2026

Annual practice edition | 7 x 10 inch pages

An independently computed book for learning and recreational practice. Not an official USNO or HMNAO publication. For real navigation, purchase and use the current official Nautical Almanac and appropriate authorized charts and procedures.

No warranty of correctness or fitness is provided. Do not rely on this book where an error could endanger life or property. See NAVALM SAFETY.md and LICENSE for the software terms; no claim is made that a disclaimer removes legal responsibilities.

Astronomy: precise. NOVAS C3.1 with JPL DE440s (ephem/de440s.nav, JD 2396752.5 to 2506352.5)

Time: whole UTC hours, with DUT1 assumed zero. Future leap seconds and Earth-rotation predictions are uncertain. Printed digits are resolution, not an accuracy guarantee. Values are apparent geocentric coordinates, rounded to 0.1 minute of arc.

Angles are printed as degrees SPACE minutes, e.g. 123 45.6. Declinations carry N or S on every row. Longitudes are east positive; LHA = GHA + east longitude, reduced to 0 through 360 degrees. GHA and SHA increase westward.

The selectable sections are listed on the next page. This development edition does not reproduce every official-book section: NAO Concise tables, Polaris correction tables, eclipse predictions, star charts and standard-time maps are not included.

CONTENTS AND USE

INCLUDED	Front reference: dip, refraction and parallax corrections
INCLUDED	Three-day Aries and navigational-planet pages
INCLUDED	Navigational-star SHA and declination on three-day pages
INCLUDED	Three-day Sun and Moon hourly pages, v/d, HP and SD
INCLUDED	Greenwich rise/set and twilight tables alongside daily pages
INCLUDED	Concise calculator formulas and worksheet
INCLUDED	Compact Ageton tables, instructions and worksheet (25 pages)
INCLUDED	Back reference: increments and corrections for minutes/seconds

Daily pages group three consecutive calendar days. Each day has all 24 hours. The final group stops on December 31; no next-year daily pages are inserted. Adjacent next-hour ephemerides are used for the final hourly rates. Planet pages and Sun/Moon pages are omitted independently; selecting stars alone still creates the Aries/star page. Day and UTC hour are separate columns. Use Increments and Corrections at the back to advance a whole-hour GHA to the observation's minute and second.

v is the signed excess hourly GHA rate over the base motion: 15 degrees/hour for Sun and planets, 14 degrees 19 minutes/hour for Moon. d is the signed change in declination in minutes/hour (N positive). Unlike the official book, all d rates here are explicitly signed. Use the signed rate, not a change in the printed N/S magnitude.

Greenwich event times are computed at longitude zero, sea level and a level horizon. Solar twilight uses center altitudes -6 and -12 degrees; rise/set uses 34 minutes of refraction and the body semidiameter plus parallax. These are approximate times, rounded to one minute. '--' means no event in that UTC day. They are not exact local times for other longitudes; recompute there, especially for Moon or polar events.

Use the sight-reduction method checkboxes independently. The concise calculator guide is NAVALM's own formula sheet, not the NAO Concise paper tables. Ageton may be included with it, substituted for it, or left out. The Ageton scale is 1,000,000; never mix these entries with the historical 100,000-scale tables.

ALTITUDE CORRECTIONS | COMPONENT TABLES

Hs + signed index correction - dip = apparent altitude Ha. Subtract refraction; add parallax and signed semidiameter (+ lower limb, - upper limb). Artificial horizon: apply index correction, halve the angle and omit dip. These are components, not the official combined-limb tables.

DIP (subtract)

Eye m	Dip ’	Eye ft	Dip ’
0.5	1.2	2	1.4
1.0	1.8	4	1.9
1.5	2.2	6	2.4
2.0	2.5	8	2.7
2.5	2.8	10	3.1
3.0	3.0	12	3.4
3.5	3.3	14	3.6
4.0	3.5	16	3.9
4.5	3.7	18	4.1
5.0	3.9	20	4.3
5.5	4.1	22	4.5
6.0	4.3	24	4.8
6.5	4.5	26	4.9
7.0	4.7	28	5.1
7.5	4.8	30	5.3
8.0	5.0	32	5.5
8.5	5.1	34	5.7
9.0	5.3	36	5.8
9.5	5.4	38	6.0
10.0	5.6	40	6.1
10.5	5.7	42	6.3
11.0	5.8	44	6.4
11.5	6.0	46	6.6
12.0	6.1	48	6.7
12.5	6.2	50	6.9
13.0	6.3	52	7.0
13.5	6.5	54	7.1
14.0	6.6	56	7.3
14.5	6.7	58	7.4
15.0	6.8	60	7.5
15.5	6.9	62	7.6
16.0	7.0	64	7.8
16.5	7.1	66	7.9
17.0	7.3	68	8.0
17.5	7.4	70	8.1
18.0	7.5	72	8.2
18.5	7.6	74	8.3
19.0	7.7	76	8.5
19.5	7.8	78	8.6
20.0	7.9	80	8.7

REFRACTION (subtract)

Ha deg	Refr ’
5.0	9.9
5.5	9.1
6.0	8.5
6.5	7.9
7.0	7.5
7.5	7.0
8.0	6.6
8.5	6.3
9.0	5.9
9.5	5.7
10.0	5.4
12.5	4.4
15.0	3.6
17.5	3.1
20.0	2.7
22.5	2.4
25.0	2.1
27.5	1.9
30.0	1.7
32.5	1.6
35.0	1.4
37.5	1.3
40.0	1.2
42.5	1.1
45.0	1.0
47.5	0.9
50.0	0.8
52.5	0.8
55.0	0.7
57.5	0.6
60.0	0.6
62.5	0.5
65.0	0.5
67.5	0.4
70.0	0.4
72.5	0.3
75.0	0.3
77.5	0.2
80.0	0.2
82.5	0.1
85.0	0.1

PARALLAX (add, arcminutes)

Ha	HP 54’	57’	60’	63’
5	53.8	56.8	59.8	62.8
10	53.2	56.1	59.1	62.0
15	52.2	55.1	58.0	60.9
20	50.7	53.6	56.4	59.2
25	48.9	51.7	54.4	57.1
30	46.8	49.4	52.0	54.6
35	44.2	46.7	49.1	51.6
40	41.4	43.7	46.0	48.3
45	38.2	40.3	42.4	44.5
50	34.7	36.6	38.6	40.5
55	31.0	32.7	34.4	36.1
60	27.0	28.5	30.0	31.5
65	22.8	24.1	25.4	26.6
70	18.5	19.5	20.5	21.5
75	14.0	14.8	15.5	16.3
80	9.4	9.9	10.4	10.9
85	4.7	5.0	5.2	5.5
90	0.0	0.0	0.0	0.0

Dip: 1.76 sqrt(eye height in m), or 0.97 sqrt(height in ft), in arcminutes. Refraction: Bennett apparent-altitude approximation, 1010 mb and 10 C. Scale refraction by (pressure / 1010) * (283 / (273 + temperature C)). Below Ha 5 degrees use official tables.

Parallax = asin(sin HP * cos Ha). HP and SD are on the daily pages in arcminutes. For Moon, topocentric SD augmentation, limb geometry and correction order also matter. These components do not replace the official Moon limb tables; NAVALM’s sight reducer provides worked software corrections.

2026 | JANUARY 1 - JANUARY 3

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
1	00	100 39.7	180 36.3	S23 37.3	176 47.0	S23 43.2	347 32.3	N21 58.7	103 16.9	S03 35.8
	01	115 42.2	195 35.4	S23 37.2	191 47.3	S23 43.0	002 35.1	N21 58.8	118 19.2	S03 35.7
	02	130 44.7	210 34.4	S23 37.1	206 47.7	S23 42.9	017 37.9	N21 58.9	133 21.5	S03 35.7
	03	145 47.1	225 33.4	S23 37.0	221 48.1	S23 42.7	032 40.7	N21 58.9	148 23.9	S03 35.6
	04	160 49.6	240 32.5	S23 36.8	236 48.5	S23 42.5	047 43.5	N21 59.0	163 26.2	S03 35.5
	05	175 52.1	255 31.5	S23 36.7	251 48.9	S23 42.4	062 46.3	N21 59.0	178 28.5	S03 35.5
	06	190 54.5	270 30.5	S23 36.6	266 49.2	S23 42.2	077 49.1	N21 59.1	193 30.9	S03 35.4
	07	205 57.0	285 29.6	S23 36.4	281 49.6	S23 42.0	092 52.0	N21 59.1	208 33.2	S03 35.3
	08	220 59.4	300 28.6	S23 36.3	296 50.0	S23 41.8	107 54.8	N21 59.2	223 35.5	S03 35.3
	09	236 01.9	315 27.6	S23 36.2	311 50.4	S23 41.7	122 57.6	N21 59.3	238 37.9	S03 35.2
	10	251 04.4	330 26.7	S23 36.0	326 50.8	S23 41.5	138 00.4	N21 59.3	253 40.2	S03 35.1
	11	266 06.8	345 25.7	S23 35.9	341 51.1	S23 41.3	153 03.2	N21 59.4	268 42.5	S03 35.1
	12	281 09.3	000 24.7	S23 35.7	356 51.5	S23 41.2	168 06.0	N21 59.4	283 44.9	S03 35.0
	13	296 11.8	015 23.8	S23 35.6	011 51.9	S23 41.0	183 08.8	N21 59.5	298 47.2	S03 34.9
	14	311 14.2	030 22.8	S23 35.5	026 52.3	S23 40.8	198 11.6	N21 59.5	313 49.5	S03 34.9
	15	326 16.7	045 21.8	S23 35.3	041 52.7	S23 40.6	213 14.4	N21 59.6	328 51.9	S03 34.8
	16	341 19.2	060 20.9	S23 35.2	056 53.0	S23 40.5	228 17.3	N21 59.7	343 54.2	S03 34.7
	17	356 21.6	075 19.9	S23 35.0	071 53.4	S23 40.3	243 20.1	N21 59.7	358 56.5	S03 34.7
	18	011 24.1	090 18.9	S23 34.9	086 53.8	S23 40.1	258 22.9	N21 59.8	013 58.9	S03 34.6
	19	026 26.6	105 18.0	S23 34.7	101 54.2	S23 39.9	273 25.7	N21 59.8	029 01.2	S03 34.5
	20	041 29.0	120 17.0	S23 34.6	116 54.6	S23 39.8	288 28.5	N21 59.9	044 03.5	S03 34.5
	21	056 31.5	135 16.0	S23 34.4	131 54.9	S23 39.6	303 31.3	N21 59.9	059 05.8	S03 34.4
	22	071 33.9	150 15.1	S23 34.3	146 55.3	S23 39.4	318 34.1	N22 00.0	074 08.2	S03 34.3
	23	086 36.4	165 14.1	S23 34.1	161 55.7	S23 39.2	333 37.0	N22 00.1	089 10.5	S03 34.3
2	00	101 38.9	180 13.2	S23 34.0	176 56.1	S23 39.1	348 39.8	N22 00.1	104 12.8	S03 34.2
	01	116 41.3	195 12.2	S23 33.8	191 56.5	S23 38.9	003 42.6	N22 00.2	119 15.2	S03 34.1
	02	131 43.8	210 11.2	S23 33.7	206 56.8	S23 38.7	018 45.4	N22 00.2	134 17.5	S03 34.1
	03	146 46.3	225 10.3	S23 33.5	221 57.2	S23 38.5	033 48.2	N22 00.3	149 19.8	S03 34.0
	04	161 48.7	240 09.3	S23 33.3	236 57.6	S23 38.3	048 51.0	N22 00.3	164 22.2	S03 33.9
	05	176 51.2	255 08.3	S23 33.2	251 58.0	S23 38.2	063 53.8	N22 00.4	179 24.5	S03 33.9
	06	191 53.7	270 07.4	S23 33.0	266 58.4	S23 38.0	078 56.6	N22 00.5	194 26.8	S03 33.8
	07	206 56.1	285 06.4	S23 32.8	281 58.7	S23 37.8	093 59.5	N22 00.5	209 29.1	S03 33.7
	08	221 58.6	300 05.4	S23 32.7	296 59.1	S23 37.6	109 02.3	N22 00.6	224 31.5	S03 33.7
	09	237 01.1	315 04.5	S23 32.5	311 59.5	S23 37.4	124 05.1	N22 00.6	239 33.8	S03 33.6
	10	252 03.5	330 03.5	S23 32.3	326 59.9	S23 37.2	139 07.9	N22 00.7	254 36.1	S03 33.5
	11	267 06.0	345 02.5	S23 32.2	342 00.3	S23 37.1	154 10.7	N22 00.7	269 38.5	S03 33.5
	12	282 08.4	000 01.6	S23 32.0	357 00.6	S23 36.9	169 13.5	N22 00.8	284 40.8	S03 33.4
	13	297 10.9	015 00.6	S23 31.8	012 01.0	S23 36.7	184 16.3	N22 00.9	299 43.1	S03 33.3
	14	312 13.4	029 59.7	S23 31.7	027 01.4	S23 36.5	199 19.2	N22 00.9	314 45.4	S03 33.3
	15	327 15.8	044 58.7	S23 31.5	042 01.8	S23 36.3	214 22.0	N22 01.0	329 47.8	S03 33.2
	16	342 18.3	059 57.7	S23 31.3	057 02.2	S23 36.1	229 24.8	N22 01.0	344 50.1	S03 33.1
	17	357 20.8	074 56.8	S23 31.1	072 02.5	S23 36.0	244 27.6	N22 01.1	359 52.4	S03 33.0
	18	012 23.2	089 55.8	S23 31.0	087 02.9	S23 35.8	259 30.4	N22 01.1	014 54.8	S03 33.0
	19	027 25.7	104 54.8	S23 30.8	102 03.3	S23 35.6	274 33.2	N22 01.2	029 57.1	S03 32.9
	20	042 28.2	119 53.9	S23 30.6	117 03.7	S23 35.4	289 36.0	N22 01.3	044 59.4	S03 32.8
	21	057 30.6	134 52.9	S23 30.4	132 04.1	S23 35.2	304 38.9	N22 01.3	060 01.7	S03 32.8
	22	072 33.1	149 52.0	S23 30.2	147 04.4	S23 35.0	319 41.7	N22 01.4	075 04.1	S03 32.7
	23	087 35.6	164 51.0	S23 30.1	162 04.8	S23 34.8	334 44.5	N22 01.4	090 06.4	S03 32.6
3	00	102 38.0	179 50.0	S23 29.9	177 05.2	S23 34.6	349 47.3	N22 01.5	105 08.7	S03 32.6
	01	117 40.5	194 49.1	S23 29.7	192 05.6	S23 34.4	004 50.1	N22 01.5	120 11.0	S03 32.5
	02	132 42.9	209 48.1	S23 29.5	207 06.0	S23 34.3	019 52.9	N22 01.6	135 13.4	S03 32.4
	03	147 45.4	224 47.2	S23 29.3	222 06.3	S23 34.1	034 55.8	N22 01.7	150 15.7	S03 32.4
	04	162 47.9	239 46.2	S23 29.1	237 06.7	S23 33.9	049 58.6	N22 01.7	165 18.0	S03 32.3
	05	177 50.3	254 45.2	S23 28.9	252 07.1	S23 33.7	065 01.4	N22 01.8	180 20.3	S03 32.2
	06	192 52.8	269 44.3	S23 28.7	267 07.5	S23 33.5	080 04.2	N22 01.8	195 22.7	S03 32.2
	07	207 55.3	284 43.3	S23 28.5	282 07.9	S23 33.3	095 07.0	N22 01.9	210 25.0	S03 32.1
	08	222 57.7	299 42.4	S23 28.3	297 08.2	S23 33.1	110 09.8	N22 01.9	225 27.3	S03 32.0
	09	238 00.2	314 41.4	S23 28.1	312 08.6	S23 32.9	125 12.7	N22 02.0	240 29.6	S03 32.0
	10	253 02.7	329 40.4	S23 27.9	327 09.0	S23 32.7	140 15.5	N22 02.1	255 32.0	S03 31.9
	11	268 05.1	344 39.5	S23 27.7	342 09.4	S23 32.5	155 18.3	N22 02.1	270 34.3	S03 31.8
	12	283 07.6	359 38.5	S23 27.5	357 09.8	S23 32.3	170 21.1	N22 02.2	285 36.6	S03 31.7
	13	298 10.1	014 37.6	S23 27.3	012 10.2	S23 32.1	185 23.9	N22 02.2	300 38.9	S03 31.7
	14	313 12.5	029 36.6	S23 27.1	027 10.5	S23 31.9	200 26.7	N22 02.3	315 41.3	S03 31.6
	15	328 15.0	044 35.6	S23 26.9	042 10.9	S23 31.7	215 29.6	N22 02.3	330 43.6	S03 31.5
	16	343 17.4	059 34.7	S23 26.7	057 11.3	S23 31.5	230 32.4	N22 02.4	345 45.9	S03 31.5
	17	358 19.9	074 33.7	S23 26.5	072 11.7	S23 31.4	245 35.2	N22 02.5	000 48.2	S03 31.4
	18	013 22.4	089 32.8	S23 26.3	087 12.1	S23 31.2	260 38.0	N22 02.5	015 50.6	S03 31.3
	19	028 24.8	104 31.8	S23 26.1	102 12.4	S23 31.0	275 40.8	N22 02.6	030 52.9	S03 31.3
	20	043 27.3	119 30.9	S23 25.9	117 12.8	S23 30.8	290 43.6	N22 02.6	045 55.2	S03 31.2
	21	058 29.8	134 29.9	S23 25.7	132 13.2	S23 30.6	305 46.5	N22 02.7	060 57.5	S03 31.1
	22	073 32.2	149 28.9	S23 25.5	147 13.6	S23 30.4	320 49.3	N22 02.7	075 59.9	S03 31.1
	23	088 34.7	164 28.0	S23 25.3	162 14.0	S23 30.2	335 52.1	N22 02.8	091 02.2	S03 31.0

Venus	Mars	Jupiter	Saturn
1: v -1.0 d 0.1	1: v 0.4 d 0.2	1: v 2.8 d 0.1	1: v 2.3 d 0.1
2: v -1.0 d 0.2	2: v 0.4 d 0.2	2: v 2.8 d 0.1	2: v 2.3 d 0.1
3: v -1.0 d 0.2	3: v 0.4 d 0.2	3: v 2.8 d 0.1	3: v 2.3 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.9	S40 12.2
Achernar	335 19.4	S57 06.5
Acrux	172 59.1	S63 14.3
Adhara	255 04.8	S29 00.4
Al Na'ir	027 32.2	S46 50.3
Aldebaran	290 38.4	N16 33.7
Alioth	166 12.3	N55 48.8
Alkaid	152 51.5	N49 10.7
Alnilam	275 36.6	S01 11.1
Alphard	217 46.7	S08 46.3
Alphecca	126 03.3	N26 37.4
Alpheratz	357 34.0	N29 14.2
Altair	061 59.5	N08 56.2
Ankaa	353 06.4	S42 10.1
Antares	112 15.2	S26 29.3
Arcturus	145 47.3	N19 02.6
Atria	107 09.2	S69 04.3
Avior	234 13.8	S59 35.4
Bellatrix	278 21.7	N06 22.4
Betelgeuse	270 50.9	N07 24.7
Canopus	263 51.5	S52 42.6
Capella	280 20.2	N46 01.5
Deneb	049 25.7	N45 22.5
Denebola	182 24.0	N14 25.5
Diphda	348 46.5	S17 50.7
Dubhe	193 39.7	N61 36.3
Elnath	278 00.5	N28 37.8
Eltanin	090 42.3	N51 29.0
Enif	033 38.2	N09 59.7
Fomalhaut	015 13.8	S29 29.2
Gacrux	171 50.7	S57 15.3
Gienah	175 42.7	S17 41.1
Hadar	148 35.1	S60 29.7
Hamal	327 50.1	N23 35.3
Kaus Australi	083 31.8	S34 22.3
Kochab	137 20.5	N74 02.5
Markab	013 29.2	N15 20.8
Menkar	314 05.1	N04 11.5
Menkent	147 56.8	S36 29.7
Miaplacidus	221 37.3	S69 49.2
Mirfak	308 26.7	N49 57.4
Nunki	075 47.1	S26 15.9
Peacock	053 05.0	S56 39.2
Polaris	313 17.9	N89 22.7
Pollux	243 15.9	N27 57.7
Procyon	244 49.6	N05 09.5
Rasalhague	095 58.1	N12 32.4
Regulus	207 33.4	N11 50.3
Rigel	281 02.8	S08 10.3
Rigil Kentaur	139 39.5	S60 56.3
Sabik	102 02.2	S15 45.4
Schedar	349 30.1	N56 41.1
Shaula	096 09.7	S37 07.3
Sirius	258 25.2	S16 45.1
Spica	158 21.5	S11 17.8
Suhail	222 45.3	S43 32.1
Vega	080 33.1	N38 48.4
Zubenelgenubi	136 55.3	S16 09.0

PLANETS | noon UTC

Name	SHA	Transit
Venus	077 53.1	1200
Mars	074 52.2	1212
Jupiter	247 05.1	0045
Saturn	002 32.3	1701

2026 | JANUARY 1 - JANUARY 3

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
1	00	179 10.1	S23 01.0	036 44.5	N26 24.2	60.7	2.4	6.7
	01	194 09.8	S23 00.8	051 06.0	N26 30.9	60.7	2.3	6.5
	02	209 09.5	S23 00.6	065 27.3	N26 37.4	60.8	2.3	6.3
	03	224 09.2	S23 00.4	079 48.6	N26 43.7	60.8	2.2	6.1
	04	239 08.9	S23 00.2	094 09.7	N26 49.8	60.8	2.1	5.9
	05	254 08.6	S23 00.0	108 30.8	N26 55.7	60.8	2.0	5.7
	06	269 08.3	S22 59.8	122 51.8	N27 01.5	60.8	1.9	5.5
	07	284 08.0	S22 59.6	137 12.7	N27 07.0	60.8	1.8	5.3
	08	299 07.7	S22 59.4	151 33.5	N27 12.3	60.8	1.8	5.1
	09	314 07.4	S22 59.2	165 54.3	N27 17.4	60.8	1.7	4.9
	10	329 07.1	S22 59.0	180 14.9	N27 22.3	60.8	1.6	4.7
	11	344 06.8	S22 58.8	194 35.6	N27 27.0	60.8	1.5	4.5
	12	359 06.5	S22 58.6	208 56.1	N27 31.4	60.8	1.5	4.3
	13	014 06.2	S22 58.3	223 16.6	N27 35.7	60.8	1.4	4.1
	14	029 05.9	S22 58.1	237 37.0	N27 39.8	60.8	1.4	3.9
	15	044 05.6	S22 57.9	251 57.3	N27 43.6	60.8	1.3	3.6
	16	059 05.4	S22 57.7	266 17.6	N27 47.3	60.8	1.2	3.4
	17	074 05.1	S22 57.5	280 37.9	N27 50.7	60.8	1.2	3.2
	18	089 04.8	S22 57.3	294 58.1	N27 53.9	60.8	1.2	3.0
	19	104 04.5	S22 57.1	309 18.2	N27 56.9	60.8	1.1	2.8
	20	119 04.2	S22 56.8	323 38.3	N27 59.7	60.9	1.1	2.6
	21	134 03.9	S22 56.6	337 58.4	N28 02.2	60.9	1.0	2.3
	22	149 03.6	S22 56.4	352 18.5	N28 04.6	60.9	1.0	2.1
	23	164 03.3	S22 56.2	006 38.5	N28 06.7	60.9	1.0	1.9
2	00	179 03.0	S22 56.0	020 58.4	N28 08.6	60.8	1.0	1.7
	01	194 02.7	S22 55.7	035 18.4	N28 10.3	60.8	0.9	1.5
	02	209 02.4	S22 55.5	049 38.3	N28 11.8	60.8	0.9	1.3
	03	224 02.2	S22 55.3	063 58.2	N28 13.0	60.8	0.9	1.0
	04	239 01.9	S22 55.1	078 18.2	N28 14.1	60.8	0.9	0.8
	05	254 01.6	S22 54.8	092 38.0	N28 14.9	60.8	0.9	0.6
	06	269 01.3	S22 54.6	106 57.9	N28 15.5	60.8	0.9	0.4
	07	284 01.0	S22 54.4	121 17.8	N28 15.8	60.8	0.9	0.1
	08	299 00.7	S22 54.2	135 37.7	N28 16.0	60.8	0.9	-0.1
	09	314 00.4	S22 53.9	149 57.6	N28 15.9	60.8	0.9	-0.3
	10	329 00.1	S22 53.7	164 17.5	N28 15.6	60.8	0.9	-0.5
	11	343 59.8	S22 53.5	178 37.4	N28 15.1	60.8	0.9	-0.7
	12	358 59.5	S22 53.3	192 57.3	N28 14.4	60.8	0.9	-1.0
	13	013 59.3	S22 53.0	207 17.3	N28 13.4	60.8	1.0	-1.2
	14	028 59.0	S22 52.8	221 37.3	N28 12.3	60.8	1.0	-1.4
	15	043 58.7	S22 52.6	235 57.3	N28 10.9	60.8	1.0	-1.6
	16	058 58.4	S22 52.3	250 17.3	N28 09.3	60.8	1.1	-1.8
	17	073 58.1	S22 52.1	264 37.4	N28 07.4	60.8	1.1	-2.0
	18	088 57.8	S22 51.9	278 57.5	N28 05.4	60.7	1.1	-2.3
	19	103 57.5	S22 51.6	293 17.6	N28 03.1	60.7	1.2	-2.5
	20	118 57.2	S22 51.4	307 37.8	N28 00.7	60.7	1.2	-2.7
	21	133 56.9	S22 51.1	321 58.0	N27 58.0	60.7	1.3	-2.9
	22	148 56.7	S22 50.9	336 18.3	N27 55.1	60.7	1.3	-3.1
	23	163 56.4	S22 50.7	350 38.7	N27 52.0	60.7	1.4	-3.3
3	00	178 56.1	S22 50.4	004 59.1	N27 48.6	60.7	1.5	-3.5
	01	193 55.8	S22 50.2	019 19.5	N27 45.1	60.7	1.5	-3.7
	02	208 55.5	S22 49.9	033 40.1	N27 41.4	60.7	1.6	-4.0
	03	223 55.2	S22 49.7	048 00.7	N27 37.4	60.6	1.7	-4.2
	04	238 54.9	S22 49.5	062 21.3	N27 33.2	60.6	1.7	-4.4
	05	253 54.6	S22 49.2	076 42.1	N27 28.9	60.6	1.8	-4.6
	06	268 54.4	S22 49.0	091 02.9	N27 24.3	60.6	1.9	-4.8
	07	283 54.1	S22 48.7	105 23.8	N27 19.5	60.6	2.0	-5.0
	08	298 53.8	S22 48.5	119 44.8	N27 14.5	60.6	2.1	-5.2
	09	313 53.5	S22 48.2	134 05.9	N27 09.3	60.5	2.2	-5.4
	10	328 53.2	S22 48.0	148 27.0	N27 04.0	60.5	2.3	-5.6
	11	343 52.9	S22 47.7	162 48.3	N26 58.4	60.5	2.3	-5.8
	12	358 52.6	S22 47.5	177 09.6	N26 52.6	60.5	2.4	-6.0
	13	013 52.4	S22 47.2	191 31.1	N26 46.6	60.5	2.5	-6.2
	14	028 52.1	S22 47.0	205 52.6	N26 40.5	60.4	2.6	-6.4
	15	043 51.8	S22 46.7	220 14.3	N26 34.1	60.4	2.8	-6.5
	16	058 51.5	S22 46.5	234 36.0	N26 27.6	60.4	2.9	-6.7
	17	073 51.2	S22 46.2	248 57.9	N26 20.8	60.4	3.0	-6.9
	18	088 50.9	S22 46.0	263 19.8	N26 13.9	60.4	3.1	-7.1
	19	103 50.7	S22 45.7	277 41.9	N26 06.8	60.3	3.2	-7.3
	20	118 50.4	S22 45.5	292 04.1	N25 59.5	60.3	3.3	-7.5
	21	133 50.1	S22 45.2	306 26.4	N25 52.1	60.3	3.4	-7.6
	22	148 49.8	S22 45.0	320 48.8	N25 44.4	60.3	3.5	-7.8
	23	163 49.5	S22 44.7	335 11.4	N25 36.6	60.3	3.7	-8.0

Day 1 noon Sun: v -0.3 d 0.2 SD 16.3 | Moon SD 16.6

Day 2 noon Sun: v -0.3 d 0.2 SD 16.3 | Moon SD 16.6

Day 3 noon Sun: v -0.3 d 0.2 SD 16.3 | Moon SD 16.5

SUN: JANUARY 2 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0823	1039	--	--	1329	1546
70N	0804	0948	--	--	1421	1604
68N	0749	0916	--	--	1453	1619
66N	0737	0852	1026	1343	1516	1632
64N	0726	0834	0948	1420	1535	1642
62N	0717	0818	0922	1446	1550	1651
60N	0709	0805	0902	1507	1603	1659
58N	0702	0754	0845	1523	1614	1706
56N	0655	0744	0831	1537	1624	1713
54N	0650	0735	0819	1550	1633	1719
52N	0644	0727	0808	1600	1641	1724
50N	0639	0720	0758	1610	1648	1729
45N	0628	0705	0738	1630	1704	1741
40N	0618	0652	0722	1646	1717	1751
35N	0609	0640	0708	1700	1728	1800
30N	0600	0630	0656	1712	1738	1808
25N	0552	0620	0645	1723	1748	1816
20N	0544	0611	0635	1733	1757	1824
15N	0536	0603	0626	1742	1805	1832
10N	0528	0555	0617	1751	1814	1840
05N	0520	0546	0609	1759	1822	1848
00N	0512	0538	0600	1808	1830	1856
05S	0503	0529	0552	1816	1839	1905
10S	0453	0520	0543	1825	1848	1915
15S	0443	0511	0534	1834	1857	1925
20S	0431	0500	0525	1843	1908	1937
25S	0418	0449	0514	1854	1919	1950
30S	0403	0436	0503	1905	1932	2005
35S	0344	0421	0450	1917	1947	2023
40S	0322	0403	0436	1932	2005	2046
45S	0252	0341	0418	1950	2027	2115
50S	0209	0312	0356	2011	2055	2158
55S	0019	0231	0327	2040	2137	2341
60S	--	0109	0245	2123	2256	--

MOON: RISE / SET | UTC HHMM

Lat	Day 1		Day 2		Day 3	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	--	--	--	--
62N	1058	0853	--	--	1335	1056
60N	1150	0802	1240	0932	1419	1012
58N	1221	0731	1318	0855	1448	0943
56N	1245	0707	1344	0828	1510	0920
54N	1305	0648	1405	0807	1528	0901
52N	1321	0632	1423	0749	1544	0846
50N	1336	0618	1438	0734	1557	0832
45N	1405	0549	1508	0704	1625	0804
40N	1427	0527	1532	0640	1646	0742
35N	1446	0509	1551	0620	1704	0723
30N	1503	0453	1608	0604	1720	0707
25N	1517	0439	1623	0549	1733	0653
20N	1530	0426	1636	0535	1745	0640
15N	1542	0414	1649	0523	1757	0628
10N	1554	0403	1701	0511	1808	0617
05N	1605	0352	1712	0459	1818	0606
00N	1616	0342	1723	0448	1829	0555
05S	1627	0331	1735	0437	1839	0544
10S	1639	0320	1746	0425	1849	0533
15S	1650	0309	1758	0413	1900	0521
20S	1703	0258	1810	0401	1912	0509
25S	1716	0245	1824	0347	1924	0456
30S	1731	0231	1839	0332	1937	0441
35S	1748	0216	1855	0315	1952	0425
40S	1807	0158	1915	0256	2010	0406
45S	1831	0136	1938	0232	2031	0343
50S	1901	0108	2009	0201	2057	0313
55S	1944	0031	2051	0118	2132	0231
60S	2101	--	2205	0000	2226	0117

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JANUARY 4 - JANUARY 6

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
4	00	103 37.2	179 27.0	S23 25.0	177 14.3	S23 30.0	350 54.9	N22 02.9	106 04.5	S03 30.9
	01	118 39.6	194 26.1	S23 24.8	192 14.7	S23 29.8	005 57.7	N22 02.9	121 06.8	S03 30.8
	02	133 42.1	209 25.1	S23 24.6	207 15.1	S23 29.6	021 00.5	N22 03.0	136 09.2	S03 30.8
	03	148 44.6	224 24.2	S23 24.4	222 15.5	S23 29.4	036 03.4	N22 03.0	151 11.5	S03 30.7
	04	163 47.0	239 23.2	S23 24.2	237 15.9	S23 29.2	051 06.2	N22 03.1	166 13.8	S03 30.6
	05	178 49.5	254 22.3	S23 23.9	252 16.3	S23 29.0	066 09.0	N22 03.1	181 16.1	S03 30.6
	06	193 51.9	269 21.3	S23 23.7	267 16.6	S23 28.7	081 11.8	N22 03.2	196 18.4	S03 30.5
	07	208 54.4	284 20.3	S23 23.5	282 17.0	S23 28.5	096 14.6	N22 03.3	211 20.8	S03 30.4
	08	223 56.9	299 19.4	S23 23.3	297 17.4	S23 28.3	111 17.4	N22 03.3	226 23.1	S03 30.4
	09	238 59.3	314 18.4	S23 23.0	312 17.8	S23 28.1	126 20.3	N22 03.4	241 25.4	S03 30.3
	10	254 01.8	329 17.5	S23 22.8	327 18.2	S23 27.9	141 23.1	N22 03.4	256 27.7	S03 30.2
	11	269 04.3	344 16.5	S23 22.6	342 18.5	S23 27.7	156 25.9	N22 03.5	271 30.1	S03 30.1
	12	284 06.7	359 15.6	S23 22.3	357 18.9	S23 27.5	171 28.7	N22 03.5	286 32.4	S03 30.1
	13	299 09.2	014 14.6	S23 22.1	012 19.3	S23 27.3	186 31.5	N22 03.6	301 34.7	S03 30.0
	14	314 11.7	029 13.7	S23 21.9	027 19.7	S23 27.1	201 34.4	N22 03.6	316 37.0	S03 29.9
	15	329 14.1	044 12.7	S23 21.6	042 20.1	S23 26.9	216 37.2	N22 03.7	331 39.3	S03 29.9
	16	344 16.6	059 11.8	S23 21.4	057 20.5	S23 26.7	231 40.0	N22 03.8	346 41.7	S03 29.8
	17	359 19.1	074 10.8	S23 21.2	072 20.8	S23 26.5	246 42.8	N22 03.8	001 44.0	S03 29.7
	18	014 21.5	089 09.8	S23 20.9	087 21.2	S23 26.3	261 45.6	N22 03.9	016 46.3	S03 29.6
	19	029 24.0	104 08.9	S23 20.7	102 21.6	S23 26.1	276 48.4	N22 03.9	031 48.6	S03 29.6
	20	044 26.4	119 07.9	S23 20.5	117 22.0	S23 25.9	291 51.3	N22 04.0	046 50.9	S03 29.5
	21	059 28.9	134 07.0	S23 20.2	132 22.4	S23 25.6	306 54.1	N22 04.0	061 53.3	S03 29.4
	22	074 31.4	149 06.0	S23 20.0	147 22.7	S23 25.4	321 56.9	N22 04.1	076 55.6	S03 29.4
	23	089 33.8	164 05.1	S23 19.7	162 23.1	S23 25.2	336 59.7	N22 04.2	091 57.9	S03 29.3
5	00	104 36.3	179 04.1	S23 19.5	177 23.5	S23 25.0	352 02.5	N22 04.2	107 00.2	S03 29.2
	01	119 38.8	194 03.2	S23 19.2	192 23.9	S23 24.8	007 05.4	N22 04.3	122 02.5	S03 29.2
	02	134 41.2	209 02.2	S23 19.0	207 24.3	S23 24.6	022 08.2	N22 04.3	137 04.9	S03 29.1
	03	149 43.7	224 01.3	S23 18.7	222 24.7	S23 24.4	037 11.0	N22 04.4	152 07.2	S03 29.0
	04	164 46.2	239 00.3	S23 18.5	237 25.0	S23 24.2	052 13.8	N22 04.4	167 09.5	S03 28.9
	05	179 48.6	253 59.4	S23 18.2	252 25.4	S23 24.0	067 16.6	N22 04.5	182 11.8	S03 28.9
	06	194 51.1	268 58.4	S23 18.0	267 25.8	S23 23.7	082 19.5	N22 04.6	197 14.1	S03 28.8
	07	209 53.6	283 57.5	S23 17.7	282 26.2	S23 23.5	097 22.3	N22 04.6	212 16.5	S03 28.7
	08	224 56.0	298 56.5	S23 17.5	297 26.6	S23 23.3	112 25.1	N22 04.7	227 18.8	S03 28.6
	09	239 58.5	313 55.6	S23 17.2	312 26.9	S23 23.1	127 27.9	N22 04.7	242 21.1	S03 28.6
	10	255 00.9	328 54.6	S23 17.0	327 27.3	S23 22.9	142 30.7	N22 04.8	257 23.4	S03 28.5
	11	270 03.4	343 53.7	S23 16.7	342 27.7	S23 22.7	157 33.6	N22 04.8	272 25.7	S03 28.4
	12	285 05.9	358 52.7	S23 16.4	357 28.1	S23 22.4	172 36.4	N22 04.9	287 28.0	S03 28.4
	13	300 08.3	013 51.8	S23 16.2	012 28.5	S23 22.2	187 39.2	N22 05.0	302 30.4	S03 28.3
	14	315 10.8	028 50.8	S23 15.9	027 28.9	S23 22.0	202 42.0	N22 05.0	317 32.7	S03 28.2
	15	330 13.3	043 49.9	S23 15.6	042 29.2	S23 21.8	217 44.8	N22 05.1	332 35.0	S03 28.1
	16	345 15.7	058 48.9	S23 15.4	057 29.6	S23 21.6	232 47.7	N22 05.1	347 37.3	S03 28.1
	17	000 18.2	073 48.0	S23 15.1	072 30.0	S23 21.4	247 50.5	N22 05.2	002 39.6	S03 28.0
	18	015 20.7	088 47.0	S23 14.8	087 30.4	S23 21.1	262 53.3	N22 05.2	017 41.9	S03 27.9
	19	030 23.1	103 46.1	S23 14.6	102 30.8	S23 20.9	277 56.1	N22 05.3	032 44.3	S03 27.9
	20	045 25.6	118 45.1	S23 14.3	117 31.2	S23 20.7	292 58.9	N22 05.4	047 46.6	S03 27.8
	21	060 28.0	133 44.2	S23 14.0	132 31.5	S23 20.5	308 01.8	N22 05.4	062 48.9	S03 27.7
	22	075 30.5	148 43.3	S23 13.8	147 31.9	S23 20.3	323 04.6	N22 05.5	077 51.2	S03 27.6
	23	090 33.0	163 42.3	S23 13.5	162 32.3	S23 20.0	338 07.4	N22 05.5	092 53.5	S03 27.6
6	00	105 35.4	178 41.4	S23 13.2	177 32.7	S23 19.8	353 10.2	N22 05.6	107 55.8	S03 27.5
	01	120 37.9	193 40.4	S23 12.9	192 33.1	S23 19.6	008 13.0	N22 05.6	122 58.2	S03 27.4
	02	135 40.4	208 39.5	S23 12.7	207 33.5	S23 19.4	023 15.9	N22 05.7	138 00.5	S03 27.4
	03	150 42.8	223 38.5	S23 12.4	222 33.8	S23 19.1	038 18.7	N22 05.8	153 02.8	S03 27.3
	04	165 45.3	238 37.6	S23 12.1	237 34.2	S23 18.9	053 21.5	N22 05.8	168 05.1	S03 27.2
	05	180 47.8	253 36.6	S23 11.8	252 34.6	S23 18.7	068 24.3	N22 05.9	183 07.4	S03 27.1
	06	195 50.2	268 35.7	S23 11.5	267 35.0	S23 18.5	083 27.1	N22 05.9	198 09.7	S03 27.1
	07	210 52.7	283 34.7	S23 11.2	282 35.4	S23 18.2	098 30.0	N22 06.0	213 12.1	S03 27.0
	08	225 55.2	298 33.8	S23 11.0	297 35.8	S23 18.0	113 32.8	N22 06.0	228 14.4	S03 26.9
	09	240 57.6	313 32.9	S23 10.7	312 36.1	S23 17.8	128 35.6	N22 06.1	243 16.7	S03 26.8
	10	256 00.1	328 31.9	S23 10.4	327 36.5	S23 17.6	143 38.4	N22 06.1	258 19.0	S03 26.8
	11	271 02.5	343 31.0	S23 10.1	342 36.9	S23 17.3	158 41.2	N22 06.2	273 21.3	S03 26.7
	12	286 05.0	358 30.0	S23 09.8	357 37.3	S23 17.1	173 44.1	N22 06.3	288 23.6	S03 26.6
	13	301 07.5	013 29.1	S23 09.5	012 37.7	S23 16.9	188 46.9	N22 06.3	303 25.9	S03 26.5
	14	316 09.9	028 28.1	S23 09.2	027 38.1	S23 16.7	203 49.7	N22 06.4	318 28.3	S03 26.5
	15	331 12.4	043 27.2	S23 08.9	042 38.4	S23 16.4	218 52.5	N22 06.4	333 30.6	S03 26.4
	16	346 14.9	058 26.3	S23 08.6	057 38.8	S23 16.2	233 55.4	N22 06.5	348 32.9	S03 26.3
	17	001 17.3	073 25.3	S23 08.3	072 39.2	S23 16.0	248 58.2	N22 06.5	003 35.2	S03 26.3
	18	016 19.8	088 24.4	S23 08.0	087 39.6	S23 15.7	264 01.0	N22 06.6	018 37.5	S03 26.2
	19	031 22.3	103 23.4	S23 07.7	102 40.0	S23 15.5	279 03.8	N22 06.7	033 39.8	S03 26.1
	20	046 24.7	118 22.5	S23 07.4	117 40.4	S23 15.3	294 06.6	N22 06.7	048 42.1	S03 26.0
	21	061 27.2	133 21.5	S23 07.1	132 40.7	S23 15.0	309 09.5	N22 06.8	063 44.5	S03 26.0
	22	076 29.7	148 20.6	S23 06.8	147 41.1	S23 14.8	324 12.3	N22 06.8	078 46.8	S03 25.9
	23	091 32.1	163 19.7	S23 06.5	162 41.5	S23 14.6	339 15.1	N22 06.9	093 49.1	S03 25.8

Venus	Mars	Jupiter	Saturn
4: v -1.0 d 0.2	4: v 0.4 d 0.2	4: v 2.8 d 0.1	4: v 2.3 d 0.1
5: v -0.9 d 0.3	5: v 0.4 d 0.2	5: v 2.8 d 0.1	5: v 2.3 d 0.1
6: v -0.9 d 0.3	6: v 0.4 d 0.2	6: v 2.8 d 0.1	6: v 2.3 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.9	S40 12.2
Achernar	335 19.4	S57 06.5
Acrux	172 59.1	S63 14.3
Adhara	255 04.8	S29 00.4
Al Na'ir	027 32.2	S46 50.3
Aldebaran	290 38.4	N16 33.7
Alioth	166 12.2	N55 48.8
Alkaid	152 51.5	N49 10.7
Alnilam	275 36.6	S01 11.1
Alphard	217 46.7	S08 46.3
Alphecca	126 03.3	N26 37.4
Alpheratz	357 34.0	N29 14.2
Altair	061 59.5	N08 56.2
Ankaa	353 06.4	S42 10.1
Antares	112 15.1	S26 29.3
Arcturus	145 47.3	N19 02.6
Atria	107 09.1	S69 04.3
Avior	234 13.8	S59 35.4
Bellatrix	278 21.7	N06 22.4
Betelgeuse	270 50.8	N07 24.7
Canopus	263 51.5	S52 42.6
Capella	280 20.2	N46 01.5
Deneb	049 25.7	N45 22.5
Denebola	182 24.0	N14 25.4
Diphda	348 46.5	S17 50.7
Dubhe	193 39.7	N61 36.3
Elnath	278 00.5	N28 37.8
Eltanin	090 42.3	N51 29.0
Enif	033 38.2	N09 59.7
Fomalhaut	015 13.8	S29 29.2
Gacrux	171 50.7	S57 15.3
Gienah	175 42.7	S17 41.2
Hadar	148 35.0	S60 29.7
Hamal	327 50.1	N23 35.3
Kaus Australi	083 31.8	S34 22.3
Kochab	137 20.4	N74 02.5
Markab	013 29.2	N15 20.8
Menkar	314 05.1	N04 11.5
Menkent	147 56.8	S36 29.7
Miaplacidus	221 37.3	S69 49.2
Mirfak	308 26.7	N49 57.4
Nunki	075 47.1	S26 15.9
Peacock	053 05.0	S56 39.2
Polaris	313 18.8	N89 22.7
Pollux	243 15.9	N27 57.7
Procyon	244 49.6	N05 09.4
Rasalhague	095 58.1	N12 32.4
Regulus	207 33.3	N11 50.3
Rigel	281 02.8	S08 10.3
Rigil Kentaur	139 39.5	S60 56.3
Sabik	102 02.1	S15 45.4
Schedar	349 30.1	N56 41.1
Shaula	096 09.6	S37 07.3
Sirius	258 25.1	S16 45.1
Spica	158 21.5	S11 17.8
Suhail	222 45.3	S43 32.1
Vega	080 33.1	N38 48.4
Zubenelgenubi	136 55.3	S16 09.0

PLANETS | noon UTC

Name	SHA	Transit
Venus	073 46.9	1204
Mars	072 22.2	1210
Jupiter	247 30.5	0032
Saturn	002 22.2	1649

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
4	00	178 49.2	S22 44.4	349 34.0	N25 28.6	60.2	3.8	-8.2
	01	193 49.0	S22 44.2	003 56.8	N25 20.5	60.2	3.9	-8.3
	02	208 48.7	S22 43.9	018 19.7	N25 12.1	60.2	4.0	-8.5
	03	223 48.4	S22 43.7	032 42.7	N25 03.6	60.2	4.2	-8.7
	04	238 48.1	S22 43.4	047 05.9	N24 55.0	60.1	4.3	-8.8
	05	253 47.8	S22 43.1	061 29.2	N24 46.1	60.1	4.4	-9.0
	06	268 47.5	S22 42.9	075 52.6	N24 37.1	60.1	4.5	-9.2
	07	283 47.3	S22 42.6	090 16.1	N24 28.0	60.0	4.7	-9.3
	08	298 47.0	S22 42.4	104 39.8	N24 18.7	60.0	4.8	-9.5
	09	313 46.7	S22 42.1	119 03.6	N24 09.2	60.0	4.9	-9.6
	10	328 46.4	S22 41.8	133 27.5	N23 59.6	60.0	5.1	-9.8
	11	343 46.1	S22 41.6	147 51.6	N23 49.8	59.9	5.2	-9.9
	12	358 45.8	S22 41.3	162 15.8	N23 39.9	59.9	5.3	-10.1
	13	013 45.6	S22 41.0	176 40.2	N23 29.8	59.9	5.5	-10.2
	14	028 45.3	S22 40.7	191 04.6	N23 19.6	59.9	5.6	-10.4
	15	043 45.0	S22 40.5	205 29.2	N23 09.3	59.8	5.8	-10.5
	16	058 44.7	S22 40.2	219 54.0	N22 58.8	59.8	5.9	-10.6
	17	073 44.4	S22 39.9	234 18.9	N22 48.2	59.8	6.0	-10.8
	18	088 44.2	S22 39.7	248 43.9	N22 37.4	59.7	6.2	-10.9
	19	103 43.9	S22 39.4	263 09.1	N22 26.5	59.7	6.3	-11.0
	20	118 43.6	S22 39.1	277 34.4	N22 15.5	59.7	6.4	-11.2
	21	133 43.3	S22 38.8	291 59.8	N22 04.3	59.6	6.6	-11.3
	22	148 43.0	S22 38.6	306 25.4	N21 53.0	59.6	6.7	-11.4
	23	163 42.8	S22 38.3	320 51.1	N21 41.6	59.6	6.9	-11.5
5	00	178 42.5	S22 38.0	335 17.0	N21 30.1	59.5	7.0	-11.6
	01	193 42.2	S22 37.7	349 43.0	N21 18.5	59.5	7.1	-11.8
	02	208 41.9	S22 37.5	004 09.1	N21 06.7	59.5	7.3	-11.9
	03	223 41.6	S22 37.2	018 35.4	N20 54.8	59.4	7.4	-12.0
	04	238 41.4	S22 36.9	033 01.8	N20 42.8	59.4	7.6	-12.1
	05	253 41.1	S22 36.6	047 28.3	N20 30.7	59.4	7.7	-12.2
	06	268 40.8	S22 36.3	061 55.0	N20 18.5	59.3	7.8	-12.3
	07	283 40.5	S22 36.1	076 21.9	N20 06.2	59.3	8.0	-12.4
	08	298 40.3	S22 35.8	090 48.8	N19 53.8	59.3	8.1	-12.5
	09	313 40.0	S22 35.5	105 15.9	N19 41.2	59.2	8.2	-12.6
	10	328 39.7	S22 35.2	119 43.2	N19 28.6	59.2	8.4	-12.7
	11	343 39.4	S22 34.9	134 10.5	N19 15.9	59.2	8.5	-12.8
	12	358 39.2	S22 34.6	148 38.0	N19 03.1	59.1	8.6	-12.9
	13	013 38.9	S22 34.3	163 05.7	N18 50.2	59.1	8.8	-13.0
	14	028 38.6	S22 34.1	177 33.5	N18 37.2	59.1	8.9	-13.1
	15	043 38.3	S22 33.8	192 01.4	N18 24.1	59.0	9.0	-13.2
	16	058 38.0	S22 33.5	206 29.4	N18 10.9	59.0	9.2	-13.3
	17	073 37.8	S22 33.2	220 57.6	N17 57.6	59.0	9.3	-13.3
	18	088 37.5	S22 32.9	235 25.9	N17 44.3	58.9	9.4	-13.4
	19	103 37.2	S22 32.6	249 54.3	N17 30.9	58.9	9.6	-13.5
	20	118 36.9	S22 32.3	264 22.9	N17 17.4	58.8	9.7	-13.6
	21	133 36.7	S22 32.0	278 51.5	N17 03.8	58.8	9.8	-13.7
	22	148 36.4	S22 31.7	293 20.4	N16 50.1	58.8	9.9	-13.7
	23	163 36.1	S22 31.4	307 49.3	N16 36.4	58.7	10.1	-13.8
6	00	178 35.8	S22 31.1	322 18.4	N16 22.6	58.7	10.2	-13.9
	01	193 35.6	S22 30.8	336 47.6	N16 08.7	58.7	10.3	-13.9
	02	208 35.3	S22 30.5	351 16.9	N15 54.8	58.6	10.4	-14.0
	03	223 35.0	S22 30.2	005 46.3	N15 40.8	58.6	10.6	-14.1
	04	238 34.7	S22 29.9	020 15.9	N15 26.7	58.5	10.7	-14.1
	05	253 34.5	S22 29.6	034 45.5	N15 12.6	58.5	10.8	-14.2
	06	268 34.2	S22 29.3	049 15.3	N14 58.4	58.5	10.9	-14.2
	07	283 33.9	S22 29.0	063 45.2	N14 44.1	58.4	11.0	-14.3
	08	298 33.7	S22 28.7	078 15.3	N14 29.8	58.4	11.1	-14.4
	09	313 33.4	S22 28.4	092 45.4	N14 15.5	58.4	11.3	-14.4
	10	328 33.1	S22 28.1	107 15.7	N14 01.1	58.3	11.4	-14.5
	11	343 32.8	S22 27.8	121 46.0	N13 46.6	58.3	11.5	-14.5
	12	358 32.6	S22 27.5	136 16.5	N13 32.1	58.2	11.6	-14.6
	13	013 32.3	S22 27.2	150 47.1	N13 17.5	58.2	11.7	-14.6
	14	028 32.0	S22 26.9	165 17.8	N13 02.9	58.2	11.8	-14.6
	15	043 31.7	S22 26.6	179 48.6	N12 48.3	58.1	11.9	-14.7
	16	058 31.5	S22 26.3	194 19.5	N12 33.6	58.1	12.0	-14.7
	17	073 31.2	S22 26.0	208 50.5	N12 18.9	58.0	12.1	-14.8
	18	088 30.9	S22 25.7	223 21.6	N12 04.1	58.0	12.2	-14.8
	19	103 30.7	S22 25.4	237 52.9	N11 49.3	58.0	12.3	-14.8
	20	118 30.4	S22 25.1	252 24.2	N11 34.5	57.9	12.4	-14.9
	21	133 30.1	S22 24.7	266 55.6	N11 19.6	57.9	12.5	-14.9
	22	148 29.9	S22 24.4	281 27.1	N11 04.7	57.9	12.6	-14.9
	23	163 29.6	S22 24.1	295 58.7	N10 49.7	57.8	12.7	-15.0

Day 4 noon Sun: v -0.3 d 0.3 SD 16.3 | Moon SD 16.3

Day 5 noon Sun: v -0.3 d 0.3 SD 16.3 | Moon SD 16.1

Day 6 noon Sun: v -0.3 d 0.3 SD 16.3 | Moon SD 15.9

SUN: JANUARY 5 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0819	1029	--	--	1342	1552
70N	0801	0943	--	--	1429	1610
68N	0747	0912	1129	1243	1459	1624
66N	0735	0849	1020	1352	1522	1636
64N	0725	0831	0944	1427	1540	1646
62N	0716	0816	0919	1452	1555	1655
60N	0708	0804	0900	1512	1607	1703
58N	0701	0753	0843	1528	1618	1710
56N	0655	0743	0830	1541	1628	1716
54N	0649	0735	0818	1553	1636	1722
52N	0644	0727	0807	1604	1644	1727
50N	0639	0720	0758	1613	1651	1732
45N	0628	0705	0738	1633	1706	1743
40N	0618	0652	0722	1649	1719	1753
35N	0609	0641	0708	1702	1730	1802
30N	0601	0630	0657	1714	1740	1810
25N	0553	0621	0646	1725	1750	1818
20N	0545	0612	0636	1735	1758	1826
15N	0537	0604	0627	1744	1807	1833
10N	0530	0556	0618	1752	1815	1841
05N	0522	0548	0610	1801	1823	1849
00N	0513	0539	0602	1809	1832	1858
05S	0504	0531	0553	1817	1840	1906
10S	0455	0522	0545	1826	1849	1916
15S	0445	0512	0536	1835	1858	1926
20S	0433	0502	0526	1844	1909	1938
25S	0420	0451	0516	1854	1920	1950
30S	0405	0438	0505	1905	1932	2005
35S	0347	0423	0453	1918	1947	2023
40S	0325	0406	0438	1932	2004	2045
45S	0256	0344	0421	1949	2026	2114
50S	0214	0316	0400	2011	2054	2156
55S	0041	0236	0331	2039	2134	2325
60S	--	0119	0250	2120	2249	--

MOON: RISE / SET | UTC HHMM

Lat	Day 4		Day 5		Day 6	
72N	--	--	--	--	1827	1203
70N	--	--	1600	1242	1849	1139
68N	--	--	1644	1157	1906	1120
66N	1423	1220	1713	1127	1919	1105
64N	1518	1124	1734	1104	1930	1052
62N	1550	1051	1751	1046	1940	1041
60N	1614	1026	1806	1031	1948	1032
58N	1634	1006	1818	1018	1955	1024
56N	1649	0949	1828	1006	2001	1017
54N	1703	0935	1837	0956	2006	1010
52N	1715	0923	1845	0947	2011	1005
50N	1725	0912	1853	0939	2016	0959
45N	1747	0849	1908	0922	2025	0948
40N	1804	0830	1921	0908	2033	0938
35N	1819	0815	1932	0856	2040	0930
30N	1832	0801	1941	0845	2046	0923
25N	1843	0749	1949	0836	2051	0916
20N	1853	0738	1957	0827	2056	0910
15N	1903	0727	2004	0819	2101	0904
10N	1912	0717	2011	0811	2105	0859
05N	1921	0708	2017	0803	2109	0853
00N	1929	0658	2024	0756	2113	0848
05S	1938	0649	2030	0748	2117	0843
10S	1946	0639	2037	0741	2122	0837
15S	1955	0629	2044	0733	2126	0832
20S	2005	0618	2051	0724	2130	0826
25S	2015	0607	2058	0715	2135	0819
30S	2026	0554	2106	0705	2140	0812
35S	2038	0540	2115	0654	2146	0805
40S	2052	0523	2126	0641	2153	0756
45S	2109	0503	2138	0626	2200	0745
50S	2129	0438	2152	0607	2209	0733
55S	2156	0404	2210	0542	2220	0717
60S	2233	0311	2235	0507	2235	0655

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JANUARY 7 - JANUARY 9

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
7	00	106 34.6	178 18.7	S23 06.2	177 41.9	S23 14.3	354 17.9	N22 06.9	108 51.4	S03 25.7
	01	121 37.0	193 17.8	S23 05.9	192 42.3	S23 14.1	009 20.7	N22 07.0	123 53.7	S03 25.7
	02	136 39.5	208 16.8	S23 05.6	207 42.7	S23 13.9	024 23.6	N22 07.1	138 56.0	S03 25.6
	03	151 42.0	223 15.9	S23 05.3	222 43.0	S23 13.6	039 26.4	N22 07.1	153 58.3	S03 25.5
	04	166 44.4	238 15.0	S23 05.0	237 43.4	S23 13.4	054 29.2	N22 07.2	169 00.6	S03 25.4
	05	181 46.9	253 14.0	S23 04.7	252 43.8	S23 13.2	069 32.0	N22 07.2	184 03.0	S03 25.4
	06	196 49.4	268 13.1	S23 04.4	267 44.2	S23 12.9	084 34.9	N22 07.3	199 05.3	S03 25.3
	07	211 51.8	283 12.2	S23 04.0	282 44.6	S23 12.7	099 37.7	N22 07.3	214 07.6	S03 25.2
	08	226 54.3	298 11.2	S23 03.7	297 45.0	S23 12.5	114 40.5	N22 07.4	229 09.9	S03 25.1
	09	241 56.8	313 10.3	S23 03.4	312 45.4	S23 12.2	129 43.3	N22 07.4	244 12.2	S03 25.1
	10	256 59.2	328 09.3	S23 03.1	327 45.7	S23 12.0	144 46.1	N22 07.5	259 14.5	S03 25.0
	11	272 01.7	343 08.4	S23 02.8	342 46.1	S23 11.7	159 49.0	N22 07.6	274 16.8	S03 24.9
	12	287 04.1	358 07.5	S23 02.5	357 46.5	S23 11.5	174 51.8	N22 07.6	289 19.1	S03 24.8
	13	302 06.6	013 06.5	S23 02.1	012 46.9	S23 11.3	189 54.6	N22 07.7	304 21.4	S03 24.8
	14	317 09.1	028 05.6	S23 01.8	027 47.3	S23 11.0	204 57.4	N22 07.7	319 23.8	S03 24.7
	15	332 11.5	043 04.7	S23 01.5	042 47.7	S23 10.8	220 00.3	N22 07.8	334 26.1	S03 24.6
	16	347 14.0	058 03.7	S23 01.2	057 48.0	S23 10.5	235 03.1	N22 07.8	349 28.4	S03 24.5
	17	002 16.5	073 02.8	S23 00.8	072 48.4	S23 10.3	250 05.9	N22 07.9	004 30.7	S03 24.5
	18	017 18.9	088 01.9	S23 00.5	087 48.8	S23 10.1	265 08.7	N22 08.0	019 33.0	S03 24.4
	19	032 21.4	103 00.9	S23 00.2	102 49.2	S23 09.8	280 11.5	N22 08.0	034 35.3	S03 24.3
	20	047 23.9	118 00.0	S22 59.8	117 49.6	S23 09.6	295 14.4	N22 08.1	049 37.6	S03 24.2
	21	062 26.3	132 59.0	S22 59.5	132 50.0	S23 09.3	310 17.2	N22 08.1	064 39.9	S03 24.2
	22	077 28.8	147 58.1	S22 59.2	147 50.4	S23 09.1	325 20.0	N22 08.2	079 42.2	S03 24.1
	23	092 31.3	162 57.2	S22 58.8	162 50.7	S23 08.8	340 22.8	N22 08.2	094 44.5	S03 24.0
8	00	107 33.7	177 56.2	S22 58.5	177 51.1	S23 08.6	355 25.7	N22 08.3	109 46.9	S03 23.9
	01	122 36.2	192 55.3	S22 58.2	192 51.5	S23 08.4	010 28.5	N22 08.3	124 49.2	S03 23.9
	02	137 38.6	207 54.4	S22 57.8	207 51.9	S23 08.1	025 31.3	N22 08.4	139 51.5	S03 23.8
	03	152 41.1	222 53.4	S22 57.5	222 52.3	S23 07.9	040 34.1	N22 08.5	154 53.8	S03 23.7
	04	167 43.6	237 52.5	S22 57.2	237 52.7	S23 07.6	055 36.9	N22 08.5	169 56.1	S03 23.6
	05	182 46.0	252 51.6	S22 56.8	252 53.1	S23 07.4	070 39.8	N22 08.6	184 58.4	S03 23.6
	06	197 48.5	267 50.7	S22 56.5	267 53.4	S23 07.1	085 42.6	N22 08.6	200 00.7	S03 23.5
	07	212 51.0	282 49.7	S22 56.1	282 53.8	S23 06.9	100 45.4	N22 08.7	215 03.0	S03 23.4
	08	227 53.4	297 48.8	S22 55.8	297 54.2	S23 06.6	115 48.2	N22 08.7	230 05.3	S03 23.3
	09	242 55.9	312 47.9	S22 55.4	312 54.6	S23 06.4	130 51.1	N22 08.8	245 07.6	S03 23.3
	10	257 58.4	327 46.9	S22 55.1	327 55.0	S23 06.1	145 53.9	N22 08.9	260 09.9	S03 23.2
	11	273 00.8	342 46.0	S22 54.7	342 55.4	S23 05.9	160 56.7	N22 08.9	275 12.3	S03 23.1
	12	288 03.3	357 45.1	S22 54.4	357 55.8	S23 05.6	175 59.5	N22 09.0	290 14.6	S03 23.0
	13	303 05.8	012 44.1	S22 54.0	012 56.1	S23 05.4	191 02.4	N22 09.0	305 16.9	S03 23.0
	14	318 08.2	027 43.2	S22 53.7	027 56.5	S23 05.1	206 05.2	N22 09.1	320 19.2	S03 22.9
	15	333 10.7	042 42.3	S22 53.3	042 56.9	S23 04.9	221 08.0	N22 09.1	335 21.5	S03 22.8
	16	348 13.1	057 41.4	S22 53.0	057 57.3	S23 04.6	236 10.8	N22 09.2	350 23.8	S03 22.7
	17	003 15.6	072 40.4	S22 52.6	072 57.7	S23 04.4	251 13.6	N22 09.2	005 26.1	S03 22.7
	18	018 18.1	087 39.5	S22 52.3	087 58.1	S23 04.1	266 16.5	N22 09.3	020 28.4	S03 22.6
	19	033 20.5	102 38.6	S22 51.9	102 58.5	S23 03.9	281 19.3	N22 09.4	035 30.7	S03 22.5
	20	048 23.0	117 37.6	S22 51.5	117 58.8	S23 03.6	296 22.1	N22 09.4	050 33.0	S03 22.4
	21	063 25.5	132 36.7	S22 51.2	132 59.2	S23 03.4	311 24.9	N22 09.5	065 35.3	S03 22.4
	22	078 27.9	147 35.8	S22 50.8	147 59.6	S23 03.1	326 27.8	N22 09.5	080 37.6	S03 22.3
	23	093 30.4	162 34.9	S22 50.5	163 00.0	S23 02.9	341 30.6	N22 09.6	095 39.9	S03 22.2
9	00	108 32.9	177 33.9	S22 50.1	178 00.4	S23 02.6	356 33.4	N22 09.6	110 42.2	S03 22.1
	01	123 35.3	192 33.0	S22 49.7	193 00.8	S23 02.4	011 36.2	N22 09.7	125 44.5	S03 22.0
	02	138 37.8	207 32.1	S22 49.4	208 01.2	S23 02.1	026 39.1	N22 09.7	140 46.9	S03 22.0
	03	153 40.2	222 31.2	S22 49.0	223 01.6	S23 01.8	041 41.9	N22 09.8	155 49.2	S03 21.9
	04	168 42.7	237 30.2	S22 48.6	238 01.9	S23 01.6	056 44.7	N22 09.9	170 51.5	S03 21.8
	05	183 45.2	252 29.3	S22 48.3	253 02.3	S23 01.3	071 47.5	N22 09.9	185 53.8	S03 21.7
	06	198 47.6	267 28.4	S22 47.9	268 02.7	S23 01.1	086 50.3	N22 10.0	200 56.1	S03 21.7
	07	213 50.1	282 27.5	S22 47.5	283 03.1	S23 00.8	101 53.2	N22 10.0	215 58.4	S03 21.6
	08	228 52.6	297 26.5	S22 47.1	298 03.5	S23 00.6	116 56.0	N22 10.1	231 00.7	S03 21.5
	09	243 55.0	312 25.6	S22 46.8	313 03.9	S23 00.3	131 58.8	N22 10.1	246 03.0	S03 21.4
	10	258 57.5	327 24.7	S22 46.4	328 04.3	S23 00.0	147 01.6	N22 10.2	261 05.3	S03 21.4
	11	274 00.0	342 23.8	S22 46.0	343 04.7	S22 59.8	162 04.5	N22 10.3	276 07.6	S03 21.3
	12	289 02.4	357 22.8	S22 45.6	358 05.0	S22 59.5	177 07.3	N22 10.3	291 09.9	S03 21.2
	13	304 04.9	012 21.9	S22 45.2	013 05.4	S22 59.3	192 10.1	N22 10.4	306 12.2	S03 21.1
	14	319 07.4	027 21.0	S22 44.9	028 05.8	S22 59.0	207 12.9	N22 10.4	321 14.5	S03 21.0
	15	334 09.8	042 20.1	S22 44.5	043 06.2	S22 58.7	222 15.8	N22 10.5	336 16.8	S03 21.0
	16	349 12.3	057 19.2	S22 44.1	058 06.6	S22 58.5	237 18.6	N22 10.5	351 19.1	S03 20.9
	17	004 14.7	072 18.2	S22 43.7	073 07.0	S22 58.2	252 21.4	N22 10.6	006 21.4	S03 20.8
	18	019 17.2	087 17.3	S22 43.3	088 07.4	S22 57.9	267 24.2	N22 10.6	021 23.7	S03 20.7
	19	034 19.7	102 16.4	S22 42.9	103 07.8	S22 57.7	282 27.1	N22 10.7	036 26.0	S03 20.7
	20	049 22.1	117 15.5	S22 42.6	118 08.1	S22 57.4	297 29.9	N22 10.8	051 28.3	S03 20.6
	21	064 24.6	132 14.6	S22 42.2	133 08.5	S22 57.1	312 32.7	N22 10.8	066 30.6	S03 20.5
	22	079 27.1	147 13.6	S22 41.8	148 08.9	S22 56.9	327 35.5	N22 10.9	081 32.9	S03 20.4
	23	094 29.5	162 12.7	S22 41.4	163 09.3	S22 56.6	342 38.3	N22 10.9	096 35.2	S03 20.3

Venus	Mars	Jupiter	Saturn
7: v -0.9 d 0.3	7: v 0.4 d 0.2	7: v 2.8 d 0.1	7: v 2.3 d 0.1
8: v -0.9 d 0.4	8: v 0.4 d 0.3	8: v 2.8 d 0.1	8: v 2.3 d 0.1
9: v -0.9 d 0.4	9: v 0.4 d 0.3	9: v 2.8 d 0.1	9: v 2.3 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.9	S40 12.2
Achernar	335 19.5	S57 06.5
Acrux	172 59.1	S63 14.4
Adhara	255 04.8	S29 00.5
Al Na'ir	027 32.2	S46 50.3
Aldebaran	290 38.4	N16 33.7
Alioth	166 12.2	N55 48.8
Alkaid	152 51.4	N49 10.7
Alnilam	275 36.6	S01 11.1
Alphard	217 46.7	S08 46.3
Alphecca	126 03.3	N26 37.4
Alpheratz	357 34.0	N29 14.2
Altair	061 59.5	N08 56.2
Ankaa	353 06.4	S42 10.1
Antares	112 15.1	S26 29.3
Arcturus	145 47.3	N19 02.6
Atria	107 09.1	S69 04.3
Avior	234 13.8	S59 35.5
Bellatrix	278 21.7	N06 22.4
Betelgeuse	270 50.8	N07 24.7
Canopus	263 51.5	S52 42.6
Capella	280 20.2	N46 01.5
Deneb	049 25.7	N45 22.5
Denebola	182 24.0	N14 25.4
Diphda	348 46.5	S17 50.7
Dubhe	193 39.6	N61 36.3
Elnath	278 00.5	N28 37.8
Eltanin	090 42.3	N51 29.0
Enif	033 38.2	N09 59.7
Fomalhaut	015 13.8	S29 29.2
Gacrux	171 50.6	S57 15.3
Gienah	175 42.7	S17 41.2
Hadar	148 35.0	S60 29.7
Hamal	327 50.1	N23 35.3
Kaus Australi	083 31.8	S34 22.3
Kochab	137 20.4	N74 02.5
Markab	013 29.2	N15 20.8
Menkar	314 05.1	N04 11.5
Menkent	147 56.7	S36 29.7
Miaplacidus	221 37.3	S69 49.3
Mirfak	308 26.7	N49 57.4
Nunki	075 47.1	S26 15.9
Peacock	053 05.0	S56 39.2
Polaris	313 20.1	N89 22.7
Pollux	243 15.9	N27 57.7
Procyon	244 49.6	N05 09.4
Rasalhague	095 58.1	N12 32.4
Regulus	207 33.3	N11 50.3
Rigel	281 02.8	S08 10.3
Rigil Kentaur	139 39.4	S60 56.3
Sabik	102 02.1	S15 45.4
Schedar	349 30.1	N56 41.1
Shaula	096 09.6	S37 07.3
Sirius	258 25.1	S16 45.1
Spica	158 21.4	S11 17.8
Suhail	222 45.3	S43 32.2
Vega	080 33.1	N38 48.4
Zubenelgenubi	136 55.2	S16 09.0

PLANETS | noon UTC

Name	SHA	Transit
Venus	069 41.8	1209
Mars	069 52.5	1208
Jupiter	247 56.2	0018
Saturn	002 11.3	1638

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
7	00	178 29.3	S22 23.8	310 30.4	N10 34.8	57.8	12.8	-15.0
	01	193 29.0	S22 23.5	325 02.2	N10 19.8	57.7	12.9	-15.0
	02	208 28.8	S22 23.2	339 34.1	N10 04.7	57.7	13.0	-15.1
	03	223 28.5	S22 22.9	354 06.1	N09 49.7	57.7	13.1	-15.1
	04	238 28.2	S22 22.5	008 38.2	N09 34.6	57.6	13.2	-15.1
	05	253 28.0	S22 22.2	023 10.4	N09 19.5	57.6	13.3	-15.1
	06	268 27.7	S22 21.9	037 42.6	N09 04.4	57.5	13.3	-15.1
	07	283 27.4	S22 21.6	052 15.0	N08 49.3	57.5	13.4	-15.2
	08	298 27.2	S22 21.3	066 47.4	N08 34.1	57.5	13.5	-15.2
	09	313 26.9	S22 20.9	081 19.9	N08 18.9	57.4	13.6	-15.2
	10	328 26.6	S22 20.6	095 52.5	N08 03.7	57.4	13.7	-15.2
	11	343 26.4	S22 20.3	110 25.1	N07 48.5	57.4	13.7	-15.2
	12	358 26.1	S22 20.0	124 57.9	N07 33.3	57.3	13.8	-15.2
	13	013 25.8	S22 19.7	139 30.7	N07 18.1	57.3	13.9	-15.2
	14	028 25.6	S22 19.3	154 03.6	N07 02.8	57.2	14.0	-15.3
	15	043 25.3	S22 19.0	168 36.6	N06 47.6	57.2	14.0	-15.3
	16	058 25.0	S22 18.7	183 09.6	N06 32.3	57.2	14.1	-15.3
	17	073 24.8	S22 18.4	197 42.7	N06 17.1	57.1	14.2	-15.3
	18	088 24.5	S22 18.0	212 15.9	N06 01.8	57.1	14.3	-15.3
	19	103 24.2	S22 17.7	226 49.2	N05 46.5	57.0	14.3	-15.3
	20	118 24.0	S22 17.4	241 22.5	N05 31.2	57.0	14.4	-15.3
	21	133 23.7	S22 17.0	255 55.9	N05 15.9	57.0	14.4	-15.3
	22	148 23.4	S22 16.7	270 29.3	N05 00.7	56.9	14.5	-15.3
	23	163 23.2	S22 16.4	285 02.8	N04 45.4	56.9	14.6	-15.3
8	00	178 22.9	S22 16.0	299 36.4	N04 30.1	56.9	14.6	-15.3
	01	193 22.6	S22 15.7	314 10.0	N04 14.8	56.8	14.7	-15.3
	02	208 22.4	S22 15.4	328 43.7	N03 59.5	56.8	14.7	-15.3
	03	223 22.1	S22 15.0	343 17.5	N03 44.2	56.8	14.8	-15.3
	04	238 21.8	S22 14.7	357 51.3	N03 29.0	56.7	14.9	-15.3
	05	253 21.6	S22 14.4	012 25.1	N03 13.7	56.7	14.9	-15.3
	06	268 21.3	S22 14.0	026 59.0	N02 58.4	56.6	15.0	-15.3
	07	283 21.0	S22 13.7	041 33.0	N02 43.2	56.6	15.0	-15.2
	08	298 20.8	S22 13.4	056 07.0	N02 27.9	56.6	15.1	-15.2
	09	313 20.5	S22 13.0	070 41.1	N02 12.7	56.5	15.1	-15.2
	10	328 20.3	S22 12.7	085 15.2	N01 57.5	56.5	15.2	-15.2
	11	343 20.0	S22 12.3	099 49.3	N01 42.3	56.5	15.2	-15.2
	12	358 19.7	S22 12.0	114 23.5	N01 27.1	56.4	15.2	-15.2
	13	013 19.5	S22 11.7	128 57.8	N01 11.9	56.4	15.3	-15.2
	14	028 19.2	S22 11.3	143 32.0	N00 56.7	56.4	15.3	-15.2
	15	043 18.9	S22 11.0	158 06.4	N00 41.6	56.3	15.4	-15.1
	16	058 18.7	S22 10.6	172 40.7	N00 26.5	56.3	15.4	-15.1
	17	073 18.4	S22 10.3	187 15.1	N00 11.3	56.3	15.4	-15.1
	18	088 18.2	S22 09.9	201 49.6	S00 03.8	56.2	15.5	-15.1
	19	103 17.9	S22 09.6	216 24.0	S00 18.8	56.2	15.5	-15.1
	20	118 17.6	S22 09.2	230 58.6	S00 33.9	56.2	15.5	-15.0
	21	133 17.4	S22 08.9	245 33.1	S00 48.9	56.1	15.6	-15.0
	22	148 17.1	S22 08.5	260 07.7	S01 04.0	56.1	15.6	-15.0
	23	163 16.9	S22 08.2	274 42.3	S01 19.0	56.1	15.6	-15.0
9	00	178 16.6	S22 07.8	289 16.9	S01 33.9	56.0	15.7	-14.9
	01	193 16.3	S22 07.5	303 51.6	S01 48.9	56.0	15.7	-14.9
	02	208 16.1	S22 07.1	318 26.2	S02 03.8	56.0	15.7	-14.9
	03	223 15.8	S22 06.8	333 00.9	S02 18.7	55.9	15.7	-14.9
	04	238 15.6	S22 06.4	347 35.7	S02 33.6	55.9	15.8	-14.8
	05	253 15.3	S22 06.1	002 10.4	S02 48.4	55.9	15.8	-14.8
	06	268 15.0	S22 05.7	016 45.2	S03 03.2	55.8	15.8	-14.8
	07	283 14.8	S22 05.4	031 20.0	S03 18.0	55.8	15.8	-14.8
	08	298 14.5	S22 05.0	045 54.8	S03 32.8	55.8	15.8	-14.7
	09	313 14.3	S22 04.6	060 29.6	S03 47.5	55.7	15.8	-14.7
	10	328 14.0	S22 04.3	075 04.5	S04 02.2	55.7	15.9	-14.7
	11	343 13.8	S22 03.9	089 39.3	S04 16.8	55.7	15.9	-14.6
	12	358 13.5	S22 03.6	104 14.2	S04 31.5	55.6	15.9	-14.6
	13	013 13.2	S22 03.2	118 49.1	S04 46.1	55.6	15.9	-14.6
	14	028 13.0	S22 02.9	133 24.0	S05 00.6	55.6	15.9	-14.5
	15	043 12.7	S22 02.5	147 58.9	S05 15.2	55.6	15.9	-14.5
	16	058 12.5	S22 02.1	162 33.8	S05 29.6	55.5	15.9	-14.5
	17	073 12.2	S22 01.8	177 08.7	S05 44.1	55.5	15.9	-14.4
	18	088 12.0	S22 01.4	191 43.7	S05 58.5	55.5	15.9	-14.4
	19	103 11.7	S22 01.0	206 18.6	S06 12.9	55.4	15.9	-14.3
	20	118 11.5	S22 00.7	220 53.5	S06 27.2	55.4	15.9	-14.3
	21	133 11.2	S22 00.3	235 28.5	S06 41.5	55.4	15.9	-14.3
	22	148 10.9	S21 59.9	250 03.4	S06 55.8	55.4	15.9	-14.2
	23	163 10.7	S21 59.6	264 38.4	S07 10.0	55.3	15.9	-14.2

Day 7 noon Sun: v -0.3 d 0.3 SD 16.3 | Moon SD 15.6

Day 8 noon Sun: v -0.3 d 0.3 SD 16.3 | Moon SD 15.4

Day 9 noon Sun: v -0.3 d 0.4 SD 16.3 | Moon SD 15.2

SUN: JANUARY 8 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0815	1019	--	--	1355	1559
70N	0758	0936	--	--	1438	1616
68N	0744	0907	1109	1305	1507	1630
66N	0732	0846	1012	1401	1528	1642
64N	0723	0828	0940	1434	1545	1651
62N	0714	0814	0916	1458	1600	1700
60N	0707	0802	0857	1517	1612	1707
58N	0700	0751	0841	1533	1623	1714
56N	0654	0742	0828	1546	1632	1720
54N	0648	0734	0816	1558	1640	1726
52N	0643	0726	0806	1608	1648	1731
50N	0638	0719	0757	1617	1655	1735
45N	0627	0704	0738	1636	1709	1746
40N	0618	0652	0722	1652	1722	1756
35N	0609	0641	0709	1705	1733	1804
30N	0601	0631	0657	1717	1743	1812
25N	0553	0622	0646	1727	1752	1820
20N	0546	0613	0637	1737	1800	1828
15N	0538	0605	0628	1745	1809	1835
10N	0531	0557	0619	1754	1817	1843
05N	0523	0549	0611	1802	1825	1851
00N	0515	0541	0603	1810	1833	1859
05S	0506	0532	0555	1819	1841	1907
10S	0457	0524	0546	1827	1850	1917
15S	0447	0514	0538	1836	1859	1927
20S	0435	0504	0528	1845	1909	1938
25S	0423	0453	0519	1855	1920	1951
30S	0408	0441	0508	1906	1933	2005
35S	0350	0426	0455	1918	1947	2023
40S	0328	0409	0441	1932	2004	2044
45S	0300	0348	0424	1949	2025	2113
50S	0219	0320	0403	2009	2052	2153
55S	0056	0241	0336	2037	2131	2313
60S	--	0130	0256	2117	2241	--

MOON: RISE / SET | UTC HHMM

Lat	Day 7		Day 8		Day 9	
72N	2051	1116	2259	1041	--	1008
70N	2059	1105	2257	1038	--	1013
68N	2105	1056	2255	1037	--	1018
66N	2110	1049	2254	1035	--	1022
64N	2115	1043	2253	1034	--	1025
62N	2119	1037	2252	1033	--	1028
60N	2122	1032	2251	1032	--	1031
58N	2125	1028	2250	1031	--	1033
56N	2127	1024	2249	1030	--	1035
54N	2130	1021	2249	1029	--	1037
52N	2132	1018	2248	1028	--	1039
50N	2134	1015	2248	1028	2359	1040
45N	2138	1008	2246	1026	2353	1043
40N	2141	1003	2246	1025	2348	1046
35N	2144	0959	2245	1024	2344	1049
30N	2146	0955	2244	1023	2340	1051
25N	2149	0951	2244	1023	2337	1053
20N	2151	0947	2243	1022	2334	1055
15N	2153	0944	2242	1021	2331	1056
10N	2155	0941	2242	1020	2328	1058
05N	2157	0938	2242	1020	2325	1059
00N	2158	0935	2241	1019	2322	1101
05S	2200	0932	2241	1018	2320	1103
10S	2202	0929	2240	1018	2317	1104
15S	2204	0926	2240	1017	2314	1106
20S	2206	0923	2239	1016	2312	1107
25S	2208	0919	2239	1015	2309	1109
30S	2210	0915	2238	1014	2305	1111
35S	2213	0911	2238	1013	2302	1113
40S	2216	0906	2237	1012	2258	1116
45S	2219	0900	2236	1011	2253	1119
50S	2223	0853	2235	1009	2248	1122
55S	2228	0845	2234	1007	2241	1127
60S	2234	0833	2233	1005	2232	1132

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JANUARY 10 - JANUARY 12

UTC	ARIES	Venus		Mars		Jupiter		Saturn	
Day h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
10 00	109 32.0	177 11.8	S22 41.0	178 09.7	S22 56.4	357 41.2	N22 11.0	111 37.5	S03 20.3
01	124 34.5	192 10.9	S22 40.6	193 10.1	S22 56.1	012 44.0	N22 11.0	126 39.8	S03 20.2
02	139 36.9	207 10.0	S22 40.2	208 10.5	S22 55.8	027 46.8	N22 11.1	141 42.2	S03 20.1
03	154 39.4	222 09.1	S22 39.8	223 10.9	S22 55.6	042 49.6	N22 11.1	156 44.5	S03 20.0
04	169 41.9	237 08.1	S22 39.4	238 11.2	S22 55.3	057 52.5	N22 11.2	171 46.8	S03 20.0
05	184 44.3	252 07.2	S22 39.0	253 11.6	S22 55.0	072 55.3	N22 11.3	186 49.1	S03 19.9
06	199 46.8	267 06.3	S22 38.6	268 12.0	S22 54.7	087 58.1	N22 11.3	201 51.4	S03 19.8
07	214 49.2	282 05.4	S22 38.2	283 12.4	S22 54.5	103 00.9	N22 11.4	216 53.7	S03 19.7
08	229 51.7	297 04.5	S22 37.8	298 12.8	S22 54.2	118 03.8	N22 11.4	231 56.0	S03 19.6
09	244 54.2	312 03.6	S22 37.4	313 13.2	S22 53.9	133 06.6	N22 11.5	246 58.3	S03 19.6
10	259 56.6	327 02.6	S22 37.0	328 13.6	S22 53.7	148 09.4	N22 11.5	262 00.6	S03 19.5
11	274 59.1	342 01.7	S22 36.6	343 14.0	S22 53.4	163 12.2	N22 11.6	277 02.9	S03 19.4
12	290 01.6	357 00.8	S22 36.2	358 14.4	S22 53.1	178 15.1	N22 11.6	292 05.2	S03 19.3
13	305 04.0	011 59.9	S22 35.8	013 14.7	S22 52.9	193 17.9	N22 11.7	307 07.5	S03 19.2
14	320 06.5	026 59.0	S22 35.3	028 15.1	S22 52.6	208 20.7	N22 11.8	322 09.8	S03 19.2
15	335 09.0	041 58.1	S22 34.9	043 15.5	S22 52.3	223 23.5	N22 11.8	337 12.1	S03 19.1
16	350 11.4	056 57.2	S22 34.5	058 15.9	S22 52.0	238 26.3	N22 11.9	352 14.4	S03 19.0
17	005 13.9	071 56.2	S22 34.1	073 16.3	S22 51.8	253 29.2	N22 11.9	007 16.7	S03 18.9
18	020 16.3	086 55.3	S22 33.7	088 16.7	S22 51.5	268 32.0	N22 12.0	022 19.0	S03 18.9
19	035 18.8	101 54.4	S22 33.3	103 17.1	S22 51.2	283 34.8	N22 12.0	037 21.3	S03 18.8
20	050 21.3	116 53.5	S22 32.9	118 17.5	S22 50.9	298 37.6	N22 12.1	052 23.6	S03 18.7
21	065 23.7	131 52.6	S22 32.4	133 17.9	S22 50.7	313 40.5	N22 12.1	067 25.9	S03 18.6
22	080 26.2	146 51.7	S22 32.0	148 18.3	S22 50.4	328 43.3	N22 12.2	082 28.2	S03 18.5
23	095 28.7	161 50.8	S22 31.6	163 18.6	S22 50.1	343 46.1	N22 12.3	097 30.5	S03 18.5
11 00	110 31.1	176 49.9	S22 31.2	178 19.0	S22 49.8	358 48.9	N22 12.3	112 32.8	S03 18.4
01	125 33.6	191 49.0	S22 30.8	193 19.4	S22 49.6	013 51.8	N22 12.4	127 35.1	S03 18.3
02	140 36.1	206 48.0	S22 30.3	208 19.8	S22 49.3	028 54.6	N22 12.4	142 37.4	S03 18.2
03	155 38.5	221 47.1	S22 29.9	223 20.2	S22 49.0	043 57.4	N22 12.5	157 39.7	S03 18.1
04	170 41.0	236 46.2	S22 29.5	238 20.6	S22 48.7	059 00.2	N22 12.5	172 42.0	S03 18.1
05	185 43.5	251 45.3	S22 29.0	253 21.0	S22 48.4	074 03.1	N22 12.6	187 44.3	S03 18.0
06	200 45.9	266 44.4	S22 28.6	268 21.4	S22 48.2	089 05.9	N22 12.6	202 46.6	S03 17.9
07	215 48.4	281 43.5	S22 28.2	283 21.8	S22 47.9	104 08.7	N22 12.7	217 48.9	S03 17.8
08	230 50.8	296 42.6	S22 27.8	298 22.2	S22 47.6	119 11.5	N22 12.7	232 51.2	S03 17.7
09	245 53.3	311 41.7	S22 27.3	313 22.5	S22 47.3	134 14.4	N22 12.8	247 53.5	S03 17.7
10	260 55.8	326 40.8	S22 26.9	328 22.9	S22 47.0	149 17.2	N22 12.9	262 55.8	S03 17.6
11	275 58.2	341 39.9	S22 26.5	343 23.3	S22 46.8	164 20.0	N22 12.9	277 58.1	S03 17.5
12	291 00.7	356 39.0	S22 26.0	358 23.7	S22 46.5	179 22.8	N22 13.0	293 00.4	S03 17.4
13	306 03.2	011 38.1	S22 25.6	013 24.1	S22 46.2	194 25.6	N22 13.0	308 02.7	S03 17.3
14	321 05.6	026 37.2	S22 25.1	028 24.5	S22 45.9	209 28.5	N22 13.1	323 05.0	S03 17.3
15	336 08.1	041 36.3	S22 24.7	043 24.9	S22 45.6	224 31.3	N22 13.1	338 07.2	S03 17.2
16	351 10.6	056 35.4	S22 24.3	058 25.3	S22 45.3	239 34.1	N22 13.2	353 09.5	S03 17.1
17	006 13.0	071 34.5	S22 23.8	073 25.7	S22 45.1	254 36.9	N22 13.2	008 11.8	S03 17.0
18	021 15.5	086 33.5	S22 23.4	088 26.1	S22 44.8	269 39.8	N22 13.3	023 14.1	S03 16.9
19	036 18.0	101 32.6	S22 22.9	103 26.4	S22 44.5	284 42.6	N22 13.4	038 16.4	S03 16.9
20	051 20.4	116 31.7	S22 22.5	118 26.8	S22 44.2	299 45.4	N22 13.4	053 18.7	S03 16.8
21	066 22.9	131 30.8	S22 22.0	133 27.2	S22 43.9	314 48.2	N22 13.5	068 21.0	S03 16.7
22	081 25.3	146 29.9	S22 21.6	148 27.6	S22 43.6	329 51.1	N22 13.5	083 23.3	S03 16.6
23	096 27.8	161 29.0	S22 21.1	163 28.0	S22 43.3	344 53.9	N22 13.6	098 25.6	S03 16.5
12 00	111 30.3	176 28.1	S22 20.7	178 28.4	S22 43.1	359 56.7	N22 13.6	113 27.9	S03 16.5
01	126 32.7	191 27.2	S22 20.2	193 28.8	S22 42.8	014 59.5	N22 13.7	128 30.2	S03 16.4
02	141 35.2	206 26.3	S22 19.8	208 29.2	S22 42.5	030 02.4	N22 13.7	143 32.5	S03 16.3
03	156 37.7	221 25.4	S22 19.3	223 29.6	S22 42.2	045 05.2	N22 13.8	158 34.8	S03 16.2
04	171 40.1	236 24.5	S22 18.9	238 30.0	S22 41.9	060 08.0	N22 13.8	173 37.1	S03 16.1
05	186 42.6	251 23.6	S22 18.4	253 30.4	S22 41.6	075 10.8	N22 13.9	188 39.4	S03 16.1
06	201 45.1	266 22.7	S22 18.0	268 30.8	S22 41.3	090 13.6	N22 14.0	203 41.7	S03 16.0
07	216 47.5	281 21.8	S22 17.5	283 31.1	S22 41.0	105 16.5	N22 14.0	218 44.0	S03 15.9
08	231 50.0	296 20.9	S22 17.0	298 31.5	S22 40.7	120 19.3	N22 14.1	233 46.3	S03 15.8
09	246 52.4	311 20.0	S22 16.6	313 31.9	S22 40.4	135 22.1	N22 14.1	248 48.6	S03 15.7
10	261 54.9	326 19.1	S22 16.1	328 32.3	S22 40.2	150 24.9	N22 14.2	263 50.9	S03 15.6
11	276 57.4	341 18.2	S22 15.6	343 32.7	S22 39.9	165 27.8	N22 14.2	278 53.2	S03 15.6
12	291 59.8	356 17.3	S22 15.2	358 33.1	S22 39.6	180 30.6	N22 14.3	293 55.5	S03 15.5
13	307 02.3	011 16.5	S22 14.7	013 33.5	S22 39.3	195 33.4	N22 14.3	308 57.8	S03 15.4
14	322 04.8	026 15.6	S22 14.2	028 33.9	S22 39.0	210 36.2	N22 14.4	324 00.1	S03 15.3
15	337 07.2	041 14.7	S22 13.8	043 34.3	S22 38.7	225 39.1	N22 14.4	339 02.3	S03 15.2
16	352 09.7	056 13.8	S22 13.3	058 34.7	S22 38.4	240 41.9	N22 14.5	354 04.6	S03 15.2
17	007 12.2	071 12.9	S22 12.8	073 35.1	S22 38.1	255 44.7	N22 14.6	009 06.9	S03 15.1
18	022 14.6	086 12.0	S22 12.4	088 35.5	S22 37.8	270 47.5	N22 14.6	024 09.2	S03 15.0
19	037 17.1	101 11.1	S22 11.9	103 35.9	S22 37.5	285 50.3	N22 14.7	039 11.5	S03 14.9
20	052 19.6	116 10.2	S22 11.4	118 36.3	S22 37.2	300 53.2	N22 14.7	054 13.8	S03 14.8
21	067 22.0	131 09.3	S22 10.9	133 36.6	S22 36.9	315 56.0	N22 14.8	069 16.1	S03 14.7
22	082 24.5	146 08.4	S22 10.5	148 37.0	S22 36.6	330 58.8	N22 14.8	084 18.4	S03 14.7
23	097 26.9	161 07.5	S22 10.0	163 37.4	S22 36.3	346 01.6	N22 14.9	099 20.7	S03 14.6

Venus	Mars	Jupiter	Saturn
10: v -0.9 d 0.4	10: v 0.4 d 0.3	10: v 2.8 d 0.1	10: v 2.3 d 0.1
11: v -0.9 d 0.4	11: v 0.4 d 0.3	11: v 2.8 d 0.1	11: v 2.3 d 0.1
12: v -0.9 d 0.5	12: v 0.4 d 0.3	12: v 2.8 d 0.1	12: v 2.3 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.9	S40 12.2
Achernar	335 19.5	S57 06.5
Acrux	172 59.0	S63 14.4
Adhara	255 04.8	S29 00.5
Al Na'ir	027 32.2	S46 50.3
Aldebaran	290 38.4	N16 33.7
Alioth	166 12.2	N55 48.8
Alkaid	152 51.4	N49 10.7
Alnilam	275 36.6	S01 11.1
Alphard	217 46.6	S08 46.3
Alphecca	126 03.2	N26 37.4
Alpheratz	357 34.0	N29 14.2
Altair	061 59.5	N08 56.2
Ankaa	353 06.4	S42 10.1
Antares	112 15.1	S26 29.3
Arcturus	145 47.2	N19 02.6
Atria	107 09.0	S69 04.3
Avior	234 13.8	S59 35.5
Bellatrix	278 21.7	N06 22.4
Betelgeuse	270 50.8	N07 24.7
Canopus	263 51.5	S52 42.6
Capella	280 20.2	N46 01.5
Deneb	049 25.7	N45 22.4
Denebola	182 24.0	N14 25.4
Diphda	348 46.5	S17 50.7
Dubhe	193 39.6	N61 36.3
Elnath	278 00.5	N28 37.8
Eltanin	090 42.3	N51 28.9
Enif	033 38.2	N09 59.7
Fomalhaut	015 13.8	S29 29.2
Gacrux	171 50.6	S57 15.3
Gienah	175 42.6	S17 41.2
Hadar	148 35.0	S60 29.7
Hamal	327 50.2	N23 35.3
Kaus Australi	083 31.8	S34 22.3
Kochab	137 20.3	N74 02.5
Markab	013 29.2	N15 20.8
Menkar	314 05.1	N04 11.5
Menkent	147 56.7	S36 29.8
Miaplacidus	221 37.3	S69 49.3
Mirfak	308 26.8	N49 57.4
Nunki	075 47.1	S26 15.9
Peacock	053 05.0	S56 39.2
Polaris	313 21.4	N89 22.7
Pollux	243 15.9	N27 57.7
Procyon	244 49.6	N05 09.4
Rasalhague	095 58.1	N12 32.4
Regulus	207 33.3	N11 50.3
Rigel	281 02.8	S08 10.3
Rigil Kentaur	139 39.4	S60 56.3
Sabik	102 02.1	S15 45.4
Schedar	349 30.2	N56 41.1
Shaula	096 09.6	S37 07.3
Sirius	258 25.1	S16 45.2
Spica	158 21.4	S11 17.9
Suhail	222 45.3	S43 32.2
Vega	080 33.1	N38 48.4
Zubenelgenubi	136 55.2	S16 09.0

PLANETS | noon UTC

Name	SHA	Transit
Venus	065 38.3	1213
Mars	067 23.0	1206
Jupiter	248 22.1	0005
Saturn	001 59.7	1627

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
10	00	178 10.4	S21 59.2	279 13.3	S07 24.2	55.3	15.9	-14.1
	01	193 10.2	S21 58.8	293 48.2	S07 38.3	55.3	15.9	-14.1
	02	208 09.9	S21 58.5	308 23.2	S07 52.4	55.3	15.9	-14.0
	03	223 09.7	S21 58.1	322 58.1	S08 06.5	55.2	15.9	-14.0
	04	238 09.4	S21 57.7	337 33.0	S08 20.5	55.2	15.9	-14.0
	05	253 09.2	S21 57.3	352 07.9	S08 34.4	55.2	15.9	-13.9
	06	268 08.9	S21 57.0	006 42.8	S08 48.3	55.2	15.9	-13.9
	07	283 08.7	S21 56.6	021 17.7	S09 02.2	55.1	15.9	-13.8
	08	298 08.4	S21 56.2	035 52.6	S09 16.0	55.1	15.9	-13.8
	09	313 08.2	S21 55.8	050 27.5	S09 29.8	55.1	15.9	-13.7
	10	328 07.9	S21 55.5	065 02.4	S09 43.5	55.1	15.9	-13.7
	11	343 07.7	S21 55.1	079 37.2	S09 57.2	55.0	15.8	-13.6
	12	358 07.4	S21 54.7	094 12.1	S10 10.8	55.0	15.8	-13.6
	13	013 07.2	S21 54.3	108 46.9	S10 24.4	55.0	15.8	-13.5
	14	028 06.9	S21 54.0	123 21.7	S10 37.9	55.0	15.8	-13.5
	15	043 06.7	S21 53.6	137 56.5	S10 51.4	54.9	15.8	-13.4
	16	058 06.4	S21 53.2	152 31.2	S11 04.8	54.9	15.7	-13.4
	17	073 06.2	S21 52.8	167 06.0	S11 18.2	54.9	15.7	-13.3
	18	088 05.9	S21 52.4	181 40.7	S11 31.5	54.9	15.7	-13.3
	19	103 05.7	S21 52.1	196 15.4	S11 44.8	54.9	15.7	-13.2
	20	118 05.4	S21 51.7	210 50.1	S11 58.0	54.8	15.7	-13.2
	21	133 05.2	S21 51.3	225 24.8	S12 11.2	54.8	15.6	-13.1
	22	148 04.9	S21 50.9	239 59.4	S12 24.2	54.8	15.6	-13.0
	23	163 04.7	S21 50.5	254 34.0	S12 37.3	54.8	15.6	-13.0
11	00	178 04.4	S21 50.1	269 08.6	S12 50.3	54.8	15.6	-12.9
	01	193 04.2	S21 49.7	283 43.1	S13 03.2	54.7	15.5	-12.9
	02	208 03.9	S21 49.4	298 17.7	S13 16.0	54.7	15.5	-12.8
	03	223 03.7	S21 49.0	312 52.2	S13 28.9	54.7	15.5	-12.7
	04	238 03.4	S21 48.6	327 26.6	S13 41.6	54.7	15.4	-12.7
	05	253 03.2	S21 48.2	342 01.1	S13 54.3	54.7	15.4	-12.6
	06	268 02.9	S21 47.8	356 35.5	S14 06.9	54.6	15.4	-12.6
	07	283 02.7	S21 47.4	011 09.8	S14 19.5	54.6	15.3	-12.5
	08	298 02.4	S21 47.0	025 44.1	S14 32.0	54.6	15.3	-12.4
	09	313 02.2	S21 46.6	040 18.4	S14 44.4	54.6	15.3	-12.4
	10	328 01.9	S21 46.2	054 52.7	S14 56.8	54.6	15.2	-12.3
	11	343 01.7	S21 45.8	069 26.9	S15 09.1	54.6	15.2	-12.2
	12	358 01.4	S21 45.4	084 01.1	S15 21.3	54.5	15.1	-12.2
	13	013 01.2	S21 45.0	098 35.2	S15 33.5	54.5	15.1	-12.1
	14	028 01.0	S21 44.6	113 09.3	S15 45.6	54.5	15.1	-12.0
	15	043 00.7	S21 44.2	127 43.4	S15 57.6	54.5	15.0	-12.0
	16	058 00.5	S21 43.8	142 17.4	S16 09.6	54.5	15.0	-11.9
	17	073 00.2	S21 43.4	156 51.4	S16 21.5	54.5	14.9	-11.8
	18	088 00.0	S21 43.0	171 25.3	S16 33.3	54.4	14.9	-11.8
	19	102 59.7	S21 42.6	185 59.2	S16 45.0	54.4	14.8	-11.7
	20	117 59.5	S21 42.2	200 33.1	S16 56.7	54.4	14.8	-11.6
	21	132 59.3	S21 41.8	215 06.9	S17 08.3	54.4	14.8	-11.5
	22	147 59.0	S21 41.4	229 40.6	S17 19.9	54.4	14.7	-11.5
	23	162 58.8	S21 41.0	244 14.3	S17 31.3	54.4	14.7	-11.4
12	00	177 58.5	S21 40.6	258 48.0	S17 42.7	54.4	14.6	-11.3
	01	192 58.3	S21 40.2	273 21.6	S17 54.1	54.3	14.6	-11.2
	02	207 58.0	S21 39.8	287 55.2	S18 05.3	54.3	14.5	-11.2
	03	222 57.8	S21 39.4	302 28.7	S18 16.5	54.3	14.5	-11.1
	04	237 57.6	S21 39.0	317 02.1	S18 27.6	54.3	14.4	-11.0
	05	252 57.3	S21 38.6	331 35.5	S18 38.6	54.3	14.4	-10.9
	06	267 57.1	S21 38.2	346 08.9	S18 49.5	54.3	14.3	-10.9
	07	282 56.8	S21 37.8	000 42.2	S19 00.3	54.3	14.2	-10.8
	08	297 56.6	S21 37.4	015 15.4	S19 11.1	54.3	14.2	-10.7
	09	312 56.4	S21 37.0	029 48.6	S19 21.8	54.3	14.1	-10.6
	10	327 56.1	S21 36.6	044 21.8	S19 32.4	54.2	14.1	-10.5
	11	342 55.9	S21 36.1	058 54.8	S19 42.9	54.2	14.0	-10.4
	12	357 55.6	S21 35.7	073 27.9	S19 53.4	54.2	14.0	-10.4
	13	012 55.4	S21 35.3	088 00.8	S20 03.8	54.2	13.9	-10.3
	14	027 55.2	S21 34.9	102 33.8	S20 14.0	54.2	13.9	-10.2
	15	042 54.9	S21 34.5	117 06.6	S20 24.2	54.2	13.8	-10.1
	16	057 54.7	S21 34.1	131 39.4	S20 34.3	54.2	13.7	-10.0
	17	072 54.4	S21 33.7	146 12.2	S20 44.3	54.2	13.7	-9.9
	18	087 54.2	S21 33.2	160 44.8	S20 54.3	54.2	13.6	-9.8
	19	102 54.0	S21 32.8	175 17.5	S21 04.1	54.2	13.6	-9.8
	20	117 53.7	S21 32.4	189 50.0	S21 13.9	54.2	13.5	-9.7
	21	132 53.5	S21 32.0	204 22.5	S21 23.5	54.2	13.4	-9.6
	22	147 53.3	S21 31.6	218 55.0	S21 33.1	54.2	13.4	-9.5
	23	162 53.0	S21 31.1	233 27.3	S21 42.6	54.1	13.3	-9.4

Day 10 noon Sun: v -0.3 d 0.4 SD 16.3 | Moon SD 15.0

Day 11 noon Sun: v -0.2 d 0.4 SD 16.3 | Moon SD 14.9

Day 12 noon Sun: v -0.2 d 0.4 SD 16.3 | Moon SD 14.8

SUN: JANUARY 11 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0809	1007	--	--	1409	1607
70N	0753	0929	--	--	1448	1623
68N	0740	0902	1052	1324	1515	1636
66N	0729	0841	1004	1412	1535	1647
64N	0720	0825	0934	1442	1552	1657
62N	0712	0811	0911	1505	1605	1705
60N	0704	0759	0853	1523	1617	1712
58N	0658	0749	0838	1538	1627	1718
56N	0652	0740	0825	1551	1636	1724
54N	0647	0732	0814	1602	1644	1729
52N	0642	0725	0804	1612	1652	1734
50N	0637	0718	0755	1621	1658	1739
45N	0627	0704	0737	1640	1713	1749
40N	0618	0651	0721	1655	1725	1758
35N	0609	0641	0708	1708	1735	1807
30N	0601	0631	0657	1719	1745	1815
25N	0554	0622	0647	1729	1754	1822
20N	0547	0614	0637	1739	1802	1829
15N	0539	0606	0629	1747	1810	1837
10N	0532	0558	0620	1756	1818	1844
05N	0524	0550	0612	1804	1826	1852
00N	0516	0542	0604	1812	1834	1900
05S	0508	0534	0556	1820	1842	1908
10S	0458	0525	0548	1828	1851	1917
15S	0449	0516	0539	1836	1900	1927
20S	0437	0506	0530	1845	1909	1938
25S	0425	0455	0521	1855	1920	1951
30S	0411	0443	0510	1905	1932	2005
35S	0353	0429	0458	1917	1946	2022
40S	0332	0412	0444	1931	2003	2043
45S	0305	0352	0428	1947	2023	2110
50S	0225	0325	0407	2008	2050	2149
55S	0111	0247	0341	2034	2127	2301
60S	--	0141	0302	2112	2232	--

MOON: RISE / SET | UTC HHMM

Lat	Day 10		Day 11		Day 12	
72N	0104	0932	0323	0841	--	--
70N	0052	0946	0254	0912	0533	0803
68N	0042	0958	0233	0934	0440	0857
66N	0034	1008	0217	0952	0408	0930
64N	0028	1016	0204	1007	0345	0955
62N	0022	1024	0153	1019	0326	1014
60N	0017	1030	0143	1029	0311	1030
58N	0013	1035	0135	1039	0258	1043
56N	0009	1040	0128	1047	0247	1055
54N	0005	1045	0121	1054	0238	1105
52N	0002	1049	0116	1100	0229	1115
50N	--	1053	0110	1106	0222	1123
45N	--	1101	0059	1119	0205	1140
40N	--	1107	0050	1130	0152	1155
35N	--	1113	0042	1139	0141	1207
30N	--	1118	0035	1147	0131	1218
25N	--	1123	0029	1154	0122	1228
20N	--	1127	0024	1201	0114	1236
15N	--	1131	0018	1207	0107	1245
10N	--	1135	0013	1213	0100	1253
05N	--	1139	0009	1219	0053	1300
00N	--	1142	0004	1224	0047	1308
05S	2359	1146	--	1230	0040	1315
10S	2354	1150	--	1236	0033	1323
15S	2350	1154	--	1242	0026	1331
20S	2344	1158	--	1248	0019	1339
25S	2339	1202	--	1255	0011	1348
30S	2333	1207	--	1302	0003	1358
35S	2327	1212	2353	1311	--	1409
40S	2319	1218	2343	1320	--	1422
45S	2311	1225	2330	1331	2354	1437
50S	2300	1234	2315	1345	2334	1456
55S	2248	1244	2257	1402	2308	1520
60S	2231	1258	2231	1425	2233	1554

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JANUARY 13 - JANUARY 15

UTC	ARIES	Venus		Mars		Jupiter		Saturn	
Day h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
13 00	112 29.4	176 06.6	S22 09.5	178 37.8	S22 36.0	001 04.5	N22 14.9	114 23.0	S03 14.5
01	127 31.9	191 05.7	S22 09.0	193 38.2	S22 35.7	016 07.3	N22 15.0	129 25.3	S03 14.4
02	142 34.3	206 04.8	S22 08.5	208 38.6	S22 35.4	031 10.1	N22 15.0	144 27.6	S03 14.3
03	157 36.8	221 03.9	S22 08.1	223 39.0	S22 35.1	046 12.9	N22 15.1	159 29.9	S03 14.3
04	172 39.3	236 03.1	S22 07.6	238 39.4	S22 34.8	061 15.8	N22 15.2	174 32.2	S03 14.2
05	187 41.7	251 02.2	S22 07.1	253 39.8	S22 34.5	076 18.6	N22 15.2	189 34.5	S03 14.1
06	202 44.2	266 01.3	S22 06.6	268 40.2	S22 34.2	091 21.4	N22 15.3	204 36.7	S03 14.0
07	217 46.7	281 00.4	S22 06.1	283 40.6	S22 33.9	106 24.2	N22 15.3	219 39.0	S03 13.9
08	232 49.1	295 59.5	S22 05.6	298 41.0	S22 33.6	121 27.0	N22 15.4	234 41.3	S03 13.8
09	247 51.6	310 58.6	S22 05.1	313 41.4	S22 33.3	136 29.9	N22 15.4	249 43.6	S03 13.8
10	262 54.1	325 57.7	S22 04.7	328 41.8	S22 33.0	151 32.7	N22 15.5	264 45.9	S03 13.7
11	277 56.5	340 56.8	S22 04.2	343 42.2	S22 32.7	166 35.5	N22 15.5	279 48.2	S03 13.6
12	292 59.0	355 55.9	S22 03.7	358 42.6	S22 32.4	181 38.3	N22 15.6	294 50.5	S03 13.5
13	308 01.4	010 55.1	S22 03.2	013 42.9	S22 32.1	196 41.2	N22 15.6	309 52.8	S03 13.4
14	323 03.9	025 54.2	S22 02.7	028 43.3	S22 31.8	211 44.0	N22 15.7	324 55.1	S03 13.3
15	338 06.4	040 53.3	S22 02.2	043 43.7	S22 31.5	226 46.8	N22 15.7	339 57.4	S03 13.3
16	353 08.8	055 52.4	S22 01.7	058 44.1	S22 31.2	241 49.6	N22 15.8	354 59.7	S03 13.2
17	008 11.3	070 51.5	S22 01.2	073 44.5	S22 30.9	256 52.5	N22 15.9	010 02.0	S03 13.1
18	023 13.8	085 50.6	S22 00.7	088 44.9	S22 30.6	271 55.3	N22 15.9	025 04.2	S03 13.0
19	038 16.2	100 49.7	S22 00.2	103 45.3	S22 30.3	286 58.1	N22 16.0	040 06.5	S03 12.9
20	053 18.7	115 48.9	S21 59.7	118 45.7	S22 30.0	302 00.9	N22 16.0	055 08.8	S03 12.9
21	068 21.2	130 48.0	S21 59.2	133 46.1	S22 29.7	317 03.7	N22 16.1	070 11.1	S03 12.8
22	083 23.6	145 47.1	S21 58.7	148 46.5	S22 29.3	332 06.6	N22 16.1	085 13.4	S03 12.7
23	098 26.1	160 46.2	S21 58.2	163 46.9	S22 29.0	347 09.4	N22 16.2	100 15.7	S03 12.6
14 00	113 28.5	175 45.3	S21 57.7	178 47.3	S22 28.7	002 12.2	N22 16.2	115 18.0	S03 12.5
01	128 31.0	190 44.4	S21 57.2	193 47.7	S22 28.4	017 15.0	N22 16.3	130 20.3	S03 12.4
02	143 33.5	205 43.6	S21 56.6	208 48.1	S22 28.1	032 17.9	N22 16.3	145 22.6	S03 12.4
03	158 35.9	220 42.7	S21 56.1	223 48.5	S22 27.8	047 20.7	N22 16.4	160 24.9	S03 12.3
04	173 38.4	235 41.8	S21 55.6	238 48.9	S22 27.5	062 23.5	N22 16.4	175 27.1	S03 12.2
05	188 40.9	250 40.9	S21 55.1	253 49.3	S22 27.2	077 26.3	N22 16.5	190 29.4	S03 12.1
06	203 43.3	265 40.0	S21 54.6	268 49.7	S22 26.9	092 29.1	N22 16.6	205 31.7	S03 12.0
07	218 45.8	280 39.2	S21 54.1	283 50.1	S22 26.6	107 32.0	N22 16.6	220 34.0	S03 11.9
08	233 48.3	295 38.3	S21 53.6	298 50.5	S22 26.2	122 34.8	N22 16.7	235 36.3	S03 11.9
09	248 50.7	310 37.4	S21 53.0	313 50.9	S22 25.9	137 37.6	N22 16.7	250 38.6	S03 11.8
10	263 53.2	325 36.5	S21 52.5	328 51.3	S22 25.6	152 40.4	N22 16.8	265 40.9	S03 11.7
11	278 55.7	340 35.6	S21 52.0	343 51.6	S22 25.3	167 43.2	N22 16.8	280 43.2	S03 11.6
12	293 58.1	355 34.8	S21 51.5	358 52.0	S22 25.0	182 46.1	N22 16.9	295 45.5	S03 11.5
13	309 00.6	010 33.9	S21 51.0	013 52.4	S22 24.7	197 48.9	N22 16.9	310 47.7	S03 11.4
14	324 03.0	025 33.0	S21 50.4	028 52.8	S22 24.4	212 51.7	N22 17.0	325 50.0	S03 11.3
15	339 05.5	040 32.1	S21 49.9	043 53.2	S22 24.0	227 54.5	N22 17.0	340 52.3	S03 11.3
16	354 08.0	055 31.3	S21 49.4	058 53.6	S22 23.7	242 57.4	N22 17.1	355 54.6	S03 11.2
17	009 10.4	070 30.4	S21 48.9	073 54.0	S22 23.4	258 00.2	N22 17.1	010 56.9	S03 11.1
18	024 12.9	085 29.5	S21 48.3	088 54.4	S22 23.1	273 03.0	N22 17.2	025 59.2	S03 11.0
19	039 15.4	100 28.6	S21 47.8	103 54.8	S22 22.8	288 05.8	N22 17.3	041 01.5	S03 10.9
20	054 17.8	115 27.8	S21 47.3	118 55.2	S22 22.5	303 08.6	N22 17.3	056 03.8	S03 10.8
21	069 20.3	130 26.9	S21 46.8	133 55.6	S22 22.1	318 11.5	N22 17.4	071 06.0	S03 10.8
22	084 22.8	145 26.0	S21 46.2	148 56.0	S22 21.8	333 14.3	N22 17.4	086 08.3	S03 10.7
23	099 25.2	160 25.1	S21 45.7	163 56.4	S22 21.5	348 17.1	N22 17.5	101 10.6	S03 10.6
15 00	114 27.7	175 24.3	S21 45.2	178 56.8	S22 21.2	003 19.9	N22 17.5	116 12.9	S03 10.5
01	129 30.2	190 23.4	S21 44.6	193 57.2	S22 20.9	018 22.8	N22 17.6	131 15.2	S03 10.4
02	144 32.6	205 22.5	S21 44.1	208 57.6	S22 20.5	033 25.6	N22 17.6	146 17.5	S03 10.3
03	159 35.1	220 21.7	S21 43.5	223 58.0	S22 20.2	048 28.4	N22 17.7	161 19.8	S03 10.3
04	174 37.5	235 20.8	S21 43.0	238 58.4	S22 19.9	063 31.2	N22 17.7	176 22.1	S03 10.2
05	189 40.0	250 19.9	S21 42.5	253 58.8	S22 19.6	078 34.0	N22 17.8	191 24.3	S03 10.1
06	204 42.5	265 19.0	S21 41.9	268 59.2	S22 19.3	093 36.9	N22 17.8	206 26.6	S03 10.0
07	219 44.9	280 18.2	S21 41.4	283 59.6	S22 18.9	108 39.7	N22 17.9	221 28.9	S03 09.9
08	234 47.4	295 17.3	S21 40.8	299 00.0	S22 18.6	123 42.5	N22 17.9	236 31.2	S03 09.8
09	249 49.9	310 16.4	S21 40.3	314 00.4	S22 18.3	138 45.3	N22 18.0	251 33.5	S03 09.7
10	264 52.3	325 15.6	S21 39.7	329 00.8	S22 18.0	153 48.1	N22 18.1	266 35.8	S03 09.7
11	279 54.8	340 14.7	S21 39.2	344 01.2	S22 17.6	168 51.0	N22 18.1	281 38.1	S03 09.6
12	294 57.3	355 13.8	S21 38.6	359 01.6	S22 17.3	183 53.8	N22 18.2	296 40.3	S03 09.5
13	309 59.7	010 13.0	S21 38.1	014 02.0	S22 17.0	198 56.6	N22 18.2	311 42.6	S03 09.4
14	325 02.2	025 12.1	S21 37.5	029 02.4	S22 16.7	213 59.4	N22 18.3	326 44.9	S03 09.3
15	340 04.7	040 11.2	S21 37.0	044 02.8	S22 16.3	229 02.2	N22 18.3	341 47.2	S03 09.2
16	355 07.1	055 10.4	S21 36.4	059 03.2	S22 16.0	244 05.1	N22 18.4	356 49.5	S03 09.1
17	010 09.6	070 09.5	S21 35.9	074 03.6	S22 15.7	259 07.9	N22 18.4	011 51.8	S03 09.1
18	025 12.0	085 08.6	S21 35.3	089 04.0	S22 15.4	274 10.7	N22 18.5	026 54.0	S03 09.0
19	040 14.5	100 07.8	S21 34.8	104 04.4	S22 15.0	289 13.5	N22 18.5	041 56.3	S03 08.9
20	055 17.0	115 06.9	S21 34.2	119 04.8	S22 14.7	304 16.3	N22 18.6	056 58.6	S03 08.8
21	070 19.4	130 06.1	S21 33.7	134 05.2	S22 14.4	319 19.2	N22 18.6	072 00.9	S03 08.7
22	085 21.9	145 05.2	S21 33.1	149 05.6	S22 14.0	334 22.0	N22 18.7	087 03.2	S03 08.6
23	100 24.4	160 04.3	S21 32.5	164 06.0	S22 13.7	349 24.8	N22 18.7	102 05.5	S03 08.5

Venus	Mars	Jupiter	Saturn
13: v -0.9 d 0.5	13: v 0.4 d 0.3	13: v 2.8 d 0.1	13: v 2.3 d 0.1
14: v -0.9 d 0.5	14: v 0.4 d 0.3	14: v 2.8 d 0.1	14: v 2.3 d 0.1
15: v -0.9 d 0.5	15: v 0.4 d 0.3	15: v 2.8 d 0.1	15: v 2.3 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.9	S40 12.2
Achernar	335 19.5	S57 06.5
Acrux	172 59.0	S63 14.4
Adhara	255 04.8	S29 00.5
Al Na'ir	027 32.2	S46 50.3
Aldebaran	290 38.4	N16 33.7
Alioth	166 12.1	N55 48.8
Alkaid	152 51.4	N49 10.6
Alnilam	275 36.6	S01 11.2
Alphard	217 46.6	S08 46.3
Alphecca	126 03.2	N26 37.4
Alpheratz	357 34.0	N29 14.2
Altair	061 59.5	N08 56.2
Ankaa	353 06.4	S42 10.1
Antares	112 15.1	S26 29.3
Arcturus	145 47.2	N19 02.6
Atria	107 09.0	S69 04.3
Avior	234 13.8	S59 35.5
Bellatrix	278 21.7	N06 22.4
Betelgeuse	270 50.8	N07 24.7
Canopus	263 51.5	S52 42.6
Capella	280 20.2	N46 01.5
Deneb	049 25.7	N45 22.4
Denebola	182 23.9	N14 25.4
Diphda	348 46.5	S17 50.7
Dubhe	193 39.5	N61 36.3
Elnath	278 00.5	N28 37.8
Eltanin	090 42.3	N51 28.9
Enif	033 38.2	N09 59.7
Fomalhaut	015 13.8	S29 29.2
Gacrux	171 50.6	S57 15.3
Gienah	175 42.6	S17 41.2
Hadar	148 34.9	S60 29.7
Hamal	327 50.2	N23 35.3
Kaus Australi	083 31.8	S34 22.3
Kochab	137 20.2	N74 02.5
Markab	013 29.3	N15 20.8
Menkar	314 05.1	N04 11.5
Menkent	147 56.7	S36 29.8
Miaplacidus	221 37.2	S69 49.3
Mirfak	308 26.8	N49 57.4
Nunki	075 47.1	S26 15.9
Peacock	053 05.0	S56 39.1
Polaris	313 22.5	N89 22.7
Pollux	243 15.9	N27 57.7
Procyon	244 49.6	N05 09.4
Rasalhague	095 58.1	N12 32.4
Regulus	207 33.3	N11 50.3
Rigel	281 02.8	S08 10.3
Rigil Kentaur	139 39.3	S60 56.3
Sabik	102 02.1	S15 45.4
Schedar	349 30.2	N56 41.1
Shaula	096 09.6	S37 07.3
Sirius	258 25.1	S16 45.2
Spica	158 21.4	S11 17.9
Suhail	222 45.3	S43 32.2
Vega	080 33.1	N38 48.3
Zubenelgenubi	136 55.2	S16 09.0

PLANETS | noon UTC

Name	SHA	Transit
Venus	061 36.6	1218
Mars	064 53.9	1205
Jupiter	248 48.0	2347
Saturn	001 47.3	1616

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
13	00	177 52.8	S21 30.7	247 59.7	S21 52.0	54.1	13.3	-9.3
	01	192 52.5	S21 30.3	262 31.9	S22 01.3	54.1	13.2	-9.2
	02	207 52.3	S21 29.9	277 04.1	S22 10.5	54.1	13.1	-9.1
	03	222 52.1	S21 29.4	291 36.2	S22 19.6	54.1	13.1	-9.0
	04	237 51.8	S21 29.0	306 08.3	S22 28.6	54.1	13.0	-8.9
	05	252 51.6	S21 28.6	320 40.3	S22 37.5	54.1	12.9	-8.8
	06	267 51.4	S21 28.2	335 12.3	S22 46.3	54.1	12.9	-8.7
	07	282 51.1	S21 27.7	349 44.1	S22 55.1	54.1	12.8	-8.6
	08	297 50.9	S21 27.3	004 16.0	S23 03.7	54.1	12.8	-8.5
	09	312 50.7	S21 26.9	018 47.7	S23 12.2	54.1	12.7	-8.4
	10	327 50.4	S21 26.5	033 19.4	S23 20.6	54.1	12.6	-8.3
	11	342 50.2	S21 26.0	047 51.0	S23 29.0	54.1	12.6	-8.2
	12	357 50.0	S21 25.6	062 22.6	S23 37.2	54.1	12.5	-8.1
	13	012 49.7	S21 25.2	076 54.1	S23 45.3	54.1	12.4	-8.0
	14	027 49.5	S21 24.7	091 25.5	S23 53.3	54.1	12.4	-7.9
	15	042 49.3	S21 24.3	105 56.9	S24 01.2	54.1	12.3	-7.8
	16	057 49.0	S21 23.9	120 28.2	S24 09.0	54.1	12.2	-7.7
	17	072 48.8	S21 23.4	134 59.4	S24 16.7	54.1	12.2	-7.6
	18	087 48.6	S21 23.0	149 30.6	S24 24.3	54.1	12.1	-7.5
	19	102 48.3	S21 22.6	164 01.7	S24 31.8	54.1	12.0	-7.4
	20	117 48.1	S21 22.1	178 32.8	S24 39.2	54.1	12.0	-7.3
	21	132 47.9	S21 21.7	193 03.7	S24 46.5	54.1	11.9	-7.2
	22	147 47.7	S21 21.3	207 34.7	S24 53.6	54.1	11.9	-7.1
	23	162 47.4	S21 20.8	222 05.5	S25 00.7	54.1	11.8	-6.9
14	00	177 47.2	S21 20.4	236 36.3	S25 07.6	54.1	11.7	-6.8
	01	192 47.0	S21 19.9	251 07.0	S25 14.5	54.1	11.7	-6.7
	02	207 46.7	S21 19.5	265 37.7	S25 21.2	54.1	11.6	-6.6
	03	222 46.5	S21 19.1	280 08.3	S25 27.8	54.1	11.5	-6.5
	04	237 46.3	S21 18.6	294 38.8	S25 34.3	54.1	11.5	-6.4
	05	252 46.1	S21 18.2	309 09.3	S25 40.6	54.1	11.4	-6.3
	06	267 45.8	S21 17.7	323 39.7	S25 46.9	54.1	11.4	-6.1
	07	282 45.6	S21 17.3	338 10.1	S25 53.0	54.1	11.3	-6.0
	08	297 45.4	S21 16.8	352 40.4	S25 59.1	54.1	11.2	-5.9
	09	312 45.1	S21 16.4	007 10.6	S26 05.0	54.1	11.2	-5.8
	10	327 44.9	S21 16.0	021 40.8	S26 10.8	54.1	11.1	-5.7
	11	342 44.7	S21 15.5	036 10.9	S26 16.4	54.1	11.1	-5.5
	12	357 44.5	S21 15.1	050 40.9	S26 22.0	54.1	11.0	-5.4
	13	012 44.2	S21 14.6	065 10.9	S26 27.4	54.1	10.9	-5.3
	14	027 44.0	S21 14.2	079 40.9	S26 32.7	54.1	10.9	-5.2
	15	042 43.8	S21 13.7	094 10.7	S26 37.9	54.1	10.8	-5.1
	16	057 43.6	S21 13.3	108 40.5	S26 43.0	54.1	10.8	-4.9
	17	072 43.3	S21 12.8	123 10.3	S26 47.9	54.1	10.7	-4.8
	18	087 43.1	S21 12.4	137 40.0	S26 52.7	54.1	10.6	-4.7
	19	102 42.9	S21 11.9	152 09.7	S26 57.4	54.1	10.6	-4.6
	20	117 42.7	S21 11.5	166 39.3	S27 02.0	54.1	10.5	-4.4
	21	132 42.4	S21 11.0	181 08.8	S27 06.4	54.2	10.5	-4.3
	22	147 42.2	S21 10.5	195 38.3	S27 10.7	54.2	10.4	-4.2
	23	162 42.0	S21 10.1	210 07.7	S27 14.9	54.2	10.4	-4.1
15	00	177 41.8	S21 09.6	224 37.1	S27 19.0	54.2	10.3	-3.9
	01	192 41.5	S21 09.2	239 06.4	S27 22.9	54.2	10.3	-3.8
	02	207 41.3	S21 08.7	253 35.7	S27 26.7	54.2	10.2	-3.7
	03	222 41.1	S21 08.3	268 05.0	S27 30.3	54.2	10.2	-3.5
	04	237 40.9	S21 07.8	282 34.1	S27 33.9	54.2	10.1	-3.4
	05	252 40.7	S21 07.3	297 03.3	S27 37.3	54.2	10.1	-3.3
	06	267 40.4	S21 06.9	311 32.4	S27 40.6	54.2	10.0	-3.1
	07	282 40.2	S21 06.4	326 01.4	S27 43.7	54.2	10.0	-3.0
	08	297 40.0	S21 06.0	340 30.4	S27 46.7	54.2	10.0	-2.9
	09	312 39.8	S21 05.5	354 59.4	S27 49.6	54.2	9.9	-2.7
	10	327 39.6	S21 05.0	009 28.3	S27 52.3	54.2	9.9	-2.6
	11	342 39.3	S21 04.6	023 57.2	S27 54.9	54.3	9.8	-2.5
	12	357 39.1	S21 04.1	038 26.0	S27 57.4	54.3	9.8	-2.3
	13	012 38.9	S21 03.6	052 54.8	S27 59.7	54.3	9.8	-2.2
	14	027 38.7	S21 03.2	067 23.6	S28 01.9	54.3	9.7	-2.1
	15	042 38.5	S21 02.7	081 52.3	S28 04.0	54.3	9.7	-1.9
	16	057 38.2	S21 02.2	096 21.0	S28 05.9	54.3	9.7	-1.8
	17	072 38.0	S21 01.8	110 49.6	S28 07.7	54.3	9.6	-1.6
	18	087 37.8	S21 01.3	125 18.2	S28 09.3	54.3	9.6	-1.5
	19	102 37.6	S21 00.8	139 46.8	S28 10.8	54.3	9.6	-1.4
	20	117 37.4	S21 00.4	154 15.4	S28 12.2	54.3	9.5	-1.2
	21	132 37.1	S20 59.9	168 43.9	S28 13.4	54.4	9.5	-1.1
	22	147 36.9	S20 59.4	183 12.4	S28 14.5	54.4	9.5	-1.0
	23	162 36.7	S20 59.0	197 40.9	S28 15.5	54.4	9.4	-0.8

Day 13 noon Sun: v -0.2 d 0.4 SD 16.3 | Moon SD 14.7

Day 14 noon Sun: v -0.2 d 0.4 SD 16.3 | Moon SD 14.7

Day 15 noon Sun: v -0.2 d 0.5 SD 16.3 | Moon SD 14.8

SUN: JANUARY 14 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0803	0955	--	--	1423	1616
70N	0748	0920	--	--	1458	1631
68N	0735	0855	1037	1341	1523	1643
66N	0725	0836	0956	1423	1543	1654
64N	0716	0820	0928	1451	1558	1702
62N	0709	0807	0906	1512	1611	1710
60N	0702	0756	0849	1530	1623	1717
58N	0656	0746	0835	1544	1632	1723
56N	0650	0738	0822	1556	1641	1728
54N	0645	0730	0811	1607	1649	1734
52N	0640	0723	0802	1617	1656	1738
50N	0636	0716	0753	1625	1702	1743
45N	0626	0702	0735	1643	1716	1752
40N	0617	0651	0720	1658	1728	1801
35N	0609	0640	0708	1711	1738	1809
30N	0601	0631	0657	1722	1747	1817
25N	0554	0622	0647	1731	1756	1824
20N	0547	0614	0638	1740	1804	1831
15N	0540	0606	0629	1749	1812	1838
10N	0533	0559	0621	1757	1820	1846
05N	0525	0551	0613	1805	1827	1853
00N	0517	0543	0605	1813	1835	1901
05S	0509	0535	0558	1821	1843	1909
10S	0500	0527	0550	1828	1851	1918
15S	0451	0518	0541	1837	1900	1927
20S	0440	0508	0532	1845	1910	1938
25S	0428	0458	0523	1855	1920	1950
30S	0413	0446	0513	1905	1932	2004
35S	0357	0432	0501	1917	1946	2021
40S	0336	0416	0448	1930	2002	2041
45S	0309	0356	0432	1946	2022	2108
50S	0232	0330	0412	2006	2047	2145
55S	0124	0254	0346	2031	2123	2251
60S	--	0152	0309	2108	2223	--

MOON: RISE / SET | UTC HHMM

Lat	Day 13		Day 14		Day 15	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	0627	0845	--	--	--	--
64N	0537	0936	--	--	--	--
62N	0505	1008	0652	1001	0901	0937
60N	0442	1032	0615	1039	0742	1056
58N	0424	1051	0548	1105	0707	1132
56N	0408	1107	0528	1126	0641	1157
54N	0355	1121	0511	1144	0621	1218
52N	0343	1133	0456	1159	0604	1235
50N	0333	1144	0443	1212	0549	1250
45N	0312	1206	0417	1239	0519	1320
40N	0255	1224	0357	1300	0456	1343
35N	0240	1240	0339	1318	0437	1402
30N	0228	1253	0325	1333	0421	1419
25N	0217	1305	0312	1347	0407	1434
20N	0206	1316	0300	1359	0354	1447
15N	0157	1326	0249	1410	0342	1459
10N	0148	1335	0238	1421	0330	1511
05N	0140	1345	0228	1432	0319	1522
00N	0131	1354	0218	1442	0308	1533
05S	0123	1403	0209	1453	0258	1544
10S	0114	1412	0159	1503	0247	1556
15S	0106	1422	0148	1514	0235	1607
20S	0056	1432	0138	1526	0223	1620
25S	0046	1443	0126	1538	0210	1633
30S	0036	1455	0113	1552	0156	1648
35S	0024	1509	0059	1608	0140	1704
40S	0010	1525	0042	1626	0122	1724
45S	--	1543	0023	1647	0059	1747
50S	2358	1607	--	1715	0031	1817
55S	2326	1638	2352	1754	--	1859
60S	2237	1726	2249	1856	2318	2014

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JANUARY 16 - JANUARY 18

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
16	00	115 26.8	175 03.5	S21 32.0	179 06.4	S22 13.4	004 27.6	N22 18.8	117 07.8	S03 08.5
	01	130 29.3	190 02.6	S21 31.4	194 06.8	S22 13.1	019 30.4	N22 18.8	132 10.0	S03 08.4
	02	145 31.8	205 01.7	S21 30.9	209 07.2	S22 12.7	034 33.3	N22 18.9	147 12.3	S03 08.3
	03	160 34.2	220 00.9	S21 30.3	224 07.6	S22 12.4	049 36.1	N22 19.0	162 14.6	S03 08.2
	04	175 36.7	235 00.0	S21 29.7	239 08.0	S22 12.1	064 38.9	N22 19.0	177 16.9	S03 08.1
	05	190 39.2	249 59.2	S21 29.2	254 08.4	S22 11.7	079 41.7	N22 19.1	192 19.2	S03 08.0
	06	205 41.6	264 58.3	S21 28.6	269 08.8	S22 11.4	094 44.5	N22 19.1	207 21.5	S03 07.9
	07	220 44.1	279 57.4	S21 28.0	284 09.2	S22 11.1	109 47.4	N22 19.2	222 23.7	S03 07.9
	08	235 46.5	294 56.6	S21 27.5	299 09.6	S22 10.7	124 50.2	N22 19.2	237 26.0	S03 07.8
	09	250 49.0	309 55.7	S21 26.9	314 10.0	S22 10.4	139 53.0	N22 19.3	252 28.3	S03 07.7
	10	265 51.5	324 54.9	S21 26.3	329 10.4	S22 10.1	154 55.8	N22 19.3	267 30.6	S03 07.6
	11	280 53.9	339 54.0	S21 25.7	344 10.8	S22 09.7	169 58.6	N22 19.4	282 32.9	S03 07.5
	12	295 56.4	354 53.2	S21 25.2	359 11.2	S22 09.4	185 01.5	N22 19.4	297 35.1	S03 07.4
	13	310 58.9	009 52.3	S21 24.6	014 11.6	S22 09.1	200 04.3	N22 19.5	312 37.4	S03 07.3
	14	326 01.3	024 51.5	S21 24.0	029 12.0	S22 08.7	215 07.1	N22 19.5	327 39.7	S03 07.3
	15	341 03.8	039 50.6	S21 23.4	044 12.4	S22 08.4	230 09.9	N22 19.6	342 42.0	S03 07.2
	16	356 06.3	054 49.7	S21 22.8	059 12.8	S22 08.1	245 12.7	N22 19.6	357 44.3	S03 07.1
	17	011 08.7	069 48.9	S21 22.3	074 13.2	S22 07.7	260 15.6	N22 19.7	012 46.6	S03 07.0
	18	026 11.2	084 48.0	S21 21.7	089 13.6	S22 07.4	275 18.4	N22 19.7	027 48.8	S03 06.9
	19	041 13.7	099 47.2	S21 21.1	104 14.0	S22 07.0	290 21.2	N22 19.8	042 51.1	S03 06.8
	20	056 16.1	114 46.3	S21 20.5	119 14.4	S22 06.7	305 24.0	N22 19.8	057 53.4	S03 06.7
	21	071 18.6	129 45.5	S21 19.9	134 14.8	S22 06.4	320 26.8	N22 19.9	072 55.7	S03 06.6
	22	086 21.0	144 44.6	S21 19.3	149 15.2	S22 06.0	335 29.6	N22 20.0	087 58.0	S03 06.6
	23	101 23.5	159 43.8	S21 18.8	164 15.6	S22 05.7	350 32.5	N22 20.0	103 00.2	S03 06.5
17	00	116 26.0	174 42.9	S21 18.2	179 16.0	S22 05.3	005 35.3	N22 20.1	118 02.5	S03 06.4
	01	131 28.4	189 42.1	S21 17.6	194 16.4	S22 05.0	020 38.1	N22 20.1	133 04.8	S03 06.3
	02	146 30.9	204 41.2	S21 17.0	209 16.8	S22 04.7	035 40.9	N22 20.2	148 07.1	S03 06.2
	03	161 33.4	219 40.4	S21 16.4	224 17.2	S22 04.3	050 43.7	N22 20.2	163 09.4	S03 06.1
	04	176 35.8	234 39.5	S21 15.8	239 17.6	S22 04.0	065 46.6	N22 20.3	178 11.6	S03 06.0
	05	191 38.3	249 38.7	S21 15.2	254 18.0	S22 03.6	080 49.4	N22 20.3	193 13.9	S03 06.0
	06	206 40.8	264 37.8	S21 14.6	269 18.4	S22 03.3	095 52.2	N22 20.4	208 16.2	S03 05.9
	07	221 43.2	279 37.0	S21 14.0	284 18.8	S22 02.9	110 55.0	N22 20.4	223 18.5	S03 05.8
	08	236 45.7	294 36.1	S21 13.4	299 19.2	S22 02.6	125 57.8	N22 20.5	238 20.8	S03 05.7
	09	251 48.1	309 35.3	S21 12.8	314 19.6	S22 02.3	141 00.6	N22 20.5	253 23.0	S03 05.6
	10	266 50.6	324 34.4	S21 12.2	329 20.0	S22 01.9	156 03.5	N22 20.6	268 25.3	S03 05.5
	11	281 53.1	339 33.6	S21 11.6	344 20.4	S22 01.6	171 06.3	N22 20.6	283 27.6	S03 05.4
	12	296 55.5	354 32.7	S21 11.0	359 20.8	S22 01.2	186 09.1	N22 20.7	298 29.9	S03 05.3
	13	311 58.0	009 31.9	S21 10.4	014 21.2	S22 00.9	201 11.9	N22 20.7	313 32.2	S03 05.3
	14	327 00.5	024 31.1	S21 09.8	029 21.7	S22 00.5	216 14.7	N22 20.8	328 34.4	S03 05.2
	15	342 02.9	039 30.2	S21 09.2	044 22.1	S22 00.2	231 17.5	N22 20.8	343 36.7	S03 05.1
	16	357 05.4	054 29.4	S21 08.6	059 22.5	S21 59.8	246 20.4	N22 20.9	358 39.0	S03 05.0
	17	012 07.9	069 28.5	S21 08.0	074 22.9	S21 59.5	261 23.2	N22 20.9	013 41.3	S03 04.9
	18	027 10.3	084 27.7	S21 07.4	089 23.3	S21 59.1	276 26.0	N22 21.0	028 43.6	S03 04.8
	19	042 12.8	099 26.8	S21 06.8	104 23.7	S21 58.8	291 28.8	N22 21.0	043 45.8	S03 04.7
	20	057 15.3	114 26.0	S21 06.2	119 24.1	S21 58.4	306 31.6	N22 21.1	058 48.1	S03 04.6
	21	072 17.7	129 25.2	S21 05.6	134 24.5	S21 58.1	321 34.5	N22 21.1	073 50.4	S03 04.5
	22	087 20.2	144 24.3	S21 05.0	149 24.9	S21 57.7	336 37.3	N22 21.2	088 52.7	S03 04.5
	23	102 22.6	159 23.5	S21 04.3	164 25.3	S21 57.4	351 40.1	N22 21.3	103 54.9	S03 04.4
18	00	117 25.1	174 22.6	S21 03.7	179 25.7	S21 57.0	006 42.9	N22 21.3	118 57.2	S03 04.3
	01	132 27.6	189 21.8	S21 03.1	194 26.1	S21 56.7	021 45.7	N22 21.4	133 59.5	S03 04.2
	02	147 30.0	204 21.0	S21 02.5	209 26.5	S21 56.3	036 48.5	N22 21.4	149 01.8	S03 04.1
	03	162 32.5	219 20.1	S21 01.9	224 26.9	S21 56.0	051 51.3	N22 21.5	164 04.1	S03 04.0
	04	177 35.0	234 19.3	S21 01.3	239 27.3	S21 55.6	066 54.2	N22 21.5	179 06.3	S03 03.9
	05	192 37.4	249 18.4	S21 00.6	254 27.7	S21 55.3	081 57.0	N22 21.6	194 08.6	S03 03.8
	06	207 39.9	264 17.6	S21 00.0	269 28.1	S21 54.9	096 59.8	N22 21.6	209 10.9	S03 03.8
	07	222 42.4	279 16.8	S20 59.4	284 28.5	S21 54.6	112 02.6	N22 21.7	224 13.2	S03 03.7
	08	237 44.8	294 15.9	S20 58.8	299 28.9	S21 54.2	127 05.4	N22 21.7	239 15.4	S03 03.6
	09	252 47.3	309 15.1	S20 58.1	314 29.3	S21 53.9	142 08.2	N22 21.8	254 17.7	S03 03.5
	10	267 49.8	324 14.3	S20 57.5	329 29.7	S21 53.5	157 11.1	N22 21.8	269 20.0	S03 03.4
	11	282 52.2	339 13.4	S20 56.9	344 30.2	S21 53.2	172 13.9	N22 21.9	284 22.3	S03 03.3
	12	297 54.7	354 12.6	S20 56.3	359 30.6	S21 52.8	187 16.7	N22 21.9	299 24.5	S03 03.2
	13	312 57.1	009 11.8	S20 55.6	014 31.0	S21 52.4	202 19.5	N22 22.0	314 26.8	S03 03.1
	14	327 59.6	024 10.9	S20 55.0	029 31.4	S21 52.1	217 22.3	N22 22.0	329 29.1	S03 03.0
	15	343 02.1	039 10.1	S20 54.4	044 31.8	S21 51.7	232 25.1	N22 22.1	344 31.4	S03 03.0
	16	358 04.5	054 09.3	S20 53.7	059 32.2	S21 51.4	247 28.0	N22 22.1	359 33.7	S03 02.9
	17	013 07.0	069 08.4	S20 53.1	074 32.6	S21 51.0	262 30.8	N22 22.2	014 35.9	S03 02.8
	18	028 09.5	084 07.6	S20 52.5	089 33.0	S21 50.7	277 33.6	N22 22.2	029 38.2	S03 02.7
	19	043 11.9	099 06.8	S20 51.8	104 33.4	S21 50.3	292 36.4	N22 22.3	044 40.5	S03 02.6
	20	058 14.4	114 05.9	S20 51.2	119 33.8	S21 49.9	307 39.2	N22 22.3	059 42.8	S03 02.5
	21	073 16.9	129 05.1	S20 50.6	134 34.2	S21 49.6	322 42.0	N22 22.4	074 45.0	S03 02.4
	22	088 19.3	144 04.3	S20 49.9	149 34.6	S21 49.2	337 44.8	N22 22.4	089 47.3	S03 02.3
	23	103 21.8	159 03.5	S20 49.3	164 35.0	S21 48.9	352 47.7	N22 22.5	104 49.6	S03 02.2

Venus	Mars	Jupiter	Saturn
16: v -0.9 d 0.6	16: v 0.4 d 0.3	16: v 2.8 d 0.1	16: v 2.3 d 0.1
17: v -0.8 d 0.6	17: v 0.4 d 0.3	17: v 2.8 d 0.1	17: v 2.3 d 0.1
18: v -0.8 d 0.6	18: v 0.4 d 0.4	18: v 2.8 d 0.1	18: v 2.3 d 0.1

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.0	S40 12.2
Achernar	335 19.5	S57 06.5
Acrux	172 58.9	S63 14.4
Adhara	255 04.8	S29 00.5
Al Na'ir	027 32.2	S46 50.2
Aldebaran	290 38.4	N16 33.7
Alioth	166 12.1	N55 48.7
Alkaid	152 51.3	N49 10.6
Alnilam	275 36.6	S01 11.2
Alphard	217 46.6	S08 46.3
Alphecca	126 03.2	N26 37.4
Alpheratz	357 34.0	N29 14.2
Altair	061 59.5	N08 56.2
Ankaa	353 06.4	S42 10.1
Antares	112 15.0	S26 29.3
Arcturus	145 47.2	N19 02.6
Atria	107 08.9	S69 04.2
Avior	234 13.7	S59 35.5
Bellatrix	278 21.7	N06 22.4
Betelgeuse	270 50.8	N07 24.7
Canopus	263 51.5	S52 42.6
Capella	280 20.2	N46 01.5
Deneb	049 25.7	N45 22.4
Denebola	182 23.9	N14 25.4
Diphda	348 46.5	S17 50.7
Dubhe	193 39.5	N61 36.3
Elnath	278 00.5	N28 37.8
Eltanin	090 42.3	N51 28.9
Enif	033 38.2	N09 59.7
Fomalhaut	015 13.8	S29 29.2
Gacrux	171 50.5	S57 15.3
Gienah	175 42.6	S17 41.2
Hadar	148 34.9	S60 29.7
Hamal	327 50.2	N23 35.2
Kaus Australi	083 31.8	S34 22.3
Kochab	137 20.2	N74 02.5
Markab	013 29.3	N15 20.8
Menkar	314 05.1	N04 11.5
Menkent	147 56.7	S36 29.8
Miaplacidus	221 37.2	S69 49.3
Mirfak	308 26.8	N49 57.4
Nunki	075 47.1	S26 15.9
Peacock	053 05.0	S56 39.1
Polaris	313 23.6	N89 22.7
Pollux	243 15.9	N27 57.7
Procyon	244 49.6	N05 09.4
Rasalhague	095 58.0	N12 32.3
Regulus	207 33.3	N11 50.3
Rigel	281 02.8	S08 10.4
Rigil Kentaur	139 39.3	S60 56.3
Sabik	102 02.1	S15 45.4
Schedar	349 30.2	N56 41.1
Shaula	096 09.6	S37 07.3
Sirius	258 25.1	S16 45.2
Spica	158 21.4	S11 17.9
Suhail	222 45.3	S43 32.2
Vega	080 33.1	N38 48.3
Zubenelgenubi	136 55.2	S16 09.0

PLANETS | noon UTC

Name	SHA	Transit
Venus	057 37.2	1222
Mars	062 25.3	1203
Jupiter	249 13.6	2333
Saturn	001 34.3	1605

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
16	00	177 36.5	S20 58.5	212 09.3	S28 16.3	54.4	9.4	-0.7
	01	192 36.3	S20 58.0	226 37.7	S28 17.0	54.4	9.4	-0.5
	02	207 36.1	S20 57.5	241 06.1	S28 17.5	54.4	9.4	-0.4
	03	222 35.9	S20 57.1	255 34.5	S28 17.9	54.4	9.4	-0.2
	04	237 35.6	S20 56.6	270 02.8	S28 18.1	54.4	9.3	-0.1
	05	252 35.4	S20 56.1	284 31.2	S28 18.2	54.4	9.3	0.0
	06	267 35.2	S20 55.6	298 59.5	S28 18.2	54.5	9.3	0.2
	07	282 35.0	S20 55.2	313 27.8	S28 18.0	54.5	9.3	0.3
	08	297 34.8	S20 54.7	327 56.1	S28 17.7	54.5	9.3	0.5
	09	312 34.6	S20 54.2	342 24.3	S28 17.3	54.5	9.3	0.6
	10	327 34.4	S20 53.7	356 52.6	S28 16.6	54.5	9.2	0.7
	11	342 34.1	S20 53.2	011 20.8	S28 15.9	54.5	9.2	0.9
	12	357 33.9	S20 52.8	025 49.1	S28 15.0	54.5	9.2	1.0
	13	012 33.7	S20 52.3	040 17.3	S28 14.0	54.5	9.2	1.2
	14	027 33.5	S20 51.8	054 45.5	S28 12.8	54.6	9.2	1.3
	15	042 33.3	S20 51.3	069 13.7	S28 11.5	54.6	9.2	1.5
	16	057 33.1	S20 50.8	083 41.9	S28 10.0	54.6	9.2	1.6
	17	072 32.9	S20 50.3	098 10.1	S28 08.4	54.6	9.2	1.7
	18	087 32.7	S20 49.9	112 38.3	S28 06.7	54.6	9.2	1.9
	19	102 32.4	S20 49.4	127 06.5	S28 04.8	54.6	9.2	2.0
	20	117 32.2	S20 48.9	141 34.7	S28 02.7	54.6	9.2	2.2
	21	132 32.0	S20 48.4	156 02.9	S28 00.6	54.7	9.2	2.3
	22	147 31.8	S20 47.9	170 31.1	S27 58.2	54.7	9.2	2.5
	23	162 31.6	S20 47.4	184 59.3	S27 55.8	54.7	9.2	2.6
17	00	177 31.4	S20 46.9	199 27.6	S27 53.2	54.7	9.2	2.8
	01	192 31.2	S20 46.4	213 55.8	S27 50.4	54.7	9.2	2.9
	02	207 31.0	S20 45.9	228 24.0	S27 47.5	54.7	9.2	3.0
	03	222 30.8	S20 45.5	242 52.3	S27 44.5	54.7	9.3	3.2
	04	237 30.6	S20 45.0	257 20.5	S27 41.3	54.8	9.3	3.3
	05	252 30.4	S20 44.5	271 48.8	S27 38.0	54.8	9.3	3.5
	06	267 30.2	S20 44.0	286 17.1	S27 34.5	54.8	9.3	3.6
	07	282 29.9	S20 43.5	300 45.4	S27 30.9	54.8	9.3	3.7
	08	297 29.7	S20 43.0	315 13.7	S27 27.2	54.8	9.3	3.9
	09	312 29.5	S20 42.5	329 42.0	S27 23.3	54.8	9.4	4.0
	10	327 29.3	S20 42.0	344 10.4	S27 19.2	54.9	9.4	4.2
	11	342 29.1	S20 41.5	358 38.7	S27 15.1	54.9	9.4	4.3
	12	357 28.9	S20 41.0	013 07.1	S27 10.8	54.9	9.4	4.5
	13	012 28.7	S20 40.5	027 35.6	S27 06.3	54.9	9.4	4.6
	14	027 28.5	S20 40.0	042 04.0	S27 01.7	54.9	9.5	4.7
	15	042 28.3	S20 39.5	056 32.5	S26 57.0	54.9	9.5	4.9
	16	057 28.1	S20 39.0	071 01.0	S26 52.1	55.0	9.5	5.0
	17	072 27.9	S20 38.5	085 29.5	S26 47.1	55.0	9.5	5.1
	18	087 27.7	S20 38.0	099 58.0	S26 42.0	55.0	9.6	5.3
	19	102 27.5	S20 37.5	114 26.6	S26 36.7	55.0	9.6	5.4
	20	117 27.3	S20 37.0	128 55.2	S26 31.3	55.0	9.6	5.6
	21	132 27.1	S20 36.5	143 23.9	S26 25.7	55.0	9.7	5.7
	22	147 26.9	S20 36.0	157 52.5	S26 20.0	55.1	9.7	5.8
	23	162 26.7	S20 35.5	172 21.2	S26 14.2	55.1	9.7	6.0
18	00	177 26.5	S20 35.0	186 50.0	S26 08.2	55.1	9.8	6.1
	01	192 26.3	S20 34.5	201 18.8	S26 02.1	55.1	9.8	6.2
	02	207 26.1	S20 34.0	215 47.6	S25 55.9	55.1	9.9	6.4
	03	222 25.9	S20 33.5	230 16.4	S25 49.5	55.1	9.9	6.5
	04	237 25.7	S20 32.9	244 45.3	S25 43.0	55.2	9.9	6.6
	05	252 25.5	S20 32.4	259 14.3	S25 36.4	55.2	10.0	6.8
	06	267 25.3	S20 31.9	273 43.2	S25 29.6	55.2	10.0	6.9
	07	282 25.1	S20 31.4	288 12.2	S25 22.7	55.2	10.1	7.0
	08	297 24.9	S20 30.9	302 41.3	S25 15.7	55.2	10.1	7.2
	09	312 24.7	S20 30.4	317 10.4	S25 08.5	55.3	10.1	7.3
	10	327 24.5	S20 29.9	331 39.5	S25 01.2	55.3	10.2	7.4
	11	342 24.3	S20 29.4	346 08.7	S24 53.8	55.3	10.2	7.5
	12	357 24.1	S20 28.9	000 38.0	S24 46.2	55.3	10.3	7.7
	13	012 23.9	S20 28.3	015 07.2	S24 38.6	55.3	10.3	7.8
	14	027 23.7	S20 27.8	029 36.5	S24 30.8	55.3	10.4	7.9
	15	042 23.5	S20 27.3	044 05.9	S24 22.8	55.4	10.4	8.1
	16	057 23.3	S20 26.8	058 35.3	S24 14.8	55.4	10.5	8.2
	17	072 23.1	S20 26.3	073 04.8	S24 06.6	55.4	10.5	8.3
	18	087 22.9	S20 25.8	087 34.3	S23 58.3	55.4	10.6	8.4
	19	102 22.7	S20 25.2	102 03.9	S23 49.9	55.4	10.6	8.5
	20	117 22.5	S20 24.7	116 33.5	S23 41.3	55.5	10.7	8.7
	21	132 22.3	S20 24.2	131 03.1	S23 32.7	55.5	10.7	8.8
	22	147 22.1	S20 23.7	145 32.9	S23 23.9	55.5	10.8	8.9
	23	162 21.9	S20 23.2	160 02.6	S23 15.0	55.5	10.8	9.0

Day 16 noon Sun: v -0.2 d 0.5 SD 16.3 | Moon SD 14.9

Day 17 noon Sun: v -0.2 d 0.5 SD 16.3 | Moon SD 15.0

Day 18 noon Sun: v -0.2 d 0.5 SD 16.3 | Moon SD 15.1

SUN: JANUARY 17 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0756	0943	--	--	1438	1626
70N	0742	0912	1141	1240	1509	1639
68N	0730	0848	1023	1358	1533	1651
66N	0721	0830	0947	1434	1551	1700
64N	0712	0815	0921	1500	1605	1709
62N	0705	0803	0901	1520	1618	1716
60N	0659	0752	0844	1536	1628	1722
58N	0653	0743	0831	1550	1638	1728
56N	0648	0735	0819	1602	1646	1733
54N	0643	0727	0808	1612	1653	1738
52N	0638	0720	0759	1621	1700	1742
50N	0634	0714	0751	1630	1706	1746
45N	0625	0701	0733	1647	1720	1756
40N	0616	0650	0719	1701	1731	1804
35N	0609	0640	0707	1713	1741	1812
30N	0601	0631	0656	1724	1750	1819
25N	0554	0622	0647	1734	1758	1826
20N	0547	0614	0638	1742	1806	1833
15N	0540	0607	0630	1751	1814	1840
10N	0533	0559	0622	1759	1821	1847
05N	0526	0552	0614	1806	1828	1854
00N	0519	0544	0606	1814	1836	1902
05S	0511	0537	0559	1821	1844	1909
10S	0502	0528	0551	1829	1852	1918
15S	0453	0520	0543	1837	1900	1927
20S	0442	0510	0534	1846	1909	1938
25S	0430	0500	0525	1855	1920	1950
30S	0416	0449	0515	1905	1931	2003
35S	0400	0435	0504	1916	1944	2019
40S	0340	0419	0451	1929	2000	2039
45S	0314	0400	0435	1944	2019	2105
50S	0238	0335	0416	2003	2044	2140
55S	0137	0300	0351	2028	2118	2240
60S	--	0203	0316	2102	2214	--

MOON: RISE / SET | UTC HHMM

Lat	Day 16		Day 17		Day 18	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	--	--	1048	1318
62N	--	--	1012	1204	1001	1404
60N	0847	1139	0919	1258	0931	1434
58N	0808	1219	0846	1330	0907	1456
56N	0741	1246	0822	1354	0849	1514
54N	0719	1307	0803	1413	0833	1530
52N	0701	1325	0746	1429	0819	1543
50N	0646	1340	0732	1443	0807	1555
45N	0616	1411	0703	1511	0742	1619
40N	0552	1435	0641	1534	0722	1638
35N	0532	1454	0622	1552	0706	1654
30N	0515	1511	0606	1608	0651	1708
25N	0501	1526	0551	1622	0638	1720
20N	0447	1539	0538	1634	0626	1731
15N	0435	1551	0526	1646	0615	1741
10N	0423	1603	0515	1657	0605	1751
05N	0411	1615	0504	1708	0555	1800
00N	0400	1626	0453	1718	0545	1810
05S	0349	1637	0442	1729	0535	1819
10S	0338	1648	0431	1739	0525	1828
15S	0326	1700	0419	1750	0515	1838
20S	0313	1712	0407	1802	0503	1848
25S	0300	1725	0354	1814	0452	1859
30S	0245	1740	0340	1828	0438	1911
35S	0229	1757	0324	1843	0424	1924
40S	0209	1816	0305	1901	0407	1939
45S	0146	1839	0242	1922	0346	1957
50S	0115	1909	0212	1949	0320	2019
55S	0033	1950	0131	2026	0244	2049
60S	--	2102	0020	2122	0148	2130

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JANUARY 19 - JANUARY 21

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
19	00	118 24.3	174 02.6	S20 48.6	179 35.4	S21 48.5	007 50.5	N22 22.5	119 51.9	S03 02.2
	01	133 26.7	189 01.8	S20 48.0	194 35.9	S21 48.1	022 53.3	N22 22.6	134 54.1	S03 02.1
	02	148 29.2	204 01.0	S20 47.4	209 36.3	S21 47.8	037 56.1	N22 22.6	149 56.4	S03 02.0
	03	163 31.6	219 00.2	S20 46.7	224 36.7	S21 47.4	052 58.9	N22 22.7	164 58.7	S03 01.9
	04	178 34.1	233 59.3	S20 46.1	239 37.1	S21 47.1	068 01.7	N22 22.7	180 00.9	S03 01.8
	05	193 36.6	248 58.5	S20 45.4	254 37.5	S21 46.7	083 04.5	N22 22.8	195 03.2	S03 01.7
	06	208 39.0	263 57.7	S20 44.8	269 37.9	S21 46.3	098 07.4	N22 22.8	210 05.5	S03 01.6
	07	223 41.5	278 56.8	S20 44.1	284 38.3	S21 46.0	113 10.2	N22 22.9	225 07.8	S03 01.5
	08	238 44.0	293 56.0	S20 43.5	299 38.7	S21 45.6	128 13.0	N22 22.9	240 10.0	S03 01.4
	09	253 46.4	308 55.2	S20 42.8	314 39.1	S21 45.2	143 15.8	N22 23.0	255 12.3	S03 01.3
	10	268 48.9	323 54.4	S20 42.2	329 39.5	S21 44.9	158 18.6	N22 23.0	270 14.6	S03 01.3
	11	283 51.4	338 53.6	S20 41.5	344 39.9	S21 44.5	173 21.4	N22 23.1	285 16.9	S03 01.2
	12	298 53.8	353 52.7	S20 40.9	359 40.3	S21 44.1	188 24.2	N22 23.1	300 19.1	S03 01.1
	13	313 56.3	008 51.9	S20 40.2	014 40.8	S21 43.8	203 27.0	N22 23.2	315 21.4	S03 01.0
	14	328 58.8	023 51.1	S20 39.6	029 41.2	S21 43.4	218 29.9	N22 23.2	330 23.7	S03 00.9
	15	344 01.2	038 50.3	S20 38.9	044 41.6	S21 43.0	233 32.7	N22 23.3	345 26.0	S03 00.8
	16	359 03.7	053 49.5	S20 38.3	059 42.0	S21 42.7	248 35.5	N22 23.3	000 28.2	S03 00.7
	17	014 06.1	068 48.6	S20 37.6	074 42.4	S21 42.3	263 38.3	N22 23.4	015 30.5	S03 00.6
	18	029 08.6	083 47.8	S20 36.9	089 42.8	S21 41.9	278 41.1	N22 23.4	030 32.8	S03 00.5
	19	044 11.1	098 47.0	S20 36.3	104 43.2	S21 41.6	293 43.9	N22 23.5	045 35.0	S03 00.4
	20	059 13.5	113 46.2	S20 35.6	119 43.6	S21 41.2	308 46.7	N22 23.5	060 37.3	S03 00.4
	21	074 16.0	128 45.4	S20 34.9	134 44.0	S21 40.8	323 49.5	N22 23.6	075 39.6	S03 00.3
	22	089 18.5	143 44.5	S20 34.3	149 44.4	S21 40.5	338 52.4	N22 23.7	090 41.9	S03 00.2
	23	104 20.9	158 43.7	S20 33.6	164 44.9	S21 40.1	353 55.2	N22 23.7	105 44.1	S03 00.1
20	00	119 23.4	173 42.9	S20 33.0	179 45.3	S21 39.7	008 58.0	N22 23.8	120 46.4	S03 00.0
	01	134 25.9	188 42.1	S20 32.3	194 45.7	S21 39.3	024 00.8	N22 23.8	135 48.7	S02 59.9
	02	149 28.3	203 41.3	S20 31.6	209 46.1	S21 39.0	039 03.6	N22 23.9	150 51.0	S02 59.8
	03	164 30.8	218 40.5	S20 30.9	224 46.5	S21 38.6	054 06.4	N22 23.9	165 53.2	S02 59.7
	04	179 33.2	233 39.6	S20 30.3	239 46.9	S21 38.2	069 09.2	N22 24.0	180 55.5	S02 59.6
	05	194 35.7	248 38.8	S20 29.6	254 47.3	S21 37.9	084 12.0	N22 24.0	195 57.8	S02 59.5
	06	209 38.2	263 38.0	S20 28.9	269 47.7	S21 37.5	099 14.9	N22 24.1	211 00.0	S02 59.4
	07	224 40.6	278 37.2	S20 28.3	284 48.1	S21 37.1	114 17.7	N22 24.1	226 02.3	S02 59.4
	08	239 43.1	293 36.4	S20 27.6	299 48.6	S21 36.7	129 20.5	N22 24.2	241 04.6	S02 59.3
	09	254 45.6	308 35.6	S20 26.9	314 49.0	S21 36.4	144 23.3	N22 24.2	256 06.9	S02 59.2
	10	269 48.0	323 34.8	S20 26.2	329 49.4	S21 36.0	159 26.1	N22 24.3	271 09.1	S02 59.1
	11	284 50.5	338 34.0	S20 25.6	344 49.8	S21 35.6	174 28.9	N22 24.3	286 11.4	S02 59.0
	12	299 53.0	353 33.2	S20 24.9	359 50.2	S21 35.2	189 31.7	N22 24.4	301 13.7	S02 58.9
	13	314 55.4	008 32.3	S20 24.2	014 50.6	S21 34.9	204 34.5	N22 24.4	316 15.9	S02 58.8
	14	329 57.9	023 31.5	S20 23.5	029 51.0	S21 34.5	219 37.3	N22 24.5	331 18.2	S02 58.7
	15	345 00.4	038 30.7	S20 22.8	044 51.4	S21 34.1	234 40.1	N22 24.5	346 20.5	S02 58.6
	16	000 02.8	053 29.9	S20 22.2	059 51.8	S21 33.7	249 43.0	N22 24.6	001 22.7	S02 58.5
	17	015 05.3	068 29.1	S20 21.5	074 52.3	S21 33.3	264 45.8	N22 24.6	016 25.0	S02 58.4
	18	030 07.7	083 28.3	S20 20.8	089 52.7	S21 33.0	279 48.6	N22 24.7	031 27.3	S02 58.4
	19	045 10.2	098 27.5	S20 20.1	104 53.1	S21 32.6	294 51.4	N22 24.7	046 29.6	S02 58.3
	20	060 12.7	113 26.7	S20 19.4	119 53.5	S21 32.2	309 54.2	N22 24.8	061 31.8	S02 58.2
	21	075 15.1	128 25.9	S20 18.7	134 53.9	S21 31.8	324 57.0	N22 24.8	076 34.1	S02 58.1
	22	090 17.6	143 25.1	S20 18.0	149 54.3	S21 31.4	339 59.8	N22 24.9	091 36.4	S02 58.0
	23	105 20.1	158 24.3	S20 17.3	164 54.7	S21 31.1	355 02.6	N22 24.9	106 38.6	S02 57.9
21	00	120 22.5	173 23.5	S20 16.7	179 55.2	S21 30.7	010 05.4	N22 25.0	121 40.9	S02 57.8
	01	135 25.0	188 22.7	S20 16.0	194 55.6	S21 30.3	025 08.2	N22 25.0	136 43.2	S02 57.7
	02	150 27.5	203 21.9	S20 15.3	209 56.0	S21 29.9	040 11.1	N22 25.0	151 45.4	S02 57.6
	03	165 29.9	218 21.1	S20 14.6	224 56.4	S21 29.5	055 13.9	N22 25.1	166 47.7	S02 57.5
	04	180 32.4	233 20.3	S20 13.9	239 56.8	S21 29.2	070 16.7	N22 25.1	181 50.0	S02 57.4
	05	195 34.9	248 19.5	S20 13.2	254 57.2	S21 28.8	085 19.5	N22 25.2	196 52.2	S02 57.3
	06	210 37.3	263 18.7	S20 12.5	269 57.6	S21 28.4	100 22.3	N22 25.2	211 54.5	S02 57.3
	07	225 39.8	278 17.9	S20 11.8	284 58.1	S21 28.0	115 25.1	N22 25.3	226 56.8	S02 57.2
	08	240 42.2	293 17.1	S20 11.1	299 58.5	S21 27.6	130 27.9	N22 25.3	241 59.0	S02 57.1
	09	255 44.7	308 16.3	S20 10.4	314 58.9	S21 27.2	145 30.7	N22 25.4	257 01.3	S02 57.0
	10	270 47.2	323 15.5	S20 09.7	329 59.3	S21 26.9	160 33.5	N22 25.4	272 03.6	S02 56.9
	11	285 49.6	338 14.7	S20 09.0	344 59.7	S21 26.5	175 36.3	N22 25.5	287 05.8	S02 56.8
	12	300 52.1	353 13.9	S20 08.3	000 00.1	S21 26.1	190 39.1	N22 25.5	302 08.1	S02 56.7
	13	315 54.6	008 13.1	S20 07.6	015 00.5	S21 25.7	205 41.9	N22 25.6	317 10.4	S02 56.6
	14	330 57.0	023 12.3	S20 06.9	030 01.0	S21 25.3	220 44.8	N22 25.6	332 12.7	S02 56.5
	15	345 59.5	038 11.5	S20 06.2	045 01.4	S21 24.9	235 47.6	N22 25.7	347 14.9	S02 56.4
	16	001 02.0	053 10.7	S20 05.5	060 01.8	S21 24.5	250 50.4	N22 25.7	002 17.2	S02 56.3
	17	016 04.4	068 09.9	S20 04.7	075 02.2	S21 24.1	265 53.2	N22 25.8	017 19.5	S02 56.2
	18	031 06.9	083 09.1	S20 04.0	090 02.6	S21 23.8	280 56.0	N22 25.8	032 21.7	S02 56.1
	19	046 09.3	098 08.3	S20 03.3	105 03.0	S21 23.4	295 58.8	N22 25.9	047 24.0	S02 56.1
	20	061 11.8	113 07.5	S20 02.6	120 03.4	S21 23.0	311 01.6	N22 25.9	062 26.3	S02 56.0
	21	076 14.3	128 06.7	S20 01.9	135 03.9	S21 22.6	326 04.4	N22 26.0	077 28.5	S02 55.9
	22	091 16.7	143 05.9	S20 01.2	150 04.3	S21 22.2	341 07.2	N22 26.0	092 30.8	S02 55.8
	23	106 19.2	158 05.1	S20 00.5	165 04.7	S21 21.8	356 10.0	N22 26.1	107 33.1	S02 55.7

Venus	Mars	Jupiter	Saturn
19: v -0.8 d 0.7	19: v 0.4 d 0.4	19: v 2.8 d 0.1	19: v 2.3 d 0.1
20: v -0.8 d 0.7	20: v 0.4 d 0.4	20: v 2.8 d 0.0	20: v 2.3 d 0.1
21: v -0.8 d 0.7	21: v 0.4 d 0.4	21: v 2.8 d 0.0	21: v 2.3 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.0	S40 12.2
Achernar	335 19.6	S57 06.5
Acrux	172 58.9	S63 14.4
Adhara	255 04.8	S29 00.5
Al Na'ir	027 32.2	S46 50.2
Aldebaran	290 38.4	N16 33.7
Alioth	166 12.0	N55 48.7
Alkaid	152 51.3	N49 10.6
Alnilam	275 36.6	S01 11.2
Alphard	217 46.6	S08 46.4
Alphecca	126 03.2	N26 37.4
Alpheratz	357 34.0	N29 14.2
Altair	061 59.4	N08 56.2
Ankaa	353 06.4	S42 10.1
Antares	112 15.0	S26 29.3
Arcturus	145 47.2	N19 02.6
Atria	107 08.9	S69 04.2
Avior	234 13.7	S59 35.5
Bellatrix	278 21.7	N06 22.4
Betelgeuse	270 50.8	N07 24.7
Canopus	263 51.5	S52 42.7
Capella	280 20.2	N46 01.5
Deneb	049 25.7	N45 22.4
Denebola	182 23.9	N14 25.4
Diphda	348 46.5	S17 50.7
Dubhe	193 39.5	N61 36.3
Elnath	278 00.5	N28 37.8
Eltanin	090 42.3	N51 28.9
Enif	033 38.2	N09 59.7
Fomalhaut	015 13.8	S29 29.2
Gacrux	171 50.5	S57 15.4
Gienah	175 42.6	S17 41.2
Hadar	148 34.8	S60 29.7
Hamal	327 50.2	N23 35.2
Kaus Australi	083 31.7	S34 22.3
Kochab	137 20.1	N74 02.5
Markab	013 29.3	N15 20.8
Menkar	314 05.1	N04 11.5
Menkent	147 56.6	S36 29.8
Miaplacidus	221 37.2	S69 49.3
Mirfak	308 26.8	N49 57.4
Nunki	075 47.0	S26 15.9
Peacock	053 05.0	S56 39.1
Polaris	313 25.0	N89 22.8
Pollux	243 15.9	N27 57.7
Procyon	244 49.6	N05 09.4
Rasalhague	095 58.0	N12 32.3
Regulus	207 33.2	N11 50.3
Rigel	281 02.8	S08 10.4
Rigil Kentaur	139 39.3	S60 56.4
Sabik	102 02.0	S15 45.4
Schedar	349 30.2	N56 41.1
Shaula	096 09.5	S37 07.3
Sirius	258 25.1	S16 45.2
Spica	158 21.3	S11 17.9
Suhail	222 45.2	S43 32.2
Vega	080 33.0	N38 48.3
Zubenelgenubi	136 55.1	S16 09.0

PLANETS | noon UTC

Name	SHA	Transit
Venus	053 40.2	1226
Mars	059 57.2	1201
Jupiter	249 38.8	2320
Saturn	001 20.7	1554

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
19	00	177 21.7	S20 22.6	174 32.4	S23 05.9	55.5	10.9	9.1
	01	192 21.5	S20 22.1	189 02.3	S22 56.8	55.6	10.9	9.3
	02	207 21.3	S20 21.6	203 32.2	S22 47.5	55.6	11.0	9.4
	03	222 21.1	S20 21.1	218 02.2	S22 38.1	55.6	11.0	9.5
	04	237 21.0	S20 20.5	232 32.2	S22 28.6	55.6	11.1	9.6
	05	252 20.8	S20 20.0	247 02.3	S22 19.0	55.6	11.1	9.7
	06	267 20.6	S20 19.5	261 32.4	S22 09.3	55.6	11.2	9.8
	07	282 20.4	S20 19.0	276 02.6	S21 59.5	55.7	11.2	10.0
	08	297 20.2	S20 18.4	290 32.8	S21 49.5	55.7	11.3	10.1
	09	312 20.0	S20 17.9	305 03.1	S21 39.4	55.7	11.3	10.2
	10	327 19.8	S20 17.4	319 33.4	S21 29.3	55.7	11.4	10.3
	11	342 19.6	S20 16.9	334 03.8	S21 19.0	55.7	11.4	10.4
	12	357 19.4	S20 16.3	348 34.3	S21 08.6	55.8	11.5	10.5
	13	012 19.2	S20 15.8	003 04.8	S20 58.1	55.8	11.6	10.6
	14	027 19.0	S20 15.3	017 35.3	S20 47.5	55.8	11.6	10.7
	15	042 18.9	S20 14.7	032 05.9	S20 36.8	55.8	11.7	10.8
	16	057 18.7	S20 14.2	046 36.6	S20 26.0	55.8	11.7	10.9
	17	072 18.5	S20 13.7	061 07.3	S20 15.1	55.9	11.8	11.0
	18	087 18.3	S20 13.1	075 38.1	S20 04.0	55.9	11.8	11.1
	19	102 18.1	S20 12.6	090 08.9	S19 52.9	55.9	11.9	11.2
	20	117 17.9	S20 12.1	104 39.8	S19 41.7	55.9	11.9	11.3
	21	132 17.7	S20 11.5	119 10.7	S19 30.4	55.9	12.0	11.4
	22	147 17.5	S20 11.0	133 41.7	S19 18.9	56.0	12.0	11.5
	23	162 17.4	S20 10.5	148 12.7	S19 07.4	56.0	12.1	11.6
20	00	177 17.2	S20 09.9	162 43.8	S18 55.8	56.0	12.1	11.7
	01	192 17.0	S20 09.4	177 14.9	S18 44.1	56.0	12.2	11.8
	02	207 16.8	S20 08.8	191 46.1	S18 32.3	56.0	12.2	11.9
	03	222 16.6	S20 08.3	206 17.4	S18 20.4	56.1	12.3	12.0
	04	237 16.4	S20 07.8	220 48.6	S18 08.4	56.1	12.3	12.1
	05	252 16.2	S20 07.2	235 20.0	S17 56.3	56.1	12.4	12.2
	06	267 16.1	S20 06.7	249 51.4	S17 44.1	56.1	12.4	12.3
	07	282 15.9	S20 06.1	264 22.8	S17 31.9	56.1	12.5	12.4
	08	297 15.7	S20 05.6	278 54.3	S17 19.5	56.2	12.5	12.4
	09	312 15.5	S20 05.0	293 25.8	S17 07.1	56.2	12.6	12.5
	10	327 15.3	S20 04.5	307 57.4	S16 54.5	56.2	12.6	12.6
	11	342 15.1	S20 04.0	322 29.1	S16 41.9	56.2	12.7	12.7
	12	357 15.0	S20 03.4	337 00.8	S16 29.2	56.2	12.7	12.8
	13	012 14.8	S20 02.9	351 32.5	S16 16.4	56.3	12.8	12.9
	14	027 14.6	S20 02.3	006 04.3	S16 03.6	56.3	12.8	12.9
	15	042 14.4	S20 01.8	020 36.1	S15 50.6	56.3	12.9	13.0
	16	057 14.2	S20 01.2	035 08.0	S15 37.6	56.3	12.9	13.1
	17	072 14.0	S20 00.7	049 39.9	S15 24.5	56.3	13.0	13.2
	18	087 13.9	S20 00.1	064 11.8	S15 11.3	56.4	13.0	13.3
	19	102 13.7	S19 59.6	078 43.8	S14 58.0	56.4	13.0	13.3
	20	117 13.5	S19 59.0	093 15.9	S14 44.7	56.4	13.1	13.4
	21	132 13.3	S19 58.5	107 48.0	S14 31.3	56.4	13.1	13.5
	22	147 13.1	S19 57.9	122 20.1	S14 17.8	56.4	13.2	13.6
	23	162 13.0	S19 57.4	136 52.3	S14 04.2	56.5	13.2	13.6
21	00	177 12.8	S19 56.8	151 24.5	S13 50.6	56.5	13.3	13.7
	01	192 12.6	S19 56.3	165 56.7	S13 36.9	56.5	13.3	13.8
	02	207 12.4	S19 55.7	180 29.0	S13 23.1	56.5	13.3	13.8
	03	222 12.3	S19 55.1	195 01.4	S13 09.3	56.5	13.4	13.9
	04	237 12.1	S19 54.6	209 33.7	S12 55.4	56.6	13.4	14.0
	05	252 11.9	S19 54.0	224 06.1	S12 41.4	56.6	13.4	14.0
	06	267 11.7	S19 53.5	238 38.6	S12 27.3	56.6	13.5	14.1
	07	282 11.5	S19 52.9	253 11.1	S12 13.2	56.6	13.5	14.2
	08	297 11.4	S19 52.4	267 43.6	S11 59.0	56.6	13.5	14.2
	09	312 11.2	S19 51.8	282 16.1	S11 44.8	56.7	13.6	14.3
	10	327 11.0	S19 51.2	296 48.7	S11 30.5	56.7	13.6	14.4
	11	342 10.8	S19 50.7	311 21.3	S11 16.2	56.7	13.6	14.4
	12	357 10.7	S19 50.1	325 53.9	S11 01.7	56.7	13.7	14.5
	13	012 10.5	S19 49.6	340 26.6	S10 47.3	56.7	13.7	14.5
	14	027 10.3	S19 49.0	354 59.3	S10 32.7	56.8	13.7	14.6
	15	042 10.1	S19 48.4	009 32.0	S10 18.2	56.8	13.8	14.6
	16	057 10.0	S19 47.9	024 04.8	S10 03.5	56.8	13.8	14.7
	17	072 09.8	S19 47.3	038 37.5	S09 48.8	56.8	13.8	14.7
	18	087 09.6	S19 46.7	053 10.3	S09 34.1	56.8	13.8	14.8
	19	102 09.5	S19 46.2	067 43.2	S09 19.3	56.9	13.8	14.8
	20	117 09.3	S19 45.6	082 16.0	S09 04.4	56.9	13.9	14.9
	21	132 09.1	S19 45.0	096 48.9	S08 49.5	56.9	13.9	14.9
	22	147 08.9	S19 44.5	111 21.8	S08 34.6	56.9	13.9	15.0
	23	162 08.8	S19 43.9	125 54.7	S08 19.6	57.0	13.9	15.0

Day 19 noon Sun: v -0.2 d 0.5 SD 16.3 | Moon SD 15.2

Day 20 noon Sun: v -0.2 d 0.5 SD 16.3 | Moon SD 15.3

Day 21 noon Sun: v -0.2 d 0.6 SD 16.3 | Moon SD 15.5

SUN: JANUARY 20 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0748	0931	--	--	1452	1635
70N	0735	0902	1104	1318	1521	1648
68N	0724	0841	1010	1413	1542	1659
66N	0715	0824	0937	1446	1559	1707
64N	0708	0810	0913	1509	1613	1715
62N	0701	0758	0855	1528	1625	1722
60N	0655	0748	0839	1544	1635	1728
58N	0650	0739	0826	1557	1643	1733
56N	0645	0731	0815	1608	1651	1738
54N	0640	0724	0805	1618	1658	1742
52N	0636	0718	0756	1626	1705	1747
50N	0632	0712	0748	1634	1711	1751
45N	0623	0659	0731	1651	1723	1759
40N	0615	0648	0718	1705	1734	1807
35N	0608	0639	0706	1716	1744	1815
30N	0601	0630	0656	1727	1752	1821
25N	0554	0622	0646	1736	1800	1828
20N	0547	0614	0638	1744	1808	1835
15N	0541	0607	0630	1752	1815	1841
10N	0534	0600	0622	1800	1822	1848
05N	0527	0553	0615	1807	1829	1855
00N	0520	0545	0607	1815	1837	1902
05S	0512	0538	0600	1822	1844	1910
10S	0504	0530	0552	1829	1852	1918
15S	0454	0522	0545	1837	1900	1927
20S	0444	0513	0536	1845	1909	1937
25S	0433	0503	0528	1854	1919	1949
30S	0419	0451	0518	1904	1930	2002
35S	0404	0438	0507	1915	1943	2018
40S	0344	0423	0454	1927	1958	2037
45S	0320	0405	0440	1942	2017	2101
50S	0245	0341	0421	2000	2040	2135
55S	0149	0307	0357	2024	2113	2230
60S	--	0214	0324	2056	2205	--

MOON: RISE / SET | UTC HHMM

Lat	Day 19		Day 20		Day 21	
72N	--	--	1158	1536	1048	1822
70N	--	--	1114	1618	1030	1838
68N	1144	1407	1044	1646	1015	1851
66N	1051	1459	1022	1707	1003	1901
64N	1019	1530	1004	1724	0953	1910
62N	0954	1554	0949	1738	0944	1917
60N	0935	1612	0936	1749	0936	1923
58N	0919	1628	0926	1759	0930	1929
56N	0905	1641	0916	1808	0924	1934
54N	0853	1652	0908	1815	0918	1938
52N	0843	1702	0900	1822	0914	1942
50N	0833	1711	0853	1828	0909	1946
45N	0813	1730	0838	1841	0900	1953
40N	0757	1745	0826	1852	0852	1959
35N	0743	1757	0816	1901	0845	2005
30N	0731	1809	0807	1909	0839	2010
25N	0720	1818	0758	1917	0833	2014
20N	0710	1827	0751	1923	0828	2018
15N	0701	1836	0744	1929	0823	2021
10N	0652	1844	0737	1935	0819	2025
05N	0644	1851	0730	1941	0814	2028
00N	0635	1859	0724	1946	0810	2031
05S	0627	1906	0717	1951	0806	2035
10S	0619	1914	0711	1957	0801	2038
15S	0610	1922	0704	2003	0756	2041
20S	0600	1930	0656	2009	0752	2045
25S	0550	1939	0649	2015	0746	2049
30S	0539	1948	0640	2022	0741	2053
35S	0527	1959	0631	2029	0734	2057
40S	0512	2011	0620	2038	0727	2102
45S	0455	2025	0607	2048	0719	2108
50S	0434	2042	0551	2100	0709	2115
55S	0406	2104	0531	2115	0656	2123
60S	0326	2134	0504	2134	0639	2134

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JANUARY 22 - JANUARY 24

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
22	00	121 21.7	173 04.3	S19 59.8	180 05.1	S21 21.4	011 12.8	N22 26.1	122 35.3	S02 55.6
	01	136 24.1	188 03.5	S19 59.0	195 05.5	S21 21.0	026 15.6	N22 26.2	137 37.6	S02 55.5
	02	151 26.6	203 02.7	S19 58.3	210 05.9	S21 20.6	041 18.4	N22 26.2	152 39.8	S02 55.4
	03	166 29.1	218 02.0	S19 57.6	225 06.4	S21 20.2	056 21.2	N22 26.3	167 42.1	S02 55.3
	04	181 31.5	233 01.2	S19 56.9	240 06.8	S21 19.8	071 24.0	N22 26.3	182 44.4	S02 55.2
	05	196 34.0	248 00.4	S19 56.2	255 07.2	S21 19.5	086 26.8	N22 26.4	197 46.6	S02 55.1
	06	211 36.5	262 59.6	S19 55.4	270 07.6	S21 19.1	101 29.7	N22 26.4	212 48.9	S02 55.0
	07	226 38.9	277 58.8	S19 54.7	285 08.0	S21 18.7	116 32.5	N22 26.5	227 51.2	S02 54.9
	08	241 41.4	292 58.0	S19 54.0	300 08.5	S21 18.3	131 35.3	N22 26.5	242 53.4	S02 54.8
	09	256 43.8	307 57.2	S19 53.3	315 08.9	S21 17.9	146 38.1	N22 26.6	257 55.7	S02 54.8
	10	271 46.3	322 56.4	S19 52.5	330 09.3	S21 17.5	161 40.9	N22 26.6	272 58.0	S02 54.7
	11	286 48.8	337 55.7	S19 51.8	345 09.7	S21 17.1	176 43.7	N22 26.7	288 00.2	S02 54.6
	12	301 51.2	352 54.9	S19 51.1	000 10.1	S21 16.7	191 46.5	N22 26.7	303 02.5	S02 54.5
	13	316 53.7	007 54.1	S19 50.4	015 10.5	S21 16.3	206 49.3	N22 26.8	318 04.8	S02 54.4
	14	331 56.2	022 53.3	S19 49.6	030 11.0	S21 15.9	221 52.1	N22 26.8	333 07.0	S02 54.3
	15	346 58.6	037 52.5	S19 48.9	045 11.4	S21 15.5	236 54.9	N22 26.9	348 09.3	S02 54.2
	16	002 01.1	052 51.7	S19 48.2	060 11.8	S21 15.1	251 57.7	N22 26.9	003 11.6	S02 54.1
	17	017 03.6	067 51.0	S19 47.4	075 12.2	S21 14.7	267 00.5	N22 27.0	018 13.8	S02 54.0
	18	032 06.0	082 50.2	S19 46.7	090 12.6	S21 14.3	282 03.3	N22 27.0	033 16.1	S02 53.9
	19	047 08.5	097 49.4	S19 46.0	105 13.1	S21 13.9	297 06.1	N22 27.1	048 18.4	S02 53.8
	20	062 11.0	112 48.6	S19 45.2	120 13.5	S21 13.5	312 08.9	N22 27.1	063 20.6	S02 53.7
	21	077 13.4	127 47.8	S19 44.5	135 13.9	S21 13.1	327 11.7	N22 27.2	078 22.9	S02 53.6
	22	092 15.9	142 47.0	S19 43.8	150 14.3	S21 12.7	342 14.5	N22 27.2	093 25.1	S02 53.5
	23	107 18.3	157 46.3	S19 43.0	165 14.7	S21 12.3	357 17.3	N22 27.2	108 27.4	S02 53.4
23	00	122 20.8	172 45.5	S19 42.3	180 15.1	S21 11.9	012 20.1	N22 27.3	123 29.7	S02 53.4
	01	137 23.3	187 44.7	S19 41.5	195 15.6	S21 11.5	027 22.9	N22 27.3	138 31.9	S02 53.3
	02	152 25.7	202 43.9	S19 40.8	210 16.0	S21 11.1	042 25.7	N22 27.4	153 34.2	S02 53.2
	03	167 28.2	217 43.2	S19 40.1	225 16.4	S21 10.7	057 28.5	N22 27.4	168 36.5	S02 53.1
	04	182 30.7	232 42.4	S19 39.3	240 16.8	S21 10.3	072 31.3	N22 27.5	183 38.7	S02 53.0
	05	197 33.1	247 41.6	S19 38.6	255 17.3	S21 09.9	087 34.1	N22 27.5	198 41.0	S02 52.9
	06	212 35.6	262 40.8	S19 37.8	270 17.7	S21 09.5	102 36.9	N22 27.6	213 43.2	S02 52.8
	07	227 38.1	277 40.0	S19 37.1	285 18.1	S21 09.1	117 39.7	N22 27.6	228 45.5	S02 52.7
	08	242 40.5	292 39.3	S19 36.3	300 18.5	S21 08.7	132 42.5	N22 27.7	243 47.8	S02 52.6
	09	257 43.0	307 38.5	S19 35.6	315 18.9	S21 08.3	147 45.3	N22 27.7	258 50.0	S02 52.5
	10	272 45.4	322 37.7	S19 34.8	330 19.4	S21 07.9	162 48.1	N22 27.8	273 52.3	S02 52.4
	11	287 47.9	337 37.0	S19 34.1	345 19.8	S21 07.5	177 51.0	N22 27.8	288 54.6	S02 52.3
	12	302 50.4	352 36.2	S19 33.3	000 20.2	S21 07.1	192 53.8	N22 27.9	303 56.8	S02 52.2
	13	317 52.8	007 35.4	S19 32.6	015 20.6	S21 06.7	207 56.6	N22 27.9	318 59.1	S02 52.1
	14	332 55.3	022 34.6	S19 31.8	030 21.0	S21 06.2	222 59.4	N22 28.0	334 01.3	S02 52.0
	15	347 57.8	037 33.9	S19 31.1	045 21.5	S21 05.8	238 02.2	N22 28.0	349 03.6	S02 51.9
	16	003 00.2	052 33.1	S19 30.3	060 21.9	S21 05.4	253 05.0	N22 28.1	004 05.9	S02 51.8
	17	018 02.7	067 32.3	S19 29.5	075 22.3	S21 05.0	268 07.8	N22 28.1	019 08.1	S02 51.7
	18	033 05.2	082 31.6	S19 28.8	090 22.7	S21 04.6	283 10.6	N22 28.2	034 10.4	S02 51.7
	19	048 07.6	097 30.8	S19 28.0	105 23.2	S21 04.2	298 13.4	N22 28.2	049 12.7	S02 51.6
	20	063 10.1	112 30.0	S19 27.3	120 23.6	S21 03.8	313 16.2	N22 28.3	064 14.9	S02 51.5
	21	078 12.6	127 29.3	S19 26.5	135 24.0	S21 03.4	328 19.0	N22 28.3	079 17.2	S02 51.4
	22	093 15.0	142 28.5	S19 25.8	150 24.4	S21 03.0	343 21.8	N22 28.3	094 19.4	S02 51.3
	23	108 17.5	157 27.7	S19 25.0	165 24.8	S21 02.6	358 24.6	N22 28.4	109 21.7	S02 51.2
24	00	123 19.9	172 27.0	S19 24.2	180 25.3	S21 02.2	013 27.4	N22 28.4	124 24.0	S02 51.1
	01	138 22.4	187 26.2	S19 23.5	195 25.7	S21 01.7	028 30.2	N22 28.5	139 26.2	S02 51.0
	02	153 24.9	202 25.4	S19 22.7	210 26.1	S21 01.3	043 33.0	N22 28.5	154 28.5	S02 50.9
	03	168 27.3	217 24.7	S19 21.9	225 26.5	S21 00.9	058 35.8	N22 28.6	169 30.7	S02 50.8
	04	183 29.8	232 23.9	S19 21.2	240 27.0	S21 00.5	073 38.6	N22 28.6	184 33.0	S02 50.7
	05	198 32.3	247 23.1	S19 20.4	255 27.4	S21 00.1	088 41.4	N22 28.7	199 35.3	S02 50.6
	06	213 34.7	262 22.4	S19 19.6	270 27.8	S20 59.7	103 44.1	N22 28.7	214 37.5	S02 50.5
	07	228 37.2	277 21.6	S19 18.9	285 28.2	S20 59.3	118 46.9	N22 28.8	229 39.8	S02 50.4
	08	243 39.7	292 20.8	S19 18.1	300 28.7	S20 58.9	133 49.7	N22 28.8	244 42.0	S02 50.3
	09	258 42.1	307 20.1	S19 17.3	315 29.1	S20 58.4	148 52.5	N22 28.9	259 44.3	S02 50.2
	10	273 44.6	322 19.3	S19 16.5	330 29.5	S20 58.0	163 55.3	N22 28.9	274 46.6	S02 50.1
	11	288 47.1	337 18.6	S19 15.8	345 29.9	S20 57.6	178 58.1	N22 29.0	289 48.8	S02 50.0
	12	303 49.5	352 17.8	S19 15.0	000 30.4	S20 57.2	194 00.9	N22 29.0	304 51.1	S02 49.9
	13	318 52.0	007 17.0	S19 14.2	015 30.8	S20 56.8	209 03.7	N22 29.1	319 53.3	S02 49.8
	14	333 54.4	022 16.3	S19 13.4	030 31.2	S20 56.4	224 06.5	N22 29.1	334 55.6	S02 49.8
	15	348 56.9	037 15.5	S19 12.7	045 31.6	S20 55.9	239 09.3	N22 29.1	349 57.9	S02 49.7
	16	003 59.4	052 14.8	S19 11.9	060 32.1	S20 55.5	254 12.1	N22 29.2	005 00.1	S02 49.6
	17	019 01.8	067 14.0	S19 11.1	075 32.5	S20 55.1	269 14.9	N22 29.2	020 02.4	S02 49.5
	18	034 04.3	082 13.3	S19 10.3	090 32.9	S20 54.7	284 17.7	N22 29.3	035 04.6	S02 49.4
	19	049 06.8	097 12.5	S19 09.5	105 33.3	S20 54.3	299 20.5	N22 29.3	050 06.9	S02 49.3
	20	064 09.2	112 11.7	S19 08.8	120 33.8	S20 53.9	314 23.3	N22 29.4	065 09.1	S02 49.2
	21	079 11.7	127 11.0	S19 08.0	135 34.2	S20 53.4	329 26.1	N22 29.4	080 11.4	S02 49.1
	22	094 14.2	142 10.2	S19 07.2	150 34.6	S20 53.0	344 28.9	N22 29.5	095 13.7	S02 49.0
	23	109 16.6	157 09.5	S19 06.4	165 35.0	S20 52.6	359 31.7	N22 29.5	110 15.9	S02 48.9

Venus	Mars	Jupiter	Saturn
22: v -0.8 d 0.7	22: v 0.4 d 0.4	22: v 2.8 d 0.0	22: v 2.3 d 0.1
23: v -0.8 d 0.8	23: v 0.4 d 0.4	23: v 2.8 d 0.0	23: v 2.3 d 0.1
24: v -0.8 d 0.8	24: v 0.4 d 0.4	24: v 2.8 d 0.0	24: v 2.3 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.0	S40 12.2
Achernar	335 19.6	S57 06.5
Acrux	172 58.8	S63 14.4
Adhara	255 04.8	S29 00.5
Al Na'ir	027 32.2	S46 50.2
Aldebaran	290 38.4	N16 33.7
Alioth	166 12.0	N55 48.7
Alkaid	152 51.3	N49 10.6
Alnilam	275 36.6	S01 11.2
Alphard	217 46.6	S08 46.4
Alphecca	126 03.1	N26 37.4
Alpheratz	357 34.0	N29 14.2
Altair	061 59.4	N08 56.2
Ankaa	353 06.5	S42 10.1
Antares	112 15.0	S26 29.3
Arcturus	145 47.1	N19 02.6
Atria	107 08.8	S69 04.2
Avior	234 13.7	S59 35.6
Bellatrix	278 21.7	N06 22.4
Betelgeuse	270 50.8	N07 24.7
Canopus	263 51.5	S52 42.7
Capella	280 20.2	N46 01.5
Deneb	049 25.7	N45 22.4
Denebola	182 23.9	N14 25.4
Diphda	348 46.5	S17 50.7
Dubhe	193 39.4	N61 36.3
Elnath	278 00.5	N28 37.8
Eltanin	090 42.2	N51 28.9
Enif	033 38.2	N09 59.6
Fomalhaut	015 13.8	S29 29.2
Gacrux	171 50.4	S57 15.4
Gienah	175 42.5	S17 41.2
Hadar	148 34.8	S60 29.7
Hamal	327 50.2	N23 35.2
Kaus Australi	083 31.7	S34 22.3
Kochab	137 20.0	N74 02.5
Markab	013 29.3	N15 20.8
Menkar	314 05.1	N04 11.5
Menkent	147 56.6	S36 29.8
Miaplacidus	221 37.2	S69 49.4
Mirfak	308 26.8	N49 57.4
Nunki	075 47.0	S26 15.9
Peacock	053 04.9	S56 39.1
Polaris	313 26.6	N89 22.8
Pollux	243 15.9	N27 57.7
Procyon	244 49.6	N05 09.4
Rasalhague	095 58.0	N12 32.3
Regulus	207 33.2	N11 50.2
Rigel	281 02.8	S08 10.4
Rigil Kentaur	139 39.2	S60 56.4
Sabik	102 02.0	S15 45.5
Schedar	349 30.3	N56 41.1
Shaula	096 09.5	S37 07.3
Sirius	258 25.1	S16 45.2
Spica	158 21.3	S11 17.9
Suhail	222 45.2	S43 32.3
Vega	080 33.0	N38 48.3
Zubenelgenubi	136 55.1	S16 09.0

PLANETS | noon UTC

Name	SHA	Transit
Venus	049 45.8	1230
Mars	057 29.8	1159
Jupiter	250 03.4	2306
Saturn	001 06.4	1544

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
22	00	177 08.6	S19 43.3	140 27.6	S08 04.6	57.0	13.9	15.1
	01	192 08.4	S19 42.8	155 00.6	S07 49.5	57.0	14.0	15.1
	02	207 08.3	S19 42.2	169 33.5	S07 34.3	57.0	14.0	15.2
	03	222 08.1	S19 41.6	184 06.5	S07 19.2	57.0	14.0	15.2
	04	237 07.9	S19 41.1	198 39.5	S07 04.0	57.1	14.0	15.3
	05	252 07.8	S19 40.5	213 12.5	S06 48.7	57.1	14.0	15.3
	06	267 07.6	S19 39.9	227 45.6	S06 33.4	57.1	14.0	15.3
	07	282 07.4	S19 39.3	242 18.6	S06 18.1	57.1	14.0	15.4
	08	297 07.3	S19 38.8	256 51.6	S06 02.7	57.1	14.1	15.4
	09	312 07.1	S19 38.2	271 24.7	S05 47.3	57.2	14.1	15.4
	10	327 06.9	S19 37.6	285 57.8	S05 31.9	57.2	14.1	15.5
	11	342 06.8	S19 37.0	300 30.8	S05 16.4	57.2	14.1	15.5
	12	357 06.6	S19 36.5	315 03.9	S05 00.9	57.2	14.1	15.5
	13	012 06.4	S19 35.9	329 37.0	S04 45.3	57.2	14.1	15.6
	14	027 06.3	S19 35.3	344 10.1	S04 29.8	57.3	14.1	15.6
	15	042 06.1	S19 34.7	358 43.2	S04 14.2	57.3	14.1	15.6
	16	057 05.9	S19 34.1	013 16.3	S03 58.5	57.3	14.1	15.7
	17	072 05.8	S19 33.6	027 49.3	S03 42.9	57.3	14.1	15.7
	18	087 05.6	S19 33.0	042 22.4	S03 27.2	57.3	14.1	15.7
	19	102 05.4	S19 32.4	056 55.5	S03 11.5	57.4	14.1	15.7
	20	117 05.3	S19 31.8	071 28.6	S02 55.8	57.4	14.1	15.8
	21	132 05.1	S19 31.2	086 01.7	S02 40.0	57.4	14.1	15.8
	22	147 04.9	S19 30.7	100 34.8	S02 24.2	57.4	14.1	15.8
	23	162 04.8	S19 30.1	115 07.8	S02 08.4	57.4	14.1	15.8
23	00	177 04.6	S19 29.5	129 40.9	S01 52.6	57.5	14.1	15.8
	01	192 04.5	S19 28.9	144 13.9	S01 36.8	57.5	14.0	15.9
	02	207 04.3	S19 28.3	158 47.0	S01 20.9	57.5	14.0	15.9
	03	222 04.1	S19 27.7	173 20.0	S01 05.1	57.5	14.0	15.9
	04	237 04.0	S19 27.1	187 53.0	S00 49.2	57.5	14.0	15.9
	05	252 03.8	S19 26.6	202 26.0	S00 33.3	57.6	14.0	15.9
	06	267 03.6	S19 26.0	216 59.0	S00 17.4	57.6	14.0	15.9
	07	282 03.5	S19 25.4	231 32.0	S00 01.5	57.6	13.9	15.9
	08	297 03.3	S19 24.8	246 04.9	N00 14.5	57.6	13.9	15.9
	09	312 03.2	S19 24.2	260 37.9	N00 30.4	57.6	13.9	15.9
	10	327 03.0	S19 23.6	275 10.8	N00 46.3	57.7	13.9	16.0
	11	342 02.9	S19 23.0	289 43.7	N01 02.3	57.7	13.9	16.0
	12	357 02.7	S19 22.4	304 16.5	N01 18.3	57.7	13.8	16.0
	13	012 02.5	S19 21.8	318 49.4	N01 34.2	57.7	13.8	16.0
	14	027 02.4	S19 21.2	333 22.2	N01 50.2	57.7	13.8	16.0
	15	042 02.2	S19 20.7	347 55.0	N02 06.1	57.8	13.8	16.0
	16	057 02.1	S19 20.1	002 27.7	N02 22.1	57.8	13.7	16.0
	17	072 01.9	S19 19.5	017 00.4	N02 38.1	57.8	13.7	16.0
	18	087 01.8	S19 18.9	031 33.1	N02 54.1	57.8	13.7	16.0
	19	102 01.6	S19 18.3	046 05.8	N03 10.0	57.8	13.6	16.0
	20	117 01.4	S19 17.7	060 38.4	N03 26.0	57.9	13.6	16.0
	21	132 01.3	S19 17.1	075 11.0	N03 41.9	57.9	13.6	15.9
	22	147 01.1	S19 16.5	089 43.6	N03 57.9	57.9	13.5	15.9
	23	162 01.0	S19 15.9	104 16.1	N04 13.8	57.9	13.5	15.9
24	00	177 00.8	S19 15.3	118 48.6	N04 29.7	57.9	13.4	15.9
	01	192 00.7	S19 14.7	133 21.0	N04 45.7	58.0	13.4	15.9
	02	207 00.5	S19 14.1	147 53.4	N05 01.6	58.0	13.4	15.9
	03	222 00.4	S19 13.5	162 25.8	N05 17.5	58.0	13.3	15.9
	04	237 00.2	S19 12.9	176 58.1	N05 33.3	58.0	13.3	15.9
	05	252 00.1	S19 12.3	191 30.4	N05 49.2	58.0	13.2	15.8
	06	266 59.9	S19 11.7	206 02.6	N06 05.1	58.1	13.2	15.8
	07	281 59.8	S19 11.1	220 34.7	N06 20.9	58.1	13.1	15.8
	08	296 59.6	S19 10.5	235 06.9	N06 36.7	58.1	13.1	15.8
	09	311 59.5	S19 09.9	249 38.9	N06 52.5	58.1	13.0	15.8
	10	326 59.3	S19 09.3	264 10.9	N07 08.3	58.1	13.0	15.7
	11	341 59.2	S19 08.7	278 42.9	N07 24.0	58.2	12.9	15.7
	12	356 59.0	S19 08.1	293 14.8	N07 39.7	58.2	12.8	15.7
	13	011 58.9	S19 07.4	307 46.7	N07 55.4	58.2	12.8	15.7
	14	026 58.7	S19 06.8	322 18.4	N08 11.1	58.2	12.7	15.6
	15	041 58.6	S19 06.2	336 50.2	N08 26.7	58.2	12.7	15.6
	16	056 58.4	S19 05.6	351 21.8	N08 42.3	58.3	12.6	15.6
	17	071 58.3	S19 05.0	005 53.5	N08 57.9	58.3	12.5	15.5
	18	086 58.1	S19 04.4	020 25.0	N09 13.5	58.3	12.5	15.5
	19	101 58.0	S19 03.8	034 56.5	N09 29.0	58.3	12.4	15.5
	20	116 57.8	S19 03.2	049 27.9	N09 44.4	58.3	12.3	15.4
	21	131 57.7	S19 02.6	063 59.2	N09 59.9	58.4	12.3	15.4
	22	146 57.5	S19 02.0	078 30.5	N10 15.3	58.4	12.2	15.4
	23	161 57.4	S19 01.3	093 01.7	N10 30.6	58.4	12.1	15.3

Day 22 noon Sun: v -0.2 d 0.6 SD 16.3 | Moon SD 15.6

Day 23 noon Sun: v -0.2 d 0.6 SD 16.2 | Moon SD 15.7

Day 24 noon Sun: v -0.1 d 0.6 SD 16.2 | Moon SD 15.9

SUN: JANUARY 23 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0739	0918	--	--	1507	1646
70N	0727	0852	1040	1344	1533	1657
68N	0718	0833	0956	1428	1552	1707
66N	0710	0817	0927	1457	1608	1715
64N	0703	0804	0905	1519	1621	1722
62N	0656	0753	0848	1537	1632	1728
60N	0651	0743	0833	1551	1641	1734
58N	0646	0735	0821	1603	1649	1738
56N	0641	0727	0810	1614	1657	1743
54N	0637	0721	0801	1623	1703	1747
52N	0633	0715	0753	1632	1709	1751
50N	0630	0709	0745	1639	1715	1755
45N	0621	0657	0729	1655	1727	1803
40N	0614	0647	0716	1708	1737	1810
35N	0607	0637	0704	1719	1747	1817
30N	0600	0629	0655	1729	1755	1824
25N	0554	0621	0646	1738	1802	1830
20N	0547	0614	0637	1746	1810	1836
15N	0541	0607	0630	1754	1817	1843
10N	0535	0600	0622	1801	1824	1849
05N	0528	0553	0615	1808	1830	1856
00N	0521	0546	0608	1815	1837	1903
05S	0513	0539	0601	1822	1845	1910
10S	0505	0531	0554	1830	1852	1918
15S	0456	0523	0546	1837	1900	1927
20S	0447	0515	0538	1845	1909	1937
25S	0435	0505	0530	1853	1918	1948
30S	0423	0454	0521	1903	1929	2001
35S	0407	0442	0510	1913	1941	2016
40S	0349	0427	0458	1925	1956	2034
45S	0325	0409	0444	1939	2014	2058
50S	0252	0346	0426	1957	2036	2130
55S	0201	0315	0403	2019	2107	2220
60S	--	0226	0332	2050	2155	--

MOON: RISE / SET | UTC HHMM

Lat	Day 22		Day 23		Day 24	
72N	1007	2039	0932	2253	0856	--
70N	0959	2044	0933	2247	0906	--
68N	0953	2047	0933	2242	0913	--
66N	0948	2050	0934	2238	0920	--
64N	0943	2052	0934	2235	0925	--
62N	0939	2054	0935	2232	0930	--
60N	0936	2056	0935	2229	0934	--
58N	0933	2058	0935	2227	0938	2359
56N	0930	2059	0936	2225	0941	2354
54N	0927	2100	0936	2223	0944	2349
52N	0925	2101	0936	2222	0947	2344
50N	0923	2102	0936	2220	0950	2340
45N	0919	2105	0937	2217	0955	2331
40N	0915	2107	0937	2214	1000	2324
35N	0911	2108	0937	2212	1004	2318
30N	0909	2110	0938	2210	1007	2312
25N	0906	2111	0938	2208	1011	2307
20N	0903	2112	0938	2207	1014	2303
15N	0901	2113	0938	2205	1017	2259
10N	0859	2114	0939	2203	1019	2255
05N	0857	2115	0939	2202	1022	2251
00N	0855	2116	0939	2201	1025	2247
05S	0853	2117	0939	2159	1027	2243
10S	0850	2118	0940	2158	1030	2239
15S	0848	2119	0940	2156	1033	2235
20S	0846	2120	0940	2155	1036	2231
25S	0843	2121	0941	2153	1039	2227
30S	0841	2122	0941	2151	1042	2222
35S	0838	2123	0941	2149	1046	2216
40S	0834	2125	0942	2147	1050	2210
45S	0830	2126	0942	2144	1056	2203
50S	0826	2128	0943	2141	1102	2155
55S	0820	2130	0944	2137	1109	2145
60S	0812	2133	0945	2132	1120	2132

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JANUARY 25 - JANUARY 27

UTC	ARIES	Venus		Mars		Jupiter		Saturn	
Day h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
25 00	124 19.1	172 08.7	S19 05.6	180 35.5	S20 52.2	014 34.5	N22 29.6	125 18.2	S02 48.8
01	139 21.5	187 08.0	S19 04.8	195 35.9	S20 51.8	029 37.3	N22 29.6	140 20.4	S02 48.7
02	154 24.0	202 07.2	S19 04.0	210 36.3	S20 51.3	044 40.1	N22 29.7	155 22.7	S02 48.6
03	169 26.5	217 06.5	S19 03.2	225 36.7	S20 50.9	059 42.9	N22 29.7	170 25.0	S02 48.5
04	184 28.9	232 05.7	S19 02.5	240 37.2	S20 50.5	074 45.7	N22 29.7	185 27.2	S02 48.4
05	199 31.4	247 05.0	S19 01.7	255 37.6	S20 50.1	089 48.5	N22 29.8	200 29.5	S02 48.3
06	214 33.9	262 04.2	S19 00.9	270 38.0	S20 49.6	104 51.3	N22 29.8	215 31.7	S02 48.2
07	229 36.3	277 03.5	S19 00.1	285 38.4	S20 49.2	119 54.1	N22 29.9	230 34.0	S02 48.1
08	244 38.8	292 02.7	S18 59.3	300 38.9	S20 48.8	134 56.9	N22 29.9	245 36.2	S02 48.0
09	259 41.3	307 02.0	S18 58.5	315 39.3	S20 48.4	149 59.7	N22 30.0	260 38.5	S02 47.9
10	274 43.7	322 01.2	S18 57.7	330 39.7	S20 47.9	165 02.4	N22 30.0	275 40.8	S02 47.8
11	289 46.2	337 00.5	S18 56.9	345 40.2	S20 47.5	180 05.2	N22 30.1	290 43.0	S02 47.7
12	304 48.7	351 59.7	S18 56.1	000 40.6	S20 47.1	195 08.0	N22 30.1	305 45.3	S02 47.6
13	319 51.1	006 59.0	S18 55.3	015 41.0	S20 46.7	210 10.8	N22 30.2	320 47.5	S02 47.5
14	334 53.6	021 58.2	S18 54.5	030 41.4	S20 46.2	225 13.6	N22 30.2	335 49.8	S02 47.4
15	349 56.0	036 57.5	S18 53.7	045 41.9	S20 45.8	240 16.4	N22 30.3	350 52.0	S02 47.3
16	004 58.5	051 56.7	S18 52.9	060 42.3	S20 45.4	255 19.2	N22 30.3	005 54.3	S02 47.2
17	020 01.0	066 56.0	S18 52.1	075 42.7	S20 45.0	270 22.0	N22 30.3	020 56.5	S02 47.2
18	035 03.4	081 55.3	S18 51.3	090 43.2	S20 44.5	285 24.8	N22 30.4	035 58.8	S02 47.1
19	050 05.9	096 54.5	S18 50.5	105 43.6	S20 44.1	300 27.6	N22 30.4	051 01.1	S02 47.0
20	065 08.4	111 53.8	S18 49.7	120 44.0	S20 43.7	315 30.4	N22 30.5	066 03.3	S02 46.9
21	080 10.8	126 53.0	S18 48.9	135 44.4	S20 43.3	330 33.2	N22 30.5	081 05.6	S02 46.8
22	095 13.3	141 52.3	S18 48.1	150 44.9	S20 42.8	345 36.0	N22 30.6	096 07.8	S02 46.7
23	110 15.8	156 51.5	S18 47.3	165 45.3	S20 42.4	000 38.8	N22 30.6	111 10.1	S02 46.6
26 00	125 18.2	171 50.8	S18 46.4	180 45.7	S20 42.0	015 41.5	N22 30.7	126 12.3	S02 46.5
01	140 20.7	186 50.1	S18 45.6	195 46.2	S20 41.5	030 44.3	N22 30.7	141 14.6	S02 46.4
02	155 23.1	201 49.3	S18 44.8	210 46.6	S20 41.1	045 47.1	N22 30.8	156 16.8	S02 46.3
03	170 25.6	216 48.6	S18 44.0	225 47.0	S20 40.7	060 49.9	N22 30.8	171 19.1	S02 46.2
04	185 28.1	231 47.9	S18 43.2	240 47.5	S20 40.2	075 52.7	N22 30.8	186 21.4	S02 46.1
05	200 30.5	246 47.1	S18 42.4	255 47.9	S20 39.8	090 55.5	N22 30.9	201 23.6	S02 46.0
06	215 33.0	261 46.4	S18 41.6	270 48.3	S20 39.4	105 58.3	N22 30.9	216 25.9	S02 45.9
07	230 35.5	276 45.6	S18 40.8	285 48.8	S20 38.9	121 01.1	N22 31.0	231 28.1	S02 45.8
08	245 37.9	291 44.9	S18 39.9	300 49.2	S20 38.5	136 03.9	N22 31.0	246 30.4	S02 45.7
09	260 40.4	306 44.2	S18 39.1	315 49.6	S20 38.1	151 06.7	N22 31.1	261 32.6	S02 45.6
10	275 42.9	321 43.4	S18 38.3	330 50.0	S20 37.6	166 09.5	N22 31.1	276 34.9	S02 45.5
11	290 45.3	336 42.7	S18 37.5	345 50.5	S20 37.2	181 12.2	N22 31.2	291 37.1	S02 45.4
12	305 47.8	351 42.0	S18 36.7	000 50.9	S20 36.8	196 15.0	N22 31.2	306 39.4	S02 45.3
13	320 50.3	006 41.2	S18 35.8	015 51.3	S20 36.3	211 17.8	N22 31.3	321 41.6	S02 45.2
14	335 52.7	021 40.5	S18 35.0	030 51.8	S20 35.9	226 20.6	N22 31.3	336 43.9	S02 45.1
15	350 55.2	036 39.8	S18 34.2	045 52.2	S20 35.5	241 23.4	N22 31.3	351 46.2	S02 45.0
16	005 57.6	051 39.0	S18 33.4	060 52.6	S20 35.0	256 26.2	N22 31.4	006 48.4	S02 44.9
17	021 00.1	066 38.3	S18 32.5	075 53.1	S20 34.6	271 29.0	N22 31.4	021 50.7	S02 44.8
18	036 02.6	081 37.6	S18 31.7	090 53.5	S20 34.2	286 31.8	N22 31.5	036 52.9	S02 44.7
19	051 05.0	096 36.8	S18 30.9	105 53.9	S20 33.7	301 34.6	N22 31.5	051 55.2	S02 44.6
20	066 07.5	111 36.1	S18 30.1	120 54.4	S20 33.3	316 37.3	N22 31.6	066 57.4	S02 44.5
21	081 10.0	126 35.4	S18 29.2	135 54.8	S20 32.8	331 40.1	N22 31.6	081 59.7	S02 44.4
22	096 12.4	141 34.7	S18 28.4	150 55.2	S20 32.4	346 42.9	N22 31.7	097 01.9	S02 44.3
23	111 14.9	156 33.9	S18 27.6	165 55.7	S20 32.0	001 45.7	N22 31.7	112 04.2	S02 44.2
27 00	126 17.4	171 33.2	S18 26.7	180 56.1	S20 31.5	016 48.5	N22 31.8	127 06.4	S02 44.1
01	141 19.8	186 32.5	S18 25.9	195 56.5	S20 31.1	031 51.3	N22 31.8	142 08.7	S02 44.0
02	156 22.3	201 31.8	S18 25.1	210 57.0	S20 30.6	046 54.1	N22 31.8	157 10.9	S02 43.9
03	171 24.8	216 31.0	S18 24.2	225 57.4	S20 30.2	061 56.9	N22 31.9	172 13.2	S02 43.8
04	186 27.2	231 30.3	S18 23.4	240 57.8	S20 29.8	076 59.6	N22 31.9	187 15.4	S02 43.7
05	201 29.7	246 29.6	S18 22.6	255 58.3	S20 29.3	092 02.4	N22 32.0	202 17.7	S02 43.6
06	216 32.1	261 28.9	S18 21.7	270 58.7	S20 28.9	107 05.2	N22 32.0	217 19.9	S02 43.5
07	231 34.6	276 28.1	S18 20.9	285 59.1	S20 28.4	122 08.0	N22 32.1	232 22.2	S02 43.4
08	246 37.1	291 27.4	S18 20.1	300 59.6	S20 28.0	137 10.8	N22 32.1	247 24.4	S02 43.3
09	261 39.5	306 26.7	S18 19.2	316 00.0	S20 27.5	152 13.6	N22 32.2	262 26.7	S02 43.2
10	276 42.0	321 26.0	S18 18.4	331 00.4	S20 27.1	167 16.4	N22 32.2	277 29.0	S02 43.1
11	291 44.5	336 25.2	S18 17.5	346 00.9	S20 26.7	182 19.1	N22 32.2	292 31.2	S02 43.1
12	306 46.9	351 24.5	S18 16.7	001 01.3	S20 26.2	197 21.9	N22 32.3	307 33.5	S02 43.0
13	321 49.4	006 23.8	S18 15.8	016 01.8	S20 25.8	212 24.7	N22 32.3	322 35.7	S02 42.9
14	336 51.9	021 23.1	S18 15.0	031 02.2	S20 25.3	227 27.5	N22 32.4	337 38.0	S02 42.8
15	351 54.3	036 22.4	S18 14.2	046 02.6	S20 24.9	242 30.3	N22 32.4	352 40.2	S02 42.7
16	006 56.8	051 21.7	S18 13.3	061 03.1	S20 24.4	257 33.1	N22 32.5	007 42.5	S02 42.6
17	021 59.3	066 20.9	S18 12.5	076 03.5	S20 24.0	272 35.9	N22 32.5	022 44.7	S02 42.5
18	037 01.7	081 20.2	S18 11.6	091 03.9	S20 23.5	287 38.6	N22 32.5	037 47.0	S02 42.4
19	052 04.2	096 19.5	S18 10.8	106 04.4	S20 23.1	302 41.4	N22 32.6	052 49.2	S02 42.3
20	067 06.6	111 18.8	S18 09.9	121 04.8	S20 22.6	317 44.2	N22 32.6	067 51.5	S02 42.2
21	082 09.1	126 18.1	S18 09.1	136 05.2	S20 22.2	332 47.0	N22 32.7	082 53.7	S02 42.1
22	097 11.6	141 17.4	S18 08.2	151 05.7	S20 21.8	347 49.8	N22 32.7	097 56.0	S02 42.0
23	112 14.0	156 16.6	S18 07.4	166 06.1	S20 21.3	002 52.6	N22 32.8	112 58.2	S02 41.9

Venus	Mars	Jupiter	Saturn
25: v -0.7 d 0.8	25: v 0.4 d 0.4	25: v 2.8 d 0.0	25: v 2.3 d 0.1
26: v -0.7 d 0.8	26: v 0.4 d 0.4	26: v 2.8 d 0.0	26: v 2.3 d 0.1
27: v -0.7 d 0.8	27: v 0.4 d 0.4	27: v 2.8 d 0.0	27: v 2.3 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.0	S40 12.2
Achernar	335 19.6	S57 06.5
Acrux	172 58.8	S63 14.4
Adhara	255 04.8	S29 00.5
Al Na'ir	027 32.2	S46 50.2
Aldebaran	290 38.4	N16 33.7
Alioth	166 12.0	N55 48.7
Alkaid	152 51.2	N49 10.6
Alnilam	275 36.6	S01 11.2
Alphard	217 46.6	S08 46.4
Alphecca	126 03.1	N26 37.3
Alpheratz	357 34.1	N29 14.2
Altair	061 59.4	N08 56.1
Ankaa	353 06.5	S42 10.1
Antares	112 15.0	S26 29.3
Arcturus	145 47.1	N19 02.6
Atria	107 08.8	S69 04.2
Avior	234 13.7	S59 35.6
Bellatrix	278 21.7	N06 22.4
Betelgeuse	270 50.9	N07 24.7
Canopus	263 51.5	S52 42.7
Capella	280 20.2	N46 01.6
Deneb	049 25.7	N45 22.4
Denebola	182 23.8	N14 25.4
Diphda	348 46.5	S17 50.7
Dubhe	193 39.4	N61 36.3
Elnath	278 00.5	N28 37.8
Eltanin	090 42.2	N51 28.9
Enif	033 38.2	N09 59.6
Fomalhaut	015 13.8	S29 29.2
Gacrux	171 50.4	S57 15.4
Gienah	175 42.5	S17 41.2
Hadar	148 34.7	S60 29.7
Hamal	327 50.2	N23 35.2
Kaus Australi	083 31.7	S34 22.3
Kochab	137 20.0	N74 02.5
Markab	013 29.3	N15 20.8
Menkar	314 05.2	N04 11.5
Menkent	147 56.6	S36 29.8
Miaplacidus	221 37.2	S69 49.4
Mirfak	308 26.8	N49 57.4
Nunki	075 47.0	S26 15.9
Peacock	053 04.9	S56 39.1
Polaris	313 28.0	N89 22.8
Pollux	243 15.9	N27 57.7
Procyon	244 49.6	N05 09.4
Rasalhague	095 58.0	N12 32.3
Regulus	207 33.2	N11 50.2
Rigel	281 02.8	S08 10.4
Rigil Kentaur	139 39.2	S60 56.4
Sabik	102 02.0	S15 45.5
Schedar	349 30.3	N56 41.1
Shaula	096 09.5	S37 07.3
Sirius	258 25.1	S16 45.2
Spica	158 21.3	S11 17.9
Suhail	222 45.2	S43 32.3
Vega	080 33.0	N38 48.3
Zubenelgenubi	136 55.1	S16 09.0

PLANETS | noon UTC

Name	SHA	Transit
Venus	045 54.2	1233
Mars	055 03.1	1157
Jupiter	250 27.2	2253
Saturn	000 51.6	1533

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
25	00	176 57.2	S19 00.7	107 32.9	N10 46.0	58.4	12.1	15.3
	01	191 57.1	S19 00.1	122 03.9	N11 01.2	58.4	12.0	15.2
	02	206 56.9	S18 59.5	136 34.9	N11 16.5	58.5	11.9	15.2
	03	221 56.8	S18 58.9	151 05.8	N11 31.6	58.5	11.8	15.1
	04	236 56.7	S18 58.3	165 36.7	N11 46.8	58.5	11.8	15.1
	05	251 56.5	S18 57.7	180 07.4	N12 01.9	58.5	11.7	15.0
	06	266 56.4	S18 57.0	194 38.1	N12 16.9	58.5	11.6	15.0
	07	281 56.2	S18 56.4	209 08.7	N12 31.9	58.6	11.5	14.9
	08	296 56.1	S18 55.8	223 39.2	N12 46.8	58.6	11.4	14.9
	09	311 55.9	S18 55.2	238 09.6	N13 01.7	58.6	11.4	14.8
	10	326 55.8	S18 54.6	252 40.0	N13 16.5	58.6	11.3	14.8
	11	341 55.7	S18 53.9	267 10.3	N13 31.3	58.6	11.2	14.7
	12	356 55.5	S18 53.3	281 40.4	N13 46.0	58.7	11.1	14.6
	13	011 55.4	S18 52.7	296 10.5	N14 00.6	58.7	11.0	14.6
	14	026 55.2	S18 52.1	310 40.5	N14 15.2	58.7	10.9	14.5
	15	041 55.1	S18 51.5	325 10.4	N14 29.7	58.7	10.8	14.5
	16	056 55.0	S18 50.8	339 40.3	N14 44.2	58.7	10.7	14.4
	17	071 54.8	S18 50.2	354 10.0	N14 58.6	58.7	10.6	14.3
	18	086 54.7	S18 49.6	008 39.6	N15 12.9	58.8	10.5	14.2
	19	101 54.5	S18 49.0	023 09.2	N15 27.1	58.8	10.4	14.2
	20	116 54.4	S18 48.3	037 38.6	N15 41.3	58.8	10.3	14.1
	21	131 54.3	S18 47.7	052 08.0	N15 55.4	58.8	10.2	14.0
	22	146 54.1	S18 47.1	066 37.2	N16 09.4	58.8	10.2	13.9
	23	161 54.0	S18 46.5	081 06.4	N16 23.4	58.9	10.1	13.9
26	00	176 53.8	S18 45.8	095 35.4	N16 37.2	58.9	9.9	13.8
	01	191 53.7	S18 45.2	110 04.4	N16 51.0	58.9	9.8	13.7
	02	206 53.6	S18 44.6	124 33.2	N17 04.7	58.9	9.7	13.6
	03	221 53.4	S18 43.9	139 02.0	N17 18.3	58.9	9.6	13.5
	04	236 53.3	S18 43.3	153 30.6	N17 31.9	59.0	9.5	13.4
	05	251 53.2	S18 42.7	167 59.1	N17 45.3	59.0	9.4	13.4
	06	266 53.0	S18 42.0	182 27.6	N17 58.7	59.0	9.3	13.3
	07	281 52.9	S18 41.4	196 55.9	N18 11.9	59.0	9.2	13.2
	08	296 52.8	S18 40.8	211 24.1	N18 25.1	59.0	9.1	13.1
	09	311 52.6	S18 40.2	225 52.2	N18 38.2	59.0	9.0	13.0
	10	326 52.5	S18 39.5	240 20.2	N18 51.1	59.1	8.9	12.9
	11	341 52.4	S18 38.9	254 48.1	N19 04.0	59.1	8.8	12.8
	12	356 52.2	S18 38.2	269 15.9	N19 16.8	59.1	8.7	12.7
	13	011 52.1	S18 37.6	283 43.6	N19 29.5	59.1	8.6	12.6
	14	026 52.0	S18 37.0	298 11.1	N19 42.1	59.1	8.4	12.5
	15	041 51.8	S18 36.3	312 38.6	N19 54.5	59.1	8.3	12.4
	16	056 51.7	S18 35.7	327 05.9	N20 06.9	59.2	8.2	12.3
	17	071 51.6	S18 35.1	341 33.1	N20 19.1	59.2	8.1	12.1
	18	086 51.4	S18 34.4	356 00.2	N20 31.3	59.2	8.0	12.0
	19	101 51.3	S18 33.8	010 27.2	N20 43.3	59.2	7.9	11.9
	20	116 51.2	S18 33.1	024 54.1	N20 55.2	59.2	7.8	11.8
	21	131 51.0	S18 32.5	039 20.9	N21 07.0	59.2	7.7	11.7
	22	146 50.9	S18 31.9	053 47.5	N21 18.7	59.3	7.5	11.6
	23	161 50.8	S18 31.2	068 14.0	N21 30.3	59.3	7.4	11.4
27	00	176 50.7	S18 30.6	082 40.5	N21 41.7	59.3	7.3	11.3
	01	191 50.5	S18 29.9	097 06.8	N21 53.0	59.3	7.2	11.2
	02	206 50.4	S18 29.3	111 33.0	N22 04.2	59.3	7.1	11.1
	03	221 50.3	S18 28.7	125 59.0	N22 15.3	59.3	7.0	10.9
	04	236 50.2	S18 28.0	140 25.0	N22 26.2	59.4	6.8	10.8
	05	251 50.0	S18 27.4	154 50.8	N22 37.0	59.4	6.7	10.7
	06	266 49.9	S18 26.7	169 16.6	N22 47.7	59.4	6.6	10.5
	07	281 49.8	S18 26.1	183 42.2	N22 58.2	59.4	6.5	10.4
	08	296 49.6	S18 25.4	198 07.7	N23 08.6	59.4	6.4	10.3
	09	311 49.5	S18 24.8	212 33.0	N23 18.9	59.4	6.3	10.1
	10	326 49.4	S18 24.1	226 58.3	N23 29.0	59.4	6.2	10.0
	11	341 49.3	S18 23.5	241 23.5	N23 39.0	59.5	6.0	9.8
	12	356 49.1	S18 22.8	255 48.5	N23 48.8	59.5	5.9	9.7
	13	011 49.0	S18 22.2	270 13.4	N23 58.5	59.5	5.8	9.5
	14	026 48.9	S18 21.5	284 38.2	N24 08.0	59.5	5.7	9.4
	15	041 48.8	S18 20.9	299 02.9	N24 17.4	59.5	5.6	9.2
	16	056 48.7	S18 20.2	313 27.5	N24 26.6	59.5	5.5	9.1
	17	071 48.5	S18 19.6	327 52.0	N24 35.7	59.5	5.4	8.9
	18	086 48.4	S18 18.9	342 16.3	N24 44.6	59.6	5.3	8.8
	19	101 48.3	S18 18.3	356 40.6	N24 53.4	59.6	5.1	8.6
	20	116 48.2	S18 17.6	011 04.7	N25 02.0	59.6	5.0	8.5
	21	131 48.0	S18 17.0	025 28.8	N25 10.5	59.6	4.9	8.3
	22	146 47.9	S18 16.3	039 52.7	N25 18.8	59.6	4.8	8.1
	23	161 47.8	S18 15.7	054 16.5	N25 26.9	59.6	4.7	8.0

Day 25 noon Sun: v -0.1 d 0.6 SD 16.2 | Moon SD 16.0

Day 26 noon Sun: v -0.1 d 0.6 SD 16.2 | Moon SD 16.1

Day 27 noon Sun: v -0.1 d 0.6 SD 16.2 | Moon SD 16.2

SUN: JANUARY 26 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0730	0905	1138	1248	1521	1657
70N	0719	0842	1020	1406	1544	1707
68N	0711	0824	0943	1443	1602	1715
66N	0703	0809	0917	1509	1617	1723
64N	0657	0757	0857	1529	1629	1729
62N	0651	0747	0841	1545	1639	1735
60N	0646	0738	0827	1559	1648	1740
58N	0642	0730	0816	1610	1655	1744
56N	0638	0723	0806	1620	1702	1748
54N	0634	0717	0757	1629	1709	1752
52N	0630	0711	0749	1637	1714	1756
50N	0627	0706	0742	1644	1720	1759
45N	0619	0654	0726	1659	1731	1807
40N	0612	0645	0714	1712	1741	1814
35N	0605	0636	0703	1723	1749	1820
30N	0559	0628	0653	1732	1757	1826
25N	0553	0621	0645	1740	1805	1832
20N	0547	0614	0637	1748	1811	1838
15N	0541	0607	0630	1756	1818	1844
10N	0535	0600	0623	1803	1825	1850
05N	0528	0554	0616	1809	1831	1857
00N	0522	0547	0609	1816	1838	1903
05S	0515	0540	0602	1823	1845	1910
10S	0507	0533	0555	1830	1852	1918
15S	0458	0525	0548	1837	1900	1927
20S	0449	0517	0540	1844	1908	1936
25S	0438	0507	0532	1853	1917	1947
30S	0426	0457	0523	1901	1928	1959
35S	0411	0445	0513	1911	1939	2013
40S	0353	0431	0502	1923	1953	2031
45S	0330	0414	0448	1936	2010	2053
50S	0300	0352	0431	1953	2032	2124
55S	0212	0322	0410	2014	2101	2210
60S	--	0237	0340	2043	2146	--

MOON: RISE / SET | UTC HHMM

Lat	Day 25		Day 26		Day 27	
72N	0810	0119	0617	0458	--	--
70N	0832	0059	0736	0341	--	--
68N	0850	0044	0815	0303	--	--
66N	0904	0032	0842	0237	0758	0515
64N	0915	0022	0903	0218	0845	0430
62N	0925	0013	0921	0201	0916	0400
60N	0934	0006	0935	0148	0939	0337
58N	0942	--	0948	0137	0958	0319
56N	0949	--	0958	0127	1013	0304
54N	0955	--	1008	0118	1027	0251
52N	1000	--	1016	0110	1039	0240
50N	1005	--	1024	0104	1050	0230
45N	1016	--	1040	0049	1112	0209
40N	1025	--	1054	0037	1130	0152
35N	1033	--	1106	0026	1145	0138
30N	1040	--	1116	0017	1158	0126
25N	1046	--	1125	0009	1210	0115
20N	1052	--	1134	0002	1221	0105
15N	1057	2355	1142	--	1231	0055
10N	1102	2349	1149	--	1241	0047
05N	1107	2342	1156	--	1251	0038
00N	1112	2336	1204	--	1300	0030
05S	1117	2330	1211	--	1309	0021
10S	1122	2324	1218	--	1319	0013
15S	1128	2317	1226	--	1328	0004
20S	1133	2311	1234	2355	1339	--
25S	1139	2303	1243	2345	1350	--
30S	1146	2256	1253	2335	1402	--
35S	1153	2247	1303	2323	1416	--
40S	1202	2237	1316	2309	1432	2349
45S	1211	2226	1331	2253	1452	2329
50S	1223	2212	1349	2233	1516	2303
55S	1239	2155	1412	2208	1549	2229
60S	1259	2132	1445	2133	1639	2138

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JANUARY 28 - JANUARY 30

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
28	00	127 16.5	171 15.9	S18 06.5	181 06.6	S20 20.9	017 55.3	N22 32.8	128 00.5	S02 41.8
	01	142 19.0	186 15.2	S18 05.7	196 07.0	S20 20.4	032 58.1	N22 32.9	143 02.7	S02 41.7
	02	157 21.4	201 14.5	S18 04.8	211 07.4	S20 20.0	048 00.9	N22 32.9	158 05.0	S02 41.6
	03	172 23.9	216 13.8	S18 03.9	226 07.9	S20 19.5	063 03.7	N22 32.9	173 07.2	S02 41.5
	04	187 26.4	231 13.1	S18 03.1	241 08.3	S20 19.1	078 06.5	N22 33.0	188 09.5	S02 41.4
	05	202 28.8	246 12.4	S18 02.2	256 08.7	S20 18.6	093 09.2	N22 33.0	203 11.7	S02 41.3
	06	217 31.3	261 11.7	S18 01.4	271 09.2	S20 18.2	108 12.0	N22 33.1	218 14.0	S02 41.2
	07	232 33.8	276 10.9	S18 00.5	286 09.6	S20 17.7	123 14.8	N22 33.1	233 16.2	S02 41.1
	08	247 36.2	291 10.2	S17 59.6	301 10.1	S20 17.2	138 17.6	N22 33.2	248 18.5	S02 41.0
	09	262 38.7	306 09.5	S17 58.8	316 10.5	S20 16.8	153 20.4	N22 33.2	263 20.7	S02 40.9
	10	277 41.1	321 08.8	S17 57.9	331 10.9	S20 16.3	168 23.2	N22 33.2	278 23.0	S02 40.8
	11	292 43.6	336 08.1	S17 57.1	346 11.4	S20 15.9	183 25.9	N22 33.3	293 25.2	S02 40.7
	12	307 46.1	351 07.4	S17 56.2	001 11.8	S20 15.4	198 28.7	N22 33.3	308 27.5	S02 40.6
	13	322 48.5	006 06.7	S17 55.3	016 12.3	S20 15.0	213 31.5	N22 33.4	323 29.7	S02 40.5
	14	337 51.0	021 06.0	S17 54.5	031 12.7	S20 14.5	228 34.3	N22 33.4	338 32.0	S02 40.4
	15	352 53.5	036 05.3	S17 53.6	046 13.1	S20 14.1	243 37.1	N22 33.5	353 34.2	S02 40.3
	16	007 55.9	051 04.6	S17 52.7	061 13.6	S20 13.6	258 39.8	N22 33.5	008 36.5	S02 40.2
	17	022 58.4	066 03.9	S17 51.9	076 14.0	S20 13.2	273 42.6	N22 33.6	023 38.7	S02 40.1
	18	038 00.9	081 03.2	S17 51.0	091 14.4	S20 12.7	288 45.4	N22 33.6	038 40.9	S02 40.0
	19	053 03.3	096 02.5	S17 50.1	106 14.9	S20 12.2	303 48.2	N22 33.6	053 43.2	S02 39.9
	20	068 05.8	111 01.8	S17 49.3	121 15.3	S20 11.8	318 51.0	N22 33.7	068 45.4	S02 39.8
	21	083 08.2	126 01.1	S17 48.4	136 15.8	S20 11.3	333 53.7	N22 33.7	083 47.7	S02 39.7
	22	098 10.7	141 00.4	S17 47.5	151 16.2	S20 10.9	348 56.5	N22 33.8	098 49.9	S02 39.6
	23	113 13.2	155 59.7	S17 46.6	166 16.7	S20 10.4	003 59.3	N22 33.8	113 52.2	S02 39.5
29	00	128 15.6	170 59.0	S17 45.8	181 17.1	S20 10.0	019 02.1	N22 33.9	128 54.4	S02 39.4
	01	143 18.1	185 58.3	S17 44.9	196 17.5	S20 09.5	034 04.8	N22 33.9	143 56.7	S02 39.3
	02	158 20.6	200 57.6	S17 44.0	211 18.0	S20 09.0	049 07.6	N22 33.9	158 58.9	S02 39.2
	03	173 23.0	215 56.9	S17 43.1	226 18.4	S20 08.6	064 10.4	N22 34.0	174 01.2	S02 39.1
	04	188 25.5	230 56.2	S17 42.3	241 18.9	S20 08.1	079 13.2	N22 34.0	189 03.4	S02 39.0
	05	203 28.0	245 55.5	S17 41.4	256 19.3	S20 07.7	094 16.0	N22 34.1	204 05.7	S02 38.9
	06	218 30.4	260 54.8	S17 40.5	271 19.7	S20 07.2	109 18.7	N22 34.1	219 07.9	S02 38.8
	07	233 32.9	275 54.1	S17 39.6	286 20.2	S20 06.7	124 21.5	N22 34.2	234 10.2	S02 38.7
	08	248 35.4	290 53.4	S17 38.7	301 20.6	S20 06.3	139 24.3	N22 34.2	249 12.4	S02 38.6
	09	263 37.8	305 52.7	S17 37.9	316 21.1	S20 05.8	154 27.1	N22 34.2	264 14.7	S02 38.5
	10	278 40.3	320 52.0	S17 37.0	331 21.5	S20 05.4	169 29.8	N22 34.3	279 16.9	S02 38.4
	11	293 42.7	335 51.3	S17 36.1	346 22.0	S20 04.9	184 32.6	N22 34.3	294 19.2	S02 38.3
	12	308 45.2	350 50.6	S17 35.2	001 22.4	S20 04.4	199 35.4	N22 34.4	309 21.4	S02 38.2
	13	323 47.7	005 49.9	S17 34.3	016 22.8	S20 04.0	214 38.2	N22 34.4	324 23.6	S02 38.1
	14	338 50.1	020 49.2	S17 33.4	031 23.3	S20 03.5	229 40.9	N22 34.5	339 25.9	S02 38.0
	15	353 52.6	035 48.5	S17 32.5	046 23.7	S20 03.0	244 43.7	N22 34.5	354 28.1	S02 37.9
	16	008 55.1	050 47.8	S17 31.7	061 24.2	S20 02.6	259 46.5	N22 34.5	009 30.4	S02 37.8
	17	023 57.5	065 47.1	S17 30.8	076 24.6	S20 02.1	274 49.3	N22 34.6	024 32.6	S02 37.7
	18	039 00.0	080 46.4	S17 29.9	091 25.1	S20 01.6	289 52.0	N22 34.6	039 34.9	S02 37.6
	19	054 02.5	095 45.8	S17 29.0	106 25.5	S20 01.2	304 54.8	N22 34.7	054 37.1	S02 37.5
	20	069 04.9	110 45.1	S17 28.1	121 25.9	S20 00.7	319 57.6	N22 34.7	069 39.4	S02 37.4
	21	084 07.4	125 44.4	S17 27.2	136 26.4	S20 00.2	335 00.4	N22 34.7	084 41.6	S02 37.3
	22	099 09.9	140 43.7	S17 26.3	151 26.8	S19 59.8	350 03.1	N22 34.8	099 43.9	S02 37.2
	23	114 12.3	155 43.0	S17 25.4	166 27.3	S19 59.3	005 05.9	N22 34.8	114 46.1	S02 37.1
30	00	129 14.8	170 42.3	S17 24.5	181 27.7	S19 58.8	020 08.7	N22 34.9	129 48.4	S02 37.0
	01	144 17.2	185 41.6	S17 23.6	196 28.2	S19 58.4	035 11.5	N22 34.9	144 50.6	S02 36.9
	02	159 19.7	200 40.9	S17 22.7	211 28.6	S19 57.9	050 14.2	N22 35.0	159 52.8	S02 36.8
	03	174 22.2	215 40.3	S17 21.8	226 29.1	S19 57.4	065 17.0	N22 35.0	174 55.1	S02 36.7
	04	189 24.6	230 39.6	S17 20.9	241 29.5	S19 57.0	080 19.8	N22 35.0	189 57.3	S02 36.6
	05	204 27.1	245 38.9	S17 20.0	256 29.9	S19 56.5	095 22.6	N22 35.1	204 59.6	S02 36.5
	06	219 29.6	260 38.2	S17 19.1	271 30.4	S19 56.0	110 25.3	N22 35.1	220 01.8	S02 36.4
	07	234 32.0	275 37.5	S17 18.2	286 30.8	S19 55.6	125 28.1	N22 35.2	235 04.1	S02 36.3
	08	249 34.5	290 36.8	S17 17.3	301 31.3	S19 55.1	140 30.9	N22 35.2	250 06.3	S02 36.2
	09	264 37.0	305 36.2	S17 16.4	316 31.7	S19 54.6	155 33.6	N22 35.2	265 08.6	S02 36.0
	10	279 39.4	320 35.5	S17 15.5	331 32.2	S19 54.2	170 36.4	N22 35.3	280 10.8	S02 35.9
	11	294 41.9	335 34.8	S17 14.6	346 32.6	S19 53.7	185 39.2	N22 35.3	295 13.0	S02 35.8
	12	309 44.4	350 34.1	S17 13.7	001 33.1	S19 53.2	200 42.0	N22 35.4	310 15.3	S02 35.7
	13	324 46.8	005 33.4	S17 12.8	016 33.5	S19 52.7	215 44.7	N22 35.4	325 17.5	S02 35.6
	14	339 49.3	020 32.7	S17 11.9	031 34.0	S19 52.3	230 47.5	N22 35.5	340 19.8	S02 35.5
	15	354 51.7	035 32.1	S17 11.0	046 34.4	S19 51.8	245 50.3	N22 35.5	355 22.0	S02 35.4
	16	009 54.2	050 31.4	S17 10.1	061 34.9	S19 51.3	260 53.0	N22 35.5	010 24.3	S02 35.3
	17	024 56.7	065 30.7	S17 09.2	076 35.3	S19 50.8	275 55.8	N22 35.6	025 26.5	S02 35.2
	18	039 59.1	080 30.0	S17 08.3	091 35.8	S19 50.4	290 58.6	N22 35.6	040 28.7	S02 35.1
	19	055 01.6	095 29.4	S17 07.3	106 36.2	S19 49.9	306 01.3	N22 35.7	055 31.0	S02 35.0
	20	070 04.1	110 28.7	S17 06.4	121 36.6	S19 49.4	321 04.1	N22 35.7	070 33.2	S02 34.9
	21	085 06.5	125 28.0	S17 05.5	136 37.1	S19 48.9	336 06.9	N22 35.7	085 35.5	S02 34.8
	22	100 09.0	140 27.3	S17 04.6	151 37.5	S19 48.5	351 09.7	N22 35.8	100 37.7	S02 34.7
	23	115 11.5	155 26.7	S17 03.7	166 38.0	S19 48.0	006 12.4	N22 35.8	115 40.0	S02 34.6

Venus	Mars	Jupiter	Saturn
28: v -0.7 d 0.9	28: v 0.4 d 0.5	28: v 2.8 d 0.0	28: v 2.2 d 0.1
29: v -0.7 d 0.9	29: v 0.4 d 0.5	29: v 2.8 d 0.0	29: v 2.2 d 0.1
30: v -0.7 d 0.9	30: v 0.4 d 0.5	30: v 2.8 d 0.0	30: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.0	S40 12.2
Achernar	335 19.6	S57 06.5
Acrux	172 58.8	S63 14.4
Adhara	255 04.8	S29 00.6
Al Na'ir	027 32.2	S46 50.2
Aldebaran	290 38.4	N16 33.7
Alioth	166 11.9	N55 48.7
Alkaid	152 51.2	N49 10.6
Alnilam	275 36.6	S01 11.2
Alphard	217 46.6	S08 46.4
Alphecca	126 03.1	N26 37.3
Alpheratz	357 34.1	N29 14.2
Altair	061 59.4	N08 56.1
Ankaa	353 06.5	S42 10.1
Antares	112 14.9	S26 29.4
Arcturus	145 47.1	N19 02.6
Atria	107 08.7	S69 04.2
Avior	234 13.7	S59 35.6
Bellatrix	278 21.7	N06 22.4
Betelgeuse	270 50.9	N07 24.7
Canopus	263 51.5	S52 42.7
Capella	280 20.2	N46 01.6
Deneb	049 25.7	N45 22.4
Denebola	182 23.8	N14 25.4
Diphda	348 46.5	S17 50.7
Dubhe	193 39.4	N61 36.3
Elnath	278 00.5	N28 37.8
Eltanin	090 42.2	N51 28.9
Enif	033 38.2	N09 59.6
Fomalhaut	015 13.8	S29 29.2
Gacrux	171 50.4	S57 15.4
Gienah	175 42.5	S17 41.2
Hadar	148 34.7	S60 29.7
Hamal	327 50.2	N23 35.2
Kaus Australi	083 31.7	S34 22.3
Kochab	137 19.9	N74 02.5
Markab	013 29.3	N15 20.7
Menkar	314 05.2	N04 11.5
Menkent	147 56.5	S36 29.8
Miaplacidus	221 37.2	S69 49.4
Mirfak	308 26.8	N49 57.4
Nunki	075 47.0	S26 15.9
Peacock	053 04.9	S56 39.1
Polaris	313 29.1	N89 22.8
Pollux	243 15.8	N27 57.7
Procyon	244 49.6	N05 09.4
Rasalhague	095 58.0	N12 32.3
Regulus	207 33.2	N11 50.2
Rigel	281 02.8	S08 10.4
Rigil Kentaur	139 39.1	S60 56.4
Sabik	102 02.0	S15 45.5
Schedar	349 30.3	N56 41.1
Shaula	096 09.5	S37 07.3
Sirius	258 25.1	S16 45.2
Spica	158 21.3	S11 17.9
Suhail	222 45.2	S43 32.3
Vega	080 33.0	N38 48.3
Zubenelgenubi	136 55.1	S16 09.0

PLANETS | noon UTC

Name	SHA	Transit
Venus	042 05.4	1237
Mars	052 37.2	1155
Jupiter	250 50.2	2240
Saturn	000 36.2	1522

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
28	00	176 47.7	S18 15.0	068 40.3	N25 34.9	59.6	4.6	7.8
	01	191 47.6	S18 14.4	083 03.9	N25 42.7	59.6	4.5	7.6
	02	206 47.4	S18 13.7	097 27.4	N25 50.3	59.7	4.4	7.5
	03	221 47.3	S18 13.0	111 50.8	N25 57.7	59.7	4.3	7.3
	04	236 47.2	S18 12.4	126 14.1	N26 05.0	59.7	4.2	7.1
	05	251 47.1	S18 11.7	140 37.4	N26 12.1	59.7	4.1	6.9
	06	266 47.0	S18 11.1	155 00.5	N26 19.1	59.7	4.0	6.8
	07	281 46.9	S18 10.4	169 23.5	N26 25.8	59.7	3.9	6.6
	08	296 46.7	S18 09.7	183 46.4	N26 32.4	59.7	3.8	6.4
	09	311 46.6	S18 09.1	198 09.3	N26 38.8	59.7	3.8	6.2
	10	326 46.5	S18 08.4	212 32.0	N26 45.0	59.7	3.7	6.0
	11	341 46.4	S18 07.8	226 54.7	N26 51.1	59.8	3.6	5.9
	12	356 46.3	S18 07.1	241 17.3	N26 56.9	59.8	3.5	5.7
	13	011 46.2	S18 06.4	255 39.8	N27 02.6	59.8	3.4	5.5
	14	026 46.0	S18 05.8	270 02.2	N27 08.1	59.8	3.3	5.3
	15	041 45.9	S18 05.1	284 24.6	N27 13.4	59.8	3.3	5.1
	16	056 45.8	S18 04.4	298 46.8	N27 18.5	59.8	3.2	4.9
	17	071 45.7	S18 03.8	313 09.0	N27 23.4	59.8	3.1	4.7
	18	086 45.6	S18 03.1	327 31.1	N27 28.1	59.8	3.0	4.5
	19	101 45.5	S18 02.4	341 53.2	N27 32.7	59.8	3.0	4.3
	20	116 45.4	S18 01.8	356 15.1	N27 37.0	59.8	2.9	4.1
	21	131 45.3	S18 01.1	010 37.1	N27 41.1	59.8	2.8	3.9
	22	146 45.1	S18 00.4	024 58.9	N27 45.1	59.8	2.8	3.7
	23	161 45.0	S17 59.8	039 20.7	N27 48.8	59.9	2.7	3.6
29	00	176 44.9	S17 59.1	053 42.4	N27 52.4	59.9	2.7	3.4
	01	191 44.8	S17 58.4	068 04.1	N27 55.7	59.9	2.6	3.2
	02	206 44.7	S17 57.8	082 25.7	N27 58.9	59.9	2.6	3.0
	03	221 44.6	S17 57.1	096 47.3	N28 01.8	59.9	2.5	2.8
	04	236 44.5	S17 56.4	111 08.8	N28 04.6	59.9	2.5	2.5
	05	251 44.4	S17 55.7	125 30.3	N28 07.1	59.9	2.4	2.3
	06	266 44.3	S17 55.1	139 51.8	N28 09.5	59.9	2.4	2.1
	07	281 44.2	S17 54.4	154 13.2	N28 11.6	59.9	2.4	1.9
	08	296 44.0	S17 53.7	168 34.5	N28 13.6	59.9	2.3	1.7
	09	311 43.9	S17 53.1	182 55.9	N28 15.3	59.9	2.3	1.5
	10	326 43.8	S17 52.4	197 17.2	N28 16.8	59.9	2.3	1.3
	11	341 43.7	S17 51.7	211 38.4	N28 18.2	59.9	2.3	1.1
	12	356 43.6	S17 51.0	225 59.7	N28 19.3	59.9	2.2	0.9
	13	011 43.5	S17 50.4	240 20.9	N28 20.2	59.9	2.2	0.7
	14	026 43.4	S17 49.7	254 42.1	N28 20.9	59.9	2.2	0.5
	15	041 43.3	S17 49.0	269 03.3	N28 21.4	59.9	2.2	0.3
	16	056 43.2	S17 48.3	283 24.5	N28 21.7	59.9	2.2	0.1
	17	071 43.1	S17 47.6	297 45.7	N28 21.8	59.9	2.2	-0.1
	18	086 43.0	S17 47.0	312 06.9	N28 21.6	59.9	2.2	-0.3
	19	101 42.9	S17 46.3	326 28.1	N28 21.3	59.9	2.2	-0.5
	20	116 42.8	S17 45.6	340 49.3	N28 20.8	59.9	2.2	-0.7
	21	131 42.7	S17 44.9	355 10.4	N28 20.0	59.9	2.2	-1.0
	22	146 42.6	S17 44.2	009 31.6	N28 19.1	59.9	2.2	-1.2
	23	161 42.5	S17 43.6	023 52.8	N28 17.9	59.9	2.2	-1.4
30	00	176 42.4	S17 42.9	038 14.0	N28 16.5	59.9	2.2	-1.6
	01	191 42.3	S17 42.2	052 35.3	N28 14.9	59.9	2.3	-1.8
	02	206 42.2	S17 41.5	066 56.5	N28 13.2	59.9	2.3	-2.0
	03	221 42.1	S17 40.8	081 17.8	N28 11.2	59.9	2.3	-2.2
	04	236 42.0	S17 40.1	095 39.1	N28 09.0	59.9	2.3	-2.4
	05	251 41.9	S17 39.5	110 00.4	N28 06.6	59.9	2.4	-2.6
	06	266 41.8	S17 38.8	124 21.8	N28 04.0	59.9	2.4	-2.8
	07	281 41.7	S17 38.1	138 43.2	N28 01.2	59.9	2.4	-3.0
	08	296 41.6	S17 37.4	153 04.6	N27 58.2	59.9	2.5	-3.2
	09	311 41.5	S17 36.7	167 26.1	N27 55.0	59.9	2.5	-3.4
	10	326 41.4	S17 36.0	181 47.6	N27 51.5	59.9	2.6	-3.6
	11	341 41.3	S17 35.3	196 09.2	N27 47.9	59.9	2.6	-3.8
	12	356 41.2	S17 34.6	210 30.8	N27 44.1	59.9	2.7	-4.0
	13	011 41.1	S17 34.0	224 52.5	N27 40.1	59.9	2.7	-4.2
	14	026 41.0	S17 33.3	239 14.2	N27 35.9	59.9	2.8	-4.4
	15	041 40.9	S17 32.6	253 36.0	N27 31.5	59.9	2.8	-4.6
	16	056 40.8	S17 31.9	267 57.8	N27 26.9	59.9	2.9	-4.8
	17	071 40.7	S17 31.2	282 19.8	N27 22.1	59.9	3.0	-5.0
	18	086 40.6	S17 30.5	296 41.7	N27 17.1	59.9	3.0	-5.2
	19	101 40.5	S17 29.8	311 03.8	N27 11.9	59.9	3.1	-5.4
	20	116 40.4	S17 29.1	325 25.9	N27 06.5	59.8	3.2	-5.6
	21	131 40.3	S17 28.4	339 48.1	N27 00.9	59.8	3.3	-5.8
	22	146 40.2	S17 27.7	354 10.3	N26 55.1	59.8	3.3	-6.0
	23	161 40.1	S17 27.0	008 32.7	N26 49.2	59.8	3.4	-6.1

Day 28 noon Sun: v -0.1 d 0.7 SD 16.2 | Moon SD 16.3

Day 29 noon Sun: v -0.1 d 0.7 SD 16.2 | Moon SD 16.3

Day 30 noon Sun: v -0.1 d 0.7 SD 16.2 | Moon SD 16.3

SUN: JANUARY 29 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0720	0852	1055	1333	1536	1708
70N	0711	0831	1002	1425	1556	1717
68N	0703	0815	0930	1457	1613	1724
66N	0657	0801	0907	1520	1626	1731
64N	0651	0750	0848	1539	1637	1736
62N	0646	0741	0833	1554	1646	1741
60N	0641	0733	0821	1606	1655	1746
58N	0637	0725	0810	1617	1702	1750
56N	0633	0719	0800	1626	1708	1754
54N	0630	0713	0752	1635	1714	1757
52N	0627	0707	0745	1642	1719	1800
50N	0623	0703	0738	1649	1724	1803
45N	0616	0652	0723	1703	1735	1810
40N	0610	0642	0711	1715	1744	1817
35N	0604	0634	0701	1726	1752	1823
30N	0558	0627	0652	1735	1800	1829
25N	0552	0620	0644	1743	1807	1834
20N	0547	0613	0636	1750	1813	1840
15N	0541	0607	0629	1757	1819	1845
10N	0535	0601	0623	1804	1826	1851
05N	0529	0554	0616	1810	1832	1857
00N	0523	0548	0610	1817	1838	1904
05S	0516	0541	0603	1823	1845	1910
10S	0508	0534	0556	1830	1852	1918
15S	0500	0527	0550	1836	1859	1926
20S	0451	0519	0542	1844	1907	1935
25S	0441	0510	0534	1851	1916	1945
30S	0429	0500	0526	1900	1926	1957
35S	0415	0448	0516	1909	1937	2011
40S	0358	0435	0505	1920	1950	2028
45S	0336	0419	0452	1933	2007	2049
50S	0307	0358	0436	1949	2027	2118
55S	0223	0330	0416	2009	2055	2201
60S	0021	0248	0348	2036	2136	0005

MOON: RISE / SET | UTC HHMM

Lat	Day 28		Day 29		Day 30	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	--	--	--	--
62N	0909	0611	--	--	1033	0917
60N	0949	0531	1021	0713	1138	0812
58N	1017	0503	1058	0636	1212	0737
56N	1039	0442	1125	0609	1237	0712
54N	1057	0424	1146	0548	1257	0651
52N	1113	0409	1203	0530	1314	0634
50N	1126	0356	1218	0515	1329	0620
45N	1154	0330	1249	0445	1358	0550
40N	1215	0309	1313	0422	1421	0526
35N	1234	0251	1332	0402	1440	0507
30N	1249	0236	1349	0346	1456	0451
25N	1303	0223	1404	0331	1511	0436
20N	1316	0210	1417	0318	1524	0422
15N	1328	0159	1430	0305	1536	0410
10N	1339	0149	1442	0253	1547	0358
05N	1350	0138	1453	0242	1558	0347
00N	1401	0128	1505	0231	1609	0336
05S	1411	0118	1516	0220	1620	0324
10S	1422	0108	1528	0208	1631	0313
15S	1434	0057	1540	0157	1643	0301
20S	1446	0046	1552	0144	1655	0249
25S	1459	0034	1606	0131	1708	0235
30S	1513	0021	1621	0116	1722	0220
35S	1529	0006	1638	0100	1738	0203
40S	1548	--	1658	0040	1757	0143
45S	1611	--	1722	0017	1819	0119
50S	1640	2347	1753	--	1848	0048
55S	1721	2305	1837	--	1927	0005
60S	1832	2154	1957	2244	2032	--

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JANUARY 31 - FEBRUARY 2

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
31	00	130 13.9	170 26.0	S17 02.8	181 38.4	S19 47.5	021 15.2	N22 35.9	130 42.2	S02 34.5
	01	145 16.4	185 25.3	S17 01.9	196 38.9	S19 47.0	036 18.0	N22 35.9	145 44.4	S02 34.4
	02	160 18.9	200 24.6	S17 00.9	211 39.3	S19 46.6	051 20.7	N22 36.0	160 46.7	S02 34.3
	03	175 21.3	215 24.0	S17 00.0	226 39.8	S19 46.1	066 23.5	N22 36.0	175 48.9	S02 34.2
	04	190 23.8	230 23.3	S16 59.1	241 40.2	S19 45.6	081 26.3	N22 36.0	190 51.2	S02 34.1
	05	205 26.2	245 22.6	S16 58.2	256 40.7	S19 45.1	096 29.0	N22 36.1	205 53.4	S02 34.0
	06	220 28.7	260 21.9	S16 57.3	271 41.1	S19 44.6	111 31.8	N22 36.1	220 55.7	S02 33.9
	07	235 31.2	275 21.3	S16 56.4	286 41.6	S19 44.2	126 34.6	N22 36.2	235 57.9	S02 33.8
	08	250 33.6	290 20.6	S16 55.4	301 42.0	S19 43.7	141 37.3	N22 36.2	251 00.1	S02 33.7
	09	265 36.1	305 19.9	S16 54.5	316 42.5	S19 43.2	156 40.1	N22 36.2	266 02.4	S02 33.6
	10	280 38.6	320 19.3	S16 53.6	331 42.9	S19 42.7	171 42.9	N22 36.3	281 04.6	S02 33.5
	11	295 41.0	335 18.6	S16 52.7	346 43.4	S19 42.2	186 45.6	N22 36.3	296 06.9	S02 33.4
	12	310 43.5	350 17.9	S16 51.7	001 43.8	S19 41.8	201 48.4	N22 36.4	311 09.1	S02 33.3
	13	325 46.0	005 17.3	S16 50.8	016 44.3	S19 41.3	216 51.2	N22 36.4	326 11.4	S02 33.2
	14	340 48.4	020 16.6	S16 49.9	031 44.7	S19 40.8	231 53.9	N22 36.4	341 13.6	S02 33.1
	15	355 50.9	035 15.9	S16 49.0	046 45.2	S19 40.3	246 56.7	N22 36.5	356 15.8	S02 33.0
	16	010 53.4	050 15.3	S16 48.0	061 45.6	S19 39.8	261 59.5	N22 36.5	011 18.1	S02 32.9
	17	025 55.8	065 14.6	S16 47.1	076 46.1	S19 39.4	277 02.2	N22 36.6	026 20.3	S02 32.8
	18	040 58.3	080 13.9	S16 46.2	091 46.5	S19 38.9	292 05.0	N22 36.6	041 22.6	S02 32.7
	19	056 00.7	095 13.3	S16 45.2	106 47.0	S19 38.4	307 07.7	N22 36.6	056 24.8	S02 32.6
	20	071 03.2	110 12.6	S16 44.3	121 47.4	S19 37.9	322 10.5	N22 36.7	071 27.0	S02 32.5
	21	086 05.7	125 11.9	S16 43.4	136 47.9	S19 37.4	337 13.3	N22 36.7	086 29.3	S02 32.4
	22	101 08.1	140 11.3	S16 42.4	151 48.4	S19 36.9	352 16.0	N22 36.8	101 31.5	S02 32.3
	23	116 10.6	155 10.6	S16 41.5	166 48.8	S19 36.4	007 18.8	N22 36.8	116 33.8	S02 32.2
1	00	131 13.1	170 10.0	S16 40.6	181 49.3	S19 36.0	022 21.6	N22 36.8	131 36.0	S02 32.1
	01	146 15.5	185 09.3	S16 39.6	196 49.7	S19 35.5	037 24.3	N22 36.9	146 38.2	S02 32.0
	02	161 18.0	200 08.6	S16 38.7	211 50.2	S19 35.0	052 27.1	N22 36.9	161 40.5	S02 31.9
	03	176 20.5	215 08.0	S16 37.8	226 50.6	S19 34.5	067 29.9	N22 37.0	176 42.7	S02 31.8
	04	191 22.9	230 07.3	S16 36.8	241 51.1	S19 34.0	082 32.6	N22 37.0	191 45.0	S02 31.7
	05	206 25.4	245 06.7	S16 35.9	256 51.5	S19 33.5	097 35.4	N22 37.0	206 47.2	S02 31.6
	06	221 27.9	260 06.0	S16 34.9	271 52.0	S19 33.0	112 38.1	N22 37.1	221 49.4	S02 31.4
	07	236 30.3	275 05.4	S16 34.0	286 52.4	S19 32.6	127 40.9	N22 37.1	236 51.7	S02 31.3
	08	251 32.8	290 04.7	S16 33.1	301 52.9	S19 32.1	142 43.7	N22 37.2	251 53.9	S02 31.2
	09	266 35.2	305 04.0	S16 32.1	316 53.3	S19 31.6	157 46.4	N22 37.2	266 56.2	S02 31.1
	10	281 37.7	320 03.4	S16 31.2	331 53.8	S19 31.1	172 49.2	N22 37.2	281 58.4	S02 31.0
	11	296 40.2	335 02.7	S16 30.2	346 54.2	S19 30.6	187 51.9	N22 37.3	297 00.6	S02 30.9
	12	311 42.6	350 02.1	S16 29.3	001 54.7	S19 30.1	202 54.7	N22 37.3	312 02.9	S02 30.8
	13	326 45.1	005 01.4	S16 28.3	016 55.2	S19 29.6	217 57.5	N22 37.4	327 05.1	S02 30.7
	14	341 47.6	020 00.8	S16 27.4	031 55.6	S19 29.1	233 00.2	N22 37.4	342 07.4	S02 30.6
	15	356 50.0	035 00.1	S16 26.4	046 56.1	S19 28.6	248 03.0	N22 37.4	357 09.6	S02 30.5
	16	011 52.5	049 59.5	S16 25.5	061 56.5	S19 28.1	263 05.7	N22 37.5	012 11.8	S02 30.4
	17	026 55.0	064 58.8	S16 24.6	076 57.0	S19 27.7	278 08.5	N22 37.5	027 14.1	S02 30.3
	18	041 57.4	079 58.2	S16 23.6	091 57.4	S19 27.2	293 11.3	N22 37.6	042 16.3	S02 30.2
	19	056 59.9	094 57.5	S16 22.7	106 57.9	S19 26.7	308 14.0	N22 37.6	057 18.6	S02 30.1
	20	072 02.3	109 56.9	S16 21.7	121 58.3	S19 26.2	323 16.8	N22 37.6	072 20.8	S02 30.0
	21	087 04.8	124 56.2	S16 20.8	136 58.8	S19 25.7	338 19.5	N22 37.7	087 23.0	S02 29.9
	22	102 07.3	139 55.6	S16 19.8	151 59.2	S19 25.2	353 22.3	N22 37.7	102 25.3	S02 29.8
	23	117 09.7	154 54.9	S16 18.8	166 59.7	S19 24.7	008 25.0	N22 37.8	117 27.5	S02 29.7
2	00	132 12.2	169 54.3	S16 17.9	182 00.2	S19 24.2	023 27.8	N22 37.8	132 29.7	S02 29.6
	01	147 14.7	184 53.6	S16 16.9	197 00.6	S19 23.7	038 30.6	N22 37.8	147 32.0	S02 29.5
	02	162 17.1	199 53.0	S16 16.0	212 01.1	S19 23.2	053 33.3	N22 37.9	162 34.2	S02 29.4
	03	177 19.6	214 52.3	S16 15.0	227 01.5	S19 22.7	068 36.1	N22 37.9	177 36.5	S02 29.3
	04	192 22.1	229 51.7	S16 14.1	242 02.0	S19 22.2	083 38.8	N22 38.0	192 38.7	S02 29.2
	05	207 24.5	244 51.0	S16 13.1	257 02.4	S19 21.7	098 41.6	N22 38.0	207 40.9	S02 29.1
	06	222 27.0	259 50.4	S16 12.1	272 02.9	S19 21.2	113 44.3	N22 38.0	222 43.2	S02 29.0
	07	237 29.5	274 49.7	S16 11.2	287 03.4	S19 20.7	128 47.1	N22 38.1	237 45.4	S02 28.9
	08	252 31.9	289 49.1	S16 10.2	302 03.8	S19 20.2	143 49.9	N22 38.1	252 47.6	S02 28.8
	09	267 34.4	304 48.5	S16 09.3	317 04.3	S19 19.7	158 52.6	N22 38.2	267 49.9	S02 28.7
	10	282 36.8	319 47.8	S16 08.3	332 04.7	S19 19.2	173 55.4	N22 38.2	282 52.1	S02 28.5
	11	297 39.3	334 47.2	S16 07.3	347 05.2	S19 18.7	188 58.1	N22 38.2	297 54.4	S02 28.4
	12	312 41.8	349 46.5	S16 06.4	002 05.6	S19 18.2	204 00.9	N22 38.3	312 56.6	S02 28.3
	13	327 44.2	004 45.9	S16 05.4	017 06.1	S19 17.7	219 03.6	N22 38.3	327 58.8	S02 28.2
	14	342 46.7	019 45.2	S16 04.5	032 06.6	S19 17.2	234 06.4	N22 38.3	343 01.1	S02 28.1
	15	357 49.2	034 44.6	S16 03.5	047 07.0	S19 16.7	249 09.1	N22 38.4	358 03.3	S02 28.0
	16	012 51.6	049 44.0	S16 02.5	062 07.5	S19 16.2	264 11.9	N22 38.4	013 05.5	S02 27.9
	17	027 54.1	064 43.3	S16 01.6	077 07.9	S19 15.7	279 14.6	N22 38.5	028 07.8	S02 27.8
	18	042 56.6	079 42.7	S16 00.6	092 08.4	S19 15.2	294 17.4	N22 38.5	043 10.0	S02 27.7
	19	057 59.0	094 42.1	S15 59.6	107 08.9	S19 14.7	309 20.2	N22 38.5	058 12.3	S02 27.6
	20	073 01.5	109 41.4	S15 58.6	122 09.3	S19 14.2	324 22.9	N22 38.6	073 14.5	S02 27.5
	21	088 04.0	124 40.8	S15 57.7	137 09.8	S19 13.7	339 25.7	N22 38.6	088 16.7	S02 27.4
	22	103 06.4	139 40.1	S15 56.7	152 10.2	S19 13.2	354 28.4	N22 38.7	103 19.0	S02 27.3
	23	118 08.9	154 39.5	S15 55.7	167 10.7	S19 12.7	009 31.2	N22 38.7	118 21.2	S02 27.2

Venus	Mars	Jupiter	Saturn
31: v -0.7 d 0.9	31: v 0.5 d 0.5	31: v 2.8 d 0.0	31: v 2.2 d 0.1
1: v -0.7 d 0.9	1: v 0.5 d 0.5	1: v 2.8 d 0.0	1: v 2.2 d 0.1
2: v -0.6 d 1.0	2: v 0.5 d 0.5	2: v 2.8 d 0.0	2: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.0	S40 12.2
Achernar	335 19.7	S57 06.5
Acrux	172 58.7	S63 14.5
Adhara	255 04.8	S29 00.6
Al Na'ir	027 32.2	S46 50.2
Aldebaran	290 38.4	N16 33.7
Alioth	166 11.9	N55 48.7
Alkaid	152 51.2	N49 10.6
Alnilam	275 36.6	S01 11.2
Alphard	217 46.5	S08 46.4
Alphecca	126 03.1	N26 37.3
Alpheratz	357 34.1	N29 14.2
Altair	061 59.4	N08 56.1
Ankaa	353 06.5	S42 10.1
Antares	112 14.9	S26 29.4
Arcturus	145 47.0	N19 02.5
Atria	107 08.6	S69 04.2
Avior	234 13.7	S59 35.6
Bellatrix	278 21.7	N06 22.4
Betelgeuse	270 50.8	N07 24.7
Canopus	263 51.5	S52 42.7
Capella	280 20.2	N46 01.6
Deneb	049 25.7	N45 22.3
Denebola	182 23.8	N14 25.4
Diphda	348 46.5	S17 50.7
Dubhe	193 39.3	N61 36.4
Elnath	278 00.5	N28 37.8
Eltanin	090 42.2	N51 28.8
Enif	033 38.2	N09 59.6
Fomalhaut	015 13.8	S29 29.2
Gacrux	171 50.3	S57 15.4
Gienah	175 42.5	S17 41.3
Hadar	148 34.6	S60 29.7
Hamal	327 50.2	N23 35.2
Kaus Australi	083 31.6	S34 22.3
Kochab	137 19.9	N74 02.5
Markab	013 29.3	N15 20.7
Menkar	314 05.2	N04 11.5
Menkent	147 56.5	S36 29.8
Miaplacidus	221 37.2	S69 49.4
Mirfak	308 26.8	N49 57.4
Nunki	075 47.0	S26 15.9
Peacock	053 04.9	S56 39.1
Polaris	313 30.4	N89 22.8
Pollux	243 15.8	N27 57.7
Procyon	244 49.6	N05 09.4
Rasalhague	095 57.9	N12 32.3
Regulus	207 33.2	N11 50.2
Rigel	281 02.8	S08 10.4
Rigil Kentaur	139 39.1	S60 56.4
Sabik	102 02.0	S15 45.5
Schedar	349 30.3	N56 41.1
Shaula	096 09.4	S37 07.3
Sirius	258 25.1	S16 45.2
Spica	158 21.2	S11 17.9
Suhail	222 45.2	S43 32.3
Vega	080 33.0	N38 48.3
Zubenelgenubi	136 55.0	S16 09.0

PLANETS | noon UTC

Name	SHA	Transit
Venus	038 19.4	1240
Mars	050 12.1	1152
Jupiter	251 12.1	2226
Saturn	000 20.2	1511

2026 | JANUARY 31 - FEBRUARY 2

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
31	00	176 40.0	S17 26.3	022 55.1	N26 43.0	59.8	3.5	-6.3
	01	191 39.9	S17 25.6	037 17.6	N26 36.7	59.8	3.6	-6.5
	02	206 39.8	S17 24.9	051 40.2	N26 30.2	59.8	3.7	-6.7
	03	221 39.7	S17 24.3	066 02.9	N26 23.5	59.8	3.8	-6.9
	04	236 39.6	S17 23.6	080 25.6	N26 16.6	59.8	3.9	-7.1
	05	251 39.5	S17 22.9	094 48.5	N26 09.6	59.8	3.9	-7.2
	06	266 39.4	S17 22.2	109 11.4	N26 02.4	59.8	4.0	-7.4
	07	281 39.4	S17 21.5	123 34.5	N25 54.9	59.7	4.1	-7.6
	08	296 39.3	S17 20.8	137 57.6	N25 47.4	59.7	4.2	-7.8
	09	311 39.2	S17 20.1	152 20.9	N25 39.6	59.7	4.3	-7.9
	10	326 39.1	S17 19.4	166 44.2	N25 31.7	59.7	4.4	-8.1
	11	341 39.0	S17 18.7	181 07.6	N25 23.6	59.7	4.5	-8.3
	12	356 38.9	S17 18.0	195 31.2	N25 15.3	59.7	4.6	-8.4
	13	011 38.8	S17 17.3	209 54.8	N25 06.9	59.7	4.8	-8.6
	14	026 38.7	S17 16.6	224 18.6	N24 58.3	59.7	4.9	-8.8
	15	041 38.6	S17 15.8	238 42.4	N24 49.5	59.6	5.0	-8.9
	16	056 38.5	S17 15.1	253 06.4	N24 40.6	59.6	5.1	-9.1
	17	071 38.5	S17 14.4	267 30.5	N24 31.5	59.6	5.2	-9.2
	18	086 38.4	S17 13.7	281 54.7	N24 22.3	59.6	5.3	-9.4
	19	101 38.3	S17 13.0	296 19.0	N24 12.9	59.6	5.4	-9.5
	20	116 38.2	S17 12.3	310 43.4	N24 03.3	59.6	5.5	-9.7
	21	131 38.1	S17 11.6	325 07.9	N23 53.6	59.6	5.6	-9.8
	22	146 38.0	S17 10.9	339 32.6	N23 43.8	59.5	5.8	-10.0
	23	161 37.9	S17 10.2	353 57.3	N23 33.8	59.5	5.9	-10.1
1	00	176 37.9	S17 09.5	008 22.2	N23 23.6	59.5	6.0	-10.3
	01	191 37.8	S17 08.8	022 47.2	N23 13.3	59.5	6.1	-10.4
	02	206 37.7	S17 08.1	037 12.3	N23 02.9	59.5	6.2	-10.6
	03	221 37.6	S17 07.4	051 37.5	N22 52.4	59.4	6.3	-10.7
	04	236 37.5	S17 06.7	066 02.9	N22 41.6	59.4	6.5	-10.8
	05	251 37.4	S17 05.9	080 28.3	N22 30.8	59.4	6.6	-11.0
	06	266 37.4	S17 05.2	094 53.9	N22 19.8	59.4	6.7	-11.1
	07	281 37.3	S17 04.5	109 19.6	N22 08.7	59.4	6.8	-11.2
	08	296 37.2	S17 03.8	123 45.4	N21 57.5	59.4	6.9	-11.4
	09	311 37.1	S17 03.1	138 11.4	N21 46.1	59.3	7.1	-11.5
	10	326 37.0	S17 02.4	152 37.5	N21 34.6	59.3	7.2	-11.6
	11	341 36.9	S17 01.7	167 03.6	N21 23.0	59.3	7.3	-11.7
	12	356 36.9	S17 01.0	181 30.0	N21 11.3	59.3	7.4	-11.9
	13	011 36.8	S17 00.2	195 56.4	N20 59.4	59.3	7.6	-12.0
	14	026 36.7	S16 59.5	210 22.9	N20 47.4	59.2	7.7	-12.1
	15	041 36.6	S16 58.8	224 49.6	N20 35.3	59.2	7.8	-12.2
	16	056 36.5	S16 58.1	239 16.4	N20 23.1	59.2	7.9	-12.3
	17	071 36.5	S16 57.4	253 43.3	N20 10.8	59.2	8.0	-12.4
	18	086 36.4	S16 56.7	268 10.4	N19 58.4	59.1	8.2	-12.5
	19	101 36.3	S16 55.9	282 37.5	N19 45.9	59.1	8.3	-12.6
	20	116 36.2	S16 55.2	297 04.8	N19 33.2	59.1	8.4	-12.7
	21	131 36.1	S16 54.5	311 32.2	N19 20.5	59.1	8.5	-12.8
	22	146 36.1	S16 53.8	325 59.7	N19 07.6	59.0	8.6	-12.9
	23	161 36.0	S16 53.1	340 27.3	N18 54.7	59.0	8.8	-13.0
2	00	176 35.9	S16 52.3	354 55.1	N18 41.6	59.0	8.9	-13.1
	01	191 35.8	S16 51.6	009 23.0	N18 28.5	59.0	9.0	-13.2
	02	206 35.8	S16 50.9	023 51.0	N18 15.3	58.9	9.1	-13.3
	03	221 35.7	S16 50.2	038 19.1	N18 02.0	58.9	9.2	-13.4
	04	236 35.6	S16 49.5	052 47.3	N17 48.5	58.9	9.3	-13.5
	05	251 35.5	S16 48.7	067 15.6	N17 35.1	58.9	9.5	-13.6
	06	266 35.5	S16 48.0	081 44.1	N17 21.5	58.8	9.6	-13.7
	07	281 35.4	S16 47.3	096 12.6	N17 07.8	58.8	9.7	-13.7
	08	296 35.3	S16 46.6	110 41.3	N16 54.1	58.8	9.8	-13.8
	09	311 35.2	S16 45.8	125 10.1	N16 40.2	58.8	9.9	-13.9
	10	326 35.2	S16 45.1	139 39.0	N16 26.3	58.7	10.0	-14.0
	11	341 35.1	S16 44.4	154 08.1	N16 12.3	58.7	10.1	-14.1
	12	356 35.0	S16 43.7	168 37.2	N15 58.3	58.7	10.2	-14.1
	13	011 34.9	S16 42.9	183 06.4	N15 44.2	58.7	10.4	-14.2
	14	026 34.9	S16 42.2	197 35.8	N15 30.0	58.6	10.5	-14.3
	15	041 34.8	S16 41.5	212 05.2	N15 15.7	58.6	10.6	-14.3
	16	056 34.7	S16 40.8	226 34.8	N15 01.4	58.6	10.7	-14.4
	17	071 34.7	S16 40.0	241 04.5	N14 47.0	58.5	10.8	-14.5
	18	086 34.6	S16 39.3	255 34.3	N14 32.5	58.5	10.9	-14.5
	19	101 34.5	S16 38.6	270 04.1	N14 18.0	58.5	11.0	-14.6
	20	116 34.4	S16 37.8	284 34.1	N14 03.4	58.5	11.1	-14.6
	21	131 34.4	S16 37.1	299 04.2	N13 48.8	58.4	11.2	-14.7
	22	146 34.3	S16 36.4	313 34.4	N13 34.1	58.4	11.3	-14.7
	23	161 34.2	S16 35.6	328 04.7	N13 19.3	58.4	11.4	-14.8

Day 31 noon Sun: v -0.1 d 0.7 SD 16.2 | Moon SD 16.3

Day 1 noon Sun: v -0.1 d 0.7 SD 16.2 | Moon SD 16.2

Day 2 noon Sun: v -0.1 d 0.7 SD 16.2 | Moon SD 16.0

SUN: FEBRUARY 1 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0709	0838	1027	1401	1550	1719
70N	0702	0820	0945	1443	1609	1727
68N	0655	0805	0917	1511	1623	1733
66N	0649	0753	0856	1532	1635	1739
64N	0644	0743	0839	1549	1645	1744
62N	0640	0734	0826	1602	1654	1748
60N	0636	0727	0814	1614	1701	1752
58N	0632	0720	0804	1624	1708	1756
56N	0629	0714	0755	1633	1714	1759
54N	0626	0708	0747	1641	1720	1802
52N	0623	0703	0740	1648	1724	1805
50N	0620	0659	0734	1654	1729	1808
45N	0613	0649	0720	1708	1739	1814
40N	0608	0640	0709	1719	1748	1820
35N	0602	0632	0659	1729	1755	1826
30N	0557	0625	0650	1737	1802	1831
25N	0551	0619	0643	1745	1809	1836
20N	0546	0612	0635	1752	1815	1841
15N	0541	0606	0629	1758	1821	1847
10N	0535	0600	0622	1805	1827	1852
05N	0529	0554	0616	1811	1833	1858
00N	0523	0548	0610	1817	1839	1904
05S	0517	0542	0604	1823	1845	1910
10S	0510	0535	0558	1829	1851	1917
15S	0502	0528	0551	1836	1858	1925
20S	0453	0521	0544	1843	1906	1934
25S	0443	0512	0537	1850	1914	1943
30S	0432	0503	0528	1858	1924	1955
35S	0418	0452	0519	1907	1935	2008
40S	0402	0439	0509	1917	1947	2024
45S	0342	0423	0457	1930	2003	2044
50S	0314	0404	0442	1944	2022	2111
55S	0233	0337	0422	2003	2048	2151
60S	0110	0258	0356	2029	2126	2309

MOON: RISE / SET | UTC HHMM

Lat	Day 31		Day 1		Day 2	
72N	--	--	--	--	1508	1053
70N	--	--	--	--	1545	1014
68N	--	--	1317	1049	1610	0947
66N	--	--	1408	0957	1630	0926
64N	1203	0959	1440	0924	1645	0909
62N	1256	0906	1503	0900	1658	0855
60N	1328	0833	1522	0840	1709	0843
58N	1351	0809	1537	0824	1718	0832
56N	1410	0749	1550	0810	1726	0823
54N	1426	0733	1601	0758	1734	0815
52N	1440	0719	1611	0748	1740	0808
50N	1452	0706	1620	0738	1746	0801
45N	1517	0640	1639	0718	1758	0747
40N	1537	0620	1654	0702	1809	0735
35N	1553	0602	1707	0648	1817	0725
30N	1607	0547	1718	0636	1825	0716
25N	1620	0534	1728	0625	1832	0708
20N	1631	0522	1737	0615	1838	0700
15N	1642	0511	1745	0605	1844	0653
10N	1652	0500	1753	0556	1850	0647
05N	1702	0449	1801	0548	1855	0640
00N	1711	0439	1808	0539	1900	0634
05S	1721	0429	1816	0530	1906	0627
10S	1730	0418	1823	0522	1911	0621
15S	1740	0407	1831	0512	1916	0614
20S	1751	0356	1840	0503	1922	0607
25S	1802	0343	1848	0452	1928	0559
30S	1814	0330	1858	0441	1935	0550
35S	1828	0314	1909	0428	1942	0541
40S	1844	0256	1921	0413	1951	0530
45S	1903	0234	1935	0356	2001	0517
50S	1926	0206	1953	0334	2012	0501
55S	1957	0128	2015	0304	2027	0441
60S	2042	0025	2045	0221	2046	0413

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | FEBRUARY 3 - FEBRUARY 5

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
3	00	133 11.3	169 38.9	S15 54.8	182 11.2	S19 12.2	024 33.9	N22 38.7	133 23.4	S02 27.1
	01	148 13.8	184 38.2	S15 53.8	197 11.6	S19 11.7	039 36.7	N22 38.8	148 25.7	S02 27.0
	02	163 16.3	199 37.6	S15 52.8	212 12.1	S19 11.2	054 39.4	N22 38.8	163 27.9	S02 26.9
	03	178 18.7	214 37.0	S15 51.8	227 12.5	S19 10.7	069 42.2	N22 38.8	178 30.1	S02 26.8
	04	193 21.2	229 36.3	S15 50.9	242 13.0	S19 10.2	084 44.9	N22 38.9	193 32.4	S02 26.7
	05	208 23.7	244 35.7	S15 49.9	257 13.5	S19 09.7	099 47.7	N22 38.9	208 34.6	S02 26.6
	06	223 26.1	259 35.1	S15 48.9	272 13.9	S19 09.2	114 50.4	N22 39.0	223 36.8	S02 26.5
	07	238 28.6	274 34.4	S15 47.9	287 14.4	S19 08.7	129 53.2	N22 39.0	238 39.1	S02 26.4
	08	253 31.1	289 33.8	S15 47.0	302 14.8	S19 08.2	144 55.9	N22 39.0	253 41.3	S02 26.2
	09	268 33.5	304 33.2	S15 46.0	317 15.3	S19 07.7	159 58.7	N22 39.1	268 43.6	S02 26.1
	10	283 36.0	319 32.5	S15 45.0	332 15.8	S19 07.2	175 01.4	N22 39.1	283 45.8	S02 26.0
	11	298 38.4	334 31.9	S15 44.0	347 16.2	S19 06.7	190 04.2	N22 39.2	298 48.0	S02 25.9
	12	313 40.9	349 31.3	S15 43.0	002 16.7	S19 06.2	205 06.9	N22 39.2	313 50.3	S02 25.8
	13	328 43.4	004 30.7	S15 42.0	017 17.2	S19 05.7	220 09.7	N22 39.2	328 52.5	S02 25.7
	14	343 45.8	019 30.0	S15 41.1	032 17.6	S19 05.1	235 12.4	N22 39.3	343 54.7	S02 25.6
	15	358 48.3	034 29.4	S15 40.1	047 18.1	S19 04.6	250 15.2	N22 39.3	358 57.0	S02 25.5
	16	013 50.8	049 28.8	S15 39.1	062 18.5	S19 04.1	265 17.9	N22 39.3	013 59.2	S02 25.4
	17	028 53.2	064 28.2	S15 38.1	077 19.0	S19 03.6	280 20.7	N22 39.4	029 01.4	S02 25.3
	18	043 55.7	079 27.5	S15 37.1	092 19.5	S19 03.1	295 23.4	N22 39.4	044 03.7	S02 25.2
	19	058 58.2	094 26.9	S15 36.1	107 19.9	S19 02.6	310 26.2	N22 39.5	059 05.9	S02 25.1
	20	074 00.6	109 26.3	S15 35.1	122 20.4	S19 02.1	325 28.9	N22 39.5	074 08.1	S02 25.0
	21	089 03.1	124 25.7	S15 34.2	137 20.9	S19 01.6	340 31.7	N22 39.5	089 10.4	S02 24.9
	22	104 05.6	139 25.0	S15 33.2	152 21.3	S19 01.1	355 34.4	N22 39.6	104 12.6	S02 24.8
	23	119 08.0	154 24.4	S15 32.2	167 21.8	S19 00.6	010 37.1	N22 39.6	119 14.8	S02 24.7
4	00	134 10.5	169 23.8	S15 31.2	182 22.3	S19 00.0	025 39.9	N22 39.6	134 17.1	S02 24.6
	01	149 12.9	184 23.2	S15 30.2	197 22.7	S18 59.5	040 42.6	N22 39.7	149 19.3	S02 24.5
	02	164 15.4	199 22.5	S15 29.2	212 23.2	S18 59.0	055 45.4	N22 39.7	164 21.5	S02 24.4
	03	179 17.9	214 21.9	S15 28.2	227 23.7	S18 58.5	070 48.1	N22 39.8	179 23.8	S02 24.3
	04	194 20.3	229 21.3	S15 27.2	242 24.1	S18 58.0	085 50.9	N22 39.8	194 26.0	S02 24.1
	05	209 22.8	244 20.7	S15 26.2	257 24.6	S18 57.5	100 53.6	N22 39.8	209 28.2	S02 24.0
	06	224 25.3	259 20.1	S15 25.2	272 25.0	S18 57.0	115 56.4	N22 39.9	224 30.5	S02 23.9
	07	239 27.7	274 19.4	S15 24.2	287 25.5	S18 56.4	130 59.1	N22 39.9	239 32.7	S02 23.8
	08	254 30.2	289 18.8	S15 23.2	302 26.0	S18 55.9	146 01.8	N22 39.9	254 34.9	S02 23.7
	09	269 32.7	304 18.2	S15 22.2	317 26.4	S18 55.4	161 04.6	N22 40.0	269 37.2	S02 23.6
	10	284 35.1	319 17.6	S15 21.2	332 26.9	S18 54.9	176 07.3	N22 40.0	284 39.4	S02 23.5
	11	299 37.6	334 17.0	S15 20.2	347 27.4	S18 54.4	191 10.1	N22 40.0	299 41.6	S02 23.4
	12	314 40.1	349 16.4	S15 19.2	002 27.8	S18 53.9	206 12.8	N22 40.1	314 43.9	S02 23.3
	13	329 42.5	004 15.7	S15 18.2	017 28.3	S18 53.4	221 15.6	N22 40.1	329 46.1	S02 23.2
	14	344 45.0	019 15.1	S15 17.2	032 28.8	S18 52.8	236 18.3	N22 40.2	344 48.3	S02 23.1
	15	359 47.4	034 14.5	S15 16.2	047 29.2	S18 52.3	251 21.1	N22 40.2	359 50.6	S02 23.0
	16	014 49.9	049 13.9	S15 15.2	062 29.7	S18 51.8	266 23.8	N22 40.2	014 52.8	S02 22.9
	17	029 52.4	064 13.3	S15 14.2	077 30.2	S18 51.3	281 26.5	N22 40.3	029 55.0	S02 22.8
	18	044 54.8	079 12.7	S15 13.2	092 30.6	S18 50.8	296 29.3	N22 40.3	044 57.3	S02 22.7
	19	059 57.3	094 12.1	S15 12.2	107 31.1	S18 50.2	311 32.0	N22 40.3	059 59.5	S02 22.6
	20	074 59.8	109 11.5	S15 11.2	122 31.6	S18 49.7	326 34.8	N22 40.4	075 01.7	S02 22.5
	21	090 02.2	124 10.8	S15 10.2	137 32.0	S18 49.2	341 37.5	N22 40.4	090 03.9	S02 22.3
	22	105 04.7	139 10.2	S15 09.2	152 32.5	S18 48.7	356 40.2	N22 40.5	105 06.2	S02 22.2
	23	120 07.2	154 09.6	S15 08.2	167 33.0	S18 48.2	011 43.0	N22 40.5	120 08.4	S02 22.1
5	00	135 09.6	169 09.0	S15 07.2	182 33.4	S18 47.7	026 45.7	N22 40.5	135 10.6	S02 22.0
	01	150 12.1	184 08.4	S15 06.2	197 33.9	S18 47.1	041 48.5	N22 40.6	150 12.9	S02 21.9
	02	165 14.5	199 07.8	S15 05.2	212 34.4	S18 46.6	056 51.2	N22 40.6	165 15.1	S02 21.8
	03	180 17.0	214 07.2	S15 04.2	227 34.9	S18 46.1	071 53.9	N22 40.6	180 17.3	S02 21.7
	04	195 19.5	229 06.6	S15 03.2	242 35.3	S18 45.6	086 56.7	N22 40.7	195 19.6	S02 21.6
	05	210 21.9	244 06.0	S15 02.1	257 35.8	S18 45.0	101 59.4	N22 40.7	210 21.8	S02 21.5
	06	225 24.4	259 05.4	S15 01.1	272 36.3	S18 44.5	117 02.2	N22 40.7	225 24.0	S02 21.4
	07	240 26.9	274 04.8	S15 00.1	287 36.7	S18 44.0	132 04.9	N22 40.8	240 26.3	S02 21.3
	08	255 29.3	289 04.2	S14 59.1	302 37.2	S18 43.5	147 07.6	N22 40.8	255 28.5	S02 21.2
	09	270 31.8	304 03.5	S14 58.1	317 37.7	S18 43.0	162 10.4	N22 40.8	270 30.7	S02 21.1
	10	285 34.3	319 02.9	S14 57.1	332 38.1	S18 42.4	177 13.1	N22 40.9	285 33.0	S02 21.0
	11	300 36.7	334 02.3	S14 56.1	347 38.6	S18 41.9	192 15.8	N22 40.9	300 35.2	S02 20.9
	12	315 39.2	349 01.7	S14 55.0	002 39.1	S18 41.4	207 18.6	N22 41.0	315 37.4	S02 20.7
	13	330 41.7	004 01.1	S14 54.0	017 39.6	S18 40.9	222 21.3	N22 41.0	330 39.6	S02 20.6
	14	345 44.1	019 00.5	S14 53.0	032 40.0	S18 40.3	237 24.1	N22 41.0	345 41.9	S02 20.5
	15	000 46.6	033 59.9	S14 52.0	047 40.5	S18 39.8	252 26.8	N22 41.1	000 44.1	S02 20.4
	16	015 49.0	048 59.3	S14 51.0	062 41.0	S18 39.3	267 29.5	N22 41.1	015 46.3	S02 20.3
	17	030 51.5	063 58.7	S14 49.9	077 41.4	S18 38.8	282 32.3	N22 41.1	030 48.6	S02 20.2
	18	045 54.0	078 58.1	S14 48.9	092 41.9	S18 38.2	297 35.0	N22 41.2	045 50.8	S02 20.1
	19	060 56.4	093 57.5	S14 47.9	107 42.4	S18 37.7	312 37.7	N22 41.2	060 53.0	S02 20.0
	20	075 58.9	108 56.9	S14 46.9	122 42.8	S18 37.2	327 40.5	N22 41.2	075 55.3	S02 19.9
	21	091 01.4	123 56.3	S14 45.9	137 43.3	S18 36.6	342 43.2	N22 41.3	090 57.5	S02 19.8
	22	106 03.8	138 55.7	S14 44.8	152 43.8	S18 36.1	357 45.9	N22 41.3	105 59.7	S02 19.7
	23	121 06.3	153 55.1	S14 43.8	167 44.3	S18 35.6	012 48.7	N22 41.3	121 01.9	S02 19.6

Venus	Mars	Jupiter	Saturn
3: v -0.6 d 1.0	3: v 0.5 d 0.5	3: v 2.7 d 0.0	3: v 2.2 d 0.1
4: v -0.6 d 1.0	4: v 0.5 d 0.5	4: v 2.7 d 0.0	4: v 2.2 d 0.1
5: v -0.6 d 1.0	5: v 0.5 d 0.5	5: v 2.7 d 0.0	5: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.1	S40 12.2
Achernar	335 19.7	S57 06.5
Acrux	172 58.7	S63 14.5
Adhara	255 04.8	S29 00.6
Al Na'ir	027 32.2	S46 50.2
Aldebaran	290 38.4	N16 33.7
Alioth	166 11.9	N55 48.7
Alkaid	152 51.1	N49 10.6
Alnilam	275 36.6	S01 11.2
Alphard	217 46.5	S08 46.4
Alphecca	126 03.0	N26 37.3
Alpheratz	357 34.1	N29 14.2
Altair	061 59.4	N08 56.1
Ankaa	353 06.5	S42 10.0
Antares	112 14.9	S26 29.4
Arcturus	145 47.0	N19 02.5
Atria	107 08.6	S69 04.2
Avior	234 13.7	S59 35.6
Bellatrix	278 21.7	N06 22.4
Betelgeuse	270 50.9	N07 24.7
Canopus	263 51.6	S52 42.7
Capella	280 20.3	N46 01.6
Deneb	049 25.7	N45 22.3
Denebola	182 23.8	N14 25.4
Diphda	348 46.6	S17 50.7
Dubhe	193 39.3	N61 36.4
Elnath	278 00.5	N28 37.8
Eltanin	090 42.1	N51 28.8
Enif	033 38.2	N09 59.6
Fomalhaut	015 13.8	S29 29.2
Gacrux	171 50.3	S57 15.4
Gienah	175 42.4	S17 41.3
Hadar	148 34.6	S60 29.7
Hamal	327 50.2	N23 35.2
Kaus Australi	083 31.6	S34 22.3
Kochab	137 19.8	N74 02.4
Markab	013 29.3	N15 20.7
Menkar	314 05.2	N04 11.5
Menkent	147 56.5	S36 29.8
Miaplacidus	221 37.2	S69 49.4
Mirfak	308 26.9	N49 57.4
Nunki	075 47.0	S26 15.9
Peacock	053 04.9	S56 39.1
Polaris	313 32.1	N89 22.8
Pollux	243 15.8	N27 57.7
Procyon	244 49.6	N05 09.4
Rasalhague	095 57.9	N12 32.3
Regulus	207 33.2	N11 50.2
Rigel	281 02.8	S08 10.4
Rigil Kentaur	139 39.0	S60 56.4
Sabik	102 01.9	S15 45.5
Schedar	349 30.3	N56 41.1
Shaula	096 09.4	S37 07.3
Sirius	258 25.1	S16 45.2
Spica	158 21.2	S11 17.9
Suhail	222 45.2	S43 32.3
Vega	080 33.0	N38 48.2
Zubenelgenubi	136 55.0	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	034 36.3	1243
Mars	047 47.8	1150
Jupiter	251 32.8	2213
Saturn	000 03.8	1501

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
3	00	176 34.2	S16 34.9	342 35.1	N13 04.5	58.3	11.5	-14.8
	01	191 34.1	S16 34.2	357 05.6	N12 49.7	58.3	11.6	-14.9
	02	206 34.0	S16 33.4	011 36.1	N12 34.8	58.3	11.7	-14.9
	03	221 34.0	S16 32.7	026 06.8	N12 19.9	58.3	11.8	-15.0
	04	236 33.9	S16 32.0	040 37.6	N12 04.9	58.2	11.9	-15.0
	05	251 33.8	S16 31.2	055 08.5	N11 49.8	58.2	12.0	-15.1
	06	266 33.8	S16 30.5	069 39.4	N11 34.8	58.2	12.1	-15.1
	07	281 33.7	S16 29.8	084 10.5	N11 19.7	58.1	12.1	-15.2
	08	296 33.6	S16 29.0	098 41.6	N11 04.5	58.1	12.2	-15.2
	09	311 33.6	S16 28.3	113 12.8	N10 49.3	58.1	12.3	-15.2
	10	326 33.5	S16 27.6	127 44.2	N10 34.1	58.0	12.4	-15.3
	11	341 33.4	S16 26.8	142 15.6	N10 18.8	58.0	12.5	-15.3
	12	356 33.4	S16 26.1	156 47.1	N10 03.5	58.0	12.6	-15.3
	13	011 33.3	S16 25.3	171 18.6	N09 48.2	57.9	12.7	-15.3
	14	026 33.3	S16 24.6	185 50.3	N09 32.9	57.9	12.7	-15.4
	15	041 33.2	S16 23.9	200 22.0	N09 17.5	57.9	12.8	-15.4
	16	056 33.1	S16 23.1	214 53.9	N09 02.1	57.8	12.9	-15.4
	17	071 33.1	S16 22.4	229 25.8	N08 46.7	57.8	13.0	-15.5
	18	086 33.0	S16 21.6	243 57.7	N08 31.2	57.8	13.1	-15.5
	19	101 32.9	S16 20.9	258 29.8	N08 15.7	57.8	13.1	-15.5
	20	116 32.9	S16 20.1	273 01.9	N08 00.3	57.7	13.2	-15.5
	21	131 32.8	S16 19.4	287 34.1	N07 44.7	57.7	13.3	-15.5
	22	146 32.8	S16 18.7	302 06.4	N07 29.2	57.7	13.3	-15.5
	23	161 32.7	S16 17.9	316 38.7	N07 13.7	57.6	13.4	-15.6
4	00	176 32.6	S16 17.2	331 11.2	N06 58.1	57.6	13.5	-15.6
	01	191 32.6	S16 16.4	345 43.6	N06 42.5	57.6	13.6	-15.6
	02	206 32.5	S16 15.7	000 16.2	N06 27.0	57.5	13.6	-15.6
	03	221 32.5	S16 14.9	014 48.8	N06 11.4	57.5	13.7	-15.6
	04	236 32.4	S16 14.2	029 21.5	N05 55.8	57.5	13.8	-15.6
	05	251 32.3	S16 13.4	043 54.3	N05 40.1	57.4	13.8	-15.6
	06	266 32.3	S16 12.7	058 27.1	N05 24.5	57.4	13.9	-15.6
	07	281 32.2	S16 12.0	072 59.9	N05 08.9	57.4	13.9	-15.6
	08	296 32.2	S16 11.2	087 32.9	N04 53.3	57.3	14.0	-15.6
	09	311 32.1	S16 10.5	102 05.9	N04 37.6	57.3	14.1	-15.6
	10	326 32.1	S16 09.7	116 38.9	N04 22.0	57.3	14.1	-15.6
	11	341 32.0	S16 09.0	131 12.0	N04 06.4	57.2	14.2	-15.6
	12	356 31.9	S16 08.2	145 45.2	N03 50.8	57.2	14.2	-15.6
	13	011 31.9	S16 07.5	160 18.4	N03 35.1	57.2	14.3	-15.6
	14	026 31.8	S16 06.7	174 51.7	N03 19.5	57.1	14.3	-15.6
	15	041 31.8	S16 05.9	189 25.0	N03 03.9	57.1	14.4	-15.6
	16	056 31.7	S16 05.2	203 58.4	N02 48.3	57.1	14.4	-15.6
	17	071 31.7	S16 04.4	218 31.8	N02 32.7	57.0	14.5	-15.6
	18	086 31.6	S16 03.7	233 05.3	N02 17.1	57.0	14.5	-15.6
	19	101 31.6	S16 02.9	247 38.8	N02 01.5	57.0	14.6	-15.6
	20	116 31.5	S16 02.2	262 12.3	N01 45.9	56.9	14.6	-15.6
	21	131 31.5	S16 01.4	276 45.9	N01 30.3	56.9	14.6	-15.6
	22	146 31.4	S16 00.7	291 19.6	N01 14.8	56.9	14.7	-15.5
	23	161 31.4	S15 59.9	305 53.3	N00 59.2	56.8	14.7	-15.5
5	00	176 31.3	S15 59.2	320 27.0	N00 43.7	56.8	14.8	-15.5
	01	191 31.2	S15 58.4	335 00.7	N00 28.2	56.8	14.8	-15.5
	02	206 31.2	S15 57.6	349 34.5	N00 12.7	56.7	14.8	-15.5
	03	221 31.1	S15 56.9	004 08.4	S00 02.8	56.7	14.9	-15.5
	04	236 31.1	S15 56.1	018 42.3	S00 18.2	56.7	14.9	-15.4
	05	251 31.0	S15 55.4	033 16.2	S00 33.7	56.6	14.9	-15.4
	06	266 31.0	S15 54.6	047 50.1	S00 49.1	56.6	15.0	-15.4
	07	281 30.9	S15 53.9	062 24.1	S01 04.5	56.6	15.0	-15.4
	08	296 30.9	S15 53.1	076 58.1	S01 19.8	56.5	15.0	-15.3
	09	311 30.8	S15 52.3	091 32.1	S01 35.2	56.5	15.1	-15.3
	10	326 30.8	S15 51.6	106 06.1	S01 50.5	56.5	15.1	-15.3
	11	341 30.8	S15 50.8	120 40.2	S02 05.8	56.5	15.1	-15.3
	12	356 30.7	S15 50.1	135 14.3	S02 21.1	56.4	15.1	-15.2
	13	011 30.7	S15 49.3	149 48.5	S02 36.3	56.4	15.2	-15.2
	14	026 30.6	S15 48.5	164 22.6	S02 51.5	56.4	15.2	-15.2
	15	041 30.6	S15 47.8	178 56.8	S03 06.7	56.3	15.2	-15.2
	16	056 30.5	S15 47.0	193 31.0	S03 21.9	56.3	15.2	-15.1
	17	071 30.5	S15 46.2	208 05.2	S03 37.0	56.3	15.2	-15.1
	18	086 30.4	S15 45.5	222 39.4	S03 52.1	56.2	15.2	-15.1
	19	101 30.4	S15 44.7	237 13.7	S04 07.1	56.2	15.3	-15.0
	20	116 30.3	S15 43.9	251 47.9	S04 22.1	56.2	15.3	-15.0
	21	131 30.3	S15 43.2	266 22.2	S04 37.1	56.1	15.3	-14.9
	22	146 30.2	S15 42.4	280 56.5	S04 52.1	56.1	15.3	-14.9
	23	161 30.2	S15 41.6	295 30.8	S05 07.0	56.1	15.3	-14.9

Day 3 noon Sun: v -0.1 d 0.7 SD 16.2 | Moon SD 15.8

Day 4 noon Sun: v -0.1 d 0.8 SD 16.2 | Moon SD 15.6

Day 5 noon Sun: v 0.0 d 0.8 SD 16.2 | Moon SD 15.4

SUN: FEBRUARY 4 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0658	0825	1004	1425	1604	1731
70N	0652	0808	0929	1500	1621	1737
68N	0646	0755	0904	1524	1634	1743
66N	0641	0744	0845	1543	1645	1748
64N	0637	0735	0830	1559	1654	1752
62N	0633	0727	0817	1611	1702	1755
60N	0630	0720	0807	1622	1708	1759
58N	0627	0714	0757	1631	1715	1802
56N	0624	0708	0749	1640	1720	1805
54N	0621	0703	0742	1647	1725	1807
52N	0619	0659	0735	1653	1730	1810
50N	0616	0655	0729	1659	1734	1812
45N	0610	0645	0716	1712	1743	1818
40N	0605	0637	0706	1723	1751	1823
35N	0600	0630	0656	1732	1758	1828
30N	0555	0624	0648	1740	1805	1833
25N	0550	0617	0641	1747	1811	1838
20N	0545	0612	0634	1754	1816	1843
15N	0540	0606	0628	1800	1822	1848
10N	0535	0600	0622	1806	1828	1853
05N	0530	0555	0616	1812	1833	1858
00N	0524	0549	0610	1817	1839	1904
05S	0518	0543	0605	1823	1845	1910
10S	0511	0537	0559	1829	1851	1917
15S	0503	0530	0552	1835	1858	1924
20S	0455	0523	0546	1842	1905	1932
25S	0446	0515	0539	1849	1913	1941
30S	0435	0506	0531	1856	1922	1952
35S	0422	0455	0522	1905	1932	2005
40S	0407	0443	0513	1914	1944	2020
45S	0347	0428	0501	1926	1959	2039
50S	0321	0409	0447	1940	2017	2105
55S	0244	0345	0429	1958	2041	2142
60S	0135	0309	0405	2021	2116	2247

MOON: RISE / SET | UTC HHMM

Lat	Day 3		Day 4		Day 5	
72N	1756	0947	2012	0907	2220	0833
70N	1809	0931	2014	0901	2213	0835
68N	1820	0918	2016	0856	2207	0837
66N	1829	0907	2018	0852	2202	0839
64N	1836	0858	2019	0849	2157	0840
62N	1843	0850	2020	0846	2154	0841
60N	1848	0843	2021	0843	2151	0842
58N	1853	0837	2022	0840	2148	0843
56N	1857	0832	2023	0838	2145	0844
54N	1901	0827	2024	0836	2143	0844
52N	1904	0823	2024	0834	2141	0845
50N	1907	0818	2025	0833	2139	0845
45N	1914	0810	2026	0829	2135	0847
40N	1920	0802	2027	0826	2132	0848
35N	1924	0756	2028	0823	2129	0849
30N	1929	0750	2029	0821	2127	0849
25N	1932	0745	2030	0819	2125	0850
20N	1936	0740	2030	0817	2123	0851
15N	1939	0736	2031	0815	2121	0851
10N	1942	0732	2031	0813	2119	0852
05N	1945	0728	2032	0811	2117	0853
00N	1948	0723	2033	0810	2115	0853
05S	1951	0719	2033	0808	2114	0854
10S	1954	0715	2034	0806	2112	0854
15S	1957	0711	2034	0804	2110	0855
20S	2000	0706	2035	0802	2108	0856
25S	2004	0701	2036	0800	2107	0856
30S	2007	0656	2037	0758	2104	0857
35S	2011	0650	2037	0755	2102	0858
40S	2016	0643	2038	0752	2100	0859
45S	2021	0635	2039	0749	2057	0900
50S	2028	0625	2041	0745	2053	0901
55S	2035	0613	2042	0740	2049	0902
60S	2045	0557	2044	0733	2043	0904

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | FEBRUARY 6 - FEBRUARY 8

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
6	00	136 08.8	168 54.5	S14 42.8	182 44.7	S18 35.1	027 51.4	N22 41.4	136 04.2	S02 19.5
	01	151 11.2	183 53.9	S14 41.8	197 45.2	S18 34.5	042 54.1	N22 41.4	151 06.4	S02 19.4
	02	166 13.7	198 53.3	S14 40.7	212 45.7	S18 34.0	057 56.9	N22 41.5	166 08.6	S02 19.3
	03	181 16.1	213 52.7	S14 39.7	227 46.2	S18 33.5	072 59.6	N22 41.5	181 10.9	S02 19.1
	04	196 18.6	228 52.1	S14 38.7	242 46.6	S18 32.9	088 02.3	N22 41.5	196 13.1	S02 19.0
	05	211 21.1	243 51.6	S14 37.6	257 47.1	S18 32.4	103 05.1	N22 41.6	211 15.3	S02 18.9
	06	226 23.5	258 51.0	S14 36.6	272 47.6	S18 31.9	118 07.8	N22 41.6	226 17.5	S02 18.8
	07	241 26.0	273 50.4	S14 35.6	287 48.0	S18 31.3	133 10.5	N22 41.6	241 19.8	S02 18.7
	08	256 28.5	288 49.8	S14 34.6	302 48.5	S18 30.8	148 13.3	N22 41.7	256 22.0	S02 18.6
	09	271 30.9	303 49.2	S14 33.5	317 49.0	S18 30.3	163 16.0	N22 41.7	271 24.2	S02 18.5
	10	286 33.4	318 48.6	S14 32.5	332 49.5	S18 29.7	178 18.7	N22 41.7	286 26.5	S02 18.4
	11	301 35.9	333 48.0	S14 31.5	347 49.9	S18 29.2	193 21.5	N22 41.8	301 28.7	S02 18.3
	12	316 38.3	348 47.4	S14 30.4	002 50.4	S18 28.7	208 24.2	N22 41.8	316 30.9	S02 18.2
	13	331 40.8	003 46.8	S14 29.4	017 50.9	S18 28.2	223 26.9	N22 41.8	331 33.1	S02 18.1
	14	346 43.3	018 46.2	S14 28.4	032 51.4	S18 27.6	238 29.6	N22 41.9	346 35.4	S02 18.0
	15	001 45.7	033 45.6	S14 27.3	047 51.8	S18 27.1	253 32.4	N22 41.9	001 37.6	S02 17.9
	16	016 48.2	048 45.0	S14 26.3	062 52.3	S18 26.5	268 35.1	N22 41.9	016 39.8	S02 17.7
	17	031 50.6	063 44.5	S14 25.2	077 52.8	S18 26.0	283 37.8	N22 42.0	031 42.1	S02 17.6
	18	046 53.1	078 43.9	S14 24.2	092 53.3	S18 25.5	298 40.6	N22 42.0	046 44.3	S02 17.5
	19	061 55.6	093 43.3	S14 23.2	107 53.7	S18 24.9	313 43.3	N22 42.0	061 46.5	S02 17.4
	20	076 58.0	108 42.7	S14 22.1	122 54.2	S18 24.4	328 46.0	N22 42.1	076 48.7	S02 17.3
	21	092 00.5	123 42.1	S14 21.1	137 54.7	S18 23.9	343 48.7	N22 42.1	091 51.0	S02 17.2
	22	107 03.0	138 41.5	S14 20.1	152 55.2	S18 23.3	358 51.5	N22 42.2	106 53.2	S02 17.1
	23	122 05.4	153 40.9	S14 19.0	167 55.6	S18 22.8	013 54.2	N22 42.2	121 55.4	S02 17.0
7	00	137 07.9	168 40.4	S14 18.0	182 56.1	S18 22.3	028 56.9	N22 42.2	136 57.6	S02 16.9
	01	152 10.4	183 39.8	S14 16.9	197 56.6	S18 21.7	043 59.7	N22 42.3	151 59.9	S02 16.8
	02	167 12.8	198 39.2	S14 15.9	212 57.1	S18 21.2	059 02.4	N22 42.3	167 02.1	S02 16.7
	03	182 15.3	213 38.6	S14 14.8	227 57.6	S18 20.6	074 05.1	N22 42.3	182 04.3	S02 16.6
	04	197 17.8	228 38.0	S14 13.8	242 58.0	S18 20.1	089 07.8	N22 42.4	197 06.6	S02 16.5
	05	212 20.2	243 37.4	S14 12.7	257 58.5	S18 19.6	104 10.6	N22 42.4	212 08.8	S02 16.3
	06	227 22.7	258 36.9	S14 11.7	272 59.0	S18 19.0	119 13.3	N22 42.4	227 11.0	S02 16.2
	07	242 25.1	273 36.3	S14 10.7	287 59.5	S18 18.5	134 16.0	N22 42.5	242 13.2	S02 16.1
	08	257 27.6	288 35.7	S14 09.6	302 59.9	S18 18.0	149 18.7	N22 42.5	257 15.5	S02 16.0
	09	272 30.1	303 35.1	S14 08.6	318 00.4	S18 17.4	164 21.5	N22 42.5	272 17.7	S02 15.9
	10	287 32.5	318 34.5	S14 07.5	333 00.9	S18 16.9	179 24.2	N22 42.6	287 19.9	S02 15.8
	11	302 35.0	333 33.9	S14 06.5	348 01.4	S18 16.3	194 26.9	N22 42.6	302 22.1	S02 15.7
	12	317 37.5	348 33.4	S14 05.4	003 01.9	S18 15.8	209 29.6	N22 42.6	317 24.4	S02 15.6
	13	332 39.9	003 32.8	S14 04.4	018 02.3	S18 15.2	224 32.4	N22 42.7	332 26.6	S02 15.5
	14	347 42.4	018 32.2	S14 03.3	033 02.8	S18 14.7	239 35.1	N22 42.7	347 28.8	S02 15.4
	15	002 44.9	033 31.6	S14 02.3	048 03.3	S18 14.2	254 37.8	N22 42.7	002 31.0	S02 15.3
	16	017 47.3	048 31.1	S14 01.2	063 03.8	S18 13.6	269 40.5	N22 42.8	017 33.3	S02 15.2
	17	032 49.8	063 30.5	S14 00.2	078 04.2	S18 13.1	284 43.3	N22 42.8	032 35.5	S02 15.0
	18	047 52.2	078 29.9	S13 59.1	093 04.7	S18 12.5	299 46.0	N22 42.8	047 37.7	S02 14.9
	19	062 54.7	093 29.3	S13 58.0	108 05.2	S18 12.0	314 48.7	N22 42.9	062 39.9	S02 14.8
	20	077 57.2	108 28.8	S13 57.0	123 05.7	S18 11.4	329 51.4	N22 42.9	077 42.2	S02 14.7
	21	092 59.6	123 28.2	S13 55.9	138 06.2	S18 10.9	344 54.1	N22 42.9	092 44.4	S02 14.6
	22	108 02.1	138 27.6	S13 54.9	153 06.6	S18 10.4	359 56.9	N22 43.0	107 46.6	S02 14.5
	23	123 04.6	153 27.0	S13 53.8	168 07.1	S18 09.8	014 59.6	N22 43.0	122 48.8	S02 14.4
8	00	138 07.0	168 26.5	S13 52.8	183 07.6	S18 09.3	030 02.3	N22 43.0	137 51.1	S02 14.3
	01	153 09.5	183 25.9	S13 51.7	198 08.1	S18 08.7	045 05.0	N22 43.1	152 53.3	S02 14.2
	02	168 12.0	198 25.3	S13 50.6	213 08.6	S18 08.2	060 07.7	N22 43.1	167 55.5	S02 14.1
	03	183 14.4	213 24.7	S13 49.6	228 09.0	S18 07.6	075 10.5	N22 43.1	182 57.7	S02 14.0
	04	198 16.9	228 24.2	S13 48.5	243 09.5	S18 07.1	090 13.2	N22 43.2	198 00.0	S02 13.9
	05	213 19.4	243 23.6	S13 47.5	258 10.0	S18 06.5	105 15.9	N22 43.2	213 02.2	S02 13.7
	06	228 21.8	258 23.0	S13 46.4	273 10.5	S18 06.0	120 18.6	N22 43.2	228 04.4	S02 13.6
	07	243 24.3	273 22.5	S13 45.3	288 11.0	S18 05.4	135 21.3	N22 43.3	243 06.6	S02 13.5
	08	258 26.7	288 21.9	S13 44.3	303 11.5	S18 04.9	150 24.1	N22 43.3	258 08.9	S02 13.4
	09	273 29.2	303 21.3	S13 43.2	318 11.9	S18 04.3	165 26.8	N22 43.3	273 11.1	S02 13.3
	10	288 31.7	318 20.8	S13 42.2	333 12.4	S18 03.8	180 29.5	N22 43.4	288 13.3	S02 13.2
	11	303 34.1	333 20.2	S13 41.1	348 12.9	S18 03.2	195 32.2	N22 43.4	303 15.5	S02 13.1
	12	318 36.6	348 19.6	S13 40.0	003 13.4	S18 02.7	210 34.9	N22 43.4	318 17.8	S02 13.0
	13	333 39.1	003 19.1	S13 39.0	018 13.9	S18 02.1	225 37.7	N22 43.5	333 20.0	S02 12.9
	14	348 41.5	018 18.5	S13 37.9	033 14.3	S18 01.6	240 40.4	N22 43.5	348 22.2	S02 12.8
	15	003 44.0	033 17.9	S13 36.8	048 14.8	S18 01.0	255 43.1	N22 43.5	003 24.4	S02 12.7
	16	018 46.5	048 17.4	S13 35.8	063 15.3	S18 00.5	270 45.8	N22 43.6	018 26.7	S02 12.5
	17	033 48.9	063 16.8	S13 34.7	078 15.8	S17 59.9	285 48.5	N22 43.6	033 28.9	S02 12.4
	18	048 51.4	078 16.2	S13 33.6	093 16.3	S17 59.4	300 51.2	N22 43.6	048 31.1	S02 12.3
	19	063 53.9	093 15.7	S13 32.5	108 16.8	S17 58.8	315 53.9	N22 43.7	063 33.3	S02 12.2
	20	078 56.3	108 15.1	S13 31.5	123 17.3	S17 58.3	330 56.7	N22 43.7	078 35.6	S02 12.1
	21	093 58.8	123 14.5	S13 30.4	138 17.7	S17 57.7	345 59.4	N22 43.7	093 37.8	S02 12.0
	22	109 01.2	138 14.0	S13 29.3	153 18.2	S17 57.2	001 02.1	N22 43.8	108 40.0	S02 11.9
	23	124 03.7	153 13.4	S13 28.3	168 18.7	S17 56.6	016 04.8	N22 43.8	123 42.2	S02 11.8

Venus	Mars	Jupiter	Saturn
6: v -0.6 d 1.0	6: v 0.5 d 0.5	6: v 2.7 d 0.0	6: v 2.2 d 0.1
7: v -0.6 d 1.1	7: v 0.5 d 0.5	7: v 2.7 d 0.0	7: v 2.2 d 0.1
8: v -0.6 d 1.1	8: v 0.5 d 0.5	8: v 2.7 d 0.0	8: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.1	S40 12.2
Achernar	335 19.7	S57 06.5
Acrux	172 58.7	S63 14.5
Adhara	255 04.8	S29 00.6
Al Na'ir	027 32.2	S46 50.2
Aldebaran	290 38.4	N16 33.7
Alioth	166 11.8	N55 48.7
Alkaid	152 51.1	N49 10.6
Alnilam	275 36.6	S01 11.2
Alphard	217 46.5	S08 46.4
Alphecca	126 03.0	N26 37.3
Alpheratz	357 34.1	N29 14.1
Altair	061 59.4	N08 56.1
Ankaa	353 06.5	S42 10.0
Antares	112 14.9	S26 29.4
Arcturus	145 47.0	N19 02.5
Atria	107 08.5	S69 04.2
Avior	234 13.7	S59 35.7
Bellatrix	278 21.7	N06 22.4
Betelgeuse	270 50.9	N07 24.7
Canopus	263 51.6	S52 42.7
Capella	280 20.3	N46 01.6
Deneb	049 25.7	N45 22.3
Denebola	182 23.8	N14 25.4
Diphda	348 46.6	S17 50.7
Dubhe	193 39.3	N61 36.4
Elnath	278 00.5	N28 37.8
Eltanin	090 42.1	N51 28.8
Enif	033 38.2	N09 59.6
Fomalhaut	015 13.8	S29 29.2
Gacrux	171 50.3	S57 15.4
Gienah	175 42.4	S17 41.3
Hadar	148 34.6	S60 29.7
Hamal	327 50.2	N23 35.2
Kaus Australi	083 31.6	S34 22.3
Kochab	137 19.7	N74 02.4
Markab	013 29.3	N15 20.7
Menkar	314 05.2	N04 11.5
Menkent	147 56.5	S36 29.8
Miaplacidus	221 37.2	S69 49.5
Mirfak	308 26.9	N49 57.4
Nunki	075 46.9	S26 15.9
Peacock	053 04.9	S56 39.0
Polaris	313 33.7	N89 22.8
Pollux	243 15.8	N27 57.7
Procyon	244 49.6	N05 09.4
Rasalhague	095 57.9	N12 32.3
Regulus	207 33.2	N11 50.2
Rigel	281 02.8	S08 10.4
Rigil Kentaur	139 39.0	S60 56.4
Sabik	102 01.9	S15 45.5
Schedar	349 30.4	N56 41.0
Shaula	096 09.4	S37 07.3
Sirius	258 25.2	S16 45.2
Spica	158 21.2	S11 17.9
Suhail	222 45.2	S43 32.3
Vega	080 32.9	N38 48.2
Zubenelgenubi	136 55.0	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	030 55.9	1246
Mars	045 24.4	1148
Jupiter	251 52.2	2200
Saturn	359 46.9	1450

2026 | FEBRUARY 6 - FEBRUARY 8

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
6	00	176 30.2	S15 40.9	310 05.1	S05 21.9	56.0	15.3	-14.8
	01	191 30.1	S15 40.1	324 39.4	S05 36.7	56.0	15.3	-14.8
	02	206 30.1	S15 39.3	339 13.8	S05 51.5	56.0	15.3	-14.8
	03	221 30.0	S15 38.6	353 48.1	S06 06.3	56.0	15.3	-14.7
	04	236 30.0	S15 37.8	008 22.5	S06 21.0	55.9	15.4	-14.7
	05	251 29.9	S15 37.0	022 56.8	S06 35.7	55.9	15.4	-14.6
	06	266 29.9	S15 36.3	037 31.2	S06 50.3	55.9	15.4	-14.6
	07	281 29.9	S15 35.5	052 05.5	S07 04.9	55.8	15.4	-14.5
	08	296 29.8	S15 34.7	066 39.9	S07 19.4	55.8	15.4	-14.5
	09	311 29.8	S15 33.9	081 14.2	S07 33.9	55.8	15.4	-14.5
	10	326 29.7	S15 33.2	095 48.6	S07 48.4	55.8	15.4	-14.4
	11	341 29.7	S15 32.4	110 23.0	S08 02.8	55.7	15.4	-14.4
	12	356 29.7	S15 31.6	124 57.3	S08 17.1	55.7	15.4	-14.3
	13	011 29.6	S15 30.9	139 31.7	S08 31.4	55.7	15.3	-14.3
	14	026 29.6	S15 30.1	154 06.0	S08 45.7	55.6	15.3	-14.2
	15	041 29.6	S15 29.3	168 40.4	S08 59.9	55.6	15.3	-14.2
	16	056 29.5	S15 28.5	183 14.7	S09 14.1	55.6	15.3	-14.1
	17	071 29.5	S15 27.8	197 49.0	S09 28.2	55.6	15.3	-14.1
	18	086 29.4	S15 27.0	212 23.3	S09 42.2	55.5	15.3	-14.0
	19	101 29.4	S15 26.2	226 57.7	S09 56.3	55.5	15.3	-14.0
	20	116 29.4	S15 25.4	241 32.0	S10 10.2	55.5	15.3	-13.9
	21	131 29.3	S15 24.6	256 06.2	S10 24.1	55.5	15.3	-13.8
	22	146 29.3	S15 23.9	270 40.5	S10 37.9	55.4	15.3	-13.8
	23	161 29.3	S15 23.1	285 14.8	S10 51.7	55.4	15.2	-13.7
7	00	176 29.2	S15 22.3	299 49.0	S11 05.5	55.4	15.2	-13.7
	01	191 29.2	S15 21.5	314 23.2	S11 19.1	55.4	15.2	-13.6
	02	206 29.2	S15 20.8	328 57.5	S11 32.7	55.3	15.2	-13.6
	03	221 29.1	S15 20.0	343 31.6	S11 46.3	55.3	15.2	-13.5
	04	236 29.1	S15 19.2	358 05.8	S11 59.8	55.3	15.2	-13.4
	05	251 29.0	S15 18.4	012 40.0	S12 13.2	55.3	15.1	-13.4
	06	266 29.0	S15 17.6	027 14.1	S12 26.6	55.2	15.1	-13.3
	07	281 29.0	S15 16.8	041 48.2	S12 39.9	55.2	15.1	-13.3
	08	296 29.0	S15 16.1	056 22.3	S12 53.2	55.2	15.1	-13.2
	09	311 28.9	S15 15.3	070 56.4	S13 06.4	55.2	15.0	-13.1
	10	326 28.9	S15 14.5	085 30.4	S13 19.5	55.1	15.0	-13.1
	11	341 28.9	S15 13.7	100 04.4	S13 32.5	55.1	15.0	-13.0
	12	356 28.8	S15 12.9	114 38.4	S13 45.5	55.1	15.0	-12.9
	13	011 28.8	S15 12.1	129 12.4	S13 58.5	55.1	14.9	-12.9
	14	026 28.8	S15 11.4	143 46.3	S14 11.3	55.0	14.9	-12.8
	15	041 28.7	S15 10.6	158 20.2	S14 24.1	55.0	14.9	-12.7
	16	056 28.7	S15 09.8	172 54.1	S14 36.8	55.0	14.8	-12.7
	17	071 28.7	S15 09.0	187 27.9	S14 49.5	55.0	14.8	-12.6
	18	086 28.6	S15 08.2	202 01.7	S15 02.1	55.0	14.8	-12.5
	19	101 28.6	S15 07.4	216 35.5	S15 14.6	54.9	14.7	-12.4
	20	116 28.6	S15 06.6	231 09.3	S15 27.1	54.9	14.7	-12.4
	21	131 28.6	S15 05.9	245 43.0	S15 39.4	54.9	14.7	-12.3
	22	146 28.5	S15 05.1	260 16.6	S15 51.7	54.9	14.6	-12.2
	23	161 28.5	S15 04.3	274 50.3	S16 04.0	54.9	14.6	-12.2
8	00	176 28.5	S15 03.5	289 23.9	S16 16.1	54.8	14.6	-12.1
	01	191 28.4	S15 02.7	303 57.5	S16 28.2	54.8	14.5	-12.0
	02	206 28.4	S15 01.9	318 31.0	S16 40.2	54.8	14.5	-11.9
	03	221 28.4	S15 01.1	333 04.5	S16 52.1	54.8	14.4	-11.9
	04	236 28.4	S15 00.3	347 37.9	S17 04.0	54.8	14.4	-11.8
	05	251 28.3	S14 59.5	002 11.3	S17 15.8	54.7	14.4	-11.7
	06	266 28.3	S14 58.7	016 44.7	S17 27.5	54.7	14.3	-11.6
	07	281 28.3	S14 58.0	031 18.0	S17 39.1	54.7	14.3	-11.5
	08	296 28.3	S14 57.2	045 51.3	S17 50.6	54.7	14.2	-11.5
	09	311 28.2	S14 56.4	060 24.5	S18 02.1	54.7	14.2	-11.4
	10	326 28.2	S14 55.6	074 57.7	S18 13.5	54.7	14.1	-11.3
	11	341 28.2	S14 54.8	089 30.9	S18 24.8	54.6	14.1	-11.2
	12	356 28.2	S14 54.0	104 04.0	S18 36.0	54.6	14.1	-11.1
	13	011 28.2	S14 53.2	118 37.0	S18 47.1	54.6	14.0	-11.1
	14	026 28.1	S14 52.4	133 10.1	S18 58.2	54.6	14.0	-11.0
	15	041 28.1	S14 51.6	147 43.0	S19 09.1	54.6	13.9	-10.9
	16	056 28.1	S14 50.8	162 15.9	S19 20.0	54.6	13.9	-10.8
	17	071 28.1	S14 50.0	176 48.8	S19 30.8	54.5	13.8	-10.7
	18	086 28.0	S14 49.2	191 21.6	S19 41.5	54.5	13.8	-10.6
	19	101 28.0	S14 48.4	205 54.4	S19 52.2	54.5	13.7	-10.5
	20	116 28.0	S14 47.6	220 27.1	S20 02.7	54.5	13.7	-10.4
	21	131 28.0	S14 46.8	234 59.8	S20 13.1	54.5	13.6	-10.4
	22	146 28.0	S14 46.0	249 32.4	S20 23.5	54.5	13.6	-10.3
	23	161 27.9	S14 45.2	264 05.0	S20 33.8	54.5	13.5	-10.2

Day 6 noon Sun: v 0.0 d 0.8 SD 16.2 | Moon SD 15.2

Day 7 noon Sun: v 0.0 d 0.8 SD 16.2 | Moon SD 15.0

Day 8 noon Sun: v 0.0 d 0.8 SD 16.2 | Moon SD 14.9

SUN: FEBRUARY 7 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0647	0811	0943	1447	1618	1743
70N	0642	0757	0913	1516	1633	1748
68N	0637	0745	0852	1538	1644	1752
66N	0633	0735	0835	1555	1654	1756
64N	0630	0727	0821	1608	1702	1800
62N	0627	0720	0809	1620	1709	1803
60N	0624	0713	0759	1630	1716	1805
58N	0621	0708	0750	1639	1721	1808
56N	0619	0703	0743	1646	1726	1810
54N	0616	0658	0736	1653	1731	1813
52N	0614	0654	0730	1659	1735	1815
50N	0612	0650	0724	1704	1739	1817
45N	0607	0642	0712	1716	1747	1822
40N	0602	0634	0702	1726	1754	1827
35N	0558	0628	0654	1735	1801	1831
30N	0553	0622	0646	1742	1807	1835
25N	0549	0616	0640	1749	1813	1840
20N	0544	0610	0633	1755	1818	1844
15N	0540	0605	0627	1801	1823	1849
10N	0535	0600	0622	1807	1828	1853
05N	0530	0555	0616	1812	1834	1858
00N	0524	0549	0611	1818	1839	1904
05S	0518	0544	0605	1823	1845	1910
10S	0512	0538	0559	1829	1850	1916
15S	0505	0531	0554	1834	1857	1923
20S	0457	0524	0548	1840	1903	1931
25S	0448	0517	0541	1847	1911	1939
30S	0438	0508	0534	1854	1919	1950
35S	0426	0458	0526	1902	1929	2002
40S	0411	0447	0516	1911	1940	2016
45S	0353	0433	0505	1922	1954	2034
50S	0328	0415	0452	1935	2012	2058
55S	0254	0352	0435	1951	2034	2132
60S	0154	0319	0413	2014	2107	2229

MOON: RISE / SET | UTC HHMM

Lat	Day 6		Day 7		Day 8	
72N	--	0759	0034	0715	0332	0548
70N	--	0809	0014	0738	0233	0649
68N	2358	0818	--	0755	0159	0725
66N	2345	0825	--	0810	0134	0750
64N	2335	0831	--	0821	0116	0810
62N	2326	0836	--	0831	0100	0826
60N	2319	0841	--	0840	0048	0840
58N	2312	0845	--	0848	0037	0852
56N	2306	0849	--	0855	0027	0902
54N	2301	0852	--	0901	0019	0911
52N	2256	0855	--	0906	0011	0919
50N	2252	0858	--	0911	0005	0927
45N	2243	0904	2350	0922	--	0942
40N	2236	0909	2339	0931	--	0955
35N	2229	0913	2329	0939	--	1006
30N	2224	0917	2320	0946	--	1016
25N	2219	0921	2312	0952	--	1025
20N	2214	0924	2305	0958	2358	1033
15N	2210	0927	2259	1003	2349	1041
10N	2205	0930	2252	1008	2341	1048
05N	2202	0933	2246	1013	2333	1055
00N	2158	0936	2240	1018	2325	1102
05S	2154	0938	2235	1023	2317	1108
10S	2150	0941	2229	1028	2309	1115
15S	2146	0944	2222	1033	2301	1123
20S	2142	0947	2216	1039	2253	1130
25S	2137	0951	2209	1044	2243	1139
30S	2132	0954	2202	1051	2234	1148
35S	2127	0958	2153	1058	2222	1158
40S	2121	1003	2144	1106	2210	1209
45S	2114	1008	2133	1116	2155	1223
50S	2106	1014	2120	1127	2137	1240
55S	2056	1022	2104	1142	2114	1301
60S	2042	1033	2042	1201	2042	1331

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | FEBRUARY 9 - FEBRUARY 11

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
9	00	139 06.2	168 12.9	S13 27.2	183 19.2	S17 56.1	031 07.5	N22 43.8	138 44.4	S02 11.7
	01	154 08.6	183 12.3	S13 26.1	198 19.7	S17 55.5	046 10.2	N22 43.9	153 46.7	S02 11.6
	02	169 11.1	198 11.7	S13 25.0	213 20.2	S17 55.0	061 12.9	N22 43.9	168 48.9	S02 11.5
	03	184 13.6	213 11.2	S13 24.0	228 20.6	S17 54.4	076 15.7	N22 43.9	183 51.1	S02 11.3
	04	199 16.0	228 10.6	S13 22.9	243 21.1	S17 53.9	091 18.4	N22 44.0	198 53.3	S02 11.2
	05	214 18.5	243 10.1	S13 21.8	258 21.6	S17 53.3	106 21.1	N22 44.0	213 55.6	S02 11.1
	06	229 21.0	258 09.5	S13 20.7	273 22.1	S17 52.7	121 23.8	N22 44.0	228 57.8	S02 11.0
	07	244 23.4	273 08.9	S13 19.7	288 22.6	S17 52.2	136 26.5	N22 44.0	244 00.0	S02 10.9
	08	259 25.9	288 08.4	S13 18.6	303 23.1	S17 51.6	151 29.2	N22 44.1	259 02.2	S02 10.8
	09	274 28.3	303 07.8	S13 17.5	318 23.6	S17 51.1	166 31.9	N22 44.1	274 04.4	S02 10.7
	10	289 30.8	318 07.3	S13 16.4	333 24.0	S17 50.5	181 34.6	N22 44.1	289 06.7	S02 10.6
	11	304 33.3	333 06.7	S13 15.3	348 24.5	S17 50.0	196 37.4	N22 44.2	304 08.9	S02 10.5
	12	319 35.7	348 06.2	S13 14.3	003 25.0	S17 49.4	211 40.1	N22 44.2	319 11.1	S02 10.4
	13	334 38.2	003 05.6	S13 13.2	018 25.5	S17 48.9	226 42.8	N22 44.2	334 13.3	S02 10.2
	14	349 40.7	018 05.1	S13 12.1	033 26.0	S17 48.3	241 45.5	N22 44.3	349 15.6	S02 10.1
	15	004 43.1	033 04.5	S13 11.0	048 26.5	S17 47.7	256 48.2	N22 44.3	004 17.8	S02 10.0
	16	019 45.6	048 03.9	S13 09.9	063 27.0	S17 47.2	271 50.9	N22 44.3	019 20.0	S02 09.9
	17	034 48.1	063 03.4	S13 08.8	078 27.5	S17 46.6	286 53.6	N22 44.4	034 22.2	S02 09.8
	18	049 50.5	078 02.8	S13 07.8	093 27.9	S17 46.1	301 56.3	N22 44.4	049 24.4	S02 09.7
	19	064 53.0	093 02.3	S13 06.7	108 28.4	S17 45.5	316 59.0	N22 44.4	064 26.7	S02 09.6
	20	079 55.5	108 01.7	S13 05.6	123 28.9	S17 44.9	332 01.7	N22 44.5	079 28.9	S02 09.5
	21	094 57.9	123 01.2	S13 04.5	138 29.4	S17 44.4	347 04.4	N22 44.5	094 31.1	S02 09.4
	22	110 00.4	138 00.6	S13 03.4	153 29.9	S17 43.8	002 07.2	N22 44.5	109 33.3	S02 09.3
	23	125 02.8	153 00.1	S13 02.3	168 30.4	S17 43.3	017 09.9	N22 44.6	124 35.6	S02 09.1
10	00	140 05.3	167 59.5	S13 01.2	183 30.9	S17 42.7	032 12.6	N22 44.6	139 37.8	S02 09.0
	01	155 07.8	182 59.0	S13 00.1	198 31.4	S17 42.1	047 15.3	N22 44.6	154 40.0	S02 08.9
	02	170 10.2	197 58.4	S12 59.1	213 31.8	S17 41.6	062 18.0	N22 44.6	169 42.2	S02 08.8
	03	185 12.7	212 57.9	S12 58.0	228 32.3	S17 41.0	077 20.7	N22 44.7	184 44.4	S02 08.7
	04	200 15.2	227 57.3	S12 56.9	243 32.8	S17 40.4	092 23.4	N22 44.7	199 46.7	S02 08.6
	05	215 17.6	242 56.8	S12 55.8	258 33.3	S17 39.9	107 26.1	N22 44.7	214 48.9	S02 08.5
	06	230 20.1	257 56.2	S12 54.7	273 33.8	S17 39.3	122 28.8	N22 44.8	229 51.1	S02 08.4
	07	245 22.6	272 55.7	S12 53.6	288 34.3	S17 38.8	137 31.5	N22 44.8	244 53.3	S02 08.3
	08	260 25.0	287 55.2	S12 52.5	303 34.8	S17 38.2	152 34.2	N22 44.8	259 55.5	S02 08.2
	09	275 27.5	302 54.6	S12 51.4	318 35.3	S17 37.6	167 36.9	N22 44.9	274 57.8	S02 08.0
	10	290 30.0	317 54.1	S12 50.3	333 35.8	S17 37.1	182 39.6	N22 44.9	290 00.0	S02 07.9
	11	305 32.4	332 53.5	S12 49.2	348 36.3	S17 36.5	197 42.3	N22 44.9	305 02.2	S02 07.8
	12	320 34.9	347 53.0	S12 48.1	003 36.7	S17 35.9	212 45.0	N22 45.0	320 04.4	S02 07.7
	13	335 37.3	002 52.4	S12 47.0	018 37.2	S17 35.4	227 47.7	N22 45.0	335 06.6	S02 07.6
	14	350 39.8	017 51.9	S12 45.9	033 37.7	S17 34.8	242 50.4	N22 45.0	350 08.9	S02 07.5
	15	005 42.3	032 51.3	S12 44.8	048 38.2	S17 34.2	257 53.1	N22 45.1	005 11.1	S02 07.4
	16	020 44.7	047 50.8	S12 43.7	063 38.7	S17 33.7	272 55.8	N22 45.1	020 13.3	S02 07.3
	17	035 47.2	062 50.3	S12 42.6	078 39.2	S17 33.1	287 58.5	N22 45.1	035 15.5	S02 07.2
	18	050 49.7	077 49.7	S12 41.5	093 39.7	S17 32.5	303 01.2	N22 45.1	050 17.7	S02 07.0
	19	065 52.1	092 49.2	S12 40.4	108 40.2	S17 32.0	318 04.0	N22 45.2	065 20.0	S02 06.9
	20	080 54.6	107 48.6	S12 39.3	123 40.7	S17 31.4	333 06.7	N22 45.2	080 22.2	S02 06.8
	21	095 57.1	122 48.1	S12 38.2	138 41.2	S17 30.8	348 09.4	N22 45.2	095 24.4	S02 06.7
	22	110 59.5	137 47.6	S12 37.1	153 41.7	S17 30.3	003 12.1	N22 45.3	110 26.6	S02 06.6
	23	126 02.0	152 47.0	S12 36.0	168 42.2	S17 29.7	018 14.8	N22 45.3	125 28.8	S02 06.5
11	00	141 04.4	167 46.5	S12 34.9	183 42.7	S17 29.1	033 17.5	N22 45.3	140 31.1	S02 06.4
	01	156 06.9	182 45.9	S12 33.8	198 43.1	S17 28.6	048 20.2	N22 45.4	155 33.3	S02 06.3
	02	171 09.4	197 45.4	S12 32.7	213 43.6	S17 28.0	063 22.9	N22 45.4	170 35.5	S02 06.2
	03	186 11.8	212 44.9	S12 31.6	228 44.1	S17 27.4	078 25.6	N22 45.4	185 37.7	S02 06.0
	04	201 14.3	227 44.3	S12 30.5	243 44.6	S17 26.8	093 28.3	N22 45.4	200 39.9	S02 05.9
	05	216 16.8	242 43.8	S12 29.4	258 45.1	S17 26.3	108 30.9	N22 45.5	215 42.1	S02 05.8
	06	231 19.2	257 43.3	S12 28.3	273 45.6	S17 25.7	123 33.6	N22 45.5	230 44.4	S02 05.7
	07	246 21.7	272 42.7	S12 27.2	288 46.1	S17 25.1	138 36.3	N22 45.5	245 46.6	S02 05.6
	08	261 24.2	287 42.2	S12 26.1	303 46.6	S17 24.6	153 39.0	N22 45.6	260 48.8	S02 05.5
	09	276 26.6	302 41.7	S12 25.0	318 47.1	S17 24.0	168 41.7	N22 45.6	275 51.0	S02 05.4
	10	291 29.1	317 41.1	S12 23.9	333 47.6	S17 23.4	183 44.4	N22 45.6	290 53.2	S02 05.3
	11	306 31.6	332 40.6	S12 22.8	348 48.1	S17 22.8	198 47.1	N22 45.7	305 55.5	S02 05.2
	12	321 34.0	347 40.1	S12 21.7	003 48.6	S17 22.3	213 49.8	N22 45.7	320 57.7	S02 05.0
	13	336 36.5	002 39.5	S12 20.6	018 49.1	S17 21.7	228 52.5	N22 45.7	335 59.9	S02 04.9
	14	351 38.9	017 39.0	S12 19.4	033 49.6	S17 21.1	243 55.2	N22 45.7	351 02.1	S02 04.8
	15	006 41.4	032 38.5	S12 18.3	048 50.1	S17 20.5	258 57.9	N22 45.8	006 04.3	S02 04.7
	16	021 43.9	047 37.9	S12 17.2	063 50.6	S17 20.0	274 00.6	N22 45.8	021 06.5	S02 04.6
	17	036 46.3	062 37.4	S12 16.1	078 51.1	S17 19.4	289 03.3	N22 45.8	036 08.8	S02 04.5
	18	051 48.8	077 36.9	S12 15.0	093 51.6	S17 18.8	304 06.0	N22 45.9	051 11.0	S02 04.4
	19	066 51.3	092 36.3	S12 13.9	108 52.0	S17 18.2	319 08.7	N22 45.9	066 13.2	S02 04.3
	20	081 53.7	107 35.8	S12 12.8	123 52.5	S17 17.7	334 11.4	N22 45.9	081 15.4	S02 04.2
	21	096 56.2	122 35.3	S12 11.7	138 53.0	S17 17.1	349 14.1	N22 46.0	096 17.6	S02 04.0
	22	111 58.7	137 34.8	S12 10.5	153 53.5	S17 16.5	004 16.8	N22 46.0	111 19.8	S02 03.9
	23	127 01.1	152 34.2	S12 09.4	168 54.0	S17 15.9	019 19.5	N22 46.0	126 22.1	S02 03.8

Venus	Mars	Jupiter	Saturn
9: v -0.6 d 1.1	9: v 0.5 d 0.6	9: v 2.7 d 0.0	9: v 2.2 d 0.1
10: v -0.5 d 1.1	10: v 0.5 d 0.6	10: v 2.7 d 0.0	10: v 2.2 d 0.1
11: v -0.5 d 1.1	11: v 0.5 d 0.6	11: v 2.7 d 0.0	11: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.1	S40 12.2
Achernar	335 19.7	S57 06.5
Acrux	172 58.6	S63 14.5
Adhara	255 04.8	S29 00.6
Al Na'ir	027 32.2	S46 50.2
Aldebaran	290 38.4	N16 33.7
Alioth	166 11.8	N55 48.7
Alkaid	152 51.1	N49 10.6
Alnilam	275 36.6	S01 11.2
Alphard	217 46.5	S08 46.4
Alphecca	126 03.0	N26 37.3
Alpheratz	357 34.1	N29 14.1
Altair	061 59.4	N08 56.1
Ankaa	353 06.5	S42 10.0
Antares	112 14.8	S26 29.4
Arcturus	145 47.0	N19 02.5
Atria	107 08.5	S69 04.2
Avior	234 13.8	S59 35.7
Bellatrix	278 21.7	N06 22.3
Betelgeuse	270 50.9	N07 24.7
Canopus	263 51.6	S52 42.8
Capella	280 20.3	N46 01.6
Deneb	049 25.6	N45 22.3
Denebola	182 23.7	N14 25.4
Diphda	348 46.6	S17 50.7
Dubhe	193 39.3	N61 36.4
Elnath	278 00.5	N28 37.8
Eltanin	090 42.1	N51 28.8
Enif	033 38.2	N09 59.6
Fomalhaut	015 13.8	S29 29.2
Gacrux	171 50.3	S57 15.5
Gienah	175 42.4	S17 41.3
Hadar	148 34.5	S60 29.7
Hamal	327 50.3	N23 35.2
Kaus Australi	083 31.6	S34 22.3
Kochab	137 19.7	N74 02.4
Markab	013 29.3	N15 20.7
Menkar	314 05.2	N04 11.5
Menkent	147 56.4	S36 29.8
Miaplacidus	221 37.2	S69 49.5
Mirfak	308 26.9	N49 57.4
Nunki	075 46.9	S26 15.9
Peacock	053 04.9	S56 39.0
Polaris	313 35.0	N89 22.8
Pollux	243 15.8	N27 57.7
Procyon	244 49.6	N05 09.4
Rasalhague	095 57.9	N12 32.3
Regulus	207 33.1	N11 50.2
Rigel	281 02.8	S08 10.4
Rigil Kentaur	139 38.9	S60 56.4
Sabik	102 01.9	S15 45.5
Schedar	349 30.4	N56 41.0
Shaula	096 09.4	S37 07.3
Sirius	258 25.2	S16 45.3
Spica	158 21.2	S11 18.0
Suhail	222 45.2	S43 32.4
Vega	080 32.9	N38 48.2
Zubenelgenubi	136 55.0	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	027 18.1	1248
Mars	043 01.9	1146
Jupiter	252 10.2	2147
Saturn	359 29.5	1439

2026 | FEBRUARY 9 - FEBRUARY 11

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
9	00	176 27.9	S14 44.4	278 37.5	S20 43.9	54.5	13.5	-10.1
	01	191 27.9	S14 43.6	293 09.9	S20 54.0	54.4	13.4	-10.0
	02	206 27.9	S14 42.8	307 42.4	S21 04.0	54.4	13.4	-9.9
	03	221 27.9	S14 42.0	322 14.7	S21 13.9	54.4	13.3	-9.8
	04	236 27.8	S14 41.2	336 47.0	S21 23.7	54.4	13.2	-9.7
	05	251 27.8	S14 40.4	351 19.3	S21 33.4	54.4	13.2	-9.6
	06	266 27.8	S14 39.6	005 51.4	S21 43.0	54.4	13.1	-9.5
	07	281 27.8	S14 38.8	020 23.6	S21 52.6	54.4	13.1	-9.4
	08	296 27.8	S14 38.0	034 55.7	S22 02.0	54.4	13.0	-9.3
	09	311 27.8	S14 37.2	049 27.7	S22 11.3	54.4	13.0	-9.2
	10	326 27.7	S14 36.4	063 59.7	S22 20.5	54.3	12.9	-9.1
	11	341 27.7	S14 35.6	078 31.6	S22 29.7	54.3	12.9	-9.0
	12	356 27.7	S14 34.8	093 03.4	S22 38.7	54.3	12.8	-8.9
	13	011 27.7	S14 34.0	107 35.2	S22 47.6	54.3	12.7	-8.8
	14	026 27.7	S14 33.2	122 07.0	S22 56.5	54.3	12.7	-8.7
	15	041 27.7	S14 32.4	136 38.7	S23 05.2	54.3	12.6	-8.6
	16	056 27.7	S14 31.6	151 10.3	S23 13.8	54.3	12.6	-8.5
	17	071 27.6	S14 30.7	165 41.9	S23 22.4	54.3	12.5	-8.4
	18	086 27.6	S14 29.9	180 13.4	S23 30.8	54.3	12.5	-8.3
	19	101 27.6	S14 29.1	194 44.9	S23 39.1	54.3	12.4	-8.2
	20	116 27.6	S14 28.3	209 16.3	S23 47.3	54.3	12.3	-8.1
	21	131 27.6	S14 27.5	223 47.6	S23 55.4	54.3	12.3	-8.0
	22	146 27.6	S14 26.7	238 18.9	S24 03.4	54.3	12.2	-7.9
	23	161 27.6	S14 25.9	252 50.1	S24 11.3	54.2	12.2	-7.8
10	00	176 27.6	S14 25.1	267 21.3	S24 19.1	54.2	12.1	-7.7
	01	191 27.6	S14 24.3	281 52.4	S24 26.8	54.2	12.1	-7.6
	02	206 27.5	S14 23.5	296 23.4	S24 34.3	54.2	12.0	-7.5
	03	221 27.5	S14 22.6	310 54.4	S24 41.8	54.2	11.9	-7.3
	04	236 27.5	S14 21.8	325 25.4	S24 49.2	54.2	11.9	-7.2
	05	251 27.5	S14 21.0	339 56.2	S24 56.4	54.2	11.8	-7.1
	06	266 27.5	S14 20.2	354 27.0	S25 03.5	54.2	11.8	-7.0
	07	281 27.5	S14 19.4	008 57.8	S25 10.5	54.2	11.7	-6.9
	08	296 27.5	S14 18.6	023 28.5	S25 17.4	54.2	11.6	-6.8
	09	311 27.5	S14 17.8	037 59.2	S25 24.2	54.2	11.6	-6.7
	10	326 27.5	S14 17.0	052 29.7	S25 30.9	54.2	11.5	-6.6
	11	341 27.5	S14 16.1	067 00.3	S25 37.4	54.2	11.5	-6.4
	12	356 27.5	S14 15.3	081 30.7	S25 43.9	54.2	11.4	-6.3
	13	011 27.4	S14 14.5	096 01.2	S25 50.2	54.2	11.4	-6.2
	14	026 27.4	S14 13.7	110 31.5	S25 56.4	54.2	11.3	-6.1
	15	041 27.4	S14 12.9	125 01.8	S26 02.5	54.2	11.2	-6.0
	16	056 27.4	S14 12.1	139 32.1	S26 08.5	54.2	11.2	-5.8
	17	071 27.4	S14 11.2	154 02.3	S26 14.3	54.2	11.1	-5.7
	18	086 27.4	S14 10.4	168 32.4	S26 20.0	54.2	11.1	-5.6
	19	101 27.4	S14 09.6	183 02.5	S26 25.6	54.2	11.0	-5.5
	20	116 27.4	S14 08.8	197 32.5	S26 31.1	54.2	11.0	-5.4
	21	131 27.4	S14 08.0	212 02.5	S26 36.5	54.2	10.9	-5.2
	22	146 27.4	S14 07.2	226 32.4	S26 41.7	54.2	10.9	-5.1
	23	161 27.4	S14 06.3	241 02.3	S26 46.8	54.2	10.8	-5.0
11	00	176 27.4	S14 05.5	255 32.1	S26 51.8	54.2	10.8	-4.9
	01	191 27.4	S14 04.7	270 01.9	S26 56.7	54.2	10.7	-4.7
	02	206 27.4	S14 03.9	284 31.6	S27 01.4	54.2	10.7	-4.6
	03	221 27.4	S14 03.0	299 01.3	S27 06.1	54.2	10.6	-4.5
	04	236 27.4	S14 02.2	313 30.9	S27 10.6	54.2	10.6	-4.4
	05	251 27.4	S14 01.4	328 00.4	S27 14.9	54.2	10.5	-4.2
	06	266 27.4	S14 00.6	342 30.0	S27 19.2	54.2	10.5	-4.1
	07	281 27.4	S13 59.8	356 59.4	S27 23.3	54.2	10.4	-4.0
	08	296 27.4	S13 58.9	011 28.8	S27 27.2	54.2	10.4	-3.9
	09	311 27.4	S13 58.1	025 58.2	S27 31.1	54.2	10.3	-3.7
	10	326 27.4	S13 57.3	040 27.5	S27 34.8	54.2	10.3	-3.6
	11	341 27.4	S13 56.5	054 56.8	S27 38.4	54.2	10.2	-3.5
	12	356 27.4	S13 55.6	069 26.1	S27 41.9	54.3	10.2	-3.3
	13	011 27.4	S13 54.8	083 55.3	S27 45.2	54.3	10.2	-3.2
	14	026 27.4	S13 54.0	098 24.4	S27 48.4	54.3	10.1	-3.1
	15	041 27.4	S13 53.2	112 53.5	S27 51.4	54.3	10.1	-2.9
	16	056 27.4	S13 52.3	127 22.6	S27 54.4	54.3	10.0	-2.8
	17	071 27.4	S13 51.5	141 51.6	S27 57.2	54.3	10.0	-2.7
	18	086 27.4	S13 50.7	156 20.6	S27 59.8	54.3	10.0	-2.5
	19	101 27.4	S13 49.9	170 49.6	S28 02.4	54.3	9.9	-2.4
	20	116 27.4	S13 49.0	185 18.5	S28 04.8	54.3	9.9	-2.3
	21	131 27.4	S13 48.2	199 47.4	S28 07.0	54.3	9.8	-2.1
	22	146 27.4	S13 47.4	214 16.2	S28 09.1	54.3	9.8	-2.0
	23	161 27.4	S13 46.5	228 45.0	S28 11.1	54.3	9.8	-1.8

Day 9 noon Sun: v 0.0 d 0.8 SD 16.2 | Moon SD 14.8

Day 10 noon Sun: v 0.0 d 0.8 SD 16.2 | Moon SD 14.8

Day 11 noon Sun: v 0.0 d 0.8 SD 16.2 | Moon SD 14.8

SUN: FEBRUARY 10 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0635	0758	0924	1506	1632	1755
70N	0631	0745	0858	1531	1645	1759
68N	0628	0735	0839	1551	1655	1802
66N	0625	0726	0824	1606	1704	1805
64N	0622	0719	0811	1618	1711	1808
62N	0620	0712	0801	1629	1717	1810
60N	0617	0707	0751	1638	1723	1812
58N	0615	0701	0743	1646	1728	1814
56N	0613	0657	0736	1653	1732	1816
54N	0611	0653	0730	1659	1736	1818
52N	0609	0649	0725	1705	1740	1820
50N	0607	0646	0719	1710	1744	1822
45N	0603	0638	0708	1721	1751	1826
40N	0559	0631	0659	1730	1758	1830
35N	0555	0625	0651	1738	1804	1834
30N	0551	0619	0644	1745	1809	1838
25N	0547	0614	0638	1751	1814	1841
20N	0543	0609	0632	1757	1819	1846
15N	0539	0604	0626	1802	1824	1850
10N	0534	0559	0621	1807	1829	1854
05N	0530	0554	0616	1813	1834	1859
00N	0525	0549	0611	1818	1839	1904
05S	0519	0544	0606	1823	1844	1909
10S	0513	0539	0600	1828	1850	1915
15S	0507	0533	0555	1833	1855	1922
20S	0459	0526	0549	1839	1902	1929
25S	0451	0519	0543	1845	1909	1937
30S	0441	0511	0536	1852	1917	1947
35S	0429	0502	0529	1859	1926	1958
40S	0415	0451	0520	1908	1937	2012
45S	0358	0438	0510	1918	1950	2029
50S	0335	0421	0458	1930	2006	2051
55S	0303	0400	0442	1945	2027	2123
60S	0211	0329	0421	2005	2057	2213

MOON: RISE / SET | UTC HHMM

Lat	Day 9		Day 10		Day 11	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	0450	0607	--	--	--	--
66N	0340	0718	--	--	--	--
64N	0304	0754	0515	0722	--	--
62N	0239	0821	0423	0813	0621	0759
60N	0219	0841	0352	0845	0524	0856
58N	0203	0858	0329	0909	0451	0929
56N	0149	0913	0310	0928	0427	0954
54N	0137	0925	0254	0945	0407	1014
52N	0126	0936	0240	0959	0351	1030
50N	0117	0946	0229	1011	0337	1045
45N	0058	1006	0204	1036	0308	1114
40N	0042	1023	0145	1056	0246	1136
35N	0029	1037	0128	1113	0227	1155
30N	0017	1050	0114	1128	0211	1212
25N	0007	1101	0102	1141	0157	1226
20N	--	1111	0051	1153	0145	1239
15N	--	1121	0040	1204	0133	1251
10N	--	1130	0030	1214	0122	1303
05N	--	1138	0021	1225	0111	1314
00N	--	1147	0011	1235	0100	1325
05S	--	1156	0002	1245	0050	1336
10S	2352	1204	--	1255	0039	1347
15S	2343	1213	--	1306	0028	1358
20S	2332	1223	--	1317	0016	1411
25S	2321	1233	--	1329	0004	1424
30S	2309	1245	2350	1342	--	1438
35S	2256	1257	2335	1357	--	1455
40S	2240	1312	2317	1414	--	1514
45S	2222	1330	2255	1435	2337	1537
50S	2159	1352	2228	1502	2307	1606
55S	2129	1420	2151	1538	2225	1648
60S	2045	1503	2053	1635	2112	1801

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | FEBRUARY 12 - FEBRUARY 14

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
12	00	142 03.6	167 33.7	S12 08.3	183 54.5	S17 15.4	034 22.2	N22 46.0	141 24.3	S02 03.7
	01	157 06.1	182 33.2	S12 07.2	198 55.0	S17 14.8	049 24.9	N22 46.1	156 26.5	S02 03.6
	02	172 08.5	197 32.7	S12 06.1	213 55.5	S17 14.2	064 27.5	N22 46.1	171 28.7	S02 03.5
	03	187 11.0	212 32.1	S12 05.0	228 56.0	S17 13.6	079 30.2	N22 46.1	186 30.9	S02 03.4
	04	202 13.4	227 31.6	S12 03.8	243 56.5	S17 13.1	094 32.9	N22 46.2	201 33.2	S02 03.3
	05	217 15.9	242 31.1	S12 02.7	258 57.0	S17 12.5	109 35.6	N22 46.2	216 35.4	S02 03.1
	06	232 18.4	257 30.6	S12 01.6	273 57.5	S17 11.9	124 38.3	N22 46.2	231 37.6	S02 03.0
	07	247 20.8	272 30.0	S12 00.5	288 58.0	S17 11.3	139 41.0	N22 46.2	246 39.8	S02 02.9
	08	262 23.3	287 29.5	S11 59.4	303 58.5	S17 10.7	154 43.7	N22 46.3	261 42.0	S02 02.8
	09	277 25.8	302 29.0	S11 58.2	318 59.0	S17 10.2	169 46.4	N22 46.3	276 44.2	S02 02.7
	10	292 28.2	317 28.5	S11 57.1	333 59.5	S17 09.6	184 49.1	N22 46.3	291 46.5	S02 02.6
	11	307 30.7	332 27.9	S11 56.0	349 00.0	S17 09.0	199 51.8	N22 46.4	306 48.7	S02 02.5
	12	322 33.2	347 27.4	S11 54.9	004 00.5	S17 08.4	214 54.5	N22 46.4	321 50.9	S02 02.4
	13	337 35.6	002 26.9	S11 53.7	019 01.0	S17 07.8	229 57.1	N22 46.4	336 53.1	S02 02.3
	14	352 38.1	017 26.4	S11 52.6	034 01.5	S17 07.3	244 59.8	N22 46.5	351 55.3	S02 02.1
	15	007 40.6	032 25.9	S11 51.5	049 02.0	S17 06.7	260 02.5	N22 46.5	006 57.5	S02 02.0
	16	022 43.0	047 25.3	S11 50.4	064 02.5	S17 06.1	275 05.2	N22 46.5	021 59.7	S02 01.9
	17	037 45.5	062 24.8	S11 49.2	079 03.0	S17 05.5	290 07.9	N22 46.5	037 02.0	S02 01.8
	18	052 47.9	077 24.3	S11 48.1	094 03.5	S17 04.9	305 10.6	N22 46.6	052 04.2	S02 01.7
	19	067 50.4	092 23.8	S11 47.0	109 04.0	S17 04.3	320 13.3	N22 46.6	067 06.4	S02 01.6
	20	082 52.9	107 23.3	S11 45.9	124 04.5	S17 03.8	335 16.0	N22 46.6	082 08.6	S02 01.5
	21	097 55.3	122 22.7	S11 44.7	139 05.0	S17 03.2	350 18.6	N22 46.7	097 10.8	S02 01.4
	22	112 57.8	137 22.2	S11 43.6	154 05.5	S17 02.6	005 21.3	N22 46.7	112 13.0	S02 01.2
	23	128 00.3	152 21.7	S11 42.5	169 06.0	S17 02.0	020 24.0	N22 46.7	127 15.3	S02 01.1
13	00	143 02.7	167 21.2	S11 41.4	184 06.5	S17 01.4	035 26.7	N22 46.7	142 17.5	S02 01.0
	01	158 05.2	182 20.7	S11 40.2	199 07.0	S17 00.8	050 29.4	N22 46.8	157 19.7	S02 00.9
	02	173 07.7	197 20.2	S11 39.1	214 07.5	S17 00.3	065 32.1	N22 46.8	172 21.9	S02 00.8
	03	188 10.1	212 19.6	S11 38.0	229 08.0	S16 59.7	080 34.8	N22 46.8	187 24.1	S02 00.7
	04	203 12.6	227 19.1	S11 36.8	244 08.5	S16 59.1	095 37.4	N22 46.9	202 26.3	S02 00.6
	05	218 15.1	242 18.6	S11 35.7	259 09.0	S16 58.5	110 40.1	N22 46.9	217 28.5	S02 00.5
	06	233 17.5	257 18.1	S11 34.6	274 09.5	S16 57.9	125 42.8	N22 46.9	232 30.8	S02 00.3
	07	248 20.0	272 17.6	S11 33.4	289 10.0	S16 57.3	140 45.5	N22 46.9	247 33.0	S02 00.2
	08	263 22.4	287 17.1	S11 32.3	304 10.5	S16 56.7	155 48.2	N22 47.0	262 35.2	S02 00.1
	09	278 24.9	302 16.6	S11 31.2	319 11.0	S16 56.1	170 50.9	N22 47.0	277 37.4	S02 00.0
	10	293 27.4	317 16.1	S11 30.0	334 11.5	S16 55.6	185 53.5	N22 47.0	292 39.6	S01 59.9
	11	308 29.8	332 15.5	S11 28.9	349 12.0	S16 55.0	200 56.2	N22 47.0	307 41.8	S01 59.8
	12	323 32.3	347 15.0	S11 27.8	004 12.5	S16 54.4	215 58.9	N22 47.1	322 44.0	S01 59.7
	13	338 34.8	002 14.5	S11 26.6	019 13.0	S16 53.8	231 01.6	N22 47.1	337 46.3	S01 59.6
	14	353 37.2	017 14.0	S11 25.5	034 13.6	S16 53.2	246 04.3	N22 47.1	352 48.5	S01 59.4
	15	008 39.7	032 13.5	S11 24.3	049 14.1	S16 52.6	261 06.9	N22 47.2	007 50.7	S01 59.3
	16	023 42.2	047 13.0	S11 23.2	064 14.6	S16 52.0	276 09.6	N22 47.2	022 52.9	S01 59.2
	17	038 44.6	062 12.5	S11 22.1	079 15.1	S16 51.4	291 12.3	N22 47.2	037 55.1	S01 59.1
	18	053 47.1	077 12.0	S11 20.9	094 15.6	S16 50.8	306 15.0	N22 47.2	052 57.3	S01 59.0
	19	068 49.5	092 11.5	S11 19.8	109 16.1	S16 50.3	321 17.7	N22 47.3	067 59.5	S01 58.9
	20	083 52.0	107 11.0	S11 18.6	124 16.6	S16 49.7	336 20.3	N22 47.3	083 01.8	S01 58.8
	21	098 54.5	122 10.5	S11 17.5	139 17.1	S16 49.1	351 23.0	N22 47.3	098 04.0	S01 58.7
	22	113 56.9	137 09.9	S11 16.4	154 17.6	S16 48.5	006 25.7	N22 47.4	113 06.2	S01 58.5
	23	128 59.4	152 09.4	S11 15.2	169 18.1	S16 47.9	021 28.4	N22 47.4	128 08.4	S01 58.4
14	00	144 01.9	167 08.9	S11 14.1	184 18.6	S16 47.3	036 31.1	N22 47.4	143 10.6	S01 58.3
	01	159 04.3	182 08.4	S11 12.9	199 19.1	S16 46.7	051 33.7	N22 47.4	158 12.8	S01 58.2
	02	174 06.8	197 07.9	S11 11.8	214 19.6	S16 46.1	066 36.4	N22 47.5	173 15.0	S01 58.1
	03	189 09.3	212 07.4	S11 10.7	229 20.1	S16 45.5	081 39.1	N22 47.5	188 17.3	S01 58.0
	04	204 11.7	227 06.9	S11 09.5	244 20.6	S16 44.9	096 41.8	N22 47.5	203 19.5	S01 57.9
	05	219 14.2	242 06.4	S11 08.4	259 21.1	S16 44.3	111 44.4	N22 47.5	218 21.7	S01 57.7
	06	234 16.7	257 05.9	S11 07.2	274 21.6	S16 43.7	126 47.1	N22 47.6	233 23.9	S01 57.6
	07	249 19.1	272 05.4	S11 06.1	289 22.1	S16 43.1	141 49.8	N22 47.6	248 26.1	S01 57.5
	08	264 21.6	287 04.9	S11 04.9	304 22.7	S16 42.6	156 52.5	N22 47.6	263 28.3	S01 57.4
	09	279 24.0	302 04.4	S11 03.8	319 23.2	S16 42.0	171 55.1	N22 47.7	278 30.5	S01 57.3
	10	294 26.5	317 03.9	S11 02.6	334 23.7	S16 41.4	186 57.8	N22 47.7	293 32.7	S01 57.2
	11	309 29.0	332 03.4	S11 01.5	349 24.2	S16 40.8	202 00.5	N22 47.7	308 35.0	S01 57.1
	12	324 31.4	347 02.9	S11 00.3	004 24.7	S16 40.2	217 03.2	N22 47.7	323 37.2	S01 57.0
	13	339 33.9	002 02.4	S10 59.2	019 25.2	S16 39.6	232 05.8	N22 47.8	338 39.4	S01 56.8
	14	354 36.4	017 01.9	S10 58.0	034 25.7	S16 39.0	247 08.5	N22 47.8	353 41.6	S01 56.7
	15	009 38.8	032 01.4	S10 56.9	049 26.2	S16 38.4	262 11.2	N22 47.8	008 43.8	S01 56.6
	16	024 41.3	047 00.9	S10 55.7	064 26.7	S16 37.8	277 13.9	N22 47.8	023 46.0	S01 56.5
	17	039 43.8	062 00.4	S10 54.6	079 27.2	S16 37.2	292 16.5	N22 47.9	038 48.2	S01 56.4
	18	054 46.2	076 59.9	S10 53.4	094 27.7	S16 36.6	307 19.2	N22 47.9	053 50.4	S01 56.3
	19	069 48.7	091 59.4	S10 52.3	109 28.2	S16 36.0	322 21.9	N22 47.9	068 52.7	S01 56.2
	20	084 51.2	106 58.9	S10 51.1	124 28.7	S16 35.4	337 24.5	N22 47.9	083 54.9	S01 56.0
	21	099 53.6	121 58.4	S10 50.0	139 29.3	S16 34.8	352 27.2	N22 48.0	098 57.1	S01 55.9
	22	114 56.1	136 57.9	S10 48.8	154 29.8	S16 34.2	007 29.9	N22 48.0	113 59.3	S01 55.8
	23	129 58.5	151 57.4	S10 47.7	169 30.3	S16 33.6	022 32.6	N22 48.0	129 01.5	S01 55.7

Venus	Mars	Jupiter	Saturn
12: v -0.5 d 1.1	12: v 0.5 d 0.6	12: v 2.7 d 0.0	12: v 2.2 d 0.1
13: v -0.5 d 1.1	13: v 0.5 d 0.6	13: v 2.7 d 0.0	13: v 2.2 d 0.1
14: v -0.5 d 1.1	14: v 0.5 d 0.6	14: v 2.7 d 0.0	14: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.1	S40 12.2
Achernar	335 19.7	S57 06.5
Acrux	172 58.6	S63 14.5
Adhara	255 04.8	S29 00.6
Al Na'ir	027 32.2	S46 50.1
Aldebaran	290 38.4	N16 33.7
Alioth	166 11.8	N55 48.8
Alkaid	152 51.1	N49 10.6
Alnilam	275 36.6	S01 11.2
Alphard	217 46.5	S08 46.4
Alphecca	126 03.0	N26 37.3
Alpheratz	357 34.1	N29 14.1
Altair	061 59.4	N08 56.1
Ankaa	353 06.5	S42 10.0
Antares	112 14.8	S26 29.4
Arcturus	145 47.0	N19 02.5
Atria	107 08.4	S69 04.2
Avior	234 13.8	S59 35.7
Bellatrix	278 21.7	N06 22.3
Betelgeuse	270 50.9	N07 24.7
Canopus	263 51.6	S52 42.8
Capella	280 20.3	N46 01.6
Deneb	049 25.6	N45 22.3
Denebola	182 23.7	N14 25.4
Diphda	348 46.6	S17 50.7
Dubhe	193 39.2	N61 36.4
Elnath	278 00.5	N28 37.8
Eltanin	090 42.1	N51 28.8
Enif	033 38.2	N09 59.6
Fomalhaut	015 13.8	S29 29.1
Gacrux	171 50.2	S57 15.5
Gienah	175 42.4	S17 41.3
Hadar	148 34.5	S60 29.8
Hamal	327 50.3	N23 35.2
Kaus Australi	083 31.6	S34 22.3
Kochab	137 19.6	N74 02.4
Markab	013 29.3	N15 20.7
Menkar	314 05.2	N04 11.5
Menkent	147 56.4	S36 29.9
Miaplacidus	221 37.2	S69 49.5
Mirfak	308 26.9	N49 57.4
Nunki	075 46.9	S26 15.9
Peacock	053 04.8	S56 39.0
Polaris	313 36.3	N89 22.8
Pollux	243 15.8	N27 57.7
Procyon	244 49.6	N05 09.4
Rasalhague	095 57.9	N12 32.3
Regulus	207 33.1	N11 50.2
Rigel	281 02.8	S08 10.4
Rigil Kentaur	139 38.9	S60 56.4
Sabik	102 01.9	S15 45.5
Schedar	349 30.4	N56 41.0
Shaula	096 09.3	S37 07.3
Sirius	258 25.2	S16 45.3
Spica	158 21.2	S11 18.0
Suhail	222 45.2	S43 32.4
Vega	080 32.9	N38 48.2
Zubenelgenubi	136 54.9	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	023 42.7	1251
Mars	040 40.2	1143
Jupiter	252 26.6	2134
Saturn	359 11.7	1429

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
12	00	176 27.4	S13 45.7	243 13.8	S28 13.0	54.3	9.7	-1.7
	01	191 27.4	S13 44.9	257 42.6	S28 14.7	54.3	9.7	-1.6
	02	206 27.4	S13 44.0	272 11.3	S28 16.3	54.4	9.7	-1.4
	03	221 27.4	S13 43.2	286 40.0	S28 17.7	54.4	9.7	-1.3
	04	236 27.4	S13 42.4	301 08.6	S28 19.0	54.4	9.6	-1.2
	05	251 27.4	S13 41.5	315 37.2	S28 20.2	54.4	9.6	-1.0
	06	266 27.4	S13 40.7	330 05.8	S28 21.2	54.4	9.6	-0.9
	07	281 27.4	S13 39.9	344 34.4	S28 22.1	54.4	9.5	-0.7
	08	296 27.5	S13 39.1	359 02.9	S28 22.8	54.4	9.5	-0.6
	09	311 27.5	S13 38.2	013 31.5	S28 23.4	54.4	9.5	-0.5
	10	326 27.5	S13 37.4	028 00.0	S28 23.9	54.4	9.5	-0.3
	11	341 27.5	S13 36.6	042 28.5	S28 24.2	54.5	9.5	-0.2
	12	356 27.5	S13 35.7	056 56.9	S28 24.4	54.5	9.4	0.0
	13	011 27.5	S13 34.9	071 25.4	S28 24.4	54.5	9.4	0.1
	14	026 27.5	S13 34.0	085 53.8	S28 24.3	54.5	9.4	0.2
	15	041 27.5	S13 33.2	100 22.2	S28 24.1	54.5	9.4	0.4
	16	056 27.5	S13 32.4	114 50.6	S28 23.7	54.5	9.4	0.5
	17	071 27.5	S13 31.5	129 18.9	S28 23.2	54.5	9.4	0.7
	18	086 27.5	S13 30.7	143 47.3	S28 22.5	54.5	9.4	0.8
	19	101 27.6	S13 29.9	158 15.7	S28 21.7	54.6	9.3	0.9
	20	116 27.6	S13 29.0	172 44.0	S28 20.8	54.6	9.3	1.1
	21	131 27.6	S13 28.2	187 12.3	S28 19.7	54.6	9.3	1.2
	22	146 27.6	S13 27.3	201 40.7	S28 18.4	54.6	9.3	1.4
	23	161 27.6	S13 26.5	216 09.0	S28 17.1	54.6	9.3	1.5
13	00	176 27.6	S13 25.7	230 37.3	S28 15.5	54.6	9.3	1.7
	01	191 27.6	S13 24.8	245 05.6	S28 13.9	54.6	9.3	1.8
	02	206 27.6	S13 24.0	259 33.9	S28 12.1	54.7	9.3	1.9
	03	221 27.7	S13 23.2	274 02.2	S28 10.1	54.7	9.3	2.1
	04	236 27.7	S13 22.3	288 30.5	S28 08.0	54.7	9.3	2.2
	05	251 27.7	S13 21.5	302 58.8	S28 05.8	54.7	9.3	2.4
	06	266 27.7	S13 20.6	317 27.1	S28 03.4	54.7	9.3	2.5
	07	281 27.7	S13 19.8	331 55.4	S28 00.9	54.7	9.3	2.7
	08	296 27.7	S13 18.9	346 23.7	S27 58.3	54.8	9.3	2.8
	09	311 27.7	S13 18.1	000 52.0	S27 55.4	54.8	9.3	2.9
	10	326 27.8	S13 17.3	015 20.3	S27 52.5	54.8	9.3	3.1
	11	341 27.8	S13 16.4	029 48.6	S27 49.4	54.8	9.3	3.2
	12	356 27.8	S13 15.6	044 17.0	S27 46.2	54.8	9.3	3.4
	13	011 27.8	S13 14.7	058 45.3	S27 42.8	54.8	9.4	3.5
	14	026 27.8	S13 13.9	073 13.7	S27 39.3	54.9	9.4	3.7
	15	041 27.8	S13 13.0	087 42.0	S27 35.6	54.9	9.4	3.8
	16	056 27.9	S13 12.2	102 10.4	S27 31.8	54.9	9.4	3.9
	17	071 27.9	S13 11.3	116 38.8	S27 27.9	54.9	9.4	4.1
	18	086 27.9	S13 10.5	131 07.2	S27 23.8	54.9	9.4	4.2
	19	101 27.9	S13 09.7	145 35.6	S27 19.6	55.0	9.4	4.4
	20	116 27.9	S13 08.8	160 04.1	S27 15.2	55.0	9.5	4.5
	21	131 27.9	S13 08.0	174 32.5	S27 10.7	55.0	9.5	4.6
	22	146 28.0	S13 07.1	189 01.0	S27 06.1	55.0	9.5	4.8
	23	161 28.0	S13 06.3	203 29.5	S27 01.3	55.0	9.5	4.9
14	00	176 28.0	S13 05.4	217 58.0	S26 56.4	55.0	9.5	5.1
	01	191 28.0	S13 04.6	232 26.6	S26 51.3	55.1	9.6	5.2
	02	206 28.0	S13 03.7	246 55.1	S26 46.1	55.1	9.6	5.3
	03	221 28.1	S13 02.9	261 23.7	S26 40.8	55.1	9.6	5.5
	04	236 28.1	S13 02.0	275 52.3	S26 35.3	55.1	9.6	5.6
	05	251 28.1	S13 01.2	290 21.0	S26 29.7	55.1	9.7	5.8
	06	266 28.1	S13 00.3	304 49.6	S26 23.9	55.2	9.7	5.9
	07	281 28.1	S12 59.5	319 18.4	S26 18.0	55.2	9.7	6.0
	08	296 28.2	S12 58.6	333 47.1	S26 12.0	55.2	9.8	6.2
	09	311 28.2	S12 57.8	348 15.8	S26 05.8	55.2	9.8	6.3
	10	326 28.2	S12 56.9	002 44.6	S25 59.5	55.3	9.8	6.4
	11	341 28.2	S12 56.1	017 13.5	S25 53.1	55.3	9.9	6.6
	12	356 28.3	S12 55.2	031 42.3	S25 46.5	55.3	9.9	6.7
	13	011 28.3	S12 54.4	046 11.2	S25 39.8	55.3	9.9	6.8
	14	026 28.3	S12 53.5	060 40.1	S25 33.0	55.3	10.0	7.0
	15	041 28.3	S12 52.6	075 09.1	S25 26.0	55.4	10.0	7.1
	16	056 28.4	S12 51.8	089 38.1	S25 18.9	55.4	10.0	7.2
	17	071 28.4	S12 50.9	104 07.1	S25 11.7	55.4	10.1	7.4
	18	086 28.4	S12 50.1	118 36.2	S25 04.3	55.4	10.1	7.5
	19	101 28.4	S12 49.2	133 05.3	S24 56.8	55.5	10.1	7.6
	20	116 28.5	S12 48.4	147 34.4	S24 49.2	55.5	10.2	7.8
	21	131 28.5	S12 47.5	162 03.6	S24 41.4	55.5	10.2	7.9
	22	146 28.5	S12 46.7	176 32.8	S24 33.5	55.5	10.3	8.0
	23	161 28.5	S12 45.8	191 02.1	S24 25.5	55.5	10.3	8.1

Day 12 noon Sun: v 0.0 d 0.8 SD 16.2 | Moon SD 14.8

Day 13 noon Sun: v 0.0 d 0.8 SD 16.2 | Moon SD 14.9

Day 14 noon Sun: v 0.0 d 0.9 SD 16.2 | Moon SD 15.1

SUN: FEBRUARY 13 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0623	0744	0905	1525	1646	1807
70N	0620	0733	0843	1546	1657	1810
68N	0618	0724	0826	1603	1706	1812
66N	0616	0716	0813	1617	1713	1814
64N	0614	0710	0801	1628	1720	1816
62N	0612	0704	0752	1638	1725	1818
60N	0610	0659	0744	1646	1730	1819
58N	0609	0655	0736	1653	1734	1821
56N	0607	0651	0730	1659	1738	1822
54N	0606	0647	0724	1705	1742	1824
52N	0604	0644	0719	1710	1745	1825
50N	0603	0641	0714	1715	1748	1826
45N	0559	0634	0704	1725	1755	1830
40N	0556	0628	0655	1733	1801	1833
35N	0552	0622	0648	1741	1807	1836
30N	0549	0617	0642	1747	1812	1840
25N	0545	0612	0636	1753	1816	1843
20N	0542	0608	0630	1758	1821	1847
15N	0538	0603	0625	1803	1825	1851
10N	0534	0559	0620	1808	1830	1855
05N	0529	0554	0615	1813	1834	1859
00N	0525	0549	0611	1818	1839	1903
05S	0520	0545	0606	1822	1844	1908
10S	0514	0539	0601	1827	1849	1914
15S	0508	0534	0556	1832	1854	1920
20S	0501	0528	0551	1837	1900	1927
25S	0453	0521	0545	1843	1907	1935
30S	0444	0514	0539	1849	1914	1944
35S	0433	0505	0532	1856	1923	1955
40S	0420	0455	0524	1904	1933	2007
45S	0403	0442	0514	1913	1945	2024
50S	0342	0427	0503	1924	2000	2045
55S	0312	0407	0448	1938	2020	2114
60S	0226	0339	0429	1957	2047	2159

MOON: RISE / SET | UTC HHMM

Lat	Day 12		Day 13		Day 14	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	--	--	--	--
62N	--	--	--	--	0818	1127
60N	0640	0927	0724	1033	0740	1205
58N	0600	1007	0647	1109	0713	1231
56N	0532	1035	0621	1135	0652	1252
54N	0511	1056	0600	1156	0635	1309
52N	0453	1114	0543	1213	0620	1324
50N	0437	1130	0528	1228	0607	1336
45N	0407	1201	0458	1257	0540	1402
40N	0343	1224	0434	1321	0519	1423
35N	0323	1244	0415	1340	0501	1440
30N	0307	1301	0358	1356	0446	1455
25N	0252	1316	0344	1410	0432	1508
20N	0238	1329	0330	1423	0420	1520
15N	0226	1342	0318	1436	0408	1531
10N	0214	1354	0306	1447	0357	1541
05N	0203	1405	0255	1458	0347	1551
00N	0151	1417	0244	1509	0336	1601
05S	0140	1428	0233	1520	0326	1611
10S	0129	1439	0221	1531	0315	1621
15S	0117	1451	0209	1542	0304	1631
20S	0105	1504	0157	1554	0252	1642
25S	0051	1517	0144	1607	0240	1653
30S	0037	1532	0129	1622	0226	1706
35S	0020	1549	0112	1638	0211	1720
40S	0001	1608	0053	1656	0152	1737
45S	--	1632	0029	1718	0131	1756
50S	2359	1702	--	1747	0103	1821
55S	2316	1745	--	1826	0024	1853
60S	2200	1902	2321	1930	--	1941

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | FEBRUARY 15 - FEBRUARY 17

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
15	00	145 01.0	166 56.9	S10 46.5	184 30.8	S16 33.0	037 35.2	N22 48.1	144 03.7	S01 55.6
	01	160 03.5	181 56.4	S10 45.4	199 31.3	S16 32.4	052 37.9	N22 48.1	159 05.9	S01 55.5
	02	175 05.9	196 55.9	S10 44.2	214 31.8	S16 31.8	067 40.6	N22 48.1	174 08.1	S01 55.4
	03	190 08.4	211 55.4	S10 43.0	229 32.3	S16 31.2	082 43.2	N22 48.1	189 10.3	S01 55.3
	04	205 10.9	226 54.9	S10 41.9	244 32.8	S16 30.6	097 45.9	N22 48.2	204 12.6	S01 55.1
	05	220 13.3	241 54.4	S10 40.7	259 33.3	S16 30.0	112 48.6	N22 48.2	219 14.8	S01 55.0
	06	235 15.8	256 54.0	S10 39.6	274 33.9	S16 29.4	127 51.2	N22 48.2	234 17.0	S01 54.9
	07	250 18.3	271 53.5	S10 38.4	289 34.4	S16 28.8	142 53.9	N22 48.2	249 19.2	S01 54.8
	08	265 20.7	286 53.0	S10 37.3	304 34.9	S16 28.2	157 56.6	N22 48.3	264 21.4	S01 54.7
	09	280 23.2	301 52.5	S10 36.1	319 35.4	S16 27.6	172 59.2	N22 48.3	279 23.6	S01 54.6
	10	295 25.7	316 52.0	S10 34.9	334 35.9	S16 27.0	188 01.9	N22 48.3	294 25.8	S01 54.5
	11	310 28.1	331 51.5	S10 33.8	349 36.4	S16 26.4	203 04.6	N22 48.3	309 28.0	S01 54.3
	12	325 30.6	346 51.0	S10 32.6	004 36.9	S16 25.8	218 07.2	N22 48.4	324 30.2	S01 54.2
	13	340 33.0	001 50.5	S10 31.5	019 37.4	S16 25.2	233 09.9	N22 48.4	339 32.5	S01 54.1
	14	355 35.5	016 50.0	S10 30.3	034 37.9	S16 24.6	248 12.6	N22 48.4	354 34.7	S01 54.0
	15	010 38.0	031 49.5	S10 29.1	049 38.5	S16 24.0	263 15.2	N22 48.4	009 36.9	S01 53.9
	16	025 40.4	046 49.0	S10 28.0	064 39.0	S16 23.4	278 17.9	N22 48.5	024 39.1	S01 53.8
	17	040 42.9	061 48.6	S10 26.8	079 39.5	S16 22.8	293 20.6	N22 48.5	039 41.3	S01 53.7
	18	055 45.4	076 48.1	S10 25.6	094 40.0	S16 22.2	308 23.2	N22 48.5	054 43.5	S01 53.5
	19	070 47.8	091 47.6	S10 24.5	109 40.5	S16 21.6	323 25.9	N22 48.5	069 45.7	S01 53.4
	20	085 50.3	106 47.1	S10 23.3	124 41.0	S16 21.0	338 28.6	N22 48.6	084 47.9	S01 53.3
	21	100 52.8	121 46.6	S10 22.2	139 41.5	S16 20.4	353 31.2	N22 48.6	099 50.1	S01 53.2
	22	115 55.2	136 46.1	S10 21.0	154 42.1	S16 19.7	008 33.9	N22 48.6	114 52.4	S01 53.1
	23	130 57.7	151 45.6	S10 19.8	169 42.6	S16 19.1	023 36.6	N22 48.6	129 54.6	S01 53.0
16	00	146 00.1	166 45.2	S10 18.7	184 43.1	S16 18.5	038 39.2	N22 48.7	144 56.8	S01 52.9
	01	161 02.6	181 44.7	S10 17.5	199 43.6	S16 17.9	053 41.9	N22 48.7	159 59.0	S01 52.7
	02	176 05.1	196 44.2	S10 16.3	214 44.1	S16 17.3	068 44.5	N22 48.7	175 01.2	S01 52.6
	03	191 07.5	211 43.7	S10 15.2	229 44.6	S16 16.7	083 47.2	N22 48.7	190 03.4	S01 52.5
	04	206 10.0	226 43.2	S10 14.0	244 45.1	S16 16.1	098 49.9	N22 48.8	205 05.6	S01 52.4
	05	221 12.5	241 42.7	S10 12.8	259 45.7	S16 15.5	113 52.5	N22 48.8	220 07.8	S01 52.3
	06	236 14.9	256 42.2	S10 11.7	274 46.2	S16 14.9	128 55.2	N22 48.8	235 10.0	S01 52.2
	07	251 17.4	271 41.8	S10 10.5	289 46.7	S16 14.3	143 57.8	N22 48.8	250 12.2	S01 52.1
	08	266 19.9	286 41.3	S10 09.3	304 47.2	S16 13.7	159 00.5	N22 48.9	265 14.4	S01 51.9
	09	281 22.3	301 40.8	S10 08.1	319 47.7	S16 13.1	174 03.2	N22 48.9	280 16.7	S01 51.8
	10	296 24.8	316 40.3	S10 07.0	334 48.2	S16 12.5	189 05.8	N22 48.9	295 18.9	S01 51.7
	11	311 27.3	331 39.8	S10 05.8	349 48.7	S16 11.8	204 08.5	N22 48.9	310 21.1	S01 51.6
	12	326 29.7	346 39.4	S10 04.6	004 49.3	S16 11.2	219 11.1	N22 49.0	325 23.3	S01 51.5
	13	341 32.2	001 38.9	S10 03.5	019 49.8	S16 10.6	234 13.8	N22 49.0	340 25.5	S01 51.4
	14	356 34.6	016 38.4	S10 02.3	034 50.3	S16 10.0	249 16.5	N22 49.0	355 27.7	S01 51.3
	15	011 37.1	031 37.9	S10 01.1	049 50.8	S16 09.4	264 19.1	N22 49.0	010 29.9	S01 51.1
	16	026 39.6	046 37.4	S09 59.9	064 51.3	S16 08.8	279 21.8	N22 49.1	025 32.1	S01 51.0
	17	041 42.0	061 37.0	S09 58.8	079 51.8	S16 08.2	294 24.4	N22 49.1	040 34.3	S01 50.9
	18	056 44.5	076 36.5	S09 57.6	094 52.4	S16 07.6	309 27.1	N22 49.1	055 36.5	S01 50.8
	19	071 47.0	091 36.0	S09 56.4	109 52.9	S16 07.0	324 29.7	N22 49.1	070 38.7	S01 50.7
	20	086 49.4	106 35.5	S09 55.2	124 53.4	S16 06.3	339 32.4	N22 49.2	085 41.0	S01 50.6
	21	101 51.9	121 35.0	S09 54.1	139 53.9	S16 05.7	354 35.1	N22 49.2	100 43.2	S01 50.5
	22	116 54.4	136 34.6	S09 52.9	154 54.4	S16 05.1	009 37.7	N22 49.2	115 45.4	S01 50.3
	23	131 56.8	151 34.1	S09 51.7	169 55.0	S16 04.5	024 40.4	N22 49.2	130 47.6	S01 50.2
17	00	146 59.3	166 33.6	S09 50.5	184 55.5	S16 03.9	039 43.0	N22 49.3	145 49.8	S01 50.1
	01	162 01.8	181 33.1	S09 49.4	199 56.0	S16 03.3	054 45.7	N22 49.3	160 52.0	S01 50.0
	02	177 04.2	196 32.7	S09 48.2	214 56.5	S16 02.7	069 48.3	N22 49.3	175 54.2	S01 49.9
	03	192 06.7	211 32.2	S09 47.0	229 57.0	S16 02.1	084 51.0	N22 49.3	190 56.4	S01 49.8
	04	207 09.1	226 31.7	S09 45.8	244 57.5	S16 01.4	099 53.6	N22 49.4	205 58.6	S01 49.6
	05	222 11.6	241 31.2	S09 44.6	259 58.1	S16 00.8	114 56.3	N22 49.4	221 00.8	S01 49.5
	06	237 14.1	256 30.8	S09 43.5	274 58.6	S16 00.2	129 58.9	N22 49.4	236 03.0	S01 49.4
	07	252 16.5	271 30.3	S09 42.3	289 59.1	S15 59.6	145 01.6	N22 49.4	251 05.2	S01 49.3
	08	267 19.0	286 29.8	S09 41.1	304 59.6	S15 59.0	160 04.2	N22 49.5	266 07.5	S01 49.2
	09	282 21.5	301 29.3	S09 39.9	320 00.1	S15 58.4	175 06.9	N22 49.5	281 09.7	S01 49.1
	10	297 23.9	316 28.9	S09 38.7	335 00.7	S15 57.7	190 09.5	N22 49.5	296 11.9	S01 49.0
	11	312 26.4	331 28.4	S09 37.6	350 01.2	S15 57.1	205 12.2	N22 49.5	311 14.1	S01 48.8
	12	327 28.9	346 27.9	S09 36.4	005 01.7	S15 56.5	220 14.8	N22 49.6	326 16.3	S01 48.7
	13	342 31.3	001 27.5	S09 35.2	020 02.2	S15 55.9	235 17.5	N22 49.6	341 18.5	S01 48.6
	14	357 33.8	016 27.0	S09 34.0	035 02.7	S15 55.3	250 20.1	N22 49.6	356 20.7	S01 48.5
	15	012 36.2	031 26.5	S09 32.8	050 03.3	S15 54.7	265 22.8	N22 49.6	011 22.9	S01 48.4
	16	027 38.7	046 26.1	S09 31.6	065 03.8	S15 54.0	280 25.4	N22 49.7	026 25.1	S01 48.3
	17	042 41.2	061 25.6	S09 30.5	080 04.3	S15 53.4	295 28.1	N22 49.7	041 27.3	S01 48.2
	18	057 43.6	076 25.1	S09 29.3	095 04.8	S15 52.8	310 30.7	N22 49.7	056 29.5	S01 48.0
	19	072 46.1	091 24.6	S09 28.1	110 05.4	S15 52.2	325 33.4	N22 49.7	071 31.7	S01 47.9
	20	087 48.6	106 24.2	S09 26.9	125 05.9	S15 51.6	340 36.0	N22 49.7	086 33.9	S01 47.8
	21	102 51.0	121 23.7	S09 25.7	140 06.4	S15 50.9	355 38.7	N22 49.8	101 36.1	S01 47.7
	22	117 53.5	136 23.2	S09 24.5	155 06.9	S15 50.3	010 41.3	N22 49.8	116 38.4	S01 47.6
	23	132 56.0	151 22.8	S09 23.3	170 07.4	S15 49.7	025 44.0	N22 49.8	131 40.6	S01 47.5

Venus	Mars	Jupiter	Saturn
15: v -0.5 d 1.2	15: v 0.5 d 0.6	15: v 2.7 d 0.0	15: v 2.2 d 0.1
16: v -0.5 d 1.2	16: v 0.5 d 0.6	16: v 2.7 d 0.0	16: v 2.2 d 0.1
17: v -0.5 d 1.2	17: v 0.5 d 0.6	17: v 2.7 d 0.0	17: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.1	S40 12.2
Achernar	335 19.8	S57 06.5
Acrux	172 58.6	S63 14.5
Adhara	255 04.8	S29 00.6
Al Na'ir	027 32.2	S46 50.1
Aldebaran	290 38.5	N16 33.7
Alioth	166 11.7	N55 48.8
Alkaid	152 51.0	N49 10.6
Alnilam	275 36.6	S01 11.2
Alphard	217 46.5	S08 46.4
Alphecca	126 02.9	N26 37.3
Alpheratz	357 34.1	N29 14.1
Altair	061 59.3	N08 56.1
Ankaa	353 06.5	S42 10.0
Antares	112 14.8	S26 29.4
Arcturus	145 46.9	N19 02.5
Atria	107 08.4	S69 04.2
Avior	234 13.8	S59 35.7
Bellatrix	278 21.7	N06 22.3
Betelgeuse	270 50.9	N07 24.7
Canopus	263 51.6	S52 42.8
Capella	280 20.3	N46 01.6
Deneb	049 25.6	N45 22.3
Denebola	182 23.7	N14 25.4
Diphda	348 46.6	S17 50.7
Dubhe	193 39.2	N61 36.4
Elnath	278 00.5	N28 37.8
Eltanin	090 42.0	N51 28.8
Enif	033 38.2	N09 59.6
Fomalhaut	015 13.8	S29 29.1
Gacrux	171 50.2	S57 15.5
Gienah	175 42.4	S17 41.3
Hadar	148 34.4	S60 29.8
Hamal	327 50.3	N23 35.2
Kaus Australi	083 31.5	S34 22.3
Kochab	137 19.5	N74 02.4
Markab	013 29.3	N15 20.7
Menkar	314 05.2	N04 11.5
Menkent	147 56.4	S36 29.9
Miaplacidus	221 37.2	S69 49.5
Mirfak	308 26.9	N49 57.4
Nunki	075 46.9	S26 15.9
Peacock	053 04.8	S56 39.0
Polaris	313 37.8	N89 22.8
Pollux	243 15.8	N27 57.7
Procyon	244 49.6	N05 09.4
Rasalhague	095 57.8	N12 32.3
Regulus	207 33.1	N11 50.2
Rigel	281 02.8	S08 10.4
Rigil Kentaur	139 38.9	S60 56.4
Sabik	102 01.8	S15 45.5
Schedar	349 30.4	N56 41.0
Shaula	096 09.3	S37 07.3
Sirius	258 25.2	S16 45.3
Spica	158 21.1	S11 18.0
Suhail	222 45.2	S43 32.4
Vega	080 32.9	N38 48.2
Zubenelgenubi	136 54.9	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	020 09.6	1253
Mars	038 19.5	1141
Jupiter	252 41.4	2122
Saturn	358 53.6	1418

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
15	00	176 28.6	S12 44.9	205 31.4	S24 17.4	55.6	10.3	8.3
	01	191 28.6	S12 44.1	220 00.8	S24 09.1	55.6	10.4	8.4
	02	206 28.6	S12 43.2	234 30.2	S24 00.7	55.6	10.4	8.5
	03	221 28.7	S12 42.4	248 59.6	S23 52.2	55.6	10.5	8.7
	04	236 28.7	S12 41.5	263 29.1	S23 43.5	55.7	10.5	8.8
	05	251 28.7	S12 40.7	277 58.6	S23 34.7	55.7	10.6	8.9
	06	266 28.7	S12 39.8	292 28.1	S23 25.8	55.7	10.6	9.0
	07	281 28.8	S12 38.9	306 57.7	S23 16.8	55.7	10.7	9.1
	08	296 28.8	S12 38.1	321 27.4	S23 07.7	55.8	10.7	9.3
	09	311 28.8	S12 37.2	335 57.1	S22 58.4	55.8	10.7	9.4
	10	326 28.9	S12 36.4	350 26.8	S22 49.0	55.8	10.8	9.5
	11	341 28.9	S12 35.5	004 56.6	S22 39.5	55.8	10.8	9.6
	12	356 28.9	S12 34.6	019 26.5	S22 29.9	55.8	10.9	9.7
	13	011 29.0	S12 33.8	033 56.3	S22 20.1	55.9	10.9	9.9
	14	026 29.0	S12 32.9	048 26.3	S22 10.3	55.9	11.0	10.0
	15	041 29.0	S12 32.0	062 56.2	S22 00.3	55.9	11.0	10.1
	16	056 29.0	S12 31.2	077 26.2	S21 50.2	55.9	11.1	10.2
	17	071 29.1	S12 30.3	091 56.3	S21 40.0	56.0	11.1	10.3
	18	086 29.1	S12 29.5	106 26.4	S21 29.7	56.0	11.2	10.4
	19	101 29.1	S12 28.6	120 56.6	S21 19.2	56.0	11.2	10.6
	20	116 29.2	S12 27.7	135 26.8	S21 08.7	56.0	11.3	10.7
	21	131 29.2	S12 26.9	149 57.0	S20 58.0	56.1	11.3	10.8
	22	146 29.2	S12 26.0	164 27.3	S20 47.2	56.1	11.3	10.9
	23	161 29.3	S12 25.1	178 57.7	S20 36.4	56.1	11.4	11.0
16	00	176 29.3	S12 24.3	193 28.1	S20 25.4	56.1	11.4	11.1
	01	191 29.4	S12 23.4	207 58.5	S20 14.3	56.2	11.5	11.2
	02	206 29.4	S12 22.5	222 29.0	S20 03.1	56.2	11.5	11.3
	03	221 29.4	S12 21.7	236 59.5	S19 51.8	56.2	11.6	11.4
	04	236 29.5	S12 20.8	251 30.1	S19 40.3	56.2	11.6	11.5
	05	251 29.5	S12 19.9	266 00.7	S19 28.8	56.3	11.7	11.6
	06	266 29.5	S12 19.1	280 31.4	S19 17.2	56.3	11.7	11.7
	07	281 29.6	S12 18.2	295 02.1	S19 05.5	56.3	11.8	11.8
	08	296 29.6	S12 17.3	309 32.9	S18 53.6	56.3	11.8	11.9
	09	311 29.6	S12 16.5	324 03.7	S18 41.7	56.4	11.9	12.0
	10	326 29.7	S12 15.6	338 34.5	S18 29.7	56.4	11.9	12.1
	11	341 29.7	S12 14.7	353 05.4	S18 17.5	56.4	11.9	12.2
	12	356 29.8	S12 13.9	007 36.4	S18 05.3	56.4	12.0	12.3
	13	011 29.8	S12 13.0	022 07.4	S17 53.0	56.5	12.0	12.4
	14	026 29.8	S12 12.1	036 38.4	S17 40.6	56.5	12.1	12.5
	15	041 29.9	S12 11.2	051 09.5	S17 28.1	56.5	12.1	12.6
	16	056 29.9	S12 10.4	065 40.6	S17 15.5	56.5	12.2	12.7
	17	071 30.0	S12 09.5	080 11.8	S17 02.8	56.6	12.2	12.8
	18	086 30.0	S12 08.6	094 43.0	S16 50.0	56.6	12.2	12.9
	19	101 30.0	S12 07.8	109 14.2	S16 37.1	56.6	12.3	13.0
	20	116 30.1	S12 06.9	123 45.5	S16 24.1	56.6	12.3	13.1
	21	131 30.1	S12 06.0	138 16.8	S16 11.1	56.7	12.4	13.1
	22	146 30.2	S12 05.1	152 48.2	S15 57.9	56.7	12.4	13.2
	23	161 30.2	S12 04.3	167 19.6	S15 44.7	56.7	12.5	13.3
17	00	176 30.2	S12 03.4	181 51.1	S15 31.4	56.7	12.5	13.4
	01	191 30.3	S12 02.5	196 22.6	S15 18.0	56.8	12.5	13.5
	02	206 30.3	S12 01.6	210 54.1	S15 04.5	56.8	12.6	13.6
	03	221 30.4	S12 00.8	225 25.7	S14 50.9	56.8	12.6	13.6
	04	236 30.4	S11 59.9	239 57.3	S14 37.3	56.8	12.6	13.7
	05	251 30.5	S11 59.0	254 28.9	S14 23.5	56.9	12.7	13.8
	06	266 30.5	S11 58.1	269 00.6	S14 09.7	56.9	12.7	13.9
	07	281 30.5	S11 57.3	283 32.3	S13 55.9	56.9	12.8	14.0
	08	296 30.6	S11 56.4	298 04.1	S13 41.9	56.9	12.8	14.0
	09	311 30.6	S11 55.5	312 35.9	S13 27.9	57.0	12.8	14.1
	10	326 30.7	S11 54.6	327 07.7	S13 13.8	57.0	12.9	14.2
	11	341 30.7	S11 53.8	341 39.6	S12 59.6	57.0	12.9	14.3
	12	356 30.8	S11 52.9	356 11.5	S12 45.3	57.0	12.9	14.3
	13	011 30.8	S11 52.0	010 43.4	S12 31.0	57.1	13.0	14.4
	14	026 30.9	S11 51.1	025 15.3	S12 16.6	57.1	13.0	14.5
	15	041 30.9	S11 50.2	039 47.3	S12 02.2	57.1	13.0	14.5
	16	056 31.0	S11 49.4	054 19.3	S11 47.6	57.1	13.0	14.6
	17	071 31.0	S11 48.5	068 51.4	S11 33.0	57.1	13.1	14.7
	18	086 31.0	S11 47.6	083 23.4	S11 18.4	57.2	13.1	14.7
	19	101 31.1	S11 46.7	097 55.5	S11 03.7	57.2	13.1	14.8
	20	116 31.1	S11 45.8	112 27.6	S10 48.9	57.2	13.1	14.8
	21	131 31.2	S11 45.0	126 59.8	S10 34.0	57.2	13.2	14.9
	22	146 31.2	S11 44.1	141 32.0	S10 19.1	57.3	13.2	15.0
	23	161 31.3	S11 43.2	156 04.1	S10 04.2	57.3	13.2	15.0

Day 15 noon Sun: v 0.0 d 0.9 SD 16.2 | Moon SD 15.2

Day 16 noon Sun: v 0.0 d 0.9 SD 16.2 | Moon SD 15.4

Day 17 noon Sun: v 0.0 d 0.9 SD 16.2 | Moon SD 15.5

SUN: FEBRUARY 16 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0610	0730	0848	1542	1700	1820
70N	0609	0721	0829	1601	1709	1821
68N	0608	0713	0814	1616	1717	1822
66N	0607	0706	0802	1628	1723	1823
64N	0605	0701	0752	1638	1728	1824
62N	0604	0656	0743	1646	1733	1825
60N	0603	0652	0735	1654	1737	1826
58N	0602	0648	0729	1700	1741	1827
56N	0601	0644	0723	1706	1745	1828
54N	0600	0641	0718	1711	1748	1829
52N	0559	0638	0713	1716	1751	1830
50N	0558	0636	0709	1720	1753	1831
45N	0555	0629	0659	1729	1759	1834
40N	0552	0624	0652	1737	1805	1836
35N	0549	0619	0645	1744	1809	1839
30N	0547	0615	0639	1749	1814	1842
25N	0543	0610	0634	1755	1818	1845
20N	0540	0606	0629	1800	1822	1848
15N	0537	0602	0624	1804	1826	1851
10N	0533	0558	0619	1809	1830	1855
05N	0529	0554	0615	1813	1834	1859
00N	0525	0549	0611	1817	1839	1903
05S	0520	0545	0606	1822	1843	1908
10S	0515	0540	0602	1826	1848	1913
15S	0509	0535	0557	1831	1853	1918
20S	0503	0529	0552	1836	1858	1925
25S	0455	0523	0547	1841	1904	1932
30S	0447	0516	0541	1846	1911	1941
35S	0436	0508	0535	1853	1919	1951
40S	0424	0459	0527	1900	1929	2003
45S	0409	0447	0519	1909	1940	2018
50S	0349	0433	0508	1919	1954	2038
55S	0321	0414	0455	1932	2012	2104
60S	0239	0348	0438	1949	2037	2145

MOON: RISE / SET | UTC HHMM

Lat	Day 15		Day 16		Day 17	
72N	--	--	--	--	0921	1538
70N	--	--	0957	1321	0856	1601
68N	--	--	0913	1403	0837	1618
66N	0927	1206	0844	1431	0822	1632
64N	0840	1252	0821	1453	0809	1643
62N	0810	1322	0803	1510	0758	1652
60N	0746	1344	0748	1524	0749	1701
58N	0728	1402	0736	1535	0741	1708
56N	0712	1418	0725	1546	0733	1714
54N	0658	1430	0715	1555	0727	1719
52N	0647	1442	0706	1603	0721	1724
50N	0636	1452	0658	1610	0716	1729
45N	0614	1513	0641	1625	0704	1739
40N	0556	1530	0627	1638	0654	1747
35N	0541	1544	0616	1649	0646	1753
30N	0528	1556	0605	1658	0639	1759
25N	0516	1607	0556	1706	0632	1805
20N	0505	1617	0547	1714	0626	1810
15N	0455	1626	0539	1721	0621	1814
10N	0446	1635	0532	1727	0615	1818
05N	0437	1643	0524	1734	0610	1823
00N	0427	1651	0517	1740	0605	1827
05S	0418	1700	0510	1746	0559	1831
10S	0409	1708	0502	1753	0554	1835
15S	0359	1717	0455	1759	0549	1839
20S	0349	1726	0446	1806	0543	1844
25S	0338	1735	0438	1813	0537	1848
30S	0326	1746	0428	1821	0530	1853
35S	0313	1758	0417	1830	0522	1859
40S	0257	1811	0405	1840	0514	1905
45S	0239	1827	0350	1852	0504	1913
50S	0215	1846	0333	1906	0451	1922
55S	0144	1911	0309	1923	0436	1932
60S	0057	1945	0237	1946	0415	1946

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | FEBRUARY 18 - FEBRUARY 20

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
18	00	147 58.4	166 22.3	S09 22.1	185 08.0	S15 49.1	040 46.6	N22 49.8	146 42.8	S01 47.3
	01	163 00.9	181 21.8	S09 21.0	200 08.5	S15 48.5	055 49.3	N22 49.9	161 45.0	S01 47.2
	02	178 03.4	196 21.4	S09 19.8	215 09.0	S15 47.8	070 51.9	N22 49.9	176 47.2	S01 47.1
	03	193 05.8	211 20.9	S09 18.6	230 09.5	S15 47.2	085 54.6	N22 49.9	191 49.4	S01 47.0
	04	208 08.3	226 20.4	S09 17.4	245 10.1	S15 46.6	100 57.2	N22 49.9	206 51.6	S01 46.9
	05	223 10.7	241 20.0	S09 16.2	260 10.6	S15 46.0	115 59.9	N22 50.0	221 53.8	S01 46.8
	06	238 13.2	256 19.5	S09 15.0	275 11.1	S15 45.4	131 02.5	N22 50.0	236 56.0	S01 46.7
	07	253 15.7	271 19.1	S09 13.8	290 11.6	S15 44.7	146 05.1	N22 50.0	251 58.2	S01 46.5
	08	268 18.1	286 18.6	S09 12.6	305 12.2	S15 44.1	161 07.8	N22 50.0	267 00.4	S01 46.4
	09	283 20.6	301 18.1	S09 11.4	320 12.7	S15 43.5	176 10.4	N22 50.0	282 02.6	S01 46.3
	10	298 23.1	316 17.7	S09 10.2	335 13.2	S15 42.9	191 13.1	N22 50.1	297 04.8	S01 46.2
	11	313 25.5	331 17.2	S09 09.1	350 13.7	S15 42.2	206 15.7	N22 50.1	312 07.0	S01 46.1
	12	328 28.0	346 16.7	S09 07.9	005 14.3	S15 41.6	221 18.4	N22 50.1	327 09.2	S01 46.0
	13	343 30.5	001 16.3	S09 06.7	020 14.8	S15 41.0	236 21.0	N22 50.1	342 11.4	S01 45.8
	14	358 32.9	016 15.8	S09 05.5	035 15.3	S15 40.4	251 23.6	N22 50.2	357 13.6	S01 45.7
	15	013 35.4	031 15.4	S09 04.3	050 15.8	S15 39.8	266 26.3	N22 50.2	012 15.9	S01 45.6
	16	028 37.9	046 14.9	S09 03.1	065 16.4	S15 39.1	281 28.9	N22 50.2	027 18.1	S01 45.5
	17	043 40.3	061 14.4	S09 01.9	080 16.9	S15 38.5	296 31.6	N22 50.2	042 20.3	S01 45.4
	18	058 42.8	076 14.0	S09 00.7	095 17.4	S15 37.9	311 34.2	N22 50.3	057 22.5	S01 45.3
	19	073 45.2	091 13.5	S08 59.5	110 17.9	S15 37.3	326 36.8	N22 50.3	072 24.7	S01 45.1
	20	088 47.7	106 13.1	S08 58.3	125 18.5	S15 36.6	341 39.5	N22 50.3	087 26.9	S01 45.0
	21	103 50.2	121 12.6	S08 57.1	140 19.0	S15 36.0	356 42.1	N22 50.3	102 29.1	S01 44.9
	22	118 52.6	136 12.1	S08 55.9	155 19.5	S15 35.4	011 44.8	N22 50.3	117 31.3	S01 44.8
	23	133 55.1	151 11.7	S08 54.7	170 20.0	S15 34.7	026 47.4	N22 50.4	132 33.5	S01 44.7
19	00	148 57.6	166 11.2	S08 53.5	185 20.6	S15 34.1	041 50.0	N22 50.4	147 35.7	S01 44.6
	01	164 00.0	181 10.8	S08 52.3	200 21.1	S15 33.5	056 52.7	N22 50.4	162 37.9	S01 44.5
	02	179 02.5	196 10.3	S08 51.1	215 21.6	S15 32.9	071 55.3	N22 50.4	177 40.1	S01 44.3
	03	194 05.0	211 09.8	S08 49.9	230 22.2	S15 32.2	086 58.0	N22 50.5	192 42.3	S01 44.2
	04	209 07.4	226 09.4	S08 48.7	245 22.7	S15 31.6	102 00.6	N22 50.5	207 44.5	S01 44.1
	05	224 09.9	241 08.9	S08 47.5	260 23.2	S15 31.0	117 03.2	N22 50.5	222 46.7	S01 44.0
	06	239 12.3	256 08.5	S08 46.3	275 23.7	S15 30.4	132 05.9	N22 50.5	237 48.9	S01 43.9
	07	254 14.8	271 08.0	S08 45.1	290 24.3	S15 29.7	147 08.5	N22 50.5	252 51.1	S01 43.8
	08	269 17.3	286 07.6	S08 43.9	305 24.8	S15 29.1	162 11.1	N22 50.6	267 53.3	S01 43.6
	09	284 19.7	301 07.1	S08 42.7	320 25.3	S15 28.5	177 13.8	N22 50.6	282 55.5	S01 43.5
	10	299 22.2	316 06.7	S08 41.5	335 25.9	S15 27.8	192 16.4	N22 50.6	297 57.7	S01 43.4
	11	314 24.7	331 06.2	S08 40.3	350 26.4	S15 27.2	207 19.0	N22 50.6	313 00.0	S01 43.3
	12	329 27.1	346 05.8	S08 39.1	005 26.9	S15 26.6	222 21.7	N22 50.6	328 02.2	S01 43.2
	13	344 29.6	001 05.3	S08 37.9	020 27.4	S15 25.9	237 24.3	N22 50.7	343 04.4	S01 43.1
	14	359 32.1	016 04.8	S08 36.7	035 28.0	S15 25.3	252 26.9	N22 50.7	358 06.6	S01 42.9
	15	014 34.5	031 04.4	S08 35.5	050 28.5	S15 24.7	267 29.6	N22 50.7	013 08.8	S01 42.8
	16	029 37.0	046 03.9	S08 34.3	065 29.0	S15 24.0	282 32.2	N22 50.7	028 11.0	S01 42.7
	17	044 39.5	061 03.5	S08 33.1	080 29.6	S15 23.4	297 34.8	N22 50.8	043 13.2	S01 42.6
	18	059 41.9	076 03.0	S08 31.9	095 30.1	S15 22.8	312 37.5	N22 50.8	058 15.4	S01 42.5
	19	074 44.4	091 02.6	S08 30.7	110 30.6	S15 22.2	327 40.1	N22 50.8	073 17.6	S01 42.4
	20	089 46.8	106 02.1	S08 29.5	125 31.2	S15 21.5	342 42.7	N22 50.8	088 19.8	S01 42.2
	21	104 49.3	121 01.7	S08 28.3	140 31.7	S15 20.9	357 45.4	N22 50.8	103 22.0	S01 42.1
	22	119 51.8	136 01.2	S08 27.1	155 32.2	S15 20.3	012 48.0	N22 50.9	118 24.2	S01 42.0
	23	134 54.2	151 00.8	S08 25.9	170 32.7	S15 19.6	027 50.6	N22 50.9	133 26.4	S01 41.9
20	00	149 56.7	166 00.3	S08 24.6	185 33.3	S15 19.0	042 53.3	N22 50.9	148 28.6	S01 41.8
	01	164 59.2	180 59.9	S08 23.4	200 33.8	S15 18.4	057 55.9	N22 50.9	163 30.8	S01 41.7
	02	180 01.6	195 59.4	S08 22.2	215 34.3	S15 17.7	072 58.5	N22 50.9	178 33.0	S01 41.5
	03	195 04.1	210 59.0	S08 21.0	230 34.9	S15 17.1	088 01.2	N22 51.0	193 35.2	S01 41.4
	04	210 06.6	225 58.5	S08 19.8	245 35.4	S15 16.5	103 03.8	N22 51.0	208 37.4	S01 41.3
	05	225 09.0	240 58.1	S08 18.6	260 35.9	S15 15.8	118 06.4	N22 51.0	223 39.6	S01 41.2
	06	240 11.5	255 57.7	S08 17.4	275 36.5	S15 15.2	133 09.0	N22 51.0	238 41.8	S01 41.1
	07	255 13.9	270 57.2	S08 16.2	290 37.0	S15 14.5	148 11.7	N22 51.1	253 44.0	S01 41.0
	08	270 16.4	285 56.8	S08 15.0	305 37.5	S15 13.9	163 14.3	N22 51.1	268 46.2	S01 40.8
	09	285 18.9	300 56.3	S08 13.8	320 38.1	S15 13.3	178 16.9	N22 51.1	283 48.4	S01 40.7
	10	300 21.3	315 55.9	S08 12.6	335 38.6	S15 12.6	193 19.5	N22 51.1	298 50.6	S01 40.6
	11	315 23.8	330 55.4	S08 11.3	350 39.1	S15 12.0	208 22.2	N22 51.1	313 52.8	S01 40.5
	12	330 26.3	345 55.0	S08 10.1	005 39.7	S15 11.4	223 24.8	N22 51.2	328 55.0	S01 40.4
	13	345 28.7	000 54.5	S08 08.9	020 40.2	S15 10.7	238 27.4	N22 51.2	343 57.2	S01 40.3
	14	000 31.2	015 54.1	S08 07.7	035 40.7	S15 10.1	253 30.0	N22 51.2	358 59.4	S01 40.1
	15	015 33.7	030 53.6	S08 06.5	050 41.3	S15 09.5	268 32.7	N22 51.2	014 01.6	S01 40.0
	16	030 36.1	045 53.2	S08 05.3	065 41.8	S15 08.8	283 35.3	N22 51.2	029 03.8	S01 39.9
	17	045 38.6	060 52.8	S08 04.1	080 42.3	S15 08.2	298 37.9	N22 51.3	044 06.0	S01 39.8
	18	060 41.1	075 52.3	S08 02.9	095 42.9	S15 07.5	313 40.5	N22 51.3	059 08.3	S01 39.7
	19	075 43.5	090 51.9	S08 01.6	110 43.4	S15 06.9	328 43.2	N22 51.3	074 10.5	S01 39.6
	20	090 46.0	105 51.4	S08 00.4	125 43.9	S15 06.3	343 45.8	N22 51.3	089 12.7	S01 39.4
	21	105 48.4	120 51.0	S07 59.2	140 44.5	S15 05.6	358 48.4	N22 51.3	104 14.9	S01 39.3
	22	120 50.9	135 50.5	S07 58.0	155 45.0	S15 05.0	013 51.0	N22 51.4	119 17.1	S01 39.2
	23	135 53.4	150 50.1	S07 56.8	170 45.6	S15 04.3	028 53.7	N22 51.4	134 19.3	S01 39.1

Venus	Mars	Jupiter	Saturn
18: v -0.5 d 1.2	18: v 0.5 d 0.6	18: v 2.6 d 0.0	18: v 2.2 d 0.1
19: v -0.5 d 1.2	19: v 0.5 d 0.6	19: v 2.6 d 0.0	19: v 2.2 d 0.1
20: v -0.4 d 1.2	20: v 0.5 d 0.6	20: v 2.6 d 0.0	20: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.1	S40 12.2
Achernar	335 19.8	S57 06.5
Acrux	172 58.5	S63 14.6
Adhara	255 04.9	S29 00.6
Al Na'ir	027 32.2	S46 50.1
Aldebaran	290 38.5	N16 33.7
Alioth	166 11.7	N55 48.8
Alkaid	152 51.0	N49 10.6
Alnilam	275 36.6	S01 11.2
Alphard	217 46.5	S08 46.5
Alphecca	126 02.9	N26 37.3
Alpheratz	357 34.1	N29 14.1
Altair	061 59.3	N08 56.1
Ankaa	353 06.5	S42 10.0
Antares	112 14.7	S26 29.4
Arcturus	145 46.9	N19 02.5
Atria	107 08.3	S69 04.2
Avior	234 13.8	S59 35.7
Bellatrix	278 21.7	N06 22.3
Betelgeuse	270 50.9	N07 24.7
Canopus	263 51.7	S52 42.8
Capella	280 20.3	N46 01.6
Deneb	049 25.6	N45 22.3
Denebola	182 23.7	N14 25.4
Diphda	348 46.6	S17 50.7
Dubhe	193 39.2	N61 36.4
Elnath	278 00.5	N28 37.8
Eltanin	090 42.0	N51 28.8
Enif	033 38.2	N09 59.6
Fomalhaut	015 13.8	S29 29.1
Gacrux	171 50.2	S57 15.5
Gienah	175 42.4	S17 41.3
Hadar	148 34.4	S60 29.8
Hamal	327 50.3	N23 35.2
Kaus Australi	083 31.5	S34 22.3
Kochab	137 19.5	N74 02.4
Markab	013 29.3	N15 20.7
Menkar	314 05.2	N04 11.5
Menkent	147 56.3	S36 29.9
Miaplacidus	221 37.2	S69 49.5
Mirfak	308 27.0	N49 57.4
Nunki	075 46.9	S26 15.9
Peacock	053 04.8	S56 39.0
Polaris	313 39.5	N89 22.8
Pollux	243 15.8	N27 57.7
Procyon	244 49.6	N05 09.4
Rasalhague	095 57.8	N12 32.2
Regulus	207 33.1	N11 50.2
Rigel	281 02.8	S08 10.4
Rigil Kentaur	139 38.8	S60 56.4
Sabik	102 01.8	S15 45.5
Schedar	349 30.4	N56 41.0
Shaula	096 09.3	S37 07.3
Sirius	258 25.2	S16 45.3
Spica	158 21.1	S11 18.0
Suhail	222 45.2	S43 32.4
Vega	080 32.9	N38 48.2
Zubenelgenubi	136 54.9	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	016 38.6	1256
Mars	035 59.8	1138
Jupiter	252 54.5	2109
Saturn	358 35.0	1408

2026 | FEBRUARY 18 - FEBRUARY 20

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
18	00	176 31.3	S11 42.3	170 36.4	S09 49.1	57.3	13.2	15.1
	01	191 31.4	S11 41.4	185 08.6	S09 34.1	57.3	13.3	15.1
	02	206 31.4	S11 40.6	199 40.9	S09 18.9	57.4	13.3	15.2
	03	221 31.5	S11 39.7	214 13.1	S09 03.7	57.4	13.3	15.2
	04	236 31.5	S11 38.8	228 45.4	S08 48.5	57.4	13.3	15.3
	05	251 31.6	S11 37.9	243 17.8	S08 33.2	57.4	13.3	15.3
	06	266 31.6	S11 37.0	257 50.1	S08 17.9	57.4	13.4	15.4
	07	281 31.7	S11 36.1	272 22.5	S08 02.5	57.5	13.4	15.4
	08	296 31.7	S11 35.3	286 54.8	S07 47.0	57.5	13.4	15.5
	09	311 31.8	S11 34.4	301 27.2	S07 31.5	57.5	13.4	15.5
	10	326 31.8	S11 33.5	315 59.6	S07 16.0	57.5	13.4	15.6
	11	341 31.9	S11 32.6	330 32.0	S07 00.4	57.6	13.4	15.6
	12	356 32.0	S11 31.7	345 04.4	S06 44.8	57.6	13.4	15.7
	13	011 32.0	S11 30.8	359 36.9	S06 29.1	57.6	13.4	15.7
	14	026 32.1	S11 29.9	014 09.3	S06 13.4	57.6	13.4	15.7
	15	041 32.1	S11 29.1	028 41.8	S05 57.7	57.6	13.5	15.8
	16	056 32.2	S11 28.2	043 14.2	S05 41.9	57.7	13.5	15.8
	17	071 32.2	S11 27.3	057 46.7	S05 26.1	57.7	13.5	15.9
	18	086 32.3	S11 26.4	072 19.1	S05 10.2	57.7	13.5	15.9
	19	101 32.3	S11 25.5	086 51.6	S04 54.4	57.7	13.5	15.9
	20	116 32.4	S11 24.6	101 24.1	S04 38.4	57.8	13.5	16.0
	21	131 32.4	S11 23.7	115 56.6	S04 22.5	57.8	13.5	16.0
	22	146 32.5	S11 22.8	130 29.1	S04 06.5	57.8	13.5	16.0
	23	161 32.6	S11 22.0	145 01.5	S03 50.5	57.8	13.5	16.0
19	00	176 32.6	S11 21.1	159 34.0	S03 34.4	57.8	13.5	16.1
	01	191 32.7	S11 20.2	174 06.5	S03 18.4	57.9	13.5	16.1
	02	206 32.7	S11 19.3	188 39.0	S03 02.3	57.9	13.5	16.1
	03	221 32.8	S11 18.4	203 11.4	S02 46.1	57.9	13.5	16.1
	04	236 32.8	S11 17.5	217 43.9	S02 30.0	57.9	13.5	16.2
	05	251 32.9	S11 16.6	232 16.4	S02 13.8	57.9	13.5	16.2
	06	266 33.0	S11 15.7	246 48.8	S01 57.7	58.0	13.4	16.2
	07	281 33.0	S11 14.8	261 21.3	S01 41.4	58.0	13.4	16.2
	08	296 33.1	S11 13.9	275 53.7	S01 25.2	58.0	13.4	16.2
	09	311 33.1	S11 13.1	290 26.1	S01 09.0	58.0	13.4	16.3
	10	326 33.2	S11 12.2	304 58.5	S00 52.7	58.0	13.4	16.3
	11	341 33.3	S11 11.3	319 30.9	S00 36.5	58.1	13.4	16.3
	12	356 33.3	S11 10.4	334 03.3	S00 20.2	58.1	13.4	16.3
	13	011 33.4	S11 09.5	348 35.7	S00 03.9	58.1	13.3	16.3
	14	026 33.4	S11 08.6	003 08.0	N00 12.4	58.1	13.3	16.3
	15	041 33.5	S11 07.7	017 40.3	N00 28.7	58.1	13.3	16.3
	16	056 33.6	S11 06.8	032 12.6	N00 45.0	58.1	13.3	16.3
	17	071 33.6	S11 05.9	046 44.9	N01 01.3	58.2	13.3	16.3
	18	086 33.7	S11 05.0	061 17.2	N01 17.7	58.2	13.2	16.3
	19	101 33.7	S11 04.1	075 49.4	N01 34.0	58.2	13.2	16.3
	20	116 33.8	S11 03.2	090 21.7	N01 50.3	58.2	13.2	16.3
	21	131 33.9	S11 02.3	104 53.9	N02 06.7	58.2	13.2	16.3
	22	146 33.9	S11 01.4	119 26.0	N02 23.0	58.2	13.1	16.3
	23	161 34.0	S11 00.5	133 58.2	N02 39.3	58.3	13.1	16.3
20	00	176 34.1	S10 59.6	148 30.3	N02 55.6	58.3	13.1	16.3
	01	191 34.1	S10 58.7	163 02.4	N03 11.9	58.3	13.1	16.3
	02	206 34.2	S10 57.8	177 34.4	N03 28.3	58.3	13.0	16.3
	03	221 34.2	S10 56.9	192 06.4	N03 44.6	58.3	13.0	16.3
	04	236 34.3	S10 56.0	206 38.4	N04 00.8	58.3	12.9	16.3
	05	251 34.4	S10 55.1	221 10.4	N04 17.1	58.4	12.9	16.3
	06	266 34.4	S10 54.3	235 42.3	N04 33.4	58.4	12.9	16.3
	07	281 34.5	S10 53.4	250 14.2	N04 49.7	58.4	12.8	16.2
	08	296 34.6	S10 52.5	264 46.0	N05 05.9	58.4	12.8	16.2
	09	311 34.6	S10 51.6	279 17.8	N05 22.1	58.4	12.8	16.2
	10	326 34.7	S10 50.7	293 49.6	N05 38.3	58.4	12.7	16.2
	11	341 34.8	S10 49.8	308 21.3	N05 54.5	58.5	12.7	16.2
	12	356 34.8	S10 48.9	322 52.9	N06 10.7	58.5	12.6	16.1
	13	011 34.9	S10 48.0	337 24.6	N06 26.8	58.5	12.6	16.1
	14	026 35.0	S10 47.1	351 56.1	N06 42.9	58.5	12.5	16.1
	15	041 35.0	S10 46.2	006 27.7	N06 59.0	58.5	12.5	16.1
	16	056 35.1	S10 45.3	020 59.2	N07 15.1	58.5	12.4	16.0
	17	071 35.2	S10 44.4	035 30.6	N07 31.1	58.5	12.4	16.0
	18	086 35.2	S10 43.4	050 02.0	N07 47.1	58.6	12.3	16.0
	19	101 35.3	S10 42.5	064 33.3	N08 03.1	58.6	12.3	15.9
	20	116 35.4	S10 41.6	079 04.6	N08 19.1	58.6	12.2	15.9
	21	131 35.5	S10 40.7	093 35.8	N08 35.0	58.6	12.2	15.9
	22	146 35.5	S10 39.8	108 07.0	N08 50.8	58.6	12.1	15.8
	23	161 35.6	S10 38.9	122 38.1	N09 06.7	58.6	12.1	15.8

Day 18 noon Sun: v 0.1 d 0.9 SD 16.2 | Moon SD 15.7

Day 19 noon Sun: v 0.1 d 0.9 SD 16.2 | Moon SD 15.8

Day 20 noon Sun: v 0.1 d 0.9 SD 16.2 | Moon SD 15.9

SUN: FEBRUARY 19 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0557	0716	0831	1558	1714	1833
70N	0557	0708	0814	1615	1721	1832
68N	0557	0702	0801	1628	1727	1832
66N	0557	0656	0751	1638	1733	1832
64N	0557	0652	0742	1647	1737	1833
62N	0556	0648	0734	1655	1741	1833
60N	0556	0644	0727	1701	1745	1833
58N	0555	0641	0721	1707	1748	1834
56N	0555	0638	0716	1712	1751	1834
54N	0554	0635	0711	1717	1753	1835
52N	0553	0633	0707	1721	1756	1835
50N	0553	0630	0703	1725	1758	1836
45N	0551	0625	0655	1733	1803	1838
40N	0549	0620	0648	1740	1808	1840
35N	0546	0616	0642	1746	1812	1842
30N	0544	0612	0636	1752	1816	1844
25N	0541	0608	0631	1757	1820	1847
20N	0539	0604	0627	1801	1823	1849
15N	0536	0601	0623	1805	1827	1852
10N	0532	0557	0618	1809	1831	1855
05N	0529	0553	0614	1813	1834	1859
00N	0525	0549	0610	1817	1838	1903
05S	0521	0545	0606	1821	1842	1907
10S	0516	0541	0602	1825	1847	1912
15S	0510	0536	0558	1829	1851	1917
20S	0504	0531	0554	1834	1856	1923
25S	0457	0525	0549	1838	1902	1930
30S	0449	0519	0543	1844	1908	1938
35S	0440	0511	0538	1849	1916	1947
40S	0428	0502	0531	1856	1924	1958
45S	0414	0452	0523	1904	1935	2012
50S	0355	0439	0513	1913	1948	2031
55S	0330	0421	0501	1925	2004	2055
60S	0252	0358	0446	1940	2028	2132

MOON: RISE / SET | UTC HHMM

Lat	Day 18		Day 19		Day 20	
72N	0833	1805	0756	2021	0720	2244
70N	0822	1813	0754	2019	0727	2229
68N	0813	1819	0752	2017	0732	2218
66N	0805	1824	0751	2015	0736	2208
64N	0759	1829	0749	2013	0740	2201
62N	0753	1832	0748	2012	0744	2154
60N	0748	1836	0747	2011	0747	2148
58N	0744	1839	0747	2010	0749	2143
56N	0740	1841	0746	2009	0752	2139
54N	0736	1844	0745	2008	0754	2135
52N	0733	1846	0744	2007	0756	2131
50N	0730	1848	0744	2007	0757	2128
45N	0724	1852	0743	2005	0801	2121
40N	0719	1855	0742	2004	0805	2115
35N	0714	1858	0741	2003	0807	2110
30N	0710	1901	0740	2002	0810	2105
25N	0706	1903	0739	2001	0812	2101
20N	0703	1905	0739	2001	0814	2057
15N	0700	1907	0738	2000	0816	2054
10N	0657	1909	0737	1959	0818	2051
05N	0654	1911	0737	1959	0820	2048
00N	0651	1912	0736	1958	0822	2045
05S	0648	1914	0736	1957	0824	2041
10S	0645	1916	0735	1957	0826	2038
15S	0642	1918	0735	1956	0828	2035
20S	0638	1920	0734	1955	0830	2032
25S	0635	1922	0733	1954	0832	2028
30S	0631	1924	0733	1954	0835	2024
35S	0627	1926	0732	1953	0838	2020
40S	0622	1929	0731	1952	0841	2015
45S	0617	1932	0730	1950	0844	2009
50S	0610	1936	0729	1949	0849	2003
55S	0602	1940	0727	1947	0854	1954
60S	0551	1946	0726	1945	0902	1944

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | FEBRUARY 21 - FEBRUARY 23

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
21	00	150 55.8	165 49.7	S07 55.6	185 46.1	S15 03.7	043 56.3	N22 51.4	149 21.5	S01 39.0
	01	165 58.3	180 49.2	S07 54.3	200 46.6	S15 03.1	058 58.9	N22 51.4	164 23.7	S01 38.9
	02	181 00.8	195 48.8	S07 53.1	215 47.2	S15 02.4	074 01.5	N22 51.4	179 25.9	S01 38.7
	03	196 03.2	210 48.3	S07 51.9	230 47.7	S15 01.8	089 04.1	N22 51.5	194 28.1	S01 38.6
	04	211 05.7	225 47.9	S07 50.7	245 48.2	S15 01.1	104 06.8	N22 51.5	209 30.3	S01 38.5
	05	226 08.2	240 47.5	S07 49.5	260 48.8	S15 00.5	119 09.4	N22 51.5	224 32.5	S01 38.4
	06	241 10.6	255 47.0	S07 48.3	275 49.3	S14 59.9	134 12.0	N22 51.5	239 34.7	S01 38.3
	07	256 13.1	270 46.6	S07 47.0	290 49.8	S14 59.2	149 14.6	N22 51.5	254 36.9	S01 38.2
	08	271 15.5	285 46.1	S07 45.8	305 50.4	S14 58.6	164 17.2	N22 51.6	269 39.1	S01 38.0
	09	286 18.0	300 45.7	S07 44.6	320 50.9	S14 57.9	179 19.9	N22 51.6	284 41.3	S01 37.9
	10	301 20.5	315 45.3	S07 43.4	335 51.5	S14 57.3	194 22.5	N22 51.6	299 43.5	S01 37.8
	11	316 22.9	330 44.8	S07 42.2	350 52.0	S14 56.6	209 25.1	N22 51.6	314 45.7	S01 37.7
	12	331 25.4	345 44.4	S07 40.9	005 52.5	S14 56.0	224 27.7	N22 51.6	329 47.9	S01 37.6
	13	346 27.9	000 44.0	S07 39.7	020 53.1	S14 55.4	239 30.3	N22 51.7	344 50.1	S01 37.5
	14	001 30.3	015 43.5	S07 38.5	035 53.6	S14 54.7	254 33.0	N22 51.7	359 52.3	S01 37.3
	15	016 32.8	030 43.1	S07 37.3	050 54.1	S14 54.1	269 35.6	N22 51.7	014 54.5	S01 37.2
	16	031 35.3	045 42.7	S07 36.1	065 54.7	S14 53.4	284 38.2	N22 51.7	029 56.7	S01 37.1
	17	046 37.7	060 42.2	S07 34.8	080 55.2	S14 52.8	299 40.8	N22 51.7	044 58.9	S01 37.0
	18	061 40.2	075 41.8	S07 33.6	095 55.8	S14 52.1	314 43.4	N22 51.8	060 01.1	S01 36.9
	19	076 42.7	090 41.4	S07 32.4	110 56.3	S14 51.5	329 46.0	N22 51.8	075 03.3	S01 36.7
	20	091 45.1	105 40.9	S07 31.2	125 56.8	S14 50.8	344 48.6	N22 51.8	090 05.5	S01 36.6
	21	106 47.6	120 40.5	S07 29.9	140 57.4	S14 50.2	359 51.3	N22 51.8	105 07.7	S01 36.5
	22	121 50.0	135 40.0	S07 28.7	155 57.9	S14 49.6	014 53.9	N22 51.8	120 09.9	S01 36.4
	23	136 52.5	150 39.6	S07 27.5	170 58.5	S14 48.9	029 56.5	N22 51.9	135 12.1	S01 36.3
22	00	151 55.0	165 39.2	S07 26.3	185 59.0	S14 48.3	044 59.1	N22 51.9	150 14.3	S01 36.2
	01	166 57.4	180 38.7	S07 25.0	200 59.5	S14 47.6	060 01.7	N22 51.9	165 16.5	S01 36.0
	02	181 59.9	195 38.3	S07 23.8	216 00.1	S14 47.0	075 04.3	N22 51.9	180 18.7	S01 35.9
	03	197 02.4	210 37.9	S07 22.6	231 00.6	S14 46.3	090 06.9	N22 51.9	195 20.9	S01 35.8
	04	212 04.8	225 37.5	S07 21.4	246 01.2	S14 45.7	105 09.6	N22 52.0	210 23.1	S01 35.7
	05	227 07.3	240 37.0	S07 20.1	261 01.7	S14 45.0	120 12.2	N22 52.0	225 25.3	S01 35.6
	06	242 09.8	255 36.6	S07 18.9	276 02.2	S14 44.4	135 14.8	N22 52.0	240 27.5	S01 35.5
	07	257 12.2	270 36.2	S07 17.7	291 02.8	S14 43.7	150 17.4	N22 52.0	255 29.7	S01 35.3
	08	272 14.7	285 35.7	S07 16.5	306 03.3	S14 43.1	165 20.0	N22 52.0	270 31.9	S01 35.2
	09	287 17.2	300 35.3	S07 15.2	321 03.9	S14 42.4	180 22.6	N22 52.0	285 34.1	S01 35.1
	10	302 19.6	315 34.9	S07 14.0	336 04.4	S14 41.8	195 25.2	N22 52.1	300 36.3	S01 35.0
	11	317 22.1	330 34.4	S07 12.8	351 05.0	S14 41.1	210 27.8	N22 52.1	315 38.5	S01 34.9
	12	332 24.5	345 34.0	S07 11.5	006 05.5	S14 40.5	225 30.4	N22 52.1	330 40.7	S01 34.8
	13	347 27.0	000 33.6	S07 10.3	021 06.0	S14 39.8	240 33.0	N22 52.1	345 42.9	S01 34.6
	14	002 29.5	015 33.2	S07 09.1	036 06.6	S14 39.2	255 35.7	N22 52.1	000 45.1	S01 34.5
	15	017 31.9	030 32.7	S07 07.9	051 07.1	S14 38.5	270 38.3	N22 52.2	015 47.3	S01 34.4
	16	032 34.4	045 32.3	S07 06.6	066 07.7	S14 37.9	285 40.9	N22 52.2	030 49.5	S01 34.3
	17	047 36.9	060 31.9	S07 05.4	081 08.2	S14 37.2	300 43.5	N22 52.2	045 51.7	S01 34.2
	18	062 39.3	075 31.4	S07 04.2	096 08.8	S14 36.6	315 46.1	N22 52.2	060 53.9	S01 34.0
	19	077 41.8	090 31.0	S07 02.9	111 09.3	S14 35.9	330 48.7	N22 52.2	075 56.1	S01 33.9
	20	092 44.3	105 30.6	S07 01.7	126 09.8	S14 35.3	345 51.3	N22 52.2	090 58.3	S01 33.8
	21	107 46.7	120 30.2	S07 00.5	141 10.4	S14 34.6	000 53.9	N22 52.3	106 00.5	S01 33.7
	22	122 49.2	135 29.7	S06 59.2	156 10.9	S14 34.0	015 56.5	N22 52.3	121 02.7	S01 33.6
	23	137 51.6	150 29.3	S06 58.0	171 11.5	S14 33.3	030 59.1	N22 52.3	136 04.9	S01 33.5
23	00	152 54.1	165 28.9	S06 56.8	186 12.0	S14 32.7	046 01.7	N22 52.3	151 07.1	S01 33.3
	01	167 56.6	180 28.5	S06 55.6	201 12.6	S14 32.0	061 04.3	N22 52.3	166 09.3	S01 33.2
	02	182 59.0	195 28.0	S06 54.3	216 13.1	S14 31.4	076 06.9	N22 52.4	181 11.5	S01 33.1
	03	198 01.5	210 27.6	S06 53.1	231 13.7	S14 30.7	091 09.5	N22 52.4	196 13.7	S01 33.0
	04	213 04.0	225 27.2	S06 51.9	246 14.2	S14 30.1	106 12.1	N22 52.4	211 15.9	S01 32.9
	05	228 06.4	240 26.8	S06 50.6	261 14.7	S14 29.4	121 14.7	N22 52.4	226 18.1	S01 32.7
	06	243 08.9	255 26.3	S06 49.4	276 15.3	S14 28.8	136 17.3	N22 52.4	241 20.3	S01 32.6
	07	258 11.4	270 25.9	S06 48.1	291 15.8	S14 28.1	151 19.9	N22 52.4	256 22.5	S01 32.5
	08	273 13.8	285 25.5	S06 46.9	306 16.4	S14 27.4	166 22.5	N22 52.5	271 24.7	S01 32.4
	09	288 16.3	300 25.1	S06 45.7	321 16.9	S14 26.8	181 25.1	N22 52.5	286 26.9	S01 32.3
	10	303 18.8	315 24.6	S06 44.4	336 17.5	S14 26.1	196 27.8	N22 52.5	301 29.1	S01 32.2
	11	318 21.2	330 24.2	S06 43.2	351 18.0	S14 25.5	211 30.4	N22 52.5	316 31.3	S01 32.0
	12	333 23.7	345 23.8	S06 42.0	006 18.6	S14 24.8	226 33.0	N22 52.5	331 33.5	S01 31.9
	13	348 26.1	000 23.4	S06 40.7	021 19.1	S14 24.2	241 35.6	N22 52.6	346 35.7	S01 31.8
	14	003 28.6	015 23.0	S06 39.5	036 19.7	S14 23.5	256 38.2	N22 52.6	001 37.9	S01 31.7
	15	018 31.1	030 22.5	S06 38.3	051 20.2	S14 22.9	271 40.8	N22 52.6	016 40.1	S01 31.6
	16	033 33.5	045 22.1	S06 37.0	066 20.8	S14 22.2	286 43.4	N22 52.6	031 42.3	S01 31.4
	17	048 36.0	060 21.7	S06 35.8	081 21.3	S14 21.5	301 46.0	N22 52.6	046 44.5	S01 31.3
	18	063 38.5	075 21.3	S06 34.5	096 21.9	S14 20.9	316 48.5	N22 52.6	061 46.7	S01 31.2
	19	078 40.9	090 20.9	S06 33.3	111 22.4	S14 20.2	331 51.1	N22 52.7	076 48.9	S01 31.1
	20	093 43.4	105 20.4	S06 32.1	126 23.0	S14 19.6	346 53.7	N22 52.7	091 51.1	S01 31.0
	21	108 45.9	120 20.0	S06 30.8	141 23.5	S14 18.9	001 56.3	N22 52.7	106 53.3	S01 30.9
	22	123 48.3	135 19.6	S06 29.6	156 24.1	S14 18.3	016 58.9	N22 52.7	121 55.5	S01 30.7
	23	138 50.8	150 19.2	S06 28.4	171 24.6	S14 17.6	032 01.5	N22 52.7	136 57.7	S01 30.6

Venus	Mars	Jupiter	Saturn
21: v -0.4 d 1.2	21: v 0.5 d 0.6	21: v 2.6 d 0.0	21: v 2.2 d 0.1
22: v -0.4 d 1.2	22: v 0.5 d 0.6	22: v 2.6 d 0.0	22: v 2.2 d 0.1
23: v -0.4 d 1.2	23: v 0.5 d 0.7	23: v 2.6 d 0.0	23: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.2	S40 12.2
Achernar	335 19.8	S57 06.5
Acrux	172 58.5	S63 14.6
Adhara	255 04.9	S29 00.6
Al Na'ir	027 32.2	S46 50.1
Aldebaran	290 38.5	N16 33.7
Alioth	166 11.7	N55 48.8
Alkaid	152 51.0	N49 10.6
Alnilam	275 36.6	S01 11.2
Alphard	217 46.5	S08 46.5
Alphecca	126 02.9	N26 37.3
Alpheratz	357 34.1	N29 14.1
Altair	061 59.3	N08 56.1
Ankaa	353 06.6	S42 10.0
Antares	112 14.7	S26 29.4
Arcturus	145 46.9	N19 02.5
Atria	107 08.2	S69 04.2
Avior	234 13.8	S59 35.7
Bellatrix	278 21.8	N06 22.3
Betelgeuse	270 50.9	N07 24.7
Canopus	263 51.7	S52 42.8
Capella	280 20.4	N46 01.6
Deneb	049 25.6	N45 22.2
Denebola	182 23.7	N14 25.4
Diphda	348 46.6	S17 50.7
Dubhe	193 39.2	N61 36.4
Elnath	278 00.5	N28 37.8
Eltanin	090 42.0	N51 28.8
Enif	033 38.2	N09 59.6
Fomalhaut	015 13.8	S29 29.1
Gacrux	171 50.2	S57 15.5
Gienah	175 42.3	S17 41.3
Hadar	148 34.4	S60 29.8
Hamal	327 50.3	N23 35.2
Kaus Australi	083 31.5	S34 22.3
Kochab	137 19.4	N74 02.5
Markab	013 29.3	N15 20.7
Menkar	314 05.2	N04 11.5
Menkent	147 56.3	S36 29.9
Miaplacidus	221 37.2	S69 49.5
Mirfak	308 27.0	N49 57.4
Nunki	075 46.8	S26 15.9
Peacock	053 04.8	S56 39.0
Polaris	313 41.0	N89 22.8
Pollux	243 15.9	N27 57.7
Procyon	244 49.6	N05 09.4
Rasalhague	095 57.8	N12 32.2
Regulus	207 33.1	N11 50.2
Rigel	281 02.9	S08 10.4
Rigil Kentaur	139 38.8	S60 56.4
Sabik	102 01.8	S15 45.5
Schedar	349 30.4	N56 41.0
Shaula	096 09.2	S37 07.3
Sirius	258 25.2	S16 45.3
Spica	158 21.1	S11 18.0
Suhail	222 45.2	S43 32.4
Vega	080 32.8	N38 48.2
Zubenelgenubi	136 54.9	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	013 09.5	1258
Mars	033 41.0	1136
Jupiter	253 05.9	2056
Saturn	358 16.2	1357

2026 | FEBRUARY 21 - FEBRUARY 23

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
21	00	176 35.7	S10 38.0	137 09.2	N09 22.5	58.6	12.0	15.8
	01	191 35.7	S10 37.1	151 40.1	N09 38.2	58.7	11.9	15.7
	02	206 35.8	S10 36.2	166 11.1	N09 53.9	58.7	11.9	15.7
	03	221 35.9	S10 35.3	180 42.0	N10 09.6	58.7	11.8	15.6
	04	236 36.0	S10 34.4	195 12.8	N10 25.2	58.7	11.7	15.6
	05	251 36.0	S10 33.5	209 43.5	N10 40.8	58.7	11.7	15.5
	06	266 36.1	S10 32.6	224 14.2	N10 56.3	58.7	11.6	15.5
	07	281 36.2	S10 31.7	238 44.8	N11 11.8	58.7	11.5	15.4
	08	296 36.2	S10 30.8	253 15.4	N11 27.3	58.7	11.5	15.4
	09	311 36.3	S10 29.9	267 45.8	N11 42.6	58.8	11.4	15.3
	10	326 36.4	S10 29.0	282 16.2	N11 58.0	58.8	11.3	15.3
	11	341 36.5	S10 28.1	296 46.6	N12 13.2	58.8	11.3	15.2
	12	356 36.5	S10 27.2	311 16.9	N12 28.4	58.8	11.2	15.2
	13	011 36.6	S10 26.3	325 47.0	N12 43.6	58.8	11.1	15.1
	14	026 36.7	S10 25.4	340 17.2	N12 58.7	58.8	11.0	15.0
	15	041 36.8	S10 24.4	354 47.2	N13 13.7	58.8	11.0	15.0
	16	056 36.8	S10 23.5	009 17.2	N13 28.7	58.8	10.9	14.9
	17	071 36.9	S10 22.6	023 47.1	N13 43.6	58.8	10.8	14.8
	18	086 37.0	S10 21.7	038 16.9	N13 58.4	58.9	10.7	14.8
	19	101 37.1	S10 20.8	052 46.6	N14 13.2	58.9	10.7	14.7
	20	116 37.1	S10 19.9	067 16.3	N14 27.9	58.9	10.6	14.6
	21	131 37.2	S10 19.0	081 45.9	N14 42.5	58.9	10.5	14.5
	22	146 37.3	S10 18.1	096 15.3	N14 57.0	58.9	10.4	14.5
	23	161 37.4	S10 17.2	110 44.8	N15 11.5	58.9	10.3	14.4
22	00	176 37.4	S10 16.3	125 14.1	N15 25.9	58.9	10.2	14.3
	01	191 37.5	S10 15.4	139 43.3	N15 40.2	58.9	10.2	14.2
	02	206 37.6	S10 14.4	154 12.5	N15 54.5	58.9	10.1	14.2
	03	221 37.7	S10 13.5	168 41.5	N16 08.6	58.9	10.0	14.1
	04	236 37.8	S10 12.6	183 10.5	N16 22.7	58.9	9.9	14.0
	05	251 37.8	S10 11.7	197 39.4	N16 36.7	59.0	9.8	13.9
	06	266 37.9	S10 10.8	212 08.2	N16 50.6	59.0	9.7	13.8
	07	281 38.0	S10 09.9	226 36.9	N17 04.4	59.0	9.6	13.7
	08	296 38.1	S10 09.0	241 05.6	N17 18.1	59.0	9.5	13.6
	09	311 38.1	S10 08.1	255 34.1	N17 31.7	59.0	9.4	13.5
	10	326 38.2	S10 07.2	270 02.5	N17 45.3	59.0	9.3	13.4
	11	341 38.3	S10 06.2	284 30.9	N17 58.7	59.0	9.3	13.3
	12	356 38.4	S10 05.3	298 59.1	N18 12.0	59.0	9.2	13.2
	13	011 38.5	S10 04.4	313 27.3	N18 25.3	59.0	9.1	13.1
	14	026 38.6	S10 03.5	327 55.4	N18 38.4	59.0	9.0	13.0
	15	041 38.6	S10 02.6	342 23.3	N18 51.5	59.0	8.9	12.9
	16	056 38.7	S10 01.7	356 51.2	N19 04.4	59.0	8.8	12.8
	17	071 38.8	S10 00.8	011 19.0	N19 17.3	59.1	8.7	12.7
	18	086 38.9	S09 59.8	025 46.7	N19 30.0	59.1	8.6	12.6
	19	101 39.0	S09 58.9	040 14.3	N19 42.6	59.1	8.5	12.5
	20	116 39.0	S09 58.0	054 41.7	N19 55.1	59.1	8.4	12.4
	21	131 39.1	S09 57.1	069 09.1	N20 07.5	59.1	8.3	12.3
	22	146 39.2	S09 56.2	083 36.4	N20 19.8	59.1	8.2	12.2
	23	161 39.3	S09 55.3	098 03.6	N20 31.9	59.1	8.1	12.0
23	00	176 39.4	S09 54.3	112 30.7	N20 44.0	59.1	8.0	11.9
	01	191 39.5	S09 53.4	126 57.7	N20 55.9	59.1	7.9	11.8
	02	206 39.5	S09 52.5	141 24.6	N21 07.7	59.1	7.8	11.7
	03	221 39.6	S09 51.6	155 51.4	N21 19.4	59.1	7.7	11.6
	04	236 39.7	S09 50.7	170 18.1	N21 31.0	59.1	7.6	11.4
	05	251 39.8	S09 49.8	184 44.7	N21 42.4	59.1	7.5	11.3
	06	266 39.9	S09 48.8	199 11.2	N21 53.7	59.1	7.4	11.2
	07	281 40.0	S09 47.9	213 37.6	N22 04.9	59.1	7.3	11.0
	08	296 40.1	S09 47.0	228 03.9	N22 16.0	59.1	7.2	10.9
	09	311 40.1	S09 46.1	242 30.1	N22 26.9	59.1	7.1	10.8
	10	326 40.2	S09 45.2	256 56.2	N22 37.7	59.2	7.0	10.6
	11	341 40.3	S09 44.2	271 22.2	N22 48.3	59.2	6.9	10.5
	12	356 40.4	S09 43.3	285 48.1	N22 58.8	59.2	6.8	10.4
	13	011 40.5	S09 42.4	300 13.9	N23 09.2	59.2	6.7	10.2
	14	026 40.6	S09 41.5	314 39.6	N23 19.4	59.2	6.6	10.1
	15	041 40.7	S09 40.6	329 05.2	N23 29.5	59.2	6.5	9.9
	16	056 40.8	S09 39.6	343 30.7	N23 39.4	59.2	6.4	9.8
	17	071 40.8	S09 38.7	357 56.1	N23 49.2	59.2	6.3	9.7
	18	086 40.9	S09 37.8	012 21.4	N23 58.9	59.2	6.2	9.5
	19	101 41.0	S09 36.9	026 46.7	N24 08.4	59.2	6.1	9.4
	20	116 41.1	S09 36.0	041 11.8	N24 17.8	59.2	6.0	9.2
	21	131 41.2	S09 35.0	055 36.8	N24 27.0	59.2	5.9	9.0
	22	146 41.3	S09 34.1	070 01.7	N24 36.0	59.2	5.8	8.9
	23	161 41.4	S09 33.2	084 26.6	N24 44.9	59.2	5.7	8.7

Day 21 noon Sun: v 0.1 d 0.9 SD 16.2 | Moon SD 16.0

Day 22 noon Sun: v 0.1 d 0.9 SD 16.2 | Moon SD 16.1

Day 23 noon Sun: v 0.1 d 0.9 SD 16.2 | Moon SD 16.1

SUN: FEBRUARY 22 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0543	0702	0814	1614	1727	1846
70N	0545	0655	0800	1628	1733	1844
68N	0546	0650	0749	1640	1738	1843
66N	0547	0646	0739	1649	1742	1842
64N	0547	0642	0731	1657	1746	1841
62N	0548	0639	0725	1703	1749	1841
60N	0548	0636	0719	1709	1752	1840
58N	0548	0633	0713	1714	1755	1840
56N	0548	0631	0709	1719	1757	1840
54N	0548	0629	0705	1723	1759	1840
52N	0547	0627	0701	1727	1801	1840
50N	0547	0625	0657	1730	1803	1841
45N	0546	0620	0650	1738	1807	1842
40N	0545	0616	0644	1744	1811	1843
35N	0543	0613	0638	1749	1815	1844
30N	0541	0609	0633	1754	1818	1846
25N	0539	0606	0629	1758	1821	1848
20N	0537	0603	0625	1802	1825	1850
15N	0534	0559	0621	1806	1828	1853
10N	0531	0556	0617	1810	1831	1856
05N	0528	0553	0614	1813	1834	1859
00N	0525	0549	0610	1817	1838	1902
05S	0521	0545	0606	1820	1841	1906
10S	0516	0541	0603	1824	1845	1910
15S	0512	0537	0559	1828	1850	1915
20S	0506	0532	0555	1832	1854	1921
25S	0500	0527	0551	1836	1859	1927
30S	0452	0521	0546	1841	1905	1934
35S	0443	0514	0540	1846	1912	1943
40S	0432	0506	0534	1852	1920	1954
45S	0419	0456	0527	1859	1929	2007
50S	0402	0444	0519	1907	1941	2024
55S	0339	0428	0508	1918	1957	2046
60S	0304	0407	0454	1931	2018	2120

MOON: RISE / SET | UTC HHMM

Lat	Day 21		Day 22		Day 23	
72N	0638	--	0525	0142	--	--
70N	0655	--	0609	0100	--	--
68N	0709	--	0639	0032	0526	0337
66N	0721	--	0701	0011	0628	0236
64N	0730	2355	0719	--	0703	0202
62N	0739	2341	0734	--	0729	0137
60N	0746	2330	0746	--	0749	0118
58N	0752	2320	0757	--	0806	0102
56N	0758	2311	0807	--	0820	0048
54N	0803	2304	0815	--	0832	0037
52N	0808	2257	0823	--	0843	0026
50N	0812	2251	0830	--	0853	0017
45N	0821	2238	0845	2358	0914	--
40N	0829	2227	0857	2342	0931	--
35N	0836	2218	0908	2329	0945	--
30N	0842	2210	0917	2318	0957	--
25N	0847	2203	0925	2308	1008	--
20N	0852	2156	0933	2258	1019	--
15N	0857	2150	0940	2250	1028	2352
10N	0901	2145	0947	2242	1037	2342
05N	0906	2139	0954	2234	1046	2332
00N	0910	2133	1000	2226	1055	2322
05S	0914	2128	1007	2218	1104	2313
10S	0919	2122	1014	2210	1113	2303
15S	0923	2117	1021	2202	1122	2253
20S	0928	2111	1028	2154	1132	2242
25S	0933	2104	1036	2145	1142	2231
30S	0939	2057	1045	2135	1154	2218
35S	0945	2050	1055	2124	1207	2204
40S	0952	2041	1106	2111	1222	2148
45S	1001	2031	1120	2056	1240	2129
50S	1011	2019	1136	2038	1303	2105
55S	1024	2003	1157	2015	1333	2034
60S	1041	1943	1226	1944	1418	1947

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | FEBRUARY 24 - FEBRUARY 26

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
24	00	153 53.3	165 18.8	S06 27.1	186 25.1	S14 16.9	047 04.1	N22 52.7	151 59.8	S01 30.5
	01	168 55.7	180 18.3	S06 25.9	201 25.7	S14 16.3	062 06.7	N22 52.8	167 02.0	S01 30.4
	02	183 58.2	195 17.9	S06 24.6	216 26.2	S14 15.6	077 09.3	N22 52.8	182 04.2	S01 30.3
	03	199 00.6	210 17.5	S06 23.4	231 26.8	S14 15.0	092 11.9	N22 52.8	197 06.4	S01 30.1
	04	214 03.1	225 17.1	S06 22.2	246 27.3	S14 14.3	107 14.5	N22 52.8	212 08.6	S01 30.0
	05	229 05.6	240 16.7	S06 20.9	261 27.9	S14 13.6	122 17.1	N22 52.8	227 10.8	S01 29.9
	06	244 08.0	255 16.3	S06 19.7	276 28.4	S14 13.0	137 19.7	N22 52.8	242 13.0	S01 29.8
	07	259 10.5	270 15.8	S06 18.4	291 29.0	S14 12.3	152 22.3	N22 52.9	257 15.2	S01 29.7
	08	274 13.0	285 15.4	S06 17.2	306 29.5	S14 11.7	167 24.9	N22 52.9	272 17.4	S01 29.6
	09	289 15.4	300 15.0	S06 15.9	321 30.1	S14 11.0	182 27.5	N22 52.9	287 19.6	S01 29.4
	10	304 17.9	315 14.6	S06 14.7	336 30.6	S14 10.3	197 30.1	N22 52.9	302 21.8	S01 29.3
	11	319 20.4	330 14.2	S06 13.5	351 31.2	S14 09.7	212 32.7	N22 52.9	317 24.0	S01 29.2
	12	334 22.8	345 13.8	S06 12.2	006 31.7	S14 09.0	227 35.3	N22 52.9	332 26.2	S01 29.1
	13	349 25.3	000 13.4	S06 11.0	021 32.3	S14 08.4	242 37.9	N22 53.0	347 28.4	S01 29.0
	14	004 27.8	015 12.9	S06 09.7	036 32.9	S14 07.7	257 40.4	N22 53.0	002 30.6	S01 28.8
	15	019 30.2	030 12.5	S06 08.5	051 33.4	S14 07.0	272 43.0	N22 53.0	017 32.8	S01 28.7
	16	034 32.7	045 12.1	S06 07.2	066 34.0	S14 06.4	287 45.6	N22 53.0	032 35.0	S01 28.6
	17	049 35.1	060 11.7	S06 06.0	081 34.5	S14 05.7	302 48.2	N22 53.0	047 37.2	S01 28.5
	18	064 37.6	075 11.3	S06 04.8	096 35.1	S14 05.0	317 50.8	N22 53.0	062 39.4	S01 28.4
	19	079 40.1	090 10.9	S06 03.5	111 35.6	S14 04.4	332 53.4	N22 53.1	077 41.6	S01 28.2
	20	094 42.5	105 10.5	S06 02.3	126 36.2	S14 03.7	347 56.0	N22 53.1	092 43.8	S01 28.1
	21	109 45.0	120 10.0	S06 01.0	141 36.7	S14 03.1	002 58.6	N22 53.1	107 46.0	S01 28.0
	22	124 47.5	135 09.6	S05 59.8	156 37.3	S14 02.4	018 01.2	N22 53.1	122 48.2	S01 27.9
	23	139 49.9	150 09.2	S05 58.5	171 37.8	S14 01.7	033 03.8	N22 53.1	137 50.4	S01 27.8
25	00	154 52.4	165 08.8	S05 57.3	186 38.4	S14 01.1	048 06.3	N22 53.1	152 52.6	S01 27.7
	01	169 54.9	180 08.4	S05 56.0	201 38.9	S14 00.4	063 08.9	N22 53.2	167 54.8	S01 27.5
	02	184 57.3	195 08.0	S05 54.8	216 39.5	S13 59.7	078 11.5	N22 53.2	182 57.0	S01 27.4
	03	199 59.8	210 07.6	S05 53.5	231 40.0	S13 59.1	093 14.1	N22 53.2	197 59.2	S01 27.3
	04	215 02.2	225 07.2	S05 52.3	246 40.6	S13 58.4	108 16.7	N22 53.2	213 01.4	S01 27.2
	05	230 04.7	240 06.8	S05 51.0	261 41.1	S13 57.7	123 19.3	N22 53.2	228 03.6	S01 27.1
	06	245 07.2	255 06.3	S05 49.8	276 41.7	S13 57.1	138 21.9	N22 53.2	243 05.8	S01 26.9
	07	260 09.6	270 05.9	S05 48.5	291 42.3	S13 56.4	153 24.4	N22 53.3	258 08.0	S01 26.8
	08	275 12.1	285 05.5	S05 47.3	306 42.8	S13 55.7	168 27.0	N22 53.3	273 10.1	S01 26.7
	09	290 14.6	300 05.1	S05 46.0	321 43.4	S13 55.1	183 29.6	N22 53.3	288 12.3	S01 26.6
	10	305 17.0	315 04.7	S05 44.8	336 43.9	S13 54.4	198 32.2	N22 53.3	303 14.5	S01 26.5
	11	320 19.5	330 04.3	S05 43.5	351 44.5	S13 53.7	213 34.8	N22 53.3	318 16.7	S01 26.3
	12	335 22.0	345 03.9	S05 42.3	006 45.0	S13 53.1	228 37.4	N22 53.3	333 18.9	S01 26.2
	13	350 24.4	000 03.5	S05 41.0	021 45.6	S13 52.4	243 39.9	N22 53.3	348 21.1	S01 26.1
	14	005 26.9	015 03.1	S05 39.8	036 46.1	S13 51.7	258 42.5	N22 53.4	003 23.3	S01 26.0
	15	020 29.4	030 02.7	S05 38.5	051 46.7	S13 51.1	273 45.1	N22 53.4	018 25.5	S01 25.9
	16	035 31.8	045 02.3	S05 37.3	066 47.3	S13 50.4	288 47.7	N22 53.4	033 27.7	S01 25.7
	17	050 34.3	060 01.9	S05 36.0	081 47.8	S13 49.7	303 50.3	N22 53.4	048 29.9	S01 25.6
	18	065 36.7	075 01.4	S05 34.8	096 48.4	S13 49.1	318 52.9	N22 53.4	063 32.1	S01 25.5
	19	080 39.2	090 01.0	S05 33.5	111 48.9	S13 48.4	333 55.4	N22 53.4	078 34.3	S01 25.4
	20	095 41.7	105 00.6	S05 32.3	126 49.5	S13 47.7	348 58.0	N22 53.5	093 36.5	S01 25.3
	21	110 44.1	120 00.2	S05 31.0	141 50.0	S13 47.1	004 00.6	N22 53.5	108 38.7	S01 25.2
	22	125 46.6	134 59.8	S05 29.8	156 50.6	S13 46.4	019 03.2	N22 53.5	123 40.9	S01 25.0
	23	140 49.1	149 59.4	S05 28.5	171 51.1	S13 45.7	034 05.8	N22 53.5	138 43.1	S01 24.9
26	00	155 51.5	164 59.0	S05 27.3	186 51.7	S13 45.0	049 08.3	N22 53.5	153 45.3	S01 24.8
	01	170 54.0	179 58.6	S05 26.0	201 52.3	S13 44.4	064 10.9	N22 53.5	168 47.5	S01 24.7
	02	185 56.5	194 58.2	S05 24.8	216 52.8	S13 43.7	079 13.5	N22 53.5	183 49.7	S01 24.6
	03	200 58.9	209 57.8	S05 23.5	231 53.4	S13 43.0	094 16.1	N22 53.6	198 51.9	S01 24.4
	04	216 01.4	224 57.4	S05 22.3	246 53.9	S13 42.4	109 18.7	N22 53.6	213 54.1	S01 24.3
	05	231 03.9	239 57.0	S05 21.0	261 54.5	S13 41.7	124 21.2	N22 53.6	228 56.3	S01 24.2
	06	246 06.3	254 56.6	S05 19.8	276 55.1	S13 41.0	139 23.8	N22 53.6	243 58.4	S01 24.1
	07	261 08.8	269 56.2	S05 18.5	291 55.6	S13 40.3	154 26.4	N22 53.6	259 00.6	S01 24.0
	08	276 11.2	284 55.8	S05 17.3	306 56.2	S13 39.7	169 29.0	N22 53.6	274 02.8	S01 23.8
	09	291 13.7	299 55.4	S05 16.0	321 56.7	S13 39.0	184 31.5	N22 53.6	289 05.0	S01 23.7
	10	306 16.2	314 55.0	S05 14.7	336 57.3	S13 38.3	199 34.1	N22 53.7	304 07.2	S01 23.6
	11	321 18.6	329 54.6	S05 13.5	351 57.8	S13 37.7	214 36.7	N22 53.7	319 09.4	S01 23.5
	12	336 21.1	344 54.2	S05 12.2	006 58.4	S13 37.0	229 39.3	N22 53.7	334 11.6	S01 23.4
	13	351 23.6	359 53.8	S05 11.0	021 59.0	S13 36.3	244 41.8	N22 53.7	349 13.8	S01 23.2
	14	006 26.0	014 53.4	S05 09.7	036 59.5	S13 35.6	259 44.4	N22 53.7	004 16.0	S01 23.1
	15	021 28.5	029 53.0	S05 08.5	052 00.1	S13 35.0	274 47.0	N22 53.7	019 18.2	S01 23.0
	16	036 31.0	044 52.6	S05 07.2	067 00.6	S13 34.3	289 49.6	N22 53.7	034 20.4	S01 22.9
	17	051 33.4	059 52.2	S05 05.9	082 01.2	S13 33.6	304 52.1	N22 53.8	049 22.6	S01 22.8
	18	066 35.9	074 51.8	S05 04.7	097 01.8	S13 32.9	319 54.7	N22 53.8	064 24.8	S01 22.6
	19	081 38.4	089 51.4	S05 03.4	112 02.3	S13 32.3	334 57.3	N22 53.8	079 27.0	S01 22.5
	20	096 40.8	104 51.0	S05 02.2	127 02.9	S13 31.6	349 59.8	N22 53.8	094 29.2	S01 22.4
	21	111 43.3	119 50.6	S05 00.9	142 03.5	S13 30.9	005 02.4	N22 53.8	109 31.4	S01 22.3
	22	126 45.7	134 50.2	S04 59.7	157 04.0	S13 30.2	020 05.0	N22 53.8	124 33.6	S01 22.2
	23	141 48.2	149 49.8	S04 58.4	172 04.6	S13 29.6	035 07.6	N22 53.8	139 35.8	S01 22.0

Venus	Mars	Jupiter	Saturn
24: v -0.4 d 1.2	24: v 0.6 d 0.7	24: v 2.6 d 0.0	24: v 2.2 d 0.1
25: v -0.4 d 1.2	25: v 0.6 d 0.7	25: v 2.6 d 0.0	25: v 2.2 d 0.1
26: v -0.4 d 1.3	26: v 0.6 d 0.7	26: v 2.6 d 0.0	26: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.2	S40 12.2
Achernar	335 19.8	S57 06.5
Acrux	172 58.5	S63 14.6
Adhara	255 04.9	S29 00.6
Al Na'ir	027 32.2	S46 50.1
Aldebaran	290 38.5	N16 33.7
Alioth	166 11.7	N55 48.8
Alkaid	152 50.9	N49 10.6
Alnilam	275 36.7	S01 11.2
Alphard	217 46.5	S08 46.5
Alphecca	126 02.9	N26 37.3
Alpheratz	357 34.1	N29 14.1
Altair	061 59.3	N08 56.1
Ankaa	353 06.6	S42 10.0
Antares	112 14.7	S26 29.4
Arcturus	145 46.9	N19 02.5
Atria	107 08.2	S69 04.2
Avior	234 13.8	S59 35.8
Bellatrix	278 21.8	N06 22.3
Betelgeuse	270 50.9	N07 24.6
Canopus	263 51.7	S52 42.8
Capella	280 20.4	N46 01.6
Deneb	049 25.6	N45 22.2
Denebola	182 23.7	N14 25.4
Diphda	348 46.6	S17 50.7
Dubhe	193 39.2	N61 36.4
Elnath	278 00.6	N28 37.8
Eltanin	090 42.0	N51 28.8
Enif	033 38.2	N09 59.6
Fomalhaut	015 13.8	S29 29.1
Gacrux	171 50.1	S57 15.5
Gienah	175 42.3	S17 41.3
Hadar	148 34.3	S60 29.8
Hamal	327 50.3	N23 35.2
Kaus Australi	083 31.5	S34 22.3
Kochab	137 19.4	N74 02.5
Markab	013 29.3	N15 20.7
Menkar	314 05.3	N04 11.5
Menkent	147 56.3	S36 29.9
Miaplacidus	221 37.2	S69 49.6
Mirfak	308 27.0	N49 57.4
Nunki	075 46.8	S26 15.8
Peacock	053 04.7	S56 39.0
Polaris	313 42.1	N89 22.8
Pollux	243 15.9	N27 57.7
Procyon	244 49.6	N05 09.4
Rasalhague	095 57.8	N12 32.2
Regulus	207 33.1	N11 50.2
Rigel	281 02.9	S08 10.4
Rigil Kentaur	139 38.7	S60 56.4
Sabik	102 01.8	S15 45.5
Schedar	349 30.4	N56 41.0
Shaula	096 09.2	S37 07.3
Sirius	258 25.2	S16 45.3
Spica	158 21.1	S11 18.0
Suhail	222 45.2	S43 32.4
Vega	080 32.8	N38 48.2
Zubenelgenubi	136 54.8	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	009 41.9	1300
Mars	031 23.1	1133
Jupiter	253 15.4	2044
Saturn	357 57.0	1346

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
24	00	176 41.5	S09 32.3	098 51.3	N24 53.6	59.2	5.7	8.6
	01	191 41.6	S09 31.4	113 16.0	N25 02.2	59.2	5.6	8.4
	02	206 41.7	S09 30.4	127 40.6	N25 10.6	59.2	5.5	8.3
	03	221 41.7	S09 29.5	142 05.0	N25 18.9	59.2	5.4	8.1
	04	236 41.8	S09 28.6	156 29.4	N25 27.0	59.2	5.3	7.9
	05	251 41.9	S09 27.7	170 53.7	N25 34.9	59.2	5.2	7.8
	06	266 42.0	S09 26.7	185 17.9	N25 42.7	59.2	5.1	7.6
	07	281 42.1	S09 25.8	199 42.1	N25 50.3	59.2	5.0	7.4
	08	296 42.2	S09 24.9	214 06.1	N25 57.8	59.2	5.0	7.3
	09	311 42.3	S09 24.0	228 30.1	N26 05.0	59.2	4.9	7.1
	10	326 42.4	S09 23.0	242 54.0	N26 12.1	59.2	4.8	6.9
	11	341 42.5	S09 22.1	257 17.8	N26 19.1	59.2	4.7	6.8
	12	356 42.6	S09 21.2	271 41.5	N26 25.8	59.2	4.6	6.6
	13	011 42.7	S09 20.3	286 05.2	N26 32.4	59.2	4.6	6.4
	14	026 42.8	S09 19.3	300 28.7	N26 38.8	59.2	4.5	6.2
	15	041 42.9	S09 18.4	314 52.2	N26 45.0	59.2	4.4	6.1
	16	056 43.0	S09 17.5	329 15.7	N26 51.1	59.2	4.4	5.9
	17	071 43.0	S09 16.6	343 39.0	N26 56.9	59.2	4.3	5.7
	18	086 43.1	S09 15.6	358 02.3	N27 02.6	59.2	4.2	5.5
	19	101 43.2	S09 14.7	012 25.5	N27 08.1	59.2	4.2	5.3
	20	116 43.3	S09 13.8	026 48.7	N27 13.5	59.2	4.1	5.1
	21	131 43.4	S09 12.8	041 11.8	N27 18.6	59.2	4.0	5.0
	22	146 43.5	S09 11.9	055 34.8	N27 23.6	59.2	4.0	4.8
	23	161 43.6	S09 11.0	069 57.8	N27 28.4	59.2	3.9	4.6
25	00	176 43.7	S09 10.1	084 20.7	N27 33.0	59.2	3.9	4.4
	01	191 43.8	S09 09.1	098 43.6	N27 37.4	59.2	3.8	4.2
	02	206 43.9	S09 08.2	113 06.4	N27 41.6	59.2	3.8	4.0
	03	221 44.0	S09 07.3	127 29.2	N27 45.6	59.2	3.7	3.8
	04	236 44.1	S09 06.3	141 51.9	N27 49.4	59.2	3.7	3.7
	05	251 44.2	S09 05.4	156 14.6	N27 53.1	59.2	3.6	3.5
	06	266 44.3	S09 04.5	170 37.2	N27 56.6	59.2	3.6	3.3
	07	281 44.4	S09 03.6	184 59.8	N27 59.8	59.2	3.5	3.1
	08	296 44.5	S09 02.6	199 22.3	N28 02.9	59.2	3.5	2.9
	09	311 44.6	S09 01.7	213 44.8	N28 05.8	59.2	3.5	2.7
	10	326 44.7	S09 00.8	228 07.3	N28 08.5	59.2	3.4	2.5
	11	341 44.8	S08 59.8	242 29.8	N28 11.0	59.2	3.4	2.3
	12	356 44.9	S08 58.9	256 52.2	N28 13.3	59.2	3.4	2.1
	13	011 45.0	S08 58.0	271 14.6	N28 15.4	59.2	3.4	1.9
	14	026 45.1	S08 57.0	285 36.9	N28 17.3	59.2	3.3	1.7
	15	041 45.2	S08 56.1	299 59.3	N28 19.0	59.2	3.3	1.5
	16	056 45.3	S08 55.2	314 21.6	N28 20.5	59.2	3.3	1.3
	17	071 45.4	S08 54.2	328 43.9	N28 21.9	59.2	3.3	1.1
	18	086 45.5	S08 53.3	343 06.2	N28 23.0	59.2	3.3	0.9
	19	101 45.6	S08 52.4	357 28.5	N28 23.9	59.2	3.3	0.7
	20	116 45.7	S08 51.4	011 50.8	N28 24.7	59.2	3.3	0.5
	21	131 45.8	S08 50.5	026 13.0	N28 25.2	59.2	3.3	0.3
	22	146 45.9	S08 49.6	040 35.3	N28 25.5	59.2	3.3	0.1
	23	161 46.0	S08 48.6	054 57.6	N28 25.7	59.2	3.3	-0.1
26	00	176 46.1	S08 47.7	069 19.8	N28 25.6	59.2	3.3	-0.2
	01	191 46.2	S08 46.8	083 42.1	N28 25.4	59.2	3.3	-0.4
	02	206 46.3	S08 45.8	098 04.4	N28 24.9	59.2	3.3	-0.6
	03	221 46.4	S08 44.9	112 26.7	N28 24.3	59.2	3.3	-0.8
	04	236 46.5	S08 44.0	126 49.0	N28 23.5	59.2	3.3	-1.0
	05	251 46.6	S08 43.0	141 11.3	N28 22.4	59.2	3.3	-1.2
	06	266 46.7	S08 42.1	155 33.6	N28 21.2	59.2	3.4	-1.4
	07	281 46.8	S08 41.2	169 56.0	N28 19.8	59.2	3.4	-1.6
	08	296 46.9	S08 40.2	184 18.3	N28 18.2	59.2	3.4	-1.8
	09	311 47.1	S08 39.3	198 40.7	N28 16.4	59.2	3.4	-2.0
	10	326 47.2	S08 38.4	213 03.2	N28 14.3	59.2	3.5	-2.2
	11	341 47.3	S08 37.4	227 25.6	N28 12.1	59.2	3.5	-2.4
	12	356 47.4	S08 36.5	241 48.1	N28 09.7	59.1	3.5	-2.6
	13	011 47.5	S08 35.6	256 10.7	N28 07.2	59.1	3.6	-2.8
	14	026 47.6	S08 34.6	270 33.2	N28 04.4	59.1	3.6	-3.0
	15	041 47.7	S08 33.7	284 55.8	N28 01.4	59.1	3.7	-3.2
	16	056 47.8	S08 32.7	299 18.5	N27 58.2	59.1	3.7	-3.4
	17	071 47.9	S08 31.8	313 41.2	N27 54.9	59.1	3.7	-3.5
	18	086 48.0	S08 30.9	328 03.9	N27 51.3	59.1	3.8	-3.7
	19	101 48.1	S08 29.9	342 26.7	N27 47.6	59.1	3.8	-3.9
	20	116 48.2	S08 29.0	356 49.6	N27 43.7	59.1	3.9	-4.1
	21	131 48.3	S08 28.1	011 12.5	N27 39.6	59.1	4.0	-4.3
	22	146 48.4	S08 27.1	025 35.4	N27 35.3	59.1	4.0	-4.5
	23	161 48.6	S08 26.2	039 58.4	N27 30.8	59.1	4.1	-4.7

Day 24 noon Sun: v 0.1 d 0.9 SD 16.2 | Moon SD 16.1

Day 25 noon Sun: v 0.1 d 0.9 SD 16.2 | Moon SD 16.1

Day 26 noon Sun: v 0.1 d 0.9 SD 16.2 | Moon SD 16.1

SUN: FEBRUARY 25 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0529	0647	0758	1630	1741	1859
70N	0532	0643	0746	1642	1745	1856
68N	0535	0639	0736	1651	1749	1853
66N	0537	0636	0728	1659	1752	1851
64N	0538	0633	0721	1706	1755	1850
62N	0539	0630	0715	1712	1757	1849
60N	0540	0628	0710	1717	1759	1848
58N	0540	0626	0706	1721	1801	1847
56N	0541	0624	0702	1725	1803	1846
54N	0541	0622	0658	1729	1805	1846
52N	0541	0620	0655	1732	1806	1846
50N	0542	0619	0652	1735	1808	1845
45N	0541	0615	0645	1742	1811	1845
40N	0541	0612	0639	1747	1815	1846
35N	0540	0609	0635	1752	1817	1847
30N	0538	0606	0630	1756	1820	1848
25N	0537	0603	0626	1800	1823	1850
20N	0535	0601	0623	1804	1826	1851
15N	0533	0558	0619	1807	1828	1854
10N	0530	0555	0616	1810	1831	1856
05N	0528	0552	0613	1813	1834	1859
00N	0524	0549	0610	1816	1837	1902
05S	0521	0545	0606	1819	1840	1905
10S	0517	0542	0603	1823	1844	1909
15S	0513	0538	0600	1826	1848	1913
20S	0507	0534	0556	1830	1852	1918
25S	0502	0529	0552	1833	1857	1924
30S	0455	0523	0548	1838	1902	1931
35S	0446	0517	0543	1842	1908	1939
40S	0436	0510	0538	1848	1915	1949
45S	0424	0501	0531	1854	1924	2001
50S	0408	0450	0524	1901	1935	2016
55S	0347	0435	0514	1911	1949	2037
60S	0316	0416	0502	1923	2008	2108

MOON: RISE / SET | UTC HHMM

Lat	Day 24		Day 25		Day 26	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	0622	0443	--	--	--	--
62N	0722	0344	0706	0608	--	--
60N	0756	0310	0817	0457	0915	0611
58N	0821	0246	0853	0422	0953	0533
56N	0841	0226	0918	0356	1020	0506
54N	0858	0210	0939	0336	1041	0445
52N	0913	0156	0956	0319	1058	0427
50N	0925	0143	1011	0304	1113	0412
45N	0951	0118	1041	0235	1144	0342
40N	1012	0058	1104	0212	1207	0318
35N	1030	0042	1124	0153	1227	0258
30N	1045	0027	1140	0136	1244	0241
25N	1058	0014	1155	0122	1258	0226
20N	1110	0003	1209	0109	1312	0213
15N	1122	--	1221	0056	1324	0200
10N	1133	--	1233	0045	1336	0148
05N	1143	--	1244	0034	1347	0137
00N	1154	--	1256	0023	1358	0126
05S	1204	--	1307	0012	1410	0114
10S	1215	--	1318	0001	1421	0103
15S	1226	2349	1330	--	1433	0051
20S	1237	2337	1343	--	1445	0038
25S	1250	2324	1356	--	1458	0024
30S	1304	2310	1411	--	1513	0009
35S	1319	2254	1428	2352	1530	--
40S	1338	2235	1448	2332	1549	--
45S	1400	2212	1512	2308	1613	--
50S	1428	2143	1543	2237	1643	2348
55S	1507	2103	1627	2153	1724	2306
60S	1612	1958	1748	2032	1837	2155

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | FEBRUARY 27 - MARCH 1

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
27	00	156 50.7	164 49.4	S04 57.1	187 05.1	S13 28.9	050 10.1	N22 53.9	154 37.9	S01 21.9
	01	171 53.1	179 49.0	S04 55.9	202 05.7	S13 28.2	065 12.7	N22 53.9	169 40.1	S01 21.8
	02	186 55.6	194 48.6	S04 54.6	217 06.3	S13 27.5	080 15.3	N22 53.9	184 42.3	S01 21.7
	03	201 58.1	209 48.2	S04 53.4	232 06.8	S13 26.9	095 17.8	N22 53.9	199 44.5	S01 21.6
	04	217 00.5	224 47.8	S04 52.1	247 07.4	S13 26.2	110 20.4	N22 53.9	214 46.7	S01 21.4
	05	232 03.0	239 47.4	S04 50.9	262 07.9	S13 25.5	125 23.0	N22 53.9	229 48.9	S01 21.3
	06	247 05.5	254 47.0	S04 49.6	277 08.5	S13 24.8	140 25.5	N22 53.9	244 51.1	S01 21.2
	07	262 07.9	269 46.6	S04 48.3	292 09.1	S13 24.2	155 28.1	N22 54.0	259 53.3	S01 21.1
	08	277 10.4	284 46.2	S04 47.1	307 09.6	S13 23.5	170 30.7	N22 54.0	274 55.5	S01 21.0
	09	292 12.9	299 45.8	S04 45.8	322 10.2	S13 22.8	185 33.3	N22 54.0	289 57.7	S01 20.8
	10	307 15.3	314 45.4	S04 44.5	337 10.8	S13 22.1	200 35.8	N22 54.0	304 59.9	S01 20.7
	11	322 17.8	329 45.0	S04 43.3	352 11.3	S13 21.4	215 38.4	N22 54.0	320 02.1	S01 20.6
	12	337 20.2	344 44.6	S04 42.0	007 11.9	S13 20.8	230 41.0	N22 54.0	335 04.3	S01 20.5
	13	352 22.7	359 44.2	S04 40.8	022 12.5	S13 20.1	245 43.5	N22 54.0	350 06.5	S01 20.4
	14	007 25.2	014 43.8	S04 39.5	037 13.0	S13 19.4	260 46.1	N22 54.1	005 08.7	S01 20.2
	15	022 27.6	029 43.4	S04 38.2	052 13.6	S13 18.7	275 48.6	N22 54.1	020 10.9	S01 20.1
	16	037 30.1	044 43.0	S04 37.0	067 14.1	S13 18.1	290 51.2	N22 54.1	035 13.0	S01 20.0
	17	052 32.6	059 42.6	S04 35.7	082 14.7	S13 17.4	305 53.8	N22 54.1	050 15.2	S01 19.9
	18	067 35.0	074 42.2	S04 34.5	097 15.3	S13 16.7	320 56.3	N22 54.1	065 17.4	S01 19.8
	19	082 37.5	089 41.8	S04 33.2	112 15.8	S13 16.0	335 58.9	N22 54.1	080 19.6	S01 19.6
	20	097 40.0	104 41.4	S04 31.9	127 16.4	S13 15.3	351 01.5	N22 54.1	095 21.8	S01 19.5
	21	112 42.4	119 41.0	S04 30.7	142 17.0	S13 14.7	006 04.0	N22 54.2	110 24.0	S01 19.4
	22	127 44.9	134 40.6	S04 29.4	157 17.5	S13 14.0	021 06.6	N22 54.2	125 26.2	S01 19.3
	23	142 47.4	149 40.2	S04 28.1	172 18.1	S13 13.3	036 09.2	N22 54.2	140 28.4	S01 19.2
28	00	157 49.8	164 39.8	S04 26.9	187 18.7	S13 12.6	051 11.7	N22 54.2	155 30.6	S01 19.0
	01	172 52.3	179 39.5	S04 25.6	202 19.2	S13 11.9	066 14.3	N22 54.2	170 32.8	S01 18.9
	02	187 54.7	194 39.1	S04 24.4	217 19.8	S13 11.2	081 16.8	N22 54.2	185 35.0	S01 18.8
	03	202 57.2	209 38.7	S04 23.1	232 20.4	S13 10.6	096 19.4	N22 54.2	200 37.2	S01 18.7
	04	217 59.7	224 38.3	S04 21.8	247 20.9	S13 09.9	111 22.0	N22 54.2	215 39.4	S01 18.6
	05	233 02.1	239 37.9	S04 20.6	262 21.5	S13 09.2	126 24.5	N22 54.3	230 41.6	S01 18.4
	06	248 04.6	254 37.5	S04 19.3	277 22.1	S13 08.5	141 27.1	N22 54.3	245 43.7	S01 18.3
	07	263 07.1	269 37.1	S04 18.0	292 22.6	S13 07.8	156 29.6	N22 54.3	260 45.9	S01 18.2
	08	278 09.5	284 36.7	S04 16.8	307 23.2	S13 07.2	171 32.2	N22 54.3	275 48.1	S01 18.1
	09	293 12.0	299 36.3	S04 15.5	322 23.8	S13 06.5	186 34.8	N22 54.3	290 50.3	S01 18.0
	10	308 14.5	314 35.9	S04 14.2	337 24.3	S13 05.8	201 37.3	N22 54.3	305 52.5	S01 17.8
	11	323 16.9	329 35.5	S04 13.0	352 24.9	S13 05.1	216 39.9	N22 54.3	320 54.7	S01 17.7
	12	338 19.4	344 35.1	S04 11.7	007 25.5	S13 04.4	231 42.4	N22 54.3	335 56.9	S01 17.6
	13	353 21.8	359 34.7	S04 10.4	022 26.0	S13 03.7	246 45.0	N22 54.4	350 59.1	S01 17.5
	14	008 24.3	014 34.4	S04 09.2	037 26.6	S13 03.1	261 47.5	N22 54.4	006 01.3	S01 17.4
	15	023 26.8	029 34.0	S04 07.9	052 27.2	S13 02.4	276 50.1	N22 54.4	021 03.5	S01 17.2
	16	038 29.2	044 33.6	S04 06.6	067 27.7	S13 01.7	291 52.7	N22 54.4	036 05.7	S01 17.1
	17	053 31.7	059 33.2	S04 05.4	082 28.3	S13 01.0	306 55.2	N22 54.4	051 07.9	S01 17.0
	18	068 34.2	074 32.8	S04 04.1	097 28.9	S13 00.3	321 57.8	N22 54.4	066 10.1	S01 16.9
	19	083 36.6	089 32.4	S04 02.8	112 29.5	S12 59.6	337 00.3	N22 54.4	081 12.2	S01 16.8
	20	098 39.1	104 32.0	S04 01.6	127 30.0	S12 58.9	352 02.9	N22 54.4	096 14.4	S01 16.6
	21	113 41.6	119 31.6	S04 00.3	142 30.6	S12 58.3	007 05.4	N22 54.5	111 16.6	S01 16.5
	22	128 44.0	134 31.2	S03 59.0	157 31.2	S12 57.6	022 08.0	N22 54.5	126 18.8	S01 16.4
	23	143 46.5	149 30.9	S03 57.8	172 31.7	S12 56.9	037 10.5	N22 54.5	141 21.0	S01 16.3
1	00	158 49.0	164 30.5	S03 56.5	187 32.3	S12 56.2	052 13.1	N22 54.5	156 23.2	S01 16.2
	01	173 51.4	179 30.1	S03 55.2	202 32.9	S12 55.5	067 15.6	N22 54.5	171 25.4	S01 16.0
	02	188 53.9	194 29.7	S03 54.0	217 33.4	S12 54.8	082 18.2	N22 54.5	186 27.6	S01 15.9
	03	203 56.3	209 29.3	S03 52.7	232 34.0	S12 54.1	097 20.8	N22 54.5	201 29.8	S01 15.8
	04	218 58.8	224 28.9	S03 51.4	247 34.6	S12 53.4	112 23.3	N22 54.5	216 32.0	S01 15.7
	05	234 01.3	239 28.5	S03 50.1	262 35.2	S12 52.8	127 25.9	N22 54.6	231 34.2	S01 15.6
	06	249 03.7	254 28.1	S03 48.9	277 35.7	S12 52.1	142 28.4	N22 54.6	246 36.4	S01 15.4
	07	264 06.2	269 27.7	S03 47.6	292 36.3	S12 51.4	157 31.0	N22 54.6	261 38.5	S01 15.3
	08	279 08.7	284 27.4	S03 46.3	307 36.9	S12 50.7	172 33.5	N22 54.6	276 40.7	S01 15.2
	09	294 11.1	299 27.0	S03 45.1	322 37.4	S12 50.0	187 36.1	N22 54.6	291 42.9	S01 15.1
	10	309 13.6	314 26.6	S03 43.8	337 38.0	S12 49.3	202 38.6	N22 54.6	306 45.1	S01 15.0
	11	324 16.1	329 26.2	S03 42.5	352 38.6	S12 48.6	217 41.2	N22 54.6	321 47.3	S01 14.8
	12	339 18.5	344 25.8	S03 41.3	007 39.2	S12 47.9	232 43.7	N22 54.6	336 49.5	S01 14.7
	13	354 21.0	359 25.4	S03 40.0	022 39.7	S12 47.3	247 46.3	N22 54.6	351 51.7	S01 14.6
	14	009 23.5	014 25.0	S03 38.7	037 40.3	S12 46.6	262 48.8	N22 54.7	006 53.9	S01 14.5
	15	024 25.9	029 24.7	S03 37.4	052 40.9	S12 45.9	277 51.3	N22 54.7	021 56.1	S01 14.4
	16	039 28.4	044 24.3	S03 36.2	067 41.4	S12 45.2	292 53.9	N22 54.7	036 58.3	S01 14.2
	17	054 30.8	059 23.9	S03 34.9	082 42.0	S12 44.5	307 56.4	N22 54.7	052 00.5	S01 14.1
	18	069 33.3	074 23.5	S03 33.6	097 42.6	S12 43.8	322 59.0	N22 54.7	067 02.6	S01 14.0
	19	084 35.8	089 23.1	S03 32.4	112 43.2	S12 43.1	338 01.5	N22 54.7	082 04.8	S01 13.9
	20	099 38.2	104 22.7	S03 31.1	127 43.7	S12 42.4	353 04.1	N22 54.7	097 07.0	S01 13.8
	21	114 40.7	119 22.3	S03 29.8	142 44.3	S12 41.7	008 06.6	N22 54.7	112 09.2	S01 13.6
	22	129 43.2	134 22.0	S03 28.5	157 44.9	S12 41.0	023 09.2	N22 54.8	127 11.4	S01 13.5
	23	144 45.6	149 21.6	S03 27.3	172 45.5	S12 40.4	038 11.7	N22 54.8	142 13.6	S01 13.4

Venus	Mars	Jupiter	Saturn
27: v -0.4 d 1.3	27: v 0.6 d 0.7	27: v 2.6 d 0.0	27: v 2.2 d 0.1
28: v -0.4 d 1.3	28: v 0.6 d 0.7	28: v 2.6 d 0.0	28: v 2.2 d 0.1
1: v -0.4 d 1.3	1: v 0.6 d 0.7	1: v 2.5 d 0.0	1: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.2	S40 12.2
Achernar	335 19.8	S57 06.4
Acrux	172 58.4	S63 14.6
Adhara	255 04.9	S29 00.7
Al Na'ir	027 32.2	S46 50.1
Aldebaran	290 38.5	N16 33.7
Alioth	166 11.6	N55 48.8
Alkaid	152 50.9	N49 10.6
Alnilam	275 36.7	S01 11.2
Alphard	217 46.5	S08 46.5
Alphecca	126 02.8	N26 37.3
Alpheratz	357 34.1	N29 14.1
Altair	061 59.3	N08 56.1
Ankaa	353 06.6	S42 10.0
Antares	112 14.7	S26 29.4
Arcturus	145 46.8	N19 02.5
Atria	107 08.1	S69 04.2
Avior	234 13.8	S59 35.8
Bellatrix	278 21.8	N06 22.3
Betelgeuse	270 50.9	N07 24.6
Canopus	263 51.7	S52 42.8
Capella	280 20.4	N46 01.6
Deneb	049 25.6	N45 22.2
Denebola	182 23.7	N14 25.4
Diphda	348 46.6	S17 50.7
Dubhe	193 39.1	N61 36.4
Elnath	278 00.6	N28 37.8
Eltanin	090 41.9	N51 28.7
Enif	033 38.2	N09 59.6
Fomalhaut	015 13.8	S29 29.1
Gacrux	171 50.1	S57 15.6
Gienah	175 42.3	S17 41.4
Hadar	148 34.3	S60 29.8
Hamal	327 50.3	N23 35.2
Kaus Australi	083 31.4	S34 22.3
Kochab	137 19.3	N74 02.5
Markab	013 29.3	N15 20.7
Menkar	314 05.3	N04 11.5
Menkent	147 56.3	S36 29.9
Miaplacidus	221 37.3	S69 49.6
Mirfak	308 27.0	N49 57.4
Nunki	075 46.8	S26 15.8
Peacock	053 04.7	S56 39.0
Polaris	313 43.4	N89 22.8
Pollux	243 15.9	N27 57.7
Procyon	244 49.6	N05 09.4
Rasalhague	095 57.7	N12 32.2
Regulus	207 33.1	N11 50.2
Rigel	281 02.9	S08 10.4
Rigil Kentaur	139 38.7	S60 56.5
Sabik	102 01.7	S15 45.5
Schedar	349 30.4	N56 41.0
Shaula	096 09.2	S37 07.3
Sirius	258 25.2	S16 45.3
Spica	158 21.1	S11 18.0
Suhail	222 45.2	S43 32.5
Vega	080 32.8	N38 48.2
Zubenelgenubi	136 54.8	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	006 15.8	1302
Mars	029 06.1	1130
Jupiter	253 23.0	2032
Saturn	357 37.5	1336

2026 | FEBRUARY 27 - MARCH 1

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
27	00	176 48.7	S08 25.2	054 21.5	N27 26.1	59.1	4.1	-4.8
	01	191 48.8	S08 24.3	068 44.7	N27 21.3	59.1	4.2	-5.0
	02	206 48.9	S08 23.4	083 07.9	N27 16.3	59.1	4.3	-5.2
	03	221 49.0	S08 22.4	097 31.1	N27 11.1	59.1	4.3	-5.4
	04	236 49.1	S08 21.5	111 54.5	N27 05.7	59.0	4.4	-5.6
	05	251 49.2	S08 20.5	126 17.9	N27 00.1	59.0	4.5	-5.7
	06	266 49.3	S08 19.6	140 41.4	N26 54.3	59.0	4.6	-5.9
	07	281 49.4	S08 18.7	155 05.0	N26 48.4	59.0	4.6	-6.1
	08	296 49.5	S08 17.7	169 28.6	N26 42.3	59.0	4.7	-6.3
	09	311 49.6	S08 16.8	183 52.3	N26 36.0	59.0	4.8	-6.4
	10	326 49.8	S08 15.8	198 16.1	N26 29.6	59.0	4.9	-6.6
	11	341 49.9	S08 14.9	212 40.0	N26 23.0	59.0	5.0	-6.8
	12	356 50.0	S08 14.0	227 04.0	N26 16.2	59.0	5.0	-7.0
	13	011 50.1	S08 13.0	241 28.0	N26 09.2	59.0	5.1	-7.1
	14	026 50.2	S08 12.1	255 52.1	N26 02.1	59.0	5.2	-7.3
	15	041 50.3	S08 11.1	270 16.4	N25 54.8	58.9	5.3	-7.5
	16	056 50.4	S08 10.2	284 40.7	N25 47.3	58.9	5.4	-7.6
	17	071 50.5	S08 09.2	299 05.1	N25 39.7	58.9	5.5	-7.8
	18	086 50.7	S08 08.3	313 29.6	N25 31.9	58.9	5.6	-7.9
	19	101 50.8	S08 07.4	327 54.2	N25 24.0	58.9	5.7	-8.1
	20	116 50.9	S08 06.4	342 18.8	N25 15.9	58.9	5.8	-8.3
	21	131 51.0	S08 05.5	356 43.6	N25 07.6	58.9	5.9	-8.4
	22	146 51.1	S08 04.5	011 08.5	N24 59.2	58.9	6.0	-8.6
	23	161 51.2	S08 03.6	025 33.5	N24 50.6	58.9	6.1	-8.7
28	00	176 51.3	S08 02.6	039 58.5	N24 41.9	58.9	6.2	-8.9
	01	191 51.5	S08 01.7	054 23.7	N24 33.0	58.8	6.3	-9.0
	02	206 51.6	S08 00.8	068 49.0	N24 24.0	58.8	6.4	-9.2
	03	221 51.7	S07 59.8	083 14.4	N24 14.8	58.8	6.5	-9.3
	04	236 51.8	S07 58.9	097 39.8	N24 05.5	58.8	6.6	-9.5
	05	251 51.9	S07 57.9	112 05.4	N23 56.1	58.8	6.7	-9.6
	06	266 52.0	S07 57.0	126 31.1	N23 46.4	58.8	6.8	-9.7
	07	281 52.2	S07 56.0	140 56.9	N23 36.7	58.8	6.9	-9.9
	08	296 52.3	S07 55.1	155 22.7	N23 26.8	58.8	7.0	-10.0
	09	311 52.4	S07 54.1	169 48.7	N23 16.8	58.7	7.1	-10.2
	10	326 52.5	S07 53.2	184 14.8	N23 06.6	58.7	7.2	-10.3
	11	341 52.6	S07 52.2	198 41.0	N22 56.3	58.7	7.3	-10.4
	12	356 52.7	S07 51.3	213 07.3	N22 45.9	58.7	7.4	-10.6
	13	011 52.9	S07 50.4	227 33.8	N22 35.3	58.7	7.5	-10.7
	14	026 53.0	S07 49.4	242 00.3	N22 24.6	58.7	7.6	-10.8
	15	041 53.1	S07 48.5	256 26.9	N22 13.8	58.7	7.7	-10.9
	16	056 53.2	S07 47.5	270 53.6	N22 02.9	58.6	7.8	-11.1
	17	071 53.3	S07 46.6	285 20.5	N21 51.8	58.6	7.9	-11.2
	18	086 53.4	S07 45.6	299 47.4	N21 40.6	58.6	8.1	-11.3
	19	101 53.6	S07 44.7	314 14.5	N21 29.3	58.6	8.2	-11.4
	20	116 53.7	S07 43.7	328 41.7	N21 17.8	58.6	8.3	-11.6
	21	131 53.8	S07 42.8	343 08.9	N21 06.3	58.6	8.4	-11.7
	22	146 53.9	S07 41.8	357 36.3	N20 54.6	58.6	8.5	-11.8
	23	161 54.0	S07 40.9	012 03.8	N20 42.9	58.5	8.6	-11.9
1	00	176 54.2	S07 39.9	026 31.4	N20 31.0	58.5	8.7	-12.0
	01	191 54.3	S07 39.0	040 59.1	N20 19.0	58.5	8.8	-12.1
	02	206 54.4	S07 38.0	055 26.9	N20 06.9	58.5	8.9	-12.2
	03	221 54.5	S07 37.1	069 54.8	N19 54.6	58.5	9.0	-12.3
	04	236 54.6	S07 36.1	084 22.8	N19 42.3	58.5	9.1	-12.4
	05	251 54.8	S07 35.2	098 51.0	N19 29.9	58.4	9.2	-12.5
	06	266 54.9	S07 34.2	113 19.2	N19 17.4	58.4	9.3	-12.6
	07	281 55.0	S07 33.3	127 47.5	N19 04.7	58.4	9.4	-12.7
	08	296 55.1	S07 32.3	142 16.0	N18 52.0	58.4	9.5	-12.8
	09	311 55.3	S07 31.4	156 44.5	N18 39.2	58.4	9.6	-12.9
	10	326 55.4	S07 30.4	171 13.1	N18 26.3	58.4	9.7	-13.0
	11	341 55.5	S07 29.5	185 41.9	N18 13.3	58.3	9.9	-13.1
	12	356 55.6	S07 28.5	200 10.7	N18 00.2	58.3	10.0	-13.2
	13	011 55.7	S07 27.6	214 39.7	N17 47.0	58.3	10.1	-13.3
	14	026 55.9	S07 26.6	229 08.7	N17 33.7	58.3	10.2	-13.4
	15	041 56.0	S07 25.7	243 37.9	N17 20.4	58.3	10.3	-13.4
	16	056 56.1	S07 24.7	258 07.2	N17 06.9	58.3	10.4	-13.5
	17	071 56.2	S07 23.8	272 36.5	N16 53.4	58.2	10.5	-13.6
	18	086 56.4	S07 22.8	287 06.0	N16 39.8	58.2	10.6	-13.7
	19	101 56.5	S07 21.9	301 35.5	N16 26.1	58.2	10.6	-13.8
	20	116 56.6	S07 20.9	316 05.2	N16 12.3	58.2	10.7	-13.8
	21	131 56.7	S07 20.0	330 34.9	N15 58.5	58.2	10.8	-13.9
	22	146 56.9	S07 19.0	345 04.7	N15 44.6	58.1	10.9	-14.0
	23	161 57.0	S07 18.1	359 34.7	N15 30.6	58.1	11.0	-14.1

Day 27 noon Sun: v 0.1 d 0.9 SD 16.1 | Moon SD 16.1

Day 28 noon Sun: v 0.1 d 0.9 SD 16.1 | Moon SD 16.0

Day 1 noon Sun: v 0.1 d 1.0 SD 16.1 | Moon SD 15.9

SUN: FEBRUARY 28 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0515	0633	0742	1645	1755	1913
70N	0519	0630	0732	1655	1757	1908
68N	0523	0627	0724	1703	1800	1904
66N	0526	0625	0717	1710	1802	1901
64N	0528	0623	0711	1715	1804	1859
62N	0530	0621	0706	1720	1805	1857
60N	0532	0620	0701	1725	1807	1855
58N	0533	0618	0658	1728	1808	1854
56N	0534	0617	0654	1732	1809	1852
54N	0535	0615	0651	1735	1811	1852
52N	0535	0614	0648	1738	1812	1851
50N	0536	0613	0645	1740	1813	1850
45N	0536	0610	0640	1746	1815	1849
40N	0536	0608	0635	1751	1818	1849
35N	0536	0605	0631	1755	1820	1849
30N	0535	0603	0627	1758	1822	1850
25N	0534	0601	0624	1802	1825	1851
20N	0533	0558	0621	1805	1827	1852
15N	0531	0556	0618	1808	1829	1854
10N	0529	0554	0615	1810	1832	1856
05N	0527	0551	0612	1813	1834	1858
00N	0524	0548	0609	1816	1837	1901
05S	0521	0545	0606	1819	1839	1904
10S	0518	0542	0603	1821	1843	1907
15S	0513	0539	0600	1824	1846	1911
20S	0509	0535	0557	1827	1850	1916
25S	0503	0531	0554	1831	1854	1921
30S	0457	0526	0550	1834	1859	1927
35S	0450	0520	0546	1838	1904	1935
40S	0440	0513	0541	1843	1911	1944
45S	0429	0505	0536	1849	1919	1955
50S	0414	0455	0529	1855	1929	2009
55S	0355	0442	0520	1903	1941	2028
60S	0326	0425	0509	1914	1958	2056

MOON: RISE / SET | UTC HHMM

Lat	Day 27		Day 28		Day 1	
72N	--	--	--	--	--	--
70N	--	--	--	--	1235	0901
68N	--	--	--	--	1315	0818
66N	--	--	1103	0837	1343	0749
64N	--	--	1152	0747	1404	0727
62N	1014	0723	1223	0715	1420	0709
60N	1055	0641	1246	0651	1434	0655
58N	1123	0613	1305	0632	1446	0642
56N	1144	0550	1320	0616	1456	0631
54N	1202	0532	1333	0602	1505	0621
52N	1217	0517	1345	0550	1513	0612
50N	1231	0503	1355	0539	1520	0604
45N	1257	0435	1416	0516	1535	0548
40N	1319	0414	1434	0458	1548	0534
35N	1336	0355	1448	0443	1558	0522
30N	1351	0340	1500	0429	1608	0511
25N	1405	0326	1511	0417	1616	0502
20N	1417	0313	1522	0406	1623	0453
15N	1428	0301	1531	0356	1630	0445
10N	1439	0250	1540	0346	1637	0438
05N	1449	0239	1548	0337	1643	0430
00N	1500	0228	1557	0327	1650	0423
05S	1510	0217	1605	0318	1656	0415
10S	1520	0206	1614	0309	1703	0408
15S	1531	0155	1623	0259	1709	0400
20S	1542	0143	1632	0248	1716	0352
25S	1554	0130	1642	0237	1723	0343
30S	1607	0115	1653	0224	1731	0333
35S	1622	0059	1705	0210	1740	0322
40S	1639	0040	1719	0154	1750	0309
45S	1700	0017	1735	0134	1802	0254
50S	1725	--	1755	0110	1816	0236
55S	1800	--	1821	0037	1834	0212
60S	1852	2346	1857	--	1858	0138

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | MARCH 2 - MARCH 4

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
2	00	159 48.1	164 21.2	S03 26.0	187 46.0	S12 39.7	053 14.3	N22 54.8	157 15.8	S01 13.3
	01	174 50.6	179 20.8	S03 24.7	202 46.6	S12 39.0	068 16.8	N22 54.8	172 18.0	S01 13.2
	02	189 53.0	194 20.4	S03 23.5	217 47.2	S12 38.3	083 19.3	N22 54.8	187 20.2	S01 13.0
	03	204 55.5	209 20.0	S03 22.2	232 47.8	S12 37.6	098 21.9	N22 54.8	202 22.4	S01 12.9
	04	219 57.9	224 19.7	S03 20.9	247 48.3	S12 36.9	113 24.4	N22 54.8	217 24.6	S01 12.8
	05	235 00.4	239 19.3	S03 19.6	262 48.9	S12 36.2	128 27.0	N22 54.8	232 26.7	S01 12.7
	06	250 02.9	254 18.9	S03 18.4	277 49.5	S12 35.5	143 29.5	N22 54.8	247 28.9	S01 12.5
	07	265 05.3	269 18.5	S03 17.1	292 50.1	S12 34.8	158 32.1	N22 54.8	262 31.1	S01 12.4
	08	280 07.8	284 18.1	S03 15.8	307 50.6	S12 34.1	173 34.6	N22 54.9	277 33.3	S01 12.3
	09	295 10.3	299 17.7	S03 14.5	322 51.2	S12 33.4	188 37.1	N22 54.9	292 35.5	S01 12.2
	10	310 12.7	314 17.4	S03 13.3	337 51.8	S12 32.7	203 39.7	N22 54.9	307 37.7	S01 12.1
	11	325 15.2	329 17.0	S03 12.0	352 52.4	S12 32.0	218 42.2	N22 54.9	322 39.9	S01 11.9
	12	340 17.7	344 16.6	S03 10.7	007 52.9	S12 31.3	233 44.8	N22 54.9	337 42.1	S01 11.8
	13	355 20.1	359 16.2	S03 09.4	022 53.5	S12 30.6	248 47.3	N22 54.9	352 44.3	S01 11.7
	14	010 22.6	014 15.8	S03 08.2	037 54.1	S12 30.0	263 49.8	N22 54.9	007 46.5	S01 11.6
	15	025 25.1	029 15.5	S03 06.9	052 54.7	S12 29.3	278 52.4	N22 54.9	022 48.6	S01 11.5
	16	040 27.5	044 15.1	S03 05.6	067 55.2	S12 28.6	293 54.9	N22 54.9	037 50.8	S01 11.3
	17	055 30.0	059 14.7	S03 04.3	082 55.8	S12 27.9	308 57.5	N22 55.0	052 53.0	S01 11.2
	18	070 32.4	074 14.3	S03 03.1	097 56.4	S12 27.2	324 00.0	N22 55.0	067 55.2	S01 11.1
	19	085 34.9	089 13.9	S03 01.8	112 57.0	S12 26.5	339 02.5	N22 55.0	082 57.4	S01 11.0
	20	100 37.4	104 13.5	S03 00.5	127 57.5	S12 25.8	354 05.1	N22 55.0	097 59.6	S01 10.9
	21	115 39.8	119 13.2	S02 59.2	142 58.1	S12 25.1	009 07.6	N22 55.0	113 01.8	S01 10.7
	22	130 42.3	134 12.8	S02 58.0	157 58.7	S12 24.4	024 10.1	N22 55.0	128 04.0	S01 10.6
	23	145 44.8	149 12.4	S02 56.7	172 59.3	S12 23.7	039 12.7	N22 55.0	143 06.2	S01 10.5
3	00	160 47.2	164 12.0	S02 55.4	187 59.9	S12 23.0	054 15.2	N22 55.0	158 08.4	S01 10.4
	01	175 49.7	179 11.6	S02 54.1	203 00.4	S12 22.3	069 17.8	N22 55.0	173 10.5	S01 10.3
	02	190 52.2	194 11.3	S02 52.9	218 01.0	S12 21.6	084 20.3	N22 55.0	188 12.7	S01 10.1
	03	205 54.6	209 10.9	S02 51.6	233 01.6	S12 20.9	099 22.8	N22 55.1	203 14.9	S01 10.0
	04	220 57.1	224 10.5	S02 50.3	248 02.2	S12 20.2	114 25.4	N22 55.1	218 17.1	S01 09.9
	05	235 59.6	239 10.1	S02 49.0	263 02.7	S12 19.5	129 27.9	N22 55.1	233 19.3	S01 09.8
	06	251 02.0	254 09.7	S02 47.8	278 03.3	S12 18.8	144 30.4	N22 55.1	248 21.5	S01 09.6
	07	266 04.5	269 09.4	S02 46.5	293 03.9	S12 18.1	159 33.0	N22 55.1	263 23.7	S01 09.5
	08	281 06.9	284 09.0	S02 45.2	308 04.5	S12 17.4	174 35.5	N22 55.1	278 25.9	S01 09.4
	09	296 09.4	299 08.6	S02 43.9	323 05.1	S12 16.7	189 38.0	N22 55.1	293 28.1	S01 09.3
	10	311 11.9	314 08.2	S02 42.6	338 05.6	S12 16.0	204 40.6	N22 55.1	308 30.2	S01 09.2
	11	326 14.3	329 07.9	S02 41.4	353 06.2	S12 15.3	219 43.1	N22 55.1	323 32.4	S01 09.0
	12	341 16.8	344 07.5	S02 40.1	008 06.8	S12 14.6	234 45.6	N22 55.1	338 34.6	S01 08.9
	13	356 19.3	359 07.1	S02 38.8	023 07.4	S12 13.9	249 48.1	N22 55.2	353 36.8	S01 08.8
	14	011 21.7	014 06.7	S02 37.5	038 08.0	S12 13.2	264 50.7	N22 55.2	008 39.0	S01 08.7
	15	026 24.2	029 06.3	S02 36.3	053 08.5	S12 12.5	279 53.2	N22 55.2	023 41.2	S01 08.6
	16	041 26.7	044 06.0	S02 35.0	068 09.1	S12 11.8	294 55.7	N22 55.2	038 43.4	S01 08.4
	17	056 29.1	059 05.6	S02 33.7	083 09.7	S12 11.1	309 58.3	N22 55.2	053 45.6	S01 08.3
	18	071 31.6	074 05.2	S02 32.4	098 10.3	S12 10.4	325 00.8	N22 55.2	068 47.8	S01 08.2
	19	086 34.0	089 04.8	S02 31.1	113 10.9	S12 09.7	340 03.3	N22 55.2	083 49.9	S01 08.1
	20	101 36.5	104 04.5	S02 29.9	128 11.5	S12 09.0	355 05.9	N22 55.2	098 52.1	S01 08.0
	21	116 39.0	119 04.1	S02 28.6	143 12.0	S12 08.3	010 08.4	N22 55.2	113 54.3	S01 07.8
	22	131 41.4	134 03.7	S02 27.3	158 12.6	S12 07.6	025 10.9	N22 55.2	128 56.5	S01 07.7
	23	146 43.9	149 03.3	S02 26.0	173 13.2	S12 06.9	040 13.4	N22 55.3	143 58.7	S01 07.6
4	00	161 46.4	164 03.0	S02 24.7	188 13.8	S12 06.2	055 16.0	N22 55.3	159 00.9	S01 07.5
	01	176 48.8	179 02.6	S02 23.5	203 14.4	S12 05.5	070 18.5	N22 55.3	174 03.1	S01 07.3
	02	191 51.3	194 02.2	S02 22.2	218 14.9	S12 04.8	085 21.0	N22 55.3	189 05.3	S01 07.2
	03	206 53.8	209 01.8	S02 20.9	233 15.5	S12 04.1	100 23.5	N22 55.3	204 07.5	S01 07.1
	04	221 56.2	224 01.5	S02 19.6	248 16.1	S12 03.4	115 26.1	N22 55.3	219 09.6	S01 07.0
	05	236 58.7	239 01.1	S02 18.3	263 16.7	S12 02.7	130 28.6	N22 55.3	234 11.8	S01 06.9
	06	252 01.2	254 00.7	S02 17.1	278 17.3	S12 02.0	145 31.1	N22 55.3	249 14.0	S01 06.7
	07	267 03.6	269 00.3	S02 15.8	293 17.9	S12 01.3	160 33.6	N22 55.3	264 16.2	S01 06.6
	08	282 06.1	283 59.9	S02 14.5	308 18.4	S12 00.6	175 36.2	N22 55.3	279 18.4	S01 06.5
	09	297 08.5	298 59.6	S02 13.2	323 19.0	S11 59.9	190 38.7	N22 55.3	294 20.6	S01 06.4
	10	312 11.0	313 59.2	S02 11.9	338 19.6	S11 59.2	205 41.2	N22 55.4	309 22.8	S01 06.3
	11	327 13.5	328 58.8	S02 10.7	353 20.2	S11 58.5	220 43.7	N22 55.4	324 25.0	S01 06.1
	12	342 15.9	343 58.5	S02 09.4	008 20.8	S11 57.8	235 46.3	N22 55.4	339 27.2	S01 06.0
	13	357 18.4	358 58.1	S02 08.1	023 21.4	S11 57.1	250 48.8	N22 55.4	354 29.3	S01 05.9
	14	012 20.9	013 57.7	S02 06.8	038 21.9	S11 56.4	265 51.3	N22 55.4	009 31.5	S01 05.8
	15	027 23.3	028 57.3	S02 05.5	053 22.5	S11 55.7	280 53.8	N22 55.4	024 33.7	S01 05.6
	16	042 25.8	043 57.0	S02 04.3	068 23.1	S11 55.0	295 56.3	N22 55.4	039 35.9	S01 05.5
	17	057 28.3	058 56.6	S02 03.0	083 23.7	S11 54.3	310 58.9	N22 55.4	054 38.1	S01 05.4
	18	072 30.7	073 56.2	S02 01.7	098 24.3	S11 53.6	326 01.4	N22 55.4	069 40.3	S01 05.3
	19	087 33.2	088 55.8	S02 00.4	113 24.9	S11 52.8	341 03.9	N22 55.4	084 42.5	S01 05.2
	20	102 35.6	103 55.5	S01 59.1	128 25.5	S11 52.1	356 06.4	N22 55.4	099 44.7	S01 05.0
	21	117 38.1	118 55.1	S01 57.9	143 26.0	S11 51.4	011 08.9	N22 55.4	114 46.8	S01 04.9
	22	132 40.6	133 54.7	S01 56.6	158 26.6	S11 50.7	026 11.5	N22 55.5	129 49.0	S01 04.8
	23	147 43.0	148 54.3	S01 55.3	173 27.2	S11 50.0	041 14.0	N22 55.5	144 51.2	S01 04.7

Venus	Mars	Jupiter	Saturn
2: v -0.4 d 1.3	2: v 0.6 d 0.7	2: v 2.5 d 0.0	2: v 2.2 d 0.1
3: v -0.4 d 1.3	3: v 0.6 d 0.7	3: v 2.5 d 0.0	3: v 2.2 d 0.1
4: v -0.4 d 1.3	4: v 0.6 d 0.7	4: v 2.5 d 0.0	4: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.2	S40 12.2
Achernar	335 19.9	S57 06.4
Acrux	172 58.4	S63 14.6
Adhara	255 04.9	S29 00.7
Al Na'ir	027 32.1	S46 50.1
Aldebaran	290 38.5	N16 33.7
Alioth	166 11.6	N55 48.8
Alkaid	152 50.9	N49 10.6
Alnilam	275 36.7	S01 11.2
Alphard	217 46.5	S08 46.5
Alphecca	126 02.8	N26 37.3
Alpheratz	357 34.1	N29 14.1
Altair	061 59.3	N08 56.1
Ankaa	353 06.6	S42 10.0
Antares	112 14.6	S26 29.4
Arcturus	145 46.8	N19 02.5
Atria	107 08.0	S69 04.2
Avior	234 13.9	S59 35.8
Bellatrix	278 21.8	N06 22.3
Betelgeuse	270 50.9	N07 24.6
Canopus	263 51.7	S52 42.8
Capella	280 20.4	N46 01.6
Deneb	049 25.6	N45 22.2
Denebola	182 23.6	N14 25.4
Diphda	348 46.6	S17 50.7
Dubhe	193 39.1	N61 36.5
Elnath	278 00.6	N28 37.8
Eltanin	090 41.9	N51 28.7
Enif	033 38.2	N09 59.6
Fomalhaut	015 13.8	S29 29.1
Gacrux	171 50.1	S57 15.6
Gienah	175 42.3	S17 41.4
Hadar	148 34.3	S60 29.8
Hamal	327 50.3	N23 35.2
Kaus Australi	083 31.4	S34 22.3
Kochab	137 19.2	N74 02.5
Markab	013 29.3	N15 20.7
Menkar	314 05.3	N04 11.5
Menkent	147 56.2	S36 29.9
Miaplacidus	221 37.3	S69 49.6
Mirfak	308 27.0	N49 57.4
Nunki	075 46.8	S26 15.8
Peacock	053 04.7	S56 38.9
Polaris	313 44.9	N89 22.8
Pollux	243 15.9	N27 57.7
Procyon	244 49.6	N05 09.4
Rasalhague	095 57.7	N12 32.2
Regulus	207 33.1	N11 50.2
Rigel	281 02.9	S08 10.4
Rigil Kentaur	139 38.7	S60 56.5
Sabik	102 01.7	S15 45.5
Schedar	349 30.5	N56 41.0
Shaula	096 09.1	S37 07.3
Sirius	258 25.2	S16 45.3
Spica	158 21.0	S11 18.0
Suhail	222 45.2	S43 32.5
Vega	080 32.8	N38 48.1
Zubenelgenubi	136 54.8	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	002 50.7	1304
Mars	026 50.0	1128
Jupiter	253 28.8	2020
Saturn	357 17.8	1325

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
2	00	176 57.1	S07 17.1	014 04.7	N15 16.6	58.1	11.1	-14.1
	01	191 57.2	S07 16.2	028 34.8	N15 02.4	58.1	11.2	-14.2
	02	206 57.4	S07 15.2	043 05.0	N14 48.2	58.1	11.3	-14.3
	03	221 57.5	S07 14.2	057 35.3	N14 34.0	58.0	11.4	-14.3
	04	236 57.6	S07 13.3	072 05.7	N14 19.7	58.0	11.5	-14.4
	05	251 57.7	S07 12.3	086 36.2	N14 05.3	58.0	11.6	-14.4
	06	266 57.9	S07 11.4	101 06.8	N13 50.9	58.0	11.7	-14.5
	07	281 58.0	S07 10.4	115 37.5	N13 36.4	58.0	11.7	-14.6
	08	296 58.1	S07 09.5	130 08.2	N13 21.8	57.9	11.8	-14.6
	09	311 58.2	S07 08.5	144 39.0	N13 07.2	57.9	11.9	-14.7
	10	326 58.4	S07 07.6	159 10.0	N12 52.5	57.9	12.0	-14.7
	11	341 58.5	S07 06.6	173 41.0	N12 37.8	57.9	12.1	-14.8
	12	356 58.6	S07 05.7	188 12.0	N12 23.0	57.9	12.2	-14.8
	13	011 58.8	S07 04.7	202 43.2	N12 08.2	57.8	12.2	-14.9
	14	026 58.9	S07 03.7	217 14.5	N11 53.4	57.8	12.3	-14.9
	15	041 59.0	S07 02.8	231 45.8	N11 38.5	57.8	12.4	-15.0
	16	056 59.1	S07 01.8	246 17.2	N11 23.5	57.8	12.5	-15.0
	17	071 59.3	S07 00.9	260 48.7	N11 08.5	57.7	12.6	-15.0
	18	086 59.4	S06 59.9	275 20.2	N10 53.5	57.7	12.6	-15.1
	19	101 59.5	S06 59.0	289 51.8	N10 38.4	57.7	12.7	-15.1
	20	116 59.7	S06 58.0	304 23.6	N10 23.3	57.7	12.8	-15.2
	21	131 59.8	S06 57.1	318 55.3	N10 08.1	57.7	12.9	-15.2
	22	146 59.9	S06 56.1	333 27.2	N09 52.9	57.6	12.9	-15.2
	23	162 00.1	S06 55.1	347 59.1	N09 37.7	57.6	13.0	-15.3
3	00	177 00.2	S06 54.2	002 31.1	N09 22.4	57.6	13.1	-15.3
	01	192 00.3	S06 53.2	017 03.2	N09 07.1	57.6	13.1	-15.3
	02	207 00.4	S06 52.3	031 35.3	N08 51.8	57.5	13.2	-15.3
	03	222 00.6	S06 51.3	046 07.5	N08 36.5	57.5	13.3	-15.4
	04	237 00.7	S06 50.4	060 39.7	N08 21.1	57.5	13.3	-15.4
	05	252 00.8	S06 49.4	075 12.1	N08 05.7	57.5	13.4	-15.4
	06	267 01.0	S06 48.4	089 44.5	N07 50.3	57.4	13.4	-15.4
	07	282 01.1	S06 47.5	104 16.9	N07 34.8	57.4	13.5	-15.5
	08	297 01.2	S06 46.5	118 49.4	N07 19.3	57.4	13.6	-15.5
	09	312 01.4	S06 45.6	133 22.0	N07 03.9	57.4	13.6	-15.5
	10	327 01.5	S06 44.6	147 54.6	N06 48.3	57.3	13.7	-15.5
	11	342 01.6	S06 43.6	162 27.3	N06 32.8	57.3	13.7	-15.5
	12	357 01.8	S06 42.7	177 00.0	N06 17.3	57.3	13.8	-15.6
	13	012 01.9	S06 41.7	191 32.8	N06 01.7	57.3	13.8	-15.6
	14	027 02.0	S06 40.8	206 05.7	N05 46.2	57.3	13.9	-15.6
	15	042 02.2	S06 39.8	220 38.6	N05 30.6	57.2	14.0	-15.6
	16	057 02.3	S06 38.8	235 11.5	N05 15.0	57.2	14.0	-15.6
	17	072 02.4	S06 37.9	249 44.5	N04 59.4	57.2	14.1	-15.6
	18	087 02.6	S06 36.9	264 17.6	N04 43.8	57.2	14.1	-15.6
	19	102 02.7	S06 36.0	278 50.7	N04 28.2	57.1	14.1	-15.6
	20	117 02.8	S06 35.0	293 23.8	N04 12.5	57.1	14.2	-15.6
	21	132 03.0	S06 34.0	307 57.0	N03 56.9	57.1	14.2	-15.6
	22	147 03.1	S06 33.1	322 30.3	N03 41.3	57.1	14.3	-15.6
	23	162 03.2	S06 32.1	337 03.5	N03 25.6	57.0	14.3	-15.6
4	00	177 03.4	S06 31.2	351 36.9	N03 10.0	57.0	14.4	-15.6
	01	192 03.5	S06 30.2	006 10.2	N02 54.4	57.0	14.4	-15.6
	02	207 03.6	S06 29.2	020 43.6	N02 38.8	57.0	14.4	-15.6
	03	222 03.8	S06 28.3	035 17.1	N02 23.1	56.9	14.5	-15.6
	04	237 03.9	S06 27.3	049 50.6	N02 07.5	56.9	14.5	-15.6
	05	252 04.1	S06 26.4	064 24.1	N01 51.9	56.9	14.6	-15.6
	06	267 04.2	S06 25.4	078 57.6	N01 36.3	56.8	14.6	-15.6
	07	282 04.3	S06 24.4	093 31.2	N01 20.7	56.8	14.6	-15.6
	08	297 04.5	S06 23.5	108 04.8	N01 05.1	56.8	14.7	-15.6
	09	312 04.6	S06 22.5	122 38.5	N00 49.5	56.8	14.7	-15.6
	10	327 04.7	S06 21.5	137 12.2	N00 33.9	56.7	14.7	-15.6
	11	342 04.9	S06 20.6	151 45.9	N00 18.4	56.7	14.7	-15.5
	12	357 05.0	S06 19.6	166 19.6	N00 02.8	56.7	14.8	-15.5
	13	012 05.2	S06 18.7	180 53.4	S00 12.7	56.7	14.8	-15.5
	14	027 05.3	S06 17.7	195 27.2	S00 28.2	56.6	14.8	-15.5
	15	042 05.4	S06 16.7	210 01.0	S00 43.7	56.6	14.8	-15.5
	16	057 05.6	S06 15.8	224 34.8	S00 59.2	56.6	14.9	-15.5
	17	072 05.7	S06 14.8	239 08.7	S01 14.7	56.6	14.9	-15.4
	18	087 05.8	S06 13.8	253 42.6	S01 30.1	56.5	14.9	-15.4
	19	102 06.0	S06 12.9	268 16.5	S01 45.5	56.5	14.9	-15.4
	20	117 06.1	S06 11.9	282 50.4	S02 01.0	56.5	14.9	-15.4
	21	132 06.3	S06 10.9	297 24.3	S02 16.3	56.5	15.0	-15.4
	22	147 06.4	S06 10.0	311 58.3	S02 31.7	56.4	15.0	-15.3
	23	162 06.5	S06 09.0	326 32.3	S02 47.0	56.4	15.0	-15.3

Day 2 noon Sun: v 0.1 d 1.0 SD 16.1 | Moon SD 15.8

Day 3 noon Sun: v 0.1 d 1.0 SD 16.1 | Moon SD 15.6

Day 4 noon Sun: v 0.1 d 1.0 SD 16.1 | Moon SD 15.4

SUN: MARCH 3 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0500	0618	0726	1659	1808	1927
70N	0506	0617	0718	1708	1809	1920
68N	0511	0615	0711	1714	1810	1915
66N	0515	0614	0705	1720	1811	1911
64N	0518	0613	0701	1725	1812	1907
62N	0521	0612	0656	1729	1813	1905
60N	0523	0611	0653	1732	1814	1902
58N	0525	0610	0649	1735	1815	1900
56N	0526	0609	0647	1738	1816	1859
54N	0528	0609	0644	1741	1816	1857
52N	0529	0608	0642	1743	1817	1856
50N	0530	0607	0639	1745	1818	1855
45N	0531	0605	0635	1750	1819	1853
40N	0532	0603	0630	1754	1821	1852
35N	0532	0602	0627	1757	1823	1852
30N	0532	0600	0624	1800	1824	1852
25N	0532	0558	0621	1803	1826	1853
20N	0531	0556	0618	1806	1828	1853
15N	0529	0554	0616	1808	1830	1855
10N	0528	0552	0613	1811	1832	1856
05N	0526	0550	0611	1813	1834	1858
00N	0524	0548	0609	1815	1836	1900
05S	0521	0545	0606	1818	1838	1903
10S	0518	0543	0604	1820	1841	1906
15S	0514	0540	0601	1822	1844	1909
20S	0510	0536	0558	1825	1847	1913
25S	0505	0532	0555	1828	1851	1918
30S	0459	0528	0552	1831	1855	1924
35S	0453	0523	0549	1835	1900	1930
40S	0444	0517	0545	1839	1906	1939
45S	0434	0510	0540	1843	1913	1949
50S	0420	0501	0534	1849	1922	2002
55S	0402	0449	0527	1856	1933	2020
60S	0337	0433	0517	1905	1949	2045

MOON: RISE / SET | UTC HHMM

Lat	Day 2		Day 3		Day 4	
72N	1458	0824	1722	0737	1933	0701
70N	1519	0800	1729	0726	1930	0659
68N	1535	0742	1735	0718	1928	0658
66N	1548	0727	1740	0711	1926	0657
64N	1559	0715	1744	0705	1924	0656
62N	1608	0704	1747	0700	1923	0655
60N	1615	0655	1750	0655	1921	0654
58N	1622	0647	1753	0651	1920	0654
56N	1628	0640	1755	0647	1919	0653
54N	1633	0634	1757	0644	1918	0652
52N	1638	0628	1759	0641	1918	0652
50N	1642	0623	1801	0638	1917	0651
45N	1652	0612	1805	0632	1915	0650
40N	1659	0603	1808	0627	1914	0650
35N	1706	0554	1811	0623	1913	0649
30N	1712	0547	1813	0619	1912	0648
25N	1717	0541	1815	0616	1911	0648
20N	1722	0535	1817	0612	1910	0647
15N	1726	0529	1819	0609	1910	0647
10N	1730	0524	1821	0606	1909	0646
05N	1734	0519	1822	0603	1908	0645
00N	1739	0513	1824	0601	1908	0645
05S	1743	0508	1826	0558	1907	0644
10S	1747	0503	1827	0555	1906	0644
15S	1751	0457	1829	0552	1906	0643
20S	1755	0452	1831	0549	1905	0643
25S	1800	0445	1833	0545	1904	0642
30S	1805	0439	1835	0541	1903	0642
35S	1810	0431	1837	0537	1903	0641
40S	1817	0422	1840	0533	1902	0640
45S	1824	0412	1843	0527	1901	0639
50S	1833	0400	1847	0520	1859	0638
55S	1844	0344	1851	0512	1858	0636
60S	1858	0323	1857	0501	1856	0634

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | MARCH 5 - MARCH 7

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
5	00	162 45.5	163 54.0	S01 54.0	188 27.8	S11 49.3	056 16.5	N22 55.5	159 53.4	S01 04.6
	01	177 48.0	178 53.6	S01 52.7	203 28.4	S11 48.6	071 19.0	N22 55.5	174 55.6	S01 04.4
	02	192 50.4	193 53.2	S01 51.4	218 29.0	S11 47.9	086 21.5	N22 55.5	189 57.8	S01 04.3
	03	207 52.9	208 52.8	S01 50.2	233 29.6	S11 47.2	101 24.1	N22 55.5	205 00.0	S01 04.2
	04	222 55.4	223 52.5	S01 48.9	248 30.1	S11 46.5	116 26.6	N22 55.5	220 02.2	S01 04.1
	05	237 57.8	238 52.1	S01 47.6	263 30.7	S11 45.8	131 29.1	N22 55.5	235 04.3	S01 03.9
	06	253 00.3	253 51.7	S01 46.3	278 31.3	S11 45.1	146 31.6	N22 55.5	250 06.5	S01 03.8
	07	268 02.8	268 51.4	S01 45.0	293 31.9	S11 44.4	161 34.1	N22 55.5	265 08.7	S01 03.7
	08	283 05.2	283 51.0	S01 43.8	308 32.5	S11 43.7	176 36.6	N22 55.5	280 10.9	S01 03.6
	09	298 07.7	298 50.6	S01 42.5	323 33.1	S11 43.0	191 39.1	N22 55.5	295 13.1	S01 03.5
	10	313 10.1	313 50.2	S01 41.2	338 33.7	S11 42.2	206 41.7	N22 55.5	310 15.3	S01 03.3
	11	328 12.6	328 49.9	S01 39.9	353 34.2	S11 41.5	221 44.2	N22 55.6	325 17.5	S01 03.2
	12	343 15.1	343 49.5	S01 38.6	008 34.8	S11 40.8	236 46.7	N22 55.6	340 19.7	S01 03.1
	13	358 17.5	358 49.1	S01 37.3	023 35.4	S11 40.1	251 49.2	N22 55.6	355 21.8	S01 03.0
	14	013 20.0	013 48.8	S01 36.1	038 36.0	S11 39.4	266 51.7	N22 55.6	010 24.0	S01 02.9
	15	028 22.5	028 48.4	S01 34.8	053 36.6	S11 38.7	281 54.2	N22 55.6	025 26.2	S01 02.7
	16	043 24.9	043 48.0	S01 33.5	068 37.2	S11 38.0	296 56.7	N22 55.6	040 28.4	S01 02.6
	17	058 27.4	058 47.6	S01 32.2	083 37.8	S11 37.3	311 59.3	N22 55.6	055 30.6	S01 02.5
	18	073 29.9	073 47.3	S01 30.9	098 38.4	S11 36.6	327 01.8	N22 55.6	070 32.8	S01 02.4
	19	088 32.3	088 46.9	S01 29.6	113 39.0	S11 35.9	342 04.3	N22 55.6	085 35.0	S01 02.2
	20	103 34.8	103 46.5	S01 28.4	128 39.5	S11 35.1	357 06.8	N22 55.6	100 37.1	S01 02.1
	21	118 37.2	118 46.2	S01 27.1	143 40.1	S11 34.4	012 09.3	N22 55.6	115 39.3	S01 02.0
	22	133 39.7	133 45.8	S01 25.8	158 40.7	S11 33.7	027 11.8	N22 55.6	130 41.5	S01 01.9
	23	148 42.2	148 45.4	S01 24.5	173 41.3	S11 33.0	042 14.3	N22 55.6	145 43.7	S01 01.8
6	00	163 44.6	163 45.1	S01 23.2	188 41.9	S11 32.3	057 16.8	N22 55.7	160 45.9	S01 01.6
	01	178 47.1	178 44.7	S01 21.9	203 42.5	S11 31.6	072 19.3	N22 55.7	175 48.1	S01 01.5
	02	193 49.6	193 44.3	S01 20.6	218 43.1	S11 30.9	087 21.8	N22 55.7	190 50.3	S01 01.4
	03	208 52.0	208 43.9	S01 19.4	233 43.7	S11 30.2	102 24.4	N22 55.7	205 52.5	S01 01.3
	04	223 54.5	223 43.6	S01 18.1	248 44.3	S11 29.5	117 26.9	N22 55.7	220 54.6	S01 01.1
	05	238 57.0	238 43.2	S01 16.8	263 44.9	S11 28.7	132 29.4	N22 55.7	235 56.8	S01 01.0
	06	253 59.4	253 42.8	S01 15.5	278 45.4	S11 28.0	147 31.9	N22 55.7	250 59.0	S01 00.9
	07	269 01.9	268 42.5	S01 14.2	293 46.0	S11 27.3	162 34.4	N22 55.7	266 01.2	S01 00.8
	08	284 04.4	283 42.1	S01 12.9	308 46.6	S11 26.6	177 36.9	N22 55.7	281 03.4	S01 00.7
	09	299 06.8	298 41.7	S01 11.7	323 47.2	S11 25.9	192 39.4	N22 55.7	296 05.6	S01 00.5
	10	314 09.3	313 41.4	S01 10.4	338 47.8	S11 25.2	207 41.9	N22 55.7	311 07.8	S01 00.4
	11	329 11.7	328 41.0	S01 09.1	353 48.4	S11 24.5	222 44.4	N22 55.7	326 09.9	S01 00.3
	12	344 14.2	343 40.6	S01 07.8	008 49.0	S11 23.8	237 46.9	N22 55.7	341 12.1	S01 00.2
	13	359 16.7	358 40.2	S01 06.5	023 49.6	S11 23.0	252 49.4	N22 55.7	356 14.3	S01 00.1
	14	014 19.1	013 39.9	S01 05.2	038 50.2	S11 22.3	267 51.9	N22 55.8	011 16.5	S00 59.9
	15	029 21.6	028 39.5	S01 03.9	053 50.8	S11 21.6	282 54.4	N22 55.8	026 18.7	S00 59.8
	16	044 24.1	043 39.1	S01 02.7	068 51.4	S11 20.9	297 56.9	N22 55.8	041 20.9	S00 59.7
	17	059 26.5	058 38.8	S01 01.4	083 52.0	S11 20.2	312 59.4	N22 55.8	056 23.1	S00 59.6
	18	074 29.0	073 38.4	S01 00.1	098 52.5	S11 19.5	328 01.9	N22 55.8	071 25.3	S00 59.4
	19	089 31.5	088 38.0	S00 58.8	113 53.1	S11 18.8	343 04.4	N22 55.8	086 27.4	S00 59.3
	20	104 33.9	103 37.7	S00 57.5	128 53.7	S11 18.0	358 06.9	N22 55.8	101 29.6	S00 59.2
	21	119 36.4	118 37.3	S00 56.2	143 54.3	S11 17.3	013 09.4	N22 55.8	116 31.8	S00 59.1
	22	134 38.8	133 36.9	S00 54.9	158 54.9	S11 16.6	028 11.9	N22 55.8	131 34.0	S00 59.0
	23	149 41.3	148 36.6	S00 53.7	173 55.5	S11 15.9	043 14.4	N22 55.8	146 36.2	S00 58.8
7	00	164 43.8	163 36.2	S00 52.4	188 56.1	S11 15.2	058 16.9	N22 55.8	161 38.4	S00 58.7
	01	179 46.2	178 35.8	S00 51.1	203 56.7	S11 14.5	073 19.4	N22 55.8	176 40.6	S00 58.6
	02	194 48.7	193 35.5	S00 49.8	218 57.3	S11 13.8	088 21.9	N22 55.8	191 42.7	S00 58.5
	03	209 51.2	208 35.1	S00 48.5	233 57.9	S11 13.0	103 24.4	N22 55.8	206 44.9	S00 58.3
	04	224 53.6	223 34.7	S00 47.2	248 58.5	S11 12.3	118 26.9	N22 55.8	221 47.1	S00 58.2
	05	239 56.1	238 34.4	S00 45.9	263 59.1	S11 11.6	133 29.4	N22 55.8	236 49.3	S00 58.1
	06	254 58.6	253 34.0	S00 44.7	278 59.7	S11 10.9	148 31.9	N22 55.9	251 51.5	S00 58.0
	07	270 01.0	268 33.6	S00 43.4	294 00.3	S11 10.2	163 34.4	N22 55.9	266 53.7	S00 57.9
	08	285 03.5	283 33.3	S00 42.1	309 00.9	S11 09.5	178 36.9	N22 55.9	281 55.9	S00 57.7
	09	300 06.0	298 32.9	S00 40.8	324 01.5	S11 08.7	193 39.4	N22 55.9	296 58.0	S00 57.6
	10	315 08.4	313 32.5	S00 39.5	339 02.0	S11 08.0	208 41.9	N22 55.9	312 00.2	S00 57.5
	11	330 10.9	328 32.2	S00 38.2	354 02.6	S11 07.3	223 44.4	N22 55.9	327 02.4	S00 57.4
	12	345 13.3	343 31.8	S00 36.9	009 03.2	S11 06.6	238 46.9	N22 55.9	342 04.6	S00 57.2
	13	000 15.8	358 31.4	S00 35.7	024 03.8	S11 05.9	253 49.4	N22 55.9	357 06.8	S00 57.1
	14	015 18.3	013 31.1	S00 34.4	039 04.4	S11 05.1	268 51.9	N22 55.9	012 09.0	S00 57.0
	15	030 20.7	028 30.7	S00 33.1	054 05.0	S11 04.4	283 54.4	N22 55.9	027 11.1	S00 56.9
	16	045 23.2	043 30.3	S00 31.8	069 05.6	S11 03.7	298 56.9	N22 55.9	042 13.3	S00 56.8
	17	060 25.7	058 30.0	S00 30.5	084 06.2	S11 03.0	313 59.4	N22 55.9	057 15.5	S00 56.6
	18	075 28.1	073 29.6	S00 29.2	099 06.8	S11 02.3	329 01.9	N22 55.9	072 17.7	S00 56.5
	19	090 30.6	088 29.2	S00 27.9	114 07.4	S11 01.6	344 04.4	N22 55.9	087 19.9	S00 56.4
	20	105 33.1	103 28.9	S00 26.6	129 08.0	S11 00.8	359 06.9	N22 55.9	102 22.1	S00 56.3
	21	120 35.5	118 28.5	S00 25.4	144 08.6	S11 00.1	014 09.4	N22 55.9	117 24.3	S00 56.1
	22	135 38.0	133 28.1	S00 24.1	159 09.2	S10 59.4	029 11.9	N22 55.9	132 26.4	S00 56.0
	23	150 40.5	148 27.8	S00 22.8	174 09.8	S10 58.7	044 14.4	N22 55.9	147 28.6	S00 55.9

Venus	Mars	Jupiter	Saturn
5: v -0.4 d 1.3	5: v 0.6 d 0.7	5: v 2.5 d 0.0	5: v 2.2 d 0.1
6: v -0.4 d 1.3	6: v 0.6 d 0.7	6: v 2.5 d 0.0	6: v 2.2 d 0.1
7: v -0.4 d 1.3	7: v 0.6 d 0.7	7: v 2.5 d 0.0	7: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.2	S40 12.2
Achernar	335 19.9	S57 06.4
Acrux	172 58.4	S63 14.6
Adhara	255 04.9	S29 00.7
Al Na'ir	027 32.1	S46 50.1
Aldebaran	290 38.5	N16 33.7
Alioth	166 11.6	N55 48.8
Alkaid	152 50.9	N49 10.6
Alnilam	275 36.7	S01 11.2
Alphard	217 46.5	S08 46.5
Alphecca	126 02.8	N26 37.3
Alpheratz	357 34.1	N29 14.1
Altair	061 59.2	N08 56.1
Ankaa	353 06.6	S42 10.0
Antares	112 14.6	S26 29.4
Arcturus	145 46.8	N19 02.5
Atria	107 08.0	S69 04.2
Avior	234 13.9	S59 35.8
Bellatrix	278 21.8	N06 22.3
Betelgeuse	270 51.0	N07 24.6
Canopus	263 51.8	S52 42.8
Capella	280 20.4	N46 01.6
Deneb	049 25.5	N45 22.2
Denebola	182 23.6	N14 25.4
Diphda	348 46.6	S17 50.7
Dubhe	193 39.1	N61 36.5
Elnath	278 00.6	N28 37.8
Eltanin	090 41.9	N51 28.7
Enif	033 38.2	N09 59.6
Fomalhaut	015 13.8	S29 29.1
Gacrux	171 50.1	S57 15.6
Gienah	175 42.3	S17 41.4
Hadar	148 34.2	S60 29.8
Hamal	327 50.3	N23 35.2
Kaus Australi	083 31.4	S34 22.3
Kochab	137 19.2	N74 02.5
Markab	013 29.3	N15 20.7
Menkar	314 05.3	N04 11.5
Menkent	147 56.2	S36 29.9
Miaplacidus	221 37.3	S69 49.6
Mirfak	308 27.1	N49 57.4
Nunki	075 46.7	S26 15.8
Peacock	053 04.7	S56 38.9
Polaris	313 46.3	N89 22.8
Pollux	243 15.9	N27 57.8
Procyon	244 49.6	N05 09.4
Rasalhague	095 57.7	N12 32.2
Regulus	207 33.1	N11 50.2
Rigel	281 02.9	S08 10.4
Rigil Kentaur	139 38.6	S60 56.5
Sabik	102 01.7	S15 45.5
Schedar	349 30.5	N56 40.9
Shaula	096 09.1	S37 07.3
Sirius	258 25.2	S16 45.3
Spica	158 21.0	S11 18.0
Suhail	222 45.2	S43 32.5
Vega	080 32.7	N38 48.1
Zubenelgenubi	136 54.8	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	359 26.4	1305
Mars	024 34.8	1125
Jupiter	253 32.7	2008
Saturn	356 57.9	1315

2026 | MARCH 5 - MARCH 7

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
5	00	177 06.7	S06 08.1	341 06.3	S03 02.3	56.4	15.0	-15.3
	01	192 06.8	S06 07.1	355 40.3	S03 17.6	56.4	15.0	-15.2
	02	207 07.0	S06 06.1	010 14.3	S03 32.8	56.3	15.0	-15.2
	03	222 07.1	S06 05.2	024 48.3	S03 48.1	56.3	15.0	-15.2
	04	237 07.2	S06 04.2	039 22.4	S04 03.2	56.3	15.1	-15.2
	05	252 07.4	S06 03.2	053 56.4	S04 18.4	56.3	15.1	-15.1
	06	267 07.5	S06 02.3	068 30.5	S04 33.5	56.2	15.1	-15.1
	07	282 07.7	S06 01.3	083 04.6	S04 48.6	56.2	15.1	-15.1
	08	297 07.8	S06 00.3	097 38.6	S05 03.7	56.2	15.1	-15.0
	09	312 08.0	S05 59.4	112 12.7	S05 18.7	56.2	15.1	-15.0
	10	327 08.1	S05 58.4	126 46.8	S05 33.7	56.1	15.1	-14.9
	11	342 08.2	S05 57.4	141 20.9	S05 48.6	56.1	15.1	-14.9
	12	357 08.4	S05 56.5	155 55.0	S06 03.5	56.1	15.1	-14.9
	13	012 08.5	S05 55.5	170 29.1	S06 18.4	56.1	15.1	-14.8
	14	027 08.7	S05 54.5	185 03.2	S06 33.2	56.0	15.1	-14.8
	15	042 08.8	S05 53.6	199 37.2	S06 48.0	56.0	15.1	-14.7
	16	057 08.9	S05 52.6	214 11.3	S07 02.8	56.0	15.1	-14.7
	17	072 09.1	S05 51.6	228 45.4	S07 17.5	56.0	15.1	-14.7
	18	087 09.2	S05 50.7	243 19.5	S07 32.1	55.9	15.1	-14.6
	19	102 09.4	S05 49.7	257 53.6	S07 46.7	55.9	15.1	-14.6
	20	117 09.5	S05 48.7	272 27.7	S08 01.3	55.9	15.1	-14.5
	21	132 09.7	S05 47.8	287 01.7	S08 15.8	55.9	15.1	-14.5
	22	147 09.8	S05 46.8	301 35.8	S08 30.3	55.8	15.0	-14.4
	23	162 10.0	S05 45.8	316 09.8	S08 44.7	55.8	15.0	-14.4
6	00	177 10.1	S05 44.9	330 43.9	S08 59.1	55.8	15.0	-14.3
	01	192 10.2	S05 43.9	345 17.9	S09 13.5	55.8	15.0	-14.3
	02	207 10.4	S05 42.9	359 51.9	S09 27.7	55.7	15.0	-14.2
	03	222 10.5	S05 41.9	014 25.9	S09 42.0	55.7	15.0	-14.2
	04	237 10.7	S05 41.0	028 59.9	S09 56.1	55.7	15.0	-14.1
	05	252 10.8	S05 40.0	043 33.9	S10 10.3	55.7	15.0	-14.1
	06	267 11.0	S05 39.0	058 07.8	S10 24.3	55.6	14.9	-14.0
	07	282 11.1	S05 38.1	072 41.8	S10 38.3	55.6	14.9	-14.0
	08	297 11.3	S05 37.1	087 15.7	S10 52.3	55.6	14.9	-13.9
	09	312 11.4	S05 36.1	101 49.6	S11 06.2	55.6	14.9	-13.8
	10	327 11.5	S05 35.2	116 23.5	S11 20.0	55.5	14.9	-13.8
	11	342 11.7	S05 34.2	130 57.4	S11 33.8	55.5	14.9	-13.7
	12	357 11.8	S05 33.2	145 31.3	S11 47.5	55.5	14.8	-13.7
	13	012 12.0	S05 32.3	160 05.1	S12 01.2	55.5	14.8	-13.6
	14	027 12.1	S05 31.3	174 38.9	S12 14.8	55.4	14.8	-13.5
	15	042 12.3	S05 30.3	189 12.7	S12 28.4	55.4	14.8	-13.5
	16	057 12.4	S05 29.3	203 46.4	S12 41.8	55.4	14.7	-13.4
	17	072 12.6	S05 28.4	218 20.2	S12 55.2	55.4	14.7	-13.3
	18	087 12.7	S05 27.4	232 53.9	S13 08.6	55.4	14.7	-13.3
	19	102 12.9	S05 26.4	247 27.6	S13 21.9	55.3	14.7	-13.2
	20	117 13.0	S05 25.5	262 01.2	S13 35.1	55.3	14.6	-13.2
	21	132 13.2	S05 24.5	276 34.9	S13 48.2	55.3	14.6	-13.1
	22	147 13.3	S05 23.5	291 08.5	S14 01.3	55.3	14.6	-13.0
	23	162 13.5	S05 22.5	305 42.0	S14 14.3	55.2	14.5	-12.9
7	00	177 13.6	S05 21.6	320 15.6	S14 27.3	55.2	14.5	-12.9
	01	192 13.8	S05 20.6	334 49.1	S14 40.2	55.2	14.5	-12.8
	02	207 13.9	S05 19.6	349 22.6	S14 53.0	55.2	14.4	-12.7
	03	222 14.1	S05 18.7	003 56.0	S15 05.7	55.2	14.4	-12.7
	04	237 14.2	S05 17.7	018 29.4	S15 18.4	55.1	14.4	-12.6
	05	252 14.4	S05 16.7	033 02.8	S15 31.0	55.1	14.3	-12.5
	06	267 14.5	S05 15.7	047 36.1	S15 43.5	55.1	14.3	-12.4
	07	282 14.7	S05 14.8	062 09.4	S15 55.9	55.1	14.3	-12.4
	08	297 14.8	S05 13.8	076 42.7	S16 08.3	55.1	14.2	-12.3
	09	312 15.0	S05 12.8	091 15.9	S16 20.6	55.0	14.2	-12.2
	10	327 15.1	S05 11.9	105 49.1	S16 32.8	55.0	14.2	-12.1
	11	342 15.3	S05 10.9	120 22.3	S16 44.9	55.0	14.1	-12.1
	12	357 15.4	S05 09.9	134 55.4	S16 57.0	55.0	14.1	-12.0
	13	012 15.6	S05 08.9	149 28.5	S17 08.9	55.0	14.0	-11.9
	14	027 15.7	S05 08.0	164 01.5	S17 20.8	54.9	14.0	-11.8
	15	042 15.9	S05 07.0	178 34.5	S17 32.6	54.9	14.0	-11.7
	16	057 16.0	S05 06.0	193 07.5	S17 44.4	54.9	13.9	-11.6
	17	072 16.2	S05 05.0	207 40.4	S17 56.0	54.9	13.9	-11.6
	18	087 16.3	S05 04.1	222 13.3	S18 07.6	54.9	13.8	-11.5
	19	102 16.5	S05 03.1	236 46.1	S18 19.1	54.9	13.8	-11.4
	20	117 16.6	S05 02.1	251 18.9	S18 30.5	54.8	13.7	-11.3
	21	132 16.8	S05 01.1	265 51.6	S18 41.8	54.8	13.7	-11.2
	22	147 16.9	S05 00.2	280 24.3	S18 53.0	54.8	13.7	-11.1
	23	162 17.1	S04 59.2	294 57.0	S19 04.1	54.8	13.6	-11.0

Day 5 noon Sun: v 0.1 d 1.0 SD 16.1 | Moon SD 15.3

Day 6 noon Sun: v 0.1 d 1.0 SD 16.1 | Moon SD 15.1

Day 7 noon Sun: v 0.2 d 1.0 SD 16.1 | Moon SD 15.0

SUN: MARCH 6 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0444	0603	0711	1714	1822	1941
70N	0452	0603	0704	1720	1821	1933
68N	0459	0603	0659	1726	1821	1926
66N	0504	0603	0654	1730	1821	1921
64N	0508	0603	0650	1734	1821	1916
62N	0511	0603	0647	1737	1821	1913
60N	0514	0602	0644	1740	1821	1910
58N	0517	0602	0641	1742	1822	1907
56N	0519	0602	0639	1745	1822	1905
54N	0521	0602	0637	1747	1822	1903
52N	0522	0601	0635	1749	1822	1901
50N	0524	0601	0633	1750	1823	1900
45N	0526	0600	0629	1754	1823	1857
40N	0528	0559	0626	1757	1824	1856
35N	0528	0558	0623	1800	1825	1855
30N	0529	0557	0620	1802	1826	1854
25N	0529	0555	0618	1805	1828	1854
20N	0528	0554	0616	1807	1829	1854
15N	0528	0552	0614	1809	1830	1855
10N	0526	0551	0612	1811	1832	1856
05N	0525	0549	0610	1813	1833	1858
00N	0523	0547	0608	1814	1835	1859
05S	0521	0545	0606	1816	1837	1902
10S	0518	0543	0604	1818	1840	1904
15S	0515	0540	0602	1820	1842	1907
20S	0511	0537	0559	1823	1845	1911
25S	0507	0534	0557	1825	1848	1915
30S	0502	0530	0554	1828	1852	1920
35S	0456	0526	0551	1831	1856	1926
40S	0448	0520	0548	1834	1901	1934
45S	0438	0514	0544	1838	1908	1943
50S	0426	0506	0539	1842	1915	1955
55S	0410	0455	0533	1848	1926	2011
60S	0347	0441	0525	1856	1939	2033

MOON: RISE / SET | UTC HHMM

Lat	Day 5		Day 6		Day 7	
72N	2143	0627	--	0548	0013	0451
70N	2130	0633	2339	0605	--	0526
68N	2119	0639	2316	0618	--	0552
66N	2110	0643	2257	0629	--	0611
64N	2102	0647	2243	0638	--	0627
62N	2056	0650	2230	0646	--	0640
60N	2051	0653	2220	0652	2351	0652
58N	2046	0656	2211	0658	2338	0702
56N	2041	0658	2203	0704	2326	0710
54N	2038	0700	2156	0709	2315	0718
52N	2034	0702	2150	0713	2306	0725
50N	2031	0704	2145	0717	2258	0731
45N	2024	0708	2133	0726	2241	0745
40N	2019	0711	2123	0733	2227	0756
35N	2014	0714	2114	0739	2215	0806
30N	2010	0716	2107	0745	2205	0814
25N	2006	0719	2100	0750	2155	0822
20N	2002	0721	2054	0754	2147	0829
15N	1959	0723	2049	0759	2139	0836
10N	1956	0724	2044	0803	2132	0842
05N	1953	0726	2038	0807	2125	0848
00N	1950	0728	2033	0811	2118	0854
05S	1947	0730	2028	0815	2110	0900
10S	1945	0732	2023	0819	2103	0907
15S	1942	0734	2018	0823	2056	0913
20S	1938	0735	2012	0827	2048	0920
25S	1935	0738	2007	0832	2040	0927
30S	1931	0740	2000	0837	2031	0935
35S	1927	0742	1953	0843	2021	0944
40S	1923	0745	1945	0850	2010	0954
45S	1918	0749	1936	0857	1957	1005
50S	1912	0753	1925	0906	1941	1020
55S	1904	0758	1912	0918	1921	1038
60S	1855	0804	1854	0933	1854	1103

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | MARCH 8 - MARCH 10

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
8	00	165 42.9	163 27.4	S00 21.5	189 10.4	S10 58.0	059 16.8	N22 56.0	162 30.8	S00 55.8
	01	180 45.4	178 27.0	S00 20.2	204 11.0	S10 57.2	074 19.3	N22 56.0	177 33.0	S00 55.7
	02	195 47.8	193 26.7	S00 18.9	219 11.6	S10 56.5	089 21.8	N22 56.0	192 35.2	S00 55.5
	03	210 50.3	208 26.3	S00 17.6	234 12.2	S10 55.8	104 24.3	N22 56.0	207 37.4	S00 55.4
	04	225 52.8	223 25.9	S00 16.4	249 12.8	S10 55.1	119 26.8	N22 56.0	222 39.6	S00 55.3
	05	240 55.2	238 25.6	S00 15.1	264 13.4	S10 54.4	134 29.3	N22 56.0	237 41.7	S00 55.2
	06	255 57.7	253 25.2	S00 13.8	279 14.0	S10 53.6	149 31.8	N22 56.0	252 43.9	S00 55.0
	07	271 00.2	268 24.8	S00 12.5	294 14.6	S10 52.9	164 34.3	N22 56.0	267 46.1	S00 54.9
	08	286 02.6	283 24.5	S00 11.2	309 15.2	S10 52.2	179 36.8	N22 56.0	282 48.3	S00 54.8
	09	301 05.1	298 24.1	S00 09.9	324 15.8	S10 51.5	194 39.3	N22 56.0	297 50.5	S00 54.7
	10	316 07.6	313 23.7	S00 08.6	339 16.4	S10 50.7	209 41.7	N22 56.0	312 52.7	S00 54.6
	11	331 10.0	328 23.4	S00 07.3	354 17.0	S10 50.0	224 44.2	N22 56.0	327 54.8	S00 54.4
	12	346 12.5	343 23.0	S00 06.1	009 17.6	S10 49.3	239 46.7	N22 56.0	342 57.0	S00 54.3
	13	001 14.9	358 22.6	S00 04.8	024 18.2	S10 48.6	254 49.2	N22 56.0	357 59.2	S00 54.2
	14	016 17.4	013 22.3	S00 03.5	039 18.8	S10 47.9	269 51.7	N22 56.0	013 01.4	S00 54.1
	15	031 19.9	028 21.9	S00 02.2	054 19.4	S10 47.1	284 54.2	N22 56.0	028 03.6	S00 53.9
	16	046 22.3	043 21.5	S00 00.9	069 20.0	S10 46.4	299 56.7	N22 56.0	043 05.8	S00 53.8
	17	061 24.8	058 21.2	N00 00.4	084 20.6	S10 45.7	314 59.1	N22 56.0	058 08.0	S00 53.7
	18	076 27.3	073 20.8	N00 01.7	099 21.2	S10 45.0	330 01.6	N22 56.0	073 10.1	S00 53.6
	19	091 29.7	088 20.4	N00 03.0	114 21.8	S10 44.2	345 04.1	N22 56.0	088 12.3	S00 53.5
	20	106 32.2	103 20.1	N00 04.2	129 22.4	S10 43.5	000 06.6	N22 56.0	103 14.5	S00 53.3
	21	121 34.7	118 19.7	N00 05.5	144 23.0	S10 42.8	015 09.1	N22 56.1	118 16.7	S00 53.2
	22	136 37.1	133 19.4	N00 06.8	159 23.6	S10 42.1	030 11.6	N22 56.1	133 18.9	S00 53.1
	23	151 39.6	148 19.0	N00 08.1	174 24.2	S10 41.3	045 14.1	N22 56.1	148 21.1	S00 53.0
9	00	166 42.1	163 18.6	N00 09.4	189 24.8	S10 40.6	060 16.5	N22 56.1	163 23.2	S00 52.8
	01	181 44.5	178 18.3	N00 10.7	204 25.4	S10 39.9	075 19.0	N22 56.1	178 25.4	S00 52.7
	02	196 47.0	193 17.9	N00 12.0	219 26.0	S10 39.2	090 21.5	N22 56.1	193 27.6	S00 52.6
	03	211 49.4	208 17.5	N00 13.3	234 26.6	S10 38.4	105 24.0	N22 56.1	208 29.8	S00 52.5
	04	226 51.9	223 17.2	N00 14.5	249 27.2	S10 37.7	120 26.5	N22 56.1	223 32.0	S00 52.4
	05	241 54.4	238 16.8	N00 15.8	264 27.8	S10 37.0	135 28.9	N22 56.1	238 34.2	S00 52.2
	06	256 56.8	253 16.4	N00 17.1	279 28.4	S10 36.3	150 31.4	N22 56.1	253 36.3	S00 52.1
	07	271 59.3	268 16.1	N00 18.4	294 29.0	S10 35.5	165 33.9	N22 56.1	268 38.5	S00 52.0
	08	287 01.8	283 15.7	N00 19.7	309 29.6	S10 34.8	180 36.4	N22 56.1	283 40.7	S00 51.9
	09	302 04.2	298 15.3	N00 21.0	324 30.2	S10 34.1	195 38.9	N22 56.1	298 42.9	S00 51.7
	10	317 06.7	313 15.0	N00 22.3	339 30.8	S10 33.4	210 41.3	N22 56.1	313 45.1	S00 51.6
	11	332 09.2	328 14.6	N00 23.6	354 31.4	S10 32.6	225 43.8	N22 56.1	328 47.3	S00 51.5
	12	347 11.6	343 14.3	N00 24.9	009 32.0	S10 31.9	240 46.3	N22 56.1	343 49.5	S00 51.4
	13	002 14.1	358 13.9	N00 26.1	024 32.6	S10 31.2	255 48.8	N22 56.1	358 51.6	S00 51.3
	14	017 16.6	013 13.5	N00 27.4	039 33.2	S10 30.5	270 51.3	N22 56.1	013 53.8	S00 51.1
	15	032 19.0	028 13.2	N00 28.7	054 33.8	S10 29.7	285 53.7	N22 56.1	028 56.0	S00 51.0
	16	047 21.5	043 12.8	N00 30.0	069 34.4	S10 29.0	300 56.2	N22 56.1	043 58.2	S00 50.9
	17	062 23.9	058 12.4	N00 31.3	084 35.0	S10 28.3	315 58.7	N22 56.1	059 00.4	S00 50.8
	18	077 26.4	073 12.1	N00 32.6	099 35.6	S10 27.6	331 01.2	N22 56.1	074 02.6	S00 50.6
	19	092 28.9	088 11.7	N00 33.9	114 36.2	S10 26.8	346 03.6	N22 56.1	089 04.7	S00 50.5
	20	107 31.3	103 11.3	N00 35.2	129 36.8	S10 26.1	001 06.1	N22 56.1	104 06.9	S00 50.4
	21	122 33.8	118 11.0	N00 36.4	144 37.4	S10 25.4	016 08.6	N22 56.1	119 09.1	S00 50.3
	22	137 36.3	133 10.6	N00 37.7	159 38.0	S10 24.6	031 11.1	N22 56.2	134 11.3	S00 50.1
	23	152 38.7	148 10.3	N00 39.0	174 38.6	S10 23.9	046 13.5	N22 56.2	149 13.5	S00 50.0
10	00	167 41.2	163 09.9	N00 40.3	189 39.2	S10 23.2	061 16.0	N22 56.2	164 15.7	S00 49.9
	01	182 43.7	178 09.5	N00 41.6	204 39.8	S10 22.5	076 18.5	N22 56.2	179 17.8	S00 49.8
	02	197 46.1	193 09.2	N00 42.9	219 40.4	S10 21.7	091 21.0	N22 56.2	194 20.0	S00 49.7
	03	212 48.6	208 08.8	N00 44.2	234 41.0	S10 21.0	106 23.4	N22 56.2	209 22.2	S00 49.5
	04	227 51.0	223 08.4	N00 45.5	249 41.7	S10 20.3	121 25.9	N22 56.2	224 24.4	S00 49.4
	05	242 53.5	238 08.1	N00 46.7	264 42.3	S10 19.5	136 28.4	N22 56.2	239 26.6	S00 49.3
	06	257 56.0	253 07.7	N00 48.0	279 42.9	S10 18.8	151 30.9	N22 56.2	254 28.8	S00 49.2
	07	272 58.4	268 07.3	N00 49.3	294 43.5	S10 18.1	166 33.3	N22 56.2	269 30.9	S00 49.0
	08	288 00.9	283 07.0	N00 50.6	309 44.1	S10 17.4	181 35.8	N22 56.2	284 33.1	S00 48.9
	09	303 03.4	298 06.6	N00 51.9	324 44.7	S10 16.6	196 38.3	N22 56.2	299 35.3	S00 48.8
	10	318 05.8	313 06.3	N00 53.2	339 45.3	S10 15.9	211 40.7	N22 56.2	314 37.5	S00 48.7
	11	333 08.3	328 05.9	N00 54.5	354 45.9	S10 15.2	226 43.2	N22 56.2	329 39.7	S00 48.6
	12	348 10.8	343 05.5	N00 55.8	009 46.5	S10 14.4	241 45.7	N22 56.2	344 41.9	S00 48.4
	13	003 13.2	358 05.2	N00 57.0	024 47.1	S10 13.7	256 48.1	N22 56.2	359 44.0	S00 48.3
	14	018 15.7	013 04.8	N00 58.3	039 47.7	S10 13.0	271 50.6	N22 56.2	014 46.2	S00 48.2
	15	033 18.2	028 04.4	N00 59.6	054 48.3	S10 12.2	286 53.1	N22 56.2	029 48.4	S00 48.1
	16	048 20.6	043 04.1	N01 00.9	069 48.9	S10 11.5	301 55.6	N22 56.2	044 50.6	S00 47.9
	17	063 23.1	058 03.7	N01 02.2	084 49.5	S10 10.8	316 58.0	N22 56.2	059 52.8	S00 47.8
	18	078 25.5	073 03.3	N01 03.5	099 50.1	S10 10.1	332 00.5	N22 56.2	074 55.0	S00 47.7
	19	093 28.0	088 03.0	N01 04.8	114 50.7	S10 09.3	347 03.0	N22 56.2	089 57.1	S00 47.6
	20	108 30.5	103 02.6	N01 06.1	129 51.3	S10 08.6	002 05.4	N22 56.2	104 59.3	S00 47.4
	21	123 32.9	118 02.3	N01 07.3	144 52.0	S10 07.9	017 07.9	N22 56.2	120 01.5	S00 47.3
	22	138 35.4	133 01.9	N01 08.6	159 52.6	S10 07.1	032 10.4	N22 56.2	135 03.7	S00 47.2
	23	153 37.9	148 01.5	N01 09.9	174 53.2	S10 06.4	047 12.8	N22 56.2	150 05.9	S00 47.1

Venus	Mars	Jupiter	Saturn
8: v -0.4 d 1.3	8: v 0.6 d 0.7	8: v 2.5 d 0.0	8: v 2.2 d 0.1
9: v -0.4 d 1.3	9: v 0.6 d 0.7	9: v 2.5 d 0.0	9: v 2.2 d 0.1
10: v -0.4 d 1.3	10: v 0.6 d 0.7	10: v 2.5 d 0.0	10: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.2	S40 12.2
Achernar	335 19.9	S57 06.4
Acrux	172 58.4	S63 14.7
Adhara	255 04.9	S29 00.7
Al Na'ir	027 32.1	S46 50.0
Aldebaran	290 38.5	N16 33.7
Alioth	166 11.6	N55 48.8
Alkaid	152 50.9	N49 10.6
Alnilam	275 36.7	S01 11.2
Alphard	217 46.5	S08 46.5
Alphecca	126 02.8	N26 37.3
Alpheratz	357 34.1	N29 14.1
Altair	061 59.2	N08 56.1
Ankaa	353 06.6	S42 09.9
Antares	112 14.6	S26 29.4
Arcturus	145 46.8	N19 02.5
Atria	107 07.9	S69 04.2
Avior	234 13.9	S59 35.8
Bellatrix	278 21.8	N06 22.3
Betelgeuse	270 51.0	N07 24.6
Canopus	263 51.8	S52 42.8
Capella	280 20.4	N46 01.6
Deneb	049 25.5	N45 22.2
Denebola	182 23.6	N14 25.4
Diphda	348 46.6	S17 50.7
Dubhe	193 39.1	N61 36.5
Elnath	278 00.6	N28 37.8
Eltanin	090 41.8	N51 28.7
Enif	033 38.1	N09 59.6
Fomalhaut	015 13.8	S29 29.1
Gacrux	171 50.1	S57 15.6
Gienah	175 42.3	S17 41.4
Hadar	148 34.2	S60 29.9
Hamal	327 50.3	N23 35.2
Kaus Australi	083 31.4	S34 22.3
Kochab	137 19.1	N74 02.5
Markab	013 29.3	N15 20.7
Menkar	314 05.3	N04 11.5
Menkent	147 56.2	S36 29.9
Miaplacidus	221 37.3	S69 49.6
Mirfak	308 27.1	N49 57.4
Nunki	075 46.7	S26 15.8
Peacock	053 04.6	S56 38.9
Polaris	313 47.5	N89 22.7
Pollux	243 15.9	N27 57.8
Procyon	244 49.6	N05 09.4
Rasalhague	095 57.7	N12 32.2
Regulus	207 33.1	N11 50.2
Rigel	281 02.9	S08 10.4
Rigil Kentaur	139 38.6	S60 56.5
Sabik	102 01.7	S15 45.5
Schedar	349 30.5	N56 40.9
Shaula	096 09.1	S37 07.3
Sirius	258 25.2	S16 45.3
Spica	158 21.0	S11 18.0
Suhail	222 45.2	S43 32.5
Vega	080 32.7	N38 48.1
Zubenelgenubi	136 54.8	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	356 02.6	1307
Mars	022 20.4	1122
Jupiter	253 34.7	1956
Saturn	356 37.8	1305

2026 | MARCH 8 - MARCH 10

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
8	00	177 17.2	S04 58.2	309 29.6	S19 15.2	54.8	13.6	-11.0
	01	192 17.4	S04 57.3	324 02.2	S19 26.1	54.8	13.5	-10.9
	02	207 17.5	S04 56.3	338 34.7	S19 37.0	54.7	13.5	-10.8
	03	222 17.7	S04 55.3	353 07.2	S19 47.8	54.7	13.4	-10.7
	04	237 17.8	S04 54.3	007 39.6	S19 58.5	54.7	13.4	-10.6
	05	252 18.0	S04 53.4	022 11.9	S20 09.1	54.7	13.3	-10.5
	06	267 18.1	S04 52.4	036 44.3	S20 19.6	54.7	13.3	-10.4
	07	282 18.3	S04 51.4	051 16.6	S20 30.0	54.7	13.2	-10.3
	08	297 18.4	S04 50.4	065 48.8	S20 40.3	54.6	13.2	-10.2
	09	312 18.6	S04 49.5	080 21.0	S20 50.6	54.6	13.1	-10.1
	10	327 18.8	S04 48.5	094 53.1	S21 00.7	54.6	13.1	-10.0
	11	342 18.9	S04 47.5	109 25.2	S21 10.7	54.6	13.0	-9.9
	12	357 19.1	S04 46.5	123 57.2	S21 20.7	54.6	13.0	-9.8
	13	012 19.2	S04 45.5	138 29.2	S21 30.5	54.6	12.9	-9.7
	14	027 19.4	S04 44.6	153 01.1	S21 40.3	54.6	12.9	-9.6
	15	042 19.5	S04 43.6	167 33.0	S21 49.9	54.5	12.8	-9.5
	16	057 19.7	S04 42.6	182 04.8	S21 59.4	54.5	12.8	-9.4
	17	072 19.8	S04 41.6	196 36.6	S22 08.9	54.5	12.7	-9.3
	18	087 20.0	S04 40.7	211 08.3	S22 18.2	54.5	12.7	-9.2
	19	102 20.1	S04 39.7	225 40.0	S22 27.5	54.5	12.6	-9.1
	20	117 20.3	S04 38.7	240 11.6	S22 36.6	54.5	12.6	-9.0
	21	132 20.5	S04 37.7	254 43.2	S22 45.6	54.5	12.5	-8.9
	22	147 20.6	S04 36.8	269 14.7	S22 54.6	54.5	12.5	-8.8
	23	162 20.8	S04 35.8	283 46.1	S23 03.4	54.4	12.4	-8.7
9	00	177 20.9	S04 34.8	298 17.5	S23 12.1	54.4	12.4	-8.6
	01	192 21.1	S04 33.8	312 48.9	S23 20.7	54.4	12.3	-8.5
	02	207 21.2	S04 32.9	327 20.2	S23 29.3	54.4	12.3	-8.4
	03	222 21.4	S04 31.9	341 51.5	S23 37.7	54.4	12.2	-8.3
	04	237 21.6	S04 30.9	356 22.7	S23 46.0	54.4	12.1	-8.2
	05	252 21.7	S04 29.9	010 53.8	S23 54.1	54.4	12.1	-8.1
	06	267 21.9	S04 28.9	025 24.9	S24 02.2	54.4	12.0	-8.0
	07	282 22.0	S04 28.0	039 55.9	S24 10.2	54.4	12.0	-7.9
	08	297 22.2	S04 27.0	054 26.9	S24 18.0	54.4	11.9	-7.7
	09	312 22.3	S04 26.0	068 57.9	S24 25.8	54.3	11.9	-7.6
	10	327 22.5	S04 25.0	083 28.7	S24 33.4	54.3	11.8	-7.5
	11	342 22.7	S04 24.1	097 59.6	S24 40.9	54.3	11.8	-7.4
	12	357 22.8	S04 23.1	112 30.4	S24 48.3	54.3	11.7	-7.3
	13	012 23.0	S04 22.1	127 01.1	S24 55.6	54.3	11.7	-7.2
	14	027 23.1	S04 21.1	141 31.8	S25 02.8	54.3	11.6	-7.1
	15	042 23.3	S04 20.1	156 02.4	S25 09.9	54.3	11.6	-6.9
	16	057 23.4	S04 19.2	170 33.0	S25 16.8	54.3	11.5	-6.8
	17	072 23.6	S04 18.2	185 03.5	S25 23.7	54.3	11.5	-6.7
	18	087 23.8	S04 17.2	199 33.9	S25 30.4	54.3	11.4	-6.6
	19	102 23.9	S04 16.2	214 04.4	S25 37.0	54.3	11.4	-6.5
	20	117 24.1	S04 15.2	228 34.7	S25 43.5	54.3	11.3	-6.4
	21	132 24.2	S04 14.3	243 05.1	S25 49.8	54.3	11.3	-6.2
	22	147 24.4	S04 13.3	257 35.3	S25 56.1	54.3	11.2	-6.1
	23	162 24.6	S04 12.3	272 05.5	S26 02.2	54.3	11.2	-6.0
10	00	177 24.7	S04 11.3	286 35.7	S26 08.2	54.3	11.1	-5.9
	01	192 24.9	S04 10.3	301 05.8	S26 14.0	54.2	11.1	-5.8
	02	207 25.0	S04 09.4	315 35.9	S26 19.8	54.2	11.0	-5.6
	03	222 25.2	S04 08.4	330 05.9	S26 25.4	54.2	11.0	-5.5
	04	237 25.4	S04 07.4	344 35.9	S26 30.9	54.2	10.9	-5.4
	05	252 25.5	S04 06.4	359 05.9	S26 36.3	54.2	10.9	-5.3
	06	267 25.7	S04 05.4	013 35.8	S26 41.6	54.2	10.8	-5.1
	07	282 25.8	S04 04.5	028 05.6	S26 46.7	54.2	10.8	-5.0
	08	297 26.0	S04 03.5	042 35.4	S26 51.7	54.2	10.8	-4.9
	09	312 26.2	S04 02.5	057 05.1	S26 56.6	54.2	10.7	-4.8
	10	327 26.3	S04 01.5	071 34.9	S27 01.4	54.2	10.7	-4.6
	11	342 26.5	S04 00.5	086 04.5	S27 06.0	54.2	10.6	-4.5
	12	357 26.6	S03 59.6	100 34.1	S27 10.5	54.2	10.6	-4.4
	13	012 26.8	S03 58.6	115 03.7	S27 14.9	54.2	10.5	-4.2
	14	027 27.0	S03 57.6	129 33.3	S27 19.2	54.2	10.5	-4.1
	15	042 27.1	S03 56.6	144 02.8	S27 23.3	54.2	10.5	-4.0
	16	057 27.3	S03 55.6	158 32.2	S27 27.3	54.2	10.4	-3.9
	17	072 27.5	S03 54.7	173 01.7	S27 31.1	54.2	10.4	-3.7
	18	087 27.6	S03 53.7	187 31.0	S27 34.9	54.2	10.3	-3.6
	19	102 27.8	S03 52.7	202 00.4	S27 38.5	54.2	10.3	-3.5
	20	117 27.9	S03 51.7	216 29.7	S27 41.9	54.2	10.3	-3.3
	21	132 28.1	S03 50.7	230 59.0	S27 45.3	54.2	10.2	-3.2
	22	147 28.3	S03 49.8	245 28.2	S27 48.5	54.2	10.2	-3.1
	23	162 28.4	S03 48.8	259 57.4	S27 51.6	54.2	10.2	-2.9

Day 8 noon Sun: v 0.2 d 1.0 SD 16.1 | Moon SD 14.9

Day 9 noon Sun: v 0.2 d 1.0 SD 16.1 | Moon SD 14.8

Day 10 noon Sun: v 0.2 d 1.0 SD 16.1 | Moon SD 14.8

SUN: MARCH 9 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0428	0548	0655	1728	1835	1956
70N	0438	0550	0650	1733	1834	1946
68N	0446	0551	0646	1737	1832	1938
66N	0452	0552	0643	1740	1831	1931
64N	0457	0553	0640	1743	1830	1926
62N	0502	0553	0637	1745	1829	1921
60N	0505	0554	0635	1747	1829	1917
58N	0508	0554	0633	1749	1828	1914
56N	0511	0554	0631	1751	1828	1911
54N	0513	0554	0630	1752	1828	1909
52N	0515	0555	0628	1754	1827	1907
50N	0517	0555	0627	1755	1827	1905
45N	0521	0555	0624	1758	1827	1901
40N	0523	0554	0621	1800	1827	1859
35N	0524	0554	0619	1802	1828	1857
30N	0525	0553	0617	1804	1828	1856
25N	0526	0552	0615	1806	1829	1855
20N	0526	0551	0614	1808	1830	1855
15N	0526	0550	0612	1809	1831	1856
10N	0525	0549	0610	1811	1832	1856
05N	0524	0548	0609	1812	1833	1857
00N	0522	0546	0607	1814	1834	1859
05S	0521	0545	0606	1815	1836	1900
10S	0518	0543	0604	1817	1838	1902
15S	0516	0541	0602	1818	1840	1905
20S	0513	0538	0600	1820	1842	1908
25S	0509	0536	0558	1822	1845	1912
30S	0504	0532	0556	1824	1848	1916
35S	0458	0528	0554	1827	1852	1922
40S	0451	0524	0551	1829	1856	1929
45S	0443	0518	0548	1832	1902	1937
50S	0432	0511	0544	1836	1909	1948
55S	0417	0502	0539	1841	1918	2002
60S	0356	0450	0533	1847	1930	2023

MOON: RISE / SET | UTC HHMM

Lat	Day 8		Day 9		Day 10	
72N	--	--	--	--	--	--
70N	0305	0334	--	--	--	--
68N	0133	0507	--	--	--	--
66N	0055	0546	0344	0433	--	--
64N	0028	0614	0227	0552	--	--
62N	0008	0635	0151	0629	0342	0619
60N	--	0652	0125	0655	0259	0702
58N	--	0707	0105	0716	0230	0731
56N	--	0720	0048	0733	0208	0754
54N	--	0730	0034	0747	0150	0812
52N	--	0740	0022	0800	0134	0828
50N	--	0749	0011	0811	0121	0841
45N	2348	0808	--	0835	0054	0909
40N	2330	0823	--	0854	0033	0931
35N	2315	0836	--	0910	0015	0949
30N	2302	0847	2400	0923	--	1005
25N	2251	0857	2346	0936	--	1019
20N	2240	0906	2334	0947	--	1031
15N	2231	0915	2323	0957	--	1043
10N	2221	0923	2312	1007	--	1054
05N	2212	0931	2302	1017	2353	1105
00N	2204	0939	2252	1027	2342	1116
05S	2155	0947	2242	1036	2331	1126
10S	2146	0955	2231	1046	2320	1137
15S	2137	1004	2221	1056	2308	1149
20S	2127	1013	2210	1106	2256	1200
25S	2117	1022	2158	1118	2243	1213
30S	2106	1032	2144	1130	2229	1227
35S	2053	1044	2130	1144	2212	1243
40S	2039	1058	2113	1201	2153	1302
45S	2022	1113	2052	1220	2131	1324
50S	2001	1133	2027	1245	2102	1353
55S	1934	1159	1953	1318	2021	1432
60S	1856	1236	1901	1409	1914	1539

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | MARCH 11 - MARCH 13

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
11	00	168 40.3	163 01.2	N01 11.2	189 53.8	S10 05.7	062 15.3	N22 56.2	165 08.0	S00 47.0
	01	183 42.8	178 00.8	N01 12.5	204 54.4	S10 04.9	077 17.8	N22 56.2	180 10.2	S00 46.8
	02	198 45.3	193 00.4	N01 13.8	219 55.0	S10 04.2	092 20.2	N22 56.2	195 12.4	S00 46.7
	03	213 47.7	208 00.1	N01 15.1	234 55.6	S10 03.5	107 22.7	N22 56.2	210 14.6	S00 46.6
	04	228 50.2	222 59.7	N01 16.4	249 56.2	S10 02.7	122 25.1	N22 56.2	225 16.8	S00 46.5
	05	243 52.7	237 59.4	N01 17.6	264 56.8	S10 02.0	137 27.6	N22 56.2	240 19.0	S00 46.3
	06	258 55.1	252 59.0	N01 18.9	279 57.4	S10 01.3	152 30.1	N22 56.2	255 21.1	S00 46.2
	07	273 57.6	267 58.6	N01 20.2	294 58.0	S10 00.5	167 32.5	N22 56.2	270 23.3	S00 46.1
	08	289 00.0	282 58.3	N01 21.5	309 58.6	S09 59.8	182 35.0	N22 56.2	285 25.5	S00 46.0
	09	304 02.5	297 57.9	N01 22.8	324 59.3	S09 59.1	197 37.5	N22 56.2	300 27.7	S00 45.9
	10	319 05.0	312 57.5	N01 24.1	339 59.9	S09 58.3	212 39.9	N22 56.3	315 29.9	S00 45.7
	11	334 07.4	327 57.2	N01 25.4	355 00.5	S09 57.6	227 42.4	N22 56.3	330 32.1	S00 45.6
	12	349 09.9	342 56.8	N01 26.7	010 01.1	S09 56.9	242 44.8	N22 56.3	345 34.2	S00 45.5
	13	004 12.4	357 56.4	N01 27.9	025 01.7	S09 56.1	257 47.3	N22 56.3	000 36.4	S00 45.4
	14	019 14.8	012 56.1	N01 29.2	040 02.3	S09 55.4	272 49.8	N22 56.3	015 38.6	S00 45.2
	15	034 17.3	027 55.7	N01 30.5	055 02.9	S09 54.7	287 52.2	N22 56.3	030 40.8	S00 45.1
	16	049 19.8	042 55.4	N01 31.8	070 03.5	S09 53.9	302 54.7	N22 56.3	045 43.0	S00 45.0
	17	064 22.2	057 55.0	N01 33.1	085 04.1	S09 53.2	317 57.1	N22 56.3	060 45.2	S00 44.9
	18	079 24.7	072 54.6	N01 34.4	100 04.7	S09 52.5	332 59.6	N22 56.3	075 47.3	S00 44.7
	19	094 27.2	087 54.3	N01 35.7	115 05.4	S09 51.7	348 02.1	N22 56.3	090 49.5	S00 44.6
	20	109 29.6	102 53.9	N01 37.0	130 06.0	S09 51.0	003 04.5	N22 56.3	105 51.7	S00 44.5
	21	124 32.1	117 53.5	N01 38.2	145 06.6	S09 50.2	018 07.0	N22 56.3	120 53.9	S00 44.4
	22	139 34.5	132 53.2	N01 39.5	160 07.2	S09 49.5	033 09.4	N22 56.3	135 56.1	S00 44.3
	23	154 37.0	147 52.8	N01 40.8	175 07.8	S09 48.8	048 11.9	N22 56.3	150 58.2	S00 44.1
12	00	169 39.5	162 52.5	N01 42.1	190 08.4	S09 48.0	063 14.3	N22 56.3	166 00.4	S00 44.0
	01	184 41.9	177 52.1	N01 43.4	205 09.0	S09 47.3	078 16.8	N22 56.3	181 02.6	S00 43.9
	02	199 44.4	192 51.7	N01 44.7	220 09.6	S09 46.6	093 19.3	N22 56.3	196 04.8	S00 43.8
	03	214 46.9	207 51.4	N01 46.0	235 10.2	S09 45.8	108 21.7	N22 56.3	211 07.0	S00 43.6
	04	229 49.3	222 51.0	N01 47.2	250 10.9	S09 45.1	123 24.2	N22 56.3	226 09.2	S00 43.5
	05	244 51.8	237 50.6	N01 48.5	265 11.5	S09 44.4	138 26.6	N22 56.3	241 11.3	S00 43.4
	06	259 54.3	252 50.3	N01 49.8	280 12.1	S09 43.6	153 29.1	N22 56.3	256 13.5	S00 43.3
	07	274 56.7	267 49.9	N01 51.1	295 12.7	S09 42.9	168 31.5	N22 56.3	271 15.7	S00 43.1
	08	289 59.2	282 49.5	N01 52.4	310 13.3	S09 42.1	183 34.0	N22 56.3	286 17.9	S00 43.0
	09	305 01.6	297 49.2	N01 53.7	325 13.9	S09 41.4	198 36.4	N22 56.3	301 20.1	S00 42.9
	10	320 04.1	312 48.8	N01 55.0	340 14.5	S09 40.7	213 38.9	N22 56.3	316 22.2	S00 42.8
	11	335 06.6	327 48.5	N01 56.2	355 15.1	S09 39.9	228 41.3	N22 56.3	331 24.4	S00 42.7
	12	350 09.0	342 48.1	N01 57.5	010 15.8	S09 39.2	243 43.8	N22 56.3	346 26.6	S00 42.5
	13	005 11.5	357 47.7	N01 58.8	025 16.4	S09 38.5	258 46.2	N22 56.3	001 28.8	S00 42.4
	14	020 14.0	012 47.4	N02 00.1	040 17.0	S09 37.7	273 48.7	N22 56.3	016 31.0	S00 42.3
	15	035 16.4	027 47.0	N02 01.4	055 17.6	S09 37.0	288 51.2	N22 56.3	031 33.2	S00 42.2
	16	050 18.9	042 46.6	N02 02.7	070 18.2	S09 36.2	303 53.6	N22 56.3	046 35.3	S00 42.0
	17	065 21.4	057 46.3	N02 04.0	085 18.8	S09 35.5	318 56.1	N22 56.3	061 37.5	S00 41.9
	18	080 23.8	072 45.9	N02 05.2	100 19.4	S09 34.8	333 58.5	N22 56.3	076 39.7	S00 41.8
	19	095 26.3	087 45.6	N02 06.5	115 20.1	S09 34.0	349 01.0	N22 56.3	091 41.9	S00 41.7
	20	110 28.8	102 45.2	N02 07.8	130 20.7	S09 33.3	004 03.4	N22 56.3	106 44.1	S00 41.5
	21	125 31.2	117 44.8	N02 09.1	145 21.3	S09 32.5	019 05.8	N22 56.3	121 46.2	S00 41.4
	22	140 33.7	132 44.5	N02 10.4	160 21.9	S09 31.8	034 08.3	N22 56.3	136 48.4	S00 41.3
	23	155 36.1	147 44.1	N02 11.7	175 22.5	S09 31.1	049 10.7	N22 56.3	151 50.6	S00 41.2
13	00	170 38.6	162 43.7	N02 13.0	190 23.1	S09 30.3	064 13.2	N22 56.3	166 52.8	S00 41.1
	01	185 41.1	177 43.4	N02 14.2	205 23.7	S09 29.6	079 15.6	N22 56.3	181 55.0	S00 40.9
	02	200 43.5	192 43.0	N02 15.5	220 24.4	S09 28.8	094 18.1	N22 56.3	196 57.1	S00 40.8
	03	215 46.0	207 42.6	N02 16.8	235 25.0	S09 28.1	109 20.5	N22 56.3	211 59.3	S00 40.7
	04	230 48.5	222 42.3	N02 18.1	250 25.6	S09 27.4	124 23.0	N22 56.3	227 01.5	S00 40.6
	05	245 50.9	237 41.9	N02 19.4	265 26.2	S09 26.6	139 25.4	N22 56.3	242 03.7	S00 40.4
	06	260 53.4	252 41.6	N02 20.7	280 26.8	S09 25.9	154 27.9	N22 56.3	257 05.9	S00 40.3
	07	275 55.9	267 41.2	N02 22.0	295 27.4	S09 25.1	169 30.3	N22 56.3	272 08.1	S00 40.2
	08	290 58.3	282 40.8	N02 23.2	310 28.1	S09 24.4	184 32.8	N22 56.3	287 10.2	S00 40.1
	09	306 00.8	297 40.5	N02 24.5	325 28.7	S09 23.7	199 35.2	N22 56.3	302 12.4	S00 39.9
	10	321 03.3	312 40.1	N02 25.8	340 29.3	S09 22.9	214 37.7	N22 56.3	317 14.6	S00 39.8
	11	336 05.7	327 39.7	N02 27.1	355 29.9	S09 22.2	229 40.1	N22 56.3	332 16.8	S00 39.7
	12	351 08.2	342 39.4	N02 28.4	010 30.5	S09 21.4	244 42.5	N22 56.3	347 19.0	S00 39.6
	13	006 10.6	357 39.0	N02 29.7	025 31.1	S09 20.7	259 45.0	N22 56.3	002 21.1	S00 39.5
	14	021 13.1	012 38.6	N02 30.9	040 31.7	S09 20.0	274 47.4	N22 56.3	017 23.3	S00 39.3
	15	036 15.6	027 38.3	N02 32.2	055 32.4	S09 19.2	289 49.9	N22 56.3	032 25.5	S00 39.2
	16	051 18.0	042 37.9	N02 33.5	070 33.0	S09 18.5	304 52.3	N22 56.3	047 27.7	S00 39.1
	17	066 20.5	057 37.5	N02 34.8	085 33.6	S09 17.7	319 54.7	N22 56.3	062 29.9	S00 39.0
	18	081 23.0	072 37.2	N02 36.1	100 34.2	S09 17.0	334 57.2	N22 56.3	077 32.0	S00 38.8
	19	096 25.4	087 36.8	N02 37.4	115 34.8	S09 16.2	349 59.6	N22 56.3	092 34.2	S00 38.7
	20	111 27.9	102 36.5	N02 38.7	130 35.5	S09 15.5	005 02.1	N22 56.3	107 36.4	S00 38.6
	21	126 30.4	117 36.1	N02 39.9	145 36.1	S09 14.8	020 04.5	N22 56.3	122 38.6	S00 38.5
	22	141 32.8	132 35.7	N02 41.2	160 36.7	S09 14.0	035 07.0	N22 56.3	137 40.8	S00 38.3
	23	156 35.3	147 35.4	N02 42.5	175 37.3	S09 13.3	050 09.4	N22 56.3	152 43.0	S00 38.2

Venus	Mars	Jupiter	Saturn
11: v -0.4 d 1.3	11: v 0.6 d 0.7	11: v 2.5 d 0.0	11: v 2.2 d 0.1
12: v -0.4 d 1.3	12: v 0.6 d 0.7	12: v 2.5 d 0.0	12: v 2.2 d 0.1
13: v -0.4 d 1.3	13: v 0.6 d 0.7	13: v 2.4 d 0.0	13: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.3	S40 12.2
Achernar	335 19.9	S57 06.4
Acrux	172 58.4	S63 14.7
Adhara	255 05.0	S29 00.7
Al Na'ir	027 32.1	S46 50.0
Aldebaran	290 38.6	N16 33.7
Alioth	166 11.6	N55 48.8
Alkaid	152 50.8	N49 10.7
Alnilam	275 36.7	S01 11.2
Alphard	217 46.5	S08 46.5
Alphecca	126 02.8	N26 37.3
Alpheratz	357 34.1	N29 14.1
Altair	061 59.2	N08 56.1
Ankaa	353 06.6	S42 09.9
Antares	112 14.6	S26 29.4
Arcturus	145 46.8	N19 02.5
Atria	107 07.9	S69 04.2
Avior	234 13.9	S59 35.8
Bellatrix	278 21.8	N06 22.3
Betelgeuse	270 51.0	N07 24.6
Canopus	263 51.8	S52 42.8
Capella	280 20.5	N46 01.6
Deneb	049 25.5	N45 22.2
Denebola	182 23.6	N14 25.4
Diphda	348 46.6	S17 50.7
Dubhe	193 39.1	N61 36.5
Elnath	278 00.6	N28 37.8
Eltanin	090 41.8	N51 28.7
Enif	033 38.1	N09 59.6
Fomalhaut	015 13.8	S29 29.1
Gacrux	171 50.0	S57 15.6
Gienah	175 42.3	S17 41.4
Hadar	148 34.2	S60 29.9
Hamal	327 50.4	N23 35.2
Kaus Australi	083 31.3	S34 22.3
Kochab	137 19.1	N74 02.5
Markab	013 29.3	N15 20.7
Menkar	314 05.3	N04 11.5
Menkent	147 56.2	S36 30.0
Miaplacidus	221 37.3	S69 49.7
Mirfak	308 27.1	N49 57.4
Nunki	075 46.7	S26 15.8
Peacock	053 04.6	S56 38.9
Polaris	313 48.6	N89 22.7
Pollux	243 15.9	N27 57.8
Procyon	244 49.6	N05 09.4
Rasalhague	095 57.7	N12 32.2
Regulus	207 33.1	N11 50.2
Rigel	281 02.9	S08 10.4
Rigil Kentaur	139 38.6	S60 56.5
Sabik	102 01.6	S15 45.5
Schedar	349 30.5	N56 40.9
Shaula	096 09.1	S37 07.3
Sirius	258 25.3	S16 45.3
Spica	158 21.0	S11 18.0
Suhail	222 45.2	S43 32.5
Vega	080 32.7	N38 48.1
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	352 39.1	1309
Mars	020 06.7	1119
Jupiter	253 34.8	1944
Saturn	356 17.6	1254

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
11	00	177 28.6	S03 47.8	274 26.6	S27 54.5	54.2	10.1	-2.8
	01	192 28.8	S03 46.8	288 55.7	S27 57.3	54.2	10.1	-2.7
	02	207 28.9	S03 45.8	303 24.8	S28 00.0	54.2	10.1	-2.5
	03	222 29.1	S03 44.8	317 53.9	S28 02.5	54.3	10.0	-2.4
	04	237 29.2	S03 43.9	332 22.9	S28 04.9	54.3	10.0	-2.3
	05	252 29.4	S03 42.9	346 51.9	S28 07.2	54.3	10.0	-2.1
	06	267 29.6	S03 41.9	001 20.9	S28 09.3	54.3	10.0	-2.0
	07	282 29.7	S03 40.9	015 49.9	S28 11.3	54.3	9.9	-1.9
	08	297 29.9	S03 39.9	030 18.8	S28 13.2	54.3	9.9	-1.7
	09	312 30.1	S03 39.0	044 47.7	S28 14.9	54.3	9.9	-1.6
	10	327 30.2	S03 38.0	059 16.6	S28 16.5	54.3	9.9	-1.5
	11	342 30.4	S03 37.0	073 45.4	S28 18.0	54.3	9.8	-1.3
	12	357 30.6	S03 36.0	088 14.3	S28 19.3	54.3	9.8	-1.2
	13	012 30.7	S03 35.0	102 43.1	S28 20.5	54.3	9.8	-1.0
	14	027 30.9	S03 34.0	117 11.9	S28 21.5	54.3	9.8	-0.9
	15	042 31.0	S03 33.1	131 40.6	S28 22.4	54.3	9.8	-0.8
	16	057 31.2	S03 32.1	146 09.4	S28 23.2	54.3	9.7	-0.6
	17	072 31.4	S03 31.1	160 38.1	S28 23.8	54.3	9.7	-0.5
	18	087 31.5	S03 30.1	175 06.9	S28 24.3	54.3	9.7	-0.4
	19	102 31.7	S03 29.1	189 35.6	S28 24.7	54.4	9.7	-0.2
	20	117 31.9	S03 28.1	204 04.2	S28 24.9	54.4	9.7	-0.1
	21	132 32.0	S03 27.2	218 32.9	S28 25.0	54.4	9.7	0.1
	22	147 32.2	S03 26.2	233 01.6	S28 24.9	54.4	9.7	0.2
	23	162 32.4	S03 25.2	247 30.2	S28 24.7	54.4	9.6	0.3
12	00	177 32.5	S03 24.2	261 58.9	S28 24.4	54.4	9.6	0.5
	01	192 32.7	S03 23.2	276 27.5	S28 23.9	54.4	9.6	0.6
	02	207 32.9	S03 22.2	290 56.1	S28 23.3	54.4	9.6	0.8
	03	222 33.0	S03 21.3	305 24.7	S28 22.5	54.4	9.6	0.9
	04	237 33.2	S03 20.3	319 53.3	S28 21.6	54.4	9.6	1.0
	05	252 33.4	S03 19.3	334 22.0	S28 20.6	54.5	9.6	1.2
	06	267 33.5	S03 18.3	348 50.6	S28 19.4	54.5	9.6	1.3
	07	282 33.7	S03 17.3	003 19.1	S28 18.1	54.5	9.6	1.5
	08	297 33.9	S03 16.3	017 47.7	S28 16.6	54.5	9.6	1.6
	09	312 34.0	S03 15.4	032 16.3	S28 15.0	54.5	9.6	1.7
	10	327 34.2	S03 14.4	046 44.9	S28 13.3	54.5	9.6	1.9
	11	342 34.4	S03 13.4	061 13.5	S28 11.4	54.5	9.6	2.0
	12	357 34.5	S03 12.4	075 42.1	S28 09.4	54.6	9.6	2.2
	13	012 34.7	S03 11.4	090 10.7	S28 07.2	54.6	9.6	2.3
	14	027 34.9	S03 10.4	104 39.3	S28 04.9	54.6	9.6	2.4
	15	042 35.0	S03 09.5	119 07.9	S28 02.5	54.6	9.6	2.6
	16	057 35.2	S03 08.5	133 36.6	S27 59.9	54.6	9.6	2.7
	17	072 35.4	S03 07.5	148 05.2	S27 57.2	54.6	9.6	2.9
	18	087 35.5	S03 06.5	162 33.8	S27 54.3	54.6	9.6	3.0
	19	102 35.7	S03 05.5	177 02.5	S27 51.3	54.7	9.7	3.1
	20	117 35.9	S03 04.5	191 31.1	S27 48.2	54.7	9.7	3.3
	21	132 36.0	S03 03.5	205 59.8	S27 44.9	54.7	9.7	3.4
	22	147 36.2	S03 02.6	220 28.5	S27 41.5	54.7	9.7	3.6
	23	162 36.4	S03 01.6	234 57.2	S27 37.9	54.7	9.7	3.7
13	00	177 36.6	S03 00.6	249 25.9	S27 34.2	54.7	9.7	3.8
	01	192 36.7	S02 59.6	263 54.6	S27 30.4	54.8	9.7	4.0
	02	207 36.9	S02 58.6	278 23.3	S27 26.4	54.8	9.8	4.1
	03	222 37.1	S02 57.6	292 52.1	S27 22.3	54.8	9.8	4.2
	04	237 37.2	S02 56.6	307 20.9	S27 18.1	54.8	9.8	4.4
	05	252 37.4	S02 55.7	321 49.7	S27 13.7	54.8	9.8	4.5
	06	267 37.6	S02 54.7	336 18.5	S27 09.2	54.8	9.8	4.7
	07	282 37.7	S02 53.7	350 47.3	S27 04.5	54.9	9.9	4.8
	08	297 37.9	S02 52.7	005 16.2	S26 59.7	54.9	9.9	4.9
	09	312 38.1	S02 51.7	019 45.0	S26 54.8	54.9	9.9	5.1
	10	327 38.2	S02 50.7	034 13.9	S26 49.7	54.9	9.9	5.2
	11	342 38.4	S02 49.7	048 42.9	S26 44.5	54.9	10.0	5.3
	12	357 38.6	S02 48.8	063 11.8	S26 39.2	55.0	10.0	5.5
	13	012 38.8	S02 47.8	077 40.8	S26 33.7	55.0	10.0	5.6
	14	027 38.9	S02 46.8	092 09.8	S26 28.1	55.0	10.0	5.7
	15	042 39.1	S02 45.8	106 38.8	S26 22.4	55.0	10.1	5.9
	16	057 39.3	S02 44.8	121 07.9	S26 16.5	55.1	10.1	6.0
	17	072 39.4	S02 43.8	135 37.0	S26 10.5	55.1	10.1	6.1
	18	087 39.6	S02 42.8	150 06.1	S26 04.3	55.1	10.1	6.3
	19	102 39.8	S02 41.9	164 35.2	S25 58.1	55.1	10.2	6.4
	20	117 39.9	S02 40.9	179 04.4	S25 51.7	55.1	10.2	6.5
	21	132 40.1	S02 39.9	193 33.6	S25 45.1	55.2	10.2	6.7
	22	147 40.3	S02 38.9	208 02.9	S25 38.4	55.2	10.3	6.8
	23	162 40.5	S02 37.9	222 32.1	S25 31.6	55.2	10.3	6.9

Day 11 noon Sun: v 0.2 d 1.0 SD 16.1 | Moon SD 14.8

Day 12 noon Sun: v 0.2 d 1.0 SD 16.1 | Moon SD 14.9

Day 13 noon Sun: v 0.2 d 1.0 SD 16.1 | Moon SD 15.0

SUN: MARCH 12 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0411	0533	0640	1742	1849	2012
70N	0423	0536	0636	1745	1846	1959
68N	0432	0538	0634	1748	1843	1950
66N	0440	0540	0631	1750	1841	1942
64N	0446	0542	0629	1752	1839	1935
62N	0452	0544	0628	1753	1837	1930
60N	0456	0545	0626	1755	1836	1925
58N	0500	0546	0625	1756	1835	1921
56N	0503	0546	0623	1757	1834	1918
54N	0506	0547	0622	1758	1833	1915
52N	0509	0548	0621	1759	1833	1912
50N	0511	0548	0620	1800	1832	1910
45N	0515	0549	0618	1802	1831	1905
40N	0518	0550	0616	1804	1831	1902
35N	0520	0550	0615	1805	1830	1900
30N	0522	0550	0614	1806	1830	1858
25N	0523	0549	0612	1808	1830	1857
20N	0523	0549	0611	1809	1831	1856
15N	0524	0548	0610	1810	1831	1856
10N	0523	0548	0609	1811	1832	1856
05N	0523	0547	0608	1812	1833	1857
00N	0522	0546	0606	1813	1834	1858
05S	0520	0544	0605	1814	1835	1859
10S	0519	0543	0604	1815	1836	1901
15S	0516	0541	0603	1816	1838	1903
20S	0514	0539	0601	1818	1840	1905
25S	0510	0537	0600	1819	1842	1909
30S	0506	0534	0558	1821	1845	1913
35S	0501	0531	0556	1822	1848	1918
40S	0455	0527	0554	1824	1852	1924
45S	0447	0522	0552	1827	1856	1931
50S	0437	0516	0549	1830	1902	1941
55S	0424	0508	0545	1833	1910	1954
60S	0405	0458	0540	1838	1920	2012

MOON: RISE / SET | UTC HHMM

Lat	Day 11		Day 12		Day 13	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	--	--	--	--
62N	--	--	--	--	0637	0846
60N	0424	0722	0522	0812	0547	0935
58N	0346	0800	0442	0852	0516	1006
56N	0319	0827	0415	0919	0453	1029
54N	0258	0849	0353	0941	0434	1048
52N	0240	0906	0335	0958	0417	1104
50N	0225	0921	0320	1014	0403	1117
45N	0155	0952	0249	1044	0335	1145
40N	0132	1015	0226	1108	0313	1207
35N	0113	1035	0206	1127	0254	1225
30N	0056	1052	0149	1144	0238	1241
25N	0041	1107	0134	1159	0224	1255
20N	0028	1120	0121	1212	0211	1307
15N	0016	1132	0108	1225	0159	1319
10N	0004	1144	0056	1236	0147	1330
05N	--	1156	0045	1248	0136	1340
00N	--	1207	0034	1259	0126	1351
05S	--	1218	0022	1310	0115	1401
10S	--	1229	0011	1321	0104	1411
15S	2359	1241	--	1333	0052	1422
20S	2347	1254	--	1345	0040	1434
25S	2333	1307	--	1358	0027	1446
30S	2318	1322	--	1413	0013	1459
35S	2302	1339	2357	1430	--	1514
40S	2242	1358	2338	1449	--	1532
45S	2218	1422	2315	1512	--	1553
50S	2148	1452	2246	1541	2355	1619
55S	2105	1535	2205	1623	2320	1655
60S	1947	1653	2055	1733	2226	1750

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | MARCH 14 - MARCH 16

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
14	00	171 37.8	162 35.0	N02 43.8	190 37.9	S09 12.5	065 11.8	N22 56.3	167 45.1	S00 38.1
	01	186 40.2	177 34.6	N02 45.1	205 38.5	S09 11.8	080 14.3	N22 56.3	182 47.3	S00 38.0
	02	201 42.7	192 34.3	N02 46.4	220 39.2	S09 11.0	095 16.7	N22 56.3	197 49.5	S00 37.9
	03	216 45.1	207 33.9	N02 47.6	235 39.8	S09 10.3	110 19.1	N22 56.3	212 51.7	S00 37.7
	04	231 47.6	222 33.5	N02 48.9	250 40.4	S09 09.6	125 21.6	N22 56.3	227 53.9	S00 37.6
	05	246 50.1	237 33.2	N02 50.2	265 41.0	S09 08.8	140 24.0	N22 56.3	242 56.0	S00 37.5
	06	261 52.5	252 32.8	N02 51.5	280 41.6	S09 08.1	155 26.5	N22 56.3	257 58.2	S00 37.4
	07	276 55.0	267 32.4	N02 52.8	295 42.3	S09 07.3	170 28.9	N22 56.3	273 00.4	S00 37.2
	08	291 57.5	282 32.1	N02 54.1	310 42.9	S09 06.6	185 31.3	N22 56.3	288 02.6	S00 37.1
	09	306 59.9	297 31.7	N02 55.3	325 43.5	S09 05.8	200 33.8	N22 56.3	303 04.8	S00 37.0
	10	322 02.4	312 31.4	N02 56.6	340 44.1	S09 05.1	215 36.2	N22 56.3	318 06.9	S00 36.9
	11	337 04.9	327 31.0	N02 57.9	355 44.7	S09 04.3	230 38.6	N22 56.3	333 09.1	S00 36.7
	12	352 07.3	342 30.6	N02 59.2	010 45.4	S09 03.6	245 41.1	N22 56.3	348 11.3	S00 36.6
	13	007 09.8	357 30.3	N03 00.5	025 46.0	S09 02.9	260 43.5	N22 56.3	003 13.5	S00 36.5
	14	022 12.2	012 29.9	N03 01.7	040 46.6	S09 02.1	275 45.9	N22 56.3	018 15.7	S00 36.4
	15	037 14.7	027 29.5	N03 03.0	055 47.2	S09 01.4	290 48.4	N22 56.3	033 17.8	S00 36.3
	16	052 17.2	042 29.2	N03 04.3	070 47.8	S09 00.6	305 50.8	N22 56.3	048 20.0	S00 36.1
	17	067 19.6	057 28.8	N03 05.6	085 48.5	S08 59.9	320 53.2	N22 56.3	063 22.2	S00 36.0
	18	082 22.1	072 28.4	N03 06.9	100 49.1	S08 59.1	335 55.7	N22 56.3	078 24.4	S00 35.9
	19	097 24.6	087 28.1	N03 08.2	115 49.7	S08 58.4	350 58.1	N22 56.3	093 26.6	S00 35.8
	20	112 27.0	102 27.7	N03 09.4	130 50.3	S08 57.6	006 00.5	N22 56.3	108 28.7	S00 35.6
	21	127 29.5	117 27.3	N03 10.7	145 50.9	S08 56.9	021 03.0	N22 56.3	123 30.9	S00 35.5
	22	142 32.0	132 27.0	N03 12.0	160 51.6	S08 56.1	036 05.4	N22 56.3	138 33.1	S00 35.4
	23	157 34.4	147 26.6	N03 13.3	175 52.2	S08 55.4	051 07.8	N22 56.3	153 35.3	S00 35.3
15	00	172 36.9	162 26.2	N03 14.6	190 52.8	S08 54.6	066 10.3	N22 56.3	168 37.5	S00 35.1
	01	187 39.4	177 25.9	N03 15.8	205 53.4	S08 53.9	081 12.7	N22 56.3	183 39.6	S00 35.0
	02	202 41.8	192 25.5	N03 17.1	220 54.0	S08 53.2	096 15.1	N22 56.3	198 41.8	S00 34.9
	03	217 44.3	207 25.1	N03 18.4	235 54.7	S08 52.4	111 17.5	N22 56.3	213 44.0	S00 34.8
	04	232 46.7	222 24.8	N03 19.7	250 55.3	S08 51.7	126 20.0	N22 56.3	228 46.2	S00 34.7
	05	247 49.2	237 24.4	N03 21.0	265 55.9	S08 50.9	141 22.4	N22 56.3	243 48.4	S00 34.5
	06	262 51.7	252 24.0	N03 22.2	280 56.5	S08 50.2	156 24.8	N22 56.3	258 50.5	S00 34.4
	07	277 54.1	267 23.7	N03 23.5	295 57.2	S08 49.4	171 27.3	N22 56.3	273 52.7	S00 34.3
	08	292 56.6	282 23.3	N03 24.8	310 57.8	S08 48.7	186 29.7	N22 56.3	288 54.9	S00 34.2
	09	307 59.1	297 22.9	N03 26.1	325 58.4	S08 47.9	201 32.1	N22 56.3	303 57.1	S00 34.0
	10	323 01.5	312 22.6	N03 27.4	340 59.0	S08 47.2	216 34.5	N22 56.3	318 59.3	S00 33.9
	11	338 04.0	327 22.2	N03 28.6	355 59.6	S08 46.4	231 37.0	N22 56.3	334 01.4	S00 33.8
	12	353 06.5	342 21.8	N03 29.9	011 00.3	S08 45.7	246 39.4	N22 56.3	349 03.6	S00 33.7
	13	008 08.9	357 21.5	N03 31.2	026 00.9	S08 44.9	261 41.8	N22 56.3	004 05.8	S00 33.5
	14	023 11.4	012 21.1	N03 32.5	041 01.5	S08 44.2	276 44.2	N22 56.3	019 08.0	S00 33.4
	15	038 13.9	027 20.7	N03 33.8	056 02.1	S08 43.4	291 46.7	N22 56.3	034 10.2	S00 33.3
	16	053 16.3	042 20.4	N03 35.0	071 02.8	S08 42.7	306 49.1	N22 56.3	049 12.3	S00 33.2
	17	068 18.8	057 20.0	N03 36.3	086 03.4	S08 41.9	321 51.5	N22 56.3	064 14.5	S00 33.1
	18	083 21.2	072 19.6	N03 37.6	101 04.0	S08 41.2	336 53.9	N22 56.2	079 16.7	S00 32.9
	19	098 23.7	087 19.3	N03 38.9	116 04.6	S08 40.4	351 56.4	N22 56.2	094 18.9	S00 32.8
	20	113 26.2	102 18.9	N03 40.2	131 05.3	S08 39.7	006 58.8	N22 56.2	109 21.1	S00 32.7
	21	128 28.6	117 18.5	N03 41.4	146 05.9	S08 38.9	022 01.2	N22 56.2	124 23.2	S00 32.6
	22	143 31.1	132 18.2	N03 42.7	161 06.5	S08 38.2	037 03.6	N22 56.2	139 25.4	S00 32.4
	23	158 33.6	147 17.8	N03 44.0	176 07.1	S08 37.4	052 06.1	N22 56.2	154 27.6	S00 32.3
16	00	173 36.0	162 17.4	N03 45.3	191 07.8	S08 36.7	067 08.5	N22 56.2	169 29.8	S00 32.2
	01	188 38.5	177 17.1	N03 46.5	206 08.4	S08 35.9	082 10.9	N22 56.2	184 32.0	S00 32.1
	02	203 41.0	192 16.7	N03 47.8	221 09.0	S08 35.2	097 13.3	N22 56.2	199 34.1	S00 31.9
	03	218 43.4	207 16.3	N03 49.1	236 09.6	S08 34.4	112 15.7	N22 56.2	214 36.3	S00 31.8
	04	233 45.9	222 16.0	N03 50.4	251 10.3	S08 33.7	127 18.2	N22 56.2	229 38.5	S00 31.7
	05	248 48.3	237 15.6	N03 51.7	266 10.9	S08 32.9	142 20.6	N22 56.2	244 40.7	S00 31.6
	06	263 50.8	252 15.2	N03 52.9	281 11.5	S08 32.2	157 23.0	N22 56.2	259 42.9	S00 31.4
	07	278 53.3	267 14.9	N03 54.2	296 12.1	S08 31.4	172 25.4	N22 56.2	274 45.0	S00 31.3
	08	293 55.7	282 14.5	N03 55.5	311 12.8	S08 30.7	187 27.8	N22 56.2	289 47.2	S00 31.2
	09	308 58.2	297 14.1	N03 56.8	326 13.4	S08 29.9	202 30.3	N22 56.2	304 49.4	S00 31.1
	10	324 00.7	312 13.8	N03 58.0	341 14.0	S08 29.2	217 32.7	N22 56.2	319 51.6	S00 31.0
	11	339 03.1	327 13.4	N03 59.3	356 14.6	S08 28.4	232 35.1	N22 56.2	334 53.8	S00 30.8
	12	354 05.6	342 13.0	N04 00.6	011 15.3	S08 27.7	247 37.5	N22 56.2	349 55.9	S00 30.7
	13	009 08.1	357 12.7	N04 01.9	026 15.9	S08 26.9	262 39.9	N22 56.2	004 58.1	S00 30.6
	14	024 10.5	012 12.3	N04 03.1	041 16.5	S08 26.2	277 42.3	N22 56.2	020 00.3	S00 30.5
	15	039 13.0	027 11.9	N04 04.4	056 17.1	S08 25.4	292 44.8	N22 56.2	035 02.5	S00 30.3
	16	054 15.5	042 11.6	N04 05.7	071 17.8	S08 24.7	307 47.2	N22 56.2	050 04.7	S00 30.2
	17	069 17.9	057 11.2	N04 07.0	086 18.4	S08 23.9	322 49.6	N22 56.2	065 06.8	S00 30.1
	18	084 20.4	072 10.8	N04 08.2	101 19.0	S08 23.2	337 52.0	N22 56.2	080 09.0	S00 30.0
	19	099 22.8	087 10.4	N04 09.5	116 19.6	S08 22.4	352 54.4	N22 56.2	095 11.2	S00 29.8
	20	114 25.3	102 10.1	N04 10.8	131 20.3	S08 21.7	007 56.8	N22 56.2	110 13.4	S00 29.7
	21	129 27.8	117 09.7	N04 12.1	146 20.9	S08 20.9	022 59.2	N22 56.2	125 15.6	S00 29.6
	22	144 30.2	132 09.3	N04 13.3	161 21.5	S08 20.2	038 01.7	N22 56.2	140 17.7	S00 29.5
	23	159 32.7	147 09.0	N04 14.6	176 22.2	S08 19.4	053 04.1	N22 56.2	155 19.9	S00 29.4

Venus	Mars	Jupiter	Saturn
14: v -0.4 d 1.3	14: v 0.6 d 0.7	14: v 2.4 d 0.0	14: v 2.2 d 0.1
15: v -0.4 d 1.3	15: v 0.6 d 0.7	15: v 2.4 d 0.0	15: v 2.2 d 0.1
16: v -0.4 d 1.3	16: v 0.6 d 0.8	16: v 2.4 d 0.0	16: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.3	S40 12.2
Achernar	335 19.9	S57 06.4
Acrux	172 58.4	S63 14.7
Adhara	255 05.0	S29 00.7
Al Na'ir	027 32.1	S46 50.0
Aldebaran	290 38.6	N16 33.7
Alioth	166 11.6	N55 48.8
Alkaid	152 50.8	N49 10.7
Alnilam	275 36.7	S01 11.2
Alphard	217 46.5	S08 46.5
Alphecca	126 02.7	N26 37.3
Alpheratz	357 34.1	N29 14.1
Altair	061 59.2	N08 56.1
Ankaa	353 06.6	S42 09.9
Antares	112 14.5	S26 29.4
Arcturus	145 46.8	N19 02.5
Atria	107 07.8	S69 04.2
Avior	234 13.9	S59 35.8
Bellatrix	278 21.8	N06 22.3
Betelgeuse	270 51.0	N07 24.6
Canopus	263 51.8	S52 42.8
Capella	280 20.5	N46 01.6
Deneb	049 25.5	N45 22.2
Denebola	182 23.6	N14 25.4
Diphda	348 46.6	S17 50.7
Dubhe	193 39.1	N61 36.5
Elnath	278 00.6	N28 37.8
Eltanin	090 41.8	N51 28.7
Enif	033 38.1	N09 59.6
Fomalhaut	015 13.8	S29 29.1
Gacrux	171 50.0	S57 15.6
Gienah	175 42.3	S17 41.4
Hadar	148 34.1	S60 29.9
Hamal	327 50.4	N23 35.2
Kaus Australi	083 31.3	S34 22.3
Kochab	137 19.0	N74 02.5
Markab	013 29.2	N15 20.7
Menkar	314 05.3	N04 11.5
Menkent	147 56.2	S36 30.0
Miaplacidus	221 37.4	S69 49.7
Mirfak	308 27.1	N49 57.4
Nunki	075 46.7	S26 15.8
Peacock	053 04.6	S56 38.9
Polaris	313 49.7	N89 22.7
Pollux	243 15.9	N27 57.8
Procyon	244 49.6	N05 09.4
Rasalhague	095 57.6	N12 32.2
Regulus	207 33.1	N11 50.2
Rigel	281 02.9	S08 10.4
Rigil Kentaur	139 38.5	S60 56.5
Sabik	102 01.6	S15 45.5
Schedar	349 30.5	N56 40.9
Shaula	096 09.0	S37 07.3
Sirius	258 25.3	S16 45.3
Spica	158 21.0	S11 18.0
Suhail	222 45.3	S43 32.5
Vega	080 32.7	N38 48.1
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	349 15.4	1311
Mars	017 53.8	1116
Jupiter	253 32.9	1932
Saturn	355 57.2	1244

2026 | MARCH 14 - MARCH 16

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
14	00	177 40.6	S02 36.9	237 01.4	S25 24.7	55.2	10.3	7.1
	01	192 40.8	S02 35.9	251 30.8	S25 17.6	55.3	10.4	7.2
	02	207 41.0	S02 35.0	266 00.1	S25 10.4	55.3	10.4	7.3
	03	222 41.1	S02 34.0	280 29.5	S25 03.1	55.3	10.4	7.5
	04	237 41.3	S02 33.0	294 59.0	S24 55.7	55.3	10.5	7.6
	05	252 41.5	S02 32.0	309 28.5	S24 48.1	55.4	10.5	7.7
	06	267 41.7	S02 31.0	323 58.0	S24 40.4	55.4	10.5	7.8
	07	282 41.8	S02 30.0	338 27.5	S24 32.5	55.4	10.6	8.0
	08	297 42.0	S02 29.0	352 57.1	S24 24.6	55.4	10.6	8.1
	09	312 42.2	S02 28.1	007 26.7	S24 16.5	55.5	10.7	8.2
	10	327 42.4	S02 27.1	021 56.4	S24 08.3	55.5	10.7	8.3
	11	342 42.5	S02 26.1	036 26.1	S23 59.9	55.5	10.7	8.5
	12	357 42.7	S02 25.1	050 55.8	S23 51.5	55.5	10.8	8.6
	13	012 42.9	S02 24.1	065 25.6	S23 42.9	55.6	10.8	8.7
	14	027 43.0	S02 23.1	079 55.4	S23 34.2	55.6	10.9	8.8
	15	042 43.2	S02 22.1	094 25.3	S23 25.3	55.6	10.9	9.0
	16	057 43.4	S02 21.1	108 55.2	S23 16.4	55.6	10.9	9.1
	17	072 43.6	S02 20.2	123 25.1	S23 07.3	55.7	11.0	9.2
	18	087 43.7	S02 19.2	137 55.1	S22 58.1	55.7	11.0	9.3
	19	102 43.9	S02 18.2	152 25.1	S22 48.8	55.7	11.1	9.4
	20	117 44.1	S02 17.2	166 55.1	S22 39.4	55.7	11.1	9.6
	21	132 44.3	S02 16.2	181 25.2	S22 29.8	55.8	11.1	9.7
	22	147 44.4	S02 15.2	195 55.4	S22 20.1	55.8	11.2	9.8
	23	162 44.6	S02 14.2	210 25.5	S22 10.4	55.8	11.2	9.9
15	00	177 44.8	S02 13.2	224 55.7	S22 00.5	55.9	11.3	10.0
	01	192 45.0	S02 12.3	239 26.0	S21 50.4	55.9	11.3	10.1
	02	207 45.1	S02 11.3	253 56.3	S21 40.3	55.9	11.3	10.3
	03	222 45.3	S02 10.3	268 26.6	S21 30.0	55.9	11.4	10.4
	04	237 45.5	S02 09.3	282 57.0	S21 19.7	56.0	11.4	10.5
	05	252 45.6	S02 08.3	297 27.4	S21 09.2	56.0	11.5	10.6
	06	267 45.8	S02 07.3	311 57.9	S20 58.6	56.0	11.5	10.7
	07	282 46.0	S02 06.3	326 28.4	S20 47.9	56.1	11.5	10.8
	08	297 46.2	S02 05.3	340 58.9	S20 37.1	56.1	11.6	10.9
	09	312 46.3	S02 04.4	355 29.5	S20 26.2	56.1	11.6	11.0
	10	327 46.5	S02 03.4	010 00.1	S20 15.2	56.1	11.7	11.1
	11	342 46.7	S02 02.4	024 30.7	S20 04.0	56.2	11.7	11.2
	12	357 46.9	S02 01.4	039 01.4	S19 52.8	56.2	11.7	11.4
	13	012 47.0	S02 00.4	053 32.2	S19 41.4	56.2	11.8	11.5
	14	027 47.2	S01 59.4	068 02.9	S19 30.0	56.3	11.8	11.6
	15	042 47.4	S01 58.4	082 33.7	S19 18.4	56.3	11.8	11.7
	16	057 47.6	S01 57.4	097 04.6	S19 06.7	56.3	11.9	11.8
	17	072 47.7	S01 56.4	111 35.5	S18 55.0	56.4	11.9	11.9
	18	087 47.9	S01 55.5	126 06.4	S18 43.1	56.4	12.0	12.0
	19	102 48.1	S01 54.5	140 37.4	S18 31.1	56.4	12.0	12.1
	20	117 48.3	S01 53.5	155 08.4	S18 19.0	56.4	12.0	12.2
	21	132 48.5	S01 52.5	169 39.4	S18 06.9	56.5	12.1	12.3
	22	147 48.6	S01 51.5	184 10.5	S17 54.6	56.5	12.1	12.4
	23	162 48.8	S01 50.5	198 41.6	S17 42.2	56.5	12.1	12.5
16	00	177 49.0	S01 49.5	213 12.7	S17 29.7	56.6	12.2	12.6
	01	192 49.2	S01 48.5	227 43.9	S17 17.2	56.6	12.2	12.7
	02	207 49.3	S01 47.6	242 15.1	S17 04.5	56.6	12.2	12.8
	03	222 49.5	S01 46.6	256 46.3	S16 51.8	56.7	12.3	12.8
	04	237 49.7	S01 45.6	271 17.6	S16 38.9	56.7	12.3	12.9
	05	252 49.9	S01 44.6	285 48.9	S16 26.0	56.7	12.3	13.0
	06	267 50.0	S01 43.6	300 20.3	S16 12.9	56.8	12.4	13.1
	07	282 50.2	S01 42.6	314 51.7	S15 59.8	56.8	12.4	13.2
	08	297 50.4	S01 41.6	329 23.1	S15 46.6	56.8	12.4	13.3
	09	312 50.6	S01 40.6	343 54.5	S15 33.3	56.8	12.5	13.4
	10	327 50.7	S01 39.6	358 26.0	S15 19.9	56.9	12.5	13.5
	11	342 50.9	S01 38.7	012 57.5	S15 06.4	56.9	12.5	13.6
	12	357 51.1	S01 37.7	027 29.0	S14 52.9	56.9	12.6	13.6
	13	012 51.3	S01 36.7	042 00.6	S14 39.2	57.0	12.6	13.7
	14	027 51.5	S01 35.7	056 32.2	S14 25.5	57.0	12.6	13.8
	15	042 51.6	S01 34.7	071 03.8	S14 11.7	57.0	12.6	13.9
	16	057 51.8	S01 33.7	085 35.4	S13 57.8	57.1	12.7	14.0
	17	072 52.0	S01 32.7	100 07.1	S13 43.8	57.1	12.7	14.1
	18	087 52.2	S01 31.7	114 38.8	S13 29.7	57.1	12.7	14.1
	19	102 52.3	S01 30.7	129 10.5	S13 15.6	57.2	12.7	14.2
	20	117 52.5	S01 29.8	143 42.2	S13 01.4	57.2	12.8	14.3
	21	132 52.7	S01 28.8	158 14.0	S12 47.1	57.2	12.8	14.4
	22	147 52.9	S01 27.8	172 45.8	S12 32.7	57.3	12.8	14.4
	23	162 53.1	S01 26.8	187 17.6	S12 18.3	57.3	12.8	14.5

Day 14 noon Sun: v 0.2 d 1.0 SD 16.1 | Moon SD 15.1

Day 15 noon Sun: v 0.2 d 1.0 SD 16.1 | Moon SD 15.3

Day 16 noon Sun: v 0.2 d 1.0 SD 16.1 | Moon SD 15.5

SUN: MARCH 15 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0353	0517	0624	1756	1903	2028
70N	0408	0522	0622	1757	1858	2013
68N	0419	0526	0621	1759	1854	2002
66N	0428	0529	0620	1800	1851	1952
64N	0435	0532	0619	1801	1848	1945
62N	0441	0534	0618	1801	1846	1938
60N	0447	0536	0617	1802	1844	1933
58N	0451	0537	0616	1803	1842	1928
56N	0455	0539	0616	1803	1840	1924
54N	0459	0540	0615	1804	1839	1921
52N	0501	0541	0614	1804	1838	1918
50N	0504	0542	0614	1805	1837	1915
45N	0509	0544	0613	1806	1835	1909
40N	0513	0545	0612	1807	1834	1905
35N	0516	0546	0611	1807	1833	1902
30N	0518	0546	0610	1808	1832	1900
25N	0520	0546	0609	1809	1832	1858
20N	0521	0546	0608	1810	1832	1857
15N	0522	0546	0608	1810	1832	1856
10N	0522	0546	0607	1811	1832	1856
05N	0521	0546	0606	1811	1832	1856
00N	0521	0545	0606	1812	1833	1857
05S	0520	0544	0605	1813	1834	1858
10S	0519	0543	0604	1814	1835	1859
15S	0517	0542	0603	1814	1836	1901
20S	0515	0540	0602	1815	1837	1903
25S	0512	0538	0601	1816	1839	1906
30S	0508	0536	0600	1817	1841	1909
35S	0504	0534	0559	1818	1844	1913
40S	0458	0530	0557	1820	1847	1918
45S	0451	0526	0556	1821	1851	1925
50S	0443	0521	0554	1823	1856	1934
55S	0431	0514	0551	1826	1902	1946
60S	0414	0505	0548	1829	1911	2002

MOON: RISE / SET | UTC HHMM

Lat	Day 14		Day 15		Day 16	
72N	--	--	--	--	0807	1231
70N	--	--	--	--	0730	1307
68N	--	--	0755	1100	0703	1332
66N	--	--	0710	1143	0643	1350
64N	0707	1003	0641	1212	0626	1406
62N	0625	1044	0618	1233	0613	1418
60N	0557	1112	0600	1251	0601	1429
58N	0534	1133	0545	1305	0551	1438
56N	0516	1151	0532	1318	0542	1446
54N	0501	1206	0520	1328	0534	1453
52N	0448	1218	0510	1338	0527	1459
50N	0436	1230	0501	1346	0520	1505
45N	0412	1253	0442	1404	0506	1517
40N	0352	1312	0426	1419	0455	1527
35N	0336	1327	0413	1431	0445	1536
30N	0322	1341	0401	1442	0436	1543
25N	0309	1353	0350	1451	0428	1550
20N	0258	1403	0341	1500	0421	1556
15N	0247	1413	0332	1508	0414	1602
10N	0237	1423	0323	1516	0408	1607
05N	0227	1432	0315	1523	0401	1613
00N	0217	1441	0307	1530	0355	1618
05S	0207	1450	0259	1537	0349	1623
10S	0157	1459	0250	1545	0343	1628
15S	0147	1509	0242	1552	0336	1633
20S	0136	1519	0233	1600	0329	1639
25S	0124	1529	0223	1609	0322	1645
30S	0112	1541	0212	1618	0314	1651
35S	0057	1554	0200	1628	0305	1658
40S	0040	1608	0146	1639	0254	1706
45S	0020	1626	0130	1653	0242	1716
50S	--	1648	0109	1709	0227	1727
55S	--	1716	0043	1730	0208	1741
60S	--	1756	0004	1758	0142	1759

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | MARCH 17 - MARCH 19

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
17	00	174 35.2	162 08.6	N04 15.9	191 22.8	S08 18.7	068 06.5	N22 56.2	170 22.1	S00 29.2
	01	189 37.6	177 08.2	N04 17.2	206 23.4	S08 17.9	083 08.9	N22 56.2	185 24.3	S00 29.1
	02	204 40.1	192 07.9	N04 18.4	221 24.0	S08 17.1	098 11.3	N22 56.2	200 26.5	S00 29.0
	03	219 42.6	207 07.5	N04 19.7	236 24.7	S08 16.4	113 13.7	N22 56.2	215 28.6	S00 28.9
	04	234 45.0	222 07.1	N04 21.0	251 25.3	S08 15.6	128 16.1	N22 56.2	230 30.8	S00 28.7
	05	249 47.5	237 06.8	N04 22.3	266 25.9	S08 14.9	143 18.5	N22 56.2	245 33.0	S00 28.6
	06	264 50.0	252 06.4	N04 23.5	281 26.6	S08 14.1	158 20.9	N22 56.1	260 35.2	S00 28.5
	07	279 52.4	267 06.0	N04 24.8	296 27.2	S08 13.4	173 23.4	N22 56.1	275 37.3	S00 28.4
	08	294 54.9	282 05.6	N04 26.1	311 27.8	S08 12.6	188 25.8	N22 56.1	290 39.5	S00 28.2
	09	309 57.3	297 05.3	N04 27.4	326 28.4	S08 11.9	203 28.2	N22 56.1	305 41.7	S00 28.1
	10	324 59.8	312 04.9	N04 28.6	341 29.1	S08 11.1	218 30.6	N22 56.1	320 43.9	S00 28.0
	11	340 02.3	327 04.5	N04 29.9	356 29.7	S08 10.4	233 33.0	N22 56.1	335 46.1	S00 27.9
	12	355 04.7	342 04.2	N04 31.2	011 30.3	S08 09.6	248 35.4	N22 56.1	350 48.2	S00 27.7
	13	010 07.2	357 03.8	N04 32.5	026 31.0	S08 08.9	263 37.8	N22 56.1	005 50.4	S00 27.6
	14	025 09.7	012 03.4	N04 33.7	041 31.6	S08 08.1	278 40.2	N22 56.1	020 52.6	S00 27.5
	15	040 12.1	027 03.0	N04 35.0	056 32.2	S08 07.3	293 42.6	N22 56.1	035 54.8	S00 27.4
	16	055 14.6	042 02.7	N04 36.3	071 32.8	S08 06.6	308 45.0	N22 56.1	050 57.0	S00 27.3
	17	070 17.1	057 02.3	N04 37.5	086 33.5	S08 05.8	323 47.4	N22 56.1	065 59.1	S00 27.1
	18	085 19.5	072 01.9	N04 38.8	101 34.1	S08 05.1	338 49.8	N22 56.1	081 01.3	S00 27.0
	19	100 22.0	087 01.6	N04 40.1	116 34.7	S08 04.3	353 52.3	N22 56.1	096 03.5	S00 26.9
	20	115 24.4	102 01.2	N04 41.4	131 35.4	S08 03.6	008 54.7	N22 56.1	111 05.7	S00 26.8
	21	130 26.9	117 00.8	N04 42.6	146 36.0	S08 02.8	023 57.1	N22 56.1	126 07.9	S00 26.6
	22	145 29.4	132 00.4	N04 43.9	161 36.6	S08 02.1	038 59.5	N22 56.1	141 10.0	S00 26.5
	23	160 31.8	147 00.1	N04 45.2	176 37.3	S08 01.3	054 01.9	N22 56.1	156 12.2	S00 26.4
18	00	175 34.3	161 59.7	N04 46.4	191 37.9	S08 00.5	069 04.3	N22 56.1	171 14.4	S00 26.3
	01	190 36.8	176 59.3	N04 47.7	206 38.5	S07 59.8	084 06.7	N22 56.1	186 16.6	S00 26.1
	02	205 39.2	191 59.0	N04 49.0	221 39.2	S07 59.0	099 09.1	N22 56.1	201 18.8	S00 26.0
	03	220 41.7	206 58.6	N04 50.3	236 39.8	S07 58.3	114 11.5	N22 56.1	216 20.9	S00 25.9
	04	235 44.2	221 58.2	N04 51.5	251 40.4	S07 57.5	129 13.9	N22 56.1	231 23.1	S00 25.8
	05	250 46.6	236 57.8	N04 52.8	266 41.1	S07 56.8	144 16.3	N22 56.1	246 25.3	S00 25.7
	06	265 49.1	251 57.5	N04 54.1	281 41.7	S07 56.0	159 18.7	N22 56.1	261 27.5	S00 25.5
	07	280 51.6	266 57.1	N04 55.3	296 42.3	S07 55.2	174 21.1	N22 56.1	276 29.6	S00 25.4
	08	295 54.0	281 56.7	N04 56.6	311 42.9	S07 54.5	189 23.5	N22 56.0	291 31.8	S00 25.3
	09	310 56.5	296 56.4	N04 57.9	326 43.6	S07 53.7	204 25.9	N22 56.0	306 34.0	S00 25.2
	10	325 58.9	311 56.0	N04 59.1	341 44.2	S07 53.0	219 28.3	N22 56.0	321 36.2	S00 25.0
	11	341 01.4	326 55.6	N05 00.4	356 44.8	S07 52.2	234 30.7	N22 56.0	336 38.4	S00 24.9
	12	356 03.9	341 55.2	N05 01.7	011 45.5	S07 51.5	249 33.1	N22 56.0	351 40.5	S00 24.8
	13	011 06.3	356 54.9	N05 02.9	026 46.1	S07 50.7	264 35.5	N22 56.0	006 42.7	S00 24.7
	14	026 08.8	011 54.5	N05 04.2	041 46.7	S07 49.9	279 37.9	N22 56.0	021 44.9	S00 24.5
	15	041 11.3	026 54.1	N05 05.5	056 47.4	S07 49.2	294 40.3	N22 56.0	036 47.1	S00 24.4
	16	056 13.7	041 53.7	N05 06.7	071 48.0	S07 48.4	309 42.7	N22 56.0	051 49.3	S00 24.3
	17	071 16.2	056 53.4	N05 08.0	086 48.6	S07 47.7	324 45.1	N22 56.0	066 51.4	S00 24.2
	18	086 18.7	071 53.0	N05 09.3	101 49.3	S07 46.9	339 47.5	N22 56.0	081 53.6	S00 24.1
	19	101 21.1	086 52.6	N05 10.5	116 49.9	S07 46.2	354 49.9	N22 56.0	096 55.8	S00 23.9
	20	116 23.6	101 52.2	N05 11.8	131 50.5	S07 45.4	009 52.3	N22 56.0	111 58.0	S00 23.8
	21	131 26.0	116 51.9	N05 13.1	146 51.2	S07 44.6	024 54.7	N22 56.0	127 00.1	S00 23.7
	22	146 28.5	131 51.5	N05 14.3	161 51.8	S07 43.9	039 57.1	N22 56.0	142 02.3	S00 23.6
	23	161 31.0	146 51.1	N05 15.6	176 52.4	S07 43.1	054 59.5	N22 56.0	157 04.5	S00 23.4
19	00	176 33.4	161 50.7	N05 16.9	191 53.1	S07 42.4	070 01.9	N22 56.0	172 06.7	S00 23.3
	01	191 35.9	176 50.4	N05 18.1	206 53.7	S07 41.6	085 04.3	N22 56.0	187 08.9	S00 23.2
	02	206 38.4	191 50.0	N05 19.4	221 54.3	S07 40.8	100 06.7	N22 56.0	202 11.0	S00 23.1
	03	221 40.8	206 49.6	N05 20.7	236 55.0	S07 40.1	115 09.1	N22 56.0	217 13.2	S00 22.9
	04	236 43.3	221 49.2	N05 21.9	251 55.6	S07 39.3	130 11.4	N22 55.9	232 15.4	S00 22.8
	05	251 45.8	236 48.9	N05 23.2	266 56.2	S07 38.6	145 13.8	N22 55.9	247 17.6	S00 22.7
	06	266 48.2	251 48.5	N05 24.5	281 56.9	S07 37.8	160 16.2	N22 55.9	262 19.8	S00 22.6
	07	281 50.7	266 48.1	N05 25.7	296 57.5	S07 37.1	175 18.6	N22 55.9	277 21.9	S00 22.4
	08	296 53.2	281 47.7	N05 27.0	311 58.2	S07 36.3	190 21.0	N22 55.9	292 24.1	S00 22.3
	09	311 55.6	296 47.4	N05 28.3	326 58.8	S07 35.5	205 23.4	N22 55.9	307 26.3	S00 22.2
	10	326 58.1	311 47.0	N05 29.5	341 59.4	S07 34.8	220 25.8	N22 55.9	322 28.5	S00 22.1
	11	342 00.5	326 46.6	N05 30.8	357 00.1	S07 34.0	235 28.2	N22 55.9	337 30.6	S00 22.0
	12	357 03.0	341 46.2	N05 32.1	012 00.7	S07 33.3	250 30.6	N22 55.9	352 32.8	S00 21.8
	13	012 05.5	356 45.9	N05 33.3	027 01.3	S07 32.5	265 33.0	N22 55.9	007 35.0	S00 21.7
	14	027 07.9	011 45.5	N05 34.6	042 02.0	S07 31.7	280 35.4	N22 55.9	022 37.2	S00 21.6
	15	042 10.4	026 45.1	N05 35.9	057 02.6	S07 31.0	295 37.8	N22 55.9	037 39.4	S00 21.5
	16	057 12.9	041 44.7	N05 37.1	072 03.2	S07 30.2	310 40.1	N22 55.9	052 41.5	S00 21.3
	17	072 15.3	056 44.3	N05 38.4	087 03.9	S07 29.5	325 42.5	N22 55.9	067 43.7	S00 21.2
	18	087 17.8	071 44.0	N05 39.6	102 04.5	S07 28.7	340 44.9	N22 55.9	082 45.9	S00 21.1
	19	102 20.3	086 43.6	N05 40.9	117 05.1	S07 27.9	355 47.3	N22 55.9	097 48.1	S00 21.0
	20	117 22.7	101 43.2	N05 42.2	132 05.8	S07 27.2	010 49.7	N22 55.9	112 50.2	S00 20.8
	21	132 25.2	116 42.8	N05 43.4	147 06.4	S07 26.4	025 52.1	N22 55.9	127 52.4	S00 20.7
	22	147 27.6	131 42.5	N05 44.7	162 07.1	S07 25.6	040 54.5	N22 55.8	142 54.6	S00 20.6
	23	162 30.1	146 42.1	N05 45.9	177 07.7	S07 24.9	055 56.9	N22 55.8	157 56.8	S00 20.5

Venus	Mars	Jupiter	Saturn
17: v -0.4 d 1.3	17: v 0.6 d 0.8	17: v 2.4 d 0.0	17: v 2.2 d 0.1
18: v -0.4 d 1.3	18: v 0.6 d 0.8	18: v 2.4 d 0.0	18: v 2.2 d 0.1
19: v -0.4 d 1.3	19: v 0.6 d 0.8	19: v 2.4 d 0.0	19: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.3	S40 12.2
Achernar	335 19.9	S57 06.4
Acrux	172 58.4	S63 14.7
Adhara	255 05.0	S29 00.7
Al Na'ir	027 32.1	S46 50.0
Aldebaran	290 38.6	N16 33.7
Alioth	166 11.5	N55 48.8
Alkaid	152 50.8	N49 10.7
Alnilam	275 36.7	S01 11.2
Alphard	217 46.5	S08 46.5
Alphecca	126 02.7	N26 37.3
Alpheratz	357 34.1	N29 14.0
Altair	061 59.2	N08 56.1
Ankaa	353 06.6	S42 09.9
Antares	112 14.5	S26 29.4
Arcturus	145 46.7	N19 02.5
Atria	107 07.8	S69 04.2
Avior	234 14.0	S59 35.8
Bellatrix	278 21.8	N06 22.3
Betelgeuse	270 51.0	N07 24.6
Canopus	263 51.9	S52 42.8
Capella	280 20.5	N46 01.6
Deneb	049 25.5	N45 22.2
Denebola	182 23.6	N14 25.4
Diphda	348 46.6	S17 50.7
Dubhe	193 39.1	N61 36.5
Elnath	278 00.6	N28 37.8
Eltanin	090 41.7	N51 28.7
Enif	033 38.1	N09 59.6
Fomalhaut	015 13.8	S29 29.1
Gacrux	171 50.0	S57 15.7
Gienah	175 42.3	S17 41.4
Hadar	148 34.1	S60 29.9
Hamal	327 50.4	N23 35.2
Kaus Australi	083 31.3	S34 22.3
Kochab	137 19.0	N74 02.5
Markab	013 29.2	N15 20.7
Menkar	314 05.3	N04 11.5
Menkent	147 56.1	S36 30.0
Miaplacidus	221 37.4	S69 49.7
Mirfak	308 27.1	N49 57.4
Nunki	075 46.6	S26 15.8
Peacock	053 04.5	S56 38.9
Polaris	313 51.0	N89 22.7
Pollux	243 15.9	N27 57.8
Procyon	244 49.7	N05 09.4
Rasalhague	095 57.6	N12 32.2
Regulus	207 33.1	N11 50.2
Rigel	281 03.0	S08 10.4
Rigil Kentaur	139 38.5	S60 56.5
Sabik	102 01.6	S15 45.5
Schedar	349 30.5	N56 40.9
Shaula	096 09.0	S37 07.3
Sirius	258 25.3	S16 45.3
Spica	158 21.0	S11 18.0
Suhail	222 45.3	S43 32.5
Vega	080 32.6	N38 48.1
Zubenelgenubi	136 54.7	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	345 51.4	1312
Mars	015 41.6	1113
Jupiter	253 29.2	1921
Saturn	355 36.7	1233

2026 | MARCH 17 - MARCH 19

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
17	00	177 53.2	S01 25.8	201 49.4	S12 03.8	57.3	12.8	14.6
	01	192 53.4	S01 24.8	216 21.3	S11 49.2	57.3	12.9	14.7
	02	207 53.6	S01 23.8	230 53.1	S11 34.5	57.4	12.9	14.7
	03	222 53.8	S01 22.8	245 25.0	S11 19.8	57.4	12.9	14.8
	04	237 53.9	S01 21.8	259 56.9	S11 05.0	57.4	12.9	14.9
	05	252 54.1	S01 20.9	274 28.8	S10 50.1	57.5	12.9	14.9
	06	267 54.3	S01 19.9	289 00.8	S10 35.2	57.5	12.9	15.0
	07	282 54.5	S01 18.9	303 32.7	S10 20.2	57.5	13.0	15.1
	08	297 54.7	S01 17.9	318 04.7	S10 05.1	57.6	13.0	15.1
	09	312 54.8	S01 16.9	332 36.6	S09 50.0	57.6	13.0	15.2
	10	327 55.0	S01 15.9	347 08.6	S09 34.8	57.6	13.0	15.3
	11	342 55.2	S01 14.9	001 40.6	S09 19.6	57.7	13.0	15.3
	12	357 55.4	S01 13.9	016 12.6	S09 04.3	57.7	13.0	15.4
	13	012 55.6	S01 12.9	030 44.7	S08 48.9	57.7	13.0	15.4
	14	027 55.7	S01 12.0	045 16.7	S08 33.5	57.7	13.0	15.5
	15	042 55.9	S01 11.0	059 48.7	S08 18.0	57.8	13.0	15.5
	16	057 56.1	S01 10.0	074 20.8	S08 02.4	57.8	13.0	15.6
	17	072 56.3	S01 09.0	088 52.8	S07 46.8	57.8	13.1	15.6
	18	087 56.4	S01 08.0	103 24.9	S07 31.2	57.9	13.1	15.7
	19	102 56.6	S01 07.0	117 56.9	S07 15.5	57.9	13.1	15.7
	20	117 56.8	S01 06.0	132 29.0	S06 59.7	57.9	13.1	15.8
	21	132 57.0	S01 05.0	147 01.0	S06 43.9	58.0	13.1	15.8
	22	147 57.2	S01 04.0	161 33.1	S06 28.1	58.0	13.1	15.9
	23	162 57.3	S01 03.1	176 05.2	S06 12.2	58.0	13.1	15.9
18	00	177 57.5	S01 02.1	190 37.2	S05 56.3	58.0	13.1	16.0
	01	192 57.7	S01 01.1	205 09.3	S05 40.3	58.1	13.1	16.0
	02	207 57.9	S01 00.1	219 41.3	S05 24.2	58.1	13.0	16.1
	03	222 58.1	S00 59.1	234 13.4	S05 08.2	58.1	13.0	16.1
	04	237 58.2	S00 58.1	248 45.4	S04 52.1	58.2	13.0	16.1
	05	252 58.4	S00 57.1	263 17.5	S04 35.9	58.2	13.0	16.2
	06	267 58.6	S00 56.1	277 49.5	S04 19.7	58.2	13.0	16.2
	07	282 58.8	S00 55.1	292 21.5	S04 03.5	58.2	13.0	16.3
	08	297 59.0	S00 54.2	306 53.5	S03 47.3	58.3	13.0	16.3
	09	312 59.2	S00 53.2	321 25.5	S03 31.0	58.3	13.0	16.3
	10	327 59.3	S00 52.2	335 57.5	S03 14.7	58.3	13.0	16.4
	11	342 59.5	S00 51.2	350 29.5	S02 58.3	58.4	13.0	16.4
	12	357 59.7	S00 50.2	005 01.4	S02 41.9	58.4	12.9	16.4
	13	012 59.9	S00 49.2	019 33.4	S02 25.5	58.4	12.9	16.4
	14	028 00.1	S00 48.2	034 05.3	S02 09.1	58.4	12.9	16.5
	15	043 00.2	S00 47.2	048 37.2	S01 52.6	58.5	12.9	16.5
	16	058 00.4	S00 46.2	063 09.1	S01 36.1	58.5	12.9	16.5
	17	073 00.6	S00 45.3	077 41.0	S01 19.6	58.5	12.8	16.5
	18	088 00.8	S00 44.3	092 12.8	S01 03.1	58.5	12.8	16.6
	19	103 01.0	S00 43.3	106 44.7	S00 46.5	58.6	12.8	16.6
	20	118 01.1	S00 42.3	121 16.5	S00 30.0	58.6	12.8	16.6
	21	133 01.3	S00 41.3	135 48.2	S00 13.4	58.6	12.8	16.6
	22	148 01.5	S00 40.3	150 20.0	N00 03.2	58.7	12.7	16.6
	23	163 01.7	S00 39.3	164 51.7	N00 19.9	58.7	12.7	16.6
19	00	178 01.9	S00 38.3	179 23.4	N00 36.5	58.7	12.7	16.6
	01	193 02.1	S00 37.3	193 55.1	N00 53.1	58.7	12.6	16.6
	02	208 02.2	S00 36.4	208 26.7	N01 09.8	58.8	12.6	16.7
	03	223 02.4	S00 35.4	222 58.3	N01 26.4	58.8	12.6	16.7
	04	238 02.6	S00 34.4	237 29.9	N01 43.1	58.8	12.5	16.7
	05	253 02.8	S00 33.4	252 01.4	N01 59.8	58.8	12.5	16.7
	06	268 03.0	S00 32.4	266 32.9	N02 16.4	58.8	12.5	16.7
	07	283 03.1	S00 31.4	281 04.4	N02 33.1	58.9	12.4	16.7
	08	298 03.3	S00 30.4	295 35.8	N02 49.8	58.9	12.4	16.7
	09	313 03.5	S00 29.4	310 07.2	N03 06.5	58.9	12.4	16.7
	10	328 03.7	S00 28.4	324 38.6	N03 23.1	58.9	12.3	16.7
	11	343 03.9	S00 27.4	339 09.9	N03 39.8	59.0	12.3	16.7
	12	358 04.1	S00 26.5	353 41.2	N03 56.4	59.0	12.2	16.7
	13	013 04.2	S00 25.5	008 12.4	N04 13.1	59.0	12.2	16.6
	14	028 04.4	S00 24.5	022 43.6	N04 29.7	59.0	12.1	16.6
	15	043 04.6	S00 23.5	037 14.7	N04 46.4	59.0	12.1	16.6
	16	058 04.8	S00 22.5	051 45.8	N05 03.0	59.1	12.0	16.6
	17	073 05.0	S00 21.5	066 16.8	N05 19.6	59.1	12.0	16.6
	18	088 05.2	S00 20.5	080 47.8	N05 36.2	59.1	11.9	16.6
	19	103 05.3	S00 19.5	095 18.7	N05 52.8	59.1	11.9	16.6
	20	118 05.5	S00 18.5	109 49.6	N06 09.3	59.1	11.8	16.5
	21	133 05.7	S00 17.6	124 20.5	N06 25.9	59.2	11.8	16.5
	22	148 05.9	S00 16.6	138 51.2	N06 42.4	59.2	11.7	16.5
	23	163 06.1	S00 15.6	153 22.0	N06 58.9	59.2	11.7	16.5

Day 17 noon Sun: v 0.2 d 1.0 SD 16.1 | Moon SD 15.7

Day 18 noon Sun: v 0.2 d 1.0 SD 16.1 | Moon SD 15.9

Day 19 noon Sun: v 0.2 d 1.0 SD 16.1 | Moon SD 16.1

SUN: MARCH 18 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0335	0501	0609	1810	1918	2046
70N	0352	0508	0609	1810	1911	2028
68N	0405	0513	0608	1810	1905	2015
66N	0415	0517	0608	1810	1901	2004
64N	0424	0521	0608	1810	1857	1955
62N	0431	0524	0608	1810	1854	1947
60N	0437	0526	0608	1810	1851	1941
58N	0442	0529	0608	1810	1849	1935
56N	0447	0531	0608	1810	1847	1931
54N	0451	0532	0608	1810	1845	1927
52N	0454	0534	0607	1810	1843	1923
50N	0457	0535	0607	1810	1842	1920
45N	0504	0538	0607	1810	1839	1913
40N	0508	0540	0607	1810	1837	1908
35N	0512	0541	0607	1810	1835	1905
30N	0515	0543	0606	1810	1834	1902
25N	0517	0543	0606	1810	1833	1900
20N	0518	0544	0606	1810	1832	1858
15N	0519	0544	0606	1811	1832	1857
10N	0520	0544	0605	1811	1832	1856
05N	0520	0544	0605	1811	1832	1856
00N	0520	0544	0605	1811	1832	1856
05S	0520	0544	0604	1812	1832	1856
10S	0519	0543	0604	1812	1833	1857
15S	0517	0542	0604	1812	1834	1858
20S	0516	0541	0603	1813	1835	1900
25S	0513	0540	0603	1813	1836	1902
30S	0510	0538	0602	1813	1837	1905
35S	0507	0536	0601	1814	1839	1909
40S	0502	0534	0601	1815	1842	1913
45S	0456	0530	0600	1816	1845	1919
50S	0448	0526	0558	1817	1849	1927
55S	0437	0521	0557	1818	1854	1937
60S	0422	0513	0555	1820	1901	1952

MOON: RISE / SET | UTC HHMM

Lat	Day 17		Day 18		Day 19	
72N	0704	1513	0624	1734	0548	1956
70N	0648	1527	0618	1736	0551	1947
68N	0635	1537	0613	1737	0553	1939
66N	0624	1546	0609	1739	0555	1933
64N	0615	1554	0606	1740	0556	1928
62N	0607	1600	0603	1741	0558	1924
60N	0601	1605	0600	1742	0559	1920
58N	0555	1610	0558	1742	0600	1917
56N	0549	1614	0555	1743	0601	1914
54N	0544	1618	0554	1743	0602	1911
52N	0540	1621	0552	1744	0603	1909
50N	0536	1624	0550	1744	0604	1906
45N	0527	1631	0547	1745	0606	1902
40N	0520	1636	0544	1746	0607	1858
35N	0514	1641	0541	1747	0608	1854
30N	0508	1645	0539	1748	0609	1851
25N	0503	1649	0537	1748	0610	1849
20N	0459	1652	0535	1749	0611	1846
15N	0454	1655	0533	1749	0612	1844
10N	0450	1658	0532	1749	0613	1842
05N	0446	1701	0530	1750	0614	1840
00N	0442	1704	0528	1750	0615	1837
05S	0438	1707	0527	1751	0616	1835
10S	0434	1710	0525	1751	0617	1833
15S	0430	1713	0523	1751	0617	1831
20S	0425	1716	0522	1752	0618	1829
25S	0421	1719	0520	1752	0619	1826
30S	0415	1722	0518	1753	0621	1824
35S	0410	1726	0515	1753	0622	1821
40S	0403	1731	0513	1754	0623	1817
45S	0356	1736	0510	1754	0625	1814
50S	0346	1742	0506	1755	0627	1809
55S	0335	1749	0502	1756	0630	1804
60S	0319	1758	0456	1757	0633	1756

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | MARCH 20 - MARCH 22

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
20	00	177 32.6	161 41.7	N05 47.2	192 08.3	S07 24.1	070 59.3	N22 55.8	172 59.0	S00 20.4
	01	192 35.0	176 41.3	N05 48.5	207 09.0	S07 23.4	086 01.6	N22 55.8	188 01.1	S00 20.2
	02	207 37.5	191 40.9	N05 49.7	222 09.6	S07 22.6	101 04.0	N22 55.8	203 03.3	S00 20.1
	03	222 40.0	206 40.6	N05 51.0	237 10.2	S07 21.8	116 06.4	N22 55.8	218 05.5	S00 20.0
	04	237 42.4	221 40.2	N05 52.3	252 10.9	S07 21.1	131 08.8	N22 55.8	233 07.7	S00 19.9
	05	252 44.9	236 39.8	N05 53.5	267 11.5	S07 20.3	146 11.2	N22 55.8	248 09.9	S00 19.7
	06	267 47.4	251 39.4	N05 54.8	282 12.2	S07 19.6	161 13.6	N22 55.8	263 12.0	S00 19.6
	07	282 49.8	266 39.0	N05 56.0	297 12.8	S07 18.8	176 16.0	N22 55.8	278 14.2	S00 19.5
	08	297 52.3	281 38.7	N05 57.3	312 13.4	S07 18.0	191 18.3	N22 55.8	293 16.4	S00 19.4
	09	312 54.8	296 38.3	N05 58.6	327 14.1	S07 17.3	206 20.7	N22 55.8	308 18.6	S00 19.2
	10	327 57.2	311 37.9	N05 59.8	342 14.7	S07 16.5	221 23.1	N22 55.8	323 20.7	S00 19.1
	11	342 59.7	326 37.5	N06 01.1	357 15.3	S07 15.7	236 25.5	N22 55.8	338 22.9	S00 19.0
	12	358 02.1	341 37.1	N06 02.3	012 16.0	S07 15.0	251 27.9	N22 55.8	353 25.1	S00 18.9
	13	013 04.6	356 36.8	N06 03.6	027 16.6	S07 14.2	266 30.3	N22 55.8	008 27.3	S00 18.7
	14	028 07.1	011 36.4	N06 04.8	042 17.3	S07 13.5	281 32.6	N22 55.7	023 29.5	S00 18.6
	15	043 09.5	026 36.0	N06 06.1	057 17.9	S07 12.7	296 35.0	N22 55.7	038 31.6	S00 18.5
	16	058 12.0	041 35.6	N06 07.4	072 18.5	S07 11.9	311 37.4	N22 55.7	053 33.8	S00 18.4
	17	073 14.5	056 35.2	N06 08.6	087 19.2	S07 11.2	326 39.8	N22 55.7	068 36.0	S00 18.3
	18	088 16.9	071 34.9	N06 09.9	102 19.8	S07 10.4	341 42.2	N22 55.7	083 38.2	S00 18.1
	19	103 19.4	086 34.5	N06 11.1	117 20.5	S07 09.6	356 44.5	N22 55.7	098 40.3	S00 18.0
	20	118 21.9	101 34.1	N06 12.4	132 21.1	S07 08.9	011 46.9	N22 55.7	113 42.5	S00 17.9
	21	133 24.3	116 33.7	N06 13.6	147 21.7	S07 08.1	026 49.3	N22 55.7	128 44.7	S00 17.8
	22	148 26.8	131 33.3	N06 14.9	162 22.4	S07 07.4	041 51.7	N22 55.7	143 46.9	S00 17.6
	23	163 29.2	146 33.0	N06 16.2	177 23.0	S07 06.6	056 54.1	N22 55.7	158 49.1	S00 17.5
21	00	178 31.7	161 32.6	N06 17.4	192 23.7	S07 05.8	071 56.4	N22 55.7	173 51.2	S00 17.4
	01	193 34.2	176 32.2	N06 18.7	207 24.3	S07 05.1	086 58.8	N22 55.7	188 53.4	S00 17.3
	02	208 36.6	191 31.8	N06 19.9	222 24.9	S07 04.3	102 01.2	N22 55.7	203 55.6	S00 17.1
	03	223 39.1	206 31.4	N06 21.2	237 25.6	S07 03.5	117 03.6	N22 55.7	218 57.8	S00 17.0
	04	238 41.6	221 31.0	N06 22.4	252 26.2	S07 02.8	132 05.9	N22 55.6	233 59.9	S00 16.9
	05	253 44.0	236 30.7	N06 23.7	267 26.9	S07 02.0	147 08.3	N22 55.6	249 02.1	S00 16.8
	06	268 46.5	251 30.3	N06 24.9	282 27.5	S07 01.2	162 10.7	N22 55.6	264 04.3	S00 16.7
	07	283 49.0	266 29.9	N06 26.2	297 28.1	S07 00.5	177 13.1	N22 55.6	279 06.5	S00 16.5
	08	298 51.4	281 29.5	N06 27.4	312 28.8	S06 59.7	192 15.4	N22 55.6	294 08.7	S00 16.4
	09	313 53.9	296 29.1	N06 28.7	327 29.4	S06 58.9	207 17.8	N22 55.6	309 10.8	S00 16.3
	10	328 56.4	311 28.7	N06 30.0	342 30.1	S06 58.2	222 20.2	N22 55.6	324 13.0	S00 16.2
	11	343 58.8	326 28.4	N06 31.2	357 30.7	S06 57.4	237 22.6	N22 55.6	339 15.2	S00 16.0
	12	359 01.3	341 28.0	N06 32.5	012 31.4	S06 56.7	252 24.9	N22 55.6	354 17.4	S00 15.9
	13	014 03.7	356 27.6	N06 33.7	027 32.0	S06 55.9	267 27.3	N22 55.6	009 19.5	S00 15.8
	14	029 06.2	011 27.2	N06 35.0	042 32.6	S06 55.1	282 29.7	N22 55.6	024 21.7	S00 15.7
	15	044 08.7	026 26.8	N06 36.2	057 33.3	S06 54.4	297 32.1	N22 55.6	039 23.9	S00 15.5
	16	059 11.1	041 26.4	N06 37.5	072 33.9	S06 53.6	312 34.4	N22 55.6	054 26.1	S00 15.4
	17	074 13.6	056 26.1	N06 38.7	087 34.6	S06 52.8	327 36.8	N22 55.5	069 28.3	S00 15.3
	18	089 16.1	071 25.7	N06 40.0	102 35.2	S06 52.1	342 39.2	N22 55.5	084 30.4	S00 15.2
	19	104 18.5	086 25.3	N06 41.2	117 35.8	S06 51.3	357 41.6	N22 55.5	099 32.6	S00 15.1
	20	119 21.0	101 24.9	N06 42.5	132 36.5	S06 50.5	012 43.9	N22 55.5	114 34.8	S00 14.9
	21	134 23.5	116 24.5	N06 43.7	147 37.1	S06 49.8	027 46.3	N22 55.5	129 37.0	S00 14.8
	22	149 25.9	131 24.1	N06 45.0	162 37.8	S06 49.0	042 48.7	N22 55.5	144 39.1	S00 14.7
	23	164 28.4	146 23.7	N06 46.2	177 38.4	S06 48.2	057 51.0	N22 55.5	159 41.3	S00 14.6
22	00	179 30.9	161 23.3	N06 47.5	192 39.1	S06 47.5	072 53.4	N22 55.5	174 43.5	S00 14.4
	01	194 33.3	176 23.0	N06 48.7	207 39.7	S06 46.7	087 55.8	N22 55.5	189 45.7	S00 14.3
	02	209 35.8	191 22.6	N06 50.0	222 40.3	S06 45.9	102 58.1	N22 55.5	204 47.9	S00 14.2
	03	224 38.2	206 22.2	N06 51.2	237 41.0	S06 45.2	118 00.5	N22 55.5	219 50.0	S00 14.1
	04	239 40.7	221 21.8	N06 52.5	252 41.6	S06 44.4	133 02.9	N22 55.5	234 52.2	S00 13.9
	05	254 43.2	236 21.4	N06 53.7	267 42.3	S06 43.6	148 05.2	N22 55.5	249 54.4	S00 13.8
	06	269 45.6	251 21.0	N06 55.0	282 42.9	S06 42.9	163 07.6	N22 55.4	264 56.6	S00 13.7
	07	284 48.1	266 20.6	N06 56.2	297 43.6	S06 42.1	178 10.0	N22 55.4	279 58.7	S00 13.6
	08	299 50.6	281 20.3	N06 57.5	312 44.2	S06 41.3	193 12.3	N22 55.4	295 00.9	S00 13.5
	09	314 53.0	296 19.9	N06 58.7	327 44.9	S06 40.6	208 14.7	N22 55.4	310 03.1	S00 13.3
	10	329 55.5	311 19.5	N07 00.0	342 45.5	S06 39.8	223 17.1	N22 55.4	325 05.3	S00 13.2
	11	344 58.0	326 19.1	N07 01.2	357 46.1	S06 39.0	238 19.4	N22 55.4	340 07.5	S00 13.1
	12	000 00.4	341 18.7	N07 02.4	012 46.8	S06 38.3	253 21.8	N22 55.4	355 09.6	S00 13.0
	13	015 02.9	356 18.3	N07 03.7	027 47.4	S06 37.5	268 24.2	N22 55.4	010 11.8	S00 12.8
	14	030 05.3	011 17.9	N07 04.9	042 48.1	S06 36.7	283 26.5	N22 55.4	025 14.0	S00 12.7
	15	045 07.8	026 17.5	N07 06.2	057 48.7	S06 36.0	298 28.9	N22 55.4	040 16.2	S00 12.6
	16	060 10.3	041 17.1	N07 07.4	072 49.4	S06 35.2	313 31.3	N22 55.4	055 18.3	S00 12.5
	17	075 12.7	056 16.8	N07 08.7	087 50.0	S06 34.4	328 33.6	N22 55.4	070 20.5	S00 12.3
	18	090 15.2	071 16.4	N07 09.9	102 50.7	S06 33.7	343 36.0	N22 55.3	085 22.7	S00 12.2
	19	105 17.7	086 16.0	N07 11.2	117 51.3	S06 32.9	358 38.4	N22 55.3	100 24.9	S00 12.1
	20	120 20.1	101 15.6	N07 12.4	132 51.9	S06 32.1	013 40.7	N22 55.3	115 27.1	S00 12.0
	21	135 22.6	116 15.2	N07 13.7	147 52.6	S06 31.4	028 43.1	N22 55.3	130 29.2	S00 11.9
	22	150 25.1	131 14.8	N07 14.9	162 53.2	S06 30.6	043 45.5	N22 55.3	145 31.4	S00 11.7
	23	165 27.5	146 14.4	N07 16.1	177 53.9	S06 29.8	058 47.8	N22 55.3	160 33.6	S00 11.6

Venus	Mars	Jupiter	Saturn
20: v -0.4 d 1.3	20: v 0.6 d 0.8	20: v 2.4 d 0.0	20: v 2.2 d 0.1
21: v -0.4 d 1.3	21: v 0.6 d 0.8	21: v 2.4 d 0.0	21: v 2.2 d 0.1
22: v -0.4 d 1.2	22: v 0.6 d 0.8	22: v 2.4 d 0.0	22: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.3	S40 12.2
Achernar	335 19.9	S57 06.3
Acrux	172 58.3	S63 14.7
Adhara	255 05.0	S29 00.7
Al Na'ir	027 32.1	S46 50.0
Aldebaran	290 38.6	N16 33.7
Alioth	166 11.5	N55 48.9
Alkaid	152 50.8	N49 10.7
Alnilam	275 36.8	S01 11.2
Alphard	217 46.5	S08 46.5
Alphecca	126 02.7	N26 37.3
Alpheratz	357 34.1	N29 14.0
Altair	061 59.1	N08 56.1
Ankaa	353 06.6	S42 09.9
Antares	112 14.5	S26 29.4
Arcturus	145 46.7	N19 02.5
Atria	107 07.7	S69 04.2
Avior	234 14.0	S59 35.9
Bellatrix	278 21.9	N06 22.3
Betelgeuse	270 51.0	N07 24.6
Canopus	263 51.9	S52 42.8
Capella	280 20.5	N46 01.6
Deneb	049 25.4	N45 22.2
Denebola	182 23.6	N14 25.4
Diphda	348 46.6	S17 50.7
Dubhe	193 39.1	N61 36.5
Elnath	278 00.7	N28 37.8
Eltanin	090 41.7	N51 28.7
Enif	033 38.1	N09 59.6
Fomalhaut	015 13.8	S29 29.0
Gacrux	171 50.0	S57 15.7
Gienah	175 42.3	S17 41.4
Hadar	148 34.1	S60 29.9
Hamal	327 50.4	N23 35.2
Kaus Australi	083 31.2	S34 22.3
Kochab	137 18.9	N74 02.5
Markab	013 29.2	N15 20.7
Menkar	314 05.3	N04 11.5
Menkent	147 56.1	S36 30.0
Miaplacidus	221 37.4	S69 49.7
Mirfak	308 27.1	N49 57.4
Nunki	075 46.6	S26 15.8
Peacock	053 04.5	S56 38.9
Polaris	313 52.2	N89 22.7
Pollux	243 15.9	N27 57.8
Procyon	244 49.7	N05 09.4
Rasalhague	095 57.6	N12 32.2
Regulus	207 33.1	N11 50.2
Rigel	281 03.0	S08 10.4
Rigil Kentaur	139 38.5	S60 56.5
Sabik	102 01.6	S15 45.5
Schedar	349 30.5	N56 40.9
Shaula	096 09.0	S37 07.3
Sirius	258 25.3	S16 45.3
Spica	158 21.0	S11 18.0
Suhail	222 45.3	S43 32.5
Vega	080 32.6	N38 48.1
Zubenelgenubi	136 54.7	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	342 26.7	1314
Mars	013 30.1	1110
Jupiter	253 23.7	1909
Saturn	355 16.1	1223

2026 | MARCH 20 - MARCH 22

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
20	00	178 06.3	S00 14.6	167 52.6	N07 15.3	59.2	11.6	16.4
	01	193 06.4	S00 13.6	182 23.2	N07 31.8	59.2	11.6	16.4
	02	208 06.6	S00 12.6	196 53.8	N07 48.2	59.3	11.5	16.4
	03	223 06.8	S00 11.6	211 24.3	N08 04.5	59.3	11.4	16.3
	04	238 07.0	S00 10.6	225 54.7	N08 20.9	59.3	11.4	16.3
	05	253 07.2	S00 09.6	240 25.1	N08 37.2	59.3	11.3	16.3
	06	268 07.4	S00 08.7	254 55.4	N08 53.5	59.3	11.2	16.2
	07	283 07.5	S00 07.7	269 25.6	N09 09.7	59.3	11.2	16.2
	08	298 07.7	S00 06.7	283 55.8	N09 25.9	59.4	11.1	16.2
	09	313 07.9	S00 05.7	298 25.9	N09 42.0	59.4	11.0	16.1
	10	328 08.1	S00 04.7	312 56.0	N09 58.2	59.4	11.0	16.1
	11	343 08.3	S00 03.7	327 25.9	N10 14.2	59.4	10.9	16.0
	12	358 08.5	S00 02.7	341 55.8	N10 30.2	59.4	10.8	16.0
	13	013 08.6	S00 01.7	356 25.7	N10 46.2	59.4	10.8	15.9
	14	028 08.8	S00 00.8	010 55.4	N11 02.1	59.5	10.7	15.9
	15	043 09.0	N00 00.2	025 25.1	N11 18.0	59.5	10.6	15.8
	16	058 09.2	N00 01.2	039 54.7	N11 33.8	59.5	10.5	15.8
	17	073 09.4	N00 02.2	054 24.2	N11 49.6	59.5	10.5	15.7
	18	088 09.6	N00 03.2	068 53.7	N12 05.3	59.5	10.4	15.6
	19	103 09.7	N00 04.2	083 23.1	N12 20.9	59.5	10.3	15.6
	20	118 09.9	N00 05.2	097 52.4	N12 36.5	59.5	10.2	15.5
	21	133 10.1	N00 06.2	112 21.6	N12 52.0	59.5	10.1	15.5
	22	148 10.3	N00 07.2	126 50.8	N13 07.5	59.6	10.1	15.4
	23	163 10.5	N00 08.1	141 19.8	N13 22.9	59.6	10.0	15.3
21	00	178 10.7	N00 09.1	155 48.8	N13 38.2	59.6	9.9	15.2
	01	193 10.8	N00 10.1	170 17.7	N13 53.4	59.6	9.8	15.2
	02	208 11.0	N00 11.1	184 46.5	N14 08.6	59.6	9.7	15.1
	03	223 11.2	N00 12.1	199 15.2	N14 23.7	59.6	9.6	15.0
	04	238 11.4	N00 13.1	213 43.9	N14 38.7	59.6	9.6	14.9
	05	253 11.6	N00 14.1	228 12.4	N14 53.7	59.6	9.5	14.9
	06	268 11.8	N00 15.1	242 40.9	N15 08.6	59.6	9.4	14.8
	07	283 12.0	N00 16.0	257 09.3	N15 23.3	59.6	9.3	14.7
	08	298 12.1	N00 17.0	271 37.6	N15 38.0	59.7	9.2	14.6
	09	313 12.3	N00 18.0	286 05.8	N15 52.7	59.7	9.1	14.5
	10	328 12.5	N00 19.0	300 33.9	N16 07.2	59.7	9.0	14.4
	11	343 12.7	N00 20.0	315 02.0	N16 21.6	59.7	8.9	14.4
	12	358 12.9	N00 21.0	329 29.9	N16 36.0	59.7	8.8	14.3
	13	013 13.1	N00 22.0	343 57.7	N16 50.3	59.7	8.8	14.2
	14	028 13.3	N00 23.0	358 25.5	N17 04.4	59.7	8.7	14.1
	15	043 13.4	N00 24.0	012 53.1	N17 18.5	59.7	8.6	14.0
	16	058 13.6	N00 24.9	027 20.7	N17 32.5	59.7	8.5	13.9
	17	073 13.8	N00 25.9	041 48.2	N17 46.3	59.7	8.4	13.8
	18	088 14.0	N00 26.9	056 15.5	N18 00.1	59.7	8.3	13.7
	19	103 14.2	N00 27.9	070 42.8	N18 13.8	59.7	8.2	13.6
	20	118 14.4	N00 28.9	085 10.0	N18 27.3	59.7	8.1	13.4
	21	133 14.6	N00 29.9	099 37.1	N18 40.8	59.7	8.0	13.3
	22	148 14.7	N00 30.9	114 04.1	N18 54.1	59.7	7.9	13.2
	23	163 14.9	N00 31.9	128 31.0	N19 07.3	59.7	7.8	13.1
22	00	178 15.1	N00 32.8	142 57.8	N19 20.4	59.8	7.7	13.0
	01	193 15.3	N00 33.8	157 24.5	N19 33.4	59.8	7.6	12.9
	02	208 15.5	N00 34.8	171 51.1	N19 46.3	59.8	7.5	12.8
	03	223 15.7	N00 35.8	186 17.6	N19 59.1	59.8	7.4	12.6
	04	238 15.9	N00 36.8	200 44.0	N20 11.7	59.8	7.3	12.5
	05	253 16.0	N00 37.8	215 10.3	N20 24.2	59.8	7.2	12.4
	06	268 16.2	N00 38.8	229 36.6	N20 36.6	59.8	7.1	12.3
	07	283 16.4	N00 39.8	244 02.7	N20 48.9	59.8	7.0	12.1
	08	298 16.6	N00 40.7	258 28.7	N21 01.0	59.8	6.9	12.0
	09	313 16.8	N00 41.7	272 54.6	N21 13.0	59.8	6.8	11.9
	10	328 17.0	N00 42.7	287 20.5	N21 24.9	59.8	6.7	11.7
	11	343 17.2	N00 43.7	301 46.2	N21 36.6	59.8	6.6	11.6
	12	358 17.3	N00 44.7	316 11.8	N21 48.3	59.8	6.5	11.5
	13	013 17.5	N00 45.7	330 37.4	N21 59.7	59.8	6.4	11.3
	14	028 17.7	N00 46.7	345 02.8	N22 11.0	59.8	6.3	11.2
	15	043 17.9	N00 47.6	359 28.2	N22 22.2	59.8	6.3	11.0
	16	058 18.1	N00 48.6	013 53.4	N22 33.3	59.8	6.2	10.9
	17	073 18.3	N00 49.6	028 18.6	N22 44.2	59.8	6.1	10.8
	18	088 18.5	N00 50.6	042 43.7	N22 54.9	59.8	6.0	10.6
	19	103 18.6	N00 51.6	057 08.6	N23 05.5	59.8	5.9	10.5
	20	118 18.8	N00 52.6	071 33.5	N23 16.0	59.8	5.8	10.3
	21	133 19.0	N00 53.6	085 58.3	N23 26.3	59.8	5.7	10.2
	22	148 19.2	N00 54.6	100 23.0	N23 36.5	59.8	5.6	10.0
	23	163 19.4	N00 55.5	114 47.6	N23 46.5	59.8	5.5	9.8

Day 20 noon Sun: v 0.2 d 1.0 SD 16.1 | Moon SD 16.2

Day 21 noon Sun: v 0.2 d 1.0 SD 16.1 | Moon SD 16.3

Day 22 noon Sun: v 0.2 d 1.0 SD 16.1 | Moon SD 16.3

SUN: MARCH 21 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0315	0445	0553	1823	1932	2105
70N	0335	0453	0555	1822	1924	2044
68N	0350	0500	0556	1820	1917	2028
66N	0402	0505	0557	1819	1911	2015
64N	0412	0510	0558	1818	1906	2005
62N	0420	0514	0558	1818	1902	1956
60N	0427	0517	0559	1817	1859	1949
58N	0433	0520	0559	1816	1856	1943
56N	0438	0523	0600	1816	1853	1937
54N	0443	0525	0600	1815	1851	1933
52N	0447	0527	0601	1815	1849	1929
50N	0451	0529	0601	1814	1847	1925
45N	0458	0532	0602	1814	1843	1917
40N	0503	0535	0602	1813	1840	1912
35N	0508	0537	0602	1812	1838	1907
30N	0511	0539	0603	1812	1836	1904
25N	0514	0540	0603	1812	1834	1901
20N	0516	0541	0603	1811	1833	1859
15N	0517	0542	0603	1811	1832	1857
10N	0518	0543	0604	1811	1832	1856
05N	0519	0543	0604	1811	1831	1855
00N	0519	0543	0604	1810	1831	1855
05S	0519	0543	0604	1810	1831	1855
10S	0519	0543	0604	1810	1831	1855
15S	0518	0543	0604	1810	1831	1856
20S	0516	0542	0604	1810	1832	1857
25S	0515	0541	0604	1810	1833	1859
30S	0512	0540	0604	1810	1834	1902
35S	0509	0539	0604	1810	1835	1905
40S	0505	0537	0604	1810	1837	1908
45S	0500	0534	0604	1810	1839	1913
50S	0453	0531	0603	1810	1842	1920
55S	0444	0527	0603	1810	1846	1929
60S	0431	0521	0602	1811	1852	1942

MOON: RISE / SET | UTC HHMM

Lat	Day 20		Day 21		Day 22	
72N	0509	2237	0414	--	--	--
70N	0521	2211	0443	--	0305	0141
68N	0531	2151	0505	--	0418	0029
66N	0540	2135	0522	2353	0456	--
64N	0547	2122	0536	2327	0523	--
62N	0553	2112	0549	2307	0544	--
60N	0559	2103	0559	2251	0601	--
58N	0604	2055	0608	2238	0615	--
56N	0608	2048	0616	2226	0628	--
54N	0612	2042	0623	2216	0639	2352
52N	0615	2036	0630	2207	0648	2339
50N	0619	2031	0636	2159	0657	2328
45N	0626	2020	0648	2142	0716	2305
40N	0632	2012	0659	2128	0731	2246
35N	0637	2004	0708	2116	0744	2230
30N	0641	1957	0716	2106	0755	2217
25N	0645	1951	0723	2057	0806	2205
20N	0649	1946	0730	2049	0815	2154
15N	0653	1941	0736	2041	0824	2144
10N	0656	1936	0742	2033	0832	2134
05N	0700	1931	0748	2026	0841	2125
00N	0703	1927	0754	2019	0849	2116
05S	0706	1922	0800	2012	0857	2107
10S	0710	1918	0806	2005	0905	2058
15S	0713	1913	0812	1958	0914	2048
20S	0717	1908	0818	1950	0923	2038
25S	0721	1902	0825	1942	0932	2028
30S	0725	1857	0833	1933	0943	2016
35S	0730	1850	0841	1924	0955	2003
40S	0736	1843	0851	1912	1009	1948
45S	0743	1835	0903	1859	1025	1930
50S	0750	1825	0917	1843	1046	1908
55S	0800	1812	0935	1823	1113	1840
60S	0813	1756	0959	1756	1152	1759

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | MARCH 23 - MARCH 25

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
23	00	180 30.0	161 14.0	N07 17.4	192 54.5	S06 29.0	073 50.2	N22 55.3	175 35.8	S00 11.5
	01	195 32.5	176 13.6	N07 18.6	207 55.2	S06 28.3	088 52.5	N22 55.3	190 37.9	S00 11.4
	02	210 34.9	191 13.2	N07 19.9	222 55.8	S06 27.5	103 54.9	N22 55.3	205 40.1	S00 11.2
	03	225 37.4	206 12.9	N07 21.1	237 56.5	S06 26.7	118 57.3	N22 55.3	220 42.3	S00 11.1
	04	240 39.8	221 12.5	N07 22.4	252 57.1	S06 26.0	133 59.6	N22 55.3	235 44.5	S00 11.0
	05	255 42.3	236 12.1	N07 23.6	267 57.8	S06 25.2	149 02.0	N22 55.2	250 46.7	S00 10.9
	06	270 44.8	251 11.7	N07 24.8	282 58.4	S06 24.4	164 04.3	N22 55.2	265 48.8	S00 10.7
	07	285 47.2	266 11.3	N07 26.1	297 59.1	S06 23.7	179 06.7	N22 55.2	280 51.0	S00 10.6
	08	300 49.7	281 10.9	N07 27.3	312 59.7	S06 22.9	194 09.1	N22 55.2	295 53.2	S00 10.5
	09	315 52.2	296 10.5	N07 28.6	328 00.3	S06 22.1	209 11.4	N22 55.2	310 55.4	S00 10.4
	10	330 54.6	311 10.1	N07 29.8	343 01.0	S06 21.4	224 13.8	N22 55.2	325 57.5	S00 10.3
	11	345 57.1	326 09.7	N07 31.0	358 01.6	S06 20.6	239 16.1	N22 55.2	340 59.7	S00 10.1
	12	000 59.6	341 09.3	N07 32.3	013 02.3	S06 19.8	254 18.5	N22 55.2	356 01.9	S00 10.0
	13	016 02.0	356 08.9	N07 33.5	028 02.9	S06 19.1	269 20.8	N22 55.2	011 04.1	S00 09.9
	14	031 04.5	011 08.5	N07 34.8	043 03.6	S06 18.3	284 23.2	N22 55.2	026 06.3	S00 09.8
	15	046 07.0	026 08.1	N07 36.0	058 04.2	S06 17.5	299 25.6	N22 55.2	041 08.4	S00 09.6
	16	061 09.4	041 07.7	N07 37.2	073 04.9	S06 16.7	314 27.9	N22 55.1	056 10.6	S00 09.5
	17	076 11.9	056 07.3	N07 38.5	088 05.5	S06 16.0	329 30.3	N22 55.1	071 12.8	S00 09.4
	18	091 14.3	071 07.0	N07 39.7	103 06.2	S06 15.2	344 32.6	N22 55.1	086 15.0	S00 09.3
	19	106 16.8	086 06.6	N07 40.9	118 06.8	S06 14.4	359 35.0	N22 55.1	101 17.1	S00 09.1
	20	121 19.3	101 06.2	N07 42.2	133 07.5	S06 13.7	014 37.3	N22 55.1	116 19.3	S00 09.0
	21	136 21.7	116 05.8	N07 43.4	148 08.1	S06 12.9	029 39.7	N22 55.1	131 21.5	S00 08.9
	22	151 24.2	131 05.4	N07 44.7	163 08.8	S06 12.1	044 42.0	N22 55.1	146 23.7	S00 08.8
	23	166 26.7	146 05.0	N07 45.9	178 09.4	S06 11.4	059 44.4	N22 55.1	161 25.8	S00 08.7
24	00	181 29.1	161 04.6	N07 47.1	193 10.1	S06 10.6	074 46.7	N22 55.1	176 28.0	S00 08.5
	01	196 31.6	176 04.2	N07 48.4	208 10.7	S06 09.8	089 49.1	N22 55.1	191 30.2	S00 08.4
	02	211 34.1	191 03.8	N07 49.6	223 11.4	S06 09.0	104 51.4	N22 55.0	206 32.4	S00 08.3
	03	226 36.5	206 03.4	N07 50.8	238 12.0	S06 08.3	119 53.8	N22 55.0	221 34.6	S00 08.2
	04	241 39.0	221 03.0	N07 52.1	253 12.7	S06 07.5	134 56.1	N22 55.0	236 36.7	S00 08.0
	05	256 41.5	236 02.6	N07 53.3	268 13.3	S06 06.7	149 58.5	N22 55.0	251 38.9	S00 07.9
	06	271 43.9	251 02.2	N07 54.5	283 14.0	S06 06.0	165 00.9	N22 55.0	266 41.1	S00 07.8
	07	286 46.4	266 01.8	N07 55.8	298 14.6	S06 05.2	180 03.2	N22 55.0	281 43.3	S00 07.7
	08	301 48.8	281 01.4	N07 57.0	313 15.3	S06 04.4	195 05.6	N22 55.0	296 45.4	S00 07.5
	09	316 51.3	296 01.0	N07 58.2	328 15.9	S06 03.6	210 07.9	N22 55.0	311 47.6	S00 07.4
	10	331 53.8	311 00.6	N07 59.5	343 16.6	S06 02.9	225 10.3	N22 55.0	326 49.8	S00 07.3
	11	346 56.2	326 00.2	N08 00.7	358 17.2	S06 02.1	240 12.6	N22 55.0	341 52.0	S00 07.2
	12	001 58.7	340 59.8	N08 01.9	013 17.9	S06 01.3	255 14.9	N22 54.9	356 54.2	S00 07.1
	13	017 01.2	355 59.4	N08 03.2	028 18.5	S06 00.6	270 17.3	N22 54.9	011 56.3	S00 06.9
	14	032 03.6	010 59.0	N08 04.4	043 19.2	S05 59.8	285 19.6	N22 54.9	026 58.5	S00 06.8
	15	047 06.1	025 58.6	N08 05.6	058 19.8	S05 59.0	300 22.0	N22 54.9	042 00.7	S00 06.7
	16	062 08.6	040 58.2	N08 06.9	073 20.5	S05 58.2	315 24.3	N22 54.9	057 02.9	S00 06.6
	17	077 11.0	055 57.8	N08 08.1	088 21.1	S05 57.5	330 26.7	N22 54.9	072 05.0	S00 06.4
	18	092 13.5	070 57.4	N08 09.3	103 21.8	S05 56.7	345 29.0	N22 54.9	087 07.2	S00 06.3
	19	107 15.9	085 57.0	N08 10.6	118 22.4	S05 55.9	000 31.4	N22 54.9	102 09.4	S00 06.2
	20	122 18.4	100 56.6	N08 11.8	133 23.1	S05 55.2	015 33.7	N22 54.9	117 11.6	S00 06.1
	21	137 20.9	115 56.2	N08 13.0	148 23.7	S05 54.4	030 36.1	N22 54.8	132 13.8	S00 05.9
	22	152 23.3	130 55.8	N08 14.2	163 24.4	S05 53.6	045 38.4	N22 54.8	147 15.9	S00 05.8
	23	167 25.8	145 55.4	N08 15.5	178 25.0	S05 52.8	060 40.8	N22 54.8	162 18.1	S00 05.7
25	00	182 28.3	160 55.0	N08 16.7	193 25.7	S05 52.1	075 43.1	N22 54.8	177 20.3	S00 05.6
	01	197 30.7	175 54.6	N08 17.9	208 26.3	S05 51.3	090 45.5	N22 54.8	192 22.5	S00 05.5
	02	212 33.2	190 54.2	N08 19.2	223 27.0	S05 50.5	105 47.8	N22 54.8	207 24.6	S00 05.3
	03	227 35.7	205 53.8	N08 20.4	238 27.6	S05 49.8	120 50.1	N22 54.8	222 26.8	S00 05.2
	04	242 38.1	220 53.4	N08 21.6	253 28.3	S05 49.0	135 52.5	N22 54.8	237 29.0	S00 05.1
	05	257 40.6	235 53.0	N08 22.8	268 28.9	S05 48.2	150 54.8	N22 54.8	252 31.2	S00 05.0
	06	272 43.1	250 52.6	N08 24.1	283 29.6	S05 47.4	165 57.2	N22 54.7	267 33.3	S00 04.8
	07	287 45.5	265 52.2	N08 25.3	298 30.2	S05 46.7	180 59.5	N22 54.7	282 35.5	S00 04.7
	08	302 48.0	280 51.8	N08 26.5	313 30.9	S05 45.9	196 01.9	N22 54.7	297 37.7	S00 04.6
	09	317 50.4	295 51.4	N08 27.7	328 31.5	S05 45.1	211 04.2	N22 54.7	312 39.9	S00 04.5
	10	332 52.9	310 51.0	N08 29.0	343 32.2	S05 44.3	226 06.5	N22 54.7	327 42.1	S00 04.3
	11	347 55.4	325 50.6	N08 30.2	358 32.8	S05 43.6	241 08.9	N22 54.7	342 44.2	S00 04.2
	12	002 57.8	340 50.2	N08 31.4	013 33.5	S05 42.8	256 11.2	N22 54.7	357 46.4	S00 04.1
	13	018 00.3	355 49.8	N08 32.6	028 34.1	S05 42.0	271 13.6	N22 54.7	012 48.6	S00 04.0
	14	033 02.8	010 49.4	N08 33.9	043 34.8	S05 41.3	286 15.9	N22 54.7	027 50.8	S00 03.9
	15	048 05.2	025 49.0	N08 35.1	058 35.5	S05 40.5	301 18.2	N22 54.6	042 52.9	S00 03.7
	16	063 07.7	040 48.6	N08 36.3	073 36.1	S05 39.7	316 20.6	N22 54.6	057 55.1	S00 03.6
	17	078 10.2	055 48.2	N08 37.5	088 36.8	S05 38.9	331 22.9	N22 54.6	072 57.3	S00 03.5
	18	093 12.6	070 47.8	N08 38.8	103 37.4	S05 38.2	346 25.3	N22 54.6	087 59.5	S00 03.4
	19	108 15.1	085 47.4	N08 40.0	118 38.1	S05 37.4	001 27.6	N22 54.6	103 01.7	S00 03.2
	20	123 17.6	100 47.0	N08 41.2	133 38.7	S05 36.6	016 29.9	N22 54.6	118 03.8	S00 03.1
	21	138 20.0	115 46.5	N08 42.4	148 39.4	S05 35.8	031 32.3	N22 54.6	133 06.0	S00 03.0
	22	153 22.5	130 46.1	N08 43.6	163 40.0	S05 35.1	046 34.6	N22 54.6	148 08.2	S00 02.9
	23	168 24.9	145 45.7	N08 44.9	178 40.7	S05 34.3	061 36.9	N22 54.6	163 10.4	S00 02.8

Venus	Mars	Jupiter	Saturn
23: v -0.4 d 1.2	23: v 0.6 d 0.8	23: v 2.4 d 0.0	23: v 2.2 d 0.1
24: v -0.4 d 1.2	24: v 0.7 d 0.8	24: v 2.3 d 0.0	24: v 2.2 d 0.1
25: v -0.4 d 1.2	25: v 0.7 d 0.8	25: v 2.3 d 0.0	25: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.3	S40 12.1
Achernar	335 20.0	S57 06.3
Acrux	172 58.3	S63 14.7
Adhara	255 05.0	S29 00.7
Al Na'ir	027 32.0	S46 50.0
Aldebaran	290 38.6	N16 33.7
Alioth	166 11.5	N55 48.9
Alkaid	152 50.8	N49 10.7
Alnilam	275 36.8	S01 11.2
Alphard	217 46.5	S08 46.5
Alphecca	126 02.7	N26 37.3
Alpheratz	357 34.1	N29 14.0
Altair	061 59.1	N08 56.1
Ankaa	353 06.6	S42 09.9
Antares	112 14.5	S26 29.4
Arcturus	145 46.7	N19 02.5
Atria	107 07.6	S69 04.2
Avior	234 14.0	S59 35.9
Bellatrix	278 21.9	N06 22.3
Betelgeuse	270 51.0	N07 24.6
Canopus	263 51.9	S52 42.8
Capella	280 20.5	N46 01.6
Deneb	049 25.4	N45 22.1
Denebola	182 23.6	N14 25.4
Diphda	348 46.6	S17 50.7
Dubhe	193 39.1	N61 36.6
Elnath	278 00.7	N28 37.8
Eltanin	090 41.7	N51 28.7
Enif	033 38.1	N09 59.6
Fomalhaut	015 13.8	S29 29.0
Gacrux	171 50.0	S57 15.7
Gienah	175 42.2	S17 41.4
Hadar	148 34.1	S60 29.9
Hamal	327 50.4	N23 35.2
Kaus Australi	083 31.2	S34 22.3
Kochab	137 18.9	N74 02.5
Markab	013 29.2	N15 20.7
Menkar	314 05.3	N04 11.5
Menkent	147 56.1	S36 30.0
Miaplacidus	221 37.5	S69 49.7
Mirfak	308 27.2	N49 57.4
Nunki	075 46.6	S26 15.8
Peacock	053 04.5	S56 38.9
Polaris	313 53.0	N89 22.7
Pollux	243 16.0	N27 57.8
Procyon	244 49.7	N05 09.4
Rasalhague	095 57.6	N12 32.2
Regulus	207 33.1	N11 50.2
Rigel	281 03.0	S08 10.4
Rigil Kentaur	139 38.4	S60 56.6
Sabik	102 01.6	S15 45.5
Schedar	349 30.5	N56 40.9
Shaula	096 09.0	S37 07.3
Sirius	258 25.3	S16 45.3
Spica	158 21.0	S11 18.1
Suhail	222 45.3	S43 32.5
Vega	080 32.6	N38 48.1
Zubenelgenubi	136 54.7	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	339 01.1	1316
Mars	011 19.2	1107
Jupiter	253 16.2	1858
Saturn	354 55.5	1212

2026 | MARCH 23 - MARCH 25

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
23	00	178 19.6	N00 56.5	129 12.1	N23 56.3	59.8	5.4	9.7
	01	193 19.8	N00 57.5	143 36.5	N24 06.0	59.7	5.3	9.5
	02	208 20.0	N00 58.5	158 00.9	N24 15.5	59.7	5.3	9.4
	03	223 20.1	N00 59.5	172 25.1	N24 24.9	59.7	5.2	9.2
	04	238 20.3	N01 00.5	186 49.3	N24 34.1	59.7	5.1	9.0
	05	253 20.5	N01 01.5	201 13.4	N24 43.1	59.7	5.0	8.9
	06	268 20.7	N01 02.4	215 37.4	N24 52.0	59.7	4.9	8.7
	07	283 20.9	N01 03.4	230 01.3	N25 00.7	59.7	4.8	8.5
	08	298 21.1	N01 04.4	244 25.1	N25 09.2	59.7	4.8	8.4
	09	313 21.3	N01 05.4	258 48.9	N25 17.6	59.7	4.7	8.2
	10	328 21.5	N01 06.4	273 12.6	N25 25.8	59.7	4.6	8.0
	11	343 21.6	N01 07.4	287 36.2	N25 33.8	59.7	4.5	7.9
	12	358 21.8	N01 08.4	301 59.7	N25 41.7	59.7	4.4	7.7
	13	013 22.0	N01 09.3	316 23.1	N25 49.4	59.7	4.4	7.5
	14	028 22.2	N01 10.3	330 46.5	N25 56.9	59.7	4.3	7.3
	15	043 22.4	N01 11.3	345 09.8	N26 04.2	59.7	4.2	7.1
	16	058 22.6	N01 12.3	359 33.0	N26 11.3	59.7	4.2	7.0
	17	073 22.8	N01 13.3	013 56.2	N26 18.3	59.7	4.1	6.8
	18	088 23.0	N01 14.3	028 19.3	N26 25.1	59.7	4.0	6.6
	19	103 23.1	N01 15.3	042 42.4	N26 31.7	59.6	4.0	6.4
	20	118 23.3	N01 16.2	057 05.3	N26 38.1	59.6	3.9	6.2
	21	133 23.5	N01 17.2	071 28.3	N26 44.3	59.6	3.9	6.1
	22	148 23.7	N01 18.2	085 51.1	N26 50.4	59.6	3.8	5.9
	23	163 23.9	N01 19.2	100 13.9	N26 56.3	59.6	3.8	5.7
24	00	178 24.1	N01 20.2	114 36.7	N27 01.9	59.6	3.7	5.5
	01	193 24.3	N01 21.2	128 59.4	N27 07.4	59.6	3.6	5.3
	02	208 24.5	N01 22.2	143 22.0	N27 12.7	59.6	3.6	5.1
	03	223 24.6	N01 23.1	157 44.6	N27 17.8	59.6	3.6	4.9
	04	238 24.8	N01 24.1	172 07.2	N27 22.7	59.6	3.5	4.7
	05	253 25.0	N01 25.1	186 29.7	N27 27.5	59.6	3.5	4.5
	06	268 25.2	N01 26.1	200 52.2	N27 32.0	59.5	3.4	4.3
	07	283 25.4	N01 27.1	215 14.6	N27 36.4	59.5	3.4	4.2
	08	298 25.6	N01 28.1	229 37.0	N27 40.5	59.5	3.4	4.0
	09	313 25.8	N01 29.0	243 59.4	N27 44.5	59.5	3.3	3.8
	10	328 26.0	N01 30.0	258 21.7	N27 48.2	59.5	3.3	3.6
	11	343 26.1	N01 31.0	272 44.0	N27 51.8	59.5	3.3	3.4
	12	358 26.3	N01 32.0	287 06.3	N27 55.2	59.5	3.3	3.2
	13	013 26.5	N01 33.0	301 28.5	N27 58.3	59.5	3.2	3.0
	14	028 26.7	N01 34.0	315 50.8	N28 01.3	59.5	3.2	2.8
	15	043 26.9	N01 34.9	330 13.0	N28 04.1	59.4	3.2	2.6
	16	058 27.1	N01 35.9	344 35.2	N28 06.7	59.4	3.2	2.4
	17	073 27.3	N01 36.9	358 57.4	N28 09.1	59.4	3.2	2.2
	18	088 27.5	N01 37.9	013 19.5	N28 11.3	59.4	3.2	2.0
	19	103 27.6	N01 38.9	027 41.7	N28 13.3	59.4	3.2	1.8
	20	118 27.8	N01 39.9	042 03.9	N28 15.1	59.4	3.2	1.6
	21	133 28.0	N01 40.9	056 26.0	N28 16.7	59.4	3.2	1.4
	22	148 28.2	N01 41.8	070 48.2	N28 18.1	59.4	3.2	1.2
	23	163 28.4	N01 42.8	085 10.3	N28 19.3	59.3	3.2	1.0
25	00	178 28.6	N01 43.8	099 32.5	N28 20.3	59.3	3.2	0.8
	01	193 28.8	N01 44.8	113 54.7	N28 21.1	59.3	3.2	0.6
	02	208 29.0	N01 45.8	128 16.8	N28 21.7	59.3	3.2	0.4
	03	223 29.2	N01 46.8	142 39.0	N28 22.1	59.3	3.2	0.2
	04	238 29.3	N01 47.7	157 01.2	N28 22.3	59.3	3.2	0.0
	05	253 29.5	N01 48.7	171 23.4	N28 22.3	59.3	3.2	-0.2
	06	268 29.7	N01 49.7	185 45.7	N28 22.1	59.3	3.3	-0.4
	07	283 29.9	N01 50.7	200 08.0	N28 21.8	59.2	3.3	-0.6
	08	298 30.1	N01 51.7	214 30.2	N28 21.2	59.2	3.3	-0.8
	09	313 30.3	N01 52.7	228 52.6	N28 20.4	59.2	3.4	-1.0
	10	328 30.5	N01 53.6	243 14.9	N28 19.5	59.2	3.4	-1.2
	11	343 30.7	N01 54.6	257 37.3	N28 18.3	59.2	3.4	-1.4
	12	358 30.9	N01 55.6	271 59.7	N28 16.9	59.2	3.5	-1.5
	13	013 31.0	N01 56.6	286 22.2	N28 15.4	59.2	3.5	-1.7
	14	028 31.2	N01 57.6	300 44.7	N28 13.7	59.1	3.5	-1.9
	15	043 31.4	N01 58.5	315 07.2	N28 11.7	59.1	3.6	-2.1
	16	058 31.6	N01 59.5	329 29.8	N28 09.6	59.1	3.6	-2.3
	17	073 31.8	N02 00.5	343 52.4	N28 07.3	59.1	3.7	-2.5
	18	088 32.0	N02 01.5	358 15.1	N28 04.8	59.1	3.7	-2.7
	19	103 32.2	N02 02.5	012 37.9	N28 02.1	59.1	3.8	-2.9
	20	118 32.4	N02 03.5	027 00.6	N27 59.2	59.1	3.8	-3.1
	21	133 32.5	N02 04.4	041 23.5	N27 56.1	59.0	3.9	-3.3
	22	148 32.7	N02 05.4	055 46.4	N27 52.9	59.0	4.0	-3.4
	23	163 32.9	N02 06.4	070 09.4	N27 49.4	59.0	4.0	-3.6

Day 23 noon Sun: v 0.2 d 1.0 SD 16.0 | Moon SD 16.3

Day 24 noon Sun: v 0.2 d 1.0 SD 16.0 | Moon SD 16.2

Day 25 noon Sun: v 0.2 d 1.0 SD 16.0 | Moon SD 16.1

SUN: MARCH 24 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0253	0428	0538	1837	1947	2125
70N	0317	0439	0541	1834	1937	2100
68N	0334	0447	0543	1831	1928	2042
66N	0348	0453	0545	1829	1921	2027
64N	0400	0459	0547	1827	1915	2015
62N	0409	0504	0548	1826	1910	2006
60N	0417	0508	0550	1824	1906	1957
58N	0424	0511	0551	1823	1903	1950
56N	0430	0515	0552	1822	1859	1944
54N	0435	0517	0553	1821	1856	1939
52N	0440	0520	0554	1820	1854	1934
50N	0444	0522	0554	1819	1852	1930
45N	0452	0527	0556	1817	1847	1922
40N	0458	0530	0557	1816	1843	1915
35N	0503	0533	0558	1815	1840	1910
30N	0507	0535	0559	1814	1838	1906
25N	0511	0537	0600	1813	1836	1902
20N	0513	0539	0601	1812	1834	1900
15N	0515	0540	0601	1811	1833	1858
10N	0517	0541	0602	1811	1832	1856
05N	0518	0542	0602	1810	1831	1855
00N	0518	0542	0603	1809	1830	1854
05S	0519	0543	0603	1809	1830	1854
10S	0519	0543	0604	1808	1829	1854
15S	0518	0543	0604	1808	1829	1854
20S	0517	0543	0605	1807	1829	1855
25S	0516	0543	0605	1807	1830	1856
30S	0514	0542	0606	1806	1830	1858
35S	0512	0541	0606	1806	1831	1900
40S	0508	0540	0607	1805	1832	1903
45S	0504	0538	0607	1804	1834	1908
50S	0458	0536	0608	1804	1836	1913
55S	0450	0533	0609	1803	1839	1921
60S	0439	0528	0610	1802	1843	1932

MOON: RISE / SET | UTC HHMM

Lat	Day 23		Day 24		Day 25	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	0457	0153	--	--	--	--
62N	0538	0113	0529	0330	--	--
60N	0606	0045	0622	0238	0707	0406
58N	0628	0024	0654	0206	0745	0327
56N	0646	0007	0718	0142	0812	0300
54N	0702	--	0738	0123	0833	0239
52N	0715	--	0754	0107	0851	0221
50N	0727	--	0808	0053	0906	0206
45N	0751	--	0837	0024	0937	0135
40N	0811	--	0900	0002	1000	0112
35N	0827	2344	0919	--	1020	0052
30N	0842	2328	0936	--	1037	0035
25N	0854	2314	0950	--	1052	0020
20N	0906	2301	1003	--	1105	0007
15N	0917	2249	1015	2354	1118	--
10N	0927	2238	1027	2342	1130	--
05N	0937	2227	1038	2331	1141	--
00N	0947	2217	1049	2319	1152	--
05S	0957	2206	1100	2308	1204	--
10S	1007	2155	1112	2257	1215	2400
15S	1018	2144	1123	2245	1227	2348
20S	1029	2132	1136	2232	1240	2336
25S	1041	2120	1149	2219	1253	2323
30S	1054	2106	1204	2204	1308	2308
35S	1109	2050	1221	2147	1325	2251
40S	1127	2032	1240	2127	1345	2232
45S	1148	2010	1304	2103	1408	2208
50S	1214	1943	1334	2032	1439	2138
55S	1250	1906	1417	1949	1522	2055
60S	1348	1807	1535	1831	1639	1939

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | MARCH 26 - MARCH 28

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
26	00	183 27.4	160 45.3	N08 46.1	193 41.3	S05 33.5	076 39.3	N22 54.5	178 12.5	S00 02.6
	01	198 29.9	175 44.9	N08 47.3	208 42.0	S05 32.7	091 41.6	N22 54.5	193 14.7	S00 02.5
	02	213 32.3	190 44.5	N08 48.5	223 42.6	S05 32.0	106 43.9	N22 54.5	208 16.9	S00 02.4
	03	228 34.8	205 44.1	N08 49.7	238 43.3	S05 31.2	121 46.3	N22 54.5	223 19.1	S00 02.3
	04	243 37.3	220 43.7	N08 51.0	253 44.0	S05 30.4	136 48.6	N22 54.5	238 21.3	S00 02.1
	05	258 39.7	235 43.3	N08 52.2	268 44.6	S05 29.6	151 51.0	N22 54.5	253 23.4	S00 02.0
	06	273 42.2	250 42.9	N08 53.4	283 45.3	S05 28.9	166 53.3	N22 54.5	268 25.6	S00 01.9
	07	288 44.7	265 42.5	N08 54.6	298 45.9	S05 28.1	181 55.6	N22 54.5	283 27.8	S00 01.8
	08	303 47.1	280 42.1	N08 55.8	313 46.6	S05 27.3	196 58.0	N22 54.4	298 30.0	S00 01.6
	09	318 49.6	295 41.7	N08 57.0	328 47.2	S05 26.5	212 00.3	N22 54.4	313 32.1	S00 01.5
	10	333 52.1	310 41.2	N08 58.3	343 47.9	S05 25.8	227 02.6	N22 54.4	328 34.3	S00 01.4
	11	348 54.5	325 40.8	N08 59.5	358 48.5	S05 25.0	242 05.0	N22 54.4	343 36.5	S00 01.3
	12	003 57.0	340 40.4	N09 00.7	013 49.2	S05 24.2	257 07.3	N22 54.4	358 38.7	S00 01.2
	13	018 59.4	355 40.0	N09 01.9	028 49.8	S05 23.4	272 09.6	N22 54.4	013 40.8	S00 01.0
	14	034 01.9	010 39.6	N09 03.1	043 50.5	S05 22.7	287 11.9	N22 54.4	028 43.0	S00 00.9
	15	049 04.4	025 39.2	N09 04.3	058 51.2	S05 21.9	302 14.3	N22 54.4	043 45.2	S00 00.8
	16	064 06.8	040 38.8	N09 05.6	073 51.8	S05 21.1	317 16.6	N22 54.3	058 47.4	S00 00.7
	17	079 09.3	055 38.4	N09 06.8	088 52.5	S05 20.3	332 18.9	N22 54.3	073 49.6	S00 00.5
	18	094 11.8	070 38.0	N09 08.0	103 53.1	S05 19.6	347 21.3	N22 54.3	088 51.7	S00 00.4
	19	109 14.2	085 37.6	N09 09.2	118 53.8	S05 18.8	002 23.6	N22 54.3	103 53.9	S00 00.3
	20	124 16.7	100 37.1	N09 10.4	133 54.4	S05 18.0	017 25.9	N22 54.3	118 56.1	S00 00.2
	21	139 19.2	115 36.7	N09 11.6	148 55.1	S05 17.2	032 28.3	N22 54.3	133 58.3	S00 00.1
	22	154 21.6	130 36.3	N09 12.8	163 55.8	S05 16.5	047 30.6	N22 54.3	149 00.4	N00 00.1
	23	169 24.1	145 35.9	N09 14.1	178 56.4	S05 15.7	062 32.9	N22 54.3	164 02.6	N00 00.2
27	00	184 26.6	160 35.5	N09 15.3	193 57.1	S05 14.9	077 35.2	N22 54.2	179 04.8	N00 00.3
	01	199 29.0	175 35.1	N09 16.5	208 57.7	S05 14.1	092 37.6	N22 54.2	194 07.0	N00 00.4
	02	214 31.5	190 34.7	N09 17.7	223 58.4	S05 13.4	107 39.9	N22 54.2	209 09.2	N00 00.6
	03	229 33.9	205 34.3	N09 18.9	238 59.0	S05 12.6	122 42.2	N22 54.2	224 11.3	N00 00.7
	04	244 36.4	220 33.8	N09 20.1	253 59.7	S05 11.8	137 44.6	N22 54.2	239 13.5	N00 00.8
	05	259 38.9	235 33.4	N09 21.3	269 00.4	S05 11.0	152 46.9	N22 54.2	254 15.7	N00 00.9
	06	274 41.3	250 33.0	N09 22.5	284 01.0	S05 10.3	167 49.2	N22 54.2	269 17.9	N00 01.0
	07	289 43.8	265 32.6	N09 23.7	299 01.7	S05 09.5	182 51.5	N22 54.2	284 20.0	N00 01.2
	08	304 46.3	280 32.2	N09 24.9	314 02.3	S05 08.7	197 53.9	N22 54.1	299 22.2	N00 01.3
	09	319 48.7	295 31.8	N09 26.1	329 03.0	S05 07.9	212 56.2	N22 54.1	314 24.4	N00 01.4
	10	334 51.2	310 31.4	N09 27.4	344 03.6	S05 07.2	227 58.5	N22 54.1	329 26.6	N00 01.5
	11	349 53.7	325 30.9	N09 28.6	359 04.3	S05 06.4	243 00.8	N22 54.1	344 28.7	N00 01.7
	12	004 56.1	340 30.5	N09 29.8	014 05.0	S05 05.6	258 03.2	N22 54.1	359 30.9	N00 01.8
	13	019 58.6	355 30.1	N09 31.0	029 05.6	S05 04.8	273 05.5	N22 54.1	014 33.1	N00 01.9
	14	035 01.0	010 29.7	N09 32.2	044 06.3	S05 04.1	288 07.8	N22 54.1	029 35.3	N00 02.0
	15	050 03.5	025 29.3	N09 33.4	059 06.9	S05 03.3	303 10.1	N22 54.1	044 37.5	N00 02.2
	16	065 06.0	040 28.9	N09 34.6	074 07.6	S05 02.5	318 12.4	N22 54.0	059 39.6	N00 02.3
	17	080 08.4	055 28.4	N09 35.8	089 08.2	S05 01.7	333 14.8	N22 54.0	074 41.8	N00 02.4
	18	095 10.9	070 28.0	N09 37.0	104 08.9	S05 00.9	348 17.1	N22 54.0	089 44.0	N00 02.5
	19	110 13.4	085 27.6	N09 38.2	119 09.6	S05 00.2	003 19.4	N22 54.0	104 46.2	N00 02.6
	20	125 15.8	100 27.2	N09 39.4	134 10.2	S04 59.4	018 21.7	N22 54.0	119 48.3	N00 02.8
	21	140 18.3	115 26.8	N09 40.6	149 10.9	S04 58.6	033 24.1	N22 54.0	134 50.5	N00 02.9
	22	155 20.8	130 26.4	N09 41.8	164 11.5	S04 57.8	048 26.4	N22 54.0	149 52.7	N00 03.0
	23	170 23.2	145 25.9	N09 43.0	179 12.2	S04 57.1	063 28.7	N22 53.9	164 54.9	N00 03.1
28	00	185 25.7	160 25.5	N09 44.2	194 12.9	S04 56.3	078 31.0	N22 53.9	179 57.1	N00 03.3
	01	200 28.2	175 25.1	N09 45.4	209 13.5	S04 55.5	093 33.3	N22 53.9	194 59.2	N00 03.4
	02	215 30.6	190 24.7	N09 46.6	224 14.2	S04 54.7	108 35.7	N22 53.9	210 01.4	N00 03.5
	03	230 33.1	205 24.3	N09 47.8	239 14.8	S04 54.0	123 38.0	N22 53.9	225 03.6	N00 03.6
	04	245 35.5	220 23.8	N09 49.0	254 15.5	S04 53.2	138 40.3	N22 53.9	240 05.8	N00 03.7
	05	260 38.0	235 23.4	N09 50.2	269 16.2	S04 52.4	153 42.6	N22 53.9	255 07.9	N00 03.9
	06	275 40.5	250 23.0	N09 51.4	284 16.8	S04 51.6	168 44.9	N22 53.8	270 10.1	N00 04.0
	07	290 42.9	265 22.6	N09 52.6	299 17.5	S04 50.8	183 47.2	N22 53.8	285 12.3	N00 04.1
	08	305 45.4	280 22.2	N09 53.8	314 18.1	S04 50.1	198 49.6	N22 53.8	300 14.5	N00 04.2
	09	320 47.9	295 21.7	N09 55.0	329 18.8	S04 49.3	213 51.9	N22 53.8	315 16.7	N00 04.4
	10	335 50.3	310 21.3	N09 56.2	344 19.5	S04 48.5	228 54.2	N22 53.8	330 18.8	N00 04.5
	11	350 52.8	325 20.9	N09 57.4	359 20.1	S04 47.7	243 56.5	N22 53.8	345 21.0	N00 04.6
	12	005 55.3	340 20.5	N09 58.6	014 20.8	S04 47.0	258 58.8	N22 53.8	000 23.2	N00 04.7
	13	020 57.7	355 20.0	N09 59.8	029 21.4	S04 46.2	274 01.1	N22 53.8	015 25.4	N00 04.8
	14	036 00.2	010 19.6	N10 01.0	044 22.1	S04 45.4	289 03.5	N22 53.7	030 27.5	N00 05.0
	15	051 02.7	025 19.2	N10 02.2	059 22.8	S04 44.6	304 05.8	N22 53.7	045 29.7	N00 05.1
	16	066 05.1	040 18.8	N10 03.4	074 23.4	S04 43.8	319 08.1	N22 53.7	060 31.9	N00 05.2
	17	081 07.6	055 18.3	N10 04.6	089 24.1	S04 43.1	334 10.4	N22 53.7	075 34.1	N00 05.3
	18	096 10.0	070 17.9	N10 05.8	104 24.7	S04 42.3	349 12.7	N22 53.7	090 36.2	N00 05.5
	19	111 12.5	085 17.5	N10 07.0	119 25.4	S04 41.5	004 15.0	N22 53.7	105 38.4	N00 05.6
	20	126 15.0	100 17.1	N10 08.2	134 26.1	S04 40.7	019 17.4	N22 53.7	120 40.6	N00 05.7
	21	141 17.4	115 16.7	N10 09.4	149 26.7	S04 40.0	034 19.7	N22 53.6	135 42.8	N00 05.8
	22	156 19.9	130 16.2	N10 10.6	164 27.4	S04 39.2	049 22.0	N22 53.6	150 45.0	N00 05.9
	23	171 22.4	145 15.8	N10 11.8	179 28.0	S04 38.4	064 24.3	N22 53.6	165 47.1	N00 06.1

Venus	Mars	Jupiter	Saturn
26: v -0.4 d 1.2	26: v 0.7 d 0.8	26: v 2.3 d 0.0	26: v 2.2 d 0.1
27: v -0.4 d 1.2	27: v 0.7 d 0.8	27: v 2.3 d 0.0	27: v 2.2 d 0.1
28: v -0.4 d 1.2	28: v 0.7 d 0.8	28: v 2.3 d 0.0	28: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.3	S40 12.1
Achernar	335 20.0	S57 06.3
Acrux	172 58.3	S63 14.8
Adhara	255 05.0	S29 00.7
Al Na'ir	027 32.0	S46 50.0
Aldebaran	290 38.6	N16 33.7
Alioth	166 11.5	N55 48.9
Alkaid	152 50.7	N49 10.7
Alnilam	275 36.8	S01 11.2
Alphard	217 46.5	S08 46.5
Alphecca	126 02.6	N26 37.3
Alpheratz	357 34.1	N29 14.0
Altair	061 59.1	N08 56.1
Ankaa	353 06.6	S42 09.9
Antares	112 14.4	S26 29.4
Arcturus	145 46.7	N19 02.5
Atria	107 07.6	S69 04.2
Avior	234 14.0	S59 35.9
Bellatrix	278 21.9	N06 22.3
Betelgeuse	270 51.0	N07 24.6
Canopus	263 52.0	S52 42.8
Capella	280 20.5	N46 01.6
Deneb	049 25.4	N45 22.1
Denebola	182 23.6	N14 25.4
Diphda	348 46.6	S17 50.7
Dubhe	193 39.1	N61 36.6
Elnath	278 00.7	N28 37.8
Eltanin	090 41.7	N51 28.7
Enif	033 38.1	N09 59.6
Fomalhaut	015 13.7	S29 29.0
Gacrux	171 50.0	S57 15.7
Gienah	175 42.2	S17 41.4
Hadar	148 34.0	S60 30.0
Hamal	327 50.4	N23 35.2
Kaus Australi	083 31.2	S34 22.3
Kochab	137 18.9	N74 02.5
Markab	013 29.2	N15 20.7
Menkar	314 05.3	N04 11.5
Menkent	147 56.1	S36 30.0
Miaplacidus	221 37.5	S69 49.7
Mirfak	308 27.2	N49 57.4
Nunki	075 46.6	S26 15.8
Peacock	053 04.4	S56 38.9
Polaris	313 53.7	N89 22.7
Pollux	243 16.0	N27 57.8
Procyon	244 49.7	N05 09.4
Rasalhague	095 57.5	N12 32.2
Regulus	207 33.1	N11 50.2
Rigel	281 03.0	S08 10.4
Rigil Kentaur	139 38.4	S60 56.6
Sabik	102 01.5	S15 45.5
Schedar	349 30.5	N56 40.9
Shaula	096 08.9	S37 07.3
Sirius	258 25.3	S16 45.3
Spica	158 20.9	S11 18.1
Suhail	222 45.3	S43 32.6
Vega	080 32.6	N38 48.1
Zubenelgenubi	136 54.6	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	335 34.4	1318
Mars	009 08.8	1104
Jupiter	253 07.0	1847
Saturn	354 34.8	1202

2026 | MARCH 26 - MARCH 28

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
26	00	178 33.1	N02 07.4	084 32.4	N27 45.8	59.0	4.1	-3.8
	01	193 33.3	N02 08.4	098 55.5	N27 42.0	59.0	4.2	-4.0
	02	208 33.5	N02 09.3	113 18.7	N27 38.0	59.0	4.2	-4.2
	03	223 33.7	N02 10.3	127 41.9	N27 33.8	58.9	4.3	-4.4
	04	238 33.9	N02 11.3	142 05.2	N27 29.4	58.9	4.4	-4.5
	05	253 34.1	N02 12.3	156 28.6	N27 24.9	58.9	4.5	-4.7
	06	268 34.2	N02 13.3	170 52.0	N27 20.2	58.9	4.5	-4.9
	07	283 34.4	N02 14.2	185 15.6	N27 15.3	58.9	4.6	-5.1
	08	298 34.6	N02 15.2	199 39.2	N27 10.2	58.9	4.7	-5.2
	09	313 34.8	N02 16.2	214 02.9	N27 05.0	58.8	4.8	-5.4
	10	328 35.0	N02 17.2	228 26.7	N26 59.5	58.8	4.9	-5.6
	11	343 35.2	N02 18.2	242 50.5	N26 53.9	58.8	4.9	-5.8
	12	358 35.4	N02 19.2	257 14.5	N26 48.2	58.8	5.0	-5.9
	13	013 35.6	N02 20.1	271 38.5	N26 42.2	58.8	5.1	-6.1
	14	028 35.8	N02 21.1	286 02.6	N26 36.1	58.8	5.2	-6.3
	15	043 35.9	N02 22.1	300 26.8	N26 29.9	58.7	5.3	-6.4
	16	058 36.1	N02 23.1	314 51.1	N26 23.4	58.7	5.4	-6.6
	17	073 36.3	N02 24.1	329 15.5	N26 16.8	58.7	5.5	-6.8
	18	088 36.5	N02 25.0	343 40.0	N26 10.0	58.7	5.6	-6.9
	19	103 36.7	N02 26.0	358 04.6	N26 03.1	58.7	5.7	-7.1
	20	118 36.9	N02 27.0	012 29.3	N25 56.0	58.7	5.8	-7.2
	21	133 37.1	N02 28.0	026 54.0	N25 48.8	58.6	5.9	-7.4
	22	148 37.3	N02 29.0	041 18.9	N25 41.4	58.6	6.0	-7.6
	23	163 37.5	N02 29.9	055 43.9	N25 33.8	58.6	6.1	-7.7
27	00	178 37.6	N02 30.9	070 08.9	N25 26.1	58.6	6.2	-7.9
	01	193 37.8	N02 31.9	084 34.1	N25 18.2	58.6	6.3	-8.0
	02	208 38.0	N02 32.9	098 59.4	N25 10.2	58.6	6.4	-8.2
	03	223 38.2	N02 33.8	113 24.8	N25 02.0	58.5	6.5	-8.3
	04	238 38.4	N02 34.8	127 50.3	N24 53.7	58.5	6.6	-8.5
	05	253 38.6	N02 35.8	142 15.9	N24 45.3	58.5	6.7	-8.6
	06	268 38.8	N02 36.8	156 41.5	N24 36.6	58.5	6.8	-8.8
	07	283 39.0	N02 37.8	171 07.3	N24 27.9	58.5	6.9	-8.9
	08	298 39.2	N02 38.7	185 33.2	N24 19.0	58.5	7.0	-9.0
	09	313 39.3	N02 39.7	199 59.3	N24 10.0	58.4	7.1	-9.2
	10	328 39.5	N02 40.7	214 25.4	N24 00.8	58.4	7.2	-9.3
	11	343 39.7	N02 41.7	228 51.6	N23 51.5	58.4	7.3	-9.4
	12	358 39.9	N02 42.7	243 17.9	N23 42.0	58.4	7.4	-9.6
	13	013 40.1	N02 43.6	257 44.4	N23 32.4	58.4	7.5	-9.7
	14	028 40.3	N02 44.6	272 10.9	N23 22.7	58.3	7.7	-9.8
	15	043 40.5	N02 45.6	286 37.6	N23 12.9	58.3	7.8	-10.0
	16	058 40.7	N02 46.6	301 04.3	N23 02.9	58.3	7.9	-10.1
	17	073 40.9	N02 47.5	315 31.2	N22 52.8	58.3	8.0	-10.2
	18	088 41.0	N02 48.5	329 58.2	N22 42.6	58.3	8.1	-10.4
	19	103 41.2	N02 49.5	344 25.3	N22 32.2	58.3	8.2	-10.5
	20	118 41.4	N02 50.5	358 52.5	N22 21.8	58.2	8.3	-10.6
	21	133 41.6	N02 51.5	013 19.8	N22 11.2	58.2	8.4	-10.7
	22	148 41.8	N02 52.4	027 47.2	N22 00.4	58.2	8.5	-10.8
	23	163 42.0	N02 53.4	042 14.8	N21 49.6	58.2	8.6	-10.9
28	00	178 42.2	N02 54.4	056 42.4	N21 38.7	58.2	8.7	-11.1
	01	193 42.4	N02 55.4	071 10.1	N21 27.6	58.1	8.9	-11.2
	02	208 42.6	N02 56.3	085 38.0	N21 16.4	58.1	9.0	-11.3
	03	223 42.8	N02 57.3	100 06.0	N21 05.2	58.1	9.1	-11.4
	04	238 42.9	N02 58.3	114 34.0	N20 53.8	58.1	9.2	-11.5
	05	253 43.1	N02 59.3	129 02.2	N20 42.3	58.1	9.3	-11.6
	06	268 43.3	N03 00.2	143 30.5	N20 30.7	58.0	9.4	-11.7
	07	283 43.5	N03 01.2	157 58.9	N20 18.9	58.0	9.5	-11.8
	08	298 43.7	N03 02.2	172 27.4	N20 07.1	58.0	9.6	-11.9
	09	313 43.9	N03 03.2	186 56.0	N19 55.2	58.0	9.7	-12.0
	10	328 44.1	N03 04.2	201 24.7	N19 43.2	58.0	9.8	-12.1
	11	343 44.3	N03 05.1	215 53.5	N19 31.1	58.0	9.9	-12.2
	12	358 44.5	N03 06.1	230 22.4	N19 18.9	57.9	10.0	-12.3
	13	013 44.6	N03 07.1	244 51.4	N19 06.6	57.9	10.1	-12.4
	14	028 44.8	N03 08.1	259 20.5	N18 54.2	57.9	10.2	-12.5
	15	043 45.0	N03 09.0	273 49.7	N18 41.7	57.9	10.3	-12.6
	16	058 45.2	N03 10.0	288 19.1	N18 29.1	57.9	10.4	-12.7
	17	073 45.4	N03 11.0	302 48.5	N18 16.5	57.8	10.5	-12.8
	18	088 45.6	N03 12.0	317 18.0	N18 03.7	57.8	10.6	-12.8
	19	103 45.8	N03 12.9	331 47.6	N17 50.9	57.8	10.7	-12.9
	20	118 46.0	N03 13.9	346 17.4	N17 37.9	57.8	10.8	-13.0
	21	133 46.2	N03 14.9	000 47.2	N17 24.9	57.8	10.9	-13.1
	22	148 46.3	N03 15.9	015 17.1	N17 11.9	57.7	11.0	-13.2
	23	163 46.5	N03 16.8	029 47.1	N16 58.7	57.7	11.1	-13.2

Day 26 noon Sun: v 0.2 d 1.0 SD 16.0 | Moon SD 16.0

Day 27 noon Sun: v 0.2 d 1.0 SD 16.0 | Moon SD 15.9

Day 28 noon Sun: v 0.2 d 1.0 SD 16.0 | Moon SD 15.8

SUN: MARCH 27 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0229	0411	0522	1851	2003	2149
70N	0257	0424	0527	1846	1950	2118
68N	0318	0433	0531	1842	1940	2056
66N	0334	0441	0534	1839	1932	2040
64N	0347	0448	0536	1836	1925	2026
62N	0358	0454	0539	1834	1919	2015
60N	0407	0459	0541	1832	1914	2006
58N	0415	0503	0542	1830	1909	1958
56N	0421	0506	0544	1828	1906	1951
54N	0427	0510	0545	1826	1902	1945
52N	0432	0513	0547	1825	1859	1940
50N	0437	0515	0548	1824	1856	1935
45N	0446	0521	0550	1821	1851	1926
40N	0453	0525	0552	1819	1846	1918
35N	0459	0529	0554	1817	1843	1912
30N	0504	0532	0556	1816	1840	1908
25N	0507	0534	0557	1814	1837	1904
20N	0510	0536	0558	1813	1835	1901
15N	0513	0538	0559	1812	1833	1858
10N	0515	0539	0600	1811	1832	1856
05N	0516	0540	0601	1810	1830	1855
00N	0517	0541	0602	1809	1829	1853
05S	0518	0542	0603	1808	1828	1852
10S	0518	0543	0604	1807	1828	1852
15S	0519	0543	0605	1806	1827	1852
20S	0518	0544	0606	1805	1827	1852
25S	0517	0544	0607	1804	1826	1853
30S	0516	0544	0608	1803	1826	1854
35S	0514	0543	0609	1801	1827	1856
40S	0511	0543	0610	1800	1827	1859
45S	0508	0542	0611	1759	1828	1902
50S	0503	0541	0613	1757	1829	1907
55S	0456	0538	0615	1755	1831	1913
60S	0446	0535	0617	1752	1834	1922

MOON: RISE / SET | UTC HHMM

Lat	Day 26		Day 27		Day 28	
72N	--	--	--	--	--	--
70N	--	--	--	--	0911	0812
68N	--	--	--	--	1031	0650
66N	--	--	--	--	1108	0612
64N	--	--	0918	0609	1135	0544
62N	0746	0537	0957	0529	1155	0523
60N	0836	0447	1024	0501	1211	0506
58N	0907	0415	1045	0439	1225	0451
56N	0930	0352	1102	0421	1237	0439
54N	0949	0332	1117	0406	1247	0428
52N	1005	0316	1130	0353	1256	0418
50N	1019	0302	1141	0341	1304	0409
45N	1047	0233	1204	0317	1321	0350
40N	1109	0210	1222	0258	1335	0335
35N	1128	0152	1238	0241	1347	0322
30N	1143	0135	1251	0227	1358	0311
25N	1157	0121	1303	0214	1407	0300
20N	1210	0108	1314	0203	1415	0251
15N	1222	0056	1324	0152	1423	0242
10N	1233	0044	1333	0142	1430	0234
05N	1243	0033	1343	0132	1438	0226
00N	1254	0022	1352	0122	1445	0217
05S	1304	0011	1401	0112	1452	0209
10S	1315	--	1410	0102	1459	0201
15S	1326	--	1419	0052	1506	0153
20S	1338	--	1429	0041	1514	0144
25S	1350	--	1440	0029	1522	0134
30S	1404	--	1451	0016	1531	0123
35S	1419	--	1504	0001	1541	0111
40S	1437	2344	1519	--	1553	0057
45S	1459	2323	1537	--	1606	0041
50S	1526	2257	1559	--	1622	0020
55S	1603	2221	1627	2353	1642	--
60S	1701	2124	1708	2315	1710	--

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | MARCH 29 - MARCH 31

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
29	00	186 24.8	160 15.4	N10 13.0	194 28.7	S04 37.6	079 26.6	N22 53.6	180 49.3	N00 06.2
	01	201 27.3	175 14.9	N10 14.2	209 29.4	S04 36.8	094 28.9	N22 53.6	195 51.5	N00 06.3
	02	216 29.8	190 14.5	N10 15.4	224 30.0	S04 36.1	109 31.2	N22 53.6	210 53.7	N00 06.4
	03	231 32.2	205 14.1	N10 16.5	239 30.7	S04 35.3	124 33.5	N22 53.5	225 55.8	N00 06.6
	04	246 34.7	220 13.7	N10 17.7	254 31.4	S04 34.5	139 35.8	N22 53.5	240 58.0	N00 06.7
	05	261 37.2	235 13.2	N10 18.9	269 32.0	S04 33.7	154 38.2	N22 53.5	256 00.2	N00 06.8
	06	276 39.6	250 12.8	N10 20.1	284 32.7	S04 32.9	169 40.5	N22 53.5	271 02.4	N00 06.9
	07	291 42.1	265 12.4	N10 21.3	299 33.3	S04 32.2	184 42.8	N22 53.5	286 04.6	N00 07.0
	08	306 44.5	280 12.0	N10 22.5	314 34.0	S04 31.4	199 45.1	N22 53.5	301 06.7	N00 07.2
	09	321 47.0	295 11.5	N10 23.7	329 34.7	S04 30.6	214 47.4	N22 53.5	316 08.9	N00 07.3
	10	336 49.5	310 11.1	N10 24.9	344 35.3	S04 29.8	229 49.7	N22 53.4	331 11.1	N00 07.4
	11	351 51.9	325 10.7	N10 26.1	359 36.0	S04 29.1	244 52.0	N22 53.4	346 13.3	N00 07.5
	12	006 54.4	340 10.2	N10 27.2	014 36.6	S04 28.3	259 54.3	N22 53.4	001 15.4	N00 07.7
	13	021 56.9	355 09.8	N10 28.4	029 37.3	S04 27.5	274 56.6	N22 53.4	016 17.6	N00 07.8
	14	036 59.3	010 09.4	N10 29.6	044 38.0	S04 26.7	289 58.9	N22 53.4	031 19.8	N00 07.9
	15	052 01.8	025 09.0	N10 30.8	059 38.6	S04 25.9	305 01.2	N22 53.4	046 22.0	N00 08.0
	16	067 04.3	040 08.5	N10 32.0	074 39.3	S04 25.2	320 03.5	N22 53.4	061 24.2	N00 08.1
	17	082 06.7	055 08.1	N10 33.2	089 40.0	S04 24.4	335 05.9	N22 53.3	076 26.3	N00 08.3
	18	097 09.2	070 07.7	N10 34.4	104 40.6	S04 23.6	350 08.2	N22 53.3	091 28.5	N00 08.4
	19	112 11.6	085 07.2	N10 35.6	119 41.3	S04 22.8	005 10.5	N22 53.3	106 30.7	N00 08.5
	20	127 14.1	100 06.8	N10 36.7	134 42.0	S04 22.0	020 12.8	N22 53.3	121 32.9	N00 08.6
	21	142 16.6	115 06.4	N10 37.9	149 42.6	S04 21.3	035 15.1	N22 53.3	136 35.0	N00 08.8
	22	157 19.0	130 05.9	N10 39.1	164 43.3	S04 20.5	050 17.4	N22 53.3	151 37.2	N00 08.9
	23	172 21.5	145 05.5	N10 40.3	179 43.9	S04 19.7	065 19.7	N22 53.2	166 39.4	N00 09.0
30	00	187 24.0	160 05.1	N10 41.5	194 44.6	S04 18.9	080 22.0	N22 53.2	181 41.6	N00 09.1
	01	202 26.4	175 04.6	N10 42.6	209 45.3	S04 18.1	095 24.3	N22 53.2	196 43.8	N00 09.2
	02	217 28.9	190 04.2	N10 43.8	224 45.9	S04 17.4	110 26.6	N22 53.2	211 45.9	N00 09.4
	03	232 31.4	205 03.8	N10 45.0	239 46.6	S04 16.6	125 28.9	N22 53.2	226 48.1	N00 09.5
	04	247 33.8	220 03.3	N10 46.2	254 47.3	S04 15.8	140 31.2	N22 53.2	241 50.3	N00 09.6
	05	262 36.3	235 02.9	N10 47.4	269 47.9	S04 15.0	155 33.5	N22 53.2	256 52.5	N00 09.7
	06	277 38.8	250 02.5	N10 48.6	284 48.6	S04 14.2	170 35.8	N22 53.1	271 54.6	N00 09.8
	07	292 41.2	265 02.0	N10 49.7	299 49.3	S04 13.5	185 38.1	N22 53.1	286 56.8	N00 10.0
	08	307 43.7	280 01.6	N10 50.9	314 49.9	S04 12.7	200 40.4	N22 53.1	301 59.0	N00 10.1
	09	322 46.1	295 01.2	N10 52.1	329 50.6	S04 11.9	215 42.7	N22 53.1	317 01.2	N00 10.2
	10	337 48.6	310 00.7	N10 53.3	344 51.3	S04 11.1	230 45.0	N22 53.1	332 03.4	N00 10.3
	11	352 51.1	325 00.3	N10 54.4	359 51.9	S04 10.3	245 47.3	N22 53.1	347 05.5	N00 10.5
	12	007 53.5	339 59.9	N10 55.6	014 52.6	S04 09.6	260 49.6	N22 53.0	002 07.7	N00 10.6
	13	022 56.0	354 59.4	N10 56.8	029 53.2	S04 08.8	275 51.9	N22 53.0	017 09.9	N00 10.7
	14	037 58.5	009 59.0	N10 58.0	044 53.9	S04 08.0	290 54.2	N22 53.0	032 12.1	N00 10.8
	15	053 00.9	024 58.5	N10 59.2	059 54.6	S04 07.2	305 56.5	N22 53.0	047 14.2	N00 10.9
	16	068 03.4	039 58.1	N11 00.3	074 55.2	S04 06.4	320 58.8	N22 53.0	062 16.4	N00 11.1
	17	083 05.9	054 57.7	N11 01.5	089 55.9	S04 05.7	336 01.1	N22 53.0	077 18.6	N00 11.2
	18	098 08.3	069 57.2	N11 02.7	104 56.6	S04 04.9	351 03.4	N22 52.9	092 20.8	N00 11.3
	19	113 10.8	084 56.8	N11 03.9	119 57.2	S04 04.1	006 05.7	N22 52.9	107 22.9	N00 11.4
	20	128 13.2	099 56.3	N11 05.0	134 57.9	S04 03.3	021 08.0	N22 52.9	122 25.1	N00 11.6
	21	143 15.7	114 55.9	N11 06.2	149 58.6	S04 02.5	036 10.3	N22 52.9	137 27.3	N00 11.7
	22	158 18.2	129 55.5	N11 07.4	164 59.2	S04 01.8	051 12.6	N22 52.9	152 29.5	N00 11.8
	23	173 20.6	144 55.0	N11 08.5	179 59.9	S04 01.0	066 14.9	N22 52.9	167 31.7	N00 11.9
31	00	188 23.1	159 54.6	N11 09.7	195 00.6	S04 00.2	081 17.2	N22 52.8	182 33.8	N00 12.0
	01	203 25.6	174 54.1	N11 10.9	210 01.2	S03 59.4	096 19.5	N22 52.8	197 36.0	N00 12.2
	02	218 28.0	189 53.7	N11 12.1	225 01.9	S03 58.6	111 21.8	N22 52.8	212 38.2	N00 12.3
	03	233 30.5	204 53.3	N11 13.2	240 02.6	S03 57.9	126 24.1	N22 52.8	227 40.4	N00 12.4
	04	248 33.0	219 52.8	N11 14.4	255 03.2	S03 57.1	141 26.4	N22 52.8	242 42.5	N00 12.5
	05	263 35.4	234 52.4	N11 15.6	270 03.9	S03 56.3	156 28.7	N22 52.8	257 44.7	N00 12.6
	06	278 37.9	249 51.9	N11 16.7	285 04.6	S03 55.5	171 31.0	N22 52.7	272 46.9	N00 12.8
	07	293 40.4	264 51.5	N11 17.9	300 05.2	S03 54.7	186 33.3	N22 52.7	287 49.1	N00 12.9
	08	308 42.8	279 51.1	N11 19.1	315 05.9	S03 53.9	201 35.5	N22 52.7	302 51.3	N00 13.0
	09	323 45.3	294 50.6	N11 20.2	330 06.6	S03 53.2	216 37.8	N22 52.7	317 53.4	N00 13.1
	10	338 47.7	309 50.2	N11 21.4	345 07.2	S03 52.4	231 40.1	N22 52.7	332 55.6	N00 13.3
	11	353 50.2	324 49.7	N11 22.6	000 07.9	S03 51.6	246 42.4	N22 52.7	347 57.8	N00 13.4
	12	008 52.7	339 49.3	N11 23.7	015 08.6	S03 50.8	261 44.7	N22 52.6	003 00.0	N00 13.5
	13	023 55.1	354 48.8	N11 24.9	030 09.2	S03 50.0	276 47.0	N22 52.6	018 02.1	N00 13.6
	14	038 57.6	009 48.4	N11 26.1	045 09.9	S03 49.3	291 49.3	N22 52.6	033 04.3	N00 13.7
	15	054 00.1	024 47.9	N11 27.2	060 10.6	S03 48.5	306 51.6	N22 52.6	048 06.5	N00 13.9
	16	069 02.5	039 47.5	N11 28.4	075 11.2	S03 47.7	321 53.9	N22 52.6	063 08.7	N00 14.0
	17	084 05.0	054 47.1	N11 29.6	090 11.9	S03 46.9	336 56.2	N22 52.6	078 10.9	N00 14.1
	18	099 07.5	069 46.6	N11 30.7	105 12.6	S03 46.1	351 58.5	N22 52.5	093 13.0	N00 14.2
	19	114 09.9	084 46.2	N11 31.9	120 13.2	S03 45.4	007 00.8	N22 52.5	108 15.2	N00 14.4
	20	129 12.4	099 45.7	N11 33.1	135 13.9	S03 44.6	022 03.0	N22 52.5	123 17.4	N00 14.5
	21	144 14.8	114 45.3	N11 34.2	150 14.6	S03 43.8	037 05.3	N22 52.5	138 19.6	N00 14.6
	22	159 17.3	129 44.8	N11 35.4	165 15.2	S03 43.0	052 07.6	N22 52.5	153 21.8	N00 14.7
	23	174 19.8	144 44.4	N11 36.5	180 15.9	S03 42.2	067 09.9	N22 52.5	168 23.9	N00 14.8

Venus	Mars	Jupiter	Saturn
29: v -0.4 d 1.2	29: v 0.7 d 0.8	29: v 2.3 d 0.0	29: v 2.2 d 0.1
30: v -0.4 d 1.2	30: v 0.7 d 0.8	30: v 2.3 d 0.0	30: v 2.2 d 0.1
31: v -0.4 d 1.2	31: v 0.7 d 0.8	31: v 2.3 d 0.0	31: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.3	S40 12.1
Achernar	335 20.0	S57 06.3
Acrux	172 58.3	S63 14.8
Adhara	255 05.0	S29 00.7
Al Na'ir	027 32.0	S46 50.0
Aldebaran	290 38.6	N16 33.7
Alioth	166 11.5	N55 48.9
Alkaid	152 50.7	N49 10.7
Alnilam	275 36.8	S01 11.2
Alphard	217 46.6	S08 46.5
Alphecca	126 02.6	N26 37.3
Alpheratz	357 34.1	N29 14.0
Altair	061 59.1	N08 56.1
Ankaa	353 06.6	S42 09.8
Antares	112 14.4	S26 29.4
Arcturus	145 46.7	N19 02.5
Atria	107 07.5	S69 04.3
Avior	234 14.1	S59 35.9
Bellatrix	278 21.9	N06 22.3
Betelgeuse	270 51.0	N07 24.6
Canopus	263 52.0	S52 42.8
Capella	280 20.6	N46 01.6
Deneb	049 25.4	N45 22.1
Denebola	182 23.6	N14 25.4
Diphda	348 46.6	S17 50.6
Dubhe	193 39.1	N61 36.6
Elnath	278 00.7	N28 37.8
Eltanin	090 41.6	N51 28.7
Enif	033 38.0	N09 59.6
Fomalhaut	015 13.7	S29 29.0
Gacrux	171 50.0	S57 15.7
Gienah	175 42.2	S17 41.4
Hadar	148 34.0	S60 30.0
Hamal	327 50.4	N23 35.2
Kaus Australi	083 31.2	S34 22.3
Kochab	137 18.8	N74 02.6
Markab	013 29.2	N15 20.7
Menkar	314 05.3	N04 11.5
Menkent	147 56.1	S36 30.0
Miaplacidus	221 37.6	S69 49.7
Mirfak	308 27.2	N49 57.4
Nunki	075 46.5	S26 15.8
Peacock	053 04.4	S56 38.8
Polaris	313 54.7	N89 22.7
Pollux	243 16.0	N27 57.8
Procyon	244 49.7	N05 09.4
Rasalhague	095 57.5	N12 32.2
Regulus	207 33.1	N11 50.2
Rigel	281 03.0	S08 10.4
Rigil Kentaur	139 38.4	S60 56.6
Sabik	102 01.5	S15 45.5
Schedar	349 30.5	N56 40.9
Shaula	096 08.9	S37 07.3
Sirius	258 25.3	S16 45.3
Spica	158 20.9	S11 18.1
Suhail	222 45.3	S43 32.6
Vega	080 32.5	N38 48.1
Zubenelgenubi	136 54.6	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	332 06.3	1320
Mars	006 59.0	1101
Jupiter	252 56.1	1836
Saturn	354 14.2	1152

2026 | MARCH 29 - MARCH 31

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
29	00	178 46.7	N03 17.8	044 17.2	N16 45.5	57.7	11.2	-13.3
	01	193 46.9	N03 18.8	058 47.4	N16 32.1	57.7	11.3	-13.4
	02	208 47.1	N03 19.8	073 17.7	N16 18.8	57.7	11.4	-13.5
	03	223 47.3	N03 20.7	087 48.1	N16 05.3	57.6	11.5	-13.5
	04	238 47.5	N03 21.7	102 18.6	N15 51.8	57.6	11.6	-13.6
	05	253 47.7	N03 22.7	116 49.1	N15 38.2	57.6	11.7	-13.7
	06	268 47.8	N03 23.6	131 19.8	N15 24.5	57.6	11.7	-13.7
	07	283 48.0	N03 24.6	145 50.5	N15 10.8	57.6	11.8	-13.8
	08	298 48.2	N03 25.6	160 21.4	N14 56.9	57.5	11.9	-13.9
	09	313 48.4	N03 26.6	174 52.3	N14 43.1	57.5	12.0	-13.9
	10	328 48.6	N03 27.5	189 23.3	N14 29.2	57.5	12.1	-14.0
	11	343 48.8	N03 28.5	203 54.4	N14 15.2	57.5	12.2	-14.0
	12	358 49.0	N03 29.5	218 25.6	N14 01.1	57.5	12.3	-14.1
	13	013 49.2	N03 30.5	232 56.8	N13 47.0	57.4	12.3	-14.2
	14	028 49.4	N03 31.4	247 28.2	N13 32.8	57.4	12.4	-14.2
	15	043 49.5	N03 32.4	261 59.6	N13 18.6	57.4	12.5	-14.3
	16	058 49.7	N03 33.4	276 31.1	N13 04.4	57.4	12.6	-14.3
	17	073 49.9	N03 34.4	291 02.7	N12 50.0	57.4	12.7	-14.4
	18	088 50.1	N03 35.3	305 34.3	N12 35.6	57.3	12.7	-14.4
	19	103 50.3	N03 36.3	320 06.1	N12 21.2	57.3	12.8	-14.5
	20	118 50.5	N03 37.3	334 37.9	N12 06.8	57.3	12.9	-14.5
	21	133 50.7	N03 38.2	349 09.8	N11 52.2	57.3	13.0	-14.6
	22	148 50.9	N03 39.2	003 41.7	N11 37.7	57.3	13.0	-14.6
	23	163 51.1	N03 40.2	018 13.8	N11 23.1	57.2	13.1	-14.7
30	00	178 51.2	N03 41.2	032 45.9	N11 08.4	57.2	13.2	-14.7
	01	193 51.4	N03 42.1	047 18.0	N10 53.7	57.2	13.2	-14.7
	02	208 51.6	N03 43.1	061 50.3	N10 39.0	57.2	13.3	-14.8
	03	223 51.8	N03 44.1	076 22.6	N10 24.2	57.2	13.4	-14.8
	04	238 52.0	N03 45.0	090 55.0	N10 09.4	57.1	13.4	-14.8
	05	253 52.2	N03 46.0	105 27.4	N09 54.5	57.1	13.5	-14.9
	06	268 52.4	N03 47.0	119 59.9	N09 39.7	57.1	13.6	-14.9
	07	283 52.6	N03 48.0	134 32.5	N09 24.8	57.1	13.6	-14.9
	08	298 52.7	N03 48.9	149 05.1	N09 09.8	57.1	13.7	-15.0
	09	313 52.9	N03 49.9	163 37.8	N08 54.8	57.0	13.7	-15.0
	10	328 53.1	N03 50.9	178 10.5	N08 39.8	57.0	13.8	-15.0
	11	343 53.3	N03 51.8	192 43.3	N08 24.8	57.0	13.9	-15.1
	12	358 53.5	N03 52.8	207 16.2	N08 09.7	57.0	13.9	-15.1
	13	013 53.7	N03 53.8	221 49.1	N07 54.6	57.0	14.0	-15.1
	14	028 53.9	N03 54.7	236 22.1	N07 39.5	56.9	14.0	-15.1
	15	043 54.1	N03 55.7	250 55.1	N07 24.4	56.9	14.1	-15.2
	16	058 54.3	N03 56.7	265 28.2	N07 09.2	56.9	14.1	-15.2
	17	073 54.4	N03 57.7	280 01.3	N06 54.0	56.9	14.2	-15.2
	18	088 54.6	N03 58.6	294 34.5	N06 38.8	56.9	14.2	-15.2
	19	103 54.8	N03 59.6	309 07.8	N06 23.6	56.8	14.3	-15.2
	20	118 55.0	N04 00.6	323 41.0	N06 08.4	56.8	14.3	-15.3
	21	133 55.2	N04 01.5	338 14.4	N05 53.1	56.8	14.4	-15.3
	22	148 55.4	N04 02.5	352 47.7	N05 37.9	56.8	14.4	-15.3
	23	163 55.6	N04 03.5	007 21.2	N05 22.6	56.8	14.5	-15.3
31	00	178 55.8	N04 04.4	021 54.6	N05 07.3	56.7	14.5	-15.3
	01	193 55.9	N04 05.4	036 28.1	N04 52.0	56.7	14.5	-15.3
	02	208 56.1	N04 06.4	051 01.7	N04 36.7	56.7	14.6	-15.3
	03	223 56.3	N04 07.3	065 35.3	N04 21.4	56.7	14.6	-15.3
	04	238 56.5	N04 08.3	080 08.9	N04 06.0	56.7	14.7	-15.3
	05	253 56.7	N04 09.3	094 42.5	N03 50.7	56.6	14.7	-15.3
	06	268 56.9	N04 10.2	109 16.2	N03 35.4	56.6	14.7	-15.3
	07	283 57.1	N04 11.2	123 50.0	N03 20.0	56.6	14.8	-15.4
	08	298 57.3	N04 12.2	138 23.7	N03 04.7	56.6	14.8	-15.4
	09	313 57.4	N04 13.1	152 57.5	N02 49.3	56.6	14.8	-15.4
	10	328 57.6	N04 14.1	167 31.4	N02 33.9	56.5	14.9	-15.4
	11	343 57.8	N04 15.1	182 05.2	N02 18.6	56.5	14.9	-15.4
	12	358 58.0	N04 16.0	196 39.1	N02 03.2	56.5	14.9	-15.4
	13	013 58.2	N04 17.0	211 13.1	N01 47.9	56.5	14.9	-15.3
	14	028 58.4	N04 18.0	225 47.0	N01 32.5	56.4	15.0	-15.3
	15	043 58.6	N04 18.9	240 21.0	N01 17.2	56.4	15.0	-15.3
	16	058 58.8	N04 19.9	254 55.0	N01 01.9	56.4	15.0	-15.3
	17	073 58.9	N04 20.9	269 29.0	N00 46.5	56.4	15.0	-15.3
	18	088 59.1	N04 21.8	284 03.1	N00 31.2	56.4	15.1	-15.3
	19	103 59.3	N04 22.8	298 37.1	N00 15.9	56.3	15.1	-15.3
	20	118 59.5	N04 23.8	313 11.2	N00 00.6	56.3	15.1	-15.3
	21	133 59.7	N04 24.7	327 45.3	S00 14.7	56.3	15.1	-15.3
	22	148 59.9	N04 25.7	342 19.4	S00 30.0	56.3	15.1	-15.3
	23	164 00.1	N04 26.7	356 53.6	S00 45.3	56.3	15.2	-15.3

Day 29 noon Sun: v 0.2 d 1.0 SD 16.0 | Moon SD 15.7

Day 30 noon Sun: v 0.2 d 1.0 SD 16.0 | Moon SD 15.5

Day 31 noon Sun: v 0.2 d 1.0 SD 16.0 | Moon SD 15.4

SUN: MARCH 30 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0201	0354	0507	1905	2019	2217
70N	0236	0408	0513	1859	2004	2138
68N	0301	0420	0518	1853	1952	2112
66N	0320	0429	0522	1849	1942	2053
64N	0334	0437	0526	1845	1934	2037
62N	0346	0443	0529	1842	1927	2025
60N	0356	0449	0532	1839	1922	2015
58N	0405	0454	0534	1836	1916	2006
56N	0412	0458	0536	1834	1912	1958
54N	0419	0502	0538	1832	1908	1952
52N	0425	0506	0540	1830	1905	1946
50N	0430	0509	0541	1829	1901	1941
45N	0440	0515	0545	1825	1855	1930
40N	0448	0520	0547	1822	1849	1922
35N	0455	0524	0550	1820	1845	1915
30N	0500	0528	0552	1817	1841	1910
25N	0504	0531	0554	1815	1838	1905
20N	0508	0533	0555	1814	1836	1902
15N	0511	0536	0557	1812	1834	1859
10N	0513	0537	0558	1811	1832	1856
05N	0515	0539	0600	1809	1830	1854
00N	0516	0540	0601	1808	1828	1852
05S	0518	0542	0602	1806	1827	1851
10S	0518	0543	0604	1805	1826	1850
15S	0519	0544	0605	1804	1825	1850
20S	0519	0544	0606	1802	1824	1850
25S	0519	0545	0608	1801	1823	1850
30S	0518	0546	0609	1759	1823	1851
35S	0516	0546	0611	1757	1823	1852
40S	0514	0546	0613	1755	1822	1854
45S	0512	0546	0615	1753	1822	1856
50S	0508	0545	0617	1751	1823	1900
55S	0502	0544	0620	1747	1823	1905
60S	0454	0543	0624	1743	1825	1913

MOON: RISE / SET | UTC HHMM

Lat	Day 29		Day 30		Day 31	
72N	1209	0700	1442	0604	1654	0527
70N	1239	0628	1454	0550	1654	0522
68N	1301	0605	1503	0539	1655	0518
66N	1317	0546	1510	0529	1656	0515
64N	1331	0531	1517	0521	1657	0512
62N	1342	0518	1522	0514	1657	0509
60N	1352	0507	1527	0508	1657	0507
58N	1401	0458	1531	0502	1658	0505
56N	1408	0450	1535	0457	1658	0503
54N	1414	0442	1538	0453	1659	0502
52N	1420	0435	1541	0449	1659	0500
50N	1426	0429	1544	0445	1659	0459
45N	1437	0416	1549	0437	1700	0456
40N	1446	0405	1554	0431	1700	0453
35N	1454	0356	1558	0425	1700	0451
30N	1501	0348	1602	0420	1701	0449
25N	1508	0340	1605	0415	1701	0448
20N	1513	0333	1608	0411	1701	0446
15N	1519	0327	1611	0407	1702	0444
10N	1524	0321	1614	0403	1702	0443
05N	1529	0314	1617	0359	1702	0442
00N	1534	0309	1619	0356	1703	0440
05S	1538	0303	1622	0352	1703	0439
10S	1543	0256	1624	0348	1703	0437
15S	1548	0250	1627	0344	1703	0436
20S	1554	0243	1630	0340	1704	0434
25S	1559	0236	1633	0336	1704	0432
30S	1605	0228	1636	0331	1704	0431
35S	1612	0220	1640	0325	1705	0428
40S	1620	0210	1644	0319	1705	0426
45S	1629	0158	1648	0312	1706	0423
50S	1639	0143	1654	0303	1707	0420
55S	1653	0125	1701	0252	1707	0416
60S	1710	0100	1709	0238	1708	0411

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | APRIL 1 - APRIL 3

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
1	00	189 22.2	159 43.9	N11 37.7	195 16.6	S03 41.4	082 12.2	N22 52.4	183 26.1	N00 15.0
	01	204 24.7	174 43.5	N11 38.9	210 17.2	S03 40.7	097 14.5	N22 52.4	198 28.3	N00 15.1
	02	219 27.2	189 43.0	N11 40.0	225 17.9	S03 39.9	112 16.8	N22 52.4	213 30.5	N00 15.2
	03	234 29.6	204 42.6	N11 41.2	240 18.6	S03 39.1	127 19.1	N22 52.4	228 32.6	N00 15.3
	04	249 32.1	219 42.1	N11 42.3	255 19.2	S03 38.3	142 21.4	N22 52.4	243 34.8	N00 15.4
	05	264 34.6	234 41.7	N11 43.5	270 19.9	S03 37.5	157 23.6	N22 52.4	258 37.0	N00 15.6
	06	279 37.0	249 41.2	N11 44.7	285 20.6	S03 36.8	172 25.9	N22 52.3	273 39.2	N00 15.7
	07	294 39.5	264 40.8	N11 45.8	300 21.3	S03 36.0	187 28.2	N22 52.3	288 41.4	N00 15.8
	08	309 42.0	279 40.3	N11 47.0	315 21.9	S03 35.2	202 30.5	N22 52.3	303 43.5	N00 15.9
	09	324 44.4	294 39.9	N11 48.1	330 22.6	S03 34.4	217 32.8	N22 52.3	318 45.7	N00 16.1
	10	339 46.9	309 39.4	N11 49.3	345 23.3	S03 33.6	232 35.1	N22 52.3	333 47.9	N00 16.2
	11	354 49.3	324 39.0	N11 50.4	000 23.9	S03 32.8	247 37.4	N22 52.2	348 50.1	N00 16.3
	12	009 51.8	339 38.5	N11 51.6	015 24.6	S03 32.1	262 39.6	N22 52.2	003 52.2	N00 16.4
	13	024 54.3	354 38.1	N11 52.7	030 25.3	S03 31.3	277 41.9	N22 52.2	018 54.4	N00 16.5
	14	039 56.7	009 37.6	N11 53.9	045 25.9	S03 30.5	292 44.2	N22 52.2	033 56.6	N00 16.7
	15	054 59.2	024 37.2	N11 55.1	060 26.6	S03 29.7	307 46.5	N22 52.2	048 58.8	N00 16.8
	16	070 01.7	039 36.7	N11 56.2	075 27.3	S03 28.9	322 48.8	N22 52.2	064 01.0	N00 16.9
	17	085 04.1	054 36.3	N11 57.4	090 27.9	S03 28.1	337 51.1	N22 52.1	079 03.1	N00 17.0
	18	100 06.6	069 35.8	N11 58.5	105 28.6	S03 27.4	352 53.3	N22 52.1	094 05.3	N00 17.1
	19	115 09.1	084 35.3	N11 59.7	120 29.3	S03 26.6	007 55.6	N22 52.1	109 07.5	N00 17.3
	20	130 11.5	099 34.9	N12 00.8	135 30.0	S03 25.8	022 57.9	N22 52.1	124 09.7	N00 17.4
	21	145 14.0	114 34.4	N12 02.0	150 30.6	S03 25.0	038 00.2	N22 52.1	139 11.8	N00 17.5
	22	160 16.4	129 34.0	N12 03.1	165 31.3	S03 24.2	053 02.5	N22 52.0	154 14.0	N00 17.6
	23	175 18.9	144 33.5	N12 04.3	180 32.0	S03 23.5	068 04.8	N22 52.0	169 16.2	N00 17.7
2	00	190 21.4	159 33.1	N12 05.4	195 32.6	S03 22.7	083 07.0	N22 52.0	184 18.4	N00 17.9
	01	205 23.8	174 32.6	N12 06.6	210 33.3	S03 21.9	098 09.3	N22 52.0	199 20.6	N00 18.0
	02	220 26.3	189 32.2	N12 07.7	225 34.0	S03 21.1	113 11.6	N22 52.0	214 22.7	N00 18.1
	03	235 28.8	204 31.7	N12 08.9	240 34.6	S03 20.3	128 13.9	N22 52.0	229 24.9	N00 18.2
	04	250 31.2	219 31.2	N12 10.0	255 35.3	S03 19.5	143 16.2	N22 51.9	244 27.1	N00 18.4
	05	265 33.7	234 30.8	N12 11.2	270 36.0	S03 18.8	158 18.4	N22 51.9	259 29.3	N00 18.5
	06	280 36.2	249 30.3	N12 12.3	285 36.7	S03 18.0	173 20.7	N22 51.9	274 31.4	N00 18.6
	07	295 38.6	264 29.9	N12 13.4	300 37.3	S03 17.2	188 23.0	N22 51.9	289 33.6	N00 18.7
	08	310 41.1	279 29.4	N12 14.6	315 38.0	S03 16.4	203 25.3	N22 51.9	304 35.8	N00 18.8
	09	325 43.6	294 28.9	N12 15.7	330 38.7	S03 15.6	218 27.5	N22 51.8	319 38.0	N00 19.0
	10	340 46.0	309 28.5	N12 16.9	345 39.3	S03 14.8	233 29.8	N22 51.8	334 40.2	N00 19.1
	11	355 48.5	324 28.0	N12 18.0	000 40.0	S03 14.1	248 32.1	N22 51.8	349 42.3	N00 19.2
	12	010 50.9	339 27.6	N12 19.2	015 40.7	S03 13.3	263 34.4	N22 51.8	004 44.5	N00 19.3
	13	025 53.4	354 27.1	N12 20.3	030 41.3	S03 12.5	278 36.7	N22 51.8	019 46.7	N00 19.4
	14	040 55.9	009 26.6	N12 21.4	045 42.0	S03 11.7	293 38.9	N22 51.8	034 48.9	N00 19.6
	15	055 58.3	024 26.2	N12 22.6	060 42.7	S03 10.9	308 41.2	N22 51.7	049 51.1	N00 19.7
	16	071 00.8	039 25.7	N12 23.7	075 43.4	S03 10.1	323 43.5	N22 51.7	064 53.2	N00 19.8
	17	086 03.3	054 25.3	N12 24.9	090 44.0	S03 09.4	338 45.8	N22 51.7	079 55.4	N00 19.9
	18	101 05.7	069 24.8	N12 26.0	105 44.7	S03 08.6	353 48.0	N22 51.7	094 57.6	N00 20.0
	19	116 08.2	084 24.3	N12 27.1	120 45.4	S03 07.8	008 50.3	N22 51.7	109 59.8	N00 20.2
	20	131 10.7	099 23.9	N12 28.3	135 46.0	S03 07.0	023 52.6	N22 51.6	125 01.9	N00 20.3
	21	146 13.1	114 23.4	N12 29.4	150 46.7	S03 06.2	038 54.9	N22 51.6	140 04.1	N00 20.4
	22	161 15.6	129 22.9	N12 30.6	165 47.4	S03 05.4	053 57.1	N22 51.6	155 06.3	N00 20.5
	23	176 18.1	144 22.5	N12 31.7	180 48.1	S03 04.7	068 59.4	N22 51.6	170 08.5	N00 20.7
3	00	191 20.5	159 22.0	N12 32.8	195 48.7	S03 03.9	084 01.7	N22 51.6	185 10.7	N00 20.8
	01	206 23.0	174 21.6	N12 34.0	210 49.4	S03 03.1	099 03.9	N22 51.5	200 12.8	N00 20.9
	02	221 25.4	189 21.1	N12 35.1	225 50.1	S03 02.3	114 06.2	N22 51.5	215 15.0	N00 21.0
	03	236 27.9	204 20.6	N12 36.2	240 50.8	S03 01.5	129 08.5	N22 51.5	230 17.2	N00 21.1
	04	251 30.4	219 20.2	N12 37.4	255 51.4	S03 00.7	144 10.8	N22 51.5	245 19.4	N00 21.3
	05	266 32.8	234 19.7	N12 38.5	270 52.1	S03 00.0	159 13.0	N22 51.5	260 21.6	N00 21.4
	06	281 35.3	249 19.2	N12 39.6	285 52.8	S02 59.2	174 15.3	N22 51.4	275 23.7	N00 21.5
	07	296 37.8	264 18.8	N12 40.8	300 53.4	S02 58.4	189 17.6	N22 51.4	290 25.9	N00 21.6
	08	311 40.2	279 18.3	N12 41.9	315 54.1	S02 57.6	204 19.8	N22 51.4	305 28.1	N00 21.7
	09	326 42.7	294 17.8	N12 43.0	330 54.8	S02 56.8	219 22.1	N22 51.4	320 30.3	N00 21.9
	10	341 45.2	309 17.4	N12 44.2	345 55.5	S02 56.0	234 24.4	N22 51.4	335 32.4	N00 22.0
	11	356 47.6	324 16.9	N12 45.3	000 56.1	S02 55.3	249 26.7	N22 51.3	350 34.6	N00 22.1
	12	011 50.1	339 16.4	N12 46.4	015 56.8	S02 54.5	264 28.9	N22 51.3	005 36.8	N00 22.2
	13	026 52.5	354 15.9	N12 47.6	030 57.5	S02 53.7	279 31.2	N22 51.3	020 39.0	N00 22.3
	14	041 55.0	009 15.5	N12 48.7	045 58.2	S02 52.9	294 33.5	N22 51.3	035 41.2	N00 22.5
	15	056 57.5	024 15.0	N12 49.8	060 58.8	S02 52.1	309 35.7	N22 51.3	050 43.3	N00 22.6
	16	071 59.9	039 14.5	N12 51.0	075 59.5	S02 51.3	324 38.0	N22 51.2	065 45.5	N00 22.7
	17	087 02.4	054 14.1	N12 52.1	091 00.2	S02 50.6	339 40.3	N22 51.2	080 47.7	N00 22.8
	18	102 04.9	069 13.6	N12 53.2	106 00.8	S02 49.8	354 42.5	N22 51.2	095 49.9	N00 22.9
	19	117 07.3	084 13.1	N12 54.3	121 01.5	S02 49.0	009 44.8	N22 51.2	110 52.1	N00 23.1
	20	132 09.8	099 12.6	N12 55.5	136 02.2	S02 48.2	024 47.1	N22 51.2	125 54.2	N00 23.2
	21	147 12.3	114 12.2	N12 56.6	151 02.9	S02 47.4	039 49.3	N22 51.1	140 56.4	N00 23.3
	22	162 14.7	129 11.7	N12 57.7	166 03.5	S02 46.6	054 51.6	N22 51.1	155 58.6	N00 23.4
	23	177 17.2	144 11.2	N12 58.8	181 04.2	S02 45.9	069 53.9	N22 51.1	171 00.8	N00 23.6

Venus	Mars	Jupiter	Saturn
1: v -0.5 d 1.2	1: v 0.7 d 0.8	1: v 2.3 d 0.0	1: v 2.2 d 0.1
2: v -0.5 d 1.1	2: v 0.7 d 0.8	2: v 2.3 d 0.0	2: v 2.2 d 0.1
3: v -0.5 d 1.1	3: v 0.7 d 0.8	3: v 2.3 d 0.0	3: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.3	S40 12.1
Achernar	335 20.0	S57 06.3
Acrux	172 58.3	S63 14.8
Adhara	255 05.1	S29 00.7
Al Na'ir	027 32.0	S46 49.9
Aldebaran	290 38.6	N16 33.7
Alioth	166 11.5	N55 48.9
Alkaid	152 50.7	N49 10.7
Alnilam	275 36.8	S01 11.2
Alphard	217 46.6	S08 46.5
Alphecca	126 02.6	N26 37.3
Alpheratz	357 34.1	N29 14.0
Altair	061 59.1	N08 56.1
Ankaa	353 06.6	S42 09.8
Antares	112 14.4	S26 29.4
Arcturus	145 46.7	N19 02.5
Atria	107 07.5	S69 04.3
Avior	234 14.1	S59 35.9
Bellatrix	278 21.9	N06 22.3
Betelgeuse	270 51.1	N07 24.6
Canopus	263 52.0	S52 42.8
Capella	280 20.6	N46 01.6
Deneb	049 25.3	N45 22.1
Denebola	182 23.6	N14 25.4
Diphda	348 46.6	S17 50.6
Dubhe	193 39.2	N61 36.6
Elnath	278 00.7	N28 37.8
Eltanin	090 41.6	N51 28.7
Enif	033 38.0	N09 59.6
Fomalhaut	015 13.7	S29 29.0
Gacrux	171 50.0	S57 15.7
Gienah	175 42.2	S17 41.4
Hadar	148 34.0	S60 30.0
Hamal	327 50.4	N23 35.2
Kaus Australi	083 31.1	S34 22.3
Kochab	137 18.8	N74 02.6
Markab	013 29.2	N15 20.7
Menkar	314 05.4	N04 11.5
Menkent	147 56.1	S36 30.0
Miaplacidus	221 37.6	S69 49.7
Mirfak	308 27.2	N49 57.3
Nunki	075 46.5	S26 15.8
Peacock	053 04.4	S56 38.8
Polaris	313 55.6	N89 22.7
Pollux	243 16.0	N27 57.8
Procyon	244 49.7	N05 09.4
Rasalhague	095 57.5	N12 32.2
Regulus	207 33.1	N11 50.2
Rigel	281 03.0	S08 10.4
Rigil Kentaur	139 38.4	S60 56.6
Sabik	102 01.5	S15 45.5
Schedar	349 30.5	N56 40.8
Shaula	096 08.9	S37 07.3
Sirius	258 25.4	S16 45.3
Spica	158 20.9	S11 18.1
Suhail	222 45.3	S43 32.6
Vega	080 32.5	N38 48.1
Zubenelgenubi	136 54.6	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	328 36.6	1322
Mars	004 49.7	1057
Jupiter	252 43.4	1825
Saturn	353 53.6	1141

2026 | APRIL 1 - APRIL 3

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
1	00	179 00.2	N04 27.6	011 27.8	S01 00.5	56.2	15.2	-15.2
	01	194 00.4	N04 28.6	026 01.9	S01 15.8	56.2	15.2	-15.2
	02	209 00.6	N04 29.6	040 36.1	S01 31.0	56.2	15.2	-15.2
	03	224 00.8	N04 30.5	055 10.3	S01 46.2	56.2	15.2	-15.2
	04	239 01.0	N04 31.5	069 44.5	S02 01.4	56.2	15.2	-15.2
	05	254 01.2	N04 32.5	084 18.8	S02 16.6	56.1	15.2	-15.2
	06	269 01.4	N04 33.4	098 53.0	S02 31.7	56.1	15.2	-15.1
	07	284 01.6	N04 34.4	113 27.2	S02 46.8	56.1	15.3	-15.1
	08	299 01.7	N04 35.4	128 01.5	S03 01.9	56.1	15.3	-15.1
	09	314 01.9	N04 36.3	142 35.8	S03 17.0	56.1	15.3	-15.1
	10	329 02.1	N04 37.3	157 10.0	S03 32.1	56.0	15.3	-15.0
	11	344 02.3	N04 38.2	171 44.3	S03 47.1	56.0	15.3	-15.0
	12	359 02.5	N04 39.2	186 18.6	S04 02.1	56.0	15.3	-15.0
	13	014 02.7	N04 40.2	200 52.8	S04 17.1	56.0	15.3	-15.0
	14	029 02.9	N04 41.1	215 27.1	S04 32.1	56.0	15.3	-14.9
	15	044 03.0	N04 42.1	230 01.4	S04 47.0	55.9	15.3	-14.9
	16	059 03.2	N04 43.1	244 35.7	S05 01.9	55.9	15.3	-14.9
	17	074 03.4	N04 44.0	259 09.9	S05 16.8	55.9	15.3	-14.8
	18	089 03.6	N04 45.0	273 44.2	S05 31.6	55.9	15.3	-14.8
	19	104 03.8	N04 46.0	288 18.5	S05 46.4	55.9	15.3	-14.8
	20	119 04.0	N04 46.9	302 52.7	S06 01.2	55.8	15.3	-14.7
	21	134 04.2	N04 47.9	317 27.0	S06 15.9	55.8	15.3	-14.7
	22	149 04.3	N04 48.8	332 01.3	S06 30.6	55.8	15.2	-14.7
	23	164 04.5	N04 49.8	346 35.5	S06 45.2	55.8	15.2	-14.6
2	00	179 04.7	N04 50.8	001 09.7	S06 59.9	55.8	15.2	-14.6
	01	194 04.9	N04 51.7	015 44.0	S07 14.4	55.7	15.2	-14.5
	02	209 05.1	N04 52.7	030 18.2	S07 29.0	55.7	15.2	-14.5
	03	224 05.3	N04 53.6	044 52.4	S07 43.5	55.7	15.2	-14.5
	04	239 05.5	N04 54.6	059 26.6	S07 57.9	55.7	15.2	-14.4
	05	254 05.6	N04 55.6	074 00.8	S08 12.4	55.7	15.2	-14.4
	06	269 05.8	N04 56.5	088 34.9	S08 26.7	55.6	15.2	-14.3
	07	284 06.0	N04 57.5	103 09.1	S08 41.1	55.6	15.1	-14.3
	08	299 06.2	N04 58.5	117 43.2	S08 55.3	55.6	15.1	-14.2
	09	314 06.4	N04 59.4	132 17.3	S09 09.6	55.6	15.1	-14.2
	10	329 06.6	N05 00.4	146 51.4	S09 23.8	55.6	15.1	-14.1
	11	344 06.7	N05 01.3	161 25.5	S09 37.9	55.5	15.1	-14.1
	12	359 06.9	N05 02.3	175 59.6	S09 52.0	55.5	15.0	-14.0
	13	014 07.1	N05 03.3	190 33.6	S10 06.0	55.5	15.0	-14.0
	14	029 07.3	N05 04.2	205 07.7	S10 20.0	55.5	15.0	-13.9
	15	044 07.5	N05 05.2	219 41.7	S10 34.0	55.5	15.0	-13.9
	16	059 07.7	N05 06.1	234 15.6	S10 47.9	55.4	15.0	-13.8
	17	074 07.9	N05 07.1	248 49.6	S11 01.7	55.4	14.9	-13.8
	18	089 08.0	N05 08.1	263 23.5	S11 15.5	55.4	14.9	-13.7
	19	104 08.2	N05 09.0	277 57.4	S11 29.2	55.4	14.9	-13.7
	20	119 08.4	N05 10.0	292 31.3	S11 42.9	55.4	14.9	-13.6
	21	134 08.6	N05 10.9	307 05.1	S11 56.5	55.3	14.8	-13.6
	22	149 08.8	N05 11.9	321 39.0	S12 10.0	55.3	14.8	-13.5
	23	164 09.0	N05 12.8	336 12.8	S12 23.5	55.3	14.8	-13.4
3	00	179 09.1	N05 13.8	350 46.5	S12 37.0	55.3	14.7	-13.4
	01	194 09.3	N05 14.8	005 20.3	S12 50.3	55.3	14.7	-13.3
	02	209 09.5	N05 15.7	019 54.0	S13 03.7	55.3	14.7	-13.2
	03	224 09.7	N05 16.7	034 27.6	S13 16.9	55.2	14.6	-13.2
	04	239 09.9	N05 17.6	049 01.3	S13 30.1	55.2	14.6	-13.1
	05	254 10.1	N05 18.6	063 34.9	S13 43.2	55.2	14.6	-13.1
	06	269 10.3	N05 19.5	078 08.5	S13 56.3	55.2	14.5	-13.0
	07	284 10.4	N05 20.5	092 42.0	S14 09.3	55.2	14.5	-12.9
	08	299 10.6	N05 21.5	107 15.5	S14 22.2	55.1	14.5	-12.9
	09	314 10.8	N05 22.4	121 49.0	S14 35.0	55.1	14.4	-12.8
	10	329 11.0	N05 23.4	136 22.4	S14 47.8	55.1	14.4	-12.7
	11	344 11.2	N05 24.3	150 55.8	S15 00.5	55.1	14.4	-12.6
	12	359 11.4	N05 25.3	165 29.2	S15 13.2	55.1	14.3	-12.6
	13	014 11.5	N05 26.2	180 02.5	S15 25.8	55.1	14.3	-12.5
	14	029 11.7	N05 27.2	194 35.8	S15 38.3	55.0	14.2	-12.4
	15	044 11.9	N05 28.2	209 09.0	S15 50.7	55.0	14.2	-12.4
	16	059 12.1	N05 29.1	223 42.2	S16 03.1	55.0	14.2	-12.3
	17	074 12.3	N05 30.1	238 15.4	S16 15.3	55.0	14.1	-12.2
	18	089 12.5	N05 31.0	252 48.5	S16 27.5	55.0	14.1	-12.1
	19	104 12.6	N05 32.0	267 21.5	S16 39.7	55.0	14.0	-12.1
	20	119 12.8	N05 32.9	281 54.6	S16 51.7	54.9	14.0	-12.0
	21	134 13.0	N05 33.9	296 27.6	S17 03.7	54.9	13.9	-11.9
	22	149 13.2	N05 34.8	311 00.5	S17 15.6	54.9	13.9	-11.8
	23	164 13.4	N05 35.8	325 33.4	S17 27.4	54.9	13.9	-11.7

Day 1 noon Sun: v 0.2 d 1.0 SD 16.0 | Moon SD 15.3

Day 2 noon Sun: v 0.2 d 1.0 SD 16.0 | Moon SD 15.1

Day 3 noon Sun: v 0.2 d 1.0 SD 16.0 | Moon SD 15.0

SUN: APRIL 2 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0125	0335	0451	1919	2036	2255
70N	0213	0352	0459	1911	2018	2201
68N	0243	0406	0505	1904	2004	2129
66N	0304	0416	0511	1859	1953	2107
64N	0321	0425	0515	1854	1944	2049
62N	0334	0433	0519	1850	1936	2035
60N	0346	0439	0522	1846	1929	2024
58N	0355	0445	0525	1843	1924	2014
56N	0403	0450	0528	1840	1918	2005
54N	0411	0454	0531	1838	1914	1958
52N	0417	0458	0533	1835	1910	1952
50N	0422	0502	0535	1833	1906	1946
45N	0434	0509	0539	1829	1859	1934
40N	0443	0515	0543	1825	1853	1925
35N	0450	0520	0546	1822	1848	1918
30N	0456	0524	0548	1819	1843	1912
25N	0501	0528	0551	1817	1840	1907
20N	0505	0531	0553	1815	1837	1903
15N	0508	0533	0555	1812	1834	1859
10N	0511	0536	0557	1810	1832	1856
05N	0513	0538	0559	1809	1829	1854
00N	0515	0540	0600	1807	1828	1852
05S	0517	0541	0602	1805	1826	1850
10S	0518	0543	0604	1803	1824	1849
15S	0519	0544	0605	1801	1823	1848
20S	0520	0545	0607	1800	1822	1847
25S	0520	0546	0609	1758	1820	1847
30S	0520	0547	0611	1755	1819	1847
35S	0519	0548	0613	1753	1818	1848
40S	0517	0549	0616	1751	1818	1849
45S	0515	0549	0619	1748	1817	1851
50S	0512	0550	0622	1744	1816	1854
55S	0508	0550	0626	1740	1816	1858
60S	0501	0550	0631	1734	1816	1904

MOON: RISE / SET | UTC HHMM

Lat	Day 1		Day 2		Day 3	
72N	1901	0453	2118	0418	--	0332
70N	1852	0456	2055	0430	2322	0357
68N	1845	0459	2038	0439	2242	0416
66N	1839	0501	2024	0447	2216	0432
64N	1834	0503	2012	0454	2155	0445
62N	1830	0505	2003	0500	2139	0455
60N	1826	0506	1955	0505	2125	0505
58N	1823	0507	1948	0510	2113	0513
56N	1820	0508	1941	0514	2103	0520
54N	1817	0509	1936	0517	2055	0527
52N	1815	0510	1931	0521	2047	0532
50N	1813	0511	1926	0524	2040	0538
45N	1808	0513	1916	0531	2025	0549
40N	1804	0515	1908	0536	2012	0559
35N	1801	0516	1901	0541	2002	0607
30N	1758	0517	1855	0545	1953	0614
25N	1756	0518	1850	0549	1945	0621
20N	1753	0519	1845	0553	1937	0627
15N	1751	0520	1840	0556	1930	0633
10N	1749	0521	1836	0559	1924	0638
05N	1747	0522	1832	0602	1918	0643
00N	1745	0523	1828	0605	1911	0648
05S	1743	0524	1824	0608	1905	0654
10S	1741	0525	1819	0612	1859	0659
15S	1739	0526	1815	0615	1852	0704
20S	1737	0527	1811	0618	1846	0710
25S	1735	0527	1806	0622	1838	0716
30S	1732	0529	1801	0626	1831	0723
35S	1730	0530	1755	0630	1822	0731
40S	1727	0531	1748	0635	1812	0739
45S	1723	0533	1741	0641	1801	0749
50S	1719	0535	1732	0648	1747	0801
55S	1714	0537	1721	0657	1730	0817
60S	1707	0540	1707	0708	1707	0838

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | APRIL 4 - APRIL 6

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
4	00	192 19.7	159 10.8	N13 00.0	196 04.9	S02 45.1	084 56.1	N22 51.1	186 02.9	N00 23.7
	01	207 22.1	174 10.3	N13 01.1	211 05.6	S02 44.3	099 58.4	N22 51.1	201 05.1	N00 23.8
	02	222 24.6	189 09.8	N13 02.2	226 06.2	S02 43.5	115 00.7	N22 51.0	216 07.3	N00 23.9
	03	237 27.0	204 09.3	N13 03.3	241 06.9	S02 42.7	130 02.9	N22 51.0	231 09.5	N00 24.0
	04	252 29.5	219 08.9	N13 04.5	256 07.6	S02 41.9	145 05.2	N22 51.0	246 11.7	N00 24.2
	05	267 32.0	234 08.4	N13 05.6	271 08.3	S02 41.1	160 07.5	N22 51.0	261 13.8	N00 24.3
	06	282 34.4	249 07.9	N13 06.7	286 08.9	S02 40.4	175 09.7	N22 51.0	276 16.0	N00 24.4
	07	297 36.9	264 07.4	N13 07.8	301 09.6	S02 39.6	190 12.0	N22 50.9	291 18.2	N00 24.5
	08	312 39.4	279 07.0	N13 08.9	316 10.3	S02 38.8	205 14.2	N22 50.9	306 20.4	N00 24.6
	09	327 41.8	294 06.5	N13 10.1	331 11.0	S02 38.0	220 16.5	N22 50.9	321 22.6	N00 24.8
	10	342 44.3	309 06.0	N13 11.2	346 11.6	S02 37.2	235 18.8	N22 50.9	336 24.7	N00 24.9
	11	357 46.8	324 05.5	N13 12.3	001 12.3	S02 36.4	250 21.0	N22 50.9	351 26.9	N00 25.0
	12	012 49.2	339 05.0	N13 13.4	016 13.0	S02 35.7	265 23.3	N22 50.8	006 29.1	N00 25.1
	13	027 51.7	354 04.6	N13 14.5	031 13.6	S02 34.9	280 25.6	N22 50.8	021 31.3	N00 25.2
	14	042 54.1	009 04.1	N13 15.6	046 14.3	S02 34.1	295 27.8	N22 50.8	036 33.4	N00 25.4
	15	057 56.6	024 03.6	N13 16.8	061 15.0	S02 33.3	310 30.1	N22 50.8	051 35.6	N00 25.5
	16	072 59.1	039 03.1	N13 17.9	076 15.7	S02 32.5	325 32.3	N22 50.8	066 37.8	N00 25.6
	17	088 01.5	054 02.6	N13 19.0	091 16.3	S02 31.7	340 34.6	N22 50.7	081 40.0	N00 25.7
	18	103 04.0	069 02.2	N13 20.1	106 17.0	S02 31.0	355 36.9	N22 50.7	096 42.2	N00 25.8
	19	118 06.5	084 01.7	N13 21.2	121 17.7	S02 30.2	010 39.1	N22 50.7	111 44.3	N00 26.0
	20	133 08.9	099 01.2	N13 22.3	136 18.4	S02 29.4	025 41.4	N22 50.7	126 46.5	N00 26.1
	21	148 11.4	114 00.7	N13 23.4	151 19.0	S02 28.6	040 43.6	N22 50.7	141 48.7	N00 26.2
	22	163 13.9	129 00.2	N13 24.6	166 19.7	S02 27.8	055 45.9	N22 50.6	156 50.9	N00 26.3
	23	178 16.3	143 59.8	N13 25.7	181 20.4	S02 27.0	070 48.2	N22 50.6	171 53.1	N00 26.4
5	00	193 18.8	158 59.3	N13 26.8	196 21.1	S02 26.2	085 50.4	N22 50.6	186 55.2	N00 26.6
	01	208 21.3	173 58.8	N13 27.9	211 21.8	S02 25.5	100 52.7	N22 50.6	201 57.4	N00 26.7
	02	223 23.7	188 58.3	N13 29.0	226 22.4	S02 24.7	115 54.9	N22 50.5	216 59.6	N00 26.8
	03	238 26.2	203 57.8	N13 30.1	241 23.1	S02 23.9	130 57.2	N22 50.5	232 01.8	N00 26.9
	04	253 28.6	218 57.3	N13 31.2	256 23.8	S02 23.1	145 59.4	N22 50.5	247 04.0	N00 27.0
	05	268 31.1	233 56.9	N13 32.3	271 24.5	S02 22.3	161 01.7	N22 50.5	262 06.1	N00 27.2
	06	283 33.6	248 56.4	N13 33.4	286 25.1	S02 21.5	176 04.0	N22 50.5	277 08.3	N00 27.3
	07	298 36.0	263 55.9	N13 34.5	301 25.8	S02 20.8	191 06.2	N22 50.4	292 10.5	N00 27.4
	08	313 38.5	278 55.4	N13 35.6	316 26.5	S02 20.0	206 08.5	N22 50.4	307 12.7	N00 27.5
	09	328 41.0	293 54.9	N13 36.7	331 27.2	S02 19.2	221 10.7	N22 50.4	322 14.9	N00 27.6
	10	343 43.4	308 54.4	N13 37.8	346 27.8	S02 18.4	236 13.0	N22 50.4	337 17.0	N00 27.8
	11	358 45.9	323 53.9	N13 39.0	001 28.5	S02 17.6	251 15.2	N22 50.4	352 19.2	N00 27.9
	12	013 48.4	338 53.5	N13 40.1	016 29.2	S02 16.8	266 17.5	N22 50.3	007 21.4	N00 28.0
	13	028 50.8	353 53.0	N13 41.2	031 29.9	S02 16.0	281 19.7	N22 50.3	022 23.6	N00 28.1
	14	043 53.3	008 52.5	N13 42.3	046 30.5	S02 15.3	296 22.0	N22 50.3	037 25.7	N00 28.2
	15	058 55.8	023 52.0	N13 43.4	061 31.2	S02 14.5	311 24.2	N22 50.3	052 27.9	N00 28.4
	16	073 58.2	038 51.5	N13 44.5	076 31.9	S02 13.7	326 26.5	N22 50.2	067 30.1	N00 28.5
	17	089 00.7	053 51.0	N13 45.6	091 32.6	S02 12.9	341 28.8	N22 50.2	082 32.3	N00 28.6
	18	104 03.1	068 50.5	N13 46.7	106 33.2	S02 12.1	356 31.0	N22 50.2	097 34.5	N00 28.7
	19	119 05.6	083 50.0	N13 47.8	121 33.9	S02 11.3	011 33.3	N22 50.2	112 36.6	N00 28.8
	20	134 08.1	098 49.5	N13 48.9	136 34.6	S02 10.6	026 35.5	N22 50.2	127 38.8	N00 29.0
	21	149 10.5	113 49.1	N13 50.0	151 35.3	S02 09.8	041 37.8	N22 50.1	142 41.0	N00 29.1
	22	164 13.0	128 48.6	N13 51.1	166 36.0	S02 09.0	056 40.0	N22 50.1	157 43.2	N00 29.2
	23	179 15.5	143 48.1	N13 52.2	181 36.6	S02 08.2	071 42.3	N22 50.1	172 45.4	N00 29.3
6	00	194 17.9	158 47.6	N13 53.3	196 37.3	S02 07.4	086 44.5	N22 50.1	187 47.5	N00 29.4
	01	209 20.4	173 47.1	N13 54.4	211 38.0	S02 06.6	101 46.8	N22 50.0	202 49.7	N00 29.6
	02	224 22.9	188 46.6	N13 55.5	226 38.7	S02 05.8	116 49.0	N22 50.0	217 51.9	N00 29.7
	03	239 25.3	203 46.1	N13 56.5	241 39.3	S02 05.1	131 51.3	N22 50.0	232 54.1	N00 29.8
	04	254 27.8	218 45.6	N13 57.6	256 40.0	S02 04.3	146 53.5	N22 50.0	247 56.3	N00 29.9
	05	269 30.2	233 45.1	N13 58.7	271 40.7	S02 03.5	161 55.8	N22 50.0	262 58.4	N00 30.0
	06	284 32.7	248 44.6	N13 59.8	286 41.4	S02 02.7	176 58.0	N22 49.9	278 00.6	N00 30.2
	07	299 35.2	263 44.1	N14 00.9	301 42.0	S02 01.9	192 00.3	N22 49.9	293 02.8	N00 30.3
	08	314 37.6	278 43.6	N14 02.0	316 42.7	S02 01.1	207 02.5	N22 49.9	308 05.0	N00 30.4
	09	329 40.1	293 43.1	N14 03.1	331 43.4	S02 00.4	222 04.8	N22 49.9	323 07.2	N00 30.5
	10	344 42.6	308 42.6	N14 04.2	346 44.1	S01 59.6	237 07.0	N22 49.8	338 09.3	N00 30.6
	11	359 45.0	323 42.1	N14 05.3	001 44.8	S01 58.8	252 09.2	N22 49.8	353 11.5	N00 30.8
	12	014 47.5	338 41.6	N14 06.4	016 45.4	S01 58.0	267 11.5	N22 49.8	008 13.7	N00 30.9
	13	029 50.0	353 41.2	N14 07.5	031 46.1	S01 57.2	282 13.7	N22 49.8	023 15.9	N00 31.0
	14	044 52.4	008 40.7	N14 08.6	046 46.8	S01 56.4	297 16.0	N22 49.8	038 18.1	N00 31.1
	15	059 54.9	023 40.2	N14 09.6	061 47.5	S01 55.6	312 18.2	N22 49.7	053 20.2	N00 31.2
	16	074 57.4	038 39.7	N14 10.7	076 48.1	S01 54.9	327 20.5	N22 49.7	068 22.4	N00 31.4
	17	089 59.8	053 39.2	N14 11.8	091 48.8	S01 54.1	342 22.7	N22 49.7	083 24.6	N00 31.5
	18	105 02.3	068 38.7	N14 12.9	106 49.5	S01 53.3	357 25.0	N22 49.7	098 26.8	N00 31.6
	19	120 04.7	083 38.2	N14 14.0	121 50.2	S01 52.5	012 27.2	N22 49.6	113 29.0	N00 31.7
	20	135 07.2	098 37.7	N14 15.1	136 50.9	S01 51.7	027 29.5	N22 49.6	128 31.1	N00 31.8
	21	150 09.7	113 37.2	N14 16.2	151 51.5	S01 50.9	042 31.7	N22 49.6	143 33.3	N00 32.0
	22	165 12.1	128 36.7	N14 17.2	166 52.2	S01 50.1	057 33.9	N22 49.6	158 35.5	N00 32.1
	23	180 14.6	143 36.2	N14 18.3	181 52.9	S01 49.4	072 36.2	N22 49.5	173 37.7	N00 32.2

Venus	Mars	Jupiter	Saturn
4: v -0.5 d 1.1	4: v 0.7 d 0.8	4: v 2.3 d 0.0	4: v 2.2 d 0.1
5: v -0.5 d 1.1	5: v 0.7 d 0.8	5: v 2.3 d 0.0	5: v 2.2 d 0.1
6: v -0.5 d 1.1	6: v 0.7 d 0.8	6: v 2.2 d 0.0	6: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.4	S40 12.1
Achernar	335 20.0	S57 06.3
Acrux	172 58.3	S63 14.8
Adhara	255 05.1	S29 00.7
Al Na'ir	027 32.0	S46 49.9
Aldebaran	290 38.7	N16 33.7
Alioth	166 11.5	N55 48.9
Alkaid	152 50.7	N49 10.7
Alnilam	275 36.8	S01 11.2
Alphard	217 46.6	S08 46.5
Alphecca	126 02.6	N26 37.3
Alpheratz	357 34.1	N29 14.0
Altair	061 59.0	N08 56.1
Ankaa	353 06.6	S42 09.8
Antares	112 14.4	S26 29.4
Arcturus	145 46.7	N19 02.5
Atria	107 07.4	S69 04.3
Avior	234 14.1	S59 35.9
Bellatrix	278 21.9	N06 22.3
Betelgeuse	270 51.1	N07 24.6
Canopus	263 52.0	S52 42.8
Capella	280 20.6	N46 01.6
Deneb	049 25.3	N45 22.1
Denebola	182 23.6	N14 25.4
Diphda	348 46.6	S17 50.6
Dubhe	193 39.2	N61 36.6
Elnath	278 00.7	N28 37.8
Eltanin	090 41.6	N51 28.7
Enif	033 38.0	N09 59.6
Fomalhaut	015 13.7	S29 29.0
Gacrux	171 50.0	S57 15.8
Gienah	175 42.2	S17 41.4
Hadar	148 34.0	S60 30.0
Hamal	327 50.4	N23 35.1
Kaus Australi	083 31.1	S34 22.3
Kochab	137 18.8	N74 02.6
Markab	013 29.2	N15 20.7
Menkar	314 05.4	N04 11.5
Menkent	147 56.1	S36 30.0
Miaplacidus	221 37.6	S69 49.8
Mirfak	308 27.2	N49 57.3
Nunki	075 46.5	S26 15.8
Peacock	053 04.3	S56 38.8
Polaris	313 56.3	N89 22.6
Pollux	243 16.0	N27 57.8
Procyon	244 49.7	N05 09.4
Rasalhague	095 57.5	N12 32.2
Regulus	207 33.1	N11 50.2
Rigel	281 03.0	S08 10.4
Rigil Kentaur	139 38.3	S60 56.6
Sabik	102 01.5	S15 45.5
Schedar	349 30.5	N56 40.8
Shaula	096 08.8	S37 07.3
Sirius	258 25.4	S16 45.3
Spica	158 20.9	S11 18.1
Suhail	222 45.4	S43 32.6
Vega	080 32.5	N38 48.1
Zubenelgenubi	136 54.6	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	325 05.1	1324
Mars	002 40.8	1054
Jupiter	252 29.1	1814
Saturn	353 33.0	1131

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
4	00	179 13.5	N05 36.7	340 06.3	S17 39.1	54.9	13.8	-11.7
	01	194 13.7	N05 37.7	354 39.1	S17 50.8	54.9	13.8	-11.6
	02	209 13.9	N05 38.7	009 11.9	S18 02.4	54.8	13.7	-11.5
	03	224 14.1	N05 39.6	023 44.6	S18 13.8	54.8	13.7	-11.4
	04	239 14.3	N05 40.6	038 17.3	S18 25.2	54.8	13.6	-11.3
	05	254 14.5	N05 41.5	052 49.9	S18 36.6	54.8	13.6	-11.2
	06	269 14.6	N05 42.5	067 22.5	S18 47.8	54.8	13.5	-11.1
	07	284 14.8	N05 43.4	081 55.0	S18 58.9	54.8	13.5	-11.1
	08	299 15.0	N05 44.4	096 27.5	S19 10.0	54.7	13.4	-11.0
	09	314 15.2	N05 45.3	110 59.9	S19 21.0	54.7	13.4	-10.9
	10	329 15.4	N05 46.3	125 32.3	S19 31.8	54.7	13.3	-10.8
	11	344 15.6	N05 47.2	140 04.6	S19 42.6	54.7	13.3	-10.7
	12	359 15.7	N05 48.2	154 36.9	S19 53.3	54.7	13.2	-10.6
	13	014 15.9	N05 49.1	169 09.2	S20 03.9	54.7	13.2	-10.5
	14	029 16.1	N05 50.1	183 41.4	S20 14.5	54.7	13.1	-10.4
	15	044 16.3	N05 51.0	198 13.5	S20 24.9	54.6	13.1	-10.3
	16	059 16.5	N05 52.0	212 45.6	S20 35.2	54.6	13.0	-10.2
	17	074 16.6	N05 52.9	227 17.6	S20 45.4	54.6	13.0	-10.1
	18	089 16.8	N05 53.9	241 49.6	S20 55.6	54.6	12.9	-10.0
	19	104 17.0	N05 54.8	256 21.5	S21 05.6	54.6	12.9	-9.9
	20	119 17.2	N05 55.8	270 53.4	S21 15.6	54.6	12.8	-9.8
	21	134 17.4	N05 56.7	285 25.3	S21 25.4	54.6	12.8	-9.7
	22	149 17.5	N05 57.7	299 57.0	S21 35.2	54.5	12.7	-9.6
	23	164 17.7	N05 58.6	314 28.8	S21 44.8	54.5	12.7	-9.5
5	00	179 17.9	N05 59.6	329 00.5	S21 54.4	54.5	12.6	-9.4
	01	194 18.1	N06 00.5	343 32.1	S22 03.8	54.5	12.6	-9.3
	02	209 18.3	N06 01.5	358 03.7	S22 13.2	54.5	12.5	-9.2
	03	224 18.4	N06 02.4	012 35.2	S22 22.4	54.5	12.5	-9.1
	04	239 18.6	N06 03.4	027 06.7	S22 31.5	54.5	12.4	-9.0
	05	254 18.8	N06 04.3	041 38.1	S22 40.6	54.5	12.4	-8.9
	06	269 19.0	N06 05.3	056 09.4	S22 49.5	54.5	12.3	-8.8
	07	284 19.2	N06 06.2	070 40.7	S22 58.3	54.4	12.3	-8.7
	08	299 19.3	N06 07.2	085 12.0	S23 07.1	54.4	12.2	-8.6
	09	314 19.5	N06 08.1	099 43.2	S23 15.7	54.4	12.2	-8.5
	10	329 19.7	N06 09.1	114 14.4	S23 24.2	54.4	12.1	-8.4
	11	344 19.9	N06 10.0	128 45.5	S23 32.6	54.4	12.1	-8.3
	12	359 20.1	N06 11.0	143 16.5	S23 40.9	54.4	12.0	-8.2
	13	014 20.2	N06 11.9	157 47.5	S23 49.0	54.4	12.0	-8.1
	14	029 20.4	N06 12.9	172 18.5	S23 57.1	54.4	11.9	-8.0
	15	044 20.6	N06 13.8	186 49.4	S24 05.1	54.4	11.9	-7.8
	16	059 20.8	N06 14.8	201 20.2	S24 12.9	54.3	11.8	-7.7
	17	074 21.0	N06 15.7	215 51.0	S24 20.7	54.3	11.7	-7.6
	18	089 21.1	N06 16.7	230 21.8	S24 28.3	54.3	11.7	-7.5
	19	104 21.3	N06 17.6	244 52.5	S24 35.8	54.3	11.6	-7.4
	20	119 21.5	N06 18.6	259 23.1	S24 43.2	54.3	11.6	-7.3
	21	134 21.7	N06 19.5	273 53.7	S24 50.4	54.3	11.6	-7.2
	22	149 21.9	N06 20.5	288 24.3	S24 57.6	54.3	11.5	-7.0
	23	164 22.0	N06 21.4	302 54.8	S25 04.6	54.3	11.5	-6.9
6	00	179 22.2	N06 22.3	317 25.2	S25 11.6	54.3	11.4	-6.8
	01	194 22.4	N06 23.3	331 55.7	S25 18.4	54.3	11.4	-6.7
	02	209 22.6	N06 24.2	346 26.0	S25 25.1	54.3	11.3	-6.6
	03	224 22.8	N06 25.2	000 56.3	S25 31.6	54.3	11.3	-6.5
	04	239 22.9	N06 26.1	015 26.6	S25 38.1	54.2	11.2	-6.3
	05	254 23.1	N06 27.1	029 56.8	S25 44.4	54.2	11.2	-6.2
	06	269 23.3	N06 28.0	044 27.0	S25 50.6	54.2	11.1	-6.1
	07	284 23.5	N06 29.0	058 57.1	S25 56.7	54.2	11.1	-6.0
	08	299 23.6	N06 29.9	073 27.2	S26 02.7	54.2	11.0	-5.8
	09	314 23.8	N06 30.8	087 57.2	S26 08.5	54.2	11.0	-5.7
	10	329 24.0	N06 31.8	102 27.2	S26 14.3	54.2	10.9	-5.6
	11	344 24.2	N06 32.7	116 57.1	S26 19.9	54.2	10.9	-5.5
	12	359 24.4	N06 33.7	131 27.1	S26 25.3	54.2	10.9	-5.3
	13	014 24.5	N06 34.6	145 56.9	S26 30.7	54.2	10.8	-5.2
	14	029 24.7	N06 35.6	160 26.7	S26 35.9	54.2	10.8	-5.1
	15	044 24.9	N06 36.5	174 56.5	S26 41.0	54.2	10.7	-5.0
	16	059 25.1	N06 37.5	189 26.3	S26 46.0	54.2	10.7	-4.8
	17	074 25.2	N06 38.4	203 56.0	S26 50.8	54.2	10.7	-4.7
	18	089 25.4	N06 39.3	218 25.6	S26 55.5	54.2	10.6	-4.6
	19	104 25.6	N06 40.3	232 55.3	S27 00.1	54.2	10.6	-4.5
	20	119 25.8	N06 41.2	247 24.8	S27 04.6	54.2	10.6	-4.3
	21	134 25.9	N06 42.2	261 54.4	S27 08.9	54.2	10.5	-4.2
	22	149 26.1	N06 43.1	276 23.9	S27 13.1	54.2	10.5	-4.1
	23	164 26.3	N06 44.0	290 53.4	S27 17.2	54.2	10.4	-3.9

Day 4 noon Sun: v 0.2 d 1.0 SD 16.0 | Moon SD 14.9

Day 5 noon Sun: v 0.2 d 0.9 SD 16.0 | Moon SD 14.8

Day 6 noon Sun: v 0.2 d 0.9 SD 16.0 | Moon SD 14.8

SUN: APRIL 5 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0008	0316	0435	1934	2054	--
70N	0146	0336	0445	1924	2033	2229
68N	0223	0351	0452	1915	2017	2148
66N	0248	0404	0459	1908	2004	2122
64N	0307	0414	0504	1903	1954	2102
62N	0322	0422	0509	1858	1945	2046
60N	0335	0430	0513	1853	1937	2033
58N	0345	0436	0517	1850	1931	2022
56N	0354	0442	0520	1846	1925	2013
54N	0402	0447	0523	1843	1920	2005
52N	0409	0451	0526	1841	1915	1958
50N	0415	0455	0528	1838	1911	1951
45N	0428	0504	0534	1833	1903	1938
40N	0438	0510	0538	1828	1856	1928
35N	0446	0516	0542	1824	1850	1920
30N	0452	0521	0545	1821	1845	1914
25N	0458	0525	0548	1818	1841	1908
20N	0502	0528	0550	1815	1838	1904
15N	0506	0531	0553	1813	1834	1900
10N	0509	0534	0555	1810	1832	1856
05N	0512	0536	0557	1808	1829	1853
00N	0514	0539	0559	1806	1827	1851
05S	0516	0541	0602	1804	1825	1849
10S	0518	0543	0604	1802	1823	1847
15S	0519	0544	0606	1759	1821	1846
20S	0520	0546	0608	1757	1819	1845
25S	0521	0548	0610	1755	1817	1844
30S	0521	0549	0613	1752	1816	1844
35S	0521	0550	0616	1749	1814	1844
40S	0520	0552	0619	1746	1813	1844
45S	0519	0553	0622	1742	1811	1845
50S	0517	0554	0627	1738	1810	1847
55S	0514	0556	0632	1732	1809	1850
60S	0509	0557	0639	1726	1807	1855

MOON: RISE / SET | UTC HHMM

Lat	Day 4		Day 5		Day 6	
72N	0108	0114	--	--	--	--
70N	--	0303	--	--	--	--
68N	--	0343	--	--	--	--
66N	--	0411	0027	0335	--	--
64N	2347	0433	--	0417	0207	0336
62N	2319	0450	--	0445	0106	0438
60N	2258	0505	--	0507	0032	0512
58N	2241	0517	--	0525	0007	0537
56N	2226	0528	2348	0540	--	0558
54N	2214	0538	2331	0553	--	0614
52N	2203	0546	2317	0604	--	0629
50N	2153	0554	2305	0614	--	0641
45N	2133	0610	2240	0636	2343	0707
40N	2116	0624	2220	0653	2320	0728
35N	2103	0636	2203	0708	2302	0745
30N	2051	0646	2149	0721	2246	0800
25N	2040	0655	2136	0732	2232	0813
20N	2031	0703	2125	0743	2219	0826
15N	2022	0711	2114	0752	2207	0837
10N	2013	0719	2104	0802	2155	0848
05N	2005	0726	2054	0811	2145	0858
00N	1957	0733	2044	0819	2134	0908
05S	1949	0740	2035	0828	2123	0918
10S	1941	0747	2025	0837	2112	0929
15S	1932	0755	2015	0847	2101	0939
20S	1923	0803	2004	0857	2049	0951
25S	1914	0811	1953	0907	2037	1003
30S	1904	0821	1941	0919	2023	1016
35S	1852	0831	1927	0932	2007	1032
40S	1839	0843	1911	0947	1949	1049
45S	1824	0858	1852	1005	1927	1111
50S	1805	0915	1828	1028	1900	1138
55S	1741	0938	1757	1058	1822	1215
60S	1708	1009	1712	1142	1721	1315

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | APRIL 7 - APRIL 9

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
7	00	195 17.1	158 35.7	N14 19.4	196 53.6	S01 48.6	087 38.4	N22 49.5	188 39.9	N00 32.3
	01	210 19.5	173 35.2	N14 20.5	211 54.3	S01 47.8	102 40.7	N22 49.5	203 42.0	N00 32.4
	02	225 22.0	188 34.7	N14 21.6	226 54.9	S01 47.0	117 42.9	N22 49.5	218 44.2	N00 32.6
	03	240 24.5	203 34.2	N14 22.7	241 55.6	S01 46.2	132 45.2	N22 49.5	233 46.4	N00 32.7
	04	255 26.9	218 33.6	N14 23.7	256 56.3	S01 45.4	147 47.4	N22 49.4	248 48.6	N00 32.8
	05	270 29.4	233 33.1	N14 24.8	271 57.0	S01 44.7	162 49.6	N22 49.4	263 50.8	N00 32.9
	06	285 31.9	248 32.6	N14 25.9	286 57.6	S01 43.9	177 51.9	N22 49.4	278 52.9	N00 33.0
	07	300 34.3	263 32.1	N14 27.0	301 58.3	S01 43.1	192 54.1	N22 49.4	293 55.1	N00 33.2
	08	315 36.8	278 31.6	N14 28.1	316 59.0	S01 42.3	207 56.4	N22 49.3	308 57.3	N00 33.3
	09	330 39.2	293 31.1	N14 29.1	331 59.7	S01 41.5	222 58.6	N22 49.3	323 59.5	N00 33.4
	10	345 41.7	308 30.6	N14 30.2	347 00.4	S01 40.7	238 00.8	N22 49.3	339 01.7	N00 33.5
	11	000 44.2	323 30.1	N14 31.3	002 01.0	S01 39.9	253 03.1	N22 49.3	354 03.8	N00 33.6
	12	015 46.6	338 29.6	N14 32.4	017 01.7	S01 39.2	268 05.3	N22 49.2	009 06.0	N00 33.8
	13	030 49.1	353 29.1	N14 33.4	032 02.4	S01 38.4	283 07.6	N22 49.2	024 08.2	N00 33.9
	14	045 51.6	008 28.6	N14 34.5	047 03.1	S01 37.6	298 09.8	N22 49.2	039 10.4	N00 34.0
	15	060 54.0	023 28.1	N14 35.6	062 03.8	S01 36.8	313 12.0	N22 49.2	054 12.6	N00 34.1
	16	075 56.5	038 27.6	N14 36.7	077 04.4	S01 36.0	328 14.3	N22 49.1	069 14.7	N00 34.2
	17	090 59.0	053 27.1	N14 37.7	092 05.1	S01 35.2	343 16.5	N22 49.1	084 16.9	N00 34.4
	18	106 01.4	068 26.6	N14 38.8	107 05.8	S01 34.4	358 18.8	N22 49.1	099 19.1	N00 34.5
	19	121 03.9	083 26.1	N14 39.9	122 06.5	S01 33.7	013 21.0	N22 49.1	114 21.3	N00 34.6
	20	136 06.4	098 25.5	N14 40.9	137 07.2	S01 32.9	028 23.2	N22 49.1	129 23.5	N00 34.7
	21	151 08.8	113 25.0	N14 42.0	152 07.8	S01 32.1	043 25.5	N22 49.0	144 25.6	N00 34.8
	22	166 11.3	128 24.5	N14 43.1	167 08.5	S01 31.3	058 27.7	N22 49.0	159 27.8	N00 34.9
	23	181 13.7	143 24.0	N14 44.1	182 09.2	S01 30.5	073 29.9	N22 49.0	174 30.0	N00 35.1
8	00	196 16.2	158 23.5	N14 45.2	197 09.9	S01 29.7	088 32.2	N22 49.0	189 32.2	N00 35.2
	01	211 18.7	173 23.0	N14 46.3	212 10.6	S01 29.0	103 34.4	N22 48.9	204 34.4	N00 35.3
	02	226 21.1	188 22.5	N14 47.4	227 11.2	S01 28.2	118 36.6	N22 48.9	219 36.5	N00 35.4
	03	241 23.6	203 22.0	N14 48.4	242 11.9	S01 27.4	133 38.9	N22 48.9	234 38.7	N00 35.5
	04	256 26.1	218 21.4	N14 49.5	257 12.6	S01 26.6	148 41.1	N22 48.9	249 40.9	N00 35.7
	05	271 28.5	233 20.9	N14 50.5	272 13.3	S01 25.8	163 43.4	N22 48.8	264 43.1	N00 35.8
	06	286 31.0	248 20.4	N14 51.6	287 14.0	S01 25.0	178 45.6	N22 48.8	279 45.3	N00 35.9
	07	301 33.5	263 19.9	N14 52.7	302 14.6	S01 24.2	193 47.8	N22 48.8	294 47.4	N00 36.0
	08	316 35.9	278 19.4	N14 53.7	317 15.3	S01 23.5	208 50.1	N22 48.8	309 49.6	N00 36.1
	09	331 38.4	293 18.9	N14 54.8	332 16.0	S01 22.7	223 52.3	N22 48.7	324 51.8	N00 36.3
	10	346 40.8	308 18.4	N14 55.9	347 16.7	S01 21.9	238 54.5	N22 48.7	339 54.0	N00 36.4
	11	001 43.3	323 17.8	N14 56.9	002 17.4	S01 21.1	253 56.8	N22 48.7	354 56.2	N00 36.5
	12	016 45.8	338 17.3	N14 58.0	017 18.0	S01 20.3	268 59.0	N22 48.7	009 58.3	N00 36.6
	13	031 48.2	353 16.8	N14 59.0	032 18.7	S01 19.5	284 01.2	N22 48.6	025 00.5	N00 36.7
	14	046 50.7	008 16.3	N15 00.1	047 19.4	S01 18.7	299 03.4	N22 48.6	040 02.7	N00 36.9
	15	061 53.2	023 15.8	N15 01.2	062 20.1	S01 18.0	314 05.7	N22 48.6	055 04.9	N00 37.0
	16	076 55.6	038 15.3	N15 02.2	077 20.8	S01 17.2	329 07.9	N22 48.6	070 07.1	N00 37.1
	17	091 58.1	053 14.7	N15 03.3	092 21.4	S01 16.4	344 10.1	N22 48.5	085 09.2	N00 37.2
	18	107 00.6	068 14.2	N15 04.3	107 22.1	S01 15.6	359 12.4	N22 48.5	100 11.4	N00 37.3
	19	122 03.0	083 13.7	N15 05.4	122 22.8	S01 14.8	014 14.6	N22 48.5	115 13.6	N00 37.4
	20	137 05.5	098 13.2	N15 06.4	137 23.5	S01 14.0	029 16.8	N22 48.5	130 15.8	N00 37.6
	21	152 08.0	113 12.7	N15 07.5	152 24.2	S01 13.3	044 19.1	N22 48.4	145 18.0	N00 37.7
	22	167 10.4	128 12.1	N15 08.6	167 24.9	S01 12.5	059 21.3	N22 48.4	160 20.2	N00 37.8
	23	182 12.9	143 11.6	N15 09.6	182 25.5	S01 11.7	074 23.5	N22 48.4	175 22.3	N00 37.9
9	00	197 15.3	158 11.1	N15 10.7	197 26.2	S01 10.9	089 25.7	N22 48.4	190 24.5	N00 38.0
	01	212 17.8	173 10.6	N15 11.7	212 26.9	S01 10.1	104 28.0	N22 48.3	205 26.7	N00 38.2
	02	227 20.3	188 10.1	N15 12.8	227 27.6	S01 09.3	119 30.2	N22 48.3	220 28.9	N00 38.3
	03	242 22.7	203 09.5	N15 13.8	242 28.3	S01 08.5	134 32.4	N22 48.3	235 31.1	N00 38.4
	04	257 25.2	218 09.0	N15 14.9	257 28.9	S01 07.8	149 34.7	N22 48.3	250 33.2	N00 38.5
	05	272 27.7	233 08.5	N15 15.9	272 29.6	S01 07.0	164 36.9	N22 48.2	265 35.4	N00 38.6
	06	287 30.1	248 08.0	N15 17.0	287 30.3	S01 06.2	179 39.1	N22 48.2	280 37.6	N00 38.8
	07	302 32.6	263 07.4	N15 18.0	302 31.0	S01 05.4	194 41.3	N22 48.2	295 39.8	N00 38.9
	08	317 35.1	278 06.9	N15 19.1	317 31.7	S01 04.6	209 43.6	N22 48.2	310 42.0	N00 39.0
	09	332 37.5	293 06.4	N15 20.1	332 32.4	S01 03.8	224 45.8	N22 48.1	325 44.1	N00 39.1
	10	347 40.0	308 05.9	N15 21.2	347 33.0	S01 03.0	239 48.0	N22 48.1	340 46.3	N00 39.2
	11	002 42.5	323 05.3	N15 22.2	002 33.7	S01 02.3	254 50.2	N22 48.1	355 48.5	N00 39.4
	12	017 44.9	338 04.8	N15 23.2	017 34.4	S01 01.5	269 52.5	N22 48.1	010 50.7	N00 39.5
	13	032 47.4	353 04.3	N15 24.3	032 35.1	S01 00.7	284 54.7	N22 48.0	025 52.9	N00 39.6
	14	047 49.8	008 03.8	N15 25.3	047 35.8	S00 59.9	299 56.9	N22 48.0	040 55.1	N00 39.7
	15	062 52.3	023 03.2	N15 26.4	062 36.4	S00 59.1	314 59.1	N22 48.0	055 57.2	N00 39.8
	16	077 54.8	038 02.7	N15 27.4	077 37.1	S00 58.3	330 01.4	N22 48.0	070 59.4	N00 39.9
	17	092 57.2	053 02.2	N15 28.5	092 37.8	S00 57.6	345 03.6	N22 47.9	086 01.6	N00 40.1
	18	107 59.7	068 01.6	N15 29.5	107 38.5	S00 56.8	000 05.8	N22 47.9	101 03.8	N00 40.2
	19	123 02.2	083 01.1	N15 30.5	122 39.2	S00 56.0	015 08.0	N22 47.9	116 06.0	N00 40.3
	20	138 04.6	098 00.6	N15 31.6	137 39.9	S00 55.2	030 10.3	N22 47.9	131 08.1	N00 40.4
	21	153 07.1	113 00.1	N15 32.6	152 40.5	S00 54.4	045 12.5	N22 47.8	146 10.3	N00 40.5
	22	168 09.6	127 59.5	N15 33.7	167 41.2	S00 53.6	060 14.7	N22 47.8	161 12.5	N00 40.7
	23	183 12.0	142 59.0	N15 34.7	182 41.9	S00 52.8	075 16.9	N22 47.8	176 14.7	N00 40.8

Venus	Mars	Jupiter	Saturn
7: v -0.5 d 1.1	7: v 0.7 d 0.8	7: v 2.2 d 0.0	7: v 2.2 d 0.1
8: v -0.5 d 1.1	8: v 0.7 d 0.8	8: v 2.2 d 0.0	8: v 2.2 d 0.1
9: v -0.5 d 1.0	9: v 0.7 d 0.8	9: v 2.2 d 0.0	9: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.4	S40 12.1
Achernar	335 20.0	S57 06.2
Acrux	172 58.3	S63 14.8
Adhara	255 05.1	S29 00.7
Al Na'ir	027 31.9	S46 49.9
Aldebaran	290 38.7	N16 33.7
Alioth	166 11.5	N55 48.9
Alkaid	152 50.7	N49 10.8
Alnilam	275 36.8	S01 11.2
Alphard	217 46.6	S08 46.5
Alphecca	126 02.6	N26 37.3
Alpheratz	357 34.1	N29 14.0
Altair	061 59.0	N08 56.1
Ankaa	353 06.5	S42 09.8
Antares	112 14.4	S26 29.4
Arcturus	145 46.7	N19 02.5
Atria	107 07.4	S69 04.3
Avior	234 14.2	S59 35.9
Bellatrix	278 21.9	N06 22.3
Betelgeuse	270 51.1	N07 24.6
Canopus	263 52.1	S52 42.8
Capella	280 20.6	N46 01.6
Deneb	049 25.3	N45 22.1
Denebola	182 23.6	N14 25.4
Diphda	348 46.6	S17 50.6
Dubhe	193 39.2	N61 36.6
Elnath	278 00.7	N28 37.8
Eltanin	090 41.5	N51 28.7
Enif	033 38.0	N09 59.6
Fomalhaut	015 13.7	S29 29.0
Gacrux	171 50.0	S57 15.8
Gienah	175 42.2	S17 41.5
Hadar	148 33.9	S60 30.0
Hamal	327 50.4	N23 35.1
Kaus Australi	083 31.1	S34 22.2
Kochab	137 18.7	N74 02.6
Markab	013 29.2	N15 20.7
Menkar	314 05.4	N04 11.5
Menkent	147 56.0	S36 30.0
Miaplacidus	221 37.7	S69 49.8
Mirfak	308 27.2	N49 57.3
Nunki	075 46.5	S26 15.8
Peacock	053 04.3	S56 38.8
Polaris	313 56.7	N89 22.6
Pollux	243 16.0	N27 57.8
Procyon	244 49.7	N05 09.4
Rasalhague	095 57.5	N12 32.2
Regulus	207 33.1	N11 50.2
Rigel	281 03.0	S08 10.4
Rigil Kentaur	139 38.3	S60 56.6
Sabik	102 01.4	S15 45.5
Schedar	349 30.5	N56 40.8
Shaula	096 08.8	S37 07.3
Sirius	258 25.4	S16 45.3
Spica	158 20.9	S11 18.1
Suhail	222 45.4	S43 32.6
Vega	080 32.5	N38 48.1
Zubenelgenubi	136 54.6	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	321 31.6	1327
Mars	000 32.3	1051
Jupiter	252 13.2	1803
Saturn	353 12.6	1120

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
7	00	179 26.5	N06 45.0	305 22.8	S27 21.1	54.2	10.4	-3.8
	01	194 26.7	N06 45.9	319 52.3	S27 25.0	54.2	10.4	-3.7
	02	209 26.8	N06 46.9	334 21.6	S27 28.6	54.2	10.4	-3.6
	03	224 27.0	N06 47.8	348 51.0	S27 32.2	54.1	10.3	-3.4
	04	239 27.2	N06 48.7	003 20.3	S27 35.6	54.1	10.3	-3.3
	05	254 27.4	N06 49.7	017 49.6	S27 38.9	54.1	10.3	-3.2
	06	269 27.5	N06 50.6	032 18.9	S27 42.1	54.1	10.2	-3.0
	07	284 27.7	N06 51.6	046 48.1	S27 45.1	54.1	10.2	-2.9
	08	299 27.9	N06 52.5	061 17.3	S27 48.0	54.1	10.2	-2.8
	09	314 28.1	N06 53.4	075 46.5	S27 50.7	54.1	10.2	-2.6
	10	329 28.2	N06 54.4	090 15.7	S27 53.4	54.1	10.1	-2.5
	11	344 28.4	N06 55.3	104 44.8	S27 55.8	54.1	10.1	-2.4
	12	359 28.6	N06 56.3	119 13.9	S27 58.2	54.1	10.1	-2.2
	13	014 28.8	N06 57.2	133 43.0	S28 00.4	54.1	10.1	-2.1
	14	029 28.9	N06 58.1	148 12.1	S28 02.5	54.1	10.0	-2.0
	15	044 29.1	N06 59.1	162 41.1	S28 04.5	54.2	10.0	-1.8
	16	059 29.3	N07 00.0	177 10.1	S28 06.3	54.2	10.0	-1.7
	17	074 29.5	N07 01.0	191 39.1	S28 08.0	54.2	10.0	-1.5
	18	089 29.6	N07 01.9	206 08.1	S28 09.5	54.2	10.0	-1.4
	19	104 29.8	N07 02.8	220 37.1	S28 10.9	54.2	10.0	-1.3
	20	119 30.0	N07 03.8	235 06.1	S28 12.2	54.2	9.9	-1.1
	21	134 30.2	N07 04.7	249 35.0	S28 13.3	54.2	9.9	-1.0
	22	149 30.3	N07 05.6	264 03.9	S28 14.3	54.2	9.9	-0.9
	23	164 30.5	N07 06.6	278 32.9	S28 15.2	54.2	9.9	-0.7
8	00	179 30.7	N07 07.5	293 01.8	S28 15.9	54.2	9.9	-0.6
	01	194 30.9	N07 08.4	307 30.7	S28 16.5	54.2	9.9	-0.5
	02	209 31.0	N07 09.4	321 59.6	S28 17.0	54.2	9.9	-0.3
	03	224 31.2	N07 10.3	336 28.4	S28 17.3	54.2	9.9	-0.2
	04	239 31.4	N07 11.3	350 57.3	S28 17.5	54.2	9.9	0.0
	05	254 31.5	N07 12.2	005 26.2	S28 17.5	54.2	9.9	0.1
	06	269 31.7	N07 13.1	019 55.0	S28 17.4	54.2	9.9	0.2
	07	284 31.9	N07 14.1	034 23.9	S28 17.2	54.2	9.9	0.4
	08	299 32.1	N07 15.0	048 52.8	S28 16.8	54.2	9.9	0.5
	09	314 32.2	N07 15.9	063 21.6	S28 16.3	54.2	9.9	0.6
	10	329 32.4	N07 16.9	077 50.5	S28 15.7	54.2	9.9	0.8
	11	344 32.6	N07 17.8	092 19.3	S28 14.9	54.2	9.9	0.9
	12	359 32.8	N07 18.7	106 48.2	S28 14.0	54.2	9.9	1.1
	13	014 32.9	N07 19.7	121 17.1	S28 12.9	54.3	9.9	1.2
	14	029 33.1	N07 20.6	135 45.9	S28 11.8	54.3	9.9	1.3
	15	044 33.3	N07 21.5	150 14.8	S28 10.4	54.3	9.9	1.5
	16	059 33.4	N07 22.5	164 43.7	S28 09.0	54.3	9.9	1.6
	17	074 33.6	N07 23.4	179 12.6	S28 07.4	54.3	9.9	1.7
	18	089 33.8	N07 24.3	193 41.5	S28 05.6	54.3	9.9	1.9
	19	104 34.0	N07 25.3	208 10.4	S28 03.8	54.3	9.9	2.0
	20	119 34.1	N07 26.2	222 39.3	S28 01.7	54.3	9.9	2.1
	21	134 34.3	N07 27.1	237 08.2	S27 59.6	54.3	9.9	2.3
	22	149 34.5	N07 28.1	251 37.1	S27 57.3	54.3	9.9	2.4
	23	164 34.6	N07 29.0	266 06.1	S27 54.9	54.4	10.0	2.6
9	00	179 34.8	N07 29.9	280 35.0	S27 52.3	54.4	10.0	2.7
	01	194 35.0	N07 30.8	295 04.0	S27 49.6	54.4	10.0	2.8
	02	209 35.2	N07 31.8	309 33.0	S27 46.8	54.4	10.0	3.0
	03	224 35.3	N07 32.7	324 02.0	S27 43.8	54.4	10.0	3.1
	04	239 35.5	N07 33.6	338 31.0	S27 40.7	54.4	10.0	3.2
	05	254 35.7	N07 34.6	353 00.0	S27 37.5	54.4	10.1	3.4
	06	269 35.8	N07 35.5	007 29.1	S27 34.1	54.4	10.1	3.5
	07	284 36.0	N07 36.4	021 58.2	S27 30.6	54.4	10.1	3.6
	08	299 36.2	N07 37.4	036 27.3	S27 27.0	54.5	10.1	3.8
	09	314 36.4	N07 38.3	050 56.4	S27 23.2	54.5	10.1	3.9
	10	329 36.5	N07 39.2	065 25.6	S27 19.3	54.5	10.2	4.0
	11	344 36.7	N07 40.1	079 54.7	S27 15.3	54.5	10.2	4.2
	12	359 36.9	N07 41.1	094 23.9	S27 11.1	54.5	10.2	4.3
	13	014 37.0	N07 42.0	108 53.1	S27 06.8	54.5	10.2	4.4
	14	029 37.2	N07 42.9	123 22.4	S27 02.4	54.5	10.3	4.6
	15	044 37.4	N07 43.9	137 51.6	S26 57.8	54.6	10.3	4.7
	16	059 37.5	N07 44.8	152 20.9	S26 53.1	54.6	10.3	4.8
	17	074 37.7	N07 45.7	166 50.3	S26 48.2	54.6	10.4	5.0
	18	089 37.9	N07 46.6	181 19.6	S26 43.3	54.6	10.4	5.1
	19	104 38.0	N07 47.6	195 49.0	S26 38.2	54.6	10.4	5.2
	20	119 38.2	N07 48.5	210 18.4	S26 32.9	54.6	10.4	5.4
	21	134 38.4	N07 49.4	224 47.9	S26 27.6	54.7	10.5	5.5
	22	149 38.6	N07 50.3	239 17.3	S26 22.1	54.7	10.5	5.6
	23	164 38.7	N07 51.3	253 46.9	S26 16.5	54.7	10.5	5.7

Day 7 noon Sun: v 0.2 d 0.9 SD 16.0 | Moon SD 14.8

Day 8 noon Sun: v 0.2 d 0.9 SD 16.0 | Moon SD 14.8

Day 9 noon Sun: v 0.2 d 0.9 SD 16.0 | Moon SD 14.9

SUN: APRIL 8 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	0255	0419	1948	2114	--
70N	0109	0319	0430	1936	2049	2309
68N	0200	0336	0440	1927	2031	2210
66N	0230	0351	0447	1918	2016	2138
64N	0252	0402	0454	1912	2004	2115
62N	0310	0412	0500	1906	1954	2057
60N	0324	0420	0504	1901	1945	2043
58N	0335	0427	0509	1856	1938	2031
56N	0345	0434	0513	1852	1932	2020
54N	0354	0439	0516	1849	1926	2011
52N	0401	0444	0519	1846	1921	2004
50N	0408	0449	0522	1843	1916	1957
45N	0422	0458	0528	1836	1907	1943
40N	0433	0505	0533	1831	1859	1932
35N	0441	0512	0537	1827	1853	1923
30N	0448	0517	0541	1823	1847	1916
25N	0454	0522	0545	1819	1843	1910
20N	0459	0525	0548	1816	1838	1905
15N	0504	0529	0551	1813	1835	1900
10N	0508	0532	0553	1810	1832	1856
05N	0511	0535	0556	1808	1829	1853
00N	0514	0538	0559	1805	1826	1850
05S	0516	0540	0601	1803	1823	1848
10S	0518	0542	0604	1800	1821	1846
15S	0520	0545	0606	1757	1819	1844
20S	0521	0547	0609	1754	1817	1842
25S	0522	0549	0612	1752	1815	1841
30S	0523	0551	0615	1748	1812	1840
35S	0523	0553	0618	1745	1810	1840
40S	0523	0555	0622	1741	1808	1840
45S	0523	0557	0626	1737	1806	1840
50S	0522	0559	0631	1731	1804	1841
55S	0519	0601	0638	1725	1801	1843
60S	0516	0604	0646	1717	1758	1846

MOON: RISE / SET | UTC HHMM

Lat	Day 7		Day 8		Day 9	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	--	--	--	--
62N	0304	0424	--	--	0453	0610
60N	0202	0527	0312	0603	0349	0713
58N	0128	0601	0232	0642	0315	0747
56N	0103	0626	0205	0710	0250	0812
54N	0043	0646	0144	0731	0230	0832
52N	0026	0703	0126	0749	0213	0849
50N	0012	0717	0111	0804	0158	0903
45N	--	0746	0040	0835	0129	0932
40N	--	0810	0016	0859	0106	0955
35N	2357	0829	--	0918	0047	1013
30N	2340	0845	--	0935	0030	1029
25N	2325	0859	--	0950	0016	1044
20N	2312	0913	--	1003	0003	1057
15N	2259	0925	2350	1016	--	1108
10N	2248	0936	2339	1027	--	1120
05N	2236	0948	2328	1039	--	1131
00N	2225	0958	2317	1050	--	1141
05S	2214	1009	2306	1101	2357	1152
10S	2203	1021	2254	1112	2347	1203
15S	2151	1032	2243	1124	2336	1214
20S	2138	1045	2231	1137	2325	1226
25S	2125	1058	2217	1150	2313	1239
30S	2110	1112	2203	1205	2259	1252
35S	2054	1129	2146	1221	2244	1308
40S	2034	1148	2127	1241	2226	1326
45S	2011	1211	2104	1304	2205	1348
50S	1941	1241	2034	1334	2138	1416
55S	1859	1323	1952	1416	2101	1454
60S	1745	1436	1839	1530	2001	1554

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | APRIL 10 - APRIL 12

UTC	ARIES	Venus		Mars		Jupiter		Saturn	
Day h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
10 00	198 14.5	157 58.5	N15 35.7	197 42.6	S00 52.1	090 19.1	N22 47.8	191 16.9	N00 40.9
01	213 17.0	172 57.9	N15 36.8	212 43.3	S00 51.3	105 21.4	N22 47.7	206 19.0	N00 41.0
02	228 19.4	187 57.4	N15 37.8	227 44.0	S00 50.5	120 23.6	N22 47.7	221 21.2	N00 41.1
03	243 21.9	202 56.9	N15 38.8	242 44.6	S00 49.7	135 25.8	N22 47.7	236 23.4	N00 41.2
04	258 24.3	217 56.3	N15 39.9	257 45.3	S00 48.9	150 28.0	N22 47.7	251 25.6	N00 41.4
05	273 26.8	232 55.8	N15 40.9	272 46.0	S00 48.1	165 30.3	N22 47.6	266 27.8	N00 41.5
06	288 29.3	247 55.3	N15 41.9	287 46.7	S00 47.3	180 32.5	N22 47.6	281 30.0	N00 41.6
07	303 31.7	262 54.7	N15 43.0	302 47.4	S00 46.6	195 34.7	N22 47.6	296 32.1	N00 41.7
08	318 34.2	277 54.2	N15 44.0	317 48.0	S00 45.8	210 36.9	N22 47.5	311 34.3	N00 41.8
09	333 36.7	292 53.7	N15 45.0	332 48.7	S00 45.0	225 39.1	N22 47.5	326 36.5	N00 42.0
10	348 39.1	307 53.1	N15 46.1	347 49.4	S00 44.2	240 41.3	N22 47.5	341 38.7	N00 42.1
11	003 41.6	322 52.6	N15 47.1	002 50.1	S00 43.4	255 43.6	N22 47.5	356 40.9	N00 42.2
12	018 44.1	337 52.0	N15 48.1	017 50.8	S00 42.6	270 45.8	N22 47.4	011 43.0	N00 42.3
13	033 46.5	352 51.5	N15 49.1	032 51.5	S00 41.9	285 48.0	N22 47.4	026 45.2	N00 42.4
14	048 49.0	007 51.0	N15 50.2	047 52.1	S00 41.1	300 50.2	N22 47.4	041 47.4	N00 42.5
15	063 51.4	022 50.4	N15 51.2	062 52.8	S00 40.3	315 52.4	N22 47.4	056 49.6	N00 42.7
16	078 53.9	037 49.9	N15 52.2	077 53.5	S00 39.5	330 54.7	N22 47.3	071 51.8	N00 42.8
17	093 56.4	052 49.4	N15 53.3	092 54.2	S00 38.7	345 56.9	N22 47.3	086 54.0	N00 42.9
18	108 58.8	067 48.8	N15 54.3	107 54.9	S00 37.9	000 59.1	N22 47.3	101 56.1	N00 43.0
19	124 01.3	082 48.3	N15 55.3	122 55.6	S00 37.1	016 01.3	N22 47.3	116 58.3	N00 43.1
20	139 03.8	097 47.7	N15 56.3	137 56.3	S00 36.4	031 03.5	N22 47.2	132 00.5	N00 43.3
21	154 06.2	112 47.2	N15 57.3	152 56.9	S00 35.6	046 05.7	N22 47.2	147 02.7	N00 43.4
22	169 08.7	127 46.6	N15 58.4	167 57.6	S00 34.8	061 07.9	N22 47.2	162 04.9	N00 43.5
23	184 11.2	142 46.1	N15 59.4	182 58.3	S00 34.0	076 10.2	N22 47.2	177 07.0	N00 43.6
11 00	199 13.6	157 45.6	N16 00.4	197 59.0	S00 33.2	091 12.4	N22 47.1	192 09.2	N00 43.7
01	214 16.1	172 45.0	N16 01.4	212 59.7	S00 32.4	106 14.6	N22 47.1	207 11.4	N00 43.8
02	229 18.6	187 44.5	N16 02.5	228 00.4	S00 31.7	121 16.8	N22 47.1	222 13.6	N00 44.0
03	244 21.0	202 43.9	N16 03.5	243 01.0	S00 30.9	136 19.0	N22 47.0	237 15.8	N00 44.1
04	259 23.5	217 43.4	N16 04.5	258 01.7	S00 30.1	151 21.2	N22 47.0	252 18.0	N00 44.2
05	274 25.9	232 42.8	N16 05.5	273 02.4	S00 29.3	166 23.4	N22 47.0	267 20.1	N00 44.3
06	289 28.4	247 42.3	N16 06.5	288 03.1	S00 28.5	181 25.7	N22 47.0	282 22.3	N00 44.4
07	304 30.9	262 41.8	N16 07.5	303 03.8	S00 27.7	196 27.9	N22 46.9	297 24.5	N00 44.6
08	319 33.3	277 41.2	N16 08.6	318 04.5	S00 26.9	211 30.1	N22 46.9	312 26.7	N00 44.7
09	334 35.8	292 40.7	N16 09.6	333 05.1	S00 26.2	226 32.3	N22 46.9	327 28.9	N00 44.8
10	349 38.3	307 40.1	N16 10.6	348 05.8	S00 25.4	241 34.5	N22 46.9	342 31.0	N00 44.9
11	004 40.7	322 39.6	N16 11.6	003 06.5	S00 24.6	256 36.7	N22 46.8	357 33.2	N00 45.0
12	019 43.2	337 39.0	N16 12.6	018 07.2	S00 23.8	271 38.9	N22 46.8	012 35.4	N00 45.1
13	034 45.7	352 38.5	N16 13.6	033 07.9	S00 23.0	286 41.1	N22 46.8	027 37.6	N00 45.3
14	049 48.1	007 37.9	N16 14.6	048 08.6	S00 22.2	301 43.3	N22 46.7	042 39.8	N00 45.4
15	064 50.6	022 37.4	N16 15.6	063 09.2	S00 21.5	316 45.6	N22 46.7	057 42.0	N00 45.5
16	079 53.1	037 36.8	N16 16.6	078 09.9	S00 20.7	331 47.8	N22 46.7	072 44.1	N00 45.6
17	094 55.5	052 36.3	N16 17.7	093 10.6	S00 19.9	346 50.0	N22 46.7	087 46.3	N00 45.7
18	109 58.0	067 35.7	N16 18.7	108 11.3	S00 19.1	001 52.2	N22 46.6	102 48.5	N00 45.9
19	125 00.4	082 35.2	N16 19.7	123 12.0	S00 18.3	016 54.4	N22 46.6	117 50.7	N00 46.0
20	140 02.9	097 34.6	N16 20.7	138 12.7	S00 17.5	031 56.6	N22 46.6	132 52.9	N00 46.1
21	155 05.4	112 34.1	N16 21.7	153 13.4	S00 16.8	046 58.8	N22 46.6	147 55.1	N00 46.2
22	170 07.8	127 33.5	N16 22.7	168 14.0	S00 16.0	062 01.0	N22 46.5	162 57.2	N00 46.3
23	185 10.3	142 33.0	N16 23.7	183 14.7	S00 15.2	077 03.2	N22 46.5	177 59.4	N00 46.4
12 00	200 12.8	157 32.4	N16 24.7	198 15.4	S00 14.4	092 05.4	N22 46.5	193 01.6	N00 46.6
01	215 15.2	172 31.9	N16 25.7	213 16.1	S00 13.6	107 07.6	N22 46.4	208 03.8	N00 46.7
02	230 17.7	187 31.3	N16 26.7	228 16.8	S00 12.8	122 09.9	N22 46.4	223 06.0	N00 46.8
03	245 20.2	202 30.8	N16 27.7	243 17.5	S00 12.0	137 12.1	N22 46.4	238 08.2	N00 46.9
04	260 22.6	217 30.2	N16 28.7	258 18.2	S00 11.3	152 14.3	N22 46.4	253 10.3	N00 47.0
05	275 25.1	232 29.6	N16 29.7	273 18.8	S00 10.5	167 16.5	N22 46.3	268 12.5	N00 47.1
06	290 27.6	247 29.1	N16 30.7	288 19.5	S00 09.7	182 18.7	N22 46.3	283 14.7	N00 47.3
07	305 30.0	262 28.5	N16 31.7	303 20.2	S00 08.9	197 20.9	N22 46.3	298 16.9	N00 47.4
08	320 32.5	277 28.0	N16 32.7	318 20.9	S00 08.1	212 23.1	N22 46.2	313 19.1	N00 47.5
09	335 34.9	292 27.4	N16 33.7	333 21.6	S00 07.3	227 25.3	N22 46.2	328 21.2	N00 47.6
10	350 37.4	307 26.9	N16 34.7	348 22.3	S00 06.6	242 27.5	N22 46.2	343 23.4	N00 47.7
11	005 39.9	322 26.3	N16 35.7	003 23.0	S00 05.8	257 29.7	N22 46.2	358 25.6	N00 47.9
12	020 42.3	337 25.7	N16 36.7	018 23.6	S00 05.0	272 31.9	N22 46.1	013 27.8	N00 48.0
13	035 44.8	352 25.2	N16 37.7	033 24.3	S00 04.2	287 34.1	N22 46.1	028 30.0	N00 48.1
14	050 47.3	007 24.6	N16 38.7	048 25.0	S00 03.4	302 36.3	N22 46.1	043 32.2	N00 48.2
15	065 49.7	022 24.1	N16 39.7	063 25.7	S00 02.6	317 38.5	N22 46.0	058 34.3	N00 48.3
16	080 52.2	037 23.5	N16 40.7	078 26.4	S00 01.9	332 40.7	N22 46.0	073 36.5	N00 48.4
17	095 54.7	052 23.0	N16 41.7	093 27.1	S00 01.1	347 42.9	N22 46.0	088 38.7	N00 48.6
18	110 57.1	067 22.4	N16 42.6	108 27.8	S00 00.3	002 45.1	N22 46.0	103 40.9	N00 48.7
19	125 59.6	082 21.8	N16 43.6	123 28.4	N00 00.5	017 47.3	N22 45.9	118 43.1	N00 48.8
20	141 02.0	097 21.3	N16 44.6	138 29.1	N00 01.3	032 49.5	N22 45.9	133 45.3	N00 48.9
21	156 04.5	112 20.7	N16 45.6	153 29.8	N00 02.1	047 51.7	N22 45.9	148 47.4	N00 49.0
22	171 07.0	127 20.1	N16 46.6	168 30.5	N00 02.8	062 53.9	N22 45.8	163 49.6	N00 49.1
23	186 09.4	142 19.6	N16 47.6	183 31.2	N00 03.6	077 56.1	N22 45.8	178 51.8	N00 49.3

Venus	Mars	Jupiter	Saturn
10: v -0.5 d 1.0	10: v 0.7 d 0.8	10: v 2.2 d 0.0	10: v 2.2 d 0.1
11: v -0.5 d 1.0	11: v 0.7 d 0.8	11: v 2.2 d 0.0	11: v 2.2 d 0.1
12: v -0.6 d 1.0	12: v 0.7 d 0.8	12: v 2.2 d 0.0	12: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.4	S40 12.1
Achernar	335 20.0	S57 06.2
Acrux	172 58.3	S63 14.9
Adhara	255 05.1	S29 00.7
Al Na'ir	027 31.9	S46 49.9
Aldebaran	290 38.7	N16 33.7
Alioth	166 11.5	N55 48.9
Alkaid	152 50.7	N49 10.8
Alnilam	275 36.8	S01 11.2
Alphard	217 46.6	S08 46.5
Alphecca	126 02.6	N26 37.3
Alpheratz	357 34.1	N29 14.0
Altair	061 59.0	N08 56.1
Ankaa	353 06.5	S42 09.8
Antares	112 14.3	S26 29.4
Arcturus	145 46.6	N19 02.5
Atria	107 07.3	S69 04.3
Avior	234 14.2	S59 35.9
Bellatrix	278 21.9	N06 22.3
Betelgeuse	270 51.1	N07 24.6
Canopus	263 52.1	S52 42.8
Capella	280 20.6	N46 01.6
Deneb	049 25.3	N45 22.1
Denebola	182 23.6	N14 25.4
Diphda	348 46.6	S17 50.6
Dubhe	193 39.2	N61 36.6
Elnath	278 00.8	N28 37.8
Eltanin	090 41.5	N51 28.8
Enif	033 38.0	N09 59.6
Fomalhaut	015 13.7	S29 29.0
Gacrux	171 50.0	S57 15.8
Gienah	175 42.2	S17 41.5
Hadar	148 33.9	S60 30.0
Hamal	327 50.4	N23 35.1
Kaus Australi	083 31.0	S34 22.2
Kochab	137 18.7	N74 02.6
Markab	013 29.1	N15 20.7
Menkar	314 05.4	N04 11.5
Menkent	147 56.0	S36 30.1
Miaplacidus	221 37.7	S69 49.8
Mirfak	308 27.2	N49 57.3
Nunki	075 46.4	S26 15.8
Peacock	053 04.2	S56 38.8
Polaris	313 57.3	N89 22.6
Pollux	243 16.0	N27 57.8
Procyon	244 49.7	N05 09.4
Rasalhague	095 57.4	N12 32.2
Regulus	207 33.1	N11 50.2
Rigel	281 03.1	S08 10.4
Rigil Kentaur	139 38.3	S60 56.6
Sabik	102 01.4	S15 45.5
Schedar	349 30.4	N56 40.8
Shaula	096 08.8	S37 07.3
Sirius	258 25.4	S16 45.3
Spica	158 20.9	S11 18.1
Suhail	222 45.4	S43 32.6
Vega	080 32.4	N38 48.1
Zubenelgenubi	136 54.6	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	317 55.8	1329
Mars	358 24.0	1048
Jupiter	251 55.7	1753
Saturn	352 52.2	1110

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
10	00	179 38.9	N07 52.2	268 16.4	S26 10.7	54.7	10.6	5.9
	01	194 39.1	N07 53.1	282 46.0	S26 04.9	54.7	10.6	6.0
	02	209 39.2	N07 54.1	297 15.6	S25 58.9	54.8	10.6	6.1
	03	224 39.4	N07 55.0	311 45.2	S25 52.7	54.8	10.7	6.3
	04	239 39.6	N07 55.9	326 14.9	S25 46.5	54.8	10.7	6.4
	05	254 39.7	N07 56.8	340 44.6	S25 40.1	54.8	10.7	6.5
	06	269 39.9	N07 57.8	355 14.3	S25 33.6	54.8	10.8	6.6
	07	284 40.1	N07 58.7	009 44.1	S25 26.9	54.8	10.8	6.8
	08	299 40.2	N07 59.6	024 13.9	S25 20.2	54.9	10.9	6.9
	09	314 40.4	N08 00.5	038 43.8	S25 13.3	54.9	10.9	7.0
	10	329 40.6	N08 01.4	053 13.7	S25 06.3	54.9	10.9	7.1
	11	344 40.7	N08 02.4	067 43.6	S24 59.1	54.9	11.0	7.3
	12	359 40.9	N08 03.3	082 13.6	S24 51.9	55.0	11.0	7.4
	13	014 41.1	N08 04.2	096 43.6	S24 44.5	55.0	11.0	7.5
	14	029 41.2	N08 05.1	111 13.6	S24 37.0	55.0	11.1	7.6
	15	044 41.4	N08 06.1	125 43.7	S24 29.4	55.0	11.1	7.7
	16	059 41.6	N08 07.0	140 13.8	S24 21.6	55.0	11.2	7.9
	17	074 41.7	N08 07.9	154 44.0	S24 13.7	55.1	11.2	8.0
	18	089 41.9	N08 08.8	169 14.2	S24 05.8	55.1	11.2	8.1
	19	104 42.1	N08 09.7	183 44.4	S23 57.7	55.1	11.3	8.2
	20	119 42.2	N08 10.7	198 14.7	S23 49.4	55.1	11.3	8.3
	21	134 42.4	N08 11.6	212 45.0	S23 41.1	55.2	11.4	8.5
	22	149 42.6	N08 12.5	227 15.4	S23 32.6	55.2	11.4	8.6
	23	164 42.7	N08 13.4	241 45.8	S23 24.0	55.2	11.4	8.7
11	00	179 42.9	N08 14.4	256 16.2	S23 15.3	55.2	11.5	8.8
	01	194 43.1	N08 15.3	270 46.7	S23 06.5	55.3	11.5	8.9
	02	209 43.2	N08 16.2	285 17.2	S22 57.6	55.3	11.6	9.0
	03	224 43.4	N08 17.1	299 47.8	S22 48.5	55.3	11.6	9.2
	04	239 43.6	N08 18.0	314 18.4	S22 39.4	55.3	11.6	9.3
	05	254 43.7	N08 19.0	328 49.0	S22 30.1	55.4	11.7	9.4
	06	269 43.9	N08 19.9	343 19.7	S22 20.7	55.4	11.7	9.5
	07	284 44.0	N08 20.8	357 50.4	S22 11.2	55.4	11.8	9.6
	08	299 44.2	N08 21.7	012 21.2	S22 01.6	55.4	11.8	9.7
	09	314 44.4	N08 22.6	026 52.0	S21 51.9	55.5	11.8	9.8
	10	329 44.5	N08 23.5	041 22.8	S21 42.1	55.5	11.9	9.9
	11	344 44.7	N08 24.5	055 53.7	S21 32.1	55.5	11.9	10.1
	12	359 44.9	N08 25.4	070 24.6	S21 22.1	55.6	12.0	10.2
	13	014 45.0	N08 26.3	084 55.6	S21 11.9	55.6	12.0	10.3
	14	029 45.2	N08 27.2	099 26.6	S21 01.6	55.6	12.0	10.4
	15	044 45.4	N08 28.1	113 57.6	S20 51.3	55.6	12.1	10.5
	16	059 45.5	N08 29.0	128 28.7	S20 40.8	55.7	12.1	10.6
	17	074 45.7	N08 30.0	142 59.8	S20 30.2	55.7	12.2	10.7
	18	089 45.8	N08 30.9	157 31.0	S20 19.5	55.7	12.2	10.8
	19	104 46.0	N08 31.8	172 02.2	S20 08.7	55.8	12.2	10.9
	20	119 46.2	N08 32.7	186 33.4	S19 57.8	55.8	12.3	11.0
	21	134 46.3	N08 33.6	201 04.7	S19 46.8	55.8	12.3	11.1
	22	149 46.5	N08 34.5	215 36.0	S19 35.7	55.8	12.3	11.2
	23	164 46.7	N08 35.5	230 07.3	S19 24.5	55.9	12.4	11.3
12	00	179 46.8	N08 36.4	244 38.7	S19 13.2	55.9	12.4	11.4
	01	194 47.0	N08 37.3	259 10.1	S19 01.8	55.9	12.4	11.5
	02	209 47.1	N08 38.2	273 41.6	S18 50.3	56.0	12.5	11.6
	03	224 47.3	N08 39.1	288 13.0	S18 38.6	56.0	12.5	11.7
	04	239 47.5	N08 40.0	302 44.6	S18 26.9	56.0	12.5	11.8
	05	254 47.6	N08 40.9	317 16.1	S18 15.1	56.1	12.6	11.9
	06	269 47.8	N08 41.9	331 47.7	S18 03.2	56.1	12.6	12.0
	07	284 47.9	N08 42.8	346 19.3	S17 51.2	56.1	12.6	12.1
	08	299 48.1	N08 43.7	000 50.9	S17 39.1	56.2	12.7	12.2
	09	314 48.3	N08 44.6	015 22.6	S17 27.0	56.2	12.7	12.3
	10	329 48.4	N08 45.5	029 54.3	S17 14.7	56.2	12.7	12.4
	11	344 48.6	N08 46.4	044 26.1	S17 02.3	56.3	12.8	12.5
	12	359 48.8	N08 47.3	058 57.8	S16 49.8	56.3	12.8	12.6
	13	014 48.9	N08 48.2	073 29.6	S16 37.3	56.3	12.8	12.6
	14	029 49.1	N08 49.1	088 01.5	S16 24.6	56.4	12.9	12.7
	15	044 49.2	N08 50.1	102 33.3	S16 11.9	56.4	12.9	12.8
	16	059 49.4	N08 51.0	117 05.2	S15 59.1	56.4	12.9	12.9
	17	074 49.6	N08 51.9	131 37.1	S15 46.2	56.5	12.9	13.0
	18	089 49.7	N08 52.8	146 09.1	S15 33.2	56.5	13.0	13.1
	19	104 49.9	N08 53.7	160 41.0	S15 20.1	56.5	13.0	13.2
	20	119 50.0	N08 54.6	175 13.0	S15 06.9	56.6	13.0	13.3
	21	134 50.2	N08 55.5	189 45.0	S14 53.7	56.6	13.0	13.3
	22	149 50.3	N08 56.4	204 17.1	S14 40.3	56.6	13.1	13.4
	23	164 50.5	N08 57.3	218 49.1	S14 26.9	56.7	13.1	13.5

Day 10 noon Sun: v 0.2 d 0.9 SD 16.0 | Moon SD 15.0

Day 11 noon Sun: v 0.2 d 0.9 SD 16.0 | Moon SD 15.1

Day 12 noon Sun: v 0.2 d 0.9 SD 16.0 | Moon SD 15.3

SUN: APRIL 11 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	0233	0402	2004	2136	--
70N	--	0301	0416	1949	2106	--
68N	0133	0321	0427	1938	2044	2238
66N	0211	0337	0436	1929	2028	2156
64N	0237	0350	0443	1921	2014	2129
62N	0256	0401	0450	1914	2003	2109
60N	0312	0410	0455	1908	1953	2053
58N	0325	0418	0500	1903	1945	2039
56N	0336	0425	0505	1859	1938	2028
54N	0345	0432	0509	1854	1932	2018
52N	0354	0437	0512	1851	1926	2010
50N	0401	0442	0516	1847	1921	2003
45N	0416	0452	0523	1840	1911	1947
40N	0428	0501	0528	1834	1902	1935
35N	0437	0508	0533	1829	1855	1926
30N	0445	0513	0538	1825	1849	1918
25N	0451	0518	0542	1821	1844	1911
20N	0457	0523	0545	1817	1839	1906
15N	0502	0527	0549	1814	1835	1901
10N	0506	0530	0552	1810	1832	1856
05N	0509	0534	0555	1807	1828	1853
00N	0513	0537	0558	1804	1825	1849
05S	0515	0540	0601	1801	1822	1847
10S	0518	0542	0604	1758	1820	1844
15S	0520	0545	0607	1755	1817	1842
20S	0522	0548	0610	1752	1814	1840
25S	0523	0550	0613	1749	1812	1838
30S	0525	0552	0617	1745	1809	1837
35S	0526	0555	0621	1741	1806	1836
40S	0526	0558	0625	1737	1804	1835
45S	0526	0600	0630	1731	1801	1835
50S	0526	0603	0636	1725	1758	1835
55S	0525	0607	0643	1718	1754	1836
60S	0523	0611	0653	1708	1750	1838

MOON: RISE / SET | UTC HHMM

Lat	Day 10		Day 11		Day 12	
72N	--	--	--	--	0728	0848
70N	--	--	--	--	0610	1004
68N	--	--	--	--	0531	1041
66N	--	--	0540	0852	0504	1107
64N	0541	0708	0459	0932	0443	1127
62N	0438	0810	0431	0959	0426	1143
60N	0404	0844	0409	1020	0411	1156
58N	0338	0909	0352	1037	0359	1208
56N	0318	0928	0336	1052	0349	1218
54N	0302	0945	0324	1104	0339	1226
52N	0247	0959	0312	1115	0331	1234
50N	0235	1011	0302	1125	0323	1241
45N	0209	1036	0241	1145	0307	1256
40N	0148	1056	0223	1201	0253	1308
35N	0131	1113	0209	1215	0242	1318
30N	0116	1127	0156	1227	0232	1327
25N	0102	1140	0145	1237	0223	1335
20N	0050	1151	0134	1247	0215	1342
15N	0039	1202	0124	1256	0207	1349
10N	0028	1212	0115	1304	0159	1355
05N	0018	1222	0106	1312	0152	1402
00N	0008	1232	0057	1320	0145	1408
05S	--	1241	0048	1328	0138	1414
10S	--	1251	0039	1337	0131	1420
15S	--	1301	0030	1345	0123	1426
20S	--	1312	0020	1354	0116	1433
25S	--	1323	0010	1403	0107	1440
30S	2358	1335	--	1413	0058	1448
35S	2345	1349	--	1425	0047	1456
40S	2330	1405	--	1438	0036	1506
45S	2312	1424	--	1453	0022	1517
50S	2249	1448	--	1512	0004	1530
55S	2219	1519	2342	1535	--	1547
60S	2135	1604	2311	1608	--	1610

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | APRIL 13 - APRIL 15

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
13	00	201 11.9	157 19.0	N16 48.6	198 31.9	N00 04.4	092 58.3	N22 45.8	193 54.0	N00 49.4
	01	216 14.4	172 18.4	N16 49.6	213 32.6	N00 05.2	108 00.5	N22 45.8	208 56.2	N00 49.5
	02	231 16.8	187 17.9	N16 50.5	228 33.2	N00 06.0	123 02.7	N22 45.7	223 58.4	N00 49.6
	03	246 19.3	202 17.3	N16 51.5	243 33.9	N00 06.8	138 04.9	N22 45.7	239 00.5	N00 49.7
	04	261 21.8	217 16.8	N16 52.5	258 34.6	N00 07.5	153 07.1	N22 45.7	254 02.7	N00 49.8
	05	276 24.2	232 16.2	N16 53.5	273 35.3	N00 08.3	168 09.3	N22 45.6	269 04.9	N00 50.0
	06	291 26.7	247 15.6	N16 54.5	288 36.0	N00 09.1	183 11.5	N22 45.6	284 07.1	N00 50.1
	07	306 29.2	262 15.1	N16 55.5	303 36.7	N00 09.9	198 13.7	N22 45.6	299 09.3	N00 50.2
	08	321 31.6	277 14.5	N16 56.4	318 37.4	N00 10.7	213 15.9	N22 45.6	314 11.5	N00 50.3
	09	336 34.1	292 13.9	N16 57.4	333 38.0	N00 11.5	228 18.1	N22 45.5	329 13.6	N00 50.4
	10	351 36.5	307 13.4	N16 58.4	348 38.7	N00 12.2	243 20.3	N22 45.5	344 15.8	N00 50.5
	11	006 39.0	322 12.8	N16 59.4	003 39.4	N00 13.0	258 22.5	N22 45.5	359 18.0	N00 50.7
	12	021 41.5	337 12.2	N17 00.4	018 40.1	N00 13.8	273 24.7	N22 45.4	014 20.2	N00 50.8
	13	036 43.9	352 11.6	N17 01.3	033 40.8	N00 14.6	288 26.9	N22 45.4	029 22.4	N00 50.9
	14	051 46.4	007 11.1	N17 02.3	048 41.5	N00 15.4	303 29.1	N22 45.4	044 24.6	N00 51.0
	15	066 48.9	022 10.5	N17 03.3	063 42.2	N00 16.2	318 31.3	N22 45.3	059 26.7	N00 51.1
	16	081 51.3	037 09.9	N17 04.3	078 42.8	N00 16.9	333 33.5	N22 45.3	074 28.9	N00 51.2
	17	096 53.8	052 09.4	N17 05.2	093 43.5	N00 17.7	348 35.7	N22 45.3	089 31.1	N00 51.4
	18	111 56.3	067 08.8	N17 06.2	108 44.2	N00 18.5	003 37.9	N22 45.3	104 33.3	N00 51.5
	19	126 58.7	082 08.2	N17 07.2	123 44.9	N00 19.3	018 40.1	N22 45.2	119 35.5	N00 51.6
	20	142 01.2	097 07.6	N17 08.1	138 45.6	N00 20.1	033 42.3	N22 45.2	134 37.7	N00 51.7
	21	157 03.6	112 07.1	N17 09.1	153 46.3	N00 20.9	048 44.5	N22 45.2	149 39.9	N00 51.8
	22	172 06.1	127 06.5	N17 10.1	168 47.0	N00 21.6	063 46.7	N22 45.1	164 42.0	N00 51.9
	23	187 08.6	142 05.9	N17 11.1	183 47.7	N00 22.4	078 48.9	N22 45.1	179 44.2	N00 52.1
14	00	202 11.0	157 05.3	N17 12.0	198 48.3	N00 23.2	093 51.1	N22 45.1	194 46.4	N00 52.2
	01	217 13.5	172 04.8	N17 13.0	213 49.0	N00 24.0	108 53.2	N22 45.1	209 48.6	N00 52.3
	02	232 16.0	187 04.2	N17 14.0	228 49.7	N00 24.8	123 55.4	N22 45.0	224 50.8	N00 52.4
	03	247 18.4	202 03.6	N17 14.9	243 50.4	N00 25.5	138 57.6	N22 45.0	239 53.0	N00 52.5
	04	262 20.9	217 03.0	N17 15.9	258 51.1	N00 26.3	153 59.8	N22 45.0	254 55.1	N00 52.6
	05	277 23.4	232 02.5	N17 16.9	273 51.8	N00 27.1	169 02.0	N22 44.9	269 57.3	N00 52.8
	06	292 25.8	247 01.9	N17 17.8	288 52.5	N00 27.9	184 04.2	N22 44.9	284 59.5	N00 52.9
	07	307 28.3	262 01.3	N17 18.8	303 53.2	N00 28.7	199 06.4	N22 44.9	300 01.7	N00 53.0
	08	322 30.8	277 00.7	N17 19.7	318 53.8	N00 29.5	214 08.6	N22 44.8	315 03.9	N00 53.1
	09	337 33.2	292 00.2	N17 20.7	333 54.5	N00 30.2	229 10.8	N22 44.8	330 06.1	N00 53.2
	10	352 35.7	306 59.6	N17 21.7	348 55.2	N00 31.0	244 13.0	N22 44.8	345 08.2	N00 53.3
	11	007 38.1	321 59.0	N17 22.6	003 55.9	N00 31.8	259 15.2	N22 44.8	000 10.4	N00 53.5
	12	022 40.6	336 58.4	N17 23.6	018 56.6	N00 32.6	274 17.4	N22 44.7	015 12.6	N00 53.6
	13	037 43.1	351 57.8	N17 24.5	033 57.3	N00 33.4	289 19.5	N22 44.7	030 14.8	N00 53.7
	14	052 45.5	006 57.3	N17 25.5	048 58.0	N00 34.2	304 21.7	N22 44.7	045 17.0	N00 53.8
	15	067 48.0	021 56.7	N17 26.5	063 58.7	N00 34.9	319 23.9	N22 44.6	060 19.2	N00 53.9
	16	082 50.5	036 56.1	N17 27.4	078 59.3	N00 35.7	334 26.1	N22 44.6	075 21.4	N00 54.0
	17	097 52.9	051 55.5	N17 28.4	094 00.0	N00 36.5	349 28.3	N22 44.6	090 23.5	N00 54.2
	18	112 55.4	066 54.9	N17 29.3	109 00.7	N00 37.3	004 30.5	N22 44.5	105 25.7	N00 54.3
	19	127 57.9	081 54.3	N17 30.3	124 01.4	N00 38.1	019 32.7	N22 44.5	120 27.9	N00 54.4
	20	143 00.3	096 53.8	N17 31.2	139 02.1	N00 38.8	034 34.9	N22 44.5	135 30.1	N00 54.5
	21	158 02.8	111 53.2	N17 32.2	154 02.8	N00 39.6	049 37.1	N22 44.4	150 32.3	N00 54.6
	22	173 05.3	126 52.6	N17 33.1	169 03.5	N00 40.4	064 39.2	N22 44.4	165 34.5	N00 54.7
	23	188 07.7	141 52.0	N17 34.1	184 04.2	N00 41.2	079 41.4	N22 44.4	180 36.6	N00 54.9
15	00	203 10.2	156 51.4	N17 35.0	199 04.8	N00 42.0	094 43.6	N22 44.4	195 38.8	N00 55.0
	01	218 12.6	171 50.8	N17 36.0	214 05.5	N00 42.8	109 45.8	N22 44.3	210 41.0	N00 55.1
	02	233 15.1	186 50.2	N17 36.9	229 06.2	N00 43.5	124 48.0	N22 44.3	225 43.2	N00 55.2
	03	248 17.6	201 49.7	N17 37.9	244 06.9	N00 44.3	139 50.2	N22 44.3	240 45.4	N00 55.3
	04	263 20.0	216 49.1	N17 38.8	259 07.6	N00 45.1	154 52.4	N22 44.2	255 47.6	N00 55.4
	05	278 22.5	231 48.5	N17 39.8	274 08.3	N00 45.9	169 54.6	N22 44.2	270 49.8	N00 55.6
	06	293 25.0	246 47.9	N17 40.7	289 09.0	N00 46.7	184 56.7	N22 44.2	285 51.9	N00 55.7
	07	308 27.4	261 47.3	N17 41.7	304 09.7	N00 47.4	199 58.9	N22 44.1	300 54.1	N00 55.8
	08	323 29.9	276 46.7	N17 42.6	319 10.3	N00 48.2	215 01.1	N22 44.1	315 56.3	N00 55.9
	09	338 32.4	291 46.1	N17 43.6	334 11.0	N00 49.0	230 03.3	N22 44.1	330 58.5	N00 56.0
	10	353 34.8	306 45.5	N17 44.5	349 11.7	N00 49.8	245 05.5	N22 44.0	346 00.7	N00 56.1
	11	008 37.3	321 44.9	N17 45.4	004 12.4	N00 50.6	260 07.7	N22 44.0	001 02.9	N00 56.2
	12	023 39.7	336 44.4	N17 46.4	019 13.1	N00 51.4	275 09.8	N22 44.0	016 05.1	N00 56.4
	13	038 42.2	351 43.8	N17 47.3	034 13.8	N00 52.1	290 12.0	N22 44.0	031 07.2	N00 56.5
	14	053 44.7	006 43.2	N17 48.3	049 14.5	N00 52.9	305 14.2	N22 43.9	046 09.4	N00 56.6
	15	068 47.1	021 42.6	N17 49.2	064 15.2	N00 53.7	320 16.4	N22 43.9	061 11.6	N00 56.7
	16	083 49.6	036 42.0	N17 50.1	079 15.9	N00 54.5	335 18.6	N22 43.9	076 13.8	N00 56.8
	17	098 52.1	051 41.4	N17 51.1	094 16.5	N00 55.3	350 20.8	N22 43.8	091 16.0	N00 56.9
	18	113 54.5	066 40.8	N17 52.0	109 17.2	N00 56.0	005 22.9	N22 43.8	106 18.2	N00 57.1
	19	128 57.0	081 40.2	N17 52.9	124 17.9	N00 56.8	020 25.1	N22 43.8	121 20.3	N00 57.2
	20	143 59.5	096 39.6	N17 53.9	139 18.6	N00 57.6	035 27.3	N22 43.7	136 22.5	N00 57.3
	21	159 01.9	111 39.0	N17 54.8	154 19.3	N00 58.4	050 29.5	N22 43.7	151 24.7	N00 57.4
	22	174 04.4	126 38.4	N17 55.7	169 20.0	N00 59.2	065 31.7	N22 43.7	166 26.9	N00 57.5
	23	189 06.9	141 37.8	N17 56.7	184 20.7	N00 59.9	080 33.8	N22 43.6	181 29.1	N00 57.6

Venus	Mars	Jupiter	Saturn
13: v -0.6 d 1.0	13: v 0.7 d 0.8	13: v 2.2 d 0.0	13: v 2.2 d 0.1
14: v -0.6 d 1.0	14: v 0.7 d 0.8	14: v 2.2 d 0.0	14: v 2.2 d 0.1
15: v -0.6 d 0.9	15: v 0.7 d 0.8	15: v 2.2 d 0.0	15: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.4	S40 12.1
Achernar	335 20.0	S57 06.2
Acrux	172 58.3	S63 14.9
Adhara	255 05.1	S29 00.7
Al Na'ir	027 31.9	S46 49.9
Aldebaran	290 38.7	N16 33.7
Alioth	166 11.5	N55 49.0
Alkaid	152 50.7	N49 10.8
Alnilam	275 36.8	S01 11.2
Alphard	217 46.6	S08 46.5
Alphecca	126 02.5	N26 37.3
Alpheratz	357 34.0	N29 14.0
Altair	061 59.0	N08 56.1
Ankaa	353 06.5	S42 09.8
Antares	112 14.3	S26 29.4
Arcturus	145 46.6	N19 02.5
Atria	107 07.3	S69 04.3
Avior	234 14.2	S59 35.9
Bellatrix	278 21.9	N06 22.3
Betelgeuse	270 51.1	N07 24.6
Canopus	263 52.1	S52 42.8
Capella	280 20.6	N46 01.6
Deneb	049 25.2	N45 22.1
Denebola	182 23.6	N14 25.4
Diphda	348 46.6	S17 50.6
Dubhe	193 39.2	N61 36.6
Elnath	278 00.8	N28 37.8
Eltanin	090 41.5	N51 28.8
Enif	033 38.0	N09 59.6
Fomalhaut	015 13.6	S29 29.0
Gacrux	171 50.0	S57 15.8
Gienah	175 42.2	S17 41.5
Hadar	148 33.9	S60 30.0
Hamal	327 50.4	N23 35.1
Kaus Australi	083 31.0	S34 22.2
Kochab	137 18.7	N74 02.6
Markab	013 29.1	N15 20.7
Menkar	314 05.4	N04 11.5
Menkent	147 56.0	S36 30.1
Miaplacidus	221 37.8	S69 49.8
Mirfak	308 27.2	N49 57.3
Nunki	075 46.4	S26 15.8
Peacock	053 04.2	S56 38.8
Polaris	313 57.9	N89 22.6
Pollux	243 16.0	N27 57.8
Procyon	244 49.8	N05 09.4
Rasalhague	095 57.4	N12 32.2
Regulus	207 33.1	N11 50.2
Rigel	281 03.1	S08 10.4
Rigil Kentaur	139 38.3	S60 56.7
Sabik	102 01.4	S15 45.5
Schedar	349 30.4	N56 40.8
Shaula	096 08.8	S37 07.3
Sirius	258 25.4	S16 45.3
Spica	158 20.9	S11 18.1
Suhail	222 45.4	S43 32.6
Vega	080 32.4	N38 48.1
Zubenelgenubi	136 54.6	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	314 17.8	1332
Mars	356 16.0	1044
Jupiter	251 36.7	1742
Saturn	352 32.0	1059

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
13	00	179 50.7	N08 58.2	233 21.2	S14 13.4	56.7	13.1	13.6
	01	194 50.8	N08 59.2	247 53.3	S13 59.8	56.7	13.1	13.7
	02	209 51.0	N09 00.1	262 25.4	S13 46.1	56.8	13.1	13.7
	03	224 51.1	N09 01.0	276 57.5	S13 32.4	56.8	13.2	13.8
	04	239 51.3	N09 01.9	291 29.7	S13 18.5	56.8	13.2	13.9
	05	254 51.5	N09 02.8	306 01.9	S13 04.6	56.9	13.2	14.0
	06	269 51.6	N09 03.7	320 34.1	S12 50.7	56.9	13.2	14.1
	07	284 51.8	N09 04.6	335 06.3	S12 36.6	56.9	13.2	14.1
	08	299 51.9	N09 05.5	349 38.5	S12 22.5	57.0	13.2	14.2
	09	314 52.1	N09 06.4	004 10.7	S12 08.2	57.0	13.2	14.3
	10	329 52.2	N09 07.3	018 43.0	S11 54.0	57.1	13.3	14.4
	11	344 52.4	N09 08.2	033 15.2	S11 39.6	57.1	13.3	14.4
	12	359 52.6	N09 09.1	047 47.5	S11 25.2	57.1	13.3	14.5
	13	014 52.7	N09 10.0	062 19.8	S11 10.7	57.2	13.3	14.6
	14	029 52.9	N09 10.9	076 52.1	S10 56.1	57.2	13.3	14.6
	15	044 53.0	N09 11.8	091 24.4	S10 41.5	57.2	13.3	14.7
	16	059 53.2	N09 12.7	105 56.7	S10 26.8	57.3	13.3	14.8
	17	074 53.3	N09 13.6	120 29.0	S10 12.0	57.3	13.3	14.8
	18	089 53.5	N09 14.6	135 01.3	S09 57.2	57.3	13.3	14.9
	19	104 53.7	N09 15.5	149 33.7	S09 42.3	57.4	13.3	15.0
	20	119 53.8	N09 16.4	164 06.0	S09 27.3	57.4	13.3	15.0
	21	134 54.0	N09 17.3	178 38.3	S09 12.3	57.5	13.3	15.1
	22	149 54.1	N09 18.2	193 10.7	S08 57.2	57.5	13.3	15.2
	23	164 54.3	N09 19.1	207 43.0	S08 42.0	57.5	13.3	15.2
14	00	179 54.4	N09 20.0	222 15.3	S08 26.8	57.6	13.3	15.3
	01	194 54.6	N09 20.9	236 47.7	S08 11.5	57.6	13.3	15.3
	02	209 54.7	N09 21.8	251 20.0	S07 56.2	57.6	13.3	15.4
	03	224 54.9	N09 22.7	265 52.3	S07 40.8	57.7	13.3	15.4
	04	239 55.0	N09 23.6	280 24.6	S07 25.4	57.7	13.3	15.5
	05	254 55.2	N09 24.5	294 56.9	S07 09.9	57.8	13.3	15.6
	06	269 55.4	N09 25.4	309 29.3	S06 54.3	57.8	13.3	15.6
	07	284 55.5	N09 26.3	324 01.6	S06 38.7	57.8	13.3	15.7
	08	299 55.7	N09 27.2	338 33.8	S06 23.1	57.9	13.3	15.7
	09	314 55.8	N09 28.1	353 06.1	S06 07.4	57.9	13.3	15.8
	10	329 56.0	N09 29.0	007 38.4	S05 51.6	57.9	13.3	15.8
	11	344 56.1	N09 29.9	022 10.7	S05 35.8	58.0	13.2	15.8
	12	359 56.3	N09 30.8	036 42.9	S05 20.0	58.0	13.2	15.9
	13	014 56.4	N09 31.7	051 15.1	S05 04.1	58.1	13.2	15.9
	14	029 56.6	N09 32.6	065 47.3	S04 48.1	58.1	13.2	16.0
	15	044 56.7	N09 33.5	080 19.5	S04 32.1	58.1	13.2	16.0
	16	059 56.9	N09 34.4	094 51.7	S04 16.1	58.2	13.2	16.1
	17	074 57.0	N09 35.3	109 23.9	S04 00.0	58.2	13.1	16.1
	18	089 57.2	N09 36.2	123 56.0	S03 43.9	58.2	13.1	16.1
	19	104 57.3	N09 37.1	138 28.1	S03 27.8	58.3	13.1	16.2
	20	119 57.5	N09 38.0	153 00.2	S03 11.6	58.3	13.1	16.2
	21	134 57.7	N09 38.9	167 32.3	S02 55.4	58.3	13.0	16.3
	22	149 57.8	N09 39.7	182 04.3	S02 39.1	58.4	13.0	16.3
	23	164 58.0	N09 40.6	196 36.3	S02 22.9	58.4	13.0	16.3
15	00	179 58.1	N09 41.5	211 08.3	S02 06.5	58.5	13.0	16.3
	01	194 58.3	N09 42.4	225 40.3	S01 50.2	58.5	12.9	16.4
	02	209 58.4	N09 43.3	240 12.2	S01 33.8	58.5	12.9	16.4
	03	224 58.6	N09 44.2	254 44.1	S01 17.4	58.6	12.9	16.4
	04	239 58.7	N09 45.1	269 16.0	S01 01.0	58.6	12.8	16.5
	05	254 58.9	N09 46.0	283 47.8	S00 44.5	58.6	12.8	16.5
	06	269 59.0	N09 46.9	298 19.6	S00 28.0	58.7	12.8	16.5
	07	284 59.2	N09 47.8	312 51.3	S00 11.5	58.7	12.7	16.5
	08	299 59.3	N09 48.7	327 23.1	N00 05.0	58.7	12.7	16.5
	09	314 59.5	N09 49.6	341 54.7	N00 21.6	58.8	12.6	16.6
	10	329 59.6	N09 50.5	356 26.4	N00 38.1	58.8	12.6	16.6
	11	344 59.8	N09 51.4	010 58.0	N00 54.7	58.8	12.6	16.6
	12	359 59.9	N09 52.3	025 29.5	N01 11.3	58.9	12.5	16.6
	13	015 00.1	N09 53.2	040 01.0	N01 27.9	58.9	12.5	16.6
	14	030 00.2	N09 54.1	054 32.5	N01 44.6	58.9	12.4	16.6
	15	045 00.4	N09 54.9	069 03.9	N02 01.2	59.0	12.4	16.6
	16	060 00.5	N09 55.8	083 35.3	N02 17.8	59.0	12.3	16.7
	17	075 00.7	N09 56.7	098 06.6	N02 34.5	59.0	12.3	16.7
	18	090 00.8	N09 57.6	112 37.9	N02 51.2	59.1	12.2	16.7
	19	105 01.0	N09 58.5	127 09.1	N03 07.8	59.1	12.2	16.7
	20	120 01.1	N09 59.4	141 40.3	N03 24.5	59.1	12.1	16.7
	21	135 01.2	N10 00.3	156 11.4	N03 41.2	59.2	12.1	16.7
	22	150 01.4	N10 01.2	170 42.4	N03 57.9	59.2	12.0	16.7
	23	165 01.5	N10 02.1	185 13.4	N04 14.5	59.2	11.9	16.7

Day 13 noon Sun: v 0.2 d 0.9 SD 16.0 | Moon SD 15.6

Day 14 noon Sun: v 0.2 d 0.9 SD 15.9 | Moon SD 15.8

Day 15 noon Sun: v 0.1 d 0.9 SD 15.9 | Moon SD 16.0

SUN: APRIL 14 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	0207	0345	2019	2201	--
70N	--	0241	0401	2003	2124	--
68N	0057	0305	0414	1950	2059	2321
66N	0150	0324	0424	1939	2040	2217
64N	0220	0338	0433	1930	2025	2145
62N	0243	0350	0440	1922	2012	2121
60N	0300	0401	0447	1916	2002	2103
58N	0315	0410	0452	1910	1953	2048
56N	0327	0417	0457	1905	1945	2036
54N	0337	0424	0502	1900	1938	2026
52N	0346	0430	0506	1856	1932	2016
50N	0354	0435	0509	1852	1926	2008
45N	0410	0447	0517	1844	1915	1952
40N	0423	0456	0524	1837	1905	1939
35N	0433	0504	0530	1832	1858	1929
30N	0441	0510	0534	1827	1851	1920
25N	0448	0516	0539	1822	1845	1913
20N	0454	0520	0543	1818	1840	1907
15N	0459	0525	0547	1814	1836	1901
10N	0504	0529	0550	1810	1832	1857
05N	0508	0533	0554	1807	1828	1853
00N	0512	0536	0557	1804	1825	1849
05S	0515	0539	0600	1800	1821	1846
10S	0518	0542	0604	1757	1818	1843
15S	0520	0545	0607	1753	1815	1840
20S	0523	0548	0611	1750	1812	1838
25S	0525	0551	0614	1746	1809	1836
30S	0526	0554	0618	1742	1806	1834
35S	0528	0557	0623	1737	1803	1832
40S	0529	0601	0628	1732	1759	1831
45S	0530	0604	0634	1726	1756	1830
50S	0530	0608	0641	1719	1752	1829
55S	0530	0612	0649	1710	1747	1829
60S	0529	0618	0700	1659	1742	1830

MOON: RISE / SET | UTC HHMM

Lat	Day 13		Day 14		Day 15	
72N	0539	1214	0453	1438	0417	1657
70N	0516	1235	0443	1446	0415	1654
68N	0458	1251	0435	1451	0414	1651
66N	0443	1304	0428	1456	0413	1648
64N	0431	1315	0421	1500	0413	1646
62N	0421	1324	0416	1503	0412	1645
60N	0412	1331	0412	1506	0411	1643
58N	0404	1338	0408	1509	0411	1642
56N	0357	1344	0404	1511	0410	1641
54N	0351	1349	0401	1513	0410	1640
52N	0345	1354	0358	1515	0409	1639
50N	0340	1358	0355	1517	0409	1638
45N	0329	1408	0349	1521	0408	1636
40N	0320	1415	0344	1524	0407	1634
35N	0312	1422	0340	1526	0407	1633
30N	0305	1427	0336	1529	0406	1632
25N	0258	1433	0332	1531	0406	1631
20N	0253	1437	0329	1533	0405	1629
15N	0247	1442	0326	1534	0405	1629
10N	0242	1446	0323	1536	0404	1628
05N	0237	1450	0320	1538	0404	1627
00N	0232	1454	0318	1539	0404	1626
05S	0227	1458	0315	1541	0403	1625
10S	0222	1502	0312	1543	0403	1624
15S	0216	1506	0309	1544	0403	1623
20S	0211	1510	0306	1546	0402	1622
25S	0205	1514	0303	1548	0402	1621
30S	0158	1519	0259	1550	0401	1620
35S	0151	1525	0255	1552	0401	1619
40S	0143	1531	0251	1554	0400	1617
45S	0133	1538	0246	1557	0400	1616
50S	0121	1546	0239	1600	0359	1614
55S	0106	1556	0231	1604	0358	1612
60S	0046	1610	0221	1609	0357	1609

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | APRIL 16 - APRIL 18

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
16	00	204 09.3	156 37.2	N17 57.6	199 21.4	N01 00.7	095 36.0	N22 43.6	196 31.3	N00 57.8
	01	219 11.8	171 36.6	N17 58.5	214 22.1	N01 01.5	110 38.2	N22 43.6	211 33.5	N00 57.9
	02	234 14.2	186 36.0	N17 59.5	229 22.7	N01 02.3	125 40.4	N22 43.5	226 35.6	N00 58.0
	03	249 16.7	201 35.4	N18 00.4	244 23.4	N01 03.1	140 42.6	N22 43.5	241 37.8	N00 58.1
	04	264 19.2	216 34.8	N18 01.3	259 24.1	N01 03.9	155 44.7	N22 43.5	256 40.0	N00 58.2
	05	279 21.6	231 34.2	N18 02.3	274 24.8	N01 04.6	170 46.9	N22 43.4	271 42.2	N00 58.3
	06	294 24.1	246 33.6	N18 03.2	289 25.5	N01 05.4	185 49.1	N22 43.4	286 44.4	N00 58.4
	07	309 26.6	261 33.0	N18 04.1	304 26.2	N01 06.2	200 51.3	N22 43.4	301 46.6	N00 58.6
	08	324 29.0	276 32.4	N18 05.0	319 26.9	N01 07.0	215 53.5	N22 43.3	316 48.8	N00 58.7
	09	339 31.5	291 31.8	N18 06.0	334 27.6	N01 07.8	230 55.6	N22 43.3	331 50.9	N00 58.8
	10	354 34.0	306 31.2	N18 06.9	349 28.3	N01 08.5	245 57.8	N22 43.3	346 53.1	N00 58.9
	11	009 36.4	321 30.6	N18 07.8	004 28.9	N01 09.3	261 00.0	N22 43.3	001 55.3	N00 59.0
	12	024 38.9	336 30.0	N18 08.7	019 29.6	N01 10.1	276 02.2	N22 43.2	016 57.5	N00 59.1
	13	039 41.3	351 29.4	N18 09.6	034 30.3	N01 10.9	291 04.3	N22 43.2	031 59.7	N00 59.3
	14	054 43.8	006 28.8	N18 10.6	049 31.0	N01 11.7	306 06.5	N22 43.2	047 01.9	N00 59.4
	15	069 46.3	021 28.2	N18 11.5	064 31.7	N01 12.4	321 08.7	N22 43.1	062 04.1	N00 59.5
	16	084 48.7	036 27.6	N18 12.4	079 32.4	N01 13.2	336 10.9	N22 43.1	077 06.3	N00 59.6
	17	099 51.2	051 27.0	N18 13.3	094 33.1	N01 14.0	351 13.0	N22 43.1	092 08.4	N00 59.7
	18	114 53.7	066 26.4	N18 14.2	109 33.8	N01 14.8	006 15.2	N22 43.0	107 10.6	N00 59.8
	19	129 56.1	081 25.8	N18 15.2	124 34.5	N01 15.6	021 17.4	N22 43.0	122 12.8	N00 59.9
	20	144 58.6	096 25.2	N18 16.1	139 35.1	N01 16.3	036 19.6	N22 43.0	137 15.0	N01 00.1
	21	160 01.1	111 24.6	N18 17.0	154 35.8	N01 17.1	051 21.7	N22 42.9	152 17.2	N01 00.2
	22	175 03.5	126 24.0	N18 17.9	169 36.5	N01 17.9	066 23.9	N22 42.9	167 19.4	N01 00.3
	23	190 06.0	141 23.4	N18 18.8	184 37.2	N01 18.7	081 26.1	N22 42.9	182 21.6	N01 00.4
17	00	205 08.5	156 22.8	N18 19.7	199 37.9	N01 19.5	096 28.3	N22 42.8	197 23.7	N01 00.5
	01	220 10.9	171 22.2	N18 20.6	214 38.6	N01 20.2	111 30.4	N22 42.8	212 25.9	N01 00.6
	02	235 13.4	186 21.5	N18 21.5	229 39.3	N01 21.0	126 32.6	N22 42.8	227 28.1	N01 00.7
	03	250 15.8	201 20.9	N18 22.4	244 40.0	N01 21.8	141 34.8	N22 42.7	242 30.3	N01 00.9
	04	265 18.3	216 20.3	N18 23.4	259 40.7	N01 22.6	156 37.0	N22 42.7	257 32.5	N01 01.0
	05	280 20.8	231 19.7	N18 24.3	274 41.4	N01 23.4	171 39.1	N22 42.7	272 34.7	N01 01.1
	06	295 23.2	246 19.1	N18 25.2	289 42.0	N01 24.1	186 41.3	N22 42.6	287 36.9	N01 01.2
	07	310 25.7	261 18.5	N18 26.1	304 42.7	N01 24.9	201 43.5	N22 42.6	302 39.0	N01 01.3
	08	325 28.2	276 17.9	N18 27.0	319 43.4	N01 25.7	216 45.6	N22 42.6	317 41.2	N01 01.4
	09	340 30.6	291 17.3	N18 27.9	334 44.1	N01 26.5	231 47.8	N22 42.5	332 43.4	N01 01.6
	10	355 33.1	306 16.7	N18 28.8	349 44.8	N01 27.2	246 50.0	N22 42.5	347 45.6	N01 01.7
	11	010 35.6	321 16.0	N18 29.7	004 45.5	N01 28.0	261 52.2	N22 42.5	002 47.8	N01 01.8
	12	025 38.0	336 15.4	N18 30.6	019 46.2	N01 28.8	276 54.3	N22 42.4	017 50.0	N01 01.9
	13	040 40.5	351 14.8	N18 31.5	034 46.9	N01 29.6	291 56.5	N22 42.4	032 52.2	N01 02.0
	14	055 42.9	006 14.2	N18 32.4	049 47.6	N01 30.4	306 58.7	N22 42.4	047 54.4	N01 02.1
	15	070 45.4	021 13.6	N18 33.3	064 48.3	N01 31.1	322 00.8	N22 42.3	062 56.5	N01 02.2
	16	085 47.9	036 13.0	N18 34.2	079 48.9	N01 31.9	337 03.0	N22 42.3	077 58.7	N01 02.4
	17	100 50.3	051 12.4	N18 35.1	094 49.6	N01 32.7	352 05.2	N22 42.3	093 00.9	N01 02.5
	18	115 52.8	066 11.7	N18 36.0	109 50.3	N01 33.5	007 07.3	N22 42.2	108 03.1	N01 02.6
	19	130 55.3	081 11.1	N18 36.9	124 51.0	N01 34.3	022 09.5	N22 42.2	123 05.3	N01 02.7
	20	145 57.7	096 10.5	N18 37.8	139 51.7	N01 35.0	037 11.7	N22 42.2	138 07.5	N01 02.8
	21	161 00.2	111 09.9	N18 38.7	154 52.4	N01 35.8	052 13.8	N22 42.1	153 09.7	N01 02.9
	22	176 02.7	126 09.3	N18 39.6	169 53.1	N01 36.6	067 16.0	N22 42.1	168 11.9	N01 03.0
	23	191 05.1	141 08.7	N18 40.5	184 53.8	N01 37.4	082 18.2	N22 42.1	183 14.0	N01 03.2
18	00	206 07.6	156 08.0	N18 41.4	199 54.5	N01 38.2	097 20.3	N22 42.0	198 16.2	N01 03.3
	01	221 10.1	171 07.4	N18 42.2	214 55.2	N01 38.9	112 22.5	N22 42.0	213 18.4	N01 03.4
	02	236 12.5	186 06.8	N18 43.1	229 55.8	N01 39.7	127 24.7	N22 42.0	228 20.6	N01 03.5
	03	251 15.0	201 06.2	N18 44.0	244 56.5	N01 40.5	142 26.8	N22 41.9	243 22.8	N01 03.6
	04	266 17.4	216 05.6	N18 44.9	259 57.2	N01 41.3	157 29.0	N22 41.9	258 25.0	N01 03.7
	05	281 19.9	231 04.9	N18 45.8	274 57.9	N01 42.0	172 31.2	N22 41.9	273 27.2	N01 03.8
	06	296 22.4	246 04.3	N18 46.7	289 58.6	N01 42.8	187 33.3	N22 41.8	288 29.4	N01 04.0
	07	311 24.8	261 03.7	N18 47.6	304 59.3	N01 43.6	202 35.5	N22 41.8	303 31.5	N01 04.1
	08	326 27.3	276 03.1	N18 48.5	320 00.0	N01 44.4	217 37.7	N22 41.8	318 33.7	N01 04.2
	09	341 29.8	291 02.4	N18 49.3	335 00.7	N01 45.2	232 39.8	N22 41.7	333 35.9	N01 04.3
	10	356 32.2	306 01.8	N18 50.2	350 01.4	N01 45.9	247 42.0	N22 41.7	348 38.1	N01 04.4
	11	011 34.7	321 01.2	N18 51.1	005 02.1	N01 46.7	262 44.2	N22 41.7	003 40.3	N01 04.5
	12	026 37.2	336 00.6	N18 52.0	020 02.8	N01 47.5	277 46.3	N22 41.6	018 42.5	N01 04.6
	13	041 39.6	350 59.9	N18 52.9	035 03.4	N01 48.3	292 48.5	N22 41.6	033 44.7	N01 04.8
	14	056 42.1	005 59.3	N18 53.8	050 04.1	N01 49.0	307 50.7	N22 41.5	048 46.9	N01 04.9
	15	071 44.6	020 58.7	N18 54.6	065 04.8	N01 49.8	322 52.8	N22 41.5	063 49.0	N01 05.0
	16	086 47.0	035 58.1	N18 55.5	080 05.5	N01 50.6	337 55.0	N22 41.5	078 51.2	N01 05.1
	17	101 49.5	050 57.4	N18 56.4	095 06.2	N01 51.4	352 57.1	N22 41.4	093 53.4	N01 05.2
	18	116 51.9	065 56.8	N18 57.3	110 06.9	N01 52.2	007 59.3	N22 41.4	108 55.6	N01 05.3
	19	131 54.4	080 56.2	N18 58.1	125 07.6	N01 52.9	023 01.5	N22 41.4	123 57.8	N01 05.4
	20	146 56.9	095 55.6	N18 59.0	140 08.3	N01 53.7	038 03.6	N22 41.3	139 00.0	N01 05.6
	21	161 59.3	110 54.9	N18 59.9	155 09.0	N01 54.5	053 05.8	N22 41.3	154 02.2	N01 05.7
	22	177 01.8	125 54.3	N19 00.8	170 09.7	N01 55.3	068 08.0	N22 41.3	169 04.4	N01 05.8
	23	192 04.3	140 53.7	N19 01.6	185 10.4	N01 56.0	083 10.1	N22 41.2	184 06.5	N01 05.9

Venus	Mars	Jupiter	Saturn
16: v -0.6 d 0.9	16: v 0.7 d 0.8	16: v 2.2 d 0.0	16: v 2.2 d 0.1
17: v -0.6 d 0.9	17: v 0.7 d 0.8	17: v 2.2 d 0.0	17: v 2.2 d 0.1
18: v -0.6 d 0.9	18: v 0.7 d 0.8	18: v 2.2 d 0.0	18: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.4	S40 12.0
Achernar	335 20.0	S57 06.2
Acrux	172 58.3	S63 14.9
Adhara	255 05.1	S29 00.7
Al Na'ir	027 31.9	S46 49.9
Aldebaran	290 38.7	N16 33.7
Alioth	166 11.5	N55 49.0
Alkaid	152 50.7	N49 10.8
Alnilam	275 36.9	S01 11.2
Alphard	217 46.6	S08 46.5
Alphecca	126 02.5	N26 37.3
Alpheratz	357 34.0	N29 14.0
Altair	061 58.9	N08 56.1
Ankaa	353 06.5	S42 09.8
Antares	112 14.3	S26 29.5
Arcturus	145 46.6	N19 02.6
Atria	107 07.2	S69 04.3
Avior	234 14.3	S59 35.9
Bellatrix	278 22.0	N06 22.3
Betelgeuse	270 51.1	N07 24.6
Canopus	263 52.1	S52 42.8
Capella	280 20.7	N46 01.6
Deneb	049 25.2	N45 22.1
Denebola	182 23.6	N14 25.4
Diphda	348 46.6	S17 50.6
Dubhe	193 39.2	N61 36.6
Elnath	278 00.8	N28 37.8
Eltanin	090 41.4	N51 28.8
Enif	033 37.9	N09 59.6
Fomalhaut	015 13.6	S29 28.9
Gacrux	171 50.0	S57 15.8
Gienah	175 42.2	S17 41.5
Hadar	148 33.9	S60 30.1
Hamal	327 50.4	N23 35.1
Kaus Australi	083 31.0	S34 22.2
Kochab	137 18.7	N74 02.6
Markab	013 29.1	N15 20.7
Menkar	314 05.4	N04 11.5
Menkent	147 56.0	S36 30.1
Miaplacidus	221 37.8	S69 49.8
Mirfak	308 27.2	N49 57.3
Nunki	075 46.4	S26 15.8
Peacock	053 04.2	S56 38.8
Polaris	313 58.4	N89 22.6
Pollux	243 16.1	N27 57.8
Procyon	244 49.8	N05 09.4
Rasalhague	095 57.4	N12 32.2
Regulus	207 33.2	N11 50.2
Rigel	281 03.1	S08 10.4
Rigil Kentaur	139 38.3	S60 56.7
Sabik	102 01.4	S15 45.5
Schedar	349 30.4	N56 40.8
Shaula	096 08.7	S37 07.3
Sirius	258 25.4	S16 45.3
Spica	158 20.9	S11 18.1
Suhail	222 45.4	S43 32.6
Vega	080 32.4	N38 48.2
Zubenelgenubi	136 54.6	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	310 37.4	1335
Mars	354 08.2	1041
Jupiter	251 16.3	1732
Saturn	352 12.0	1049

2026 | APRIL 16 - APRIL 18

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
16	00	180 01.7	N10 03.0	199 44.4	N04 31.2	59.3	11.9	16.7
	01	195 01.8	N10 03.8	214 15.3	N04 47.9	59.3	11.8	16.7
	02	210 02.0	N10 04.7	228 46.1	N05 04.5	59.3	11.8	16.7
	03	225 02.1	N10 05.6	243 16.8	N05 21.2	59.4	11.7	16.6
	04	240 02.3	N10 06.5	257 47.5	N05 37.8	59.4	11.6	16.6
	05	255 02.4	N10 07.4	272 18.2	N05 54.5	59.4	11.6	16.6
	06	270 02.6	N10 08.3	286 48.7	N06 11.1	59.5	11.5	16.6
	07	285 02.7	N10 09.2	301 19.2	N06 27.7	59.5	11.4	16.6
	08	300 02.9	N10 10.1	315 49.7	N06 44.3	59.5	11.4	16.6
	09	315 03.0	N10 10.9	330 20.0	N07 00.8	59.5	11.3	16.6
	10	330 03.2	N10 11.8	344 50.3	N07 17.4	59.6	11.2	16.5
	11	345 03.3	N10 12.7	359 20.5	N07 33.9	59.6	11.1	16.5
	12	000 03.5	N10 13.6	013 50.7	N07 50.4	59.6	11.1	16.5
	13	015 03.6	N10 14.5	028 20.7	N08 06.9	59.7	11.0	16.5
	14	030 03.7	N10 15.4	042 50.7	N08 23.4	59.7	10.9	16.4
	15	045 03.9	N10 16.3	057 20.6	N08 39.8	59.7	10.8	16.4
	16	060 04.0	N10 17.1	071 50.5	N08 56.2	59.7	10.8	16.4
	17	075 04.2	N10 18.0	086 20.2	N09 12.5	59.8	10.7	16.3
	18	090 04.3	N10 18.9	100 49.9	N09 28.9	59.8	10.6	16.3
	19	105 04.5	N10 19.8	115 19.5	N09 45.2	59.8	10.5	16.3
	20	120 04.6	N10 20.7	129 49.0	N10 01.4	59.8	10.4	16.2
	21	135 04.8	N10 21.6	144 18.4	N10 17.6	59.9	10.3	16.2
	22	150 04.9	N10 22.4	158 47.8	N10 33.8	59.9	10.3	16.1
	23	165 05.0	N10 23.3	173 17.0	N10 49.9	59.9	10.2	16.1
17	00	180 05.2	N10 24.2	187 46.2	N11 06.0	59.9	10.1	16.0
	01	195 05.3	N10 25.1	202 15.3	N11 22.0	60.0	10.0	16.0
	02	210 05.5	N10 26.0	216 44.2	N11 38.0	60.0	9.9	15.9
	03	225 05.6	N10 26.8	231 13.1	N11 53.9	60.0	9.8	15.9
	04	240 05.8	N10 27.7	245 42.0	N12 09.8	60.0	9.7	15.8
	05	255 05.9	N10 28.6	260 10.7	N12 25.6	60.1	9.6	15.8
	06	270 06.0	N10 29.5	274 39.3	N12 41.4	60.1	9.5	15.7
	07	285 06.2	N10 30.4	289 07.8	N12 57.1	60.1	9.4	15.6
	08	300 06.3	N10 31.2	303 36.2	N13 12.7	60.1	9.3	15.6
	09	315 06.5	N10 32.1	318 04.6	N13 28.3	60.2	9.2	15.5
	10	330 06.6	N10 33.0	332 32.8	N13 43.8	60.2	9.1	15.4
	11	345 06.8	N10 33.9	347 00.9	N13 59.2	60.2	9.0	15.4
	12	000 06.9	N10 34.8	001 29.0	N14 14.6	60.2	8.9	15.3
	13	015 07.0	N10 35.6	015 56.9	N14 29.9	60.2	8.8	15.2
	14	030 07.2	N10 36.5	030 24.7	N14 45.1	60.2	8.7	15.1
	15	045 07.3	N10 37.4	044 52.5	N15 00.2	60.3	8.6	15.1
	16	060 07.5	N10 38.3	059 20.1	N15 15.3	60.3	8.5	15.0
	17	075 07.6	N10 39.1	073 47.6	N15 30.3	60.3	8.4	14.9
	18	090 07.7	N10 40.0	088 15.0	N15 45.2	60.3	8.3	14.8
	19	105 07.9	N10 40.9	102 42.3	N16 00.0	60.3	8.2	14.7
	20	120 08.0	N10 41.8	117 09.6	N16 14.7	60.4	8.1	14.6
	21	135 08.2	N10 42.6	131 36.7	N16 29.3	60.4	8.0	14.5
	22	150 08.3	N10 43.5	146 03.7	N16 43.9	60.4	7.9	14.4
	23	165 08.4	N10 44.4	160 30.5	N16 58.3	60.4	7.8	14.3
18	00	180 08.6	N10 45.3	174 57.3	N17 12.7	60.4	7.7	14.2
	01	195 08.7	N10 46.1	189 24.0	N17 26.9	60.4	7.6	14.1
	02	210 08.9	N10 47.0	203 50.6	N17 41.1	60.4	7.5	14.0
	03	225 09.0	N10 47.9	218 17.0	N17 55.1	60.5	7.3	13.9
	04	240 09.1	N10 48.8	232 43.4	N18 09.1	60.5	7.2	13.8
	05	255 09.3	N10 49.6	247 09.6	N18 22.9	60.5	7.1	13.7
	06	270 09.4	N10 50.5	261 35.7	N18 36.6	60.5	7.0	13.6
	07	285 09.6	N10 51.4	276 01.7	N18 50.2	60.5	6.9	13.5
	08	300 09.7	N10 52.3	290 27.6	N19 03.7	60.5	6.8	13.4
	09	315 09.8	N10 53.1	304 53.4	N19 17.1	60.5	6.7	13.3
	10	330 10.0	N10 54.0	319 19.1	N19 30.4	60.5	6.6	13.1
	11	345 10.1	N10 54.9	333 44.7	N19 43.5	60.5	6.5	13.0
	12	000 10.2	N10 55.7	348 10.1	N19 56.5	60.6	6.3	12.9
	13	015 10.4	N10 56.6	002 35.5	N20 09.4	60.6	6.2	12.8
	14	030 10.5	N10 57.5	017 00.7	N20 22.2	60.6	6.1	12.6
	15	045 10.7	N10 58.4	031 25.8	N20 34.8	60.6	6.0	12.5
	16	060 10.8	N10 59.2	045 50.9	N20 47.3	60.6	5.9	12.4
	17	075 10.9	N11 00.1	060 15.8	N20 59.7	60.6	5.8	12.2
	18	090 11.1	N11 01.0	074 40.6	N21 11.9	60.6	5.7	12.1
	19	105 11.2	N11 01.8	089 05.2	N21 24.0	60.6	5.6	12.0
	20	120 11.3	N11 02.7	103 29.8	N21 36.0	60.6	5.5	11.8
	21	135 11.5	N11 03.6	117 54.3	N21 47.8	60.6	5.4	11.7
	22	150 11.6	N11 04.4	132 18.6	N21 59.5	60.6	5.3	11.5
	23	165 11.7	N11 05.3	146 42.9	N22 11.0	60.6	5.1	11.4

Day 16 noon Sun: v 0.1 d 0.9 SD 15.9 | Moon SD 16.2

Day 17 noon Sun: v 0.1 d 0.9 SD 15.9 | Moon SD 16.4

Day 18 noon Sun: v 0.1 d 0.9 SD 15.9 | Moon SD 16.5

SUN: APRIL 17 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	0137	0328	2036	2232	--
70N	--	0221	0346	2016	2144	--
68N	--	0249	0401	2001	2115	--
66N	0124	0310	0412	1949	2053	2244
64N	0202	0326	0422	1939	2036	2202
62N	0228	0340	0431	1930	2022	2135
60N	0248	0351	0438	1923	2010	2114
58N	0304	0401	0444	1916	2000	2058
56N	0317	0409	0450	1911	1952	2044
54N	0328	0416	0455	1906	1944	2033
52N	0338	0423	0459	1901	1937	2023
50N	0346	0429	0503	1857	1931	2014
45N	0404	0441	0512	1848	1919	1956
40N	0417	0451	0519	1840	1909	1943
35N	0428	0500	0526	1834	1900	1931
30N	0437	0507	0531	1828	1853	1922
25N	0445	0513	0536	1823	1847	1914
20N	0452	0518	0541	1819	1841	1908
15N	0457	0523	0545	1815	1836	1902
10N	0502	0527	0549	1811	1832	1857
05N	0507	0531	0552	1807	1828	1852
00N	0511	0535	0556	1803	1824	1848
05S	0514	0539	0600	1759	1820	1845
10S	0518	0542	0604	1755	1817	1841
15S	0521	0546	0607	1751	1813	1838
20S	0523	0549	0611	1747	1810	1836
25S	0526	0553	0616	1743	1806	1833
30S	0528	0556	0620	1738	1803	1831
35S	0530	0600	0625	1733	1759	1829
40S	0532	0603	0631	1728	1755	1827
45S	0533	0608	0637	1721	1751	1825
50S	0535	0612	0645	1713	1746	1823
55S	0536	0618	0655	1703	1740	1822
60S	0536	0624	0707	1651	1733	1822

MOON: RISE / SET | UTC HHMM

Lat	Day 16		Day 17		Day 18	
72N	0341	1927	0256	2249	0126	--
70N	0348	1910	0316	2154	0223	--
68N	0354	1857	0331	2121	0257	--
66N	0359	1847	0343	2058	0323	2339
64N	0404	1838	0354	2039	0342	2257
62N	0407	1831	0403	2024	0359	2228
60N	0411	1824	0411	2012	0412	2207
58N	0414	1819	0418	2001	0424	2149
56N	0416	1814	0424	1952	0435	2135
54N	0419	1809	0430	1944	0444	2122
52N	0421	1805	0435	1936	0452	2111
50N	0423	1802	0439	1930	0459	2101
45N	0427	1754	0449	1916	0515	2040
40N	0431	1747	0457	1904	0528	2024
35N	0434	1742	0505	1854	0539	2010
30N	0437	1737	0511	1846	0549	1958
25N	0440	1733	0517	1838	0558	1947
20N	0442	1729	0522	1831	0606	1937
15N	0445	1725	0527	1825	0614	1928
10N	0447	1721	0532	1818	0621	1920
05N	0449	1718	0537	1812	0629	1911
00N	0451	1714	0541	1807	0636	1903
05S	0453	1711	0546	1801	0643	1855
10S	0455	1708	0551	1755	0650	1847
15S	0458	1704	0556	1749	0657	1838
20S	0500	1700	0601	1742	0705	1829
25S	0503	1657	0607	1735	0714	1819
30S	0505	1652	0613	1728	0723	1809
35S	0509	1648	0619	1720	0734	1757
40S	0512	1642	0627	1710	0746	1744
45S	0516	1636	0636	1659	0800	1728
50S	0521	1629	0647	1646	0818	1709
55S	0528	1620	0701	1630	0841	1644
60S	0536	1608	0720	1608	0912	1610

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
19	00	207 06.7	155 53.0	N19 02.5	200 11.0	N01 56.8	098 12.3	N22 41.2	199 08.7	N01 06.0
	01	222 09.2	170 52.4	N19 03.4	215 11.7	N01 57.6	113 14.4	N22 41.2	214 10.9	N01 06.1
	02	237 11.7	185 51.8	N19 04.2	230 12.4	N01 58.4	128 16.6	N22 41.1	229 13.1	N01 06.2
	03	252 14.1	200 51.1	N19 05.1	245 13.1	N01 59.1	143 18.8	N22 41.1	244 15.3	N01 06.4
	04	267 16.6	215 50.5	N19 06.0	260 13.8	N01 59.9	158 20.9	N22 41.1	259 17.5	N01 06.5
	05	282 19.0	230 49.9	N19 06.9	275 14.5	N02 00.7	173 23.1	N22 41.0	274 19.7	N01 06.6
	06	297 21.5	245 49.2	N19 07.7	290 15.2	N02 01.5	188 25.2	N22 41.0	289 21.9	N01 06.7
	07	312 24.0	260 48.6	N19 08.6	305 15.9	N02 02.3	203 27.4	N22 41.0	304 24.1	N01 06.8
	08	327 26.4	275 48.0	N19 09.5	320 16.6	N02 03.0	218 29.6	N22 40.9	319 26.2	N01 06.9
	09	342 28.9	290 47.3	N19 10.3	335 17.3	N02 03.8	233 31.7	N22 40.9	334 28.4	N01 07.0
	10	357 31.4	305 46.7	N19 11.2	350 18.0	N02 04.6	248 33.9	N22 40.9	349 30.6	N01 07.2
	11	012 33.8	320 46.1	N19 12.0	005 18.6	N02 05.4	263 36.0	N22 40.8	004 32.8	N01 07.3
	12	027 36.3	335 45.4	N19 12.9	020 19.3	N02 06.1	278 38.2	N22 40.8	019 35.0	N01 07.4
	13	042 38.8	350 44.8	N19 13.8	035 20.0	N02 06.9	293 40.3	N22 40.7	034 37.2	N01 07.5
	14	057 41.2	005 44.2	N19 14.6	050 20.7	N02 07.7	308 42.5	N22 40.7	049 39.4	N01 07.6
	15	072 43.7	020 43.5	N19 15.5	065 21.4	N02 08.5	323 44.7	N22 40.7	064 41.6	N01 07.7
	16	087 46.2	035 42.9	N19 16.3	080 22.1	N02 09.2	338 46.8	N22 40.6	079 43.8	N01 07.8
	17	102 48.6	050 42.3	N19 17.2	095 22.8	N02 10.0	353 49.0	N22 40.6	094 45.9	N01 07.9
	18	117 51.1	065 41.6	N19 18.0	110 23.5	N02 10.8	008 51.1	N22 40.6	109 48.1	N01 08.1
	19	132 53.5	080 41.0	N19 18.9	125 24.2	N02 11.6	023 53.3	N22 40.5	124 50.3	N01 08.2
	20	147 56.0	095 40.3	N19 19.8	140 24.9	N02 12.3	038 55.4	N22 40.5	139 52.5	N01 08.3
	21	162 58.5	110 39.7	N19 20.6	155 25.6	N02 13.1	053 57.6	N22 40.5	154 54.7	N01 08.4
	22	178 00.9	125 39.1	N19 21.5	170 26.3	N02 13.9	068 59.7	N22 40.4	169 56.9	N01 08.5
	23	193 03.4	140 38.4	N19 22.3	185 26.9	N02 14.7	084 01.9	N22 40.4	184 59.1	N01 08.6
20	00	208 05.9	155 37.8	N19 23.2	200 27.6	N02 15.4	099 04.1	N22 40.4	200 01.3	N01 08.7
	01	223 08.3	170 37.1	N19 24.0	215 28.3	N02 16.2	114 06.2	N22 40.3	215 03.5	N01 08.9
	02	238 10.8	185 36.5	N19 24.9	230 29.0	N02 17.0	129 08.4	N22 40.3	230 05.6	N01 09.0
	03	253 13.3	200 35.9	N19 25.7	245 29.7	N02 17.8	144 10.5	N22 40.2	245 07.8	N01 09.1
	04	268 15.7	215 35.2	N19 26.6	260 30.4	N02 18.5	159 12.7	N22 40.2	260 10.0	N01 09.2
	05	283 18.2	230 34.6	N19 27.4	275 31.1	N02 19.3	174 14.8	N22 40.2	275 12.2	N01 09.3
	06	298 20.7	245 33.9	N19 28.3	290 31.8	N02 20.1	189 17.0	N22 40.1	290 14.4	N01 09.4
	07	313 23.1	260 33.3	N19 29.1	305 32.5	N02 20.9	204 19.1	N22 40.1	305 16.6	N01 09.5
	08	328 25.6	275 32.6	N19 29.9	320 33.2	N02 21.6	219 21.3	N22 40.1	320 18.8	N01 09.6
	09	343 28.0	290 32.0	N19 30.8	335 33.9	N02 22.4	234 23.4	N22 40.0	335 21.0	N01 09.8
	10	358 30.5	305 31.3	N19 31.6	350 34.6	N02 23.2	249 25.6	N22 40.0	350 23.2	N01 09.9
	11	013 33.0	320 30.7	N19 32.5	005 35.2	N02 24.0	264 27.7	N22 40.0	005 25.4	N01 10.0
	12	028 35.4	335 30.0	N19 33.3	020 35.9	N02 24.7	279 29.9	N22 39.9	020 27.5	N01 10.1
	13	043 37.9	350 29.4	N19 34.1	035 36.6	N02 25.5	294 32.0	N22 39.9	035 29.7	N01 10.2
	14	058 40.4	005 28.8	N19 35.0	050 37.3	N02 26.3	309 34.2	N22 39.8	050 31.9	N01 10.3
	15	073 42.8	020 28.1	N19 35.8	065 38.0	N02 27.1	324 36.3	N22 39.8	065 34.1	N01 10.4
	16	088 45.3	035 27.5	N19 36.7	080 38.7	N02 27.8	339 38.5	N22 39.8	080 36.3	N01 10.6
	17	103 47.8	050 26.8	N19 37.5	095 39.4	N02 28.6	354 40.6	N22 39.7	095 38.5	N01 10.7
	18	118 50.2	065 26.2	N19 38.3	110 40.1	N02 29.4	009 42.8	N22 39.7	110 40.7	N01 10.8
	19	133 52.7	080 25.5	N19 39.2	125 40.8	N02 30.2	024 44.9	N22 39.7	125 42.9	N01 10.9
	20	148 55.2	095 24.9	N19 40.0	140 41.5	N02 30.9	039 47.1	N22 39.6	140 45.1	N01 11.0
	21	163 57.6	110 24.2	N19 40.8	155 42.2	N02 31.7	054 49.2	N22 39.6	155 47.3	N01 11.1
	22	179 00.1	125 23.6	N19 41.7	170 42.9	N02 32.5	069 51.4	N22 39.6	170 49.4	N01 11.2
	23	194 02.5	140 22.9	N19 42.5	185 43.5	N02 33.3	084 53.5	N22 39.5	185 51.6	N01 11.3
21	00	209 05.0	155 22.3	N19 43.3	200 44.2	N02 34.0	099 55.7	N22 39.5	200 53.8	N01 11.5
	01	224 07.5	170 21.6	N19 44.1	215 44.9	N02 34.8	114 57.8	N22 39.4	215 56.0	N01 11.6
	02	239 09.9	185 20.9	N19 45.0	230 45.6	N02 35.6	130 00.0	N22 39.4	230 58.2	N01 11.7
	03	254 12.4	200 20.3	N19 45.8	245 46.3	N02 36.4	145 02.1	N22 39.4	246 00.4	N01 11.8
	04	269 14.9	215 19.6	N19 46.6	260 47.0	N02 37.1	160 04.3	N22 39.3	261 02.6	N01 11.9
	05	284 17.3	230 19.0	N19 47.4	275 47.7	N02 37.9	175 06.4	N22 39.3	276 04.8	N01 12.0
	06	299 19.8	245 18.3	N19 48.3	290 48.4	N02 38.7	190 08.6	N22 39.3	291 07.0	N01 12.1
	07	314 22.3	260 17.7	N19 49.1	305 49.1	N02 39.5	205 10.7	N22 39.2	306 09.2	N01 12.2
	08	329 24.7	275 17.0	N19 49.9	320 49.8	N02 40.2	220 12.9	N22 39.2	321 11.4	N01 12.4
	09	344 27.2	290 16.4	N19 50.7	335 50.5	N02 41.0	235 15.0	N22 39.1	336 13.5	N01 12.5
	10	359 29.7	305 15.7	N19 51.6	350 51.2	N02 41.8	250 17.1	N22 39.1	351 15.7	N01 12.6
	11	014 32.1	320 15.0	N19 52.4	005 51.9	N02 42.5	265 19.3	N22 39.1	006 17.9	N01 12.7
	12	029 34.6	335 14.4	N19 53.2	020 52.5	N02 43.3	280 21.4	N22 39.0	021 20.1	N01 12.8
	13	044 37.0	350 13.7	N19 54.0	035 53.2	N02 44.1	295 23.6	N22 39.0	036 22.3	N01 12.9
	14	059 39.5	005 13.1	N19 54.8	050 53.9	N02 44.9	310 25.7	N22 39.0	051 24.5	N01 13.0
	15	074 42.0	020 12.4	N19 55.6	065 54.6	N02 45.6	325 27.9	N22 38.9	066 26.7	N01 13.1
	16	089 44.4	035 11.8	N19 56.5	080 55.3	N02 46.4	340 30.0	N22 38.9	081 28.9	N01 13.3
	17	104 46.9	050 11.1	N19 57.3	095 56.0	N02 47.2	355 32.2	N22 38.8	096 31.1	N01 13.4
	18	119 49.4	065 10.4	N19 58.1	110 56.7	N02 48.0	010 34.3	N22 38.8	111 33.3	N01 13.5
	19	134 51.8	080 09.8	N19 58.9	125 57.4	N02 48.7	025 36.4	N22 38.8	126 35.5	N01 13.6
	20	149 54.3	095 09.1	N19 59.7	140 58.1	N02 49.5	040 38.6	N22 38.7	141 37.6	N01 13.7
	21	164 56.8	110 08.5	N20 00.5	155 58.8	N02 50.3	055 40.7	N22 38.7	156 39.8	N01 13.8
	22	179 59.2	125 07.8	N20 01.3	170 59.5	N02 51.0	070 42.9	N22 38.7	171 42.0	N01 13.9
	23	195 01.7	140 07.1	N20 02.1	186 00.2	N02 51.8	085 45.0	N22 38.6	186 44.2	N01 14.0

Venus	Mars	Jupiter	Saturn
19: v -0.6 d 0.9	19: v 0.7 d 0.8	19: v 2.2 d 0.0	19: v 2.2 d 0.1
20: v -0.6 d 0.8	20: v 0.7 d 0.8	20: v 2.2 d 0.0	20: v 2.2 d 0.1
21: v -0.7 d 0.8	21: v 0.7 d 0.8	21: v 2.1 d 0.0	21: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.4	S40 12.0
Achernar	335 20.0	S57 06.2
Acrux	172 58.3	S63 14.9
Adhara	255 05.2	S29 00.7
Al Na'ir	027 31.8	S46 49.9
Aldebaran	290 38.7	N16 33.7
Alioth	166 11.5	N55 49.0
Alkaid	152 50.7	N49 10.8
Alnilam	275 36.9	S01 11.2
Alphard	217 46.6	S08 46.5
Alphecca	126 02.5	N26 37.4
Alpheratz	357 34.0	N29 14.0
Altair	061 58.9	N08 56.1
Ankaa	353 06.5	S42 09.7
Antares	112 14.3	S26 29.5
Arcturus	145 46.6	N19 02.6
Atria	107 07.2	S69 04.3
Avior	234 14.3	S59 35.9
Bellatrix	278 22.0	N06 22.3
Betelgeuse	270 51.1	N07 24.6
Canopus	263 52.2	S52 42.8
Capella	280 20.7	N46 01.5
Deneb	049 25.2	N45 22.1
Denebola	182 23.6	N14 25.4
Diphda	348 46.6	S17 50.6
Dubhe	193 39.3	N61 36.7
Elnath	278 00.8	N28 37.8
Eltanin	090 41.4	N51 28.8
Enif	033 37.9	N09 59.6
Fomalhaut	015 13.6	S29 28.9
Gacrux	171 50.0	S57 15.8
Gienah	175 42.2	S17 41.5
Hadar	148 33.9	S60 30.1
Hamal	327 50.4	N23 35.1
Kaus Australi	083 31.0	S34 22.2
Kochab	137 18.7	N74 02.7
Markab	013 29.1	N15 20.7
Menkar	314 05.4	N04 11.5
Menkent	147 56.0	S36 30.1
Miaplacidus	221 37.8	S69 49.8
Mirfak	308 27.2	N49 57.3
Nunki	075 46.4	S26 15.8
Peacock	053 04.1	S56 38.8
Polaris	313 58.5	N89 22.6
Pollux	243 16.1	N27 57.8
Procyon	244 49.8	N05 09.4
Rasalhague	095 57.4	N12 32.3
Regulus	207 33.2	N11 50.2
Rigel	281 03.1	S08 10.4
Rigil Kentaur	139 38.2	S60 56.7
Sabik	102 01.4	S15 45.5
Schedar	349 30.4	N56 40.8
Shaula	096 08.7	S37 07.3
Sirius	258 25.4	S16 45.3
Spica	158 20.9	S11 18.1
Suhail	222 45.4	S43 32.6
Vega	080 32.4	N38 48.2
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	306 54.6	1338
Mars	352 00.5	1038
Jupiter	250 54.4	1721
Saturn	351 52.1	1038

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
19	00	180 11.9	N11 06.2	161 07.0	N22 22.4	60.6	5.0	11.2
	01	195 12.0	N11 07.0	175 31.1	N22 33.6	60.6	4.9	11.1
	02	210 12.2	N11 07.9	189 55.0	N22 44.7	60.6	4.8	10.9
	03	225 12.3	N11 08.8	204 18.8	N22 55.6	60.6	4.7	10.8
	04	240 12.4	N11 09.6	218 42.6	N23 06.3	60.6	4.6	10.6
	05	255 12.6	N11 10.5	233 06.2	N23 16.9	60.6	4.5	10.4
	06	270 12.7	N11 11.4	247 29.7	N23 27.4	60.6	4.4	10.3
	07	285 12.8	N11 12.2	261 53.1	N23 37.7	60.6	4.3	10.1
	08	300 13.0	N11 13.1	276 16.5	N23 47.8	60.6	4.2	10.0
	09	315 13.1	N11 14.0	290 39.7	N23 57.7	60.6	4.1	9.8
	10	330 13.2	N11 14.8	305 02.8	N24 07.5	60.6	4.0	9.6
	11	345 13.4	N11 15.7	319 25.8	N24 17.1	60.6	3.9	9.4
	12	000 13.5	N11 16.5	333 48.8	N24 26.6	60.6	3.8	9.3
	13	015 13.6	N11 17.4	348 11.6	N24 35.8	60.6	3.8	9.1
	14	030 13.8	N11 18.3	002 34.4	N24 44.9	60.6	3.7	8.9
	15	045 13.9	N11 19.1	016 57.0	N24 53.9	60.6	3.6	8.7
	16	060 14.0	N11 20.0	031 19.6	N25 02.6	60.6	3.5	8.6
	17	075 14.2	N11 20.9	045 42.1	N25 11.1	60.6	3.4	8.4
	18	090 14.3	N11 21.7	060 04.5	N25 19.5	60.6	3.3	8.2
	19	105 14.4	N11 22.6	074 26.8	N25 27.7	60.6	3.2	8.0
	20	120 14.6	N11 23.4	088 49.1	N25 35.7	60.6	3.2	7.8
	21	135 14.7	N11 24.3	103 11.2	N25 43.6	60.6	3.1	7.6
	22	150 14.8	N11 25.2	117 33.3	N25 51.2	60.6	3.0	7.4
	23	165 15.0	N11 26.0	131 55.3	N25 58.6	60.6	2.9	7.3
20	00	180 15.1	N11 26.9	146 17.3	N26 05.9	60.6	2.9	7.1
	01	195 15.2	N11 27.7	160 39.1	N26 13.0	60.6	2.8	6.9
	02	210 15.3	N11 28.6	175 00.9	N26 19.8	60.6	2.7	6.7
	03	225 15.5	N11 29.5	189 22.7	N26 26.5	60.5	2.7	6.5
	04	240 15.6	N11 30.3	203 44.3	N26 33.0	60.5	2.6	6.3
	05	255 15.7	N11 31.2	218 06.0	N26 39.3	60.5	2.6	6.1
	06	270 15.9	N11 32.0	232 27.5	N26 45.4	60.5	2.5	5.9
	07	285 16.0	N11 32.9	246 49.0	N26 51.3	60.5	2.4	5.7
	08	300 16.1	N11 33.7	261 10.5	N26 57.0	60.5	2.4	5.5
	09	315 16.3	N11 34.6	275 31.8	N27 02.4	60.5	2.3	5.3
	10	330 16.4	N11 35.5	289 53.2	N27 07.7	60.5	2.3	5.1
	11	345 16.5	N11 36.3	304 14.5	N27 12.8	60.5	2.3	4.9
	12	000 16.6	N11 37.2	318 35.8	N27 17.7	60.5	2.2	4.7
	13	015 16.8	N11 38.0	332 57.0	N27 22.4	60.4	2.2	4.5
	14	030 16.9	N11 38.9	347 18.2	N27 26.9	60.4	2.1	4.3
	15	045 17.0	N11 39.7	001 39.3	N27 31.1	60.4	2.1	4.1
	16	060 17.2	N11 40.6	016 00.4	N27 35.2	60.4	2.1	3.9
	17	075 17.3	N11 41.4	030 21.5	N27 39.1	60.4	2.1	3.6
	18	090 17.4	N11 42.3	044 42.6	N27 42.7	60.4	2.0	3.4
	19	105 17.5	N11 43.1	059 03.6	N27 46.1	60.4	2.0	3.2
	20	120 17.7	N11 44.0	073 24.6	N27 49.4	60.3	2.0	3.0
	21	135 17.8	N11 44.8	087 45.6	N27 52.4	60.3	2.0	2.8
	22	150 17.9	N11 45.7	102 06.6	N27 55.2	60.3	2.0	2.6
	23	165 18.1	N11 46.5	116 27.6	N27 57.8	60.3	2.0	2.4
21	00	180 18.2	N11 47.4	130 48.6	N28 00.2	60.3	2.0	2.2
	01	195 18.3	N11 48.3	145 09.6	N28 02.4	60.3	2.0	2.0
	02	210 18.4	N11 49.1	159 30.5	N28 04.4	60.2	2.0	1.8
	03	225 18.6	N11 50.0	173 51.5	N28 06.2	60.2	2.0	1.6
	04	240 18.7	N11 50.8	188 12.5	N28 07.7	60.2	2.0	1.4
	05	255 18.8	N11 51.7	202 33.5	N28 09.1	60.2	2.0	1.1
	06	270 18.9	N11 52.5	216 54.5	N28 10.2	60.2	2.0	0.9
	07	285 19.1	N11 53.3	231 15.5	N28 11.2	60.2	2.0	0.7
	08	300 19.2	N11 54.2	245 36.5	N28 11.9	60.1	2.1	0.5
	09	315 19.3	N11 55.0	259 57.6	N28 12.4	60.1	2.1	0.3
	10	330 19.4	N11 55.9	274 18.6	N28 12.7	60.1	2.1	0.1
	11	345 19.6	N11 56.7	288 39.7	N28 12.8	60.1	2.1	-0.1
	12	000 19.7	N11 57.6	303 00.9	N28 12.7	60.1	2.2	-0.3
	13	015 19.8	N11 58.4	317 22.0	N28 12.4	60.0	2.2	-0.5
	14	030 19.9	N11 59.3	331 43.2	N28 11.9	60.0	2.2	-0.7
	15	045 20.1	N12 00.1	346 04.5	N28 11.1	60.0	2.3	-0.9
	16	060 20.2	N12 01.0	000 25.8	N28 10.2	60.0	2.3	-1.1
	17	075 20.3	N12 01.8	014 47.1	N28 09.1	60.0	2.4	-1.3
	18	090 20.4	N12 02.7	029 08.5	N28 07.7	59.9	2.4	-1.5
	19	105 20.6	N12 03.5	043 29.9	N28 06.2	59.9	2.5	-1.7
	20	120 20.7	N12 04.4	057 51.4	N28 04.5	59.9	2.5	-1.9
	21	135 20.8	N12 05.2	072 12.9	N28 02.5	59.9	2.6	-2.1
	22	150 20.9	N12 06.0	086 34.5	N28 00.4	59.8	2.7	-2.3
	23	165 21.0	N12 06.9	100 56.1	N27 58.0	59.8	2.7	-2.5

Day 19 noon Sun: v 0.1 d 0.9 SD 15.9 | Moon SD 16.5

Day 20 noon Sun: v 0.1 d 0.9 SD 15.9 | Moon SD 16.5

Day 21 noon Sun: v 0.1 d 0.8 SD 15.9 | Moon SD 16.4

SUN: APRIL 20 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	0056	0310	2053	2322	--
70N	--	0157	0331	2030	2207	--
68N	--	0231	0347	2013	2131	--
66N	0048	0255	0401	2000	2106	2327
64N	0142	0314	0412	1948	2047	2222
62N	0213	0329	0421	1939	2032	2149
60N	0235	0341	0429	1930	2019	2126
58N	0253	0352	0436	1923	2008	2108
56N	0307	0401	0442	1917	1959	2053
54N	0320	0409	0448	1911	1950	2040
52N	0330	0416	0453	1906	1943	2029
50N	0339	0422	0457	1902	1937	2020
45N	0358	0436	0507	1852	1923	2001
40N	0413	0447	0515	1843	1912	1946
35N	0424	0456	0522	1836	1903	1934
30N	0434	0503	0528	1830	1855	1924
25N	0442	0510	0533	1825	1848	1916
20N	0449	0516	0538	1820	1842	1909
15N	0455	0521	0543	1815	1837	1903
10N	0501	0526	0547	1811	1832	1857
05N	0506	0530	0551	1806	1828	1852
00N	0510	0534	0556	1802	1823	1848
05S	0514	0538	0600	1758	1819	1844
10S	0518	0542	0604	1754	1815	1840
15S	0521	0546	0608	1750	1811	1837
20S	0524	0550	0612	1745	1808	1833
25S	0527	0554	0617	1740	1804	1830
30S	0530	0558	0622	1735	1800	1828
35S	0532	0602	0628	1730	1755	1825
40S	0535	0606	0634	1723	1751	1823
45S	0537	0611	0641	1716	1746	1820
50S	0539	0617	0650	1707	1740	1818
55S	0541	0623	0701	1656	1734	1816
60S	0543	0631	0715	1642	1725	1814

MOON: RISE / SET | UTC HHMM

Lat	Day 19		Day 20		Day 21	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	0242	--	--	--	--	--
64N	0325	--	--	--	--	--
62N	0354	--	0350	0043	0340	0309
60N	0417	--	0429	0005	0502	0147
58N	0435	2338	0456	--	0538	0111
56N	0451	2316	0518	--	0604	0045
54N	0504	2259	0536	--	0625	0024
52N	0516	2244	0551	--	0643	0007
50N	0526	2231	0604	2352	0658	--
45N	0548	2205	0631	2322	0728	--
40N	0606	2144	0653	2259	0751	--
35N	0621	2126	0711	2240	0811	2344
30N	0634	2112	0727	2223	0828	2328
25N	0646	2058	0741	2208	0842	2313
20N	0656	2046	0753	2155	0856	2300
15N	0707	2035	0805	2143	0908	2248
10N	0716	2024	0816	2131	0920	2236
05N	0725	2014	0827	2120	0932	2225
00N	0735	2004	0838	2109	0943	2214
05S	0744	1954	0848	2057	0954	2202
10S	0753	1944	0859	2046	1005	2151
15S	0803	1933	0911	2035	1017	2139
20S	0813	1922	0923	2022	1030	2127
25S	0824	1910	0935	2009	1043	2113
30S	0837	1857	0950	1954	1058	2059
35S	0850	1843	1006	1938	1115	2042
40S	0906	1826	1025	1919	1135	2022
45S	0925	1806	1047	1855	1159	1958
50S	0950	1740	1117	1826	1230	1928
55S	1022	1707	1157	1744	1313	1845
60S	1111	1616	1307	1634	1431	1727

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | APRIL 22 - APRIL 24

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
22	00	210 04.2	155 06.5	N20 02.9	201 00.9	N02 52.6	100 47.2	N22 38.6	201 46.4	N01 14.2
	01	225 06.6	170 05.8	N20 03.8	216 01.6	N02 53.4	115 49.3	N22 38.5	216 48.6	N01 14.3
	02	240 09.1	185 05.1	N20 04.6	231 02.2	N02 54.1	130 51.4	N22 38.5	231 50.8	N01 14.4
	03	255 11.5	200 04.5	N20 05.4	246 02.9	N02 54.9	145 53.6	N22 38.5	246 53.0	N01 14.5
	04	270 14.0	215 03.8	N20 06.2	261 03.6	N02 55.7	160 55.7	N22 38.4	261 55.2	N01 14.6
	05	285 16.5	230 03.1	N20 07.0	276 04.3	N02 56.4	175 57.9	N22 38.4	276 57.4	N01 14.7
	06	300 18.9	245 02.5	N20 07.8	291 05.0	N02 57.2	191 00.0	N22 38.4	291 59.6	N01 14.8
	07	315 21.4	260 01.8	N20 08.6	306 05.7	N02 58.0	206 02.1	N22 38.3	307 01.7	N01 14.9
	08	330 23.9	275 01.1	N20 09.4	321 06.4	N02 58.8	221 04.3	N22 38.3	322 03.9	N01 15.1
	09	345 26.3	290 00.5	N20 10.2	336 07.1	N02 59.5	236 06.4	N22 38.2	337 06.1	N01 15.2
	10	000 28.8	304 59.8	N20 11.0	351 07.8	N03 00.3	251 08.6	N22 38.2	352 08.3	N01 15.3
	11	015 31.3	319 59.1	N20 11.8	006 08.5	N03 01.1	266 10.7	N22 38.2	007 10.5	N01 15.4
	12	030 33.7	334 58.5	N20 12.6	021 09.2	N03 01.8	281 12.8	N22 38.1	022 12.7	N01 15.5
	13	045 36.2	349 57.8	N20 13.4	036 09.9	N03 02.6	296 15.0	N22 38.1	037 14.9	N01 15.6
	14	060 38.7	004 57.1	N20 14.2	051 10.6	N03 03.4	311 17.1	N22 38.0	052 17.1	N01 15.7
	15	075 41.1	019 56.5	N20 14.9	066 11.3	N03 04.2	326 19.2	N22 38.0	067 19.3	N01 15.8
	16	090 43.6	034 55.8	N20 15.7	081 11.9	N03 04.9	341 21.4	N22 38.0	082 21.5	N01 15.9
	17	105 46.0	049 55.1	N20 16.5	096 12.6	N03 05.7	356 23.5	N22 37.9	097 23.7	N01 16.1
	18	120 48.5	064 54.5	N20 17.3	111 13.3	N03 06.5	011 25.7	N22 37.9	112 25.9	N01 16.2
	19	135 51.0	079 53.8	N20 18.1	126 14.0	N03 07.2	026 27.8	N22 37.9	127 28.1	N01 16.3
	20	150 53.4	094 53.1	N20 18.9	141 14.7	N03 08.0	041 29.9	N22 37.8	142 30.2	N01 16.4
	21	165 55.9	109 52.4	N20 19.7	156 15.4	N03 08.8	056 32.1	N22 37.8	157 32.4	N01 16.5
	22	180 58.4	124 51.8	N20 20.5	171 16.1	N03 09.5	071 34.2	N22 37.7	172 34.6	N01 16.6
	23	196 00.8	139 51.1	N20 21.3	186 16.8	N03 10.3	086 36.3	N22 37.7	187 36.8	N01 16.7
23	00	211 03.3	154 50.4	N20 22.0	201 17.5	N03 11.1	101 38.5	N22 37.7	202 39.0	N01 16.8
	01	226 05.8	169 49.7	N20 22.8	216 18.2	N03 11.9	116 40.6	N22 37.6	217 41.2	N01 16.9
	02	241 08.2	184 49.1	N20 23.6	231 18.9	N03 12.6	131 42.8	N22 37.6	232 43.4	N01 17.1
	03	256 10.7	199 48.4	N20 24.4	246 19.6	N03 13.4	146 44.9	N22 37.5	247 45.6	N01 17.2
	04	271 13.1	214 47.7	N20 25.2	261 20.3	N03 14.2	161 47.0	N22 37.5	262 47.8	N01 17.3
	05	286 15.6	229 47.0	N20 26.0	276 21.0	N03 14.9	176 49.2	N22 37.5	277 50.0	N01 17.4
	06	301 18.1	244 46.4	N20 26.7	291 21.6	N03 15.7	191 51.3	N22 37.4	292 52.2	N01 17.5
	07	316 20.5	259 45.7	N20 27.5	306 22.3	N03 16.5	206 53.4	N22 37.4	307 54.4	N01 17.6
	08	331 23.0	274 45.0	N20 28.3	321 23.0	N03 17.2	221 55.6	N22 37.3	322 56.6	N01 17.7
	09	346 25.5	289 44.3	N20 29.1	336 23.7	N03 18.0	236 57.7	N22 37.3	337 58.8	N01 17.8
	10	001 27.9	304 43.7	N20 29.8	351 24.4	N03 18.8	251 59.8	N22 37.3	353 00.9	N01 18.0
	11	016 30.4	319 43.0	N20 30.6	006 25.1	N03 19.6	267 02.0	N22 37.2	008 03.1	N01 18.1
	12	031 32.9	334 42.3	N20 31.4	021 25.8	N03 20.3	282 04.1	N22 37.2	023 05.3	N01 18.2
	13	046 35.3	349 41.6	N20 32.2	036 26.5	N03 21.1	297 06.2	N22 37.2	038 07.5	N01 18.3
	14	061 37.8	004 40.9	N20 32.9	051 27.2	N03 21.9	312 08.4	N22 37.1	053 09.7	N01 18.4
	15	076 40.3	019 40.3	N20 33.7	066 27.9	N03 22.6	327 10.5	N22 37.1	068 11.9	N01 18.5
	16	091 42.7	034 39.6	N20 34.5	081 28.6	N03 23.4	342 12.6	N22 37.0	083 14.1	N01 18.6
	17	106 45.2	049 38.9	N20 35.3	096 29.3	N03 24.2	357 14.8	N22 37.0	098 16.3	N01 18.7
	18	121 47.6	064 38.2	N20 36.0	111 30.0	N03 24.9	012 16.9	N22 37.0	113 18.5	N01 18.8
	19	136 50.1	079 37.5	N20 36.8	126 30.7	N03 25.7	027 19.0	N22 36.9	128 20.7	N01 19.0
	20	151 52.6	094 36.9	N20 37.6	141 31.4	N03 26.5	042 21.1	N22 36.9	143 22.9	N01 19.1
	21	166 55.0	109 36.2	N20 38.3	156 32.0	N03 27.2	057 23.3	N22 36.8	158 25.1	N01 19.2
	22	181 57.5	124 35.5	N20 39.1	171 32.7	N03 28.0	072 25.4	N22 36.8	173 27.3	N01 19.3
	23	197 00.0	139 34.8	N20 39.8	186 33.4	N03 28.8	087 27.5	N22 36.8	188 29.5	N01 19.4
24	00	212 02.4	154 34.1	N20 40.6	201 34.1	N03 29.5	102 29.7	N22 36.7	203 31.7	N01 19.5
	01	227 04.9	169 33.4	N20 41.4	216 34.8	N03 30.3	117 31.8	N22 36.7	218 33.8	N01 19.6
	02	242 07.4	184 32.8	N20 42.1	231 35.5	N03 31.1	132 33.9	N22 36.6	233 36.0	N01 19.7
	03	257 09.8	199 32.1	N20 42.9	246 36.2	N03 31.8	147 36.1	N22 36.6	248 38.2	N01 19.8
	04	272 12.3	214 31.4	N20 43.6	261 36.9	N03 32.6	162 38.2	N22 36.6	263 40.4	N01 19.9
	05	287 14.8	229 30.7	N20 44.4	276 37.6	N03 33.4	177 40.3	N22 36.5	278 42.6	N01 20.1
	06	302 17.2	244 30.0	N20 45.2	291 38.3	N03 34.2	192 42.4	N22 36.5	293 44.8	N01 20.2
	07	317 19.7	259 29.3	N20 45.9	306 39.0	N03 34.9	207 44.6	N22 36.4	308 47.0	N01 20.3
	08	332 22.1	274 28.6	N20 46.7	321 39.7	N03 35.7	222 46.7	N22 36.4	323 49.2	N01 20.4
	09	347 24.6	289 27.9	N20 47.4	336 40.4	N03 36.5	237 48.8	N22 36.4	338 51.4	N01 20.5
	10	002 27.1	304 27.3	N20 48.2	351 41.1	N03 37.2	252 50.9	N22 36.3	353 53.6	N01 20.6
	11	017 29.5	319 26.6	N20 48.9	006 41.8	N03 38.0	267 53.1	N22 36.3	008 55.8	N01 20.7
	12	032 32.0	334 25.9	N20 49.7	021 42.4	N03 38.8	282 55.2	N22 36.2	023 58.0	N01 20.8
	13	047 34.5	349 25.2	N20 50.4	036 43.1	N03 39.5	297 57.3	N22 36.2	039 00.2	N01 20.9
	14	062 36.9	004 24.5	N20 51.2	051 43.8	N03 40.3	312 59.5	N22 36.2	054 02.4	N01 21.1
	15	077 39.4	019 23.8	N20 51.9	066 44.5	N03 41.1	328 01.6	N22 36.1	069 04.6	N01 21.2
	16	092 41.9	034 23.1	N20 52.7	081 45.2	N03 41.8	343 03.7	N22 36.1	084 06.8	N01 21.3
	17	107 44.3	049 22.4	N20 53.4	096 45.9	N03 42.6	358 05.8	N22 36.0	099 09.0	N01 21.4
	18	122 46.8	064 21.7	N20 54.2	111 46.6	N03 43.4	013 08.0	N22 36.0	114 11.1	N01 21.5
	19	137 49.3	079 21.0	N20 54.9	126 47.3	N03 44.1	028 10.1	N22 36.0	129 13.3	N01 21.6
	20	152 51.7	094 20.3	N20 55.7	141 48.0	N03 44.9	043 12.2	N22 35.9	144 15.5	N01 21.7
	21	167 54.2	109 19.7	N20 56.4	156 48.7	N03 45.7	058 14.3	N22 35.9	159 17.7	N01 21.8
	22	182 56.6	124 19.0	N20 57.1	171 49.4	N03 46.4	073 16.5	N22 35.8	174 19.9	N01 21.9
	23	197 59.1	139 18.3	N20 57.9	186 50.1	N03 47.2	088 18.6	N22 35.8	189 22.1	N01 22.0

Venus	Mars	Jupiter	Saturn
22: v -0.7 d 0.8	22: v 0.7 d 0.8	22: v 2.1 d 0.0	22: v 2.2 d 0.1
23: v -0.7 d 0.8	23: v 0.7 d 0.8	23: v 2.1 d 0.0	23: v 2.2 d 0.1
24: v -0.7 d 0.7	24: v 0.7 d 0.8	24: v 2.1 d 0.0	24: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.4	S40 12.0
Achernar	335 20.0	S57 06.2
Acrux	172 58.3	S63 14.9
Adhara	255 05.2	S29 00.7
Al Na'ir	027 31.8	S46 49.8
Aldebaran	290 38.7	N16 33.7
Alioth	166 11.5	N55 49.0
Alkaid	152 50.7	N49 10.8
Alnilam	275 36.9	S01 11.2
Alphard	217 46.6	S08 46.5
Alphecca	126 02.5	N26 37.4
Alpheratz	357 34.0	N29 14.0
Altair	061 58.9	N08 56.1
Ankaa	353 06.5	S42 09.7
Antares	112 14.2	S26 29.5
Arcturus	145 46.6	N19 02.6
Atria	107 07.1	S69 04.3
Avior	234 14.3	S59 35.9
Bellatrix	278 22.0	N06 22.3
Betelgeuse	270 51.1	N07 24.6
Canopus	263 52.2	S52 42.8
Capella	280 20.7	N46 01.5
Deneb	049 25.1	N45 22.1
Denebola	182 23.6	N14 25.4
Diphda	348 46.5	S17 50.6
Dubhe	193 39.3	N61 36.7
Elnath	278 00.8	N28 37.8
Eltanin	090 41.4	N51 28.8
Enif	033 37.9	N09 59.6
Fomalhaut	015 13.6	S29 28.9
Gacrux	171 50.0	S57 15.8
Gienah	175 42.2	S17 41.5
Hadar	148 33.9	S60 30.1
Hamal	327 50.4	N23 35.1
Kaus Australi	083 30.9	S34 22.2
Kochab	137 18.6	N74 02.7
Markab	013 29.1	N15 20.7
Menkar	314 05.4	N04 11.5
Menkent	147 56.0	S36 30.1
Miaplacidus	221 37.9	S69 49.8
Mirfak	308 27.2	N49 57.3
Nunki	075 46.3	S26 15.8
Peacock	053 04.1	S56 38.8
Polaris	313 58.5	N89 22.6
Pollux	243 16.1	N27 57.8
Procyon	244 49.8	N05 09.4
Rasalhague	095 57.4	N12 32.3
Regulus	207 33.2	N11 50.2
Rigel	281 03.1	S08 10.4
Rigil Kentaur	139 38.2	S60 56.7
Sabik	102 01.3	S15 45.5
Schedar	349 30.4	N56 40.8
Shaula	096 08.7	S37 07.3
Sirius	258 25.4	S16 45.3
Spica	158 20.9	S11 18.1
Suhail	222 45.5	S43 32.6
Vega	080 32.3	N38 48.2
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	303 09.4	1341
Mars	349 52.9	1034
Jupiter	250 31.2	1711
Saturn	351 32.5	1028

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
22	00	180 21.2	N12 07.7	115 17.8	N27 55.5	59.8	2.8	-2.7
	01	195 21.3	N12 08.6	129 39.6	N27 52.7	59.8	2.9	-2.9
	02	210 21.4	N12 09.4	144 01.5	N27 49.8	59.8	2.9	-3.1
	03	225 21.5	N12 10.3	158 23.4	N27 46.7	59.7	3.0	-3.3
	04	240 21.7	N12 11.1	172 45.4	N27 43.3	59.7	3.1	-3.5
	05	255 21.8	N12 11.9	187 07.5	N27 39.8	59.7	3.2	-3.7
	06	270 21.9	N12 12.8	201 29.6	N27 36.1	59.7	3.2	-3.9
	07	285 22.0	N12 13.6	215 51.9	N27 32.2	59.6	3.3	-4.1
	08	300 22.1	N12 14.5	230 14.2	N27 28.1	59.6	3.4	-4.3
	09	315 22.3	N12 15.3	244 36.6	N27 23.8	59.6	3.5	-4.5
	10	330 22.4	N12 16.1	258 59.1	N27 19.4	59.6	3.6	-4.7
	11	345 22.5	N12 17.0	273 21.7	N27 14.7	59.5	3.7	-4.8
	12	000 22.6	N12 17.8	287 44.4	N27 09.9	59.5	3.8	-5.0
	13	015 22.7	N12 18.7	302 07.1	N27 04.8	59.5	3.9	-5.2
	14	030 22.9	N12 19.5	316 30.0	N26 59.7	59.5	4.0	-5.4
	15	045 23.0	N12 20.3	330 52.9	N26 54.3	59.4	4.1	-5.6
	16	060 23.1	N12 21.2	345 16.0	N26 48.7	59.4	4.2	-5.7
	17	075 23.2	N12 22.0	359 39.2	N26 43.0	59.4	4.3	-5.9
	18	090 23.3	N12 22.8	014 02.4	N26 37.1	59.4	4.4	-6.1
	19	105 23.5	N12 23.7	028 25.8	N26 31.0	59.3	4.5	-6.3
	20	120 23.6	N12 24.5	042 49.3	N26 24.7	59.3	4.6	-6.4
	21	135 23.7	N12 25.3	057 12.9	N26 18.3	59.3	4.7	-6.6
	22	150 23.8	N12 26.2	071 36.6	N26 11.7	59.3	4.8	-6.8
	23	165 23.9	N12 27.0	086 00.4	N26 05.0	59.2	4.9	-6.9
23	00	180 24.1	N12 27.8	100 24.3	N25 58.0	59.2	5.0	-7.1
	01	195 24.2	N12 28.7	114 48.3	N25 51.0	59.2	5.1	-7.2
	02	210 24.3	N12 29.5	129 12.4	N25 43.7	59.2	5.3	-7.4
	03	225 24.4	N12 30.4	143 36.7	N25 36.3	59.1	5.4	-7.6
	04	240 24.5	N12 31.2	158 01.0	N25 28.7	59.1	5.5	-7.7
	05	255 24.6	N12 32.0	172 25.5	N25 21.0	59.1	5.6	-7.9
	06	270 24.8	N12 32.8	186 50.1	N25 13.1	59.0	5.7	-8.0
	07	285 24.9	N12 33.7	201 14.8	N25 05.1	59.0	5.8	-8.2
	08	300 25.0	N12 34.5	215 39.7	N24 56.9	59.0	6.0	-8.3
	09	315 25.1	N12 35.3	230 04.6	N24 48.6	59.0	6.1	-8.5
	10	330 25.2	N12 36.2	244 29.7	N24 40.1	58.9	6.2	-8.6
	11	345 25.3	N12 37.0	258 54.9	N24 31.5	58.9	6.3	-8.8
	12	000 25.5	N12 37.8	273 20.2	N24 22.7	58.9	6.4	-8.9
	13	015 25.6	N12 38.7	287 45.7	N24 13.8	58.9	6.6	-9.0
	14	030 25.7	N12 39.5	302 11.2	N24 04.8	58.8	6.7	-9.2
	15	045 25.8	N12 40.3	316 36.9	N23 55.6	58.8	6.8	-9.3
	16	060 25.9	N12 41.2	331 02.7	N23 46.3	58.8	6.9	-9.5
	17	075 26.0	N12 42.0	345 28.7	N23 36.8	58.7	7.1	-9.6
	18	090 26.1	N12 42.8	359 54.7	N23 27.2	58.7	7.2	-9.7
	19	105 26.3	N12 43.6	014 20.9	N23 17.5	58.7	7.3	-9.9
	20	120 26.4	N12 44.5	028 47.2	N23 07.7	58.7	7.4	-10.0
	21	135 26.5	N12 45.3	043 13.6	N22 57.7	58.6	7.6	-10.1
	22	150 26.6	N12 46.1	057 40.2	N22 47.6	58.6	7.7	-10.2
	23	165 26.7	N12 46.9	072 06.9	N22 37.3	58.6	7.8	-10.3
24	00	180 26.8	N12 47.8	086 33.7	N22 27.0	58.5	7.9	-10.5
	01	195 26.9	N12 48.6	101 00.6	N22 16.5	58.5	8.0	-10.6
	02	210 27.1	N12 49.4	115 27.6	N22 05.9	58.5	8.2	-10.7
	03	225 27.2	N12 50.2	129 54.8	N21 55.2	58.5	8.3	-10.8
	04	240 27.3	N12 51.1	144 22.1	N21 44.4	58.4	8.4	-10.9
	05	255 27.4	N12 51.9	158 49.5	N21 33.5	58.4	8.5	-11.0
	06	270 27.5	N12 52.7	173 17.0	N21 22.4	58.4	8.7	-11.2
	07	285 27.6	N12 53.5	187 44.7	N21 11.3	58.3	8.8	-11.3
	08	300 27.7	N12 54.4	202 12.5	N21 00.0	58.3	8.9	-11.4
	09	315 27.8	N12 55.2	216 40.4	N20 48.7	58.3	9.0	-11.5
	10	330 28.0	N12 56.0	231 08.4	N20 37.2	58.3	9.1	-11.6
	11	345 28.1	N12 56.8	245 36.5	N20 25.6	58.2	9.3	-11.7
	12	000 28.2	N12 57.6	260 04.8	N20 13.9	58.2	9.4	-11.8
	13	015 28.3	N12 58.5	274 33.1	N20 02.2	58.2	9.5	-11.9
	14	030 28.4	N12 59.3	289 01.6	N19 50.3	58.2	9.6	-12.0
	15	045 28.5	N13 00.1	303 30.2	N19 38.3	58.1	9.7	-12.1
	16	060 28.6	N13 00.9	317 59.0	N19 26.3	58.1	9.8	-12.2
	17	075 28.7	N13 01.7	332 27.8	N19 14.1	58.1	10.0	-12.2
	18	090 28.8	N13 02.6	346 56.8	N19 01.9	58.0	10.1	-12.3
	19	105 28.9	N13 03.4	001 25.8	N18 49.6	58.0	10.2	-12.4
	20	120 29.1	N13 04.2	015 55.0	N18 37.1	58.0	10.3	-12.5
	21	135 29.2	N13 05.0	030 24.3	N18 24.6	58.0	10.4	-12.6
	22	150 29.3	N13 05.8	044 53.7	N18 12.0	57.9	10.5	-12.7
	23	165 29.4	N13 06.7	059 23.2	N17 59.4	57.9	10.6	-12.7

Day 22 noon Sun: v 0.1 d 0.8 SD 15.9 | Moon SD 16.2

Day 23 noon Sun: v 0.1 d 0.8 SD 15.9 | Moon SD 16.0

Day 24 noon Sun: v 0.1 d 0.8 SD 15.9 | Moon SD 15.9

SUN: APRIL 23 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	0251	2111	--	--
70N	--	0130	0315	2045	2236	--
68N	--	0212	0334	2026	2150	--
66N	--	0240	0349	2010	2120	--
64N	0118	0301	0401	1958	2059	2246
62N	0156	0318	0412	1947	2042	2205
60N	0222	0331	0420	1938	2027	2138
58N	0242	0343	0428	1930	2016	2118
56N	0258	0353	0435	1923	2005	2101
54N	0311	0402	0441	1917	1957	2048
52N	0322	0409	0446	1911	1949	2036
50N	0332	0416	0451	1906	1942	2026
45N	0352	0431	0502	1855	1927	2006
40N	0408	0442	0511	1846	1915	1950
35N	0420	0452	0518	1839	1905	1937
30N	0430	0500	0525	1832	1857	1927
25N	0439	0507	0531	1826	1850	1918
20N	0447	0513	0536	1821	1844	1910
15N	0453	0519	0541	1816	1838	1904
10N	0459	0524	0546	1811	1832	1858
05N	0504	0529	0550	1806	1828	1852
00N	0509	0534	0555	1802	1823	1847
05S	0514	0538	0559	1757	1818	1843
10S	0518	0542	0604	1753	1814	1839
15S	0521	0547	0609	1748	1810	1835
20S	0525	0551	0613	1743	1806	1832
25S	0528	0555	0618	1738	1801	1828
30S	0531	0559	0624	1732	1757	1825
35S	0534	0604	0630	1726	1752	1822
40S	0537	0609	0637	1719	1747	1819
45S	0540	0615	0645	1711	1741	1816
50S	0543	0621	0654	1701	1735	1813
55S	0546	0629	0706	1649	1727	1810
60S	0549	0638	0722	1634	1718	1806

MOON: RISE / SET | UTC HHMM

Lat	Day 22		Day 23		Day 24	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	0747	0526
66N	--	--	--	--	0840	0433
64N	--	--	0643	0431	0912	0400
62N	0520	0345	0734	0340	0935	0335
60N	0619	0246	0805	0308	0954	0315
58N	0652	0212	0829	0244	1009	0259
56N	0717	0147	0847	0224	1022	0245
54N	0737	0127	0903	0208	1034	0233
52N	0753	0111	0917	0154	1044	0223
50N	0808	0056	0929	0142	1053	0213
45N	0837	0027	0953	0116	1112	0153
40N	0859	0004	1013	0056	1127	0136
35N	0918	--	1029	0039	1140	0122
30N	0934	--	1043	0024	1151	0110
25N	0949	--	1056	0010	1201	0059
20N	1002	2358	1107	--	1210	0049
15N	1014	2347	1118	--	1218	0040
10N	1025	2336	1128	--	1226	0031
05N	1036	2326	1137	--	1234	0022
00N	1047	2316	1147	--	1242	0014
05S	1057	2306	1156	--	1249	0005
10S	1108	2255	1206	2356	1257	--
15S	1120	2244	1216	2347	1305	--
20S	1132	2233	1226	2338	1313	--
25S	1145	2221	1237	2327	1322	--
30S	1159	2207	1250	2316	1332	--
35S	1215	2152	1303	2303	1343	--
40S	1233	2134	1319	2248	1355	--
45S	1256	2112	1338	2231	1410	2348
50S	1324	2045	1401	2208	1427	2332
55S	1403	2007	1432	2139	1450	2311
60S	1506	1905	1516	2056	1520	2243

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | APRIL 25 - APRIL 27

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
25	00	213 01.6	154 17.6	N20 58.6	201 50.8	N03 48.0	103 20.7	N22 35.7	204 24.3	N01 22.2
	01	228 04.0	169 16.9	N20 59.4	216 51.5	N03 48.7	118 22.8	N22 35.7	219 26.5	N01 22.3
	02	243 06.5	184 16.2	N21 00.1	231 52.2	N03 49.5	133 25.0	N22 35.7	234 28.7	N01 22.4
	03	258 09.0	199 15.5	N21 00.8	246 52.9	N03 50.2	148 27.1	N22 35.6	249 30.9	N01 22.5
	04	273 11.4	214 14.8	N21 01.6	261 53.5	N03 51.0	163 29.2	N22 35.6	264 33.1	N01 22.6
	05	288 13.9	229 14.1	N21 02.3	276 54.2	N03 51.8	178 31.3	N22 35.5	279 35.3	N01 22.7
	06	303 16.4	244 13.4	N21 03.0	291 54.9	N03 52.5	193 33.4	N22 35.5	294 37.5	N01 22.8
	07	318 18.8	259 12.7	N21 03.8	306 55.6	N03 53.3	208 35.6	N22 35.5	309 39.7	N01 22.9
	08	333 21.3	274 12.0	N21 04.5	321 56.3	N03 54.1	223 37.7	N22 35.4	324 41.9	N01 23.0
	09	348 23.7	289 11.3	N21 05.2	336 57.0	N03 54.8	238 39.8	N22 35.4	339 44.1	N01 23.1
	10	003 26.2	304 10.6	N21 06.0	351 57.7	N03 55.6	253 41.9	N22 35.3	354 46.3	N01 23.3
	11	018 28.7	319 09.9	N21 06.7	006 58.4	N03 56.4	268 44.1	N22 35.3	009 48.5	N01 23.4
	12	033 31.1	334 09.2	N21 07.4	021 59.1	N03 57.1	283 46.2	N22 35.3	024 50.7	N01 23.5
	13	048 33.6	349 08.5	N21 08.1	036 59.8	N03 57.9	298 48.3	N22 35.2	039 52.9	N01 23.6
	14	063 36.1	004 07.8	N21 08.9	052 00.5	N03 58.7	313 50.4	N22 35.2	054 55.0	N01 23.7
	15	078 38.5	019 07.1	N21 09.6	067 01.2	N03 59.4	328 52.5	N22 35.1	069 57.2	N01 23.8
	16	093 41.0	034 06.4	N21 10.3	082 01.9	N04 00.2	343 54.7	N22 35.1	084 59.4	N01 23.9
	17	108 43.5	049 05.7	N21 11.0	097 02.6	N04 01.0	358 56.8	N22 35.0	100 01.6	N01 24.0
	18	123 45.9	064 05.0	N21 11.8	112 03.3	N04 01.7	013 58.9	N22 35.0	115 03.8	N01 24.1
	19	138 48.4	079 04.3	N21 12.5	127 04.0	N04 02.5	029 01.0	N22 35.0	130 06.0	N01 24.2
	20	153 50.9	094 03.6	N21 13.2	142 04.6	N04 03.2	044 03.1	N22 34.9	145 08.2	N01 24.4
	21	168 53.3	109 02.9	N21 13.9	157 05.3	N04 04.0	059 05.3	N22 34.9	160 10.4	N01 24.5
	22	183 55.8	124 02.2	N21 14.6	172 06.0	N04 04.8	074 07.4	N22 34.8	175 12.6	N01 24.6
	23	198 58.2	139 01.5	N21 15.3	187 06.7	N04 05.5	089 09.5	N22 34.8	190 14.8	N01 24.7
26	00	214 00.7	154 00.8	N21 16.1	202 07.4	N04 06.3	104 11.6	N22 34.8	205 17.0	N01 24.8
	01	229 03.2	169 00.1	N21 16.8	217 08.1	N04 07.1	119 13.7	N22 34.7	220 19.2	N01 24.9
	02	244 05.6	183 59.4	N21 17.5	232 08.8	N04 07.8	134 15.8	N22 34.7	235 21.4	N01 25.0
	03	259 08.1	198 58.7	N21 18.2	247 09.5	N04 08.6	149 18.0	N22 34.6	250 23.6	N01 25.1
	04	274 10.6	213 57.9	N21 18.9	262 10.2	N04 09.4	164 20.1	N22 34.6	265 25.8	N01 25.2
	05	289 13.0	228 57.2	N21 19.6	277 10.9	N04 10.1	179 22.2	N22 34.5	280 28.0	N01 25.3
	06	304 15.5	243 56.5	N21 20.3	292 11.6	N04 10.9	194 24.3	N22 34.5	295 30.2	N01 25.4
	07	319 18.0	258 55.8	N21 21.0	307 12.3	N04 11.6	209 26.4	N22 34.5	310 32.4	N01 25.6
	08	334 20.4	273 55.1	N21 21.7	322 13.0	N04 12.4	224 28.5	N22 34.4	325 34.6	N01 25.7
	09	349 22.9	288 54.4	N21 22.5	337 13.7	N04 13.2	239 30.7	N22 34.4	340 36.8	N01 25.8
	10	004 25.4	303 53.7	N21 23.2	352 14.4	N04 13.9	254 32.8	N22 34.3	355 39.0	N01 25.9
	11	019 27.8	318 53.0	N21 23.9	007 15.1	N04 14.7	269 34.9	N22 34.3	010 41.2	N01 26.0
	12	034 30.3	333 52.3	N21 24.6	022 15.7	N04 15.5	284 37.0	N22 34.2	025 43.4	N01 26.1
	13	049 32.7	348 51.6	N21 25.3	037 16.4	N04 16.2	299 39.1	N22 34.2	040 45.6	N01 26.2
	14	064 35.2	003 50.9	N21 26.0	052 17.1	N04 17.0	314 41.2	N22 34.2	055 47.8	N01 26.3
	15	079 37.7	018 50.2	N21 26.7	067 17.8	N04 17.7	329 43.4	N22 34.1	070 50.0	N01 26.4
	16	094 40.1	033 49.4	N21 27.4	082 18.5	N04 18.5	344 45.5	N22 34.1	085 52.2	N01 26.5
	17	109 42.6	048 48.7	N21 28.1	097 19.2	N04 19.3	359 47.6	N22 34.0	100 54.3	N01 26.6
	18	124 45.1	063 48.0	N21 28.8	112 19.9	N04 20.0	014 49.7	N22 34.0	115 56.5	N01 26.8
	19	139 47.5	078 47.3	N21 29.5	127 20.6	N04 20.8	029 51.8	N22 34.0	130 58.7	N01 26.9
	20	154 50.0	093 46.6	N21 30.2	142 21.3	N04 21.6	044 53.9	N22 33.9	146 00.9	N01 27.0
	21	169 52.5	108 45.9	N21 30.9	157 22.0	N04 22.3	059 56.0	N22 33.9	161 03.1	N01 27.1
	22	184 54.9	123 45.2	N21 31.5	172 22.7	N04 23.1	074 58.1	N22 33.8	176 05.3	N01 27.2
	23	199 57.4	138 44.4	N21 32.2	187 23.4	N04 23.8	090 00.3	N22 33.8	191 07.5	N01 27.3
27	00	214 59.8	153 43.7	N21 32.9	202 24.1	N04 24.6	105 02.4	N22 33.7	206 09.7	N01 27.4
	01	230 02.3	168 43.0	N21 33.6	217 24.8	N04 25.4	120 04.5	N22 33.7	221 11.9	N01 27.5
	02	245 04.8	183 42.3	N21 34.3	232 25.5	N04 26.1	135 06.6	N22 33.7	236 14.1	N01 27.6
	03	260 07.2	198 41.6	N21 35.0	247 26.2	N04 26.9	150 08.7	N22 33.6	251 16.3	N01 27.7
	04	275 09.7	213 40.9	N21 35.7	262 26.9	N04 27.6	165 10.8	N22 33.6	266 18.5	N01 27.8
	05	290 12.2	228 40.2	N21 36.4	277 27.5	N04 28.4	180 12.9	N22 33.5	281 20.7	N01 27.9
	06	305 14.6	243 39.4	N21 37.1	292 28.2	N04 29.2	195 15.0	N22 33.5	296 22.9	N01 28.1
	07	320 17.1	258 38.7	N21 37.7	307 28.9	N04 29.9	210 17.2	N22 33.4	311 25.1	N01 28.2
	08	335 19.6	273 38.0	N21 38.4	322 29.6	N04 30.7	225 19.3	N22 33.4	326 27.3	N01 28.3
	09	350 22.0	288 37.3	N21 39.1	337 30.3	N04 31.4	240 21.4	N22 33.3	341 29.5	N01 28.4
	10	005 24.5	303 36.6	N21 39.8	352 31.0	N04 32.2	255 23.5	N22 33.3	356 31.7	N01 28.5
	11	020 27.0	318 35.8	N21 40.5	007 31.7	N04 33.0	270 25.6	N22 33.3	011 33.9	N01 28.6
	12	035 29.4	333 35.1	N21 41.1	022 32.4	N04 33.7	285 27.7	N22 33.2	026 36.1	N01 28.7
	13	050 31.9	348 34.4	N21 41.8	037 33.1	N04 34.5	300 29.8	N22 33.2	041 38.3	N01 28.8
	14	065 34.3	003 33.7	N21 42.5	052 33.8	N04 35.2	315 31.9	N22 33.1	056 40.5	N01 28.9
	15	080 36.8	018 33.0	N21 43.2	067 34.5	N04 36.0	330 34.0	N22 33.1	071 42.7	N01 29.0
	16	095 39.3	033 32.2	N21 43.9	082 35.2	N04 36.8	345 36.1	N22 33.0	086 44.9	N01 29.1
	17	110 41.7	048 31.5	N21 44.5	097 35.9	N04 37.5	000 38.3	N22 33.0	101 47.1	N01 29.2
	18	125 44.2	063 30.8	N21 45.2	112 36.6	N04 38.3	015 40.4	N22 33.0	116 49.3	N01 29.4
	19	140 46.7	078 30.1	N21 45.9	127 37.3	N04 39.0	030 42.5	N22 32.9	131 51.5	N01 29.5
	20	155 49.1	093 29.4	N21 46.5	142 38.0	N04 39.8	045 44.6	N22 32.9	146 53.7	N01 29.6
	21	170 51.6	108 28.6	N21 47.2	157 38.6	N04 40.6	060 46.7	N22 32.8	161 55.9	N01 29.7
	22	185 54.1	123 27.9	N21 47.9	172 39.3	N04 41.3	075 48.8	N22 32.8	176 58.1	N01 29.8
	23	200 56.5	138 27.2	N21 48.5	187 40.0	N04 42.1	090 50.9	N22 32.7	192 00.3	N01 29.9

Venus	Mars	Jupiter	Saturn
25: v -0.7 d 0.7	25: v 0.7 d 0.8	25: v 2.1 d 0.0	25: v 2.2 d 0.1
26: v -0.7 d 0.7	26: v 0.7 d 0.8	26: v 2.1 d 0.0	26: v 2.2 d 0.1
27: v -0.7 d 0.7	27: v 0.7 d 0.8	27: v 2.1 d 0.0	27: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.4	S40 12.0
Achernar	335 20.0	S57 06.1
Acrux	172 58.3	S63 14.9
Adhara	255 05.2	S29 00.7
Al Na'ir	027 31.8	S46 49.8
Aldebaran	290 38.7	N16 33.7
Alioth	166 11.5	N55 49.0
Alkaid	152 50.7	N49 10.8
Alnilam	275 36.9	S01 11.2
Alphard	217 46.6	S08 46.5
Alphecca	126 02.5	N26 37.4
Alpheratz	357 34.0	N29 14.0
Altair	061 58.9	N08 56.1
Ankaa	353 06.5	S42 09.7
Antares	112 14.2	S26 29.5
Arcturus	145 46.6	N19 02.6
Atria	107 07.1	S69 04.3
Avior	234 14.3	S59 35.9
Bellatrix	278 22.0	N06 22.3
Betelgeuse	270 51.1	N07 24.7
Canopus	263 52.2	S52 42.8
Capella	280 20.7	N46 01.5
Deneb	049 25.1	N45 22.1
Denebola	182 23.6	N14 25.4
Diphda	348 46.5	S17 50.6
Dubhe	193 39.3	N61 36.7
Elnath	278 00.8	N28 37.8
Eltanin	090 41.4	N51 28.8
Enif	033 37.9	N09 59.6
Fomalhaut	015 13.6	S29 28.9
Gacrux	171 50.0	S57 15.9
Gienah	175 42.2	S17 41.5
Hadar	148 33.9	S60 30.1
Hamal	327 50.4	N23 35.1
Kaus Australi	083 30.9	S34 22.2
Kochab	137 18.6	N74 02.7
Markab	013 29.1	N15 20.7
Menkar	314 05.4	N04 11.5
Menkent	147 56.0	S36 30.1
Miaplacidus	221 37.9	S69 49.8
Mirfak	308 27.2	N49 57.3
Nunki	075 46.3	S26 15.8
Peacock	053 04.0	S56 38.8
Polaris	313 58.7	N89 22.5
Pollux	243 16.1	N27 57.8
Procyon	244 49.8	N05 09.4
Rasalhague	095 57.3	N12 32.3
Regulus	207 33.2	N11 50.2
Rigel	281 03.1	S08 10.4
Rigil Kentaur	139 38.2	S60 56.7
Sabik	102 01.3	S15 45.5
Schedar	349 30.4	N56 40.8
Shaula	096 08.6	S37 07.3
Sirius	258 25.5	S16 45.3
Spica	158 20.9	S11 18.1
Suhail	222 45.5	S43 32.6
Vega	080 32.3	N38 48.2
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	299 22.0	1345
Mars	347 45.5	1031
Jupiter	250 06.7	1701
Saturn	351 13.1	1017

2026 | APRIL 25 - APRIL 27

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
25	00	180 29.5	N13 07.5	073 52.8	N17 46.6	57.9	10.7	-12.8
	01	195 29.6	N13 08.3	088 22.6	N17 33.8	57.8	10.8	-12.9
	02	210 29.7	N13 09.1	102 52.4	N17 20.9	57.8	10.9	-13.0
	03	225 29.8	N13 09.9	117 22.4	N17 07.9	57.8	11.1	-13.1
	04	240 29.9	N13 10.7	131 52.4	N16 54.9	57.8	11.2	-13.1
	05	255 30.0	N13 11.5	146 22.6	N16 41.7	57.7	11.3	-13.2
	06	270 30.1	N13 12.4	160 52.8	N16 28.5	57.7	11.4	-13.3
	07	285 30.2	N13 13.2	175 23.2	N16 15.3	57.7	11.5	-13.3
	08	300 30.4	N13 14.0	189 53.6	N16 01.9	57.7	11.6	-13.4
	09	315 30.5	N13 14.8	204 24.2	N15 48.5	57.6	11.7	-13.5
	10	330 30.6	N13 15.6	218 54.9	N15 35.0	57.6	11.8	-13.5
	11	345 30.7	N13 16.4	233 25.6	N15 21.5	57.6	11.9	-13.6
	12	000 30.8	N13 17.2	247 56.5	N15 07.9	57.5	12.0	-13.7
	13	015 30.9	N13 18.1	262 27.4	N14 54.3	57.5	12.0	-13.7
	14	030 31.0	N13 18.9	276 58.5	N14 40.5	57.5	12.1	-13.8
	15	045 31.1	N13 19.7	291 29.6	N14 26.8	57.5	12.2	-13.8
	16	060 31.2	N13 20.5	306 00.9	N14 12.9	57.4	12.3	-13.9
	17	075 31.3	N13 21.3	320 32.2	N13 59.0	57.4	12.4	-13.9
	18	090 31.4	N13 22.1	335 03.6	N13 45.1	57.4	12.5	-14.0
	19	105 31.5	N13 22.9	349 35.1	N13 31.1	57.4	12.6	-14.0
	20	120 31.6	N13 23.7	004 06.7	N13 17.1	57.3	12.7	-14.1
	21	135 31.7	N13 24.5	018 38.4	N13 03.0	57.3	12.8	-14.1
	22	150 31.8	N13 25.3	033 10.1	N12 48.8	57.3	12.8	-14.2
	23	165 31.9	N13 26.1	047 42.0	N12 34.7	57.3	12.9	-14.2
26	00	180 32.0	N13 27.0	062 13.9	N12 20.4	57.2	13.0	-14.3
	01	195 32.1	N13 27.8	076 45.9	N12 06.2	57.2	13.1	-14.3
	02	210 32.2	N13 28.6	091 18.0	N11 51.8	57.2	13.2	-14.4
	03	225 32.3	N13 29.4	105 50.2	N11 37.5	57.2	13.2	-14.4
	04	240 32.4	N13 30.2	120 22.4	N11 23.1	57.1	13.3	-14.4
	05	255 32.6	N13 31.0	134 54.8	N11 08.6	57.1	13.4	-14.5
	06	270 32.7	N13 31.8	149 27.2	N10 54.2	57.1	13.5	-14.5
	07	285 32.8	N13 32.6	163 59.6	N10 39.6	57.0	13.5	-14.5
	08	300 32.9	N13 33.4	178 32.2	N10 25.1	57.0	13.6	-14.6
	09	315 33.0	N13 34.2	193 04.8	N10 10.5	57.0	13.7	-14.6
	10	330 33.1	N13 35.0	207 37.5	N09 55.9	57.0	13.8	-14.6
	11	345 33.2	N13 35.8	222 10.2	N09 41.3	56.9	13.8	-14.7
	12	000 33.3	N13 36.6	236 43.1	N09 26.6	56.9	13.9	-14.7
	13	015 33.4	N13 37.4	251 15.9	N09 11.9	56.9	14.0	-14.7
	14	030 33.5	N13 38.2	265 48.9	N08 57.1	56.9	14.0	-14.8
	15	045 33.6	N13 39.0	280 21.9	N08 42.4	56.8	14.1	-14.8
	16	060 33.7	N13 39.8	294 55.0	N08 27.6	56.8	14.1	-14.8
	17	075 33.8	N13 40.6	309 28.1	N08 12.8	56.8	14.2	-14.8
	18	090 33.9	N13 41.4	324 01.3	N07 57.9	56.8	14.3	-14.9
	19	105 34.0	N13 42.2	338 34.6	N07 43.1	56.7	14.3	-14.9
	20	120 34.1	N13 43.0	353 07.9	N07 28.2	56.7	14.4	-14.9
	21	135 34.2	N13 43.8	007 41.3	N07 13.3	56.7	14.4	-14.9
	22	150 34.3	N13 44.6	022 14.7	N06 58.4	56.7	14.5	-14.9
	23	165 34.4	N13 45.4	036 48.2	N06 43.5	56.7	14.5	-15.0
27	00	180 34.5	N13 46.2	051 21.7	N06 28.5	56.6	14.6	-15.0
	01	195 34.6	N13 47.0	065 55.3	N06 13.5	56.6	14.6	-15.0
	02	210 34.7	N13 47.8	080 28.9	N05 58.6	56.6	14.7	-15.0
	03	225 34.8	N13 48.6	095 02.6	N05 43.6	56.6	14.7	-15.0
	04	240 34.9	N13 49.4	109 36.3	N05 28.6	56.5	14.8	-15.0
	05	255 35.0	N13 50.2	124 10.1	N05 13.5	56.5	14.8	-15.0
	06	270 35.1	N13 51.0	138 43.9	N04 58.5	56.5	14.9	-15.0
	07	285 35.1	N13 51.8	153 17.8	N04 43.5	56.5	14.9	-15.0
	08	300 35.2	N13 52.6	167 51.7	N04 28.4	56.4	14.9	-15.1
	09	315 35.3	N13 53.4	182 25.6	N04 13.4	56.4	15.0	-15.1
	10	330 35.4	N13 54.2	196 59.6	N03 58.3	56.4	15.0	-15.1
	11	345 35.5	N13 55.0	211 33.6	N03 43.3	56.4	15.1	-15.1
	12	000 35.6	N13 55.8	226 07.7	N03 28.2	56.3	15.1	-15.1
	13	015 35.7	N13 56.6	240 41.8	N03 13.1	56.3	15.1	-15.1
	14	030 35.8	N13 57.4	255 15.9	N02 58.1	56.3	15.2	-15.1
	15	045 35.9	N13 58.1	269 50.1	N02 43.0	56.3	15.2	-15.1
	16	060 36.0	N13 58.9	284 24.3	N02 27.9	56.3	15.2	-15.1
	17	075 36.1	N13 59.7	298 58.5	N02 12.9	56.2	15.3	-15.1
	18	090 36.2	N14 00.5	313 32.7	N01 57.8	56.2	15.3	-15.1
	19	105 36.3	N14 01.3	328 07.0	N01 42.7	56.2	15.3	-15.1
	20	120 36.4	N14 02.1	342 41.3	N01 27.7	56.2	15.3	-15.1
	21	135 36.5	N14 02.9	357 15.7	N01 12.6	56.1	15.4	-15.1
	22	150 36.6	N14 03.7	011 50.0	N00 57.6	56.1	15.4	-15.0
	23	165 36.7	N14 04.5	026 24.4	N00 42.5	56.1	15.4	-15.0

Day 25 noon Sun: v 0.1 d 0.8 SD 15.9 | Moon SD 15.7

Day 26 noon Sun: v 0.1 d 0.8 SD 15.9 | Moon SD 15.5

Day 27 noon Sun: v 0.1 d 0.8 SD 15.9 | Moon SD 15.4

SUN: APRIL 26 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	0231	2130	--	--
70N	--	0052	0259	2100	2322	--
68N	--	0151	0321	2038	2211	--
66N	--	0224	0337	2021	2136	--
64N	0046	0248	0351	2007	2111	2326
62N	0138	0306	0402	1955	2052	2223
60N	0208	0321	0412	1945	2036	2151
58N	0230	0334	0420	1937	2023	2128
56N	0248	0345	0428	1929	2012	2110
54N	0302	0354	0434	1922	2003	2056
52N	0314	0403	0440	1916	1954	2043
50N	0325	0410	0446	1911	1947	2032
45N	0346	0425	0457	1859	1931	2010
40N	0403	0438	0507	1850	1918	1954
35N	0416	0448	0515	1841	1908	1940
30N	0427	0457	0522	1834	1859	1929
25N	0436	0504	0528	1828	1851	1920
20N	0444	0511	0534	1822	1845	1912
15N	0451	0517	0540	1816	1838	1904
10N	0458	0523	0545	1811	1833	1858
05N	0503	0528	0550	1806	1827	1852
00N	0508	0533	0554	1801	1822	1847
05S	0513	0538	0559	1756	1818	1842
10S	0518	0543	0604	1751	1813	1838
15S	0522	0547	0609	1746	1808	1834
20S	0526	0552	0614	1741	1804	1830
25S	0529	0556	0620	1735	1759	1826
30S	0533	0601	0626	1729	1754	1822
35S	0537	0606	0632	1723	1749	1819
40S	0540	0612	0640	1715	1743	1815
45S	0544	0618	0649	1706	1737	1811
50S	0547	0625	0659	1656	1730	1808
55S	0551	0634	0712	1643	1721	1804
60S	0555	0644	0729	1626	1710	1759

MOON: RISE / SET | UTC HHMM

Lat	Day 25		Day 26		Day 27	
72N	0927	0536	1213	0429	1426	0349
70N	1007	0454	1228	0411	1430	0342
68N	1035	0425	1240	0357	1433	0336
66N	1055	0403	1250	0345	1436	0330
64N	1112	0345	1258	0335	1438	0326
62N	1125	0331	1305	0326	1440	0322
60N	1136	0318	1312	0319	1442	0319
58N	1146	0308	1317	0313	1443	0316
56N	1154	0258	1321	0307	1445	0313
54N	1202	0250	1326	0302	1446	0311
52N	1209	0242	1329	0257	1447	0309
50N	1215	0235	1333	0253	1448	0307
45N	1228	0221	1340	0243	1450	0302
40N	1238	0209	1346	0235	1452	0258
35N	1247	0158	1352	0229	1453	0255
30N	1255	0149	1356	0223	1455	0252
25N	1302	0141	1400	0217	1456	0250
20N	1309	0133	1404	0212	1457	0247
15N	1315	0126	1408	0207	1458	0245
10N	1321	0119	1411	0203	1459	0243
05N	1326	0113	1415	0158	1500	0241
00N	1332	0106	1418	0154	1501	0239
05S	1337	0100	1421	0150	1502	0237
10S	1343	0053	1424	0145	1503	0234
15S	1348	0046	1428	0141	1504	0232
20S	1354	0039	1431	0136	1505	0230
25S	1401	0031	1435	0131	1506	0227
30S	1408	0022	1439	0125	1508	0225
35S	1415	0012	1443	0119	1509	0222
40S	1424	0001	1449	0111	1511	0218
45S	1434	--	1454	0103	1512	0214
50S	1446	--	1501	0052	1514	0209
55S	1501	--	1510	0040	1517	0203
60S	1521	--	1521	0022	1520	0155

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | APRIL 28 - APRIL 30

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
28	00	215 59.0	153 26.5	N21 49.2	202 40.7	N04 42.8	105 53.0	N22 32.7	207 02.5	N01 30.0
	01	231 01.4	168 25.7	N21 49.9	217 41.4	N04 43.6	120 55.1	N22 32.6	222 04.7	N01 30.1
	02	246 03.9	183 25.0	N21 50.5	232 42.1	N04 44.3	135 57.2	N22 32.6	237 06.9	N01 30.2
	03	261 06.4	198 24.3	N21 51.2	247 42.8	N04 45.1	150 59.3	N22 32.6	252 09.1	N01 30.3
	04	276 08.8	213 23.6	N21 51.9	262 43.5	N04 45.9	166 01.4	N22 32.5	267 11.3	N01 30.4
	05	291 11.3	228 22.8	N21 52.5	277 44.2	N04 46.6	181 03.5	N22 32.5	282 13.5	N01 30.5
	06	306 13.8	243 22.1	N21 53.2	292 44.9	N04 47.4	196 05.6	N22 32.4	297 15.7	N01 30.6
	07	321 16.2	258 21.4	N21 53.9	307 45.6	N04 48.1	211 07.7	N22 32.4	312 17.9	N01 30.8
	08	336 18.7	273 20.6	N21 54.5	322 46.3	N04 48.9	226 09.9	N22 32.3	327 20.1	N01 30.9
	09	351 21.2	288 19.9	N21 55.2	337 47.0	N04 49.7	241 12.0	N22 32.3	342 22.3	N01 31.0
	10	006 23.6	303 19.2	N21 55.8	352 47.7	N04 50.4	256 14.1	N22 32.3	357 24.5	N01 31.1
	11	021 26.1	318 18.5	N21 56.5	007 48.4	N04 51.2	271 16.2	N22 32.2	012 26.7	N01 31.2
	12	036 28.6	333 17.7	N21 57.1	022 49.1	N04 51.9	286 18.3	N22 32.2	027 28.9	N01 31.3
	13	051 31.0	348 17.0	N21 57.8	037 49.8	N04 52.7	301 20.4	N22 32.1	042 31.1	N01 31.4
	14	066 33.5	003 16.3	N21 58.4	052 50.4	N04 53.4	316 22.5	N22 32.1	057 33.3	N01 31.5
	15	081 35.9	018 15.5	N21 59.1	067 51.1	N04 54.2	331 24.6	N22 32.0	072 35.5	N01 31.6
	16	096 38.4	033 14.8	N21 59.7	082 51.8	N04 55.0	346 26.7	N22 32.0	087 37.7	N01 31.7
	17	111 40.9	048 14.1	N22 00.4	097 52.5	N04 55.7	001 28.8	N22 31.9	102 39.9	N01 31.8
	18	126 43.3	063 13.3	N22 01.0	112 53.2	N04 56.5	016 30.9	N22 31.9	117 42.1	N01 31.9
	19	141 45.8	078 12.6	N22 01.7	127 53.9	N04 57.2	031 33.0	N22 31.9	132 44.3	N01 32.0
	20	156 48.3	093 11.9	N22 02.3	142 54.6	N04 58.0	046 35.1	N22 31.8	147 46.5	N01 32.2
	21	171 50.7	108 11.1	N22 03.0	157 55.3	N04 58.7	061 37.2	N22 31.8	162 48.7	N01 32.3
	22	186 53.2	123 10.4	N22 03.6	172 56.0	N04 59.5	076 39.3	N22 31.7	177 50.9	N01 32.4
	23	201 55.7	138 09.7	N22 04.3	187 56.7	N05 00.2	091 41.4	N22 31.7	192 53.1	N01 32.5
29	00	216 58.1	153 08.9	N22 04.9	202 57.4	N05 01.0	106 43.5	N22 31.6	207 55.3	N01 32.6
	01	232 00.6	168 08.2	N22 05.6	217 58.1	N05 01.8	121 45.6	N22 31.6	222 57.5	N01 32.7
	02	247 03.0	183 07.5	N22 06.2	232 58.8	N05 02.5	136 47.7	N22 31.5	237 59.7	N01 32.8
	03	262 05.5	198 06.7	N22 06.8	247 59.5	N05 03.3	151 49.8	N22 31.5	253 01.9	N01 32.9
	04	277 08.0	213 06.0	N22 07.5	263 00.2	N05 04.0	166 51.9	N22 31.4	268 04.1	N01 33.0
	05	292 10.4	228 05.3	N22 08.1	278 00.9	N05 04.8	181 54.0	N22 31.4	283 06.3	N01 33.1
	06	307 12.9	243 04.5	N22 08.7	293 01.5	N05 05.5	196 56.1	N22 31.4	298 08.5	N01 33.2
	07	322 15.4	258 03.8	N22 09.4	308 02.2	N05 06.3	211 58.2	N22 31.3	313 10.7	N01 33.3
	08	337 17.8	273 03.1	N22 10.0	323 02.9	N05 07.0	227 00.3	N22 31.3	328 12.9	N01 33.4
	09	352 20.3	288 02.3	N22 10.6	338 03.6	N05 07.8	242 02.4	N22 31.2	343 15.1	N01 33.5
	10	007 22.8	303 01.6	N22 11.3	353 04.3	N05 08.6	257 04.5	N22 31.2	358 17.3	N01 33.7
	11	022 25.2	318 00.8	N22 11.9	008 05.0	N05 09.3	272 06.6	N22 31.1	013 19.5	N01 33.8
	12	037 27.7	333 00.1	N22 12.5	023 05.7	N05 10.1	287 08.7	N22 31.1	028 21.7	N01 33.9
	13	052 30.2	347 59.4	N22 13.2	038 06.4	N05 10.8	302 10.8	N22 31.0	043 23.9	N01 34.0
	14	067 32.6	002 58.6	N22 13.8	053 07.1	N05 11.6	317 12.9	N22 31.0	058 26.1	N01 34.1
	15	082 35.1	017 57.9	N22 14.4	068 07.8	N05 12.3	332 15.0	N22 30.9	073 28.3	N01 34.2
	16	097 37.5	032 57.2	N22 15.0	083 08.5	N05 13.1	347 17.1	N22 30.9	088 30.5	N01 34.3
	17	112 40.0	047 56.4	N22 15.7	098 09.2	N05 13.8	002 19.2	N22 30.9	103 32.7	N01 34.4
	18	127 42.5	062 55.7	N22 16.3	113 09.9	N05 14.6	017 21.3	N22 30.8	118 34.9	N01 34.5
	19	142 44.9	077 54.9	N22 16.9	128 10.6	N05 15.3	032 23.4	N22 30.8	133 37.1	N01 34.6
	20	157 47.4	092 54.2	N22 17.5	143 11.3	N05 16.1	047 25.5	N22 30.7	148 39.3	N01 34.7
	21	172 49.9	107 53.4	N22 18.1	158 12.0	N05 16.9	062 27.6	N22 30.7	163 41.5	N01 34.8
	22	187 52.3	122 52.7	N22 18.8	173 12.6	N05 17.6	077 29.7	N22 30.6	178 43.7	N01 34.9
	23	202 54.8	137 52.0	N22 19.4	188 13.3	N05 18.4	092 31.8	N22 30.6	193 45.9	N01 35.0
30	00	217 57.3	152 51.2	N22 20.0	203 14.0	N05 19.1	107 33.9	N22 30.5	208 48.1	N01 35.1
	01	232 59.7	167 50.5	N22 20.6	218 14.7	N05 19.9	122 36.0	N22 30.5	223 50.3	N01 35.3
	02	248 02.2	182 49.7	N22 21.2	233 15.4	N05 20.6	137 38.1	N22 30.4	238 52.5	N01 35.4
	03	263 04.7	197 49.0	N22 21.8	248 16.1	N05 21.4	152 40.2	N22 30.4	253 54.7	N01 35.5
	04	278 07.1	212 48.2	N22 22.5	263 16.8	N05 22.1	167 42.3	N22 30.3	268 56.9	N01 35.6
	05	293 09.6	227 47.5	N22 23.1	278 17.5	N05 22.9	182 44.3	N22 30.3	283 59.1	N01 35.7
	06	308 12.0	242 46.7	N22 23.7	293 18.2	N05 23.6	197 46.4	N22 30.3	299 01.3	N01 35.8
	07	323 14.5	257 46.0	N22 24.3	308 18.9	N05 24.4	212 48.5	N22 30.2	314 03.5	N01 35.9
	08	338 17.0	272 45.3	N22 24.9	323 19.6	N05 25.1	227 50.6	N22 30.2	329 05.7	N01 36.0
	09	353 19.4	287 44.5	N22 25.5	338 20.3	N05 25.9	242 52.7	N22 30.1	344 07.9	N01 36.1
	10	008 21.9	302 43.8	N22 26.1	353 21.0	N05 26.6	257 54.8	N22 30.1	359 10.1	N01 36.2
	11	023 24.4	317 43.0	N22 26.7	008 21.7	N05 27.4	272 56.9	N22 30.0	014 12.3	N01 36.3
	12	038 26.8	332 42.3	N22 27.3	023 22.4	N05 28.1	287 59.0	N22 30.0	029 14.5	N01 36.4
	13	053 29.3	347 41.5	N22 27.9	038 23.0	N05 28.9	303 01.1	N22 29.9	044 16.7	N01 36.5
	14	068 31.8	002 40.8	N22 28.5	053 23.7	N05 29.6	318 03.2	N22 29.9	059 18.9	N01 36.6
	15	083 34.2	017 40.0	N22 29.1	068 24.4	N05 30.4	333 05.3	N22 29.8	074 21.1	N01 36.7
	16	098 36.7	032 39.3	N22 29.7	083 25.1	N05 31.2	348 07.4	N22 29.8	089 23.3	N01 36.8
	17	113 39.1	047 38.5	N22 30.3	098 25.8	N05 31.9	003 09.5	N22 29.7	104 25.5	N01 37.0
	18	128 41.6	062 37.8	N22 30.9	113 26.5	N05 32.7	018 11.6	N22 29.7	119 27.7	N01 37.1
	19	143 44.1	077 37.0	N22 31.5	128 27.2	N05 33.4	033 13.7	N22 29.7	134 29.9	N01 37.2
	20	158 46.5	092 36.3	N22 32.1	143 27.9	N05 34.2	048 15.7	N22 29.6	149 32.1	N01 37.3
	21	173 49.0	107 35.5	N22 32.7	158 28.6	N05 34.9	063 17.8	N22 29.6	164 34.3	N01 37.4
	22	188 51.5	122 34.8	N22 33.3	173 29.3	N05 35.7	078 19.9	N22 29.5	179 36.5	N01 37.5
	23	203 53.9	137 34.0	N22 33.9	188 30.0	N05 36.4	093 22.0	N22 29.5	194 38.7	N01 37.6

Venus	Mars	Jupiter	Saturn
28: v -0.7 d 0.7	28: v 0.7 d 0.8	28: v 2.1 d 0.0	28: v 2.2 d 0.1
29: v -0.7 d 0.6	29: v 0.7 d 0.8	29: v 2.1 d 0.0	29: v 2.2 d 0.1
30: v -0.7 d 0.6	30: v 0.7 d 0.8	30: v 2.1 d 0.0	30: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.4	S40 12.0
Achernar	335 19.9	S57 06.1
Acrux	172 58.3	S63 14.9
Adhara	255 05.2	S29 00.7
Al Na'ir	027 31.7	S46 49.8
Aldebaran	290 38.7	N16 33.7
Alioth	166 11.5	N55 49.0
Alkaid	152 50.7	N49 10.8
Alnilam	275 36.9	S01 11.2
Alphard	217 46.7	S08 46.5
Alphecca	126 02.5	N26 37.4
Alpheratz	357 34.0	N29 14.0
Altair	061 58.9	N08 56.1
Ankaa	353 06.5	S42 09.7
Antares	112 14.2	S26 29.5
Arcturus	145 46.6	N19 02.6
Atria	107 07.0	S69 04.3
Avior	234 14.4	S59 35.9
Bellatrix	278 22.0	N06 22.3
Betelgeuse	270 51.2	N07 24.7
Canopus	263 52.2	S52 42.8
Capella	280 20.7	N46 01.5
Deneb	049 25.1	N45 22.1
Denebola	182 23.6	N14 25.4
Diphda	348 46.5	S17 50.5
Dubhe	193 39.3	N61 36.7
Elnath	278 00.8	N28 37.8
Eltanin	090 41.3	N51 28.8
Enif	033 37.8	N09 59.6
Fomalhaut	015 13.5	S29 28.9
Gacrux	171 50.0	S57 15.9
Gienah	175 42.2	S17 41.5
Hadar	148 33.9	S60 30.1
Hamal	327 50.3	N23 35.1
Kaus Australi	083 30.9	S34 22.2
Kochab	137 18.6	N74 02.7
Markab	013 29.0	N15 20.7
Menkar	314 05.4	N04 11.5
Menkent	147 56.0	S36 30.1
Miaplacidus	221 38.0	S69 49.8
Mirfak	308 27.2	N49 57.3
Nunki	075 46.3	S26 15.8
Peacock	053 04.0	S56 38.8
Polaris	313 59.0	N89 22.5
Pollux	243 16.1	N27 57.8
Procyon	244 49.8	N05 09.4
Rasalhague	095 57.3	N12 32.3
Regulus	207 33.2	N11 50.2
Rigel	281 03.1	S08 10.4
Rigil Kentaur	139 38.2	S60 56.7
Sabik	102 01.3	S15 45.5
Schedar	349 30.3	N56 40.7
Shaula	096 08.6	S37 07.3
Sirius	258 25.5	S16 45.3
Spica	158 20.9	S11 18.1
Suhail	222 45.5	S43 32.6
Vega	080 32.3	N38 48.2
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	295 32.4	1348
Mars	345 38.0	1028
Jupiter	249 41.0	1651
Saturn	350 54.0	1007

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
28	00	180 36.8	N14 05.3	040 58.8	N00 27.5	56.1	15.4	-15.0
	01	195 36.9	N14 06.0	055 33.2	N00 12.4	56.1	15.4	-15.0
	02	210 37.0	N14 06.8	070 07.7	S00 02.6	56.0	15.5	-15.0
	03	225 37.0	N14 07.6	084 42.2	S00 17.6	56.0	15.5	-15.0
	04	240 37.1	N14 08.4	099 16.6	S00 32.6	56.0	15.5	-15.0
	05	255 37.2	N14 09.2	113 51.1	S00 47.6	56.0	15.5	-15.0
	06	270 37.3	N14 10.0	128 25.7	S01 02.5	55.9	15.5	-15.0
	07	285 37.4	N14 10.8	143 00.2	S01 17.5	55.9	15.5	-14.9
	08	300 37.5	N14 11.5	157 34.7	S01 32.4	55.9	15.6	-14.9
	09	315 37.6	N14 12.3	172 09.3	S01 47.3	55.9	15.6	-14.9
	10	330 37.7	N14 13.1	186 43.9	S02 02.2	55.9	15.6	-14.9
	11	345 37.8	N14 13.9	201 18.4	S02 17.1	55.8	15.6	-14.9
	12	000 37.9	N14 14.7	215 53.0	S02 32.0	55.8	15.6	-14.8
	13	015 38.0	N14 15.5	230 27.6	S02 46.8	55.8	15.6	-14.8
	14	030 38.1	N14 16.2	245 02.2	S03 01.7	55.8	15.6	-14.8
	15	045 38.1	N14 17.0	259 36.8	S03 16.5	55.8	15.6	-14.8
	16	060 38.2	N14 17.8	274 11.4	S03 31.3	55.7	15.6	-14.8
	17	075 38.3	N14 18.6	288 46.0	S03 46.0	55.7	15.6	-14.7
	18	090 38.4	N14 19.4	303 20.6	S04 00.7	55.7	15.6	-14.7
	19	105 38.5	N14 20.2	317 55.3	S04 15.5	55.7	15.6	-14.7
	20	120 38.6	N14 20.9	332 29.9	S04 30.1	55.7	15.6	-14.7
	21	135 38.7	N14 21.7	347 04.5	S04 44.8	55.6	15.6	-14.6
	22	150 38.8	N14 22.5	001 39.1	S04 59.4	55.6	15.6	-14.6
	23	165 38.9	N14 23.3	016 13.7	S05 14.0	55.6	15.6	-14.6
29	00	180 39.0	N14 24.1	030 48.3	S05 28.6	55.6	15.6	-14.5
	01	195 39.0	N14 24.8	045 22.9	S05 43.1	55.6	15.6	-14.5
	02	210 39.1	N14 25.6	059 57.5	S05 57.6	55.5	15.6	-14.5
	03	225 39.2	N14 26.4	074 32.1	S06 12.1	55.5	15.6	-14.4
	04	240 39.3	N14 27.2	089 06.6	S06 26.5	55.5	15.6	-14.4
	05	255 39.4	N14 27.9	103 41.2	S06 40.9	55.5	15.6	-14.4
	06	270 39.5	N14 28.7	118 15.8	S06 55.3	55.5	15.5	-14.3
	07	285 39.6	N14 29.5	132 50.3	S07 09.6	55.5	15.5	-14.3
	08	300 39.6	N14 30.3	147 24.8	S07 23.9	55.4	15.5	-14.3
	09	315 39.7	N14 31.0	161 59.4	S07 38.2	55.4	15.5	-14.2
	10	330 39.8	N14 31.8	176 33.9	S07 52.4	55.4	15.5	-14.2
	11	345 39.9	N14 32.6	191 08.3	S08 06.6	55.4	15.5	-14.1
	12	000 40.0	N14 33.4	205 42.8	S08 20.7	55.4	15.5	-14.1
	13	015 40.1	N14 34.1	220 17.3	S08 34.8	55.3	15.4	-14.1
	14	030 40.2	N14 34.9	234 51.7	S08 48.9	55.3	15.4	-14.0
	15	045 40.2	N14 35.7	249 26.1	S09 02.9	55.3	15.4	-14.0
	16	060 40.3	N14 36.5	264 00.5	S09 16.9	55.3	15.4	-13.9
	17	075 40.4	N14 37.2	278 34.9	S09 30.8	55.3	15.4	-13.9
	18	090 40.5	N14 38.0	293 09.2	S09 44.7	55.3	15.3	-13.8
	19	105 40.6	N14 38.8	307 43.6	S09 58.5	55.2	15.3	-13.8
	20	120 40.7	N14 39.5	322 17.9	S10 12.3	55.2	15.3	-13.7
	21	135 40.8	N14 40.3	336 52.2	S10 26.0	55.2	15.3	-13.7
	22	150 40.8	N14 41.1	351 26.4	S10 39.7	55.2	15.2	-13.6
	23	165 40.9	N14 41.8	006 00.6	S10 53.3	55.2	15.2	-13.6
30	00	180 41.0	N14 42.6	020 34.8	S11 06.9	55.2	15.2	-13.5
	01	195 41.1	N14 43.4	035 09.0	S11 20.5	55.1	15.1	-13.5
	02	210 41.2	N14 44.2	049 43.2	S11 33.9	55.1	15.1	-13.4
	03	225 41.3	N14 44.9	064 17.3	S11 47.4	55.1	15.1	-13.4
	04	240 41.3	N14 45.7	078 51.4	S12 00.7	55.1	15.1	-13.3
	05	255 41.4	N14 46.5	093 25.4	S12 14.1	55.1	15.0	-13.3
	06	270 41.5	N14 47.2	107 59.4	S12 27.3	55.1	15.0	-13.2
	07	285 41.6	N14 48.0	122 33.4	S12 40.5	55.0	15.0	-13.1
	08	300 41.7	N14 48.8	137 07.4	S12 53.7	55.0	14.9	-13.1
	09	315 41.7	N14 49.5	151 41.3	S13 06.7	55.0	14.9	-13.0
	10	330 41.8	N14 50.3	166 15.2	S13 19.8	55.0	14.8	-13.0
	11	345 41.9	N14 51.0	180 49.0	S13 32.7	55.0	14.8	-12.9
	12	000 42.0	N14 51.8	195 22.8	S13 45.6	55.0	14.8	-12.8
	13	015 42.1	N14 52.6	209 56.6	S13 58.5	54.9	14.7	-12.8
	14	030 42.1	N14 53.3	224 30.3	S14 11.3	54.9	14.7	-12.7
	15	045 42.2	N14 54.1	239 04.0	S14 24.0	54.9	14.7	-12.6
	16	060 42.3	N14 54.9	253 37.7	S14 36.6	54.9	14.6	-12.6
	17	075 42.4	N14 55.6	268 11.3	S14 49.2	54.9	14.6	-12.5
	18	090 42.5	N14 56.4	282 44.9	S15 01.7	54.9	14.5	-12.4
	19	105 42.5	N14 57.1	297 18.4	S15 14.2	54.8	14.5	-12.4
	20	120 42.6	N14 57.9	311 51.9	S15 26.5	54.8	14.4	-12.3
	21	135 42.7	N14 58.7	326 25.3	S15 38.9	54.8	14.4	-12.2
	22	150 42.8	N14 59.4	340 58.7	S15 51.1	54.8	14.4	-12.2
	23	165 42.9	N15 00.2	355 32.1	S16 03.3	54.8	14.3	-12.1

Day 28 noon Sun: v 0.1 d 0.8 SD 15.9 | Moon SD 15.2

Day 29 noon Sun: v 0.1 d 0.8 SD 15.9 | Moon SD 15.1

Day 30 noon Sun: v 0.1 d 0.8 SD 15.9 | Moon SD 15.0

SUN: APRIL 29 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	0209	2152	--	--
70N	--	--	0243	2116	--	--
68N	--	0127	0307	2051	2236	--
66N	--	0207	0325	2032	2152	--
64N	--	0235	0341	2016	2124	--
62N	0117	0255	0353	2004	2102	2245
60N	0153	0312	0404	1953	2045	2206
58N	0218	0325	0413	1943	2031	2140
56N	0238	0337	0421	1935	2019	2120
54N	0253	0347	0428	1928	2009	2104
52N	0307	0356	0434	1921	2000	2050
50N	0318	0404	0440	1916	1952	2038
45N	0341	0420	0453	1903	1935	2015
40N	0358	0434	0503	1853	1922	1957
35N	0412	0445	0511	1844	1911	1943
30N	0424	0454	0519	1836	1901	1931
25N	0434	0502	0526	1829	1853	1921
20N	0442	0509	0532	1823	1846	1913
15N	0450	0516	0538	1817	1839	1905
10N	0456	0522	0543	1811	1833	1859
05N	0502	0527	0549	1806	1827	1853
00N	0508	0533	0554	1801	1822	1847
05S	0513	0538	0559	1756	1817	1842
10S	0518	0543	0604	1750	1812	1837
15S	0522	0548	0610	1745	1807	1832
20S	0526	0553	0615	1739	1802	1828
25S	0531	0558	0621	1733	1757	1824
30S	0535	0603	0628	1727	1751	1820
35S	0539	0609	0635	1719	1746	1816
40S	0543	0615	0643	1711	1739	1811
45S	0547	0622	0652	1702	1732	1807
50S	0551	0630	0704	1650	1724	1803
55S	0556	0639	0718	1636	1715	1758
60S	0601	0651	0736	1618	1703	1752

MOON: RISE / SET | UTC HHMM

Lat	Day 28		Day 29		Day 30	
72N	1631	0316	1840	0243	2117	0203
70N	1625	0316	1823	0251	2035	0222
68N	1621	0317	1810	0258	2007	0238
66N	1617	0317	1759	0304	1946	0250
64N	1614	0318	1750	0309	1930	0300
62N	1611	0318	1743	0314	1916	0309
60N	1609	0318	1736	0318	1905	0317
58N	1607	0318	1730	0321	1855	0324
56N	1605	0319	1725	0324	1846	0330
54N	1604	0319	1721	0327	1838	0336
52N	1602	0319	1717	0329	1832	0341
50N	1601	0319	1713	0332	1826	0345
45N	1558	0320	1705	0337	1812	0355
40N	1555	0320	1658	0341	1802	0403
35N	1553	0320	1653	0345	1753	0410
30N	1552	0320	1648	0348	1745	0416
25N	1550	0321	1643	0351	1737	0422
20N	1548	0321	1639	0354	1731	0427
15N	1547	0321	1636	0356	1725	0432
10N	1546	0321	1632	0359	1719	0437
05N	1544	0321	1629	0401	1713	0441
00N	1543	0321	1625	0403	1708	0445
05S	1542	0321	1622	0406	1702	0450
10S	1541	0322	1618	0408	1657	0454
15S	1539	0322	1615	0410	1651	0459
20S	1538	0322	1611	0413	1645	0504
25S	1537	0322	1607	0416	1639	0509
30S	1535	0322	1603	0419	1632	0515
35S	1533	0322	1558	0422	1624	0522
40S	1532	0323	1553	0426	1616	0529
45S	1529	0323	1547	0430	1606	0537
50S	1527	0323	1540	0436	1554	0548
55S	1524	0323	1531	0442	1539	0601
60S	1520	0324	1519	0451	1519	0618

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | MAY 1 - MAY 3

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
1	00	218 56.4	152 33.3	N22 34.5	203 30.7	N05 37.2	108 24.1	N22 29.4	209 40.9	N01 37.7
	01	233 58.9	167 32.5	N22 35.1	218 31.4	N05 37.9	123 26.2	N22 29.4	224 43.1	N01 37.8
	02	249 01.3	182 31.8	N22 35.7	233 32.1	N05 38.7	138 28.3	N22 29.3	239 45.3	N01 37.9
	03	264 03.8	197 31.0	N22 36.2	248 32.8	N05 39.4	153 30.4	N22 29.3	254 47.5	N01 38.0
	04	279 06.3	212 30.3	N22 36.8	263 33.4	N05 40.2	168 32.5	N22 29.2	269 49.8	N01 38.1
	05	294 08.7	227 29.5	N22 37.4	278 34.1	N05 40.9	183 34.6	N22 29.2	284 52.0	N01 38.2
	06	309 11.2	242 28.7	N22 38.0	293 34.8	N05 41.7	198 36.6	N22 29.1	299 54.2	N01 38.3
	07	324 13.6	257 28.0	N22 38.6	308 35.5	N05 42.4	213 38.7	N22 29.1	314 56.4	N01 38.4
	08	339 16.1	272 27.2	N22 39.2	323 36.2	N05 43.2	228 40.8	N22 29.0	329 58.6	N01 38.5
	09	354 18.6	287 26.5	N22 39.7	338 36.9	N05 43.9	243 42.9	N22 29.0	345 00.8	N01 38.6
	10	009 21.0	302 25.7	N22 40.3	353 37.6	N05 44.7	258 45.0	N22 28.9	000 03.0	N01 38.7
	11	024 23.5	317 25.0	N22 40.9	008 38.3	N05 45.4	273 47.1	N22 28.9	015 05.2	N01 38.9
	12	039 26.0	332 24.2	N22 41.5	023 39.0	N05 46.2	288 49.2	N22 28.8	030 07.4	N01 39.0
	13	054 28.4	347 23.5	N22 42.1	038 39.7	N05 46.9	303 51.3	N22 28.8	045 09.6	N01 39.1
	14	069 30.9	002 22.7	N22 42.6	053 40.4	N05 47.7	318 53.4	N22 28.8	060 11.8	N01 39.2
	15	084 33.4	017 21.9	N22 43.2	068 41.1	N05 48.4	333 55.4	N22 28.7	075 14.0	N01 39.3
	16	099 35.8	032 21.2	N22 43.8	083 41.8	N05 49.1	348 57.5	N22 28.7	090 16.2	N01 39.4
	17	114 38.3	047 20.4	N22 44.4	098 42.5	N05 49.9	003 59.6	N22 28.6	105 18.4	N01 39.5
	18	129 40.8	062 19.7	N22 44.9	113 43.2	N05 50.6	019 01.7	N22 28.6	120 20.6	N01 39.6
	19	144 43.2	077 18.9	N22 45.5	128 43.8	N05 51.4	034 03.8	N22 28.5	135 22.8	N01 39.7
	20	159 45.7	092 18.1	N22 46.1	143 44.5	N05 52.1	049 05.9	N22 28.5	150 25.0	N01 39.8
	21	174 48.1	107 17.4	N22 46.6	158 45.2	N05 52.9	064 08.0	N22 28.4	165 27.2	N01 39.9
	22	189 50.6	122 16.6	N22 47.2	173 45.9	N05 53.6	079 10.0	N22 28.4	180 29.4	N01 40.0
	23	204 53.1	137 15.9	N22 47.8	188 46.6	N05 54.4	094 12.1	N22 28.3	195 31.6	N01 40.1
2	00	219 55.5	152 15.1	N22 48.3	203 47.3	N05 55.1	109 14.2	N22 28.3	210 33.8	N01 40.2
	01	234 58.0	167 14.3	N22 48.9	218 48.0	N05 55.9	124 16.3	N22 28.2	225 36.0	N01 40.3
	02	250 00.5	182 13.6	N22 49.5	233 48.7	N05 56.6	139 18.4	N22 28.2	240 38.2	N01 40.4
	03	265 02.9	197 12.8	N22 50.0	248 49.4	N05 57.4	154 20.5	N22 28.1	255 40.4	N01 40.5
	04	280 05.4	212 12.1	N22 50.6	263 50.1	N05 58.1	169 22.6	N22 28.1	270 42.6	N01 40.6
	05	295 07.9	227 11.3	N22 51.1	278 50.8	N05 58.9	184 24.6	N22 28.0	285 44.8	N01 40.7
	06	310 10.3	242 10.5	N22 51.7	293 51.5	N05 59.6	199 26.7	N22 28.0	300 47.1	N01 40.8
	07	325 12.8	257 09.8	N22 52.3	308 52.2	N06 00.4	214 28.8	N22 27.9	315 49.3	N01 40.9
	08	340 15.2	272 09.0	N22 52.8	323 52.9	N06 01.1	229 30.9	N22 27.9	330 51.5	N01 41.1
	09	355 17.7	287 08.2	N22 53.4	338 53.5	N06 01.9	244 33.0	N22 27.8	345 53.7	N01 41.2
	10	010 20.2	302 07.5	N22 53.9	353 54.2	N06 02.6	259 35.1	N22 27.8	000 55.9	N01 41.3
	11	025 22.6	317 06.7	N22 54.5	008 54.9	N06 03.3	274 37.1	N22 27.7	015 58.1	N01 41.4
	12	040 25.1	332 05.9	N22 55.0	023 55.6	N06 04.1	289 39.2	N22 27.7	031 00.3	N01 41.5
	13	055 27.6	347 05.2	N22 55.6	038 56.3	N06 04.8	304 41.3	N22 27.6	046 02.5	N01 41.6
	14	070 30.0	002 04.4	N22 56.1	053 57.0	N06 05.6	319 43.4	N22 27.6	061 04.7	N01 41.7
	15	085 32.5	017 03.7	N22 56.7	068 57.7	N06 06.3	334 45.5	N22 27.5	076 06.9	N01 41.8
	16	100 35.0	032 02.9	N22 57.2	083 58.4	N06 07.1	349 47.6	N22 27.5	091 09.1	N01 41.9
	17	115 37.4	047 02.1	N22 57.8	098 59.1	N06 07.8	004 49.6	N22 27.4	106 11.3	N01 42.0
	18	130 39.9	062 01.4	N22 58.3	113 59.8	N06 08.6	019 51.7	N22 27.4	121 13.5	N01 42.1
	19	145 42.4	077 00.6	N22 58.9	129 00.5	N06 09.3	034 53.8	N22 27.4	136 15.7	N01 42.2
	20	160 44.8	091 59.8	N22 59.4	144 01.2	N06 10.1	049 55.9	N22 27.3	151 17.9	N01 42.3
	21	175 47.3	106 59.1	N22 59.9	159 01.9	N06 10.8	064 58.0	N22 27.3	166 20.1	N01 42.4
	22	190 49.7	121 58.3	N23 00.5	174 02.6	N06 11.5	080 00.0	N22 27.2	181 22.3	N01 42.5
	23	205 52.2	136 57.5	N23 01.0	189 03.2	N06 12.3	095 02.1	N22 27.2	196 24.5	N01 42.6
3	00	220 54.7	151 56.7	N23 01.6	204 03.9	N06 13.0	110 04.2	N22 27.1	211 26.7	N01 42.7
	01	235 57.1	166 56.0	N23 02.1	219 04.6	N06 13.8	125 06.3	N22 27.1	226 29.0	N01 42.8
	02	250 59.6	181 55.2	N23 02.6	234 05.3	N06 14.5	140 08.4	N22 27.0	241 31.2	N01 42.9
	03	266 02.1	196 54.4	N23 03.2	249 06.0	N06 15.3	155 10.4	N22 27.0	256 33.4	N01 43.0
	04	281 04.5	211 53.7	N23 03.7	264 06.7	N06 16.0	170 12.5	N22 26.9	271 35.6	N01 43.1
	05	296 07.0	226 52.9	N23 04.2	279 07.4	N06 16.8	185 14.6	N22 26.9	286 37.8	N01 43.2
	06	311 09.5	241 52.1	N23 04.8	294 08.1	N06 17.5	200 16.7	N22 26.8	301 40.0	N01 43.3
	07	326 11.9	256 51.4	N23 05.3	309 08.8	N06 18.2	215 18.8	N22 26.8	316 42.2	N01 43.5
	08	341 14.4	271 50.6	N23 05.8	324 09.5	N06 19.0	230 20.8	N22 26.7	331 44.4	N01 43.6
	09	356 16.9	286 49.8	N23 06.4	339 10.2	N06 19.7	245 22.9	N22 26.7	346 46.6	N01 43.7
	10	011 19.3	301 49.0	N23 06.9	354 10.9	N06 20.5	260 25.0	N22 26.6	001 48.8	N01 43.8
	11	026 21.8	316 48.3	N23 07.4	009 11.6	N06 21.2	275 27.1	N22 26.6	016 51.0	N01 43.9
	12	041 24.2	331 47.5	N23 07.9	024 12.2	N06 22.0	290 29.1	N22 26.5	031 53.2	N01 44.0
	13	056 26.7	346 46.7	N23 08.5	039 12.9	N06 22.7	305 31.2	N22 26.5	046 55.4	N01 44.1
	14	071 29.2	001 45.9	N23 09.0	054 13.6	N06 23.4	320 33.3	N22 26.4	061 57.6	N01 44.2
	15	086 31.6	016 45.2	N23 09.5	069 14.3	N06 24.2	335 35.4	N22 26.4	076 59.8	N01 44.3
	16	101 34.1	031 44.4	N23 10.0	084 15.0	N06 24.9	350 37.5	N22 26.3	092 02.0	N01 44.4
	17	116 36.6	046 43.6	N23 10.6	099 15.7	N06 25.7	005 39.5	N22 26.3	107 04.3	N01 44.5
	18	131 39.0	061 42.8	N23 11.1	114 16.4	N06 26.4	020 41.6	N22 26.2	122 06.5	N01 44.6
	19	146 41.5	076 42.1	N23 11.6	129 17.1	N06 27.2	035 43.7	N22 26.2	137 08.7	N01 44.7
	20	161 44.0	091 41.3	N23 12.1	144 17.8	N06 27.9	050 45.8	N22 26.1	152 10.9	N01 44.8
	21	176 46.4	106 40.5	N23 12.6	159 18.5	N06 28.6	065 47.8	N22 26.1	167 13.1	N01 44.9
	22	191 48.9	121 39.7	N23 13.1	174 19.2	N06 29.4	080 49.9	N22 26.0	182 15.3	N01 45.0
	23	206 51.3	136 39.0	N23 13.6	189 19.9	N06 30.1	095 52.0	N22 26.0	197 17.5	N01 45.1

Venus	Mars	Jupiter	Saturn
1: v -0.8 d 0.6	1: v 0.7 d 0.7	1: v 2.1 d 0.0	1: v 2.2 d 0.1
2: v -0.8 d 0.6	2: v 0.7 d 0.7	2: v 2.1 d 0.0	2: v 2.2 d 0.1
3: v -0.8 d 0.5	3: v 0.7 d 0.7	3: v 2.1 d 0.0	3: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.4	S40 12.0
Achernar	335 19.9	S57 06.1
Acrux	172 58.3	S63 15.0
Adhara	255 05.2	S29 00.7
Al Na'ir	027 31.7	S46 49.8
Aldebaran	290 38.7	N16 33.7
Alioth	166 11.5	N55 49.0
Alkaid	152 50.7	N49 10.9
Alnilam	275 36.9	S01 11.2
Alphard	217 46.7	S08 46.5
Alphecca	126 02.5	N26 37.4
Alpheratz	357 34.0	N29 14.0
Altair	061 58.8	N08 56.1
Ankaa	353 06.4	S42 09.7
Antares	112 14.2	S26 29.5
Arcturus	145 46.6	N19 02.6
Atria	107 07.0	S69 04.4
Avior	234 14.4	S59 35.9
Bellatrix	278 22.0	N06 22.3
Betelgeuse	270 51.2	N07 24.7
Canopus	263 52.3	S52 42.8
Capella	280 20.7	N46 01.5
Deneb	049 25.1	N45 22.1
Denebola	182 23.6	N14 25.4
Diphda	348 46.5	S17 50.5
Dubhe	193 39.3	N61 36.7
Elnath	278 00.8	N28 37.8
Eltanin	090 41.3	N51 28.8
Enif	033 37.8	N09 59.6
Fomalhaut	015 13.5	S29 28.9
Gacrux	171 50.0	S57 15.9
Gienah	175 42.2	S17 41.5
Hadar	148 33.9	S60 30.1
Hamal	327 50.3	N23 35.1
Kaus Australi	083 30.9	S34 22.2
Kochab	137 18.6	N74 02.7
Markab	013 29.0	N15 20.7
Menkar	314 05.4	N04 11.5
Menkent	147 56.0	S36 30.1
Miaplacidus	221 38.0	S69 49.8
Mirfak	308 27.2	N49 57.3
Nunki	075 46.3	S26 15.8
Peacock	053 04.0	S56 38.8
Polaris	313 58.9	N89 22.5
Pollux	243 16.1	N27 57.8
Procyon	244 49.8	N05 09.4
Rasalhague	095 57.3	N12 32.3
Regulus	207 33.2	N11 50.2
Rigel	281 03.1	S08 10.4
Rigil Kentaur	139 38.2	S60 56.7
Sabik	102 01.3	S15 45.5
Schedar	349 30.3	N56 40.7
Shaula	096 08.6	S37 07.3
Sirius	258 25.5	S16 45.3
Spica	158 20.9	S11 18.1
Suhail	222 45.5	S43 32.6
Vega	080 32.3	N38 48.2
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	291 40.8	1352
Mars	343 30.5	1024
Jupiter	249 14.1	1641
Saturn	350 35.2	0956

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
1	00	180 42.9	N15 00.9	010 05.4	S16 15.4	54.8	14.3	-12.0
	01	195 43.0	N15 01.7	024 38.7	S16 27.4	54.8	14.2	-12.0
	02	210 43.1	N15 02.5	039 11.9	S16 39.3	54.7	14.2	-11.9
	03	225 43.2	N15 03.2	053 45.1	S16 51.2	54.7	14.1	-11.8
	04	240 43.2	N15 04.0	068 18.2	S17 03.0	54.7	14.1	-11.7
	05	255 43.3	N15 04.7	082 51.3	S17 14.7	54.7	14.0	-11.6
	06	270 43.4	N15 05.5	097 24.3	S17 26.4	54.7	14.0	-11.6
	07	285 43.5	N15 06.2	111 57.3	S17 37.9	54.7	13.9	-11.5
	08	300 43.5	N15 07.0	126 30.3	S17 49.4	54.7	13.9	-11.4
	09	315 43.6	N15 07.7	141 03.2	S18 00.8	54.7	13.8	-11.3
	10	330 43.7	N15 08.5	155 36.0	S18 12.2	54.6	13.8	-11.2
	11	345 43.8	N15 09.3	170 08.8	S18 23.4	54.6	13.7	-11.2
	12	000 43.8	N15 10.0	184 41.5	S18 34.6	54.6	13.7	-11.1
	13	015 43.9	N15 10.8	199 14.2	S18 45.7	54.6	13.6	-11.0
	14	030 44.0	N15 11.5	213 46.8	S18 56.7	54.6	13.6	-10.9
	15	045 44.1	N15 12.3	228 19.4	S19 07.6	54.6	13.5	-10.8
	16	060 44.1	N15 13.0	242 52.0	S19 18.4	54.6	13.5	-10.7
	17	075 44.2	N15 13.8	257 24.4	S19 29.1	54.6	13.4	-10.7
	18	090 44.3	N15 14.5	271 56.9	S19 39.8	54.5	13.4	-10.6
	19	105 44.4	N15 15.3	286 29.2	S19 50.4	54.5	13.3	-10.5
	20	120 44.4	N15 16.0	301 01.6	S20 00.8	54.5	13.3	-10.4
	21	135 44.5	N15 16.8	315 33.8	S20 11.2	54.5	13.2	-10.3
	22	150 44.6	N15 17.5	330 06.0	S20 21.5	54.5	13.2	-10.2
	23	165 44.6	N15 18.3	344 38.2	S20 31.7	54.5	13.1	-10.1
2	00	180 44.7	N15 19.0	359 10.3	S20 41.8	54.5	13.1	-10.0
	01	195 44.8	N15 19.8	013 42.4	S20 51.8	54.5	13.0	-9.9
	02	210 44.9	N15 20.5	028 14.4	S21 01.8	54.4	12.9	-9.8
	03	225 44.9	N15 21.3	042 46.3	S21 11.6	54.4	12.9	-9.7
	04	240 45.0	N15 22.0	057 18.2	S21 21.3	54.4	12.8	-9.6
	05	255 45.1	N15 22.7	071 50.0	S21 30.9	54.4	12.8	-9.5
	06	270 45.1	N15 23.5	086 21.8	S21 40.5	54.4	12.7	-9.4
	07	285 45.2	N15 24.2	100 53.5	S21 49.9	54.4	12.7	-9.3
	08	300 45.3	N15 25.0	115 25.2	S21 59.2	54.4	12.6	-9.2
	09	315 45.4	N15 25.7	129 56.8	S22 08.5	54.4	12.6	-9.1
	10	330 45.4	N15 26.5	144 28.4	S22 17.6	54.4	12.5	-9.0
	11	345 45.5	N15 27.2	158 59.9	S22 26.7	54.3	12.4	-8.9
	12	000 45.6	N15 28.0	173 31.3	S22 35.6	54.3	12.4	-8.8
	13	015 45.6	N15 28.7	188 02.7	S22 44.4	54.3	12.3	-8.7
	14	030 45.7	N15 29.4	202 34.0	S22 53.1	54.3	12.3	-8.6
	15	045 45.8	N15 30.2	217 05.3	S23 01.8	54.3	12.2	-8.5
	16	060 45.8	N15 30.9	231 36.6	S23 10.3	54.3	12.2	-8.4
	17	075 45.9	N15 31.7	246 07.7	S23 18.7	54.3	12.1	-8.3
	18	090 46.0	N15 32.4	260 38.9	S23 27.0	54.3	12.1	-8.2
	19	105 46.0	N15 33.1	275 09.9	S23 35.2	54.3	12.0	-8.1
	20	120 46.1	N15 33.9	289 40.9	S23 43.3	54.3	12.0	-8.0
	21	135 46.2	N15 34.6	304 11.9	S23 51.2	54.3	11.9	-7.9
	22	150 46.2	N15 35.4	318 42.8	S23 59.1	54.2	11.9	-7.8
	23	165 46.3	N15 36.1	333 13.7	S24 06.8	54.2	11.8	-7.6
3	00	180 46.4	N15 36.8	347 44.5	S24 14.5	54.2	11.8	-7.5
	01	195 46.4	N15 37.6	002 15.2	S24 22.0	54.2	11.7	-7.4
	02	210 46.5	N15 38.3	016 45.9	S24 29.4	54.2	11.6	-7.3
	03	225 46.6	N15 39.0	031 16.6	S24 36.7	54.2	11.6	-7.2
	04	240 46.6	N15 39.8	045 47.2	S24 43.9	54.2	11.5	-7.1
	05	255 46.7	N15 40.5	060 17.7	S24 51.0	54.2	11.5	-7.0
	06	270 46.8	N15 41.2	074 48.2	S24 58.0	54.2	11.4	-6.8
	07	285 46.8	N15 42.0	089 18.7	S25 04.8	54.2	11.4	-6.7
	08	300 46.9	N15 42.7	103 49.0	S25 11.5	54.2	11.3	-6.6
	09	315 47.0	N15 43.4	118 19.4	S25 18.1	54.2	11.3	-6.5
	10	330 47.0	N15 44.2	132 49.7	S25 24.6	54.2	11.3	-6.4
	11	345 47.1	N15 44.9	147 19.9	S25 31.0	54.1	11.2	-6.2
	12	000 47.1	N15 45.6	161 50.2	S25 37.2	54.1	11.2	-6.1
	13	015 47.2	N15 46.4	176 20.3	S25 43.4	54.1	11.1	-6.0
	14	030 47.3	N15 47.1	190 50.4	S25 49.4	54.1	11.1	-5.9
	15	045 47.3	N15 47.8	205 20.5	S25 55.3	54.1	11.0	-5.8
	16	060 47.4	N15 48.6	219 50.5	S26 01.0	54.1	11.0	-5.6
	17	075 47.5	N15 49.3	234 20.5	S26 06.7	54.1	10.9	-5.5
	18	090 47.5	N15 50.0	248 50.4	S26 12.2	54.1	10.9	-5.4
	19	105 47.6	N15 50.8	263 20.3	S26 17.6	54.1	10.9	-5.3
	20	120 47.6	N15 51.5	277 50.2	S26 22.8	54.1	10.8	-5.1
	21	135 47.7	N15 52.2	292 20.0	S26 28.0	54.1	10.8	-5.0
	22	150 47.8	N15 52.9	306 49.7	S26 33.0	54.1	10.7	-4.9
	23	165 47.8	N15 53.7	321 19.5	S26 37.9	54.1	10.7	-4.8

Day 1 noon Sun: v 0.1 d 0.8 SD 15.9 | Moon SD 14.9

Day 2 noon Sun: v 0.1 d 0.7 SD 15.9 | Moon SD 14.8

Day 3 noon Sun: v 0.1 d 0.7 SD 15.9 | Moon SD 14.8

SUN: MAY 2 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	0144	2218	--	--
70N	--	--	0225	2133	--	--
68N	--	0055	0253	2105	2312	--
66N	--	0149	0314	2043	2210	--
64N	--	0221	0330	2026	2137	--
62N	0049	0244	0344	2012	2113	2317
60N	0137	0302	0355	2000	2055	2222
58N	0206	0317	0405	1950	2039	2151
56N	0227	0329	0414	1941	2026	2129
54N	0244	0340	0422	1933	2015	2112
52N	0259	0350	0429	1926	2006	2057
50N	0311	0358	0435	1920	1957	2045
45N	0335	0416	0448	1907	1939	2020
40N	0354	0430	0459	1856	1925	2001
35N	0409	0441	0508	1846	1913	1946
30N	0421	0451	0516	1838	1903	1934
25N	0431	0500	0524	1831	1855	1923
20N	0440	0507	0530	1824	1847	1914
15N	0448	0514	0537	1818	1840	1906
10N	0455	0520	0542	1812	1834	1859
05N	0501	0526	0548	1806	1828	1853
00N	0507	0532	0554	1800	1822	1847
05S	0513	0538	0559	1755	1816	1841
10S	0518	0543	0605	1749	1811	1836
15S	0523	0548	0610	1743	1806	1831
20S	0527	0554	0616	1737	1800	1826
25S	0532	0559	0623	1731	1755	1822
30S	0536	0605	0630	1724	1749	1817
35S	0541	0611	0637	1716	1743	1813
40S	0545	0618	0646	1708	1736	1808
45S	0550	0625	0656	1657	1728	1803
50S	0555	0634	0708	1645	1720	1758
55S	0601	0644	0723	1630	1709	1752
60S	0607	0657	0743	1610	1656	1745

MOON: RISE / SET | UTC HHMM

Lat	Day 1		Day 2		Day 3	
72N	--	0057	--	--	--	--
70N	--	0141	--	--	--	--
68N	2233	0210	--	0118	--	--
66N	2146	0233	--	0206	--	--
64N	2116	0250	2317	0237	--	0214
62N	2053	0305	2236	0300	--	0255
60N	2036	0317	2209	0319	2340	0324
58N	2021	0328	2147	0335	2310	0346
56N	2008	0338	2130	0348	2247	0404
54N	1957	0346	2115	0400	2229	0419
52N	1947	0354	2102	0410	2213	0432
50N	1938	0400	2051	0419	2200	0444
45N	1920	0415	2027	0439	2132	0508
40N	1905	0427	2009	0455	2110	0527
35N	1853	0437	1953	0508	2053	0544
30N	1842	0447	1940	0520	2037	0558
25N	1832	0455	1928	0531	2023	0610
20N	1823	0502	1917	0540	2011	0622
15N	1815	0509	1907	0549	2000	0633
10N	1807	0516	1857	0558	1949	0643
05N	1800	0523	1848	0606	1938	0653
00N	1752	0529	1839	0615	1928	0702
05S	1745	0536	1830	0623	1918	0712
10S	1738	0542	1821	0631	1907	0722
15S	1730	0549	1811	0640	1857	0732
20S	1722	0556	1802	0649	1845	0743
25S	1713	0604	1751	0659	1833	0755
30S	1704	0612	1739	0710	1820	0808
35S	1653	0622	1726	0722	1805	0822
40S	1641	0632	1712	0736	1747	0839
45S	1628	0645	1654	0753	1727	0859
50S	1611	0701	1632	0813	1700	0924
55S	1549	0720	1604	0840	1625	0959
60S	1520	0748	1523	0920	1531	1052

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
4	00	221 53.8	151 38.2	N23 14.2	204 20.6	N06 30.9	110 54.1	N22 25.9	212 19.7	N01 45.2
	01	236 56.3	166 37.4	N23 14.7	219 21.2	N06 31.6	125 56.1	N22 25.9	227 21.9	N01 45.3
	02	251 58.7	181 36.6	N23 15.2	234 21.9	N06 32.3	140 58.2	N22 25.8	242 24.1	N01 45.4
	03	267 01.2	196 35.9	N23 15.7	249 22.6	N06 33.1	156 00.3	N22 25.8	257 26.3	N01 45.5
	04	282 03.7	211 35.1	N23 16.2	264 23.3	N06 33.8	171 02.4	N22 25.7	272 28.5	N01 45.6
	05	297 06.1	226 34.3	N23 16.7	279 24.0	N06 34.6	186 04.4	N22 25.7	287 30.7	N01 45.7
	06	312 08.6	241 33.5	N23 17.2	294 24.7	N06 35.3	201 06.5	N22 25.6	302 32.9	N01 45.8
	07	327 11.1	256 32.7	N23 17.7	309 25.4	N06 36.0	216 08.6	N22 25.6	317 35.2	N01 45.9
	08	342 13.5	271 32.0	N23 18.2	324 26.1	N06 36.8	231 10.7	N22 25.5	332 37.4	N01 46.0
	09	357 16.0	286 31.2	N23 18.7	339 26.8	N06 37.5	246 12.7	N22 25.5	347 39.6	N01 46.1
	10	012 18.5	301 30.4	N23 19.2	354 27.5	N06 38.3	261 14.8	N22 25.4	002 41.8	N01 46.2
	11	027 20.9	316 29.6	N23 19.7	009 28.2	N06 39.0	276 16.9	N22 25.4	017 44.0	N01 46.3
	12	042 23.4	331 28.8	N23 20.2	024 28.9	N06 39.7	291 18.9	N22 25.3	032 46.2	N01 46.4
	13	057 25.8	346 28.1	N23 20.7	039 29.6	N06 40.5	306 21.0	N22 25.3	047 48.4	N01 46.6
	14	072 28.3	001 27.3	N23 21.2	054 30.2	N06 41.2	321 23.1	N22 25.2	062 50.6	N01 46.7
	15	087 30.8	016 26.5	N23 21.7	069 30.9	N06 42.0	336 25.2	N22 25.2	077 52.8	N01 46.8
	16	102 33.2	031 25.7	N23 22.2	084 31.6	N06 42.7	351 27.2	N22 25.1	092 55.0	N01 46.9
	17	117 35.7	046 24.9	N23 22.7	099 32.3	N06 43.4	006 29.3	N22 25.1	107 57.2	N01 47.0
	18	132 38.2	061 24.2	N23 23.2	114 33.0	N06 44.2	021 31.4	N22 25.0	122 59.4	N01 47.1
	19	147 40.6	076 23.4	N23 23.7	129 33.7	N06 44.9	036 33.4	N22 25.0	138 01.7	N01 47.2
	20	162 43.1	091 22.6	N23 24.2	144 34.4	N06 45.7	051 35.5	N22 24.9	153 03.9	N01 47.3
	21	177 45.6	106 21.8	N23 24.6	159 35.1	N06 46.4	066 37.6	N22 24.8	168 06.1	N01 47.4
	22	192 48.0	121 21.0	N23 25.1	174 35.8	N06 47.1	081 39.7	N22 24.8	183 08.3	N01 47.5
	23	207 50.5	136 20.2	N23 25.6	189 36.5	N06 47.9	096 41.7	N22 24.7	198 10.5	N01 47.6
5	00	222 53.0	151 19.5	N23 26.1	204 37.2	N06 48.6	111 43.8	N22 24.7	213 12.7	N01 47.7
	01	237 55.4	166 18.7	N23 26.6	219 37.9	N06 49.3	126 45.9	N22 24.6	228 14.9	N01 47.8
	02	252 57.9	181 17.9	N23 27.1	234 38.5	N06 50.1	141 47.9	N22 24.6	243 17.1	N01 47.9
	03	268 00.3	196 17.1	N23 27.6	249 39.2	N06 50.8	156 50.0	N22 24.5	258 19.3	N01 48.0
	04	283 02.8	211 16.3	N23 28.0	264 39.9	N06 51.6	171 52.1	N22 24.5	273 21.5	N01 48.1
	05	298 05.3	226 15.5	N23 28.5	279 40.6	N06 52.3	186 54.1	N22 24.4	288 23.7	N01 48.2
	06	313 07.7	241 14.7	N23 29.0	294 41.3	N06 53.0	201 56.2	N22 24.4	303 26.0	N01 48.3
	07	328 10.2	256 14.0	N23 29.5	309 42.0	N06 53.8	216 58.3	N22 24.3	318 28.2	N01 48.4
	08	343 12.7	271 13.2	N23 29.9	324 42.7	N06 54.5	232 00.4	N22 24.3	333 30.4	N01 48.5
	09	358 15.1	286 12.4	N23 30.4	339 43.4	N06 55.2	247 02.4	N22 24.2	348 32.6	N01 48.6
	10	013 17.6	301 11.6	N23 30.9	354 44.1	N06 56.0	262 04.5	N22 24.2	003 34.8	N01 48.7
	11	028 20.1	316 10.8	N23 31.4	009 44.8	N06 56.7	277 06.6	N22 24.1	018 37.0	N01 48.8
	12	043 22.5	331 10.0	N23 31.8	024 45.5	N06 57.5	292 08.6	N22 24.1	033 39.2	N01 48.9
	13	058 25.0	346 09.2	N23 32.3	039 46.1	N06 58.2	307 10.7	N22 24.0	048 41.4	N01 49.0
	14	073 27.5	001 08.4	N23 32.8	054 46.8	N06 58.9	322 12.8	N22 24.0	063 43.6	N01 49.1
	15	088 29.9	016 07.7	N23 33.2	069 47.5	N06 59.7	337 14.8	N22 23.9	078 45.8	N01 49.2
	16	103 32.4	031 06.9	N23 33.7	084 48.2	N07 00.4	352 16.9	N22 23.9	093 48.0	N01 49.3
	17	118 34.8	046 06.1	N23 34.2	099 48.9	N07 01.1	007 19.0	N22 23.8	108 50.3	N01 49.4
	18	133 37.3	061 05.3	N23 34.6	114 49.6	N07 01.9	022 21.0	N22 23.8	123 52.5	N01 49.5
	19	148 39.8	076 04.5	N23 35.1	129 50.3	N07 02.6	037 23.1	N22 23.7	138 54.7	N01 49.6
	20	163 42.2	091 03.7	N23 35.6	144 51.0	N07 03.3	052 25.2	N22 23.7	153 56.9	N01 49.7
	21	178 44.7	106 02.9	N23 36.0	159 51.7	N07 04.1	067 27.2	N22 23.6	168 59.1	N01 49.8
	22	193 47.2	121 02.1	N23 36.5	174 52.4	N07 04.8	082 29.3	N22 23.6	184 01.3	N01 49.9
	23	208 49.6	136 01.3	N23 36.9	189 53.1	N07 05.5	097 31.4	N22 23.5	199 03.5	N01 50.0
6	00	223 52.1	151 00.5	N23 37.4	204 53.7	N07 06.3	112 33.4	N22 23.5	214 05.7	N01 50.1
	01	238 54.6	165 59.7	N23 37.9	219 54.4	N07 07.0	127 35.5	N22 23.4	229 07.9	N01 50.2
	02	253 57.0	180 59.0	N23 38.3	234 55.1	N07 07.7	142 37.6	N22 23.3	244 10.1	N01 50.3
	03	268 59.5	195 58.2	N23 38.8	249 55.8	N07 08.5	157 39.6	N22 23.3	259 12.4	N01 50.4
	04	284 02.0	210 57.4	N23 39.2	264 56.5	N07 09.2	172 41.7	N22 23.2	274 14.6	N01 50.5
	05	299 04.4	225 56.6	N23 39.7	279 57.2	N07 09.9	187 43.7	N22 23.2	289 16.8	N01 50.6
	06	314 06.9	240 55.8	N23 40.1	294 57.9	N07 10.7	202 45.8	N22 23.1	304 19.0	N01 50.7
	07	329 09.3	255 55.0	N23 40.6	309 58.6	N07 11.4	217 47.9	N22 23.1	319 21.2	N01 50.8
	08	344 11.8	270 54.2	N23 41.0	324 59.3	N07 12.1	232 49.9	N22 23.0	334 23.4	N01 50.9
	09	359 14.3	285 53.4	N23 41.5	340 00.0	N07 12.9	247 52.0	N22 23.0	349 25.6	N01 51.0
	10	014 16.7	300 52.6	N23 41.9	355 00.7	N07 13.6	262 54.1	N22 22.9	004 27.8	N01 51.1
	11	029 19.2	315 51.8	N23 42.4	010 01.3	N07 14.3	277 56.1	N22 22.9	019 30.0	N01 51.2
	12	044 21.7	330 51.0	N23 42.8	025 02.0	N07 15.1	292 58.2	N22 22.8	034 32.3	N01 51.3
	13	059 24.1	345 50.2	N23 43.2	040 02.7	N07 15.8	308 00.3	N22 22.8	049 34.5	N01 51.4
	14	074 26.6	000 49.4	N23 43.7	055 03.4	N07 16.5	323 02.3	N22 22.7	064 36.7	N01 51.5
	15	089 29.1	015 48.6	N23 44.1	070 04.1	N07 17.3	338 04.4	N22 22.7	079 38.9	N01 51.6
	16	104 31.5	030 47.8	N23 44.6	085 04.8	N07 18.0	353 06.4	N22 22.6	094 41.1	N01 51.8
	17	119 34.0	045 47.0	N23 45.0	100 05.5	N07 18.7	008 08.5	N22 22.6	109 43.3	N01 51.9
	18	134 36.4	060 46.2	N23 45.4	115 06.2	N07 19.5	023 10.6	N22 22.5	124 45.5	N01 52.0
	19	149 38.9	075 45.5	N23 45.9	130 06.9	N07 20.2	038 12.6	N22 22.5	139 47.7	N01 52.1
	20	164 41.4	090 44.7	N23 46.3	145 07.6	N07 20.9	053 14.7	N22 22.4	154 50.0	N01 52.2
	21	179 43.8	105 43.9	N23 46.7	160 08.2	N07 21.7	068 16.7	N22 22.3	169 52.2	N01 52.3
	22	194 46.3	120 43.1	N23 47.2	175 08.9	N07 22.4	083 18.8	N22 22.3	184 54.4	N01 52.4
	23	209 48.8	135 42.3	N23 47.6	190 09.6	N07 23.1	098 20.9	N22 22.2	199 56.6	N01 52.5

Venus	Mars	Jupiter	Saturn
4: v -0.8 d 0.5	4: v 0.7 d 0.7	4: v 2.1 d -0.1	4: v 2.2 d 0.1
5: v -0.8 d 0.5	5: v 0.7 d 0.7	5: v 2.1 d -0.1	5: v 2.2 d 0.1
6: v -0.8 d 0.4	6: v 0.7 d 0.7	6: v 2.1 d -0.1	6: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.4	S40 12.0
Achernar	335 19.9	S57 06.1
Acrux	172 58.4	S63 15.0
Adhara	255 05.2	S29 00.7
Al Na'ir	027 31.7	S46 49.8
Aldebaran	290 38.7	N16 33.7
Alioth	166 11.5	N55 49.1
Alkaid	152 50.7	N49 10.9
Alnilam	275 36.9	S01 11.2
Alphard	217 46.7	S08 46.5
Alphecca	126 02.5	N26 37.4
Alpheratz	357 33.9	N29 14.0
Altair	061 58.8	N08 56.1
Ankaa	353 06.4	S42 09.7
Antares	112 14.2	S26 29.5
Arcturus	145 46.6	N19 02.6
Atria	107 07.0	S69 04.4
Avior	234 14.4	S59 35.9
Bellatrix	278 22.0	N06 22.3
Betelgeuse	270 51.2	N07 24.7
Canopus	263 52.3	S52 42.8
Capella	280 20.7	N46 01.5
Deneb	049 25.0	N45 22.2
Denebola	182 23.6	N14 25.4
Diphda	348 46.5	S17 50.5
Dubhe	193 39.4	N61 36.7
Elnath	278 00.8	N28 37.8
Eltanin	090 41.3	N51 28.8
Enif	033 37.8	N09 59.6
Fomalhaut	015 13.5	S29 28.9
Gacrux	171 50.0	S57 15.9
Gienah	175 42.2	S17 41.5
Hadar	148 33.8	S60 30.1
Hamal	327 50.3	N23 35.1
Kaus Australi	083 30.8	S34 22.2
Kochab	137 18.6	N74 02.7
Markab	013 29.0	N15 20.7
Menkar	314 05.4	N04 11.5
Menkent	147 56.0	S36 30.1
Miaplacidus	221 38.1	S69 49.8
Mirfak	308 27.2	N49 57.2
Nunki	075 46.2	S26 15.8
Peacock	053 03.9	S56 38.8
Polaris	313 58.6	N89 22.5
Pollux	243 16.1	N27 57.8
Procyon	244 49.8	N05 09.4
Rasalhague	095 57.3	N12 32.3
Regulus	207 33.2	N11 50.2
Rigel	281 03.1	S08 10.4
Rigil Kentaur	139 38.2	S60 56.7
Sabik	102 01.3	S15 45.5
Schedar	349 30.3	N56 40.7
Shaula	096 08.6	S37 07.3
Sirius	258 25.5	S16 45.3
Spica	158 20.9	S11 18.1
Suhail	222 45.5	S43 32.6
Vega	080 32.2	N38 48.2
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	287 47.5	1355
Mars	341 22.9	1021
Jupiter	248 46.1	1631
Saturn	350 16.7	0946

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
4	00	180 47.9	N15 54.4	335 49.2	S26 42.7	54.1	10.7	-4.6
	01	195 48.0	N15 55.1	350 18.8	S26 47.3	54.1	10.6	-4.5
	02	210 48.0	N15 55.8	004 48.4	S26 51.8	54.1	10.6	-4.4
	03	225 48.1	N15 56.6	019 18.0	S26 56.2	54.1	10.5	-4.3
	04	240 48.1	N15 57.3	033 47.6	S27 00.4	54.1	10.5	-4.1
	05	255 48.2	N15 58.0	048 17.1	S27 04.6	54.1	10.5	-4.0
	06	270 48.2	N15 58.7	062 46.5	S27 08.6	54.1	10.4	-3.9
	07	285 48.3	N15 59.5	077 16.0	S27 12.4	54.1	10.4	-3.7
	08	300 48.4	N16 00.2	091 45.4	S27 16.2	54.1	10.4	-3.6
	09	315 48.4	N16 00.9	106 14.8	S27 19.8	54.0	10.4	-3.5
	10	330 48.5	N16 01.6	120 44.1	S27 23.3	54.0	10.3	-3.3
	11	345 48.5	N16 02.4	135 13.5	S27 26.6	54.0	10.3	-3.2
	12	000 48.6	N16 03.1	149 42.8	S27 29.8	54.0	10.3	-3.1
	13	015 48.7	N16 03.8	164 12.0	S27 32.9	54.0	10.2	-2.9
	14	030 48.7	N16 04.5	178 41.3	S27 35.8	54.0	10.2	-2.8
	15	045 48.8	N16 05.2	193 10.5	S27 38.7	54.0	10.2	-2.7
	16	060 48.8	N16 06.0	207 39.7	S27 41.3	54.0	10.2	-2.5
	17	075 48.9	N16 06.7	222 08.9	S27 43.9	54.0	10.2	-2.4
	18	090 48.9	N16 07.4	236 38.0	S27 46.3	54.0	10.1	-2.3
	19	105 49.0	N16 08.1	251 07.2	S27 48.6	54.0	10.1	-2.1
	20	120 49.0	N16 08.8	265 36.3	S27 50.7	54.0	10.1	-2.0
	21	135 49.1	N16 09.5	280 05.4	S27 52.7	54.0	10.1	-1.9
	22	150 49.2	N16 10.3	294 34.4	S27 54.6	54.0	10.1	-1.7
	23	165 49.2	N16 11.0	309 03.5	S27 56.4	54.0	10.0	-1.6
5	00	180 49.3	N16 11.7	323 32.5	S27 58.0	54.0	10.0	-1.5
	01	195 49.3	N16 12.4	338 01.6	S27 59.5	54.0	10.0	-1.3
	02	210 49.4	N16 13.1	352 30.6	S28 00.8	54.0	10.0	-1.2
	03	225 49.4	N16 13.8	006 59.6	S28 02.0	54.0	10.0	-1.1
	04	240 49.5	N16 14.5	021 28.6	S28 03.1	54.0	10.0	-0.9
	05	255 49.5	N16 15.3	035 57.6	S28 04.0	54.0	10.0	-0.8
	06	270 49.6	N16 16.0	050 26.6	S28 04.8	54.0	10.0	-0.7
	07	285 49.6	N16 16.7	064 55.6	S28 05.5	54.0	10.0	-0.5
	08	300 49.7	N16 17.4	079 24.5	S28 06.0	54.0	10.0	-0.4
	09	315 49.7	N16 18.1	093 53.5	S28 06.4	54.0	10.0	-0.3
	10	330 49.8	N16 18.8	108 22.5	S28 06.6	54.0	10.0	-0.1
	11	345 49.9	N16 19.5	122 51.4	S28 06.8	54.0	10.0	0.0
	12	000 49.9	N16 20.2	137 20.4	S28 06.7	54.0	10.0	0.2
	13	015 50.0	N16 21.0	151 49.4	S28 06.6	54.1	10.0	0.3
	14	030 50.0	N16 21.7	166 18.3	S28 06.3	54.1	10.0	0.4
	15	045 50.1	N16 22.4	180 47.3	S28 05.9	54.1	10.0	0.6
	16	060 50.1	N16 23.1	195 16.2	S28 05.3	54.1	10.0	0.7
	17	075 50.2	N16 23.8	209 45.2	S28 04.6	54.1	10.0	0.8
	18	090 50.2	N16 24.5	224 14.2	S28 03.8	54.1	10.0	1.0
	19	105 50.3	N16 25.2	238 43.2	S28 02.8	54.1	10.0	1.1
	20	120 50.3	N16 25.9	253 12.2	S28 01.7	54.1	10.0	1.2
	21	135 50.4	N16 26.6	267 41.2	S28 00.5	54.1	10.0	1.4
	22	150 50.4	N16 27.3	282 10.2	S27 59.1	54.1	10.0	1.5
	23	165 50.5	N16 28.0	296 39.2	S27 57.6	54.1	10.0	1.6
6	00	180 50.5	N16 28.7	311 08.3	S27 55.9	54.1	10.1	1.8
	01	195 50.6	N16 29.4	325 37.3	S27 54.1	54.1	10.1	1.9
	02	210 50.6	N16 30.1	340 06.4	S27 52.2	54.1	10.1	2.1
	03	225 50.6	N16 30.8	354 35.5	S27 50.2	54.1	10.1	2.2
	04	240 50.7	N16 31.5	009 04.6	S27 48.0	54.1	10.1	2.3
	05	255 50.7	N16 32.2	023 33.7	S27 45.7	54.1	10.1	2.5
	06	270 50.8	N16 32.9	038 02.8	S27 43.2	54.1	10.2	2.6
	07	285 50.8	N16 33.6	052 32.0	S27 40.6	54.1	10.2	2.7
	08	300 50.9	N16 34.3	067 01.1	S27 37.9	54.2	10.2	2.9
	09	315 50.9	N16 35.0	081 30.3	S27 35.1	54.2	10.2	3.0
	10	330 51.0	N16 35.7	095 59.6	S27 32.1	54.2	10.2	3.1
	11	345 51.0	N16 36.4	110 28.8	S27 28.9	54.2	10.3	3.3
	12	000 51.1	N16 37.1	124 58.1	S27 25.7	54.2	10.3	3.4
	13	015 51.1	N16 37.8	139 27.4	S27 22.3	54.2	10.3	3.5
	14	030 51.2	N16 38.5	153 56.7	S27 18.8	54.2	10.3	3.6
	15	045 51.2	N16 39.2	168 26.0	S27 15.2	54.2	10.4	3.8
	16	060 51.2	N16 39.9	182 55.4	S27 11.4	54.2	10.4	3.9
	17	075 51.3	N16 40.6	197 24.8	S27 07.5	54.2	10.4	4.0
	18	090 51.3	N16 41.3	211 54.3	S27 03.4	54.2	10.5	4.2
	19	105 51.4	N16 42.0	226 23.7	S26 59.3	54.2	10.5	4.3
	20	120 51.4	N16 42.7	240 53.2	S26 55.0	54.3	10.5	4.4
	21	135 51.5	N16 43.4	255 22.8	S26 50.5	54.3	10.6	4.6
	22	150 51.5	N16 44.1	269 52.3	S26 46.0	54.3	10.6	4.7
	23	165 51.6	N16 44.8	284 21.9	S26 41.3	54.3	10.6	4.8

Day 4 noon Sun: v 0.1 d 0.7 SD 15.9 | Moon SD 14.7

Day 5 noon Sun: v 0.1 d 0.7 SD 15.9 | Moon SD 14.7

Day 6 noon Sun: v 0.0 d 0.7 SD 15.9 | Moon SD 14.8

SUN: MAY 5 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	0114	2250	--	--
70N	--	--	0207	2152	--	--
68N	--	--	0239	2118	--	--
66N	--	0129	0302	2054	2231	--
64N	--	0206	0320	2036	2151	--
62N	--	0232	0335	2020	2124	--
60N	0119	0252	0347	2008	2104	2241
58N	0153	0308	0358	1957	2047	2204
56N	0217	0322	0407	1947	2034	2139
54N	0236	0333	0416	1939	2022	2120
52N	0251	0343	0423	1931	2011	2104
50N	0304	0352	0430	1925	2002	2051
45N	0330	0411	0444	1910	1943	2025
40N	0349	0426	0455	1859	1928	2005
35N	0405	0438	0505	1849	1916	1949
30N	0418	0448	0514	1840	1906	1936
25N	0429	0457	0522	1832	1856	1925
20N	0438	0505	0529	1825	1848	1916
15N	0446	0513	0535	1818	1841	1907
10N	0454	0519	0541	1812	1834	1900
05N	0500	0526	0547	1806	1828	1853
00N	0507	0532	0553	1800	1822	1847
05S	0512	0537	0559	1754	1816	1841
10S	0518	0543	0605	1748	1810	1835
15S	0523	0549	0611	1742	1804	1830
20S	0528	0554	0617	1736	1759	1825
25S	0533	0600	0624	1729	1753	1820
30S	0538	0606	0631	1722	1747	1815
35S	0543	0613	0640	1713	1740	1810
40S	0548	0620	0649	1704	1733	1805
45S	0553	0628	0700	1653	1724	1759
50S	0559	0638	0712	1640	1715	1754
55S	0606	0649	0729	1624	1703	1747
60S	0613	0704	0750	1602	1649	1739

MOON: RISE / SET | UTC HHMM

Lat	Day 4		Day 5		Day 6	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	--	--	--	--
62N	0026	0248	--	--	0303	0344
60N	--	0335	0058	0403	0147	0501
58N	--	0405	0021	0440	0111	0536
56N	2354	0428	--	0506	0045	0602
54N	2334	0447	--	0527	0025	0622
52N	2316	0503	--	0545	0008	0639
50N	2301	0516	2353	0559	--	0654
45N	2231	0544	2323	0630	--	0724
40N	2208	0607	2300	0653	2344	0747
35N	2149	0625	2241	0712	2326	0806
30N	2132	0641	2224	0729	2311	0822
25N	2118	0655	2209	0744	2257	0836
20N	2105	0708	2156	0757	2245	0849
15N	2052	0719	2144	0809	2233	0901
10N	2041	0731	2132	0821	2222	0913
05N	2030	0742	2121	0832	2211	0924
00N	2019	0752	2110	0843	2201	0935
05S	2008	0803	2059	0855	2150	0946
10S	1956	0814	2048	0906	2140	0957
15S	1945	0825	2036	0918	2129	1008
20S	1933	0837	2024	0930	2117	1020
25S	1920	0850	2011	0943	2105	1033
30S	1905	0904	1956	0958	2051	1047
35S	1849	0920	1939	1014	2035	1103
40S	1830	0939	1920	1034	2017	1122
45S	1807	1001	1857	1057	1955	1144
50S	1738	1030	1827	1127	1927	1212
55S	1658	1110	1745	1209	1848	1252
60S	1550	1218	1632	1322	1744	1356

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | MAY 7 - MAY 9

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
7	00	224 51.2	150 41.5	N23 48.0	205 10.3	N07 23.9	113 22.9	N22 22.2	214 58.8	N01 52.6
	01	239 53.7	165 40.7	N23 48.5	220 11.0	N07 24.6	128 25.0	N22 22.1	230 01.0	N01 52.7
	02	254 56.2	180 39.9	N23 48.9	235 11.7	N07 25.3	143 27.0	N22 22.1	245 03.2	N01 52.8
	03	269 58.6	195 39.1	N23 49.3	250 12.4	N07 26.1	158 29.1	N22 22.0	260 05.4	N01 52.9
	04	285 01.1	210 38.3	N23 49.7	265 13.1	N07 26.8	173 31.2	N22 22.0	275 07.6	N01 53.0
	05	300 03.6	225 37.5	N23 50.2	280 13.8	N07 27.5	188 33.2	N22 21.9	290 09.9	N01 53.1
	06	315 06.0	240 36.7	N23 50.6	295 14.5	N07 28.2	203 35.3	N22 21.9	305 12.1	N01 53.2
	07	330 08.5	255 35.9	N23 51.0	310 15.1	N07 29.0	218 37.3	N22 21.8	320 14.3	N01 53.3
	08	345 10.9	270 35.1	N23 51.4	325 15.8	N07 29.7	233 39.4	N22 21.8	335 16.5	N01 53.4
	09	000 13.4	285 34.3	N23 51.9	340 16.5	N07 30.4	248 41.5	N22 21.7	350 18.7	N01 53.5
	10	015 15.9	300 33.5	N23 52.3	355 17.2	N07 31.2	263 43.5	N22 21.7	005 20.9	N01 53.6
	11	030 18.3	315 32.7	N23 52.7	010 17.9	N07 31.9	278 45.6	N22 21.6	020 23.1	N01 53.7
	12	045 20.8	330 31.9	N23 53.1	025 18.6	N07 32.6	293 47.6	N22 21.5	035 25.3	N01 53.8
	13	060 23.3	345 31.1	N23 53.5	040 19.3	N07 33.4	308 49.7	N22 21.5	050 27.6	N01 53.9
	14	075 25.7	000 30.3	N23 53.9	055 20.0	N07 34.1	323 51.7	N22 21.4	065 29.8	N01 54.0
	15	090 28.2	015 29.5	N23 54.3	070 20.7	N07 34.8	338 53.8	N22 21.4	080 32.0	N01 54.1
	16	105 30.7	030 28.7	N23 54.8	085 21.4	N07 35.5	353 55.9	N22 21.3	095 34.2	N01 54.2
	17	120 33.1	045 27.9	N23 55.2	100 22.0	N07 36.3	008 57.9	N22 21.3	110 36.4	N01 54.3
	18	135 35.6	060 27.1	N23 55.6	115 22.7	N07 37.0	024 00.0	N22 21.2	125 38.6	N01 54.4
	19	150 38.1	075 26.3	N23 56.0	130 23.4	N07 37.7	039 02.0	N22 21.2	140 40.8	N01 54.5
	20	165 40.5	090 25.5	N23 56.4	145 24.1	N07 38.5	054 04.1	N22 21.1	155 43.1	N01 54.6
	21	180 43.0	105 24.7	N23 56.8	160 24.8	N07 39.2	069 06.1	N22 21.1	170 45.3	N01 54.7
	22	195 45.4	120 23.8	N23 57.2	175 25.5	N07 39.9	084 08.2	N22 21.0	185 47.5	N01 54.8
	23	210 47.9	135 23.0	N23 57.6	190 26.2	N07 40.6	099 10.3	N22 20.9	200 49.7	N01 54.9
8	00	225 50.4	150 22.2	N23 58.0	205 26.9	N07 41.4	114 12.3	N22 20.9	215 51.9	N01 55.0
	01	240 52.8	165 21.4	N23 58.4	220 27.6	N07 42.1	129 14.4	N22 20.8	230 54.1	N01 55.1
	02	255 55.3	180 20.6	N23 58.8	235 28.3	N07 42.8	144 16.4	N22 20.8	245 56.3	N01 55.2
	03	270 57.8	195 19.8	N23 59.2	250 28.9	N07 43.5	159 18.5	N22 20.7	260 58.6	N01 55.3
	04	286 00.2	210 19.0	N23 59.6	265 29.6	N07 44.3	174 20.5	N22 20.7	276 00.8	N01 55.4
	05	301 02.7	225 18.2	N24 00.0	280 30.3	N07 45.0	189 22.6	N22 20.6	291 03.0	N01 55.5
	06	316 05.2	240 17.4	N24 00.4	295 31.0	N07 45.7	204 24.6	N22 20.6	306 05.2	N01 55.6
	07	331 07.6	255 16.6	N24 00.8	310 31.7	N07 46.5	219 26.7	N22 20.5	321 07.4	N01 55.7
	08	346 10.1	270 15.8	N24 01.2	325 32.4	N07 47.2	234 28.7	N22 20.5	336 09.6	N01 55.8
	09	001 12.6	285 15.0	N24 01.6	340 33.1	N07 47.9	249 30.8	N22 20.4	351 11.8	N01 55.9
	10	016 15.0	300 14.2	N24 02.0	355 33.8	N07 48.6	264 32.9	N22 20.3	006 14.1	N01 56.0
	11	031 17.5	315 13.4	N24 02.3	010 34.5	N07 49.4	279 34.9	N22 20.3	021 16.3	N01 56.1
	12	046 19.9	330 12.6	N24 02.7	025 35.1	N07 50.1	294 37.0	N22 20.2	036 18.5	N01 56.2
	13	061 22.4	345 11.8	N24 03.1	040 35.8	N07 50.8	309 39.0	N22 20.2	051 20.7	N01 56.3
	14	076 24.9	000 11.0	N24 03.5	055 36.5	N07 51.5	324 41.1	N22 20.1	066 22.9	N01 56.4
	15	091 27.3	015 10.2	N24 03.9	070 37.2	N07 52.3	339 43.1	N22 20.1	081 25.1	N01 56.5
	16	106 29.8	030 09.3	N24 04.3	085 37.9	N07 53.0	354 45.2	N22 20.0	096 27.3	N01 56.6
	17	121 32.3	045 08.5	N24 04.7	100 38.6	N07 53.7	009 47.2	N22 20.0	111 29.6	N01 56.7
	18	136 34.7	060 07.7	N24 05.0	115 39.3	N07 54.4	024 49.3	N22 19.9	126 31.8	N01 56.8
	19	151 37.2	075 06.9	N24 05.4	130 40.0	N07 55.2	039 51.3	N22 19.9	141 34.0	N01 56.9
	20	166 39.7	090 06.1	N24 05.8	145 40.7	N07 55.9	054 53.4	N22 19.8	156 36.2	N01 57.0
	21	181 42.1	105 05.3	N24 06.2	160 41.3	N07 56.6	069 55.4	N22 19.7	171 38.4	N01 57.1
	22	196 44.6	120 04.5	N24 06.5	175 42.0	N07 57.3	084 57.5	N22 19.7	186 40.6	N01 57.2
	23	211 47.1	135 03.7	N24 06.9	190 42.7	N07 58.1	099 59.5	N22 19.6	201 42.8	N01 57.3
9	00	226 49.5	150 02.9	N24 07.3	205 43.4	N07 58.8	115 01.6	N22 19.6	216 45.1	N01 57.4
	01	241 52.0	165 02.1	N24 07.7	220 44.1	N07 59.5	130 03.6	N22 19.5	231 47.3	N01 57.4
	02	256 54.4	180 01.3	N24 08.0	235 44.8	N08 00.2	145 05.7	N22 19.5	246 49.5	N01 57.5
	03	271 56.9	195 00.4	N24 08.4	250 45.5	N08 00.9	160 07.7	N22 19.4	261 51.7	N01 57.6
	04	286 59.4	209 59.6	N24 08.8	265 46.2	N08 01.7	175 09.8	N22 19.4	276 53.9	N01 57.7
	05	302 01.8	224 58.8	N24 09.1	280 46.8	N08 02.4	190 11.8	N22 19.3	291 56.1	N01 57.8
	06	317 04.3	239 58.0	N24 09.5	295 47.5	N08 03.1	205 13.9	N22 19.2	306 58.4	N01 57.9
	07	332 06.8	254 57.2	N24 09.9	310 48.2	N08 03.8	220 15.9	N22 19.2	322 00.6	N01 58.0
	08	347 09.2	269 56.4	N24 10.2	325 48.9	N08 04.6	235 18.0	N22 19.1	337 02.8	N01 58.1
	09	002 11.7	284 55.6	N24 10.6	340 49.6	N08 05.3	250 20.0	N22 19.1	352 05.0	N01 58.2
	10	017 14.2	299 54.8	N24 11.0	355 50.3	N08 06.0	265 22.1	N22 19.0	007 07.2	N01 58.3
	11	032 16.6	314 54.0	N24 11.3	010 51.0	N08 06.7	280 24.1	N22 19.0	022 09.4	N01 58.4
	12	047 19.1	329 53.1	N24 11.7	025 51.7	N08 07.5	295 26.2	N22 18.9	037 11.7	N01 58.5
	13	062 21.5	344 52.3	N24 12.0	040 52.4	N08 08.2	310 28.2	N22 18.9	052 13.9	N01 58.6
	14	077 24.0	359 51.5	N24 12.4	055 53.0	N08 08.9	325 30.3	N22 18.8	067 16.1	N01 58.7
	15	092 26.5	014 50.7	N24 12.8	070 53.7	N08 09.6	340 32.3	N22 18.7	082 18.3	N01 58.8
	16	107 28.9	029 49.9	N24 13.1	085 54.4	N08 10.3	355 34.4	N22 18.7	097 20.5	N01 58.9
	17	122 31.4	044 49.1	N24 13.5	100 55.1	N08 11.1	010 36.4	N22 18.6	112 22.7	N01 59.0
	18	137 33.9	059 48.3	N24 13.8	115 55.8	N08 11.8	025 38.5	N22 18.6	127 25.0	N01 59.1
	19	152 36.3	074 47.5	N24 14.2	130 56.5	N08 12.5	040 40.5	N22 18.5	142 27.2	N01 59.2
	20	167 38.8	089 46.6	N24 14.5	145 57.2	N08 13.2	055 42.6	N22 18.5	157 29.4	N01 59.3
	21	182 41.3	104 45.8	N24 14.9	160 57.9	N08 13.9	070 44.6	N22 18.4	172 31.6	N01 59.4
	22	197 43.7	119 45.0	N24 15.2	175 58.5	N08 14.7	085 46.7	N22 18.3	187 33.8	N01 59.5
	23	212 46.2	134 44.2	N24 15.6	190 59.2	N08 15.4	100 48.7	N22 18.3	202 36.0	N01 59.6

Venus	Mars	Jupiter	Saturn
7: v -0.8 d 0.4	7: v 0.7 d 0.7	7: v 2.1 d -0.1	7: v 2.2 d 0.1
8: v -0.8 d 0.4	8: v 0.7 d 0.7	8: v 2.1 d -0.1	8: v 2.2 d 0.1
9: v -0.8 d 0.4	9: v 0.7 d 0.7	9: v 2.0 d -0.1	9: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.4	S40 11.9
Achernar	335 19.9	S57 06.1
Acrux	172 58.4	S63 15.0
Adhara	255 05.2	S29 00.7
Al Na'ir	027 31.7	S46 49.8
Aldebaran	290 38.7	N16 33.7
Alioth	166 11.5	N55 49.1
Alkaid	152 50.7	N49 10.9
Alnilam	275 36.9	S01 11.2
Alphard	217 46.7	S08 46.5
Alphecca	126 02.5	N26 37.4
Alpheratz	357 33.9	N29 14.0
Altair	061 58.8	N08 56.1
Ankaa	353 06.4	S42 09.6
Antares	112 14.2	S26 29.5
Arcturus	145 46.6	N19 02.6
Atria	107 06.9	S69 04.4
Avior	234 14.5	S59 35.9
Bellatrix	278 22.0	N06 22.4
Betelgeuse	270 51.2	N07 24.7
Canopus	263 52.3	S52 42.8
Capella	280 20.7	N46 01.5
Deneb	049 25.0	N45 22.2
Denebola	182 23.6	N14 25.4
Diphda	348 46.5	S17 50.5
Dubhe	193 39.4	N61 36.7
Elnath	278 00.8	N28 37.8
Eltanin	090 41.3	N51 28.8
Enif	033 37.8	N09 59.6
Fomalhaut	015 13.5	S29 28.9
Gacrux	171 50.0	S57 15.9
Gienah	175 42.2	S17 41.5
Hadar	148 33.8	S60 30.2
Hamal	327 50.3	N23 35.1
Kaus Australi	083 30.8	S34 22.2
Kochab	137 18.6	N74 02.8
Markab	013 29.0	N15 20.7
Menkar	314 05.3	N04 11.5
Menkent	147 56.0	S36 30.1
Miaplacidus	221 38.1	S69 49.8
Mirfak	308 27.2	N49 57.2
Nunki	075 46.2	S26 15.8
Peacock	053 03.9	S56 38.8
Polaris	313 58.4	N89 22.5
Pollux	243 16.1	N27 57.8
Procyon	244 49.8	N05 09.4
Rasalhague	095 57.3	N12 32.3
Regulus	207 33.2	N11 50.2
Rigel	281 03.1	S08 10.4
Rigil Kentaur	139 38.1	S60 56.8
Sabik	102 01.2	S15 45.5
Schedar	349 30.3	N56 40.7
Shaula	096 08.6	S37 07.3
Sirius	258 25.5	S16 45.3
Spica	158 20.9	S11 18.1
Suhail	222 45.5	S43 32.6
Vega	080 32.2	N38 48.2
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	283 52.6	1359
Mars	339 15.2	1018
Jupiter	248 17.0	1621
Saturn	349 58.5	0935

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
7	00	180 51.6	N16 45.5	298 51.6	S26 36.5	54.3	10.7	4.9
	01	195 51.6	N16 46.2	313 21.2	S26 31.6	54.3	10.7	5.1
	02	210 51.7	N16 46.9	327 50.9	S26 26.5	54.3	10.7	5.2
	03	225 51.7	N16 47.6	342 20.7	S26 21.3	54.3	10.8	5.3
	04	240 51.8	N16 48.2	356 50.4	S26 16.0	54.4	10.8	5.4
	05	255 51.8	N16 48.9	011 20.3	S26 10.5	54.4	10.9	5.6
	06	270 51.8	N16 49.6	025 50.1	S26 05.0	54.4	10.9	5.7
	07	285 51.9	N16 50.3	040 20.0	S25 59.3	54.4	10.9	5.8
	08	300 51.9	N16 51.0	054 49.9	S25 53.5	54.4	11.0	5.9
	09	315 52.0	N16 51.7	069 19.9	S25 47.5	54.4	11.0	6.1
	10	330 52.0	N16 52.4	083 49.9	S25 41.5	54.4	11.1	6.2
	11	345 52.0	N16 53.1	098 20.0	S25 35.3	54.4	11.1	6.3
	12	000 52.1	N16 53.8	112 50.1	S25 29.0	54.5	11.1	6.4
	13	015 52.1	N16 54.4	127 20.2	S25 22.5	54.5	11.2	6.5
	14	030 52.2	N16 55.1	141 50.4	S25 16.0	54.5	11.2	6.7
	15	045 52.2	N16 55.8	156 20.6	S25 09.3	54.5	11.3	6.8
	16	060 52.2	N16 56.5	170 50.9	S25 02.5	54.5	11.3	6.9
	17	075 52.3	N16 57.2	185 21.2	S24 55.6	54.5	11.4	7.0
	18	090 52.3	N16 57.9	199 51.5	S24 48.6	54.6	11.4	7.1
	19	105 52.4	N16 58.6	214 21.9	S24 41.4	54.6	11.4	7.3
	20	120 52.4	N16 59.2	228 52.4	S24 34.2	54.6	11.5	7.4
	21	135 52.4	N16 59.9	243 22.9	S24 26.8	54.6	11.5	7.5
	22	150 52.5	N17 00.6	257 53.4	S24 19.3	54.6	11.6	7.6
	23	165 52.5	N17 01.3	272 24.0	S24 11.7	54.6	11.6	7.7
8	00	180 52.5	N17 02.0	286 54.6	S24 04.0	54.7	11.7	7.8
	01	195 52.6	N17 02.6	301 25.2	S23 56.1	54.7	11.7	8.0
	02	210 52.6	N17 03.3	315 56.0	S23 48.2	54.7	11.8	8.1
	03	225 52.6	N17 04.0	330 26.7	S23 40.1	54.7	11.8	8.2
	04	240 52.7	N17 04.7	344 57.5	S23 31.9	54.7	11.8	8.3
	05	255 52.7	N17 05.4	359 28.4	S23 23.6	54.8	11.9	8.4
	06	270 52.8	N17 06.0	013 59.3	S23 15.2	54.8	11.9	8.5
	07	285 52.8	N17 06.7	028 30.2	S23 06.7	54.8	12.0	8.6
	08	300 52.8	N17 07.4	043 01.2	S22 58.1	54.8	12.0	8.7
	09	315 52.9	N17 08.1	057 32.2	S22 49.3	54.8	12.1	8.8
	10	330 52.9	N17 08.7	072 03.3	S22 40.5	54.9	12.1	9.0
	11	345 52.9	N17 09.4	086 34.4	S22 31.5	54.9	12.2	9.1
	12	000 53.0	N17 10.1	101 05.6	S22 22.5	54.9	12.2	9.2
	13	015 53.0	N17 10.8	115 36.8	S22 13.3	54.9	12.3	9.3
	14	030 53.0	N17 11.4	130 08.1	S22 04.0	54.9	12.3	9.4
	15	045 53.1	N17 12.1	144 39.4	S21 54.7	55.0	12.4	9.5
	16	060 53.1	N17 12.8	159 10.7	S21 45.2	55.0	12.4	9.6
	17	075 53.1	N17 13.5	173 42.1	S21 35.6	55.0	12.4	9.7
	18	090 53.2	N17 14.1	188 13.6	S21 25.9	55.0	12.5	9.8
	19	105 53.2	N17 14.8	202 45.0	S21 16.1	55.0	12.5	9.9
	20	120 53.2	N17 15.5	217 16.6	S21 06.2	55.1	12.6	10.0
	21	135 53.2	N17 16.2	231 48.1	S20 56.2	55.1	12.6	10.1
	22	150 53.3	N17 16.8	246 19.8	S20 46.1	55.1	12.7	10.2
	23	165 53.3	N17 17.5	260 51.4	S20 35.9	55.1	12.7	10.3
9	00	180 53.3	N17 18.2	275 23.1	S20 25.6	55.2	12.7	10.4
	01	195 53.4	N17 18.8	289 54.9	S20 15.2	55.2	12.8	10.5
	02	210 53.4	N17 19.5	304 26.7	S20 04.7	55.2	12.8	10.6
	03	225 53.4	N17 20.2	318 58.5	S19 54.1	55.2	12.9	10.7
	04	240 53.5	N17 20.8	333 30.4	S19 43.4	55.3	12.9	10.8
	05	255 53.5	N17 21.5	348 02.3	S19 32.7	55.3	13.0	10.9
	06	270 53.5	N17 22.2	002 34.2	S19 21.8	55.3	13.0	11.0
	07	285 53.5	N17 22.8	017 06.2	S19 10.8	55.3	13.0	11.1
	08	300 53.6	N17 23.5	031 38.2	S18 59.7	55.4	13.1	11.2
	09	315 53.6	N17 24.2	046 10.3	S18 48.6	55.4	13.1	11.3
	10	330 53.6	N17 24.8	060 42.4	S18 37.3	55.4	13.1	11.3
	11	345 53.7	N17 25.5	075 14.6	S18 26.0	55.4	13.2	11.4
	12	000 53.7	N17 26.2	089 46.8	S18 14.5	55.5	13.2	11.5
	13	015 53.7	N17 26.8	104 19.0	S18 03.0	55.5	13.3	11.6
	14	030 53.7	N17 27.5	118 51.2	S17 51.4	55.5	13.3	11.7
	15	045 53.8	N17 28.1	133 23.5	S17 39.7	55.6	13.3	11.8
	16	060 53.8	N17 28.8	147 55.9	S17 27.9	55.6	13.4	11.9
	17	075 53.8	N17 29.5	162 28.2	S17 16.0	55.6	13.4	12.0
	18	090 53.8	N17 30.1	177 00.6	S17 04.0	55.6	13.4	12.1
	19	105 53.9	N17 30.8	191 33.1	S16 52.0	55.7	13.5	12.1
	20	120 53.9	N17 31.4	206 05.5	S16 39.8	55.7	13.5	12.2
	21	135 53.9	N17 32.1	220 38.0	S16 27.6	55.7	13.5	12.3
	22	150 53.9	N17 32.8	235 10.5	S16 15.3	55.8	13.6	12.4
	23	165 54.0	N17 33.4	249 43.1	S16 02.9	55.8	13.6	12.5

Day 7 noon Sun: v 0.0 d 0.7 SD 15.9 | Moon SD 14.8

Day 8 noon Sun: v 0.0 d 0.7 SD 15.8 | Moon SD 15.0

Day 9 noon Sun: v 0.0 d 0.7 SD 15.8 | Moon SD 15.1

SUN: MAY 8 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	0025	--	--	--
70N	--	--	0147	2213	--	--
68N	--	--	0224	2133	--	--
66N	--	0104	0250	2106	2259	--
64N	--	0151	0310	2045	2207	--
62N	--	0220	0326	2029	2136	--
60N	0057	0242	0340	2015	2113	2305
58N	0139	0300	0351	2003	2055	2218
56N	0206	0314	0401	1953	2041	2150
54N	0227	0327	0410	1944	2028	2128
52N	0243	0337	0418	1936	2017	2111
50N	0257	0347	0425	1929	2007	2057
45N	0325	0406	0440	1914	1947	2029
40N	0345	0422	0452	1902	1932	2009
35N	0402	0435	0502	1851	1919	1952
30N	0415	0446	0512	1842	1908	1939
25N	0426	0455	0520	1834	1858	1927
20N	0436	0504	0527	1826	1850	1917
15N	0445	0511	0534	1819	1842	1908
10N	0453	0518	0541	1813	1835	1900
05N	0500	0525	0547	1806	1828	1853
00N	0506	0531	0553	1800	1822	1847
05S	0512	0537	0559	1754	1815	1841
10S	0518	0543	0605	1747	1809	1835
15S	0524	0549	0612	1741	1803	1829
20S	0529	0555	0618	1734	1757	1824
25S	0534	0602	0626	1727	1751	1818
30S	0540	0608	0633	1719	1744	1813
35S	0545	0615	0642	1711	1737	1808
40S	0551	0623	0652	1701	1729	1802
45S	0556	0632	0703	1649	1721	1756
50S	0603	0642	0717	1636	1710	1749
55S	0610	0654	0734	1618	1658	1742
60S	0619	0710	0757	1555	1642	1733

MOON: RISE / SET | UTC HHMM

Lat	Day 7		Day 8		Day 9	
72N	--	--	--	--	--	--
70N	--	--	--	--	0503	0655
68N	--	--	--	--	0359	0757
66N	--	--	0416	0601	0323	0832
64N	--	--	0316	0700	0257	0856
62N	0248	0545	0242	0733	0237	0916
60N	0208	0625	0217	0758	0221	0932
58N	0141	0652	0157	0817	0206	0945
56N	0119	0713	0140	0833	0154	0956
54N	0101	0731	0126	0847	0144	1006
52N	0046	0746	0114	0859	0134	1015
50N	0033	0758	0103	0909	0126	1023
45N	0006	0825	0040	0931	0108	1040
40N	--	0846	0021	0949	0053	1053
35N	--	0903	0006	1003	0040	1105
30N	2352	0918	--	1016	0029	1115
25N	2340	0931	--	1027	0019	1124
20N	2329	0943	--	1038	0010	1132
15N	2319	0954	--	1047	0002	1139
10N	2309	1005	2354	1056	--	1147
05N	2300	1015	2346	1105	--	1154
00N	2251	1025	2338	1114	--	1200
05S	2241	1035	2330	1122	--	1207
10S	2232	1045	2323	1131	--	1214
15S	2222	1056	2314	1140	--	1221
20S	2211	1107	2306	1149	2400	1229
25S	2200	1118	2257	1159	2353	1237
30S	2148	1131	2246	1210	2345	1245
35S	2134	1146	2235	1223	2337	1255
40S	2118	1202	2222	1237	2327	1306
45S	2059	1222	2206	1253	2316	1318
50S	2035	1247	2147	1314	2302	1334
55S	2003	1321	2122	1340	2244	1353
60S	1914	1411	2047	1417	2220	1419

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | MAY 10 - MAY 12

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
10	00	227 48.7	149 43.4	N24 15.9	205 59.9	N08 16.1	115 50.7	N22 18.2	217 38.3	N01 59.7
	01	242 51.1	164 42.6	N24 16.3	221 00.6	N08 16.8	130 52.8	N22 18.2	232 40.5	N01 59.8
	02	257 53.6	179 41.8	N24 16.6	236 01.3	N08 17.5	145 54.8	N22 18.1	247 42.7	N01 59.9
	03	272 56.0	194 40.9	N24 16.9	251 02.0	N08 18.3	160 56.9	N22 18.1	262 44.9	N02 00.0
	04	287 58.5	209 40.1	N24 17.3	266 02.7	N08 19.0	175 58.9	N22 18.0	277 47.1	N02 00.1
	05	303 01.0	224 39.3	N24 17.6	281 03.4	N08 19.7	191 01.0	N22 17.9	292 49.3	N02 00.2
	06	318 03.4	239 38.5	N24 18.0	296 04.0	N08 20.4	206 03.0	N22 17.9	307 51.6	N02 00.3
	07	333 05.9	254 37.7	N24 18.3	311 04.7	N08 21.1	221 05.1	N22 17.8	322 53.8	N02 00.4
	08	348 08.4	269 36.9	N24 18.6	326 05.4	N08 21.9	236 07.1	N22 17.8	337 56.0	N02 00.5
	09	003 10.8	284 36.0	N24 19.0	341 06.1	N08 22.6	251 09.2	N22 17.7	352 58.2	N02 00.6
	10	018 13.3	299 35.2	N24 19.3	356 06.8	N08 23.3	266 11.2	N22 17.7	008 00.4	N02 00.7
	11	033 15.8	314 34.4	N24 19.6	011 07.5	N08 24.0	281 13.2	N22 17.6	023 02.6	N02 00.8
	12	048 18.2	329 33.6	N24 20.0	026 08.2	N08 24.7	296 15.3	N22 17.6	038 04.9	N02 00.9
	13	063 20.7	344 32.8	N24 20.3	041 08.9	N08 25.4	311 17.3	N22 17.5	053 07.1	N02 01.0
	14	078 23.2	359 32.0	N24 20.6	056 09.5	N08 26.2	326 19.4	N22 17.4	068 09.3	N02 01.1
	15	093 25.6	014 31.1	N24 21.0	071 10.2	N08 26.9	341 21.4	N22 17.4	083 11.5	N02 01.2
	16	108 28.1	029 30.3	N24 21.3	086 10.9	N08 27.6	356 23.5	N22 17.3	098 13.7	N02 01.3
	17	123 30.5	044 29.5	N24 21.6	101 11.6	N08 28.3	011 25.5	N22 17.3	113 16.0	N02 01.4
	18	138 33.0	059 28.7	N24 21.9	116 12.3	N08 29.0	026 27.5	N22 17.2	128 18.2	N02 01.5
	19	153 35.5	074 27.9	N24 22.2	131 13.0	N08 29.7	041 29.6	N22 17.2	143 20.4	N02 01.6
	20	168 37.9	089 27.0	N24 22.6	146 13.7	N08 30.5	056 31.6	N22 17.1	158 22.6	N02 01.7
	21	183 40.4	104 26.2	N24 22.9	161 14.3	N08 31.2	071 33.7	N22 17.0	173 24.8	N02 01.8
	22	198 42.9	119 25.4	N24 23.2	176 15.0	N08 31.9	086 35.7	N22 17.0	188 27.1	N02 01.9
	23	213 45.3	134 24.6	N24 23.5	191 15.7	N08 32.6	101 37.8	N22 16.9	203 29.3	N02 02.0
11	00	228 47.8	149 23.8	N24 23.8	206 16.4	N08 33.3	116 39.8	N22 16.9	218 31.5	N02 02.1
	01	243 50.3	164 23.0	N24 24.2	221 17.1	N08 34.0	131 41.8	N22 16.8	233 33.7	N02 02.2
	02	258 52.7	179 22.1	N24 24.5	236 17.8	N08 34.8	146 43.9	N22 16.7	248 35.9	N02 02.2
	03	273 55.2	194 21.3	N24 24.8	251 18.5	N08 35.5	161 45.9	N22 16.7	263 38.1	N02 02.3
	04	288 57.6	209 20.5	N24 25.1	266 19.2	N08 36.2	176 48.0	N22 16.6	278 40.4	N02 02.4
	05	304 00.1	224 19.7	N24 25.4	281 19.8	N08 36.9	191 50.0	N22 16.6	293 42.6	N02 02.5
	06	319 02.6	239 18.9	N24 25.7	296 20.5	N08 37.6	206 52.0	N22 16.5	308 44.8	N02 02.6
	07	334 05.0	254 18.0	N24 26.0	311 21.2	N08 38.3	221 54.1	N22 16.5	323 47.0	N02 02.7
	08	349 07.5	269 17.2	N24 26.3	326 21.9	N08 39.0	236 56.1	N22 16.4	338 49.2	N02 02.8
	09	004 10.0	284 16.4	N24 26.6	341 22.6	N08 39.8	251 58.2	N22 16.3	353 51.5	N02 02.9
	10	019 12.4	299 15.6	N24 26.9	356 23.3	N08 40.5	267 00.2	N22 16.3	008 53.7	N02 03.0
	11	034 14.9	314 14.8	N24 27.3	011 24.0	N08 41.2	282 02.2	N22 16.2	023 55.9	N02 03.1
	12	049 17.4	329 13.9	N24 27.6	026 24.6	N08 41.9	297 04.3	N22 16.2	038 58.1	N02 03.2
	13	064 19.8	344 13.1	N24 27.9	041 25.3	N08 42.6	312 06.3	N22 16.1	054 00.3	N02 03.3
	14	079 22.3	359 12.3	N24 28.2	056 26.0	N08 43.3	327 08.4	N22 16.1	069 02.6	N02 03.4
	15	094 24.8	014 11.5	N24 28.5	071 26.7	N08 44.0	342 10.4	N22 16.0	084 04.8	N02 03.5
	16	109 27.2	029 10.6	N24 28.8	086 27.4	N08 44.8	357 12.4	N22 15.9	099 07.0	N02 03.6
	17	124 29.7	044 09.8	N24 29.0	101 28.1	N08 45.5	012 14.5	N22 15.9	114 09.2	N02 03.7
	18	139 32.1	059 09.0	N24 29.3	116 28.8	N08 46.2	027 16.5	N22 15.8	129 11.4	N02 03.8
	19	154 34.6	074 08.2	N24 29.6	131 29.4	N08 46.9	042 18.6	N22 15.8	144 13.7	N02 03.9
	20	169 37.1	089 07.4	N24 29.9	146 30.1	N08 47.6	057 20.6	N22 15.7	159 15.9	N02 04.0
	21	184 39.5	104 06.5	N24 30.2	161 30.8	N08 48.3	072 22.6	N22 15.6	174 18.1	N02 04.1
	22	199 42.0	119 05.7	N24 30.5	176 31.5	N08 49.0	087 24.7	N22 15.6	189 20.3	N02 04.2
	23	214 44.5	134 04.9	N24 30.8	191 32.2	N08 49.7	102 26.7	N22 15.5	204 22.5	N02 04.3
12	00	229 46.9	149 04.1	N24 31.1	206 32.9	N08 50.5	117 28.7	N22 15.5	219 24.8	N02 04.4
	01	244 49.4	164 03.2	N24 31.4	221 33.6	N08 51.2	132 30.8	N22 15.4	234 27.0	N02 04.5
	02	259 51.9	179 02.4	N24 31.7	236 34.2	N08 51.9	147 32.8	N22 15.4	249 29.2	N02 04.6
	03	274 54.3	194 01.6	N24 31.9	251 34.9	N08 52.6	162 34.8	N22 15.3	264 31.4	N02 04.7
	04	289 56.8	209 00.8	N24 32.2	266 35.6	N08 53.3	177 36.9	N22 15.2	279 33.7	N02 04.8
	05	304 59.2	223 59.9	N24 32.5	281 36.3	N08 54.0	192 38.9	N22 15.2	294 35.9	N02 04.9
	06	320 01.7	238 59.1	N24 32.8	296 37.0	N08 54.7	207 41.0	N22 15.1	309 38.1	N02 04.9
	07	335 04.2	253 58.3	N24 33.1	311 37.7	N08 55.4	222 43.0	N22 15.1	324 40.3	N02 05.0
	08	350 06.6	268 57.5	N24 33.3	326 38.4	N08 56.1	237 45.0	N22 15.0	339 42.5	N02 05.1
	09	005 09.1	283 56.6	N24 33.6	341 39.0	N08 56.9	252 47.1	N22 14.9	354 44.8	N02 05.2
	10	020 11.6	298 55.8	N24 33.9	356 39.7	N08 57.6	267 49.1	N22 14.9	009 47.0	N02 05.3
	11	035 14.0	313 55.0	N24 34.2	011 40.4	N08 58.3	282 51.1	N22 14.8	024 49.2	N02 05.4
	12	050 16.5	328 54.2	N24 34.4	026 41.1	N08 59.0	297 53.2	N22 14.8	039 51.4	N02 05.5
	13	065 19.0	343 53.4	N24 34.7	041 41.8	N08 59.7	312 55.2	N22 14.7	054 53.6	N02 05.6
	14	080 21.4	358 52.5	N24 35.0	056 42.5	N09 00.4	327 57.2	N22 14.6	069 55.9	N02 05.7
	15	095 23.9	013 51.7	N24 35.3	071 43.2	N09 01.1	342 59.3	N22 14.6	084 58.1	N02 05.8
	16	110 26.4	028 50.9	N24 35.5	086 43.8	N09 01.8	358 01.3	N22 14.5	100 00.3	N02 05.9
	17	125 28.8	043 50.0	N24 35.8	101 44.5	N09 02.5	013 03.3	N22 14.5	115 02.5	N02 06.0
	18	140 31.3	058 49.2	N24 36.1	116 45.2	N09 03.2	028 05.4	N22 14.4	130 04.8	N02 06.1
	19	155 33.7	073 48.4	N24 36.3	131 45.9	N09 03.9	043 07.4	N22 14.3	145 07.0	N02 06.2
	20	170 36.2	088 47.6	N24 36.6	146 46.6	N09 04.7	058 09.4	N22 14.3	160 09.2	N02 06.3
	21	185 38.7	103 46.7	N24 36.9	161 47.3	N09 05.4	073 11.5	N22 14.2	175 11.4	N02 06.4
	22	200 41.1	118 45.9	N24 37.1	176 47.9	N09 06.1	088 13.5	N22 14.2	190 13.6	N02 06.5
	23	215 43.6	133 45.1	N24 37.4	191 48.6	N09 06.8	103 15.5	N22 14.1	205 15.9	N02 06.6

Venus	Mars	Jupiter	Saturn
10: v -0.8 d 0.3	10: v 0.7 d 0.7	10: v 2.0 d -0.1	10: v 2.2 d 0.1
11: v -0.8 d 0.3	11: v 0.7 d 0.7	11: v 2.0 d -0.1	11: v 2.2 d 0.1
12: v -0.8 d 0.3	12: v 0.7 d 0.7	12: v 2.0 d -0.1	12: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.4	S40 11.9
Achernar	335 19.9	S57 06.0
Acrux	172 58.4	S63 15.0
Adhara	255 05.2	S29 00.7
Al Na'ir	027 31.6	S46 49.8
Aldebaran	290 38.7	N16 33.7
Alioth	166 11.5	N55 49.1
Alkaid	152 50.7	N49 10.9
Alnilam	275 36.9	S01 11.2
Alphard	217 46.7	S08 46.5
Alphecca	126 02.4	N26 37.4
Alpheratz	357 33.9	N29 14.0
Altair	061 58.8	N08 56.1
Ankaa	353 06.4	S42 09.6
Antares	112 14.1	S26 29.5
Arcturus	145 46.6	N19 02.6
Atria	107 06.9	S69 04.4
Avior	234 14.5	S59 35.9
Bellatrix	278 22.0	N06 22.4
Betelgeuse	270 51.2	N07 24.7
Canopus	263 52.3	S52 42.8
Capella	280 20.7	N46 01.5
Deneb	049 25.0	N45 22.2
Denebola	182 23.6	N14 25.4
Diphda	348 46.5	S17 50.5
Dubhe	193 39.4	N61 36.7
Elnath	278 00.8	N28 37.8
Eltanin	090 41.3	N51 28.9
Enif	033 37.8	N09 59.6
Fomalhaut	015 13.5	S29 28.8
Gacrux	171 50.0	S57 15.9
Gienah	175 42.2	S17 41.5
Hadar	148 33.8	S60 30.2
Hamal	327 50.3	N23 35.1
Kaus Australi	083 30.8	S34 22.2
Kochab	137 18.6	N74 02.8
Markab	013 29.0	N15 20.7
Menkar	314 05.3	N04 11.5
Menkent	147 56.0	S36 30.1
Miaplacidus	221 38.1	S69 49.8
Mirfak	308 27.2	N49 57.2
Nunki	075 46.2	S26 15.8
Peacock	053 03.9	S56 38.8
Polaris	313 58.2	N89 22.5
Pollux	243 16.1	N27 57.8
Procyon	244 49.8	N05 09.4
Rasalhague	095 57.3	N12 32.3
Regulus	207 33.2	N11 50.3
Rigel	281 03.1	S08 10.4
Rigil Kentaur	139 38.1	S60 56.8
Sabik	102 01.2	S15 45.5
Schedar	349 30.2	N56 40.7
Shaula	096 08.5	S37 07.3
Sirius	258 25.5	S16 45.3
Spica	158 20.9	S11 18.1
Suhail	222 45.6	S43 32.6
Vega	080 32.2	N38 48.2
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	279 56.6	1403
Mars	337 07.3	1014
Jupiter	247 46.9	1611
Saturn	349 40.8	0925

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
10	00	180 54.0	N17 34.1	264 15.7	S15 50.4	55.8	13.6	12.6
	01	195 54.0	N17 34.7	278 48.3	S15 37.9	55.9	13.6	12.6
	02	210 54.0	N17 35.4	293 21.0	S15 25.2	55.9	13.7	12.7
	03	225 54.1	N17 36.0	307 53.6	S15 12.5	55.9	13.7	12.8
	04	240 54.1	N17 36.7	322 26.3	S14 59.7	56.0	13.7	12.9
	05	255 54.1	N17 37.4	336 59.0	S14 46.8	56.0	13.7	13.0
	06	270 54.1	N17 38.0	351 31.8	S14 33.9	56.0	13.8	13.0
	07	285 54.2	N17 38.7	006 04.6	S14 20.8	56.0	13.8	13.1
	08	300 54.2	N17 39.3	020 37.4	S14 07.7	56.1	13.8	13.2
	09	315 54.2	N17 40.0	035 10.2	S13 54.5	56.1	13.8	13.3
	10	330 54.2	N17 40.6	049 43.0	S13 41.3	56.1	13.9	13.3
	11	345 54.2	N17 41.3	064 15.9	S13 27.9	56.2	13.9	13.4
	12	000 54.3	N17 41.9	078 48.8	S13 14.5	56.2	13.9	13.5
	13	015 54.3	N17 42.6	093 21.7	S13 01.0	56.2	13.9	13.6
	14	030 54.3	N17 43.2	107 54.6	S12 47.5	56.3	13.9	13.6
	15	045 54.3	N17 43.9	122 27.5	S12 33.9	56.3	14.0	13.7
	16	060 54.3	N17 44.5	137 00.5	S12 20.2	56.3	14.0	13.8
	17	075 54.4	N17 45.2	151 33.4	S12 06.4	56.4	14.0	13.8
	18	090 54.4	N17 45.8	166 06.4	S11 52.6	56.4	14.0	13.9
	19	105 54.4	N17 46.5	180 39.4	S11 38.7	56.4	14.0	14.0
	20	120 54.4	N17 47.1	195 12.4	S11 24.7	56.5	14.0	14.0
	21	135 54.4	N17 47.8	209 45.4	S11 10.6	56.5	14.0	14.1
	22	150 54.5	N17 48.4	224 18.4	S10 56.5	56.6	14.0	14.2
	23	165 54.5	N17 49.0	238 51.5	S10 42.4	56.6	14.0	14.2
11	00	180 54.5	N17 49.7	253 24.5	S10 28.1	56.6	14.0	14.3
	01	195 54.5	N17 50.3	267 57.6	S10 13.8	56.7	14.1	14.4
	02	210 54.5	N17 51.0	282 30.6	S09 59.5	56.7	14.1	14.4
	03	225 54.6	N17 51.6	297 03.7	S09 45.1	56.7	14.1	14.5
	04	240 54.6	N17 52.3	311 36.8	S09 30.6	56.8	14.1	14.5
	05	255 54.6	N17 52.9	326 09.8	S09 16.0	56.8	14.1	14.6
	06	270 54.6	N17 53.6	340 42.9	S09 01.4	56.8	14.1	14.7
	07	285 54.6	N17 54.2	355 16.0	S08 46.8	56.9	14.1	14.7
	08	300 54.6	N17 54.8	009 49.0	S08 32.1	56.9	14.1	14.8
	09	315 54.7	N17 55.5	024 22.1	S08 17.3	57.0	14.1	14.8
	10	330 54.7	N17 56.1	038 55.2	S08 02.5	57.0	14.1	14.9
	11	345 54.7	N17 56.8	053 28.2	S07 47.6	57.0	14.1	14.9
	12	000 54.7	N17 57.4	068 01.3	S07 32.6	57.1	14.0	15.0
	13	015 54.7	N17 58.0	082 34.3	S07 17.6	57.1	14.0	15.0
	14	030 54.7	N17 58.7	097 07.4	S07 02.6	57.1	14.0	15.1
	15	045 54.7	N17 59.3	111 40.4	S06 47.5	57.2	14.0	15.1
	16	060 54.8	N17 59.9	126 13.4	S06 32.4	57.2	14.0	15.2
	17	075 54.8	N18 00.6	140 46.4	S06 17.2	57.3	14.0	15.2
	18	090 54.8	N18 01.2	155 19.4	S06 01.9	57.3	14.0	15.3
	19	105 54.8	N18 01.8	169 52.4	S05 46.6	57.3	14.0	15.3
	20	120 54.8	N18 02.5	184 25.4	S05 31.3	57.4	14.0	15.4
	21	135 54.8	N18 03.1	198 58.3	S05 15.9	57.4	13.9	15.4
	22	150 54.8	N18 03.7	213 31.3	S05 00.5	57.4	13.9	15.5
	23	165 54.8	N18 04.4	228 04.2	S04 45.0	57.5	13.9	15.5
12	00	180 54.9	N18 05.0	242 37.1	S04 29.5	57.5	13.9	15.6
	01	195 54.9	N18 05.6	257 10.0	S04 13.9	57.6	13.9	15.6
	02	210 54.9	N18 06.3	271 42.8	S03 58.3	57.6	13.8	15.6
	03	225 54.9	N18 06.9	286 15.6	S03 42.7	57.6	13.8	15.7
	04	240 54.9	N18 07.5	300 48.4	S03 27.0	57.7	13.8	15.7
	05	255 54.9	N18 08.2	315 21.2	S03 11.3	57.7	13.8	15.7
	06	270 54.9	N18 08.8	329 54.0	S02 55.6	57.8	13.7	15.8
	07	285 54.9	N18 09.4	344 26.7	S02 39.8	57.8	13.7	15.8
	08	300 54.9	N18 10.1	358 59.4	S02 24.0	57.8	13.7	15.9
	09	315 55.0	N18 10.7	013 32.1	S02 08.1	57.9	13.6	15.9
	10	330 55.0	N18 11.3	028 04.7	S01 52.2	57.9	13.6	15.9
	11	345 55.0	N18 11.9	042 37.3	S01 36.3	58.0	13.6	15.9
	12	000 55.0	N18 12.6	057 09.8	S01 20.4	58.0	13.5	16.0
	13	015 55.0	N18 13.2	071 42.4	S01 04.4	58.0	13.5	16.0
	14	030 55.0	N18 13.8	086 14.9	S00 48.4	58.1	13.4	16.0
	15	045 55.0	N18 14.4	100 47.3	S00 32.4	58.1	13.4	16.1
	16	060 55.0	N18 15.1	115 19.7	S00 16.3	58.2	13.4	16.1
	17	075 55.0	N18 15.7	129 52.1	S00 00.2	58.2	13.3	16.1
	18	090 55.0	N18 16.3	144 24.4	N00 15.9	58.2	13.3	16.1
	19	105 55.0	N18 16.9	158 56.7	N00 32.0	58.3	13.2	16.1
	20	120 55.0	N18 17.5	173 28.9	N00 48.1	58.3	13.2	16.2
	21	135 55.0	N18 18.2	188 01.1	N01 04.3	58.4	13.1	16.2
	22	150 55.1	N18 18.8	202 33.2	N01 20.5	58.4	13.1	16.2
	23	165 55.1	N18 19.4	217 05.3	N01 36.7	58.4	13.0	16.2

Day 10 noon Sun: v 0.0 d 0.7 SD 15.8 | Moon SD 15.3

Day 11 noon Sun: v 0.0 d 0.6 SD 15.8 | Moon SD 15.5

Day 12 noon Sun: v 0.0 d 0.6 SD 15.8 | Moon SD 15.8

SUN: MAY 11 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	0123	2237	--	--
68N	--	--	0209	2148	--	--
66N	--	0024	0238	2118	--	--
64N	--	0134	0300	2055	2224	--
62N	--	0208	0318	2037	2148	--
60N	0022	0232	0332	2022	2123	--
58N	0124	0251	0344	2010	2104	2233
56N	0155	0307	0355	1959	2048	2200
54N	0218	0320	0404	1950	2034	2137
52N	0236	0331	0413	1941	2023	2119
50N	0251	0342	0420	1934	2012	2103
45N	0320	0402	0436	1918	1951	2034
40N	0341	0419	0449	1904	1935	2012
35N	0358	0432	0500	1853	1921	1955
30N	0412	0443	0509	1844	1910	1941
25N	0424	0453	0518	1835	1900	1929
20N	0434	0502	0526	1827	1851	1919
15N	0443	0510	0533	1820	1843	1909
10N	0452	0518	0540	1813	1835	1901
05N	0459	0525	0546	1806	1828	1854
00N	0506	0531	0553	1800	1822	1847
05S	0512	0538	0559	1753	1815	1840
10S	0518	0544	0606	1747	1809	1834
15S	0524	0550	0613	1740	1802	1828
20S	0530	0557	0620	1733	1756	1823
25S	0536	0603	0627	1725	1749	1817
30S	0541	0610	0635	1717	1742	1811
35S	0547	0617	0644	1708	1735	1805
40S	0553	0626	0655	1658	1727	1759
45S	0600	0635	0707	1646	1717	1753
50S	0607	0646	0721	1631	1706	1745
55S	0615	0659	0740	1613	1653	1737
60S	0624	0716	0804	1548	1636	1727

MOON: RISE / SET | UTC HHMM

Lat	Day 10		Day 11		Day 12	
72N	0414	0921	0321	1149	0243	1404
70N	0342	0950	0306	1201	0238	1405
68N	0319	1012	0254	1211	0234	1406
66N	0300	1029	0244	1219	0230	1407
64N	0245	1043	0236	1225	0227	1408
62N	0233	1054	0228	1231	0224	1408
60N	0222	1104	0222	1236	0222	1409
58N	0212	1113	0216	1240	0220	1409
56N	0204	1120	0211	1244	0218	1410
54N	0157	1127	0207	1248	0216	1410
52N	0150	1132	0203	1251	0215	1411
50N	0144	1138	0159	1253	0213	1411
45N	0131	1149	0151	1300	0210	1412
40N	0120	1159	0144	1305	0207	1412
35N	0111	1206	0139	1309	0205	1413
30N	0103	1213	0133	1313	0203	1413
25N	0055	1220	0129	1316	0201	1413
20N	0048	1226	0124	1319	0159	1414
15N	0042	1231	0120	1322	0158	1414
10N	0036	1236	0116	1325	0156	1414
05N	0030	1241	0113	1328	0155	1415
00N	0024	1246	0109	1330	0153	1415
05S	0018	1250	0105	1333	0152	1415
10S	0012	1255	0101	1335	0151	1415
15S	0006	1300	0057	1338	0149	1416
20S	--	1305	0053	1341	0147	1416
25S	--	1311	0049	1344	0146	1416
30S	--	1317	0044	1347	0144	1417
35S	--	1324	0039	1351	0142	1417
40S	--	1331	0033	1355	0140	1417
45S	--	1340	0026	1359	0137	1418
50S	--	1350	0017	1405	0134	1418
55S	--	1403	0006	1411	0130	1419
60S	2352	1420	--	1420	0124	1419

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | MAY 13 - MAY 15

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
13	00	230 46.1	148 44.3	N24 37.6	206 49.3	N09 07.5	118 17.6	N22 14.0	220 18.1	N02 06.7
	01	245 48.5	163 43.4	N24 37.9	221 50.0	N09 08.2	133 19.6	N22 14.0	235 20.3	N02 06.8
	02	260 51.0	178 42.6	N24 38.1	236 50.7	N09 08.9	148 21.6	N22 13.9	250 22.5	N02 06.9
	03	275 53.5	193 41.8	N24 38.4	251 51.4	N09 09.6	163 23.7	N22 13.9	265 24.8	N02 07.0
	04	290 55.9	208 41.0	N24 38.7	266 52.1	N09 10.3	178 25.7	N22 13.8	280 27.0	N02 07.0
	05	305 58.4	223 40.1	N24 38.9	281 52.7	N09 11.0	193 27.7	N22 13.7	295 29.2	N02 07.1
	06	321 00.9	238 39.3	N24 39.2	296 53.4	N09 11.7	208 29.8	N22 13.7	310 31.4	N02 07.2
	07	336 03.3	253 38.5	N24 39.4	311 54.1	N09 12.4	223 31.8	N22 13.6	325 33.7	N02 07.3
	08	351 05.8	268 37.7	N24 39.7	326 54.8	N09 13.1	238 33.8	N22 13.6	340 35.9	N02 07.4
	09	006 08.2	283 36.8	N24 39.9	341 55.5	N09 13.8	253 35.9	N22 13.5	355 38.1	N02 07.5
	10	021 10.7	298 36.0	N24 40.2	356 56.2	N09 14.6	268 37.9	N22 13.4	010 40.3	N02 07.6
	11	036 13.2	313 35.2	N24 40.4	011 56.8	N09 15.3	283 39.9	N22 13.4	025 42.5	N02 07.7
	12	051 15.6	328 34.3	N24 40.6	026 57.5	N09 16.0	298 41.9	N22 13.3	040 44.8	N02 07.8
	13	066 18.1	343 33.5	N24 40.9	041 58.2	N09 16.7	313 44.0	N22 13.3	055 47.0	N02 07.9
	14	081 20.6	358 32.7	N24 41.1	056 58.9	N09 17.4	328 46.0	N22 13.2	070 49.2	N02 08.0
	15	096 23.0	013 31.9	N24 41.4	071 59.6	N09 18.1	343 48.0	N22 13.1	085 51.4	N02 08.1
	16	111 25.5	028 31.0	N24 41.6	087 00.3	N09 18.8	358 50.1	N22 13.1	100 53.7	N02 08.2
	17	126 28.0	043 30.2	N24 41.8	102 01.0	N09 19.5	013 52.1	N22 13.0	115 55.9	N02 08.3
	18	141 30.4	058 29.4	N24 42.1	117 01.6	N09 20.2	028 54.1	N22 13.0	130 58.1	N02 08.4
	19	156 32.9	073 28.5	N24 42.3	132 02.3	N09 20.9	043 56.2	N22 12.9	146 00.3	N02 08.5
	20	171 35.3	088 27.7	N24 42.6	147 03.0	N09 21.6	058 58.2	N22 12.8	161 02.6	N02 08.6
	21	186 37.8	103 26.9	N24 42.8	162 03.7	N09 22.3	074 00.2	N22 12.8	176 04.8	N02 08.7
	22	201 40.3	118 26.1	N24 43.0	177 04.4	N09 23.0	089 02.2	N22 12.7	191 07.0	N02 08.8
	23	216 42.7	133 25.2	N24 43.3	192 05.1	N09 23.7	104 04.3	N22 12.7	206 09.2	N02 08.8
14	00	231 45.2	148 24.4	N24 43.5	207 05.7	N09 24.4	119 06.3	N22 12.6	221 11.5	N02 08.9
	01	246 47.7	163 23.6	N24 43.7	222 06.4	N09 25.1	134 08.3	N22 12.5	236 13.7	N02 09.0
	02	261 50.1	178 22.7	N24 43.9	237 07.1	N09 25.8	149 10.4	N22 12.5	251 15.9	N02 09.1
	03	276 52.6	193 21.9	N24 44.2	252 07.8	N09 26.5	164 12.4	N22 12.4	266 18.1	N02 09.2
	04	291 55.1	208 21.1	N24 44.4	267 08.5	N09 27.2	179 14.4	N22 12.4	281 20.4	N02 09.3
	05	306 57.5	223 20.2	N24 44.6	282 09.2	N09 27.9	194 16.4	N22 12.3	296 22.6	N02 09.4
	06	322 00.0	238 19.4	N24 44.8	297 09.8	N09 28.6	209 18.5	N22 12.2	311 24.8	N02 09.5
	07	337 02.5	253 18.6	N24 45.1	312 10.5	N09 29.3	224 20.5	N22 12.2	326 27.0	N02 09.6
	08	352 04.9	268 17.8	N24 45.3	327 11.2	N09 30.0	239 22.5	N22 12.1	341 29.3	N02 09.7
	09	007 07.4	283 16.9	N24 45.5	342 11.9	N09 30.7	254 24.5	N22 12.1	356 31.5	N02 09.8
	10	022 09.8	298 16.1	N24 45.7	357 12.6	N09 31.4	269 26.6	N22 12.0	011 33.7	N02 09.9
	11	037 12.3	313 15.3	N24 45.9	012 13.3	N09 32.1	284 28.6	N22 11.9	026 35.9	N02 10.0
	12	052 14.8	328 14.4	N24 46.1	027 13.9	N09 32.8	299 30.6	N22 11.9	041 38.2	N02 10.1
	13	067 17.2	343 13.6	N24 46.4	042 14.6	N09 33.5	314 32.7	N22 11.8	056 40.4	N02 10.2
	14	082 19.7	358 12.8	N24 46.6	057 15.3	N09 34.2	329 34.7	N22 11.7	071 42.6	N02 10.3
	15	097 22.2	013 11.9	N24 46.8	072 16.0	N09 34.9	344 36.7	N22 11.7	086 44.8	N02 10.3
	16	112 24.6	028 11.1	N24 47.0	087 16.7	N09 35.6	359 38.7	N22 11.6	101 47.1	N02 10.4
	17	127 27.1	043 10.3	N24 47.2	102 17.3	N09 36.3	014 40.8	N22 11.6	116 49.3	N02 10.5
	18	142 29.6	058 09.5	N24 47.4	117 18.0	N09 37.0	029 42.8	N22 11.5	131 51.5	N02 10.6
	19	157 32.0	073 08.6	N24 47.6	132 18.7	N09 37.7	044 44.8	N22 11.4	146 53.7	N02 10.7
	20	172 34.5	088 07.8	N24 47.8	147 19.4	N09 38.4	059 46.8	N22 11.4	161 56.0	N02 10.8
	21	187 36.9	103 07.0	N24 48.0	162 20.1	N09 39.1	074 48.9	N22 11.3	176 58.2	N02 10.9
	22	202 39.4	118 06.1	N24 48.2	177 20.8	N09 39.8	089 50.9	N22 11.3	192 00.4	N02 11.0
	23	217 41.9	133 05.3	N24 48.4	192 21.4	N09 40.5	104 52.9	N22 11.2	207 02.7	N02 11.1
15	00	232 44.3	148 04.5	N24 48.6	207 22.1	N09 41.2	119 54.9	N22 11.1	222 04.9	N02 11.2
	01	247 46.8	163 03.6	N24 48.8	222 22.8	N09 41.9	134 57.0	N22 11.1	237 07.1	N02 11.3
	02	262 49.3	178 02.8	N24 49.0	237 23.5	N09 42.6	149 59.0	N22 11.0	252 09.3	N02 11.4
	03	277 51.7	193 02.0	N24 49.2	252 24.2	N09 43.3	165 01.0	N22 10.9	267 11.6	N02 11.5
	04	292 54.2	208 01.1	N24 49.4	267 24.9	N09 44.0	180 03.0	N22 10.9	282 13.8	N02 11.6
	05	307 56.7	223 00.3	N24 49.6	282 25.5	N09 44.7	195 05.0	N22 10.8	297 16.0	N02 11.7
	06	322 59.1	237 59.5	N24 49.8	297 26.2	N09 45.4	210 07.1	N22 10.8	312 18.2	N02 11.7
	07	338 01.6	252 58.6	N24 50.0	312 26.9	N09 46.1	225 09.1	N22 10.7	327 20.5	N02 11.8
	08	353 04.1	267 57.8	N24 50.2	327 27.6	N09 46.8	240 11.1	N22 10.6	342 22.7	N02 11.9
	09	008 06.5	282 57.0	N24 50.4	342 28.3	N09 47.5	255 13.1	N22 10.6	357 24.9	N02 12.0
	10	023 09.0	297 56.2	N24 50.6	357 28.9	N09 48.2	270 15.2	N22 10.5	012 27.2	N02 12.1
	11	038 11.4	312 55.3	N24 50.7	012 29.6	N09 48.9	285 17.2	N22 10.4	027 29.4	N02 12.2
	12	053 13.9	327 54.5	N24 50.9	027 30.3	N09 49.6	300 19.2	N22 10.4	042 31.6	N02 12.3
	13	068 16.4	342 53.7	N24 51.1	042 31.0	N09 50.3	315 21.2	N22 10.3	057 33.8	N02 12.4
	14	083 18.8	357 52.8	N24 51.3	057 31.7	N09 51.0	330 23.2	N22 10.3	072 36.1	N02 12.5
	15	098 21.3	012 52.0	N24 51.5	072 32.4	N09 51.7	345 25.3	N22 10.2	087 38.3	N02 12.6
	16	113 23.8	027 51.2	N24 51.7	087 33.0	N09 52.4	000 27.3	N22 10.1	102 40.5	N02 12.7
	17	128 26.2	042 50.3	N24 51.8	102 33.7	N09 53.1	015 29.3	N22 10.1	117 42.7	N02 12.8
	18	143 28.7	057 49.5	N24 52.0	117 34.4	N09 53.8	030 31.3	N22 10.0	132 45.0	N02 12.9
	19	158 31.2	072 48.7	N24 52.2	132 35.1	N09 54.5	045 33.3	N22 09.9	147 47.2	N02 13.0
	20	173 33.6	087 47.8	N24 52.4	147 35.8	N09 55.2	060 35.4	N22 09.9	162 49.4	N02 13.0
	21	188 36.1	102 47.0	N24 52.5	162 36.4	N09 55.9	075 37.4	N22 09.8	177 51.7	N02 13.1
	22	203 38.6	117 46.2	N24 52.7	177 37.1	N09 56.6	090 39.4	N22 09.8	192 53.9	N02 13.2
	23	218 41.0	132 45.3	N24 52.9	192 37.8	N09 57.3	105 41.4	N22 09.7	207 56.1	N02 13.3

Venus	Mars	Jupiter	Saturn
13: v -0.8 d 0.2	13: v 0.7 d 0.7	13: v 2.0 d -0.1	13: v 2.2 d 0.1
14: v -0.8 d 0.2	14: v 0.7 d 0.7	14: v 2.0 d -0.1	14: v 2.2 d 0.1
15: v -0.8 d 0.2	15: v 0.7 d 0.7	15: v 2.0 d -0.1	15: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.4	S40 11.9
Achernar	335 19.9	S57 06.0
Acrux	172 58.4	S63 15.0
Adhara	255 05.3	S29 00.6
Al Na'ir	027 31.6	S46 49.8
Aldebaran	290 38.7	N16 33.7
Alioth	166 11.6	N55 49.1
Alkaid	152 50.7	N49 10.9
Alnilam	275 36.9	S01 11.2
Alphard	217 46.7	S08 46.5
Alphecca	126 02.4	N26 37.4
Alpheratz	357 33.9	N29 14.0
Altair	061 58.7	N08 56.2
Ankaa	353 06.4	S42 09.6
Antares	112 14.1	S26 29.5
Arcturus	145 46.6	N19 02.6
Atria	107 06.9	S69 04.4
Avior	234 14.5	S59 35.9
Bellatrix	278 22.0	N06 22.4
Betelgeuse	270 51.2	N07 24.7
Canopus	263 52.3	S52 42.7
Capella	280 20.7	N46 01.5
Deneb	049 24.9	N45 22.2
Denebola	182 23.7	N14 25.4
Diphda	348 46.4	S17 50.5
Dubhe	193 39.4	N61 36.7
Elnath	278 00.8	N28 37.8
Eltanin	090 41.2	N51 28.9
Enif	033 37.7	N09 59.6
Fomalhaut	015 13.4	S29 28.8
Gacrux	171 50.0	S57 15.9
Gienah	175 42.2	S17 41.5
Hadar	148 33.8	S60 30.2
Hamal	327 50.3	N23 35.1
Kaus Australi	083 30.8	S34 22.2
Kochab	137 18.6	N74 02.8
Markab	013 28.9	N15 20.7
Menkar	314 05.3	N04 11.5
Menkent	147 56.0	S36 30.1
Miaplacidus	221 38.2	S69 49.8
Mirfak	308 27.2	N49 57.2
Nunki	075 46.2	S26 15.8
Peacock	053 03.8	S56 38.8
Polaris	313 58.0	N89 22.4
Pollux	243 16.2	N27 57.8
Procyon	244 49.9	N05 09.4
Rasalhague	095 57.2	N12 32.3
Regulus	207 33.2	N11 50.3
Rigel	281 03.1	S08 10.3
Rigil Kentaur	139 38.1	S60 56.8
Sabik	102 01.2	S15 45.5
Schedar	349 30.2	N56 40.7
Shaula	096 08.5	S37 07.3
Sirius	258 25.5	S16 45.3
Spica	158 20.9	S11 18.1
Suhail	222 45.6	S43 32.6
Vega	080 32.2	N38 48.2
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	275 59.7	1407
Mars	334 59.2	1011
Jupiter	247 15.9	1601
Saturn	349 23.4	0914

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
13	00	180 55.1	N18 20.0	231 37.3	N01 52.9	58.5	13.0	16.2
	01	195 55.1	N18 20.6	246 09.3	N02 09.1	58.5	12.9	16.2
	02	210 55.1	N18 21.3	260 41.2	N02 25.4	58.6	12.9	16.3
	03	225 55.1	N18 21.9	275 13.1	N02 41.6	58.6	12.8	16.3
	04	240 55.1	N18 22.5	289 44.9	N02 57.9	58.6	12.7	16.3
	05	255 55.1	N18 23.1	304 16.6	N03 14.1	58.7	12.7	16.3
	06	270 55.1	N18 23.7	318 48.3	N03 30.4	58.7	12.6	16.3
	07	285 55.1	N18 24.4	333 20.0	N03 46.7	58.8	12.6	16.3
	08	300 55.1	N18 25.0	347 51.5	N04 03.0	58.8	12.5	16.3
	09	315 55.1	N18 25.6	002 23.0	N04 19.3	58.8	12.4	16.3
	10	330 55.1	N18 26.2	016 54.5	N04 35.6	58.9	12.4	16.3
	11	345 55.1	N18 26.8	031 25.8	N04 51.9	58.9	12.3	16.3
	12	000 55.1	N18 27.4	045 57.1	N05 08.2	59.0	12.2	16.3
	13	015 55.1	N18 28.0	060 28.4	N05 24.4	59.0	12.2	16.3
	14	030 55.1	N18 28.6	074 59.5	N05 40.7	59.0	12.1	16.3
	15	045 55.1	N18 29.3	089 30.6	N05 57.0	59.1	12.0	16.3
	16	060 55.1	N18 29.9	104 01.6	N06 13.3	59.1	11.9	16.3
	17	075 55.1	N18 30.5	118 32.5	N06 29.5	59.1	11.9	16.3
	18	090 55.1	N18 31.1	133 03.4	N06 45.8	59.2	11.8	16.2
	19	105 55.1	N18 31.7	147 34.2	N07 02.0	59.2	11.7	16.2
	20	120 55.1	N18 32.3	162 04.9	N07 18.3	59.3	11.6	16.2
	21	135 55.1	N18 32.9	176 35.5	N07 34.5	59.3	11.5	16.2
	22	150 55.1	N18 33.5	191 06.0	N07 50.7	59.3	11.4	16.2
	23	165 55.1	N18 34.1	205 36.5	N08 06.8	59.4	11.4	16.2
14	00	180 55.1	N18 34.7	220 06.8	N08 23.0	59.4	11.3	16.1
	01	195 55.1	N18 35.3	234 37.1	N08 39.1	59.4	11.2	16.1
	02	210 55.1	N18 35.9	249 07.3	N08 55.2	59.5	11.1	16.1
	03	225 55.1	N18 36.6	263 37.4	N09 11.3	59.5	11.0	16.1
	04	240 55.1	N18 37.2	278 07.4	N09 27.4	59.6	10.9	16.0
	05	255 55.1	N18 37.8	292 37.3	N09 43.4	59.6	10.8	16.0
	06	270 55.1	N18 38.4	307 07.1	N09 59.4	59.6	10.7	16.0
	07	285 55.1	N18 39.0	321 36.9	N10 15.3	59.7	10.6	15.9
	08	300 55.1	N18 39.6	336 06.5	N10 31.3	59.7	10.5	15.9
	09	315 55.1	N18 40.2	350 36.0	N10 47.1	59.7	10.4	15.8
	10	330 55.1	N18 40.8	005 05.5	N11 03.0	59.8	10.3	15.8
	11	345 55.1	N18 41.4	019 34.8	N11 18.8	59.8	10.2	15.8
	12	000 55.1	N18 42.0	034 04.0	N11 34.6	59.8	10.1	15.7
	13	015 55.1	N18 42.6	048 33.1	N11 50.3	59.9	10.0	15.7
	14	030 55.1	N18 43.2	063 02.2	N12 06.0	59.9	9.9	15.6
	15	045 55.1	N18 43.8	077 31.1	N12 21.6	59.9	9.8	15.6
	16	060 55.1	N18 44.4	091 59.9	N12 37.2	60.0	9.7	15.5
	17	075 55.1	N18 45.0	106 28.6	N12 52.7	60.0	9.6	15.5
	18	090 55.1	N18 45.6	120 57.2	N13 08.1	60.0	9.5	15.4
	19	105 55.1	N18 46.2	135 25.7	N13 23.5	60.1	9.4	15.4
	20	120 55.1	N18 46.8	149 54.1	N13 38.9	60.1	9.3	15.3
	21	135 55.1	N18 47.3	164 22.3	N13 54.2	60.1	9.1	15.2
	22	150 55.1	N18 47.9	178 50.5	N14 09.4	60.2	9.0	15.2
	23	165 55.0	N18 48.5	193 18.5	N14 24.6	60.2	8.9	15.1
15	00	180 55.0	N18 49.1	207 46.4	N14 39.7	60.2	8.8	15.0
	01	195 55.0	N18 49.7	222 14.2	N14 54.7	60.3	8.7	15.0
	02	210 55.0	N18 50.3	236 41.9	N15 09.7	60.3	8.6	14.9
	03	225 55.0	N18 50.9	251 09.5	N15 24.5	60.3	8.4	14.8
	04	240 55.0	N18 51.5	265 36.9	N15 39.3	60.3	8.3	14.7
	05	255 55.0	N18 52.1	280 04.2	N15 54.1	60.4	8.2	14.6
	06	270 55.0	N18 52.7	294 31.4	N16 08.7	60.4	8.1	14.6
	07	285 55.0	N18 53.3	308 58.5	N16 23.3	60.4	8.0	14.5
	08	300 55.0	N18 53.9	323 25.5	N16 37.7	60.5	7.8	14.4
	09	315 55.0	N18 54.4	337 52.3	N16 52.1	60.5	7.7	14.3
	10	330 55.0	N18 55.0	352 19.0	N17 06.4	60.5	7.6	14.2
	11	345 55.0	N18 55.6	006 45.6	N17 20.6	60.5	7.5	14.1
	12	000 54.9	N18 56.2	021 12.1	N17 34.7	60.6	7.3	14.0
	13	015 54.9	N18 56.8	035 38.4	N17 48.8	60.6	7.2	13.9
	14	030 54.9	N18 57.4	050 04.6	N18 02.7	60.6	7.1	13.8
	15	045 54.9	N18 58.0	064 30.7	N18 16.5	60.6	7.0	13.7
	16	060 54.9	N18 58.6	078 56.7	N18 30.2	60.7	6.8	13.6
	17	075 54.9	N18 59.1	093 22.5	N18 43.8	60.7	6.7	13.5
	18	090 54.9	N18 59.7	107 48.2	N18 57.3	60.7	6.6	13.4
	19	105 54.9	N19 00.3	122 13.8	N19 10.7	60.7	6.4	13.3
	20	120 54.9	N19 00.9	136 39.2	N19 24.0	60.8	6.3	13.2
	21	135 54.8	N19 01.5	151 04.5	N19 37.1	60.8	6.2	13.0
	22	150 54.8	N19 02.0	165 29.7	N19 50.2	60.8	6.1	12.9
	23	165 54.8	N19 02.6	179 54.8	N20 03.1	60.8	5.9	12.8

Day 13 noon Sun: v 0.0 d 0.6 SD 15.8 | Moon SD 16.1

Day 14 noon Sun: v 0.0 d 0.6 SD 15.8 | Moon SD 16.3

Day 15 noon Sun: v 0.0 d 0.6 SD 15.8 | Moon SD 16.5

SUN: MAY 14 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	0054	2311	--	--
68N	--	--	0153	2205	--	--
66N	--	--	0226	2130	--	--
64N	--	0115	0250	2105	2244	--
62N	--	0156	0309	2045	2201	--
60N	--	0222	0325	2029	2133	--
58N	0107	0243	0338	2016	2112	2251
56N	0144	0300	0349	2005	2055	2212
54N	0209	0314	0359	1955	2040	2146
52N	0229	0326	0408	1946	2028	2126
50N	0245	0336	0416	1938	2017	2110
45N	0315	0358	0432	1921	1955	2039
40N	0338	0415	0446	1907	1938	2016
35N	0355	0429	0457	1856	1924	1958
30N	0410	0441	0507	1846	1912	1943
25N	0422	0452	0516	1837	1901	1931
20N	0433	0501	0524	1828	1852	1920
15N	0442	0509	0532	1821	1844	1911
10N	0451	0517	0539	1814	1836	1902
05N	0458	0524	0546	1807	1829	1854
00N	0506	0531	0553	1800	1822	1847
05S	0512	0538	0600	1753	1815	1840
10S	0519	0544	0606	1746	1808	1834
15S	0525	0551	0613	1739	1802	1828
20S	0531	0558	0621	1732	1755	1822
25S	0537	0604	0629	1724	1748	1816
30S	0543	0612	0637	1715	1741	1809
35S	0549	0620	0647	1706	1733	1803
40S	0556	0628	0657	1655	1724	1757
45S	0603	0638	0710	1642	1714	1750
50S	0610	0650	0725	1627	1702	1742
55S	0619	0704	0745	1607	1648	1733
60S	0630	0722	0811	1541	1630	1722

MOON: RISE / SET | UTC HHMM

Lat	Day 13		Day 14		Day 15	
72N	0209	1622	0131	1904	0036	--
70N	0212	1613	0144	1837	0106	2220
68N	0215	1605	0154	1817	0128	2059
66N	0217	1559	0203	1801	0146	2022
64N	0219	1554	0210	1748	0200	1956
62N	0220	1549	0216	1737	0212	1935
60N	0222	1545	0222	1728	0223	1919
58N	0223	1542	0227	1720	0232	1905
56N	0224	1539	0231	1713	0240	1853
54N	0225	1536	0235	1707	0247	1843
52N	0226	1534	0239	1701	0254	1834
50N	0227	1531	0242	1656	0300	1826
45N	0229	1526	0249	1645	0313	1809
40N	0230	1522	0255	1636	0323	1755
35N	0232	1519	0300	1629	0332	1743
30N	0233	1516	0305	1622	0341	1732
25N	0234	1513	0309	1616	0348	1723
20N	0235	1510	0313	1610	0355	1715
15N	0236	1508	0317	1605	0401	1707
10N	0237	1506	0320	1600	0407	1659
05N	0238	1504	0324	1556	0413	1652
00N	0239	1501	0327	1551	0419	1645
05S	0240	1459	0330	1546	0425	1638
10S	0241	1457	0334	1542	0431	1631
15S	0242	1455	0338	1537	0437	1624
20S	0243	1452	0341	1532	0444	1616
25S	0244	1450	0345	1526	0451	1608
30S	0245	1447	0350	1521	0458	1559
35S	0247	1444	0355	1514	0507	1549
40S	0248	1441	0400	1507	0517	1537
45S	0250	1437	0407	1458	0529	1524
50S	0252	1432	0415	1448	0543	1508
55S	0255	1426	0425	1436	0601	1448
60S	0259	1419	0438	1419	0626	1421

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | MAY 16 - MAY 18

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
16	00	233 43.5	147 44.5	N24 53.1	207 38.5	N09 57.9	120 43.5	N22 09.6	222 58.3	N02 13.4
	01	248 45.9	162 43.7	N24 53.2	222 39.2	N09 58.6	135 45.5	N22 09.6	238 00.6	N02 13.5
	02	263 48.4	177 42.8	N24 53.4	237 39.9	N09 59.3	150 47.5	N22 09.5	253 02.8	N02 13.6
	03	278 50.9	192 42.0	N24 53.6	252 40.5	N10 00.0	165 49.5	N22 09.4	268 05.0	N02 13.7
	04	293 53.3	207 41.2	N24 53.7	267 41.2	N10 00.7	180 51.5	N22 09.4	283 07.3	N02 13.8
	05	308 55.8	222 40.3	N24 53.9	282 41.9	N10 01.4	195 53.5	N22 09.3	298 09.5	N02 13.9
	06	323 58.3	237 39.5	N24 54.1	297 42.6	N10 02.1	210 55.6	N22 09.2	313 11.7	N02 14.0
	07	339 00.7	252 38.7	N24 54.2	312 43.3	N10 02.8	225 57.6	N22 09.2	328 13.9	N02 14.1
	08	354 03.2	267 37.8	N24 54.4	327 43.9	N10 03.5	240 59.6	N22 09.1	343 16.2	N02 14.1
	09	009 05.7	282 37.0	N24 54.5	342 44.6	N10 04.2	256 01.6	N22 09.1	358 18.4	N02 14.2
	10	024 08.1	297 36.2	N24 54.7	357 45.3	N10 04.9	271 03.6	N22 09.0	013 20.6	N02 14.3
	11	039 10.6	312 35.3	N24 54.9	012 46.0	N10 05.6	286 05.7	N22 08.9	028 22.9	N02 14.4
	12	054 13.1	327 34.5	N24 55.0	027 46.7	N10 06.3	301 07.7	N22 08.9	043 25.1	N02 14.5
	13	069 15.5	342 33.7	N24 55.2	042 47.3	N10 07.0	316 09.7	N22 08.8	058 27.3	N02 14.6
	14	084 18.0	357 32.8	N24 55.3	057 48.0	N10 07.6	331 11.7	N22 08.7	073 29.6	N02 14.7
	15	099 20.4	012 32.0	N24 55.5	072 48.7	N10 08.3	346 13.7	N22 08.7	088 31.8	N02 14.8
	16	114 22.9	027 31.2	N24 55.6	087 49.4	N10 09.0	001 15.7	N22 08.6	103 34.0	N02 14.9
	17	129 25.4	042 30.3	N24 55.8	102 50.1	N10 09.7	016 17.8	N22 08.5	118 36.2	N02 15.0
	18	144 27.8	057 29.5	N24 55.9	117 50.7	N10 10.4	031 19.8	N22 08.5	133 38.5	N02 15.1
	19	159 30.3	072 28.7	N24 56.1	132 51.4	N10 11.1	046 21.8	N22 08.4	148 40.7	N02 15.2
	20	174 32.8	087 27.8	N24 56.2	147 52.1	N10 11.8	061 23.8	N22 08.4	163 42.9	N02 15.2
	21	189 35.2	102 27.0	N24 56.4	162 52.8	N10 12.5	076 25.8	N22 08.3	178 45.2	N02 15.3
	22	204 37.7	117 26.2	N24 56.5	177 53.5	N10 13.2	091 27.8	N22 08.2	193 47.4	N02 15.4
	23	219 40.2	132 25.3	N24 56.7	192 54.1	N10 13.9	106 29.9	N22 08.2	208 49.6	N02 15.5
17	00	234 42.6	147 24.5	N24 56.8	207 54.8	N10 14.6	121 31.9	N22 08.1	223 51.9	N02 15.6
	01	249 45.1	162 23.7	N24 56.9	222 55.5	N10 15.2	136 33.9	N22 08.0	238 54.1	N02 15.7
	02	264 47.5	177 22.8	N24 57.1	237 56.2	N10 15.9	151 35.9	N22 08.0	253 56.3	N02 15.8
	03	279 50.0	192 22.0	N24 57.2	252 56.9	N10 16.6	166 37.9	N22 07.9	268 58.6	N02 15.9
	04	294 52.5	207 21.2	N24 57.3	267 57.5	N10 17.3	181 39.9	N22 07.8	284 00.8	N02 16.0
	05	309 54.9	222 20.3	N24 57.5	282 58.2	N10 18.0	196 42.0	N22 07.8	299 03.0	N02 16.1
	06	324 57.4	237 19.5	N24 57.6	297 58.9	N10 18.7	211 44.0	N22 07.7	314 05.2	N02 16.2
	07	339 59.9	252 18.7	N24 57.7	312 59.6	N10 19.4	226 46.0	N22 07.6	329 07.5	N02 16.3
	08	355 02.3	267 17.8	N24 57.9	328 00.3	N10 20.1	241 48.0	N22 07.6	344 09.7	N02 16.3
	09	010 04.8	282 17.0	N24 58.0	343 00.9	N10 20.8	256 50.0	N22 07.5	359 11.9	N02 16.4
	10	025 07.3	297 16.2	N24 58.1	358 01.6	N10 21.4	271 52.0	N22 07.5	014 14.2	N02 16.5
	11	040 09.7	312 15.3	N24 58.3	013 02.3	N10 22.1	286 54.0	N22 07.4	029 16.4	N02 16.6
	12	055 12.2	327 14.5	N24 58.4	028 03.0	N10 22.8	301 56.0	N22 07.3	044 18.6	N02 16.7
	13	070 14.7	342 13.7	N24 58.5	043 03.7	N10 23.5	316 58.1	N22 07.3	059 20.9	N02 16.8
	14	085 17.1	357 12.8	N24 58.6	058 04.3	N10 24.2	332 00.1	N22 07.2	074 23.1	N02 16.9
	15	100 19.6	012 12.0	N24 58.8	073 05.0	N10 24.9	347 02.1	N22 07.1	089 25.3	N02 17.0
	16	115 22.0	027 11.2	N24 58.9	088 05.7	N10 25.6	002 04.1	N22 07.1	104 27.6	N02 17.1
	17	130 24.5	042 10.3	N24 59.0	103 06.4	N10 26.2	017 06.1	N22 07.0	119 29.8	N02 17.2
	18	145 27.0	057 09.5	N24 59.1	118 07.1	N10 26.9	032 08.1	N22 06.9	134 32.0	N02 17.2
	19	160 29.4	072 08.7	N24 59.2	133 07.7	N10 27.6	047 10.1	N22 06.9	149 34.3	N02 17.3
	20	175 31.9	087 07.8	N24 59.4	148 08.4	N10 28.3	062 12.2	N22 06.8	164 36.5	N02 17.4
	21	190 34.4	102 07.0	N24 59.5	163 09.1	N10 29.0	077 14.2	N22 06.7	179 38.7	N02 17.5
	22	205 36.8	117 06.2	N24 59.6	178 09.8	N10 29.7	092 16.2	N22 06.7	194 41.0	N02 17.6
	23	220 39.3	132 05.3	N24 59.7	193 10.5	N10 30.4	107 18.2	N22 06.6	209 43.2	N02 17.7
18	00	235 41.8	147 04.5	N24 59.8	208 11.1	N10 31.0	122 20.2	N22 06.5	224 45.4	N02 17.8
	01	250 44.2	162 03.7	N24 59.9	223 11.8	N10 31.7	137 22.2	N22 06.5	239 47.7	N02 17.9
	02	265 46.7	177 02.8	N25 00.0	238 12.5	N10 32.4	152 24.2	N22 06.4	254 49.9	N02 18.0
	03	280 49.2	192 02.0	N25 00.1	253 13.2	N10 33.1	167 26.2	N22 06.3	269 52.1	N02 18.1
	04	295 51.6	207 01.2	N25 00.2	268 13.9	N10 33.8	182 28.2	N22 06.3	284 54.4	N02 18.1
	05	310 54.1	222 00.3	N25 00.4	283 14.5	N10 34.5	197 30.3	N22 06.2	299 56.6	N02 18.2
	06	325 56.5	236 59.5	N25 00.5	298 15.2	N10 35.1	212 32.3	N22 06.2	314 58.8	N02 18.3
	07	340 59.0	251 58.7	N25 00.6	313 15.9	N10 35.8	227 34.3	N22 06.1	330 01.1	N02 18.4
	08	356 01.5	266 57.8	N25 00.7	328 16.6	N10 36.5	242 36.3	N22 06.0	345 03.3	N02 18.5
	09	011 03.9	281 57.0	N25 00.8	343 17.2	N10 37.2	257 38.3	N22 06.0	000 05.5	N02 18.6
	10	026 06.4	296 56.2	N25 00.9	358 17.9	N10 37.9	272 40.3	N22 05.9	015 07.8	N02 18.7
	11	041 08.9	311 55.3	N25 01.0	013 18.6	N10 38.6	287 42.3	N22 05.8	030 10.0	N02 18.8
	12	056 11.3	326 54.5	N25 01.1	028 19.3	N10 39.2	302 44.3	N22 05.8	045 12.2	N02 18.9
	13	071 13.8	341 53.7	N25 01.2	043 20.0	N10 39.9	317 46.3	N22 05.7	060 14.5	N02 19.0
	14	086 16.3	356 52.8	N25 01.2	058 20.6	N10 40.6	332 48.3	N22 05.6	075 16.7	N02 19.0
	15	101 18.7	011 52.0	N25 01.3	073 21.3	N10 41.3	347 50.4	N22 05.6	090 18.9	N02 19.1
	16	116 21.2	026 51.2	N25 01.4	088 22.0	N10 42.0	002 52.4	N22 05.5	105 21.2	N02 19.2
	17	131 23.7	041 50.3	N25 01.5	103 22.7	N10 42.7	017 54.4	N22 05.4	120 23.4	N02 19.3
	18	146 26.1	056 49.5	N25 01.6	118 23.4	N10 43.3	032 56.4	N22 05.4	135 25.6	N02 19.4
	19	161 28.6	071 48.7	N25 01.7	133 24.0	N10 44.0	047 58.4	N22 05.3	150 27.9	N02 19.5
	20	176 31.0	086 47.8	N25 01.8	148 24.7	N10 44.7	063 00.4	N22 05.2	165 30.1	N02 19.6
	21	191 33.5	101 47.0	N25 01.9	163 25.4	N10 45.4	078 02.4	N22 05.2	180 32.3	N02 19.7
	22	206 36.0	116 46.2	N25 02.0	178 26.1	N10 46.1	093 04.4	N22 05.1	195 34.6	N02 19.8
	23	221 38.4	131 45.3	N25 02.0	193 26.7	N10 46.7	108 06.4	N22 05.0	210 36.8	N02 19.9

Venus	Mars	Jupiter	Saturn
16: v -0.8 d 0.2	16: v 0.7 d 0.7	16: v 2.0 d -0.1	16: v 2.2 d 0.1
17: v -0.8 d 0.1	17: v 0.7 d 0.7	17: v 2.0 d -0.1	17: v 2.2 d 0.1
18: v -0.8 d 0.1	18: v 0.7 d 0.7	18: v 2.0 d -0.1	18: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.4	S40 11.9
Achernar	335 19.9	S57 06.0
Acrux	172 58.4	S63 15.0
Adhara	255 05.3	S29 00.6
Al Na'ir	027 31.6	S46 49.8
Aldebaran	290 38.7	N16 33.7
Alioth	166 11.6	N55 49.1
Alkaid	152 50.7	N49 10.9
Alnilam	275 36.9	S01 11.2
Alphard	217 46.7	S08 46.5
Alphecca	126 02.4	N26 37.5
Alpheratz	357 33.8	N29 14.0
Altair	061 58.7	N08 56.2
Ankaa	353 06.3	S42 09.6
Antares	112 14.1	S26 29.5
Arcturus	145 46.6	N19 02.6
Atria	107 06.8	S69 04.4
Avior	234 14.5	S59 35.9
Bellatrix	278 22.0	N06 22.4
Betelgeuse	270 51.2	N07 24.7
Canopus	263 52.3	S52 42.7
Capella	280 20.7	N46 01.5
Deneb	049 24.9	N45 22.2
Denebola	182 23.7	N14 25.4
Diphda	348 46.4	S17 50.5
Dubhe	193 39.5	N61 36.7
Elnath	278 00.8	N28 37.8
Eltanin	090 41.2	N51 28.9
Enif	033 37.7	N09 59.6
Fomalhaut	015 13.4	S29 28.8
Gacrux	171 50.0	S57 15.9
Gienah	175 42.3	S17 41.5
Hadar	148 33.8	S60 30.2
Hamal	327 50.3	N23 35.1
Kaus Australi	083 30.7	S34 22.2
Kochab	137 18.7	N74 02.8
Markab	013 28.9	N15 20.7
Menkar	314 05.3	N04 11.5
Menkent	147 56.0	S36 30.2
Miaplacidus	221 38.2	S69 49.8
Mirfak	308 27.2	N49 57.2
Nunki	075 46.1	S26 15.8
Peacock	053 03.8	S56 38.8
Polaris	313 57.4	N89 22.4
Pollux	243 16.2	N27 57.8
Procyon	244 49.9	N05 09.4
Rasalhague	095 57.2	N12 32.3
Regulus	207 33.3	N11 50.3
Rigel	281 03.1	S08 10.3
Rigil Kentaur	139 38.1	S60 56.8
Sabik	102 01.2	S15 45.5
Schedar	349 30.2	N56 40.7
Shaula	096 08.5	S37 07.3
Sirius	258 25.5	S16 45.3
Spica	158 20.9	S11 18.1
Suhail	222 45.6	S43 32.6
Vega	080 32.2	N38 48.3
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	272 02.3	1411
Mars	332 50.8	1008
Jupiter	246 43.9	1552
Saturn	349 06.4	0903

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
16	00	180 54.8	N19 03.2	194 19.7	N20 15.9	60.8	5.8	12.7
	01	195 54.8	N19 03.8	208 44.5	N20 28.5	60.9	5.7	12.5
	02	210 54.8	N19 04.4	223 09.2	N20 41.1	60.9	5.5	12.4
	03	225 54.8	N19 04.9	237 33.7	N20 53.5	60.9	5.4	12.3
	04	240 54.8	N19 05.5	251 58.1	N21 05.8	60.9	5.3	12.1
	05	255 54.7	N19 06.1	266 22.4	N21 17.9	60.9	5.2	12.0
	06	270 54.7	N19 06.7	280 46.6	N21 29.9	61.0	5.0	11.9
	07	285 54.7	N19 07.3	295 10.6	N21 41.8	61.0	4.9	11.7
	08	300 54.7	N19 07.8	309 34.5	N21 53.5	61.0	4.8	11.6
	09	315 54.7	N19 08.4	323 58.3	N22 05.1	61.0	4.6	11.4
	10	330 54.7	N19 09.0	338 21.9	N22 16.5	61.0	4.5	11.3
	11	345 54.7	N19 09.6	352 45.4	N22 27.8	61.0	4.4	11.1
	12	000 54.6	N19 10.1	007 08.8	N22 39.0	61.1	4.3	11.0
	13	015 54.6	N19 10.7	021 32.1	N22 50.0	61.1	4.1	10.8
	14	030 54.6	N19 11.3	035 55.3	N23 00.8	61.1	4.0	10.7
	15	045 54.6	N19 11.8	050 18.3	N23 11.5	61.1	3.9	10.5
	16	060 54.6	N19 12.4	064 41.2	N23 22.0	61.1	3.8	10.3
	17	075 54.6	N19 13.0	079 04.0	N23 32.3	61.1	3.7	10.2
	18	090 54.5	N19 13.6	093 26.6	N23 42.5	61.1	3.6	10.0
	19	105 54.5	N19 14.1	107 49.2	N23 52.5	61.1	3.4	9.8
	20	120 54.5	N19 14.7	122 11.6	N24 02.4	61.1	3.3	9.7
	21	135 54.5	N19 15.3	136 34.0	N24 12.0	61.2	3.2	9.5
	22	150 54.5	N19 15.8	150 56.2	N24 21.5	61.2	3.1	9.3
	23	165 54.5	N19 16.4	165 18.3	N24 30.9	61.2	3.0	9.1
17	00	180 54.4	N19 17.0	179 40.2	N24 40.0	61.2	2.9	9.0
	01	195 54.4	N19 17.5	194 02.1	N24 49.0	61.2	2.8	8.8
	02	210 54.4	N19 18.1	208 23.9	N24 57.8	61.2	2.7	8.6
	03	225 54.4	N19 18.7	222 45.6	N25 06.4	61.2	2.6	8.4
	04	240 54.4	N19 19.2	237 07.1	N25 14.8	61.2	2.5	8.2
	05	255 54.3	N19 19.8	251 28.6	N25 23.0	61.2	2.4	8.0
	06	270 54.3	N19 20.3	265 49.9	N25 31.1	61.2	2.3	7.9
	07	285 54.3	N19 20.9	280 11.2	N25 38.9	61.2	2.2	7.7
	08	300 54.3	N19 21.5	294 32.4	N25 46.6	61.2	2.1	7.5
	09	315 54.3	N19 22.0	308 53.5	N25 54.0	61.2	2.0	7.3
	10	330 54.2	N19 22.6	323 14.5	N26 01.3	61.2	1.9	7.1
	11	345 54.2	N19 23.2	337 35.4	N26 08.4	61.2	1.8	6.9
	12	000 54.2	N19 23.7	351 56.2	N26 15.3	61.2	1.7	6.7
	13	015 54.2	N19 24.3	006 16.9	N26 21.9	61.2	1.7	6.5
	14	030 54.2	N19 24.8	020 37.6	N26 28.4	61.2	1.6	6.3
	15	045 54.1	N19 25.4	034 58.2	N26 34.7	61.2	1.5	6.1
	16	060 54.1	N19 25.9	049 18.7	N26 40.7	61.2	1.4	5.9
	17	075 54.1	N19 26.5	063 39.1	N26 46.6	61.2	1.4	5.6
	18	090 54.1	N19 27.1	077 59.5	N26 52.2	61.2	1.3	5.4
	19	105 54.0	N19 27.6	092 19.8	N26 57.7	61.2	1.3	5.2
	20	120 54.0	N19 28.2	106 40.1	N27 02.9	61.2	1.2	5.0
	21	135 54.0	N19 28.7	121 00.3	N27 07.9	61.2	1.1	4.8
	22	150 54.0	N19 29.3	135 20.4	N27 12.7	61.2	1.1	4.6
	23	165 54.0	N19 29.8	149 40.5	N27 17.3	61.2	1.0	4.4
18	00	180 53.9	N19 30.4	164 00.5	N27 21.7	61.2	1.0	4.2
	01	195 53.9	N19 30.9	178 20.5	N27 25.8	61.2	1.0	3.9
	02	210 53.9	N19 31.5	192 40.5	N27 29.8	61.2	0.9	3.7
	03	225 53.9	N19 32.0	207 00.4	N27 33.5	61.2	0.9	3.5
	04	240 53.8	N19 32.6	221 20.3	N27 37.0	61.2	0.8	3.3
	05	255 53.8	N19 33.1	235 40.1	N27 40.3	61.2	0.8	3.1
	06	270 53.8	N19 33.7	249 59.9	N27 43.4	61.2	0.8	2.9
	07	285 53.8	N19 34.2	264 19.7	N27 46.2	61.2	0.8	2.6
	08	300 53.7	N19 34.8	278 39.5	N27 48.9	61.1	0.8	2.4
	09	315 53.7	N19 35.3	292 59.3	N27 51.3	61.1	0.7	2.2
	10	330 53.7	N19 35.9	307 19.0	N27 53.5	61.1	0.7	2.0
	11	345 53.6	N19 36.4	321 38.7	N27 55.4	61.1	0.7	1.7
	12	000 53.6	N19 37.0	335 58.5	N27 57.2	61.1	0.7	1.5
	13	015 53.6	N19 37.5	350 18.2	N27 58.7	61.1	0.7	1.3
	14	030 53.6	N19 38.1	004 37.9	N28 00.0	61.1	0.7	1.1
	15	045 53.5	N19 38.6	018 57.6	N28 01.1	61.1	0.7	0.9
	16	060 53.5	N19 39.2	033 17.4	N28 02.0	61.0	0.7	0.6
	17	075 53.5	N19 39.7	047 37.1	N28 02.6	61.0	0.8	0.4
	18	090 53.5	N19 40.2	061 56.9	N28 03.0	61.0	0.8	0.2
	19	105 53.4	N19 40.8	076 16.7	N28 03.2	61.0	0.8	0.0
	20	120 53.4	N19 41.3	090 36.5	N28 03.2	61.0	0.8	-0.2
	21	135 53.4	N19 41.9	104 56.3	N28 03.0	61.0	0.9	-0.5
	22	150 53.3	N19 42.4	119 16.2	N28 02.5	61.0	0.9	-0.7
	23	165 53.3	N19 42.9	133 36.1	N28 01.8	60.9	0.9	-0.9

Day 16 noon Sun: v 0.0 d 0.6 SD 15.8 | Moon SD 16.6

Day 17 noon Sun: v 0.0 d 0.6 SD 15.8 | Moon SD 16.7

Day 18 noon Sun: v 0.0 d 0.5 SD 15.8 | Moon SD 16.6

SUN: MAY 17 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	0136	2222	--	--
66N	--	--	0214	2142	--	--
64N	--	0052	0241	2114	2309	--
62N	--	0143	0301	2053	2214	--
60N	--	0213	0318	2037	2143	--
58N	0047	0235	0332	2022	2120	2314
56N	0133	0253	0344	2010	2102	2224
54N	0201	0308	0354	2000	2046	2155
52N	0221	0321	0403	1950	2033	2133
50N	0238	0332	0412	1942	2022	2116
45N	0311	0354	0429	1925	1959	2043
40N	0334	0412	0443	1910	1941	2019
35N	0353	0427	0455	1858	1926	2001
30N	0408	0439	0505	1848	1914	1946
25N	0420	0450	0515	1838	1903	1933
20N	0431	0500	0523	1830	1853	1922
15N	0441	0508	0531	1822	1845	1912
10N	0450	0516	0539	1814	1837	1903
05N	0458	0524	0546	1807	1829	1855
00N	0505	0531	0553	1800	1822	1847
05S	0512	0538	0600	1753	1815	1840
10S	0519	0545	0607	1746	1808	1834
15S	0526	0552	0614	1738	1801	1827
20S	0532	0559	0622	1731	1754	1821
25S	0538	0606	0630	1722	1747	1814
30S	0544	0614	0639	1713	1739	1808
35S	0551	0622	0649	1704	1731	1801
40S	0558	0631	0700	1652	1722	1754
45S	0605	0641	0713	1639	1711	1747
50S	0614	0653	0729	1623	1659	1739
55S	0623	0708	0750	1602	1644	1729
60S	0635	0727	0818	1535	1625	1717

MOON: RISE / SET | UTC HHMM

Lat	Day 16		Day 17		Day 18	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	0041	--	--	--	--	--
66N	0120	--	--	--	--	--
64N	0147	2227	0123	--	--	--
62N	0209	2145	0205	--	0204	0004
60N	0226	2117	0234	2312	0257	--
58N	0241	2055	0257	2240	0329	2359
56N	0253	2038	0315	2216	0353	2333
54N	0305	2023	0331	2157	0413	2313
52N	0314	2010	0344	2140	0429	2256
50N	0323	1958	0356	2126	0444	2241
45N	0342	1935	0421	2058	0513	2211
40N	0358	1916	0441	2035	0535	2147
35N	0411	1900	0457	2017	0554	2128
30N	0422	1846	0512	2001	0611	2111
25N	0433	1834	0525	1947	0625	2057
20N	0442	1823	0537	1934	0638	2043
15N	0451	1813	0548	1922	0651	2031
10N	0459	1803	0558	1911	0702	2019
05N	0508	1754	0608	1900	0714	2008
00N	0516	1745	0618	1849	0725	1957
05S	0524	1736	0628	1839	0736	1945
10S	0532	1726	0639	1828	0747	1934
15S	0541	1717	0649	1817	0759	1922
20S	0550	1707	0700	1805	0811	1910
25S	0600	1656	0712	1752	0824	1856
30S	0611	1644	0726	1738	0839	1841
35S	0623	1631	0741	1722	0856	1825
40S	0637	1616	0758	1704	0915	1805
45S	0654	1558	0820	1642	0939	1741
50S	0715	1535	0847	1615	1009	1711
55S	0742	1506	0923	1537	1052	1628
60S	0822	1425	1023	1436	1208	1512

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | MAY 19 - MAY 21

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
19	00	236 40.9	146 44.5	N25 02.1	208 27.4	N10 47.4	123 08.4	N22 05.0	225 39.0	N02 19.9
	01	251 43.4	161 43.7	N25 02.2	223 28.1	N10 48.1	138 10.4	N22 04.9	240 41.3	N02 20.0
	02	266 45.8	176 42.8	N25 02.3	238 28.8	N10 48.8	153 12.4	N22 04.8	255 43.5	N02 20.1
	03	281 48.3	191 42.0	N25 02.4	253 29.5	N10 49.5	168 14.5	N22 04.8	270 45.7	N02 20.2
	04	296 50.8	206 41.2	N25 02.4	268 30.1	N10 50.1	183 16.5	N22 04.7	285 48.0	N02 20.3
	05	311 53.2	221 40.3	N25 02.5	283 30.8	N10 50.8	198 18.5	N22 04.6	300 50.2	N02 20.4
	06	326 55.7	236 39.5	N25 02.6	298 31.5	N10 51.5	213 20.5	N22 04.6	315 52.4	N02 20.5
	07	341 58.2	251 38.7	N25 02.7	313 32.2	N10 52.2	228 22.5	N22 04.5	330 54.7	N02 20.6
	08	357 00.6	266 37.8	N25 02.7	328 32.8	N10 52.9	243 24.5	N22 04.4	345 56.9	N02 20.7
	09	012 03.1	281 37.0	N25 02.8	343 33.5	N10 53.5	258 26.5	N22 04.4	000 59.2	N02 20.7
	10	027 05.5	296 36.2	N25 02.9	358 34.2	N10 54.2	273 28.5	N22 04.3	016 01.4	N02 20.8
	11	042 08.0	311 35.3	N25 02.9	013 34.9	N10 54.9	288 30.5	N22 04.2	031 03.6	N02 20.9
	12	057 10.5	326 34.5	N25 03.0	028 35.5	N10 55.6	303 32.5	N22 04.2	046 05.9	N02 21.0
	13	072 12.9	341 33.7	N25 03.1	043 36.2	N10 56.2	318 34.5	N22 04.1	061 08.1	N02 21.1
	14	087 15.4	356 32.8	N25 03.1	058 36.9	N10 56.9	333 36.5	N22 04.0	076 10.3	N02 21.2
	15	102 17.9	011 32.0	N25 03.2	073 37.6	N10 57.6	348 38.5	N22 04.0	091 12.6	N02 21.3
	16	117 20.3	026 31.2	N25 03.3	088 38.3	N10 58.3	003 40.5	N22 03.9	106 14.8	N02 21.4
	17	132 22.8	041 30.3	N25 03.3	103 38.9	N10 58.9	018 42.5	N22 03.8	121 17.0	N02 21.4
	18	147 25.3	056 29.5	N25 03.4	118 39.6	N10 59.6	033 44.5	N22 03.8	136 19.3	N02 21.5
	19	162 27.7	071 28.7	N25 03.4	133 40.3	N11 00.3	048 46.5	N22 03.7	151 21.5	N02 21.6
	20	177 30.2	086 27.8	N25 03.5	148 41.0	N11 01.0	063 48.6	N22 03.6	166 23.8	N02 21.7
	21	192 32.7	101 27.0	N25 03.6	163 41.6	N11 01.6	078 50.6	N22 03.6	181 26.0	N02 21.8
	22	207 35.1	116 26.2	N25 03.6	178 42.3	N11 02.3	093 52.6	N22 03.5	196 28.2	N02 21.9
	23	222 37.6	131 25.3	N25 03.7	193 43.0	N11 03.0	108 54.6	N22 03.4	211 30.5	N02 22.0
20	00	237 40.0	146 24.5	N25 03.7	208 43.7	N11 03.7	123 56.6	N22 03.4	226 32.7	N02 22.1
	01	252 42.5	161 23.7	N25 03.8	223 44.3	N11 04.3	138 58.6	N22 03.3	241 34.9	N02 22.2
	02	267 45.0	176 22.9	N25 03.8	238 45.0	N11 05.0	154 00.6	N22 03.2	256 37.2	N02 22.2
	03	282 47.4	191 22.0	N25 03.9	253 45.7	N11 05.7	169 02.6	N22 03.2	271 39.4	N02 22.3
	04	297 49.9	206 21.2	N25 03.9	268 46.4	N11 06.4	184 04.6	N22 03.1	286 41.7	N02 22.4
	05	312 52.4	221 20.4	N25 04.0	283 47.1	N11 07.0	199 06.6	N22 03.0	301 43.9	N02 22.5
	06	327 54.8	236 19.5	N25 04.0	298 47.7	N11 07.7	214 08.6	N22 03.0	316 46.1	N02 22.6
	07	342 57.3	251 18.7	N25 04.0	313 48.4	N11 08.4	229 10.6	N22 02.9	331 48.4	N02 22.7
	08	357 59.8	266 17.9	N25 04.1	328 49.1	N11 09.1	244 12.6	N22 02.8	346 50.6	N02 22.8
	09	013 02.2	281 17.0	N25 04.1	343 49.8	N11 09.7	259 14.6	N22 02.8	001 52.8	N02 22.9
	10	028 04.7	296 16.2	N25 04.2	358 50.4	N11 10.4	274 16.6	N22 02.7	016 55.1	N02 22.9
	11	043 07.2	311 15.4	N25 04.2	013 51.1	N11 11.1	289 18.6	N22 02.6	031 57.3	N02 23.0
	12	058 09.6	326 14.5	N25 04.2	028 51.8	N11 11.8	304 20.6	N22 02.5	046 59.6	N02 23.1
	13	073 12.1	341 13.7	N25 04.3	043 52.5	N11 12.4	319 22.6	N22 02.5	062 01.8	N02 23.2
	14	088 14.5	356 12.9	N25 04.3	058 53.1	N11 13.1	334 24.6	N22 02.4	077 04.0	N02 23.3
	15	103 17.0	011 12.1	N25 04.4	073 53.8	N11 13.8	349 26.6	N22 02.3	092 06.3	N02 23.4
	16	118 19.5	026 11.2	N25 04.4	088 54.5	N11 14.4	004 28.6	N22 02.3	107 08.5	N02 23.5
	17	133 21.9	041 10.4	N25 04.4	103 55.2	N11 15.1	019 30.6	N22 02.2	122 10.7	N02 23.6
	18	148 24.4	056 09.6	N25 04.4	118 55.8	N11 15.8	034 32.6	N22 02.1	137 13.0	N02 23.6
	19	163 26.9	071 08.7	N25 04.5	133 56.5	N11 16.5	049 34.6	N22 02.1	152 15.2	N02 23.7
	20	178 29.3	086 07.9	N25 04.5	148 57.2	N11 17.1	064 36.6	N22 02.0	167 17.5	N02 23.8
	21	193 31.8	101 07.1	N25 04.5	163 57.9	N11 17.8	079 38.6	N22 01.9	182 19.7	N02 23.9
	22	208 34.3	116 06.2	N25 04.6	178 58.5	N11 18.5	094 40.6	N22 01.9	197 21.9	N02 24.0
	23	223 36.7	131 05.4	N25 04.6	193 59.2	N11 19.1	109 42.6	N22 01.8	212 24.2	N02 24.1
21	00	238 39.2	146 04.6	N25 04.6	208 59.9	N11 19.8	124 44.6	N22 01.7	227 26.4	N02 24.2
	01	253 41.7	161 03.8	N25 04.6	224 00.6	N11 20.5	139 46.6	N22 01.7	242 28.7	N02 24.2
	02	268 44.1	176 02.9	N25 04.6	239 01.2	N11 21.1	154 48.6	N22 01.6	257 30.9	N02 24.3
	03	283 46.6	191 02.1	N25 04.7	254 01.9	N11 21.8	169 50.6	N22 01.5	272 33.1	N02 24.4
	04	298 49.0	206 01.3	N25 04.7	269 02.6	N11 22.5	184 52.6	N22 01.5	287 35.4	N02 24.5
	05	313 51.5	221 00.4	N25 04.7	284 03.3	N11 23.2	199 54.6	N22 01.4	302 37.6	N02 24.6
	06	328 54.0	235 59.6	N25 04.7	299 03.9	N11 23.8	214 56.6	N22 01.3	317 39.9	N02 24.7
	07	343 56.4	250 58.8	N25 04.7	314 04.6	N11 24.5	229 58.6	N22 01.3	332 42.1	N02 24.8
	08	358 58.9	265 58.0	N25 04.7	329 05.3	N11 25.2	245 00.6	N22 01.2	347 44.3	N02 24.9
	09	014 01.4	280 57.1	N25 04.7	344 06.0	N11 25.8	260 02.6	N22 01.1	002 46.6	N02 24.9
	10	029 03.8	295 56.3	N25 04.8	359 06.6	N11 26.5	275 04.6	N22 01.0	017 48.8	N02 25.0
	11	044 06.3	310 55.5	N25 04.8	014 07.3	N11 27.2	290 06.6	N22 01.0	032 51.1	N02 25.1
	12	059 08.8	325 54.6	N25 04.8	029 08.0	N11 27.8	305 08.6	N22 00.9	047 53.3	N02 25.2
	13	074 11.2	340 53.8	N25 04.8	044 08.7	N11 28.5	320 10.6	N22 00.8	062 55.5	N02 25.3
	14	089 13.7	355 53.0	N25 04.8	059 09.3	N11 29.2	335 12.6	N22 00.8	077 57.8	N02 25.4
	15	104 16.2	010 52.2	N25 04.8	074 10.0	N11 29.8	350 14.6	N22 00.7	093 00.0	N02 25.5
	16	119 18.6	025 51.3	N25 04.8	089 10.7	N11 30.5	005 16.6	N22 00.6	108 02.3	N02 25.5
	17	134 21.1	040 50.5	N25 04.8	104 11.4	N11 31.2	020 18.6	N22 00.6	123 04.5	N02 25.6
	18	149 23.5	055 49.7	N25 04.8	119 12.0	N11 31.8	035 20.6	N22 00.5	138 06.7	N02 25.7
	19	164 26.0	070 48.8	N25 04.8	134 12.7	N11 32.5	050 22.6	N22 00.4	153 09.0	N02 25.8
	20	179 28.5	085 48.0	N25 04.8	149 13.4	N11 33.2	065 24.6	N22 00.4	168 11.2	N02 25.9
	21	194 30.9	100 47.2	N25 04.8	164 14.1	N11 33.8	080 26.6	N22 00.3	183 13.5	N02 26.0
	22	209 33.4	115 46.4	N25 04.8	179 14.7	N11 34.5	095 28.6	N22 00.2	198 15.7	N02 26.1
	23	224 35.9	130 45.5	N25 04.8	194 15.4	N11 35.2	110 30.6	N22 00.1	213 18.0	N02 26.1

Venus	Mars	Jupiter	Saturn
19: v -0.8 d 0.1	19: v 0.7 d 0.7	19: v 2.0 d -0.1	19: v 2.2 d 0.1
20: v -0.8 d 0.0	20: v 0.7 d 0.7	20: v 2.0 d -0.1	20: v 2.2 d 0.1
21: v -0.8 d 0.0	21: v 0.7 d 0.7	21: v 2.0 d -0.1	21: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.3	S40 11.9
Achernar	335 19.8	S57 06.0
Acrux	172 58.4	S63 15.0
Adhara	255 05.3	S29 00.6
Al Na'ir	027 31.5	S46 49.8
Aldebaran	290 38.7	N16 33.7
Alioth	166 11.6	N55 49.1
Alkaid	152 50.7	N49 10.9
Alnilam	275 36.9	S01 11.2
Alphard	217 46.7	S08 46.5
Alphecca	126 02.4	N26 37.5
Alpheratz	357 33.8	N29 14.0
Altair	061 58.7	N08 56.2
Ankaa	353 06.3	S42 09.6
Antares	112 14.1	S26 29.5
Arcturus	145 46.6	N19 02.6
Atria	107 06.8	S69 04.4
Avior	234 14.6	S59 35.9
Bellatrix	278 22.0	N06 22.4
Betelgeuse	270 51.2	N07 24.7
Canopus	263 52.4	S52 42.7
Capella	280 20.7	N46 01.5
Deneb	049 24.9	N45 22.2
Denebola	182 23.7	N14 25.4
Diphda	348 46.4	S17 50.5
Dubhe	193 39.5	N61 36.7
Elnath	278 00.8	N28 37.8
Eltanin	090 41.2	N51 28.9
Enif	033 37.7	N09 59.7
Fomalhaut	015 13.4	S29 28.8
Gacrux	171 50.0	S57 16.0
Gienah	175 42.3	S17 41.5
Hadar	148 33.8	S60 30.2
Hamal	327 50.3	N23 35.1
Kaus Australi	083 30.7	S34 22.2
Kochab	137 18.7	N74 02.8
Markab	013 28.9	N15 20.7
Menkar	314 05.3	N04 11.5
Menkent	147 55.9	S36 30.2
Miaplacidus	221 38.3	S69 49.8
Mirfak	308 27.2	N49 57.2
Nunki	075 46.1	S26 15.8
Peacock	053 03.7	S56 38.7
Polaris	313 56.6	N89 22.4
Pollux	243 16.2	N27 57.8
Procyon	244 49.9	N05 09.4
Rasalhague	095 57.2	N12 32.3
Regulus	207 33.3	N11 50.3
Rigel	281 03.1	S08 10.3
Rigil Kentaur	139 38.1	S60 56.8
Sabik	102 01.2	S15 45.5
Schedar	349 30.2	N56 40.7
Shaula	096 08.5	S37 07.3
Sirius	258 25.5	S16 45.3
Spica	158 20.9	S11 18.1
Suhail	222 45.6	S43 32.6
Vega	080 32.1	N38 48.3
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	268 04.9	1415
Mars	330 42.2	1005
Jupiter	246 11.0	1542
Saturn	348 49.9	0852

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
19	00	180 53.3	N19 43.5	147 56.0	N28 00.9	60.9	1.0	-1.1
	01	195 53.3	N19 44.0	162 16.0	N27 59.8	60.9	1.0	-1.3
	02	210 53.2	N19 44.6	176 36.0	N27 58.5	60.9	1.1	-1.5
	03	225 53.2	N19 45.1	190 56.1	N27 57.0	60.9	1.1	-1.8
	04	240 53.2	N19 45.6	205 16.2	N27 55.2	60.8	1.2	-2.0
	05	255 53.1	N19 46.2	219 36.3	N27 53.2	60.8	1.2	-2.2
	06	270 53.1	N19 46.7	233 56.6	N27 51.0	60.8	1.3	-2.4
	07	285 53.1	N19 47.2	248 16.9	N27 48.6	60.8	1.4	-2.6
	08	300 53.0	N19 47.8	262 37.2	N27 46.0	60.8	1.4	-2.8
	09	315 53.0	N19 48.3	276 57.6	N27 43.2	60.7	1.5	-3.0
	10	330 53.0	N19 48.8	291 18.1	N27 40.2	60.7	1.6	-3.2
	11	345 52.9	N19 49.4	305 38.7	N27 36.9	60.7	1.6	-3.4
	12	000 52.9	N19 49.9	319 59.3	N27 33.5	60.7	1.7	-3.7
	13	015 52.9	N19 50.4	334 20.1	N27 29.8	60.7	1.8	-3.9
	14	030 52.8	N19 51.0	348 40.9	N27 26.0	60.6	1.9	-4.1
	15	045 52.8	N19 51.5	003 01.8	N27 21.9	60.6	2.0	-4.3
	16	060 52.8	N19 52.0	017 22.7	N27 17.6	60.6	2.1	-4.5
	17	075 52.7	N19 52.6	031 43.8	N27 13.2	60.6	2.2	-4.7
	18	090 52.7	N19 53.1	046 05.0	N27 08.5	60.5	2.3	-4.9
	19	105 52.7	N19 53.6	060 26.2	N27 03.6	60.5	2.4	-5.1
	20	120 52.6	N19 54.1	074 47.6	N26 58.6	60.5	2.5	-5.2
	21	135 52.6	N19 54.7	089 09.0	N26 53.3	60.5	2.6	-5.4
	22	150 52.6	N19 55.2	103 30.6	N26 47.9	60.4	2.7	-5.6
	23	165 52.5	N19 55.7	117 52.3	N26 42.3	60.4	2.8	-5.8
20	00	180 52.5	N19 56.2	132 14.0	N26 36.5	60.4	2.9	-6.0
	01	195 52.5	N19 56.8	146 35.9	N26 30.5	60.3	3.0	-6.2
	02	210 52.4	N19 57.3	160 57.9	N26 24.3	60.3	3.1	-6.4
	03	225 52.4	N19 57.8	175 20.0	N26 17.9	60.3	3.2	-6.6
	04	240 52.4	N19 58.3	189 42.3	N26 11.3	60.3	3.3	-6.7
	05	255 52.3	N19 58.9	204 04.6	N26 04.6	60.2	3.5	-6.9
	06	270 52.3	N19 59.4	218 27.1	N25 57.7	60.2	3.6	-7.1
	07	285 52.2	N19 59.9	232 49.6	N25 50.6	60.2	3.7	-7.3
	08	300 52.2	N20 00.4	247 12.3	N25 43.3	60.1	3.8	-7.4
	09	315 52.2	N20 00.9	261 35.2	N25 35.9	60.1	4.0	-7.6
	10	330 52.1	N20 01.5	275 58.1	N25 28.3	60.1	4.1	-7.8
	11	345 52.1	N20 02.0	290 21.2	N25 20.5	60.1	4.2	-7.9
	12	000 52.1	N20 02.5	304 44.4	N25 12.6	60.0	4.3	-8.1
	13	015 52.0	N20 03.0	319 07.7	N25 04.5	60.0	4.5	-8.3
	14	030 52.0	N20 03.5	333 31.2	N24 56.2	60.0	4.6	-8.4
	15	045 51.9	N20 04.0	347 54.8	N24 47.8	59.9	4.7	-8.6
	16	060 51.9	N20 04.6	002 18.5	N24 39.2	59.9	4.9	-8.7
	17	075 51.9	N20 05.1	016 42.4	N24 30.5	59.9	5.0	-8.9
	18	090 51.8	N20 05.6	031 06.4	N24 21.6	59.8	5.1	-9.0
	19	105 51.8	N20 06.1	045 30.5	N24 12.6	59.8	5.3	-9.2
	20	120 51.7	N20 06.6	059 54.8	N24 03.4	59.8	5.4	-9.3
	21	135 51.7	N20 07.1	074 19.2	N23 54.0	59.7	5.5	-9.5
	22	150 51.7	N20 07.6	088 43.7	N23 44.5	59.7	5.7	-9.6
	23	165 51.6	N20 08.1	103 08.4	N23 34.9	59.7	5.8	-9.8
21	00	180 51.6	N20 08.7	117 33.2	N23 25.2	59.6	5.9	-9.9
	01	195 51.5	N20 09.2	131 58.2	N23 15.3	59.6	6.1	-10.0
	02	210 51.5	N20 09.7	146 23.3	N23 05.2	59.6	6.2	-10.2
	03	225 51.5	N20 10.2	160 48.5	N22 55.0	59.5	6.4	-10.3
	04	240 51.4	N20 10.7	175 13.8	N22 44.7	59.5	6.5	-10.4
	05	255 51.4	N20 11.2	189 39.4	N22 34.3	59.5	6.6	-10.6
	06	270 51.3	N20 11.7	204 05.0	N22 23.7	59.4	6.8	-10.7
	07	285 51.3	N20 12.2	218 30.8	N22 13.1	59.4	6.9	-10.8
	08	300 51.2	N20 12.7	232 56.7	N22 02.2	59.4	7.1	-10.9
	09	315 51.2	N20 13.2	247 22.7	N21 51.3	59.3	7.2	-11.1
	10	330 51.2	N20 13.7	261 48.9	N21 40.3	59.3	7.3	-11.2
	11	345 51.1	N20 14.2	276 15.3	N21 29.1	59.3	7.5	-11.3
	12	000 51.1	N20 14.7	290 41.7	N21 17.8	59.2	7.6	-11.4
	13	015 51.0	N20 15.2	305 08.3	N21 06.4	59.2	7.7	-11.5
	14	030 51.0	N20 15.7	319 35.1	N20 54.9	59.2	7.9	-11.6
	15	045 50.9	N20 16.2	334 02.0	N20 43.3	59.1	8.0	-11.7
	16	060 50.9	N20 16.7	348 29.0	N20 31.5	59.1	8.1	-11.8
	17	075 50.9	N20 17.2	002 56.1	N20 19.7	59.1	8.3	-11.9
	18	090 50.8	N20 17.7	017 23.4	N20 07.8	59.0	8.4	-12.0
	19	105 50.8	N20 18.2	031 50.8	N19 55.7	59.0	8.5	-12.1
	20	120 50.7	N20 18.7	046 18.4	N19 43.6	58.9	8.7	-12.2
	21	135 50.7	N20 19.2	060 46.0	N19 31.4	58.9	8.8	-12.3
	22	150 50.6	N20 19.7	075 13.8	N19 19.0	58.9	8.9	-12.4
	23	165 50.6	N20 20.2	089 41.8	N19 06.6	58.8	9.1	-12.5

Day 19 noon Sun: v 0.0 d 0.5 SD 15.8 | Moon SD 16.5

Day 20 noon Sun: v 0.0 d 0.5 SD 15.8 | Moon SD 16.4

Day 21 noon Sun: v 0.0 d 0.5 SD 15.8 | Moon SD 16.1

SUN: MAY 20 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	0117	2243	--	--
66N	--	--	0202	2154	--	--
64N	--	0013	0232	2124	--	--
62N	--	0129	0254	2101	2228	--
60N	--	0203	0311	2043	2153	--
58N	0011	0227	0326	2028	2128	--
56N	0120	0246	0339	2016	2108	2236
54N	0152	0302	0349	2005	2052	2204
52N	0215	0316	0359	1955	2039	2140
50N	0233	0327	0408	1946	2027	2122
45N	0306	0351	0426	1928	2003	2048
40N	0331	0409	0441	1913	1944	2023
35N	0350	0425	0453	1900	1929	2004
30N	0406	0437	0504	1850	1916	1948
25N	0419	0449	0514	1840	1905	1935
20N	0430	0458	0522	1831	1855	1923
15N	0440	0507	0530	1823	1846	1913
10N	0449	0516	0538	1815	1837	1904
05N	0458	0524	0546	1807	1830	1855
00N	0505	0531	0553	1800	1822	1848
05S	0513	0538	0600	1753	1815	1840
10S	0520	0545	0608	1745	1808	1833
15S	0526	0552	0615	1738	1800	1827
20S	0533	0600	0623	1730	1753	1820
25S	0539	0607	0632	1721	1746	1813
30S	0546	0615	0641	1712	1738	1807
35S	0553	0624	0651	1702	1729	1800
40S	0600	0633	0703	1650	1719	1752
45S	0608	0644	0717	1636	1708	1744
50S	0617	0657	0733	1619	1656	1736
55S	0627	0713	0755	1558	1640	1725
60S	0640	0733	0824	1528	1620	1713

MOON: RISE / SET | UTC HHMM

Lat	Day 19		Day 20		Day 21	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	0556	0259
64N	--	--	--	--	0639	0215
62N	0247	0144	0500	0148	0708	0145
60N	0356	0034	0537	0110	0730	0123
58N	0431	--	0604	0043	0748	0104
56N	0457	--	0625	0021	0802	0049
54N	0517	--	0642	0004	0815	0035
52N	0534	2349	0657	--	0826	0024
50N	0549	2336	0710	--	0836	0013
45N	0619	2308	0736	2351	0857	--
40N	0642	2247	0757	2333	0913	--
35N	0701	2229	0814	2318	0927	2358
30N	0718	2213	0829	2305	0940	2348
25N	0732	2200	0842	2253	0950	2339
20N	0746	2147	0854	2243	1000	2330
15N	0758	2135	0905	2233	1009	2323
10N	0809	2124	0916	2223	1018	2315
05N	0821	2113	0926	2214	1026	2308
00N	0832	2103	0936	2205	1035	2301
05S	0843	2052	0946	2155	1043	2253
10S	0854	2041	0956	2146	1051	2246
15S	0906	2030	1006	2136	1100	2238
20S	0918	2018	1017	2126	1109	2230
25S	0931	2005	1029	2115	1119	2222
30S	0946	1951	1042	2103	1129	2212
35S	1002	1935	1057	2049	1141	2202
40S	1021	1916	1114	2033	1154	2149
45S	1044	1854	1134	2014	1210	2135
50S	1114	1825	1159	1950	1230	2117
55S	1155	1745	1232	1918	1255	2054
60S	1304	1636	1323	1829	1329	2021

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | MAY 22 - MAY 24

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
22	00	239 38.3	145 44.7	N25 04.8	209 16.1	N11 35.8	125 32.6	N22 00.1	228 20.2	N02 26.2
	01	254 40.8	160 43.9	N25 04.8	224 16.8	N11 36.5	140 34.6	N22 00.0	243 22.4	N02 26.3
	02	269 43.3	175 43.1	N25 04.8	239 17.4	N11 37.1	155 36.6	N21 59.9	258 24.7	N02 26.4
	03	284 45.7	190 42.2	N25 04.7	254 18.1	N11 37.8	170 38.6	N21 59.9	273 26.9	N02 26.5
	04	299 48.2	205 41.4	N25 04.7	269 18.8	N11 38.5	185 40.6	N21 59.8	288 29.2	N02 26.6
	05	314 50.6	220 40.6	N25 04.7	284 19.5	N11 39.1	200 42.5	N21 59.7	303 31.4	N02 26.7
	06	329 53.1	235 39.8	N25 04.7	299 20.1	N11 39.8	215 44.5	N21 59.7	318 33.6	N02 26.7
	07	344 55.6	250 38.9	N25 04.7	314 20.8	N11 40.5	230 46.5	N21 59.6	333 35.9	N02 26.8
	08	359 58.0	265 38.1	N25 04.7	329 21.5	N11 41.1	245 48.5	N21 59.5	348 38.1	N02 26.9
	09	015 00.5	280 37.3	N25 04.7	344 22.2	N11 41.8	260 50.5	N21 59.4	003 40.4	N02 27.0
	10	030 03.0	295 36.5	N25 04.6	359 22.8	N11 42.5	275 52.5	N21 59.4	018 42.6	N02 27.1
	11	045 05.4	310 35.6	N25 04.6	014 23.5	N11 43.1	290 54.5	N21 59.3	033 44.9	N02 27.2
	12	060 07.9	325 34.8	N25 04.6	029 24.2	N11 43.8	305 56.5	N21 59.2	048 47.1	N02 27.3
	13	075 10.4	340 34.0	N25 04.6	044 24.8	N11 44.4	320 58.5	N21 59.2	063 49.3	N02 27.3
	14	090 12.8	355 33.2	N25 04.5	059 25.5	N11 45.1	336 00.5	N21 59.1	078 51.6	N02 27.4
	15	105 15.3	010 32.3	N25 04.5	074 26.2	N11 45.8	351 02.5	N21 59.0	093 53.8	N02 27.5
	16	120 17.8	025 31.5	N25 04.5	089 26.9	N11 46.4	006 04.5	N21 59.0	108 56.1	N02 27.6
	17	135 20.2	040 30.7	N25 04.5	104 27.5	N11 47.1	021 06.5	N21 58.9	123 58.3	N02 27.7
	18	150 22.7	055 29.9	N25 04.4	119 28.2	N11 47.7	036 08.5	N21 58.8	139 00.6	N02 27.8
	19	165 25.1	070 29.0	N25 04.4	134 28.9	N11 48.4	051 10.5	N21 58.7	154 02.8	N02 27.9
	20	180 27.6	085 28.2	N25 04.4	149 29.6	N11 49.1	066 12.5	N21 58.7	169 05.0	N02 27.9
	21	195 30.1	100 27.4	N25 04.3	164 30.2	N11 49.7	081 14.5	N21 58.6	184 07.3	N02 28.0
	22	210 32.5	115 26.6	N25 04.3	179 30.9	N11 50.4	096 16.5	N21 58.5	199 09.5	N02 28.1
	23	225 35.0	130 25.7	N25 04.3	194 31.6	N11 51.0	111 18.4	N21 58.5	214 11.8	N02 28.2
23	00	240 37.5	145 24.9	N25 04.2	209 32.2	N11 51.7	126 20.4	N21 58.4	229 14.0	N02 28.3
	01	255 39.9	160 24.1	N25 04.2	224 32.9	N11 52.4	141 22.4	N21 58.3	244 16.3	N02 28.4
	02	270 42.4	175 23.3	N25 04.2	239 33.6	N11 53.0	156 24.4	N21 58.3	259 18.5	N02 28.4
	03	285 44.9	190 22.4	N25 04.1	254 34.3	N11 53.7	171 26.4	N21 58.2	274 20.8	N02 28.5
	04	300 47.3	205 21.6	N25 04.1	269 34.9	N11 54.3	186 28.4	N21 58.1	289 23.0	N02 28.6
	05	315 49.8	220 20.8	N25 04.0	284 35.6	N11 55.0	201 30.4	N21 58.0	304 25.2	N02 28.7
	06	330 52.3	235 20.0	N25 04.0	299 36.3	N11 55.7	216 32.4	N21 58.0	319 27.5	N02 28.8
	07	345 54.7	250 19.2	N25 03.9	314 37.0	N11 56.3	231 34.4	N21 57.9	334 29.7	N02 28.9
	08	000 57.2	265 18.3	N25 03.9	329 37.6	N11 57.0	246 36.4	N21 57.8	349 32.0	N02 29.0
	09	015 59.6	280 17.5	N25 03.8	344 38.3	N11 57.6	261 38.4	N21 57.8	004 34.2	N02 29.0
	10	031 02.1	295 16.7	N25 03.8	359 39.0	N11 58.3	276 40.4	N21 57.7	019 36.5	N02 29.1
	11	046 04.6	310 15.9	N25 03.7	014 39.6	N11 58.9	291 42.4	N21 57.6	034 38.7	N02 29.2
	12	061 07.0	325 15.0	N25 03.7	029 40.3	N11 59.6	306 44.3	N21 57.5	049 41.0	N02 29.3
	13	076 09.5	340 14.2	N25 03.6	044 41.0	N12 00.3	321 46.3	N21 57.5	064 43.2	N02 29.4
	14	091 12.0	355 13.4	N25 03.6	059 41.7	N12 00.9	336 48.3	N21 57.4	079 45.5	N02 29.5
	15	106 14.4	010 12.6	N25 03.5	074 42.3	N12 01.6	351 50.3	N21 57.3	094 47.7	N02 29.5
	16	121 16.9	025 11.8	N25 03.5	089 43.0	N12 02.2	006 52.3	N21 57.3	109 49.9	N02 29.6
	17	136 19.4	040 10.9	N25 03.4	104 43.7	N12 02.9	021 54.3	N21 57.2	124 52.2	N02 29.7
	18	151 21.8	055 10.1	N25 03.4	119 44.3	N12 03.5	036 56.3	N21 57.1	139 54.4	N02 29.8
	19	166 24.3	070 09.3	N25 03.3	134 45.0	N12 04.2	051 58.3	N21 57.0	154 56.7	N02 29.9
	20	181 26.7	085 08.5	N25 03.2	149 45.7	N12 04.8	067 00.3	N21 57.0	169 58.9	N02 30.0
	21	196 29.2	100 07.7	N25 03.2	164 46.4	N12 05.5	082 02.3	N21 56.9	185 01.2	N02 30.0
	22	211 31.7	115 06.8	N25 03.1	179 47.0	N12 06.2	097 04.2	N21 56.8	200 03.4	N02 30.1
	23	226 34.1	130 06.0	N25 03.0	194 47.7	N12 06.8	112 06.2	N21 56.8	215 05.7	N02 30.2
24	00	241 36.6	145 05.2	N25 03.0	209 48.4	N12 07.5	127 08.2	N21 56.7	230 07.9	N02 30.3
	01	256 39.1	160 04.4	N25 02.9	224 49.0	N12 08.1	142 10.2	N21 56.6	245 10.2	N02 30.4
	02	271 41.5	175 03.6	N25 02.8	239 49.7	N12 08.8	157 12.2	N21 56.5	260 12.4	N02 30.5
	03	286 44.0	190 02.8	N25 02.8	254 50.4	N12 09.4	172 14.2	N21 56.5	275 14.6	N02 30.5
	04	301 46.5	205 01.9	N25 02.7	269 51.1	N12 10.1	187 16.2	N21 56.4	290 16.9	N02 30.6
	05	316 48.9	220 01.1	N25 02.6	284 51.7	N12 10.7	202 18.2	N21 56.3	305 19.1	N02 30.7
	06	331 51.4	235 00.3	N25 02.6	299 52.4	N12 11.4	217 20.2	N21 56.3	320 21.4	N02 30.8
	07	346 53.9	249 59.5	N25 02.5	314 53.1	N12 12.0	232 22.1	N21 56.2	335 23.6	N02 30.9
	08	001 56.3	264 58.7	N25 02.4	329 53.7	N12 12.7	247 24.1	N21 56.1	350 25.9	N02 31.0
	09	016 58.8	279 57.8	N25 02.3	344 54.4	N12 13.3	262 26.1	N21 56.0	005 28.1	N02 31.0
	10	032 01.2	294 57.0	N25 02.2	359 55.1	N12 14.0	277 28.1	N21 56.0	020 30.4	N02 31.1
	11	047 03.7	309 56.2	N25 02.2	014 55.8	N12 14.6	292 30.1	N21 55.9	035 32.6	N02 31.2
	12	062 06.2	324 55.4	N25 02.1	029 56.4	N12 15.3	307 32.1	N21 55.8	050 34.9	N02 31.3
	13	077 08.6	339 54.6	N25 02.0	044 57.1	N12 15.9	322 34.1	N21 55.7	065 37.1	N02 31.4
	14	092 11.1	354 53.8	N25 01.9	059 57.8	N12 16.6	337 36.1	N21 55.7	080 39.4	N02 31.5
	15	107 13.6	009 52.9	N25 01.8	074 58.4	N12 17.2	352 38.0	N21 55.6	095 41.6	N02 31.5
	16	122 16.0	024 52.1	N25 01.7	089 59.1	N12 17.9	007 40.0	N21 55.5	110 43.9	N02 31.6
	17	137 18.5	039 51.3	N25 01.7	104 59.8	N12 18.5	022 42.0	N21 55.5	125 46.1	N02 31.7
	18	152 21.0	054 50.5	N25 01.6	120 00.5	N12 19.2	037 44.0	N21 55.4	140 48.4	N02 31.8
	19	167 23.4	069 49.7	N25 01.5	135 01.1	N12 19.8	052 46.0	N21 55.3	155 50.6	N02 31.9
	20	182 25.9	084 48.9	N25 01.4	150 01.8	N12 20.5	067 48.0	N21 55.2	170 52.9	N02 32.0
	21	197 28.4	099 48.1	N25 01.3	165 02.5	N12 21.1	082 50.0	N21 55.2	185 55.1	N02 32.0
	22	212 30.8	114 47.2	N25 01.2	180 03.1	N12 21.8	097 52.0	N21 55.1	200 57.4	N02 32.1
	23	227 33.3	129 46.4	N25 01.1	195 03.8	N12 22.4	112 53.9	N21 55.0	215 59.6	N02 32.2

Venus	Mars	Jupiter	Saturn
22: v -0.8 d 0.0	22: v 0.7 d 0.7	22: v 2.0 d -0.1	22: v 2.2 d 0.1
23: v -0.8 d -0.1	23: v 0.7 d 0.7	23: v 2.0 d -0.1	23: v 2.2 d 0.1
24: v -0.8 d -0.1	24: v 0.7 d 0.7	24: v 2.0 d -0.1	24: v 2.2 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.3	S40 11.9
Achernar	335 19.8	S57 06.0
Acrux	172 58.4	S63 15.0
Adhara	255 05.3	S29 00.6
Al Na'ir	027 31.5	S46 49.7
Aldebaran	290 38.7	N16 33.7
Alioth	166 11.6	N55 49.1
Alkaid	152 50.7	N49 10.9
Alnilam	275 36.9	S01 11.2
Alphard	217 46.7	S08 46.5
Alphecca	126 02.4	N26 37.5
Alpheratz	357 33.8	N29 14.0
Altair	061 58.7	N08 56.2
Ankaa	353 06.3	S42 09.6
Antares	112 14.1	S26 29.5
Arcturus	145 46.6	N19 02.6
Atria	107 06.7	S69 04.4
Avior	234 14.6	S59 35.9
Bellatrix	278 22.0	N06 22.4
Betelgeuse	270 51.2	N07 24.7
Canopus	263 52.4	S52 42.7
Capella	280 20.7	N46 01.5
Deneb	049 24.9	N45 22.2
Denebola	182 23.7	N14 25.4
Diphda	348 46.4	S17 50.4
Dubhe	193 39.5	N61 36.7
Elnath	278 00.8	N28 37.8
Eltanin	090 41.2	N51 28.9
Enif	033 37.7	N09 59.7
Fomalhaut	015 13.4	S29 28.8
Gacrux	171 50.0	S57 16.0
Gienah	175 42.3	S17 41.5
Hadar	148 33.8	S60 30.2
Hamal	327 50.2	N23 35.1
Kaus Australi	083 30.7	S34 22.2
Kochab	137 18.7	N74 02.8
Markab	013 28.9	N15 20.7
Menkar	314 05.3	N04 11.6
Menkent	147 55.9	S36 30.2
Miaplacidus	221 38.3	S69 49.8
Mirfak	308 27.1	N49 57.2
Nunki	075 46.1	S26 15.8
Peacock	053 03.7	S56 38.7
Polaris	313 56.1	N89 22.4
Pollux	243 16.2	N27 57.8
Procyon	244 49.9	N05 09.4
Rasalhague	095 57.2	N12 32.3
Regulus	207 33.3	N11 50.3
Rigel	281 03.1	S08 10.3
Rigil Kentaur	139 38.1	S60 56.8
Sabik	102 01.2	S15 45.5
Schedar	349 30.1	N56 40.7
Shaula	096 08.4	S37 07.3
Sirius	258 25.5	S16 45.3
Spica	158 20.9	S11 18.1
Suhail	222 45.6	S43 32.6
Vega	080 32.1	N38 48.3
Zubenelgenubi	136 54.4	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	264 08.0	1419
Mars	328 33.3	1001
Jupiter	245 37.3	1533
Saturn	348 33.9	0842

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
22	00	180 50.5	N20 20.7	104 09.9	N18 54.1	58.8	9.2	-12.6
	01	195 50.5	N20 21.2	118 38.1	N18 41.5	58.8	9.3	-12.7
	02	210 50.4	N20 21.7	133 06.4	N18 28.8	58.7	9.5	-12.8
	03	225 50.4	N20 22.2	147 34.9	N18 16.0	58.7	9.6	-12.9
	04	240 50.4	N20 22.7	162 03.4	N18 03.2	58.7	9.7	-12.9
	05	255 50.3	N20 23.2	176 32.1	N17 50.3	58.6	9.8	-13.0
	06	270 50.3	N20 23.7	191 01.0	N17 37.2	58.6	10.0	-13.1
	07	285 50.2	N20 24.2	205 29.9	N17 24.1	58.6	10.1	-13.2
	08	300 50.2	N20 24.7	219 59.0	N17 11.0	58.5	10.2	-13.2
	09	315 50.1	N20 25.2	234 28.2	N16 57.7	58.5	10.3	-13.3
	10	330 50.1	N20 25.6	248 57.5	N16 44.4	58.4	10.4	-13.4
	11	345 50.0	N20 26.1	263 27.0	N16 31.0	58.4	10.6	-13.5
	12	000 50.0	N20 26.6	277 56.5	N16 17.5	58.4	10.7	-13.5
	13	015 49.9	N20 27.1	292 26.2	N16 04.0	58.3	10.8	-13.6
	14	030 49.9	N20 27.6	306 56.0	N15 50.4	58.3	10.9	-13.7
	15	045 49.8	N20 28.1	321 25.9	N15 36.7	58.3	11.0	-13.7
	16	060 49.8	N20 28.6	335 55.9	N15 23.0	58.2	11.1	-13.8
	17	075 49.7	N20 29.1	350 26.1	N15 09.2	58.2	11.2	-13.8
	18	090 49.7	N20 29.5	004 56.3	N14 55.4	58.2	11.4	-13.9
	19	105 49.6	N20 30.0	019 26.7	N14 41.5	58.1	11.5	-14.0
	20	120 49.6	N20 30.5	033 57.1	N14 27.5	58.1	11.6	-14.0
	21	135 49.5	N20 31.0	048 27.7	N14 13.5	58.0	11.7	-14.1
	22	150 49.5	N20 31.5	062 58.4	N13 59.5	58.0	11.8	-14.1
	23	165 49.4	N20 32.0	077 29.1	N13 45.4	58.0	11.9	-14.2
23	00	180 49.4	N20 32.4	092 00.0	N13 31.2	57.9	12.0	-14.2
	01	195 49.3	N20 32.9	106 31.0	N13 17.0	57.9	12.1	-14.3
	02	210 49.3	N20 33.4	121 02.1	N13 02.7	57.9	12.2	-14.3
	03	225 49.2	N20 33.9	135 33.2	N12 48.4	57.8	12.3	-14.3
	04	240 49.2	N20 34.4	150 04.5	N12 34.1	57.8	12.4	-14.4
	05	255 49.1	N20 34.8	164 35.9	N12 19.7	57.8	12.5	-14.4
	06	270 49.1	N20 35.3	179 07.4	N12 05.2	57.7	12.6	-14.5
	07	285 49.0	N20 35.8	193 38.9	N11 50.8	57.7	12.7	-14.5
	08	300 49.0	N20 36.3	208 10.6	N11 36.3	57.7	12.7	-14.5
	09	315 48.9	N20 36.7	222 42.3	N11 21.7	57.6	12.8	-14.6
	10	330 48.8	N20 37.2	237 14.2	N11 07.1	57.6	12.9	-14.6
	11	345 48.8	N20 37.7	251 46.1	N10 52.5	57.6	13.0	-14.6
	12	000 48.7	N20 38.2	266 18.1	N10 37.9	57.5	13.1	-14.7
	13	015 48.7	N20 38.6	280 50.2	N10 23.2	57.5	13.2	-14.7
	14	030 48.6	N20 39.1	295 22.4	N10 08.5	57.5	13.3	-14.7
	15	045 48.6	N20 39.6	309 54.6	N09 53.8	57.4	13.3	-14.8
	16	060 48.5	N20 40.1	324 27.0	N09 39.0	57.4	13.4	-14.8
	17	075 48.5	N20 40.5	338 59.4	N09 24.2	57.4	13.5	-14.8
	18	090 48.4	N20 41.0	353 31.9	N09 09.4	57.3	13.6	-14.8
	19	105 48.4	N20 41.5	008 04.4	N08 54.5	57.3	13.6	-14.9
	20	120 48.3	N20 41.9	022 37.1	N08 39.7	57.3	13.7	-14.9
	21	135 48.2	N20 42.4	037 09.8	N08 24.8	57.2	13.8	-14.9
	22	150 48.2	N20 42.9	051 42.6	N08 09.9	57.2	13.9	-14.9
	23	165 48.1	N20 43.3	066 15.5	N07 55.0	57.2	13.9	-14.9
24	00	180 48.1	N20 43.8	080 48.4	N07 40.0	57.1	14.0	-15.0
	01	195 48.0	N20 44.3	095 21.4	N07 25.1	57.1	14.1	-15.0
	02	210 48.0	N20 44.7	109 54.5	N07 10.1	57.1	14.1	-15.0
	03	225 47.9	N20 45.2	124 27.6	N06 55.1	57.0	14.2	-15.0
	04	240 47.8	N20 45.7	139 00.8	N06 40.1	57.0	14.3	-15.0
	05	255 47.8	N20 46.1	153 34.1	N06 25.1	57.0	14.3	-15.0
	06	270 47.7	N20 46.6	168 07.4	N06 10.1	56.9	14.4	-15.0
	07	285 47.7	N20 47.1	182 40.8	N05 55.1	56.9	14.4	-15.0
	08	300 47.6	N20 47.5	197 14.2	N05 40.0	56.9	14.5	-15.0
	09	315 47.6	N20 48.0	211 47.7	N05 25.0	56.8	14.5	-15.1
	10	330 47.5	N20 48.4	226 21.2	N05 09.9	56.8	14.6	-15.1
	11	345 47.4	N20 48.9	240 54.8	N04 54.9	56.8	14.7	-15.1
	12	000 47.4	N20 49.4	255 28.5	N04 39.8	56.7	14.7	-15.1
	13	015 47.3	N20 49.8	270 02.2	N04 24.7	56.7	14.8	-15.1
	14	030 47.3	N20 50.3	284 36.0	N04 09.7	56.7	14.8	-15.1
	15	045 47.2	N20 50.7	299 09.8	N03 54.6	56.6	14.9	-15.1
	16	060 47.1	N20 51.2	313 43.6	N03 39.5	56.6	14.9	-15.1
	17	075 47.1	N20 51.6	328 17.5	N03 24.4	56.6	14.9	-15.1
	18	090 47.0	N20 52.1	342 51.5	N03 09.4	56.6	15.0	-15.1
	19	105 47.0	N20 52.5	357 25.5	N02 54.3	56.5	15.0	-15.1
	20	120 46.9	N20 53.0	011 59.5	N02 39.2	56.5	15.1	-15.1
	21	135 46.8	N20 53.5	026 33.5	N02 24.2	56.5	15.1	-15.1
	22	150 46.8	N20 53.9	041 07.7	N02 09.1	56.4	15.1	-15.0
	23	165 46.7	N20 54.4	055 41.8	N01 54.1	56.4	15.2	-15.0

Day 22 noon Sun: v 0.0 d 0.5 SD 15.8 | Moon SD 15.9

Day 23 noon Sun: v -0.1 d 0.5 SD 15.8 | Moon SD 15.7

Day 24 noon Sun: v -0.1 d 0.5 SD 15.8 | Moon SD 15.5

SUN: MAY 23 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	0054	2308	--	--
66N	--	--	0150	2207	--	--
64N	--	--	0223	2133	--	--
62N	--	0115	0246	2109	2244	--
60N	--	0154	0305	2050	2203	--
58N	--	0220	0321	2034	2136	--
56N	0107	0240	0334	2021	2115	2250
54N	0143	0257	0345	2009	2058	2213
52N	0208	0311	0355	1959	2044	2147
50N	0227	0323	0404	1950	2031	2128
45N	0302	0348	0423	1931	2006	2052
40N	0328	0407	0438	1916	1947	2026
35N	0348	0423	0451	1903	1931	2006
30N	0404	0436	0502	1851	1918	1950
25N	0417	0447	0512	1841	1906	1936
20N	0429	0458	0521	1832	1856	1925
15N	0440	0507	0530	1824	1847	1914
10N	0449	0515	0538	1816	1838	1905
05N	0457	0523	0546	1808	1830	1856
00N	0505	0531	0553	1800	1822	1848
05S	0513	0539	0601	1753	1815	1841
10S	0520	0546	0608	1745	1808	1833
15S	0527	0553	0616	1737	1800	1826
20S	0534	0601	0624	1729	1753	1820
25S	0541	0609	0633	1720	1745	1813
30S	0548	0617	0643	1711	1736	1806
35S	0555	0626	0653	1700	1727	1758
40S	0603	0636	0705	1648	1717	1751
45S	0611	0647	0720	1633	1706	1742
50S	0620	0700	0737	1616	1653	1733
55S	0631	0717	0759	1554	1636	1722
60S	0644	0738	0830	1523	1615	1708

MOON: RISE / SET | UTC HHMM

Lat	Day 22		Day 23		Day 24	
72N	0617	0436	0943	0253	1202	0209
70N	0727	0324	1002	0231	1208	0200
68N	0803	0246	1018	0214	1214	0152
66N	0829	0220	1030	0200	1218	0145
64N	0848	0159	1040	0148	1222	0139
62N	0904	0142	1049	0138	1225	0134
60N	0917	0127	1056	0129	1228	0130
58N	0928	0115	1103	0122	1231	0126
56N	0938	0105	1108	0115	1233	0122
54N	0947	0055	1113	0109	1235	0119
52N	0954	0047	1118	0103	1237	0116
50N	1001	0039	1122	0058	1238	0114
45N	1016	0023	1131	0048	1242	0108
40N	1028	0009	1138	0039	1245	0103
35N	1038	--	1145	0031	1248	0059
30N	1047	--	1150	0024	1250	0055
25N	1055	--	1155	0018	1252	0052
20N	1102	--	1200	0012	1254	0049
15N	1109	--	1204	0006	1255	0046
10N	1115	--	1208	0001	1257	0043
05N	1122	2356	1212	--	1259	0040
00N	1128	2351	1216	--	1300	0037
05S	1134	2346	1220	--	1302	0035
10S	1140	2341	1224	--	1304	0032
15S	1146	2336	1228	--	1305	0029
20S	1153	2330	1232	--	1307	0026
25S	1200	2324	1236	--	1309	0023
30S	1208	2318	1241	--	1311	0019
35S	1217	2310	1247	--	1313	0015
40S	1226	2302	1253	--	1316	0011
45S	1238	2252	1300	--	1318	0005
50S	1251	2240	1308	2359	1322	--
55S	1309	2225	1318	2351	1326	--
60S	1331	2205	1332	2341	1332	--

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | MAY 25 - MAY 27

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
25	00	242 35.7	144 45.6	N25 01.0	210 04.5	N12 23.1	127 55.9	N21 54.9	231 01.8	N02 32.3
	01	257 38.2	159 44.8	N25 00.9	225 05.1	N12 23.7	142 57.9	N21 54.9	246 04.1	N02 32.4
	02	272 40.7	174 44.0	N25 00.8	240 05.8	N12 24.4	157 59.9	N21 54.8	261 06.3	N02 32.4
	03	287 43.1	189 43.2	N25 00.7	255 06.5	N12 25.0	173 01.9	N21 54.7	276 08.6	N02 32.5
	04	302 45.6	204 42.4	N25 00.6	270 07.2	N12 25.7	188 03.9	N21 54.7	291 10.8	N02 32.6
	05	317 48.1	219 41.5	N25 00.5	285 07.8	N12 26.3	203 05.9	N21 54.6	306 13.1	N02 32.7
	06	332 50.5	234 40.7	N25 00.4	300 08.5	N12 27.0	218 07.8	N21 54.5	321 15.3	N02 32.8
	07	347 53.0	249 39.9	N25 00.3	315 09.2	N12 27.6	233 09.8	N21 54.4	336 17.6	N02 32.9
	08	002 55.5	264 39.1	N25 00.2	330 09.8	N12 28.3	248 11.8	N21 54.4	351 19.8	N02 32.9
	09	017 57.9	279 38.3	N25 00.1	345 10.5	N12 28.9	263 13.8	N21 54.3	006 22.1	N02 33.0
	10	033 00.4	294 37.5	N25 00.0	000 11.2	N12 29.6	278 15.8	N21 54.2	021 24.3	N02 33.1
	11	048 02.8	309 36.7	N24 59.9	015 11.8	N12 30.2	293 17.8	N21 54.1	036 26.6	N02 33.2
	12	063 05.3	324 35.9	N24 59.8	030 12.5	N12 30.8	308 19.7	N21 54.1	051 28.8	N02 33.3
	13	078 07.8	339 35.1	N24 59.7	045 13.2	N12 31.5	323 21.7	N21 54.0	066 31.1	N02 33.3
	14	093 10.2	354 34.2	N24 59.5	060 13.8	N12 32.1	338 23.7	N21 53.9	081 33.3	N02 33.4
	15	108 12.7	009 33.4	N24 59.4	075 14.5	N12 32.8	353 25.7	N21 53.9	096 35.6	N02 33.5
	16	123 15.2	024 32.6	N24 59.3	090 15.2	N12 33.4	008 27.7	N21 53.8	111 37.8	N02 33.6
	17	138 17.6	039 31.8	N24 59.2	105 15.9	N12 34.1	023 29.7	N21 53.7	126 40.1	N02 33.7
	18	153 20.1	054 31.0	N24 59.1	120 16.5	N12 34.7	038 31.6	N21 53.6	141 42.3	N02 33.8
	19	168 22.6	069 30.2	N24 59.0	135 17.2	N12 35.4	053 33.6	N21 53.6	156 44.6	N02 33.8
	20	183 25.0	084 29.4	N24 58.8	150 17.9	N12 36.0	068 35.6	N21 53.5	171 46.8	N02 33.9
	21	198 27.5	099 28.6	N24 58.7	165 18.5	N12 36.6	083 37.6	N21 53.4	186 49.1	N02 34.0
	22	213 30.0	114 27.8	N24 58.6	180 19.2	N12 37.3	098 39.6	N21 53.3	201 51.3	N02 34.1
	23	228 32.4	129 27.0	N24 58.5	195 19.9	N12 37.9	113 41.6	N21 53.3	216 53.6	N02 34.2
26	00	243 34.9	144 26.1	N24 58.3	210 20.5	N12 38.6	128 43.5	N21 53.2	231 55.8	N02 34.2
	01	258 37.3	159 25.3	N24 58.2	225 21.2	N12 39.2	143 45.5	N21 53.1	246 58.1	N02 34.3
	02	273 39.8	174 24.5	N24 58.1	240 21.9	N12 39.9	158 47.5	N21 53.0	262 00.3	N02 34.4
	03	288 42.3	189 23.7	N24 58.0	255 22.5	N12 40.5	173 49.5	N21 53.0	277 02.6	N02 34.5
	04	303 44.7	204 22.9	N24 57.8	270 23.2	N12 41.1	188 51.5	N21 52.9	292 04.9	N02 34.6
	05	318 47.2	219 22.1	N24 57.7	285 23.9	N12 41.8	203 53.5	N21 52.8	307 07.1	N02 34.6
	06	333 49.7	234 21.3	N24 57.6	300 24.5	N12 42.4	218 55.4	N21 52.7	322 09.4	N02 34.7
	07	348 52.1	249 20.5	N24 57.4	315 25.2	N12 43.1	233 57.4	N21 52.7	337 11.6	N02 34.8
	08	003 54.6	264 19.7	N24 57.3	330 25.9	N12 43.7	248 59.4	N21 52.6	352 13.9	N02 34.9
	09	018 57.1	279 18.9	N24 57.2	345 26.5	N12 44.3	264 01.4	N21 52.5	007 16.1	N02 35.0
	10	033 59.5	294 18.1	N24 57.0	000 27.2	N12 45.0	279 03.4	N21 52.4	022 18.4	N02 35.1
	11	049 02.0	309 17.3	N24 56.9	015 27.9	N12 45.6	294 05.3	N21 52.4	037 20.6	N02 35.1
	12	064 04.4	324 16.5	N24 56.8	030 28.6	N12 46.3	309 07.3	N21 52.3	052 22.9	N02 35.2
	13	079 06.9	339 15.7	N24 56.6	045 29.2	N12 46.9	324 09.3	N21 52.2	067 25.1	N02 35.3
	14	094 09.4	354 14.9	N24 56.5	060 29.9	N12 47.5	339 11.3	N21 52.1	082 27.4	N02 35.4
	15	109 11.8	009 14.1	N24 56.3	075 30.6	N12 48.2	354 13.3	N21 52.1	097 29.6	N02 35.5
	16	124 14.3	024 13.3	N24 56.2	090 31.2	N12 48.8	009 15.2	N21 52.0	112 31.9	N02 35.5
	17	139 16.8	039 12.4	N24 56.0	105 31.9	N12 49.5	024 17.2	N21 51.9	127 34.1	N02 35.6
	18	154 19.2	054 11.6	N24 55.9	120 32.6	N12 50.1	039 19.2	N21 51.8	142 36.4	N02 35.7
	19	169 21.7	069 10.8	N24 55.7	135 33.2	N12 50.7	054 21.2	N21 51.8	157 38.6	N02 35.8
	20	184 24.2	084 10.0	N24 55.6	150 33.9	N12 51.4	069 23.2	N21 51.7	172 40.9	N02 35.9
	21	199 26.6	099 09.2	N24 55.4	165 34.6	N12 52.0	084 25.1	N21 51.6	187 43.1	N02 35.9
	22	214 29.1	114 08.4	N24 55.3	180 35.2	N12 52.7	099 27.1	N21 51.5	202 45.4	N02 36.0
	23	229 31.6	129 07.6	N24 55.1	195 35.9	N12 53.3	114 29.1	N21 51.5	217 47.6	N02 36.1
27	00	244 34.0	144 06.8	N24 55.0	210 36.6	N12 53.9	129 31.1	N21 51.4	232 49.9	N02 36.2
	01	259 36.5	159 06.0	N24 54.8	225 37.2	N12 54.6	144 33.1	N21 51.3	247 52.2	N02 36.3
	02	274 38.9	174 05.2	N24 54.7	240 37.9	N12 55.2	159 35.0	N21 51.2	262 54.4	N02 36.3
	03	289 41.4	189 04.4	N24 54.5	255 38.6	N12 55.8	174 37.0	N21 51.2	277 56.7	N02 36.4
	04	304 43.9	204 03.6	N24 54.3	270 39.2	N12 56.5	189 39.0	N21 51.1	292 58.9	N02 36.5
	05	319 46.3	219 02.8	N24 54.2	285 39.9	N12 57.1	204 41.0	N21 51.0	308 01.2	N02 36.6
	06	334 48.8	234 02.0	N24 54.0	300 40.6	N12 57.7	219 43.0	N21 50.9	323 03.4	N02 36.7
	07	349 51.3	249 01.2	N24 53.9	315 41.2	N12 58.4	234 44.9	N21 50.9	338 05.7	N02 36.7
	08	004 53.7	264 00.4	N24 53.7	330 41.9	N12 59.0	249 46.9	N21 50.8	353 07.9	N02 36.8
	09	019 56.2	278 59.6	N24 53.5	345 42.6	N12 59.7	264 48.9	N21 50.7	008 10.2	N02 36.9
	10	034 58.7	293 58.8	N24 53.4	000 43.2	N13 00.3	279 50.9	N21 50.6	023 12.4	N02 37.0
	11	050 01.1	308 58.0	N24 53.2	015 43.9	N13 00.9	294 52.8	N21 50.6	038 14.7	N02 37.1
	12	065 03.6	323 57.2	N24 53.0	030 44.6	N13 01.6	309 54.8	N21 50.5	053 17.0	N02 37.1
	13	080 06.1	338 56.4	N24 52.9	045 45.2	N13 02.2	324 56.8	N21 50.4	068 19.2	N02 37.2
	14	095 08.5	353 55.6	N24 52.7	060 45.9	N13 02.8	339 58.8	N21 50.3	083 21.5	N02 37.3
	15	110 11.0	008 54.8	N24 52.5	075 46.6	N13 03.5	355 00.8	N21 50.3	098 23.7	N02 37.4
	16	125 13.4	023 54.0	N24 52.3	090 47.2	N13 04.1	010 02.7	N21 50.2	113 26.0	N02 37.4
	17	140 15.9	038 53.2	N24 52.2	105 47.9	N13 04.7	025 04.7	N21 50.1	128 28.2	N02 37.5
	18	155 18.4	053 52.4	N24 52.0	120 48.6	N13 05.4	040 06.7	N21 50.0	143 30.5	N02 37.6
	19	170 20.8	068 51.6	N24 51.8	135 49.2	N13 06.0	055 08.7	N21 50.0	158 32.7	N02 37.7
	20	185 23.3	083 50.8	N24 51.6	150 49.9	N13 06.6	070 10.6	N21 49.9	173 35.0	N02 37.8
	21	200 25.8	098 50.0	N24 51.5	165 50.6	N13 07.3	085 12.6	N21 49.8	188 37.2	N02 37.8
	22	215 28.2	113 49.3	N24 51.3	180 51.2	N13 07.9	100 14.6	N21 49.7	203 39.5	N02 37.9
	23	230 30.7	128 48.5	N24 51.1	195 51.9	N13 08.5	115 16.6	N21 49.7	218 41.8	N02 38.0

Venus	Mars	Jupiter	Saturn
25: v -0.8 d -0.1	25: v 0.7 d 0.6	25: v 2.0 d -0.1	25: v 2.2 d 0.1
26: v -0.8 d -0.1	26: v 0.7 d 0.6	26: v 2.0 d -0.1	26: v 2.3 d 0.1
27: v -0.8 d -0.2	27: v 0.7 d 0.6	27: v 2.0 d -0.1	27: v 2.3 d 0.1

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.3	S40 11.8
Achernar	335 19.8	S57 06.0
Acrux	172 58.5	S63 15.0
Adhara	255 05.3	S29 00.6
Al Na'ir	027 31.5	S46 49.7
Aldebaran	290 38.7	N16 33.7
Alioth	166 11.6	N55 49.1
Alkaid	152 50.7	N49 11.0
Alnilam	275 36.9	S01 11.2
Alphard	217 46.7	S08 46.5
Alphecca	126 02.4	N26 37.5
Alpheratz	357 33.8	N29 14.0
Altair	061 58.7	N08 56.2
Ankaa	353 06.3	S42 09.6
Antares	112 14.1	S26 29.5
Arcturus	145 46.6	N19 02.7
Atria	107 06.7	S69 04.4
Avior	234 14.6	S59 35.9
Bellatrix	278 22.0	N06 22.4
Betelgeuse	270 51.2	N07 24.7
Canopus	263 52.4	S52 42.7
Capella	280 20.7	N46 01.5
Deneb	049 24.8	N45 22.2
Denebola	182 23.7	N14 25.4
Diphda	348 46.4	S17 50.4
Dubhe	193 39.5	N61 36.7
Elnath	278 00.8	N28 37.8
Eltanin	090 41.2	N51 28.9
Enif	033 37.6	N09 59.7
Fomalhaut	015 13.3	S29 28.8
Gacrux	171 50.1	S57 16.0
Gienah	175 42.3	S17 41.5
Hadar	148 33.8	S60 30.2
Hamal	327 50.2	N23 35.1
Kaus Australi	083 30.7	S34 22.3
Kochab	137 18.7	N74 02.8
Markab	013 28.8	N15 20.7
Menkar	314 05.3	N04 11.6
Menkent	147 55.9	S36 30.2
Miaplacidus	221 38.4	S69 49.8
Mirfak	308 27.1	N49 57.2
Nunki	075 46.1	S26 15.8
Peacock	053 03.7	S56 38.7
Polaris	313 55.6	N89 22.4
Pollux	243 16.2	N27 57.8
Procyon	244 49.9	N05 09.4
Rasalhague	095 57.2	N12 32.3
Regulus	207 33.3	N11 50.3
Rigel	281 03.1	S08 10.3
Rigil Kentaur	139 38.1	S60 56.8
Sabik	102 01.1	S15 45.5
Schedar	349 30.1	N56 40.7
Shaula	096 08.4	S37 07.3
Sirius	258 25.5	S16 45.2
Spica	158 20.9	S11 18.1
Suhail	222 45.6	S43 32.6
Vega	080 32.1	N38 48.3
Zubenelgenubi	136 54.4	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	260 12.0	1423
Mars	326 24.1	0958
Jupiter	245 02.9	1523
Saturn	348 18.4	0831

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
25	00	180 46.7	N20 54.8	070 16.0	N01 39.0	56.4	15.2	-15.0
	01	195 46.6	N20 55.3	084 50.2	N01 24.0	56.3	15.2	-15.0
	02	210 46.5	N20 55.7	099 24.4	N01 09.0	56.3	15.3	-15.0
	03	225 46.5	N20 56.2	113 58.7	N00 54.0	56.3	15.3	-15.0
	04	240 46.4	N20 56.6	128 33.0	N00 39.0	56.3	15.3	-15.0
	05	255 46.4	N20 57.1	143 07.4	N00 24.0	56.2	15.4	-15.0
	06	270 46.3	N20 57.5	157 41.7	N00 09.0	56.2	15.4	-15.0
	07	285 46.2	N20 58.0	172 16.1	S00 05.9	56.2	15.4	-14.9
	08	300 46.2	N20 58.4	186 50.6	S00 20.9	56.1	15.4	-14.9
	09	315 46.1	N20 58.8	201 25.0	S00 35.8	56.1	15.5	-14.9
	10	330 46.0	N20 59.3	215 59.5	S00 50.7	56.1	15.5	-14.9
	11	345 46.0	N20 59.7	230 34.0	S01 05.6	56.1	15.5	-14.9
	12	000 45.9	N21 00.2	245 08.5	S01 20.5	56.0	15.5	-14.9
	13	015 45.8	N21 00.6	259 43.0	S01 35.4	56.0	15.6	-14.8
	14	030 45.8	N21 01.1	274 17.6	S01 50.2	56.0	15.6	-14.8
	15	045 45.7	N21 01.5	288 52.2	S02 05.0	56.0	15.6	-14.8
	16	060 45.7	N21 01.9	303 26.7	S02 19.8	55.9	15.6	-14.8
	17	075 45.6	N21 02.4	318 01.3	S02 34.6	55.9	15.6	-14.8
	18	090 45.5	N21 02.8	332 36.0	S02 49.4	55.9	15.6	-14.7
	19	105 45.5	N21 03.3	347 10.6	S03 04.1	55.9	15.6	-14.7
	20	120 45.4	N21 03.7	001 45.2	S03 18.8	55.8	15.6	-14.7
	21	135 45.3	N21 04.1	016 19.9	S03 33.5	55.8	15.7	-14.7
	22	150 45.3	N21 04.6	030 54.5	S03 48.1	55.8	15.7	-14.6
	23	165 45.2	N21 05.0	045 29.2	S04 02.8	55.7	15.7	-14.6
26	00	180 45.1	N21 05.5	060 03.8	S04 17.4	55.7	15.7	-14.6
	01	195 45.1	N21 05.9	074 38.5	S04 31.9	55.7	15.7	-14.5
	02	210 45.0	N21 06.3	089 13.2	S04 46.5	55.7	15.7	-14.5
	03	225 44.9	N21 06.8	103 47.9	S05 01.0	55.7	15.7	-14.5
	04	240 44.9	N21 07.2	118 22.5	S05 15.5	55.6	15.7	-14.4
	05	255 44.8	N21 07.6	132 57.2	S05 29.9	55.6	15.7	-14.4
	06	270 44.7	N21 08.1	147 31.9	S05 44.3	55.6	15.7	-14.4
	07	285 44.7	N21 08.5	162 06.6	S05 58.7	55.6	15.7	-14.3
	08	300 44.6	N21 08.9	176 41.3	S06 13.0	55.5	15.7	-14.3
	09	315 44.5	N21 09.4	191 15.9	S06 27.4	55.5	15.7	-14.3
	10	330 44.5	N21 09.8	205 50.6	S06 41.6	55.5	15.7	-14.2
	11	345 44.4	N21 10.2	220 25.3	S06 55.9	55.5	15.7	-14.2
	12	000 44.3	N21 10.6	234 59.9	S07 10.1	55.4	15.6	-14.2
	13	015 44.2	N21 11.1	249 34.6	S07 24.2	55.4	15.6	-14.1
	14	030 44.2	N21 11.5	264 09.2	S07 38.3	55.4	15.6	-14.1
	15	045 44.1	N21 11.9	278 43.8	S07 52.4	55.4	15.6	-14.0
	16	060 44.0	N21 12.4	293 18.4	S08 06.5	55.4	15.6	-14.0
	17	075 44.0	N21 12.8	307 53.0	S08 20.5	55.3	15.6	-14.0
	18	090 43.9	N21 13.2	322 27.6	S08 34.4	55.3	15.6	-13.9
	19	105 43.8	N21 13.6	337 02.2	S08 48.3	55.3	15.6	-13.9
	20	120 43.8	N21 14.0	351 36.7	S09 02.2	55.3	15.5	-13.8
	21	135 43.7	N21 14.5	006 11.3	S09 16.0	55.2	15.5	-13.8
	22	150 43.6	N21 14.9	020 45.8	S09 29.8	55.2	15.5	-13.7
	23	165 43.5	N21 15.3	035 20.3	S09 43.5	55.2	15.5	-13.7
27	00	180 43.5	N21 15.7	049 54.8	S09 57.2	55.2	15.5	-13.6
	01	195 43.4	N21 16.2	064 29.2	S10 10.8	55.2	15.4	-13.6
	02	210 43.3	N21 16.6	079 03.7	S10 24.4	55.1	15.4	-13.5
	03	225 43.3	N21 17.0	093 38.1	S10 38.0	55.1	15.4	-13.5
	04	240 43.2	N21 17.4	108 12.5	S10 51.4	55.1	15.4	-13.4
	05	255 43.1	N21 17.8	122 46.9	S11 04.9	55.1	15.3	-13.4
	06	270 43.0	N21 18.2	137 21.2	S11 18.3	55.1	15.3	-13.3
	07	285 43.0	N21 18.7	151 55.5	S11 31.6	55.0	15.3	-13.3
	08	300 42.9	N21 19.1	166 29.8	S11 44.9	55.0	15.3	-13.2
	09	315 42.8	N21 19.5	181 04.1	S11 58.1	55.0	15.2	-13.2
	10	330 42.8	N21 19.9	195 38.3	S12 11.3	55.0	15.2	-13.1
	11	345 42.7	N21 20.3	210 12.5	S12 24.4	55.0	15.2	-13.1
	12	000 42.6	N21 20.7	224 46.7	S12 37.4	55.0	15.1	-13.0
	13	015 42.5	N21 21.2	239 20.8	S12 50.4	54.9	15.1	-12.9
	14	030 42.5	N21 21.6	253 54.9	S13 03.4	54.9	15.1	-12.9
	15	045 42.4	N21 22.0	268 29.0	S13 16.2	54.9	15.0	-12.8
	16	060 42.3	N21 22.4	283 03.0	S13 29.1	54.9	15.0	-12.8
	17	075 42.2	N21 22.8	297 37.0	S13 41.8	54.9	15.0	-12.7
	18	090 42.2	N21 23.2	312 11.0	S13 54.5	54.8	14.9	-12.6
	19	105 42.1	N21 23.6	326 44.9	S14 07.2	54.8	14.9	-12.6
	20	120 42.0	N21 24.0	341 18.8	S14 19.7	54.8	14.9	-12.5
	21	135 41.9	N21 24.4	355 52.7	S14 32.2	54.8	14.8	-12.4
	22	150 41.9	N21 24.8	010 26.5	S14 44.7	54.8	14.8	-12.4
	23	165 41.8	N21 25.2	025 00.2	S14 57.1	54.8	14.7	-12.3

Day 25 noon Sun: v -0.1 d 0.4 SD 15.8 | Moon SD 15.3

Day 26 noon Sun: v -0.1 d 0.4 SD 15.8 | Moon SD 15.1

Day 27 noon Sun: v -0.1 d 0.4 SD 15.8 | Moon SD 15.0

SUN: MAY 26 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	0017	--	--	--
66N	--	--	0138	2220	--	--
64N	--	--	0214	2143	--	--
62N	--	0058	0239	2116	2301	--
60N	--	0144	0259	2056	2213	--
58N	--	0213	0316	2040	2143	--
56N	0053	0235	0329	2026	2121	2306
54N	0135	0252	0341	2014	2103	2222
52N	0202	0307	0352	2003	2048	2154
50N	0222	0319	0401	1954	2036	2134
45N	0259	0345	0421	1934	2010	2056
40N	0325	0405	0436	1918	1950	2030
35N	0346	0421	0450	1905	1934	2009
30N	0402	0434	0501	1853	1920	1952
25N	0416	0446	0512	1843	1908	1938
20N	0428	0457	0521	1833	1858	1926
15N	0439	0506	0530	1825	1848	1915
10N	0449	0515	0538	1816	1839	1906
05N	0457	0523	0546	1808	1831	1857
00N	0505	0531	0553	1801	1823	1849
05S	0513	0539	0601	1753	1815	1841
10S	0521	0547	0609	1745	1807	1833
15S	0528	0554	0617	1737	1800	1826
20S	0535	0602	0626	1728	1752	1819
25S	0542	0610	0635	1719	1744	1812
30S	0549	0619	0644	1709	1735	1805
35S	0557	0628	0655	1658	1726	1757
40S	0605	0638	0708	1646	1716	1749
45S	0613	0650	0723	1631	1704	1740
50S	0623	0704	0741	1613	1650	1731
55S	0635	0721	0804	1550	1633	1719
60S	0649	0743	0836	1518	1611	1705

MOON: RISE / SET | UTC HHMM

Lat	Day 25		Day 26		Day 27	
72N	1408	0136	1613	0103	1836	0027
70N	1405	0134	1600	0110	1805	0043
68N	1402	0133	1550	0115	1743	0055
66N	1400	0132	1541	0119	1725	0106
64N	1359	0131	1534	0123	1711	0115
62N	1357	0130	1528	0126	1700	0122
60N	1356	0129	1523	0129	1650	0129
58N	1355	0129	1518	0132	1641	0135
56N	1354	0128	1514	0134	1634	0140
54N	1353	0128	1510	0136	1627	0144
52N	1353	0127	1507	0138	1621	0149
50N	1352	0127	1504	0139	1616	0152
45N	1350	0126	1457	0143	1604	0201
40N	1349	0125	1452	0146	1555	0208
35N	1348	0124	1447	0149	1546	0214
30N	1347	0124	1443	0151	1539	0219
25N	1346	0123	1440	0154	1533	0224
20N	1345	0123	1436	0156	1527	0229
15N	1345	0122	1433	0157	1522	0233
10N	1344	0122	1430	0159	1517	0237
05N	1343	0121	1427	0201	1512	0241
00N	1343	0121	1425	0203	1507	0245
05S	1342	0120	1422	0204	1502	0248
10S	1342	0120	1419	0206	1457	0252
15S	1341	0119	1416	0208	1452	0256
20S	1340	0119	1413	0210	1446	0301
25S	1339	0118	1410	0212	1441	0305
30S	1339	0118	1406	0214	1435	0310
35S	1338	0117	1402	0217	1428	0316
40S	1337	0116	1358	0219	1420	0322
45S	1336	0115	1353	0223	1411	0329
50S	1335	0114	1347	0227	1401	0338
55S	1333	0112	1340	0231	1348	0349
60S	1331	0111	1331	0238	1330	0404

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | MAY 28 - MAY 30

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
28	00	245 33.2	143 47.7	N24 50.9	210 52.5	N13 09.2	130 18.5	N21 49.6	233 44.0	N02 38.1
	01	260 35.6	158 46.9	N24 50.7	225 53.2	N13 09.8	145 20.5	N21 49.5	248 46.3	N02 38.2
	02	275 38.1	173 46.1	N24 50.5	240 53.9	N13 10.4	160 22.5	N21 49.4	263 48.5	N02 38.2
	03	290 40.5	188 45.3	N24 50.3	255 54.5	N13 11.0	175 24.5	N21 49.4	278 50.8	N02 38.3
	04	305 43.0	203 44.5	N24 50.2	270 55.2	N13 11.7	190 26.4	N21 49.3	293 53.0	N02 38.4
	05	320 45.5	218 43.7	N24 50.0	285 55.9	N13 12.3	205 28.4	N21 49.2	308 55.3	N02 38.5
	06	335 47.9	233 42.9	N24 49.8	300 56.5	N13 12.9	220 30.4	N21 49.1	323 57.6	N02 38.6
	07	350 50.4	248 42.1	N24 49.6	315 57.2	N13 13.6	235 32.4	N21 49.1	338 59.8	N02 38.6
	08	005 52.9	263 41.3	N24 49.4	330 57.9	N13 14.2	250 34.4	N21 49.0	354 02.1	N02 38.7
	09	020 55.3	278 40.5	N24 49.2	345 58.5	N13 14.8	265 36.3	N21 48.9	009 04.3	N02 38.8
	10	035 57.8	293 39.7	N24 49.0	000 59.2	N13 15.5	280 38.3	N21 48.8	024 06.6	N02 38.9
	11	051 00.3	308 38.9	N24 48.8	015 59.9	N13 16.1	295 40.3	N21 48.7	039 08.8	N02 38.9
	12	066 02.7	323 38.1	N24 48.6	031 00.5	N13 16.7	310 42.2	N21 48.7	054 11.1	N02 39.0
	13	081 05.2	338 37.4	N24 48.4	046 01.2	N13 17.3	325 44.2	N21 48.6	069 13.4	N02 39.1
	14	096 07.7	353 36.6	N24 48.2	061 01.9	N13 18.0	340 46.2	N21 48.5	084 15.6	N02 39.2
	15	111 10.1	008 35.8	N24 48.0	076 02.5	N13 18.6	355 48.2	N21 48.4	099 17.9	N02 39.3
	16	126 12.6	023 35.0	N24 47.8	091 03.2	N13 19.2	010 50.1	N21 48.4	114 20.1	N02 39.3
	17	141 15.0	038 34.2	N24 47.6	106 03.9	N13 19.8	025 52.1	N21 48.3	129 22.4	N02 39.4
	18	156 17.5	053 33.4	N24 47.4	121 04.5	N13 20.5	040 54.1	N21 48.2	144 24.6	N02 39.5
	19	171 20.0	068 32.6	N24 47.2	136 05.2	N13 21.1	055 56.1	N21 48.1	159 26.9	N02 39.6
	20	186 22.4	083 31.8	N24 47.0	151 05.8	N13 21.7	070 58.0	N21 48.1	174 29.2	N02 39.6
	21	201 24.9	098 31.0	N24 46.8	166 06.5	N13 22.4	086 00.0	N21 48.0	189 31.4	N02 39.7
	22	216 27.4	113 30.2	N24 46.6	181 07.2	N13 23.0	101 02.0	N21 47.9	204 33.7	N02 39.8
	23	231 29.8	128 29.5	N24 46.3	196 07.8	N13 23.6	116 04.0	N21 47.8	219 35.9	N02 39.9
29	00	246 32.3	143 28.7	N24 46.1	211 08.5	N13 24.2	131 05.9	N21 47.7	234 38.2	N02 40.0
	01	261 34.8	158 27.9	N24 45.9	226 09.2	N13 24.9	146 07.9	N21 47.7	249 40.4	N02 40.0
	02	276 37.2	173 27.1	N24 45.7	241 09.8	N13 25.5	161 09.9	N21 47.6	264 42.7	N02 40.1
	03	291 39.7	188 26.3	N24 45.5	256 10.5	N13 26.1	176 11.9	N21 47.5	279 45.0	N02 40.2
	04	306 42.2	203 25.5	N24 45.3	271 11.2	N13 26.7	191 13.8	N21 47.4	294 47.2	N02 40.3
	05	321 44.6	218 24.7	N24 45.1	286 11.8	N13 27.4	206 15.8	N21 47.4	309 49.5	N02 40.3
	06	336 47.1	233 23.9	N24 44.8	301 12.5	N13 28.0	221 17.8	N21 47.3	324 51.7	N02 40.4
	07	351 49.5	248 23.2	N24 44.6	316 13.1	N13 28.6	236 19.7	N21 47.2	339 54.0	N02 40.5
	08	006 52.0	263 22.4	N24 44.4	331 13.8	N13 29.2	251 21.7	N21 47.1	354 56.3	N02 40.6
	09	021 54.5	278 21.6	N24 44.2	346 14.5	N13 29.8	266 23.7	N21 47.0	009 58.5	N02 40.7
	10	036 56.9	293 20.8	N24 43.9	001 15.1	N13 30.5	281 25.7	N21 47.0	025 00.8	N02 40.7
	11	051 59.4	308 20.0	N24 43.7	016 15.8	N13 31.1	296 27.6	N21 46.9	040 03.0	N02 40.8
	12	067 01.9	323 19.2	N24 43.5	031 16.5	N13 31.7	311 29.6	N21 46.8	055 05.3	N02 40.9
	13	082 04.3	338 18.5	N24 43.3	046 17.1	N13 32.3	326 31.6	N21 46.7	070 07.6	N02 41.0
	14	097 06.8	353 17.7	N24 43.0	061 17.8	N13 33.0	341 33.5	N21 46.7	085 09.8	N02 41.0
	15	112 09.3	008 16.9	N24 42.8	076 18.5	N13 33.6	356 35.5	N21 46.6	100 12.1	N02 41.1
	16	127 11.7	023 16.1	N24 42.6	091 19.1	N13 34.2	011 37.5	N21 46.5	115 14.3	N02 41.2
	17	142 14.2	038 15.3	N24 42.3	106 19.8	N13 34.8	026 39.5	N21 46.4	130 16.6	N02 41.3
	18	157 16.6	053 14.5	N24 42.1	121 20.4	N13 35.4	041 41.4	N21 46.3	145 18.9	N02 41.3
	19	172 19.1	068 13.8	N24 41.9	136 21.1	N13 36.1	056 43.4	N21 46.3	160 21.1	N02 41.4
	20	187 21.6	083 13.0	N24 41.6	151 21.8	N13 36.7	071 45.4	N21 46.2	175 23.4	N02 41.5
	21	202 24.0	098 12.2	N24 41.4	166 22.4	N13 37.3	086 47.3	N21 46.1	190 25.6	N02 41.6
	22	217 26.5	113 11.4	N24 41.2	181 23.1	N13 37.9	101 49.3	N21 46.0	205 27.9	N02 41.7
	23	232 29.0	128 10.6	N24 40.9	196 23.8	N13 38.6	116 51.3	N21 46.0	220 30.2	N02 41.7
30	00	247 31.4	143 09.9	N24 40.7	211 24.4	N13 39.2	131 53.2	N21 45.9	235 32.4	N02 41.8
	01	262 33.9	158 09.1	N24 40.4	226 25.1	N13 39.8	146 55.2	N21 45.8	250 34.7	N02 41.9
	02	277 36.4	173 08.3	N24 40.2	241 25.7	N13 40.4	161 57.2	N21 45.7	265 36.9	N02 42.0
	03	292 38.8	188 07.5	N24 39.9	256 26.4	N13 41.0	176 59.2	N21 45.6	280 39.2	N02 42.0
	04	307 41.3	203 06.8	N24 39.7	271 27.1	N13 41.6	192 01.1	N21 45.6	295 41.5	N02 42.1
	05	322 43.8	218 06.0	N24 39.5	286 27.7	N13 42.3	207 03.1	N21 45.5	310 43.7	N02 42.2
	06	337 46.2	233 05.2	N24 39.2	301 28.4	N13 42.9	222 05.1	N21 45.4	325 46.0	N02 42.3
	07	352 48.7	248 04.4	N24 39.0	316 29.1	N13 43.5	237 07.0	N21 45.3	340 48.3	N02 42.3
	08	007 51.1	263 03.6	N24 38.7	331 29.7	N13 44.1	252 09.0	N21 45.2	355 50.5	N02 42.4
	09	022 53.6	278 02.9	N24 38.5	346 30.4	N13 44.7	267 11.0	N21 45.2	010 52.8	N02 42.5
	10	037 56.1	293 02.1	N24 38.2	001 31.0	N13 45.4	282 12.9	N21 45.1	025 55.0	N02 42.6
	11	052 58.5	308 01.3	N24 37.9	016 31.7	N13 46.0	297 14.9	N21 45.0	040 57.3	N02 42.6
	12	068 01.0	323 00.5	N24 37.7	031 32.4	N13 46.6	312 16.9	N21 44.9	055 59.6	N02 42.7
	13	083 03.5	337 59.8	N24 37.4	046 33.0	N13 47.2	327 18.8	N21 44.9	071 01.8	N02 42.8
	14	098 05.9	352 59.0	N24 37.2	061 33.7	N13 47.8	342 20.8	N21 44.8	086 04.1	N02 42.9
	15	113 08.4	007 58.2	N24 36.9	076 34.3	N13 48.4	357 22.8	N21 44.7	101 06.4	N02 42.9
	16	128 10.9	022 57.4	N24 36.7	091 35.0	N13 49.1	012 24.7	N21 44.6	116 08.6	N02 43.0
	17	143 13.3	037 56.7	N24 36.4	106 35.7	N13 49.7	027 26.7	N21 44.5	131 10.9	N02 43.1
	18	158 15.8	052 55.9	N24 36.1	121 36.3	N13 50.3	042 28.7	N21 44.5	146 13.1	N02 43.2
	19	173 18.3	067 55.1	N24 35.9	136 37.0	N13 50.9	057 30.6	N21 44.4	161 15.4	N02 43.2
	20	188 20.7	082 54.3	N24 35.6	151 37.6	N13 51.5	072 32.6	N21 44.3	176 17.7	N02 43.3
	21	203 23.2	097 53.6	N24 35.3	166 38.3	N13 52.1	087 34.6	N21 44.2	191 19.9	N02 43.4
	22	218 25.6	112 52.8	N24 35.1	181 39.0	N13 52.7	102 36.5	N21 44.1	206 22.2	N02 43.5
	23	233 28.1	127 52.0	N24 34.8	196 39.6	N13 53.4	117 38.5	N21 44.1	221 24.5	N02 43.5

Venus	Mars	Jupiter	Saturn
28: v -0.8 d -0.2	28: v 0.7 d 0.6	28: v 2.0 d -0.1	28: v 2.3 d 0.1
29: v -0.8 d -0.2	29: v 0.7 d 0.6	29: v 2.0 d -0.1	29: v 2.3 d 0.1
30: v -0.8 d -0.3	30: v 0.7 d 0.6	30: v 2.0 d -0.1	30: v 2.3 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.3	S40 11.8
Achernar	335 19.8	S57 05.9
Acrux	172 58.5	S63 15.1
Adhara	255 05.3	S29 00.6
Al Na'ir	027 31.4	S46 49.7
Aldebaran	290 38.7	N16 33.7
Alioth	166 11.6	N55 49.1
Alkaid	152 50.7	N49 11.0
Alnilam	275 36.9	S01 11.1
Alphard	217 46.7	S08 46.5
Alphecca	126 02.4	N26 37.5
Alpheratz	357 33.8	N29 14.0
Altair	061 58.6	N08 56.2
Ankaa	353 06.2	S42 09.5
Antares	112 14.1	S26 29.5
Arcturus	145 46.6	N19 02.7
Atria	107 06.7	S69 04.5
Avior	234 14.6	S59 35.9
Bellatrix	278 22.0	N06 22.4
Betelgeuse	270 51.2	N07 24.7
Canopus	263 52.4	S52 42.7
Capella	280 20.7	N46 01.5
Deneb	049 24.8	N45 22.2
Denebola	182 23.7	N14 25.5
Diphda	348 46.4	S17 50.4
Dubhe	193 39.5	N61 36.7
Elnath	278 00.8	N28 37.8
Eltanin	090 41.1	N51 29.0
Enif	033 37.6	N09 59.7
Fomalhaut	015 13.3	S29 28.8
Gacrux	171 50.1	S57 16.0
Gienah	175 42.3	S17 41.5
Hadar	148 33.9	S60 30.2
Hamal	327 50.2	N23 35.1
Kaus Australi	083 30.7	S34 22.3
Kochab	137 18.7	N74 02.9
Markab	013 28.8	N15 20.7
Menkar	314 05.3	N04 11.6
Menkent	147 55.9	S36 30.2
Miaplacidus	221 38.4	S69 49.8
Mirfak	308 27.1	N49 57.2
Nunki	075 46.1	S26 15.8
Peacock	053 03.6	S56 38.7
Polaris	313 54.9	N89 22.4
Pollux	243 16.2	N27 57.8
Procyon	244 49.9	N05 09.4
Rasalhague	095 57.2	N12 32.4
Regulus	207 33.3	N11 50.3
Rigel	281 03.1	S08 10.3
Rigil Kentaur	139 38.1	S60 56.9
Sabik	102 01.1	S15 45.5
Schedar	349 30.1	N56 40.7
Shaula	096 08.4	S37 07.3
Sirius	258 25.5	S16 45.2
Spica	158 20.9	S11 18.1
Suhail	222 45.7	S43 32.6
Vega	080 32.1	N38 48.3
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	256 17.4	1427
Mars	324 14.6	0955
Jupiter	244 27.7	1514
Saturn	348 03.4	0820

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
28	00	180 41.7	N21 25.6	039 34.0	S15 09.4	54.7	14.7	-12.2
	01	195 41.6	N21 26.1	054 07.7	S15 21.6	54.7	14.7	-12.2
	02	210 41.6	N21 26.5	068 41.3	S15 33.8	54.7	14.6	-12.1
	03	225 41.5	N21 26.9	083 14.9	S15 45.9	54.7	14.6	-12.0
	04	240 41.4	N21 27.3	097 48.5	S15 57.9	54.7	14.5	-12.0
	05	255 41.3	N21 27.7	112 22.0	S16 09.9	54.7	14.5	-11.9
	06	270 41.2	N21 28.1	126 55.5	S16 21.8	54.7	14.4	-11.8
	07	285 41.2	N21 28.5	141 28.9	S16 33.6	54.6	14.4	-11.8
	08	300 41.1	N21 28.9	156 02.3	S16 45.4	54.6	14.3	-11.7
	09	315 41.0	N21 29.3	170 35.6	S16 57.1	54.6	14.3	-11.6
	10	330 40.9	N21 29.7	185 08.9	S17 08.7	54.6	14.2	-11.5
	11	345 40.9	N21 30.1	199 42.2	S17 20.2	54.6	14.2	-11.5
	12	000 40.8	N21 30.5	214 15.4	S17 31.6	54.6	14.1	-11.4
	13	015 40.7	N21 30.9	228 48.5	S17 43.0	54.6	14.1	-11.3
	14	030 40.6	N21 31.3	243 21.6	S17 54.3	54.5	14.0	-11.2
	15	045 40.5	N21 31.7	257 54.7	S18 05.5	54.5	14.0	-11.1
	16	060 40.5	N21 32.1	272 27.7	S18 16.7	54.5	13.9	-11.1
	17	075 40.4	N21 32.4	287 00.6	S18 27.7	54.5	13.9	-11.0
	18	090 40.3	N21 32.8	301 33.5	S18 38.7	54.5	13.8	-10.9
	19	105 40.2	N21 33.2	316 06.3	S18 49.6	54.5	13.8	-10.8
	20	120 40.1	N21 33.6	330 39.1	S19 00.4	54.5	13.7	-10.7
	21	135 40.1	N21 34.0	345 11.9	S19 11.1	54.4	13.7	-10.6
	22	150 40.0	N21 34.4	359 44.6	S19 21.8	54.4	13.6	-10.6
	23	165 39.9	N21 34.8	014 17.2	S19 32.3	54.4	13.6	-10.5
29	00	180 39.8	N21 35.2	028 49.8	S19 42.8	54.4	13.5	-10.4
	01	195 39.7	N21 35.6	043 22.3	S19 53.2	54.4	13.5	-10.3
	02	210 39.7	N21 36.0	057 54.8	S20 03.5	54.4	13.4	-10.2
	03	225 39.6	N21 36.4	072 27.2	S20 13.7	54.4	13.4	-10.1
	04	240 39.5	N21 36.7	086 59.5	S20 23.8	54.4	13.3	-10.0
	05	255 39.4	N21 37.1	101 31.8	S20 33.8	54.4	13.2	-9.9
	06	270 39.3	N21 37.5	116 04.1	S20 43.8	54.3	13.2	-9.8
	07	285 39.3	N21 37.9	130 36.3	S20 53.6	54.3	13.1	-9.8
	08	300 39.2	N21 38.3	145 08.4	S21 03.4	54.3	13.1	-9.7
	09	315 39.1	N21 38.7	159 40.5	S21 13.0	54.3	13.0	-9.6
	10	330 39.0	N21 39.1	174 12.5	S21 22.6	54.3	13.0	-9.5
	11	345 38.9	N21 39.4	188 44.5	S21 32.1	54.3	12.9	-9.4
	12	000 38.8	N21 39.8	203 16.4	S21 41.5	54.3	12.9	-9.3
	13	015 38.8	N21 40.2	217 48.3	S21 50.7	54.3	12.8	-9.2
	14	030 38.7	N21 40.6	232 20.1	S21 59.9	54.3	12.7	-9.1
	15	045 38.6	N21 41.0	246 51.8	S22 09.0	54.3	12.7	-9.0
	16	060 38.5	N21 41.3	261 23.5	S22 18.0	54.2	12.6	-8.9
	17	075 38.4	N21 41.7	275 55.1	S22 26.9	54.2	12.6	-8.8
	18	090 38.3	N21 42.1	290 26.7	S22 35.7	54.2	12.5	-8.7
	19	105 38.3	N21 42.5	304 58.2	S22 44.3	54.2	12.5	-8.6
	20	120 38.2	N21 42.9	319 29.7	S22 52.9	54.2	12.4	-8.5
	21	135 38.1	N21 43.2	334 01.1	S23 01.4	54.2	12.3	-8.4
	22	150 38.0	N21 43.6	348 32.4	S23 09.8	54.2	12.3	-8.3
	23	165 37.9	N21 44.0	003 03.7	S23 18.0	54.2	12.2	-8.2
30	00	180 37.8	N21 44.4	017 35.0	S23 26.2	54.2	12.2	-8.1
	01	195 37.8	N21 44.7	032 06.1	S23 34.3	54.2	12.1	-7.9
	02	210 37.7	N21 45.1	046 37.3	S23 42.2	54.2	12.1	-7.8
	03	225 37.6	N21 45.5	061 08.3	S23 50.0	54.1	12.0	-7.7
	04	240 37.5	N21 45.9	075 39.3	S23 57.8	54.1	12.0	-7.6
	05	255 37.4	N21 46.2	090 10.3	S24 05.4	54.1	11.9	-7.5
	06	270 37.3	N21 46.6	104 41.2	S24 12.9	54.1	11.8	-7.4
	07	285 37.2	N21 47.0	119 12.0	S24 20.3	54.1	11.8	-7.3
	08	300 37.2	N21 47.3	133 42.8	S24 27.6	54.1	11.7	-7.2
	09	315 37.1	N21 47.7	148 13.6	S24 34.8	54.1	11.7	-7.1
	10	330 37.0	N21 48.1	162 44.3	S24 41.9	54.1	11.6	-7.0
	11	345 36.9	N21 48.4	177 14.9	S24 48.8	54.1	11.6	-6.8
	12	000 36.8	N21 48.8	191 45.5	S24 55.6	54.1	11.5	-6.7
	13	015 36.7	N21 49.2	206 16.0	S25 02.4	54.1	11.5	-6.6
	14	030 36.6	N21 49.5	220 46.5	S25 09.0	54.1	11.4	-6.5
	15	045 36.5	N21 49.9	235 16.9	S25 15.5	54.1	11.4	-6.4
	16	060 36.5	N21 50.3	249 47.3	S25 21.8	54.1	11.3	-6.3
	17	075 36.4	N21 50.6	264 17.6	S25 28.1	54.1	11.3	-6.1
	18	090 36.3	N21 51.0	278 47.9	S25 34.2	54.1	11.2	-6.0
	19	105 36.2	N21 51.4	293 18.1	S25 40.3	54.0	11.2	-5.9
	20	120 36.1	N21 51.7	307 48.3	S25 46.2	54.0	11.1	-5.8
	21	135 36.0	N21 52.1	322 18.4	S25 51.9	54.0	11.1	-5.7
	22	150 35.9	N21 52.4	336 48.5	S25 57.6	54.0	11.0	-5.5
	23	165 35.8	N21 52.8	351 18.5	S26 03.1	54.0	11.0	-5.4

Day 28 noon Sun: v -0.1 d 0.4 SD 15.8 | Moon SD 14.9

Day 29 noon Sun: v -0.1 d 0.4 SD 15.8 | Moon SD 14.8

Day 30 noon Sun: v -0.1 d 0.4 SD 15.8 | Moon SD 14.7

SUN: MAY 29 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	0125	2233	--	--
64N	--	--	0206	2151	--	--
62N	--	0039	0233	2123	2324	--
60N	--	0135	0254	2102	2222	--
58N	--	0206	0311	2045	2150	--
56N	0035	0229	0326	2030	2127	2327
54N	0127	0248	0338	2018	2108	2231
52N	0156	0303	0349	2007	2053	2201
50N	0217	0316	0358	1957	2040	2139
45N	0256	0342	0418	1937	2013	2100
40N	0323	0403	0435	1920	1952	2033
35N	0344	0419	0448	1907	1936	2011
30N	0401	0433	0500	1855	1922	1954
25N	0415	0445	0511	1844	1910	1940
20N	0427	0456	0520	1835	1859	1928
15N	0438	0506	0529	1826	1849	1917
10N	0448	0515	0538	1817	1840	1907
05N	0457	0523	0546	1809	1831	1858
00N	0506	0532	0554	1801	1823	1849
05S	0514	0539	0602	1753	1815	1841
10S	0521	0547	0610	1745	1808	1834
15S	0529	0555	0618	1737	1800	1826
20S	0536	0603	0627	1728	1752	1819
25S	0543	0611	0636	1719	1743	1812
30S	0551	0620	0646	1709	1735	1804
35S	0558	0630	0657	1657	1725	1756
40S	0607	0640	0710	1644	1714	1748
45S	0616	0652	0725	1629	1702	1739
50S	0626	0707	0744	1610	1648	1728
55S	0638	0724	0808	1546	1630	1716
60S	0653	0747	0841	1513	1607	1702

MOON: RISE / SET | UTC HHMM

Lat	Day 28		Day 29		Day 30	
72N	--	--	--	--	--	--
70N	2054	0007	--	--	--	--
68N	1953	0031	--	--	--	--
66N	1918	0050	2143	0028	--	--
64N	1854	0105	2047	0054	--	0036
62N	1835	0118	2015	0114	2200	0110
60N	1819	0129	1950	0130	2122	0134
58N	1806	0138	1931	0144	2055	0154
56N	1754	0147	1915	0156	2034	0210
54N	1744	0154	1902	0207	2017	0224
52N	1736	0201	1850	0216	2002	0237
50N	1728	0207	1840	0225	1950	0247
45N	1711	0220	1818	0243	1923	0310
40N	1657	0231	1801	0258	1903	0329
35N	1646	0241	1746	0310	1845	0344
30N	1636	0249	1733	0321	1831	0357
25N	1627	0256	1722	0331	1817	0409
20N	1619	0303	1712	0340	1806	0420
15N	1611	0309	1702	0348	1754	0431
10N	1604	0316	1653	0356	1744	0440
05N	1557	0322	1645	0404	1734	0450
00N	1550	0327	1636	0412	1724	0459
05S	1543	0333	1627	0420	1714	0508
10S	1537	0339	1619	0428	1704	0518
15S	1529	0345	1610	0436	1654	0527
20S	1522	0352	1601	0444	1643	0538
25S	1514	0359	1551	0453	1631	0549
30S	1505	0407	1540	0504	1618	0601
35S	1456	0415	1527	0515	1604	0615
40S	1445	0425	1513	0528	1547	0631
45S	1432	0436	1457	0543	1528	0650
50S	1417	0450	1437	0602	1503	0714
55S	1357	0508	1411	0627	1430	0746
60S	1331	0532	1334	0702	1340	0834

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | MAY 31 - JUNE 2

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
31	00	248 30.6	142 51.3	N24 34.5	211 40.3	N13 54.0	132 40.5	N21 44.0	236 26.7	N02 43.6
	01	263 33.0	157 50.5	N24 34.3	226 41.0	N13 54.6	147 42.4	N21 43.9	251 29.0	N02 43.7
	02	278 35.5	172 49.7	N24 34.0	241 41.6	N13 55.2	162 44.4	N21 43.8	266 31.2	N02 43.8
	03	293 38.0	187 49.0	N24 33.7	256 42.3	N13 55.8	177 46.4	N21 43.7	281 33.5	N02 43.8
	04	308 40.4	202 48.2	N24 33.4	271 42.9	N13 56.4	192 48.3	N21 43.7	296 35.8	N02 43.9
	05	323 42.9	217 47.4	N24 33.2	286 43.6	N13 57.0	207 50.3	N21 43.6	311 38.0	N02 44.0
	06	338 45.4	232 46.6	N24 32.9	301 44.3	N13 57.6	222 52.3	N21 43.5	326 40.3	N02 44.1
	07	353 47.8	247 45.9	N24 32.6	316 44.9	N13 58.3	237 54.2	N21 43.4	341 42.6	N02 44.1
	08	008 50.3	262 45.1	N24 32.3	331 45.6	N13 58.9	252 56.2	N21 43.3	356 44.8	N02 44.2
	09	023 52.8	277 44.3	N24 32.0	346 46.2	N13 59.5	267 58.2	N21 43.3	011 47.1	N02 44.3
	10	038 55.2	292 43.6	N24 31.8	001 46.9	N14 00.1	283 00.1	N21 43.2	026 49.4	N02 44.4
	11	053 57.7	307 42.8	N24 31.5	016 47.6	N14 00.7	298 02.1	N21 43.1	041 51.6	N02 44.4
	12	069 00.1	322 42.0	N24 31.2	031 48.2	N14 01.3	313 04.1	N21 43.0	056 53.9	N02 44.5
	13	084 02.6	337 41.3	N24 30.9	046 48.9	N14 01.9	328 06.0	N21 42.9	071 56.2	N02 44.6
	14	099 05.1	352 40.5	N24 30.6	061 49.5	N14 02.5	343 08.0	N21 42.9	086 58.4	N02 44.7
	15	114 07.5	007 39.7	N24 30.3	076 50.2	N14 03.1	358 10.0	N21 42.8	102 00.7	N02 44.7
	16	129 10.0	022 39.0	N24 30.1	091 50.9	N14 03.7	013 11.9	N21 42.7	117 03.0	N02 44.8
	17	144 12.5	037 38.2	N24 29.8	106 51.5	N14 04.4	028 13.9	N21 42.6	132 05.2	N02 44.9
	18	159 14.9	052 37.5	N24 29.5	121 52.2	N14 05.0	043 15.9	N21 42.5	147 07.5	N02 45.0
	19	174 17.4	067 36.7	N24 29.2	136 52.8	N14 05.6	058 17.8	N21 42.5	162 09.7	N02 45.0
	20	189 19.9	082 35.9	N24 28.9	151 53.5	N14 06.2	073 19.8	N21 42.4	177 12.0	N02 45.1
	21	204 22.3	097 35.2	N24 28.6	166 54.1	N14 06.8	088 21.8	N21 42.3	192 14.3	N02 45.2
	22	219 24.8	112 34.4	N24 28.3	181 54.8	N14 07.4	103 23.7	N21 42.2	207 16.5	N02 45.3
	23	234 27.3	127 33.6	N24 28.0	196 55.5	N14 08.0	118 25.7	N21 42.1	222 18.8	N02 45.3
1	00	249 29.7	142 32.9	N24 27.7	211 56.1	N14 08.6	133 27.6	N21 42.1	237 21.1	N02 45.4
	01	264 32.2	157 32.1	N24 27.4	226 56.8	N14 09.2	148 29.6	N21 42.0	252 23.3	N02 45.5
	02	279 34.6	172 31.4	N24 27.1	241 57.4	N14 09.8	163 31.6	N21 41.9	267 25.6	N02 45.6
	03	294 37.1	187 30.6	N24 26.8	256 58.1	N14 10.4	178 33.5	N21 41.8	282 27.9	N02 45.6
	04	309 39.6	202 29.8	N24 26.5	271 58.8	N14 11.0	193 35.5	N21 41.7	297 30.1	N02 45.7
	05	324 42.0	217 29.1	N24 26.2	286 59.4	N14 11.7	208 37.5	N21 41.7	312 32.4	N02 45.8
	06	339 44.5	232 28.3	N24 25.9	302 00.1	N14 12.3	223 39.4	N21 41.6	327 34.7	N02 45.9
	07	354 47.0	247 27.6	N24 25.6	317 00.7	N14 12.9	238 41.4	N21 41.5	342 36.9	N02 45.9
	08	009 49.4	262 26.8	N24 25.3	332 01.4	N14 13.5	253 43.4	N21 41.4	357 39.2	N02 46.0
	09	024 51.9	277 26.0	N24 25.0	347 02.1	N14 14.1	268 45.3	N21 41.3	012 41.5	N02 46.1
	10	039 54.4	292 25.3	N24 24.7	002 02.7	N14 14.7	283 47.3	N21 41.3	027 43.7	N02 46.1
	11	054 56.8	307 24.5	N24 24.3	017 03.4	N14 15.3	298 49.2	N21 41.2	042 46.0	N02 46.2
	12	069 59.3	322 23.8	N24 24.0	032 04.0	N14 15.9	313 51.2	N21 41.1	057 48.3	N02 46.3
	13	085 01.7	337 23.0	N24 23.7	047 04.7	N14 16.5	328 53.2	N21 41.0	072 50.5	N02 46.4
	14	100 04.2	352 22.3	N24 23.4	062 05.3	N14 17.1	343 55.1	N21 40.9	087 52.8	N02 46.4
	15	115 06.7	007 21.5	N24 23.1	077 06.0	N14 17.7	358 57.1	N21 40.9	102 55.1	N02 46.5
	16	130 09.1	022 20.8	N24 22.8	092 06.7	N14 18.3	013 59.1	N21 40.8	117 57.3	N02 46.6
	17	145 11.6	037 20.0	N24 22.5	107 07.3	N14 18.9	029 01.0	N21 40.7	132 59.6	N02 46.7
	18	160 14.1	052 19.2	N24 22.1	122 08.0	N14 19.5	044 03.0	N21 40.6	148 01.9	N02 46.7
	19	175 16.5	067 18.5	N24 21.8	137 08.6	N14 20.1	059 04.9	N21 40.5	163 04.2	N02 46.8
	20	190 19.0	082 17.7	N24 21.5	152 09.3	N14 20.7	074 06.9	N21 40.4	178 06.4	N02 46.9
	21	205 21.5	097 17.0	N24 21.2	167 09.9	N14 21.3	089 08.9	N21 40.4	193 08.7	N02 47.0
	22	220 23.9	112 16.2	N24 20.8	182 10.6	N14 21.9	104 10.8	N21 40.3	208 11.0	N02 47.0
	23	235 26.4	127 15.5	N24 20.5	197 11.3	N14 22.5	119 12.8	N21 40.2	223 13.2	N02 47.1
2	00	250 28.9	142 14.7	N24 20.2	212 11.9	N14 23.1	134 14.7	N21 40.1	238 15.5	N02 47.2
	01	265 31.3	157 14.0	N24 19.9	227 12.6	N14 23.7	149 16.7	N21 40.0	253 17.8	N02 47.2
	02	280 33.8	172 13.2	N24 19.5	242 13.2	N14 24.3	164 18.7	N21 40.0	268 20.0	N02 47.3
	03	295 36.2	187 12.5	N24 19.2	257 13.9	N14 24.9	179 20.6	N21 39.9	283 22.3	N02 47.4
	04	310 38.7	202 11.7	N24 18.9	272 14.6	N14 25.5	194 22.6	N21 39.8	298 24.6	N02 47.5
	05	325 41.2	217 11.0	N24 18.5	287 15.2	N14 26.1	209 24.5	N21 39.7	313 26.8	N02 47.5
	06	340 43.6	232 10.2	N24 18.2	302 15.9	N14 26.7	224 26.5	N21 39.6	328 29.1	N02 47.6
	07	355 46.1	247 09.5	N24 17.9	317 16.5	N14 27.3	239 28.5	N21 39.5	343 31.4	N02 47.7
	08	010 48.6	262 08.7	N24 17.5	332 17.2	N14 27.9	254 30.4	N21 39.5	358 33.7	N02 47.8
	09	025 51.0	277 08.0	N24 17.2	347 17.8	N14 28.5	269 32.4	N21 39.4	013 35.9	N02 47.8
	10	040 53.5	292 07.2	N24 16.9	002 18.5	N14 29.1	284 34.4	N21 39.3	028 38.2	N02 47.9
	11	055 56.0	307 06.5	N24 16.5	017 19.1	N14 29.7	299 36.3	N21 39.2	043 40.5	N02 48.0
	12	070 58.4	322 05.7	N24 16.2	032 19.8	N14 30.3	314 38.3	N21 39.1	058 42.7	N02 48.0
	13	086 00.9	337 05.0	N24 15.8	047 20.5	N14 30.9	329 40.2	N21 39.1	073 45.0	N02 48.1
	14	101 03.4	352 04.3	N24 15.5	062 21.1	N14 31.5	344 42.2	N21 39.0	088 47.3	N02 48.2
	15	116 05.8	007 03.5	N24 15.2	077 21.8	N14 32.1	359 44.1	N21 38.9	103 49.5	N02 48.3
	16	131 08.3	022 02.8	N24 14.8	092 22.4	N14 32.7	014 46.1	N21 38.8	118 51.8	N02 48.3
	17	146 10.7	037 02.0	N24 14.5	107 23.1	N14 33.3	029 48.1	N21 38.7	133 54.1	N02 48.4
	18	161 13.2	052 01.3	N24 14.1	122 23.7	N14 33.9	044 50.0	N21 38.6	148 56.4	N02 48.5
	19	176 15.7	067 00.5	N24 13.8	137 24.4	N14 34.5	059 52.0	N21 38.6	163 58.6	N02 48.5
	20	191 18.1	081 59.8	N24 13.4	152 25.1	N14 35.1	074 53.9	N21 38.5	179 00.9	N02 48.6
	21	206 20.6	096 59.0	N24 13.1	167 25.7	N14 35.7	089 55.9	N21 38.4	194 03.2	N02 48.7
	22	221 23.1	111 58.3	N24 12.7	182 26.4	N14 36.3	104 57.9	N21 38.3	209 05.4	N02 48.8
	23	236 25.5	126 57.6	N24 12.4	197 27.0	N14 36.9	119 59.8	N21 38.2	224 07.7	N02 48.8

Venus	Mars	Jupiter	Saturn
31: v -0.8 d -0.3	31: v 0.7 d 0.6	31: v 2.0 d -0.1	31: v 2.3 d 0.1
1: v -0.8 d -0.3	1: v 0.7 d 0.6	1: v 2.0 d -0.1	1: v 2.3 d 0.1
2: v -0.7 d -0.3	2: v 0.7 d 0.6	2: v 2.0 d -0.1	2: v 2.3 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.3	S40 11.8
Achernar	335 19.8	S57 05.9
Acrux	172 58.5	S63 15.1
Adhara	255 05.3	S29 00.6
Al Na'ir	027 31.4	S46 49.7
Aldebaran	290 38.7	N16 33.7
Alioth	166 11.7	N55 49.1
Alkaid	152 50.7	N49 11.0
Alnilam	275 36.9	S01 11.1
Alphard	217 46.8	S08 46.5
Alphecca	126 02.4	N26 37.5
Alpheratz	357 33.7	N29 14.0
Altair	061 58.6	N08 56.2
Ankaa	353 06.2	S42 09.5
Antares	112 14.1	S26 29.5
Arcturus	145 46.6	N19 02.7
Atria	107 06.7	S69 04.5
Avior	234 14.7	S59 35.9
Bellatrix	278 22.0	N06 22.4
Betelgeuse	270 51.2	N07 24.7
Canopus	263 52.4	S52 42.7
Capella	280 20.7	N46 01.4
Deneb	049 24.8	N45 22.2
Denebola	182 23.7	N14 25.5
Diphda	348 46.3	S17 50.4
Dubhe	193 39.6	N61 36.7
Elnath	278 00.8	N28 37.8
Eltanin	090 41.1	N51 29.0
Enif	033 37.6	N09 59.7
Fomalhaut	015 13.3	S29 28.8
Gacrux	171 50.1	S57 16.0
Gienah	175 42.3	S17 41.5
Hadar	148 33.9	S60 30.3
Hamal	327 50.2	N23 35.1
Kaus Australi	083 30.6	S34 22.3
Kochab	137 18.8	N74 02.9
Markab	013 28.8	N15 20.8
Menkar	314 05.3	N04 11.6
Menkent	147 55.9	S36 30.2
Miaplacidus	221 38.4	S69 49.8
Mirfak	308 27.1	N49 57.2
Nunki	075 46.0	S26 15.8
Peacock	053 03.6	S56 38.7
Polaris	313 53.9	N89 22.4
Pollux	243 16.2	N27 57.8
Procyon	244 49.9	N05 09.4
Rasalhague	095 57.2	N12 32.4
Regulus	207 33.3	N11 50.3
Rigel	281 03.1	S08 10.3
Rigil Kentaur	139 38.1	S60 56.9
Sabik	102 01.1	S15 45.5
Schedar	349 30.0	N56 40.7
Shaula	096 08.4	S37 07.3
Sirius	258 25.5	S16 45.2
Spica	158 20.9	S11 18.1
Suhail	222 45.7	S43 32.6
Vega	080 32.1	N38 48.3
Zubenelgenubi	136 54.4	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	252 24.5	1431
Mars	322 04.7	0952
Jupiter	243 51.9	1504
Saturn	347 49.0	0809

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
31	00	180 35.7	N21 53.2	005 48.5	S26 08.5	54.0	10.9	-5.3
	01	195 35.7	N21 53.5	020 18.5	S26 13.8	54.0	10.9	-5.2
	02	210 35.6	N21 53.9	034 48.4	S26 19.0	54.0	10.9	-5.0
	03	225 35.5	N21 54.2	049 18.2	S26 24.0	54.0	10.8	-4.9
	04	240 35.4	N21 54.6	063 48.0	S26 29.0	54.0	10.8	-4.8
	05	255 35.3	N21 54.9	078 17.8	S26 33.8	54.0	10.7	-4.7
	06	270 35.2	N21 55.3	092 47.5	S26 38.4	54.0	10.7	-4.5
	07	285 35.1	N21 55.6	107 17.2	S26 43.0	54.0	10.7	-4.4
	08	300 35.0	N21 56.0	121 46.9	S26 47.4	54.0	10.6	-4.3
	09	315 34.9	N21 56.3	136 16.5	S26 51.7	54.0	10.6	-4.2
	10	330 34.8	N21 56.7	150 46.1	S26 55.8	54.0	10.5	-4.0
	11	345 34.8	N21 57.1	165 15.6	S26 59.9	54.0	10.5	-3.9
	12	000 34.7	N21 57.4	179 45.1	S27 03.8	54.0	10.5	-3.8
	13	015 34.6	N21 57.8	194 14.6	S27 07.6	54.0	10.4	-3.6
	14	030 34.5	N21 58.1	208 44.1	S27 11.2	54.0	10.4	-3.5
	15	045 34.4	N21 58.5	223 13.5	S27 14.7	54.0	10.4	-3.4
	16	060 34.3	N21 58.8	237 42.8	S27 18.1	54.0	10.3	-3.3
	17	075 34.2	N21 59.1	252 12.2	S27 21.4	54.0	10.3	-3.1
	18	090 34.1	N21 59.5	266 41.5	S27 24.5	54.0	10.3	-3.0
	19	105 34.0	N21 59.8	281 10.8	S27 27.5	54.0	10.3	-2.9
	20	120 33.9	N22 00.2	295 40.0	S27 30.4	54.0	10.2	-2.7
	21	135 33.8	N22 00.5	310 09.3	S27 33.1	54.0	10.2	-2.6
	22	150 33.7	N22 00.9	324 38.5	S27 35.7	54.0	10.2	-2.5
	23	165 33.6	N22 01.2	339 07.7	S27 38.1	54.0	10.2	-2.3
1	00	180 33.5	N22 01.6	353 36.8	S27 40.5	54.0	10.1	-2.2
	01	195 33.5	N22 01.9	008 06.0	S27 42.7	54.0	10.1	-2.1
	02	210 33.4	N22 02.2	022 35.1	S27 44.7	54.0	10.1	-1.9
	03	225 33.3	N22 02.6	037 04.2	S27 46.7	54.0	10.1	-1.8
	04	240 33.2	N22 02.9	051 33.3	S27 48.5	54.0	10.1	-1.7
	05	255 33.1	N22 03.3	066 02.4	S27 50.1	54.0	10.1	-1.5
	06	270 33.0	N22 03.6	080 31.4	S27 51.7	54.0	10.0	-1.4
	07	285 32.9	N22 03.9	095 00.4	S27 53.1	54.0	10.0	-1.3
	08	300 32.8	N22 04.3	109 29.5	S27 54.3	54.0	10.0	-1.1
	09	315 32.7	N22 04.6	123 58.5	S27 55.4	54.0	10.0	-1.0
	10	330 32.6	N22 05.0	138 27.5	S27 56.4	54.0	10.0	-0.9
	11	345 32.5	N22 05.3	152 56.5	S27 57.3	54.0	10.0	-0.7
	12	000 32.4	N22 05.6	167 25.5	S27 58.0	54.0	10.0	-0.6
	13	015 32.3	N22 06.0	181 54.4	S27 58.6	54.0	10.0	-0.4
	14	030 32.2	N22 06.3	196 23.4	S27 59.0	54.0	10.0	-0.3
	15	045 32.1	N22 06.6	210 52.4	S27 59.3	54.0	10.0	-0.2
	16	060 32.0	N22 07.0	225 21.3	S27 59.5	54.0	10.0	0.0
	17	075 31.9	N22 07.3	239 50.3	S27 59.6	54.0	10.0	0.1
	18	090 31.8	N22 07.6	254 19.3	S27 59.5	54.0	10.0	0.2
	19	105 31.7	N22 07.9	268 48.2	S27 59.2	54.0	10.0	0.4
	20	120 31.6	N22 08.3	283 17.2	S27 58.9	54.0	10.0	0.5
	21	135 31.5	N22 08.6	297 46.2	S27 58.4	54.0	10.0	0.6
	22	150 31.4	N22 08.9	312 15.1	S27 57.7	54.0	10.0	0.8
	23	165 31.3	N22 09.3	326 44.1	S27 57.0	54.0	10.0	0.9
2	00	180 31.2	N22 09.6	341 13.1	S27 56.0	54.0	10.0	1.0
	01	195 31.2	N22 09.9	355 42.1	S27 55.0	54.0	10.0	1.2
	02	210 31.1	N22 10.2	010 11.1	S27 53.8	54.0	10.0	1.3
	03	225 31.0	N22 10.6	024 40.1	S27 52.5	54.0	10.0	1.5
	04	240 30.9	N22 10.9	039 09.1	S27 51.1	54.0	10.0	1.6
	05	255 30.8	N22 11.2	053 38.1	S27 49.5	54.0	10.0	1.7
	06	270 30.7	N22 11.5	068 07.2	S27 47.8	54.0	10.1	1.9
	07	285 30.6	N22 11.9	082 36.2	S27 45.9	54.0	10.1	2.0
	08	300 30.5	N22 12.2	097 05.3	S27 43.9	54.0	10.1	2.1
	09	315 30.4	N22 12.5	111 34.4	S27 41.8	54.0	10.1	2.3
	10	330 30.3	N22 12.8	126 03.5	S27 39.5	54.0	10.1	2.4
	11	345 30.2	N22 13.1	140 32.7	S27 37.1	54.0	10.2	2.5
	12	000 30.1	N22 13.5	155 01.8	S27 34.6	54.0	10.2	2.7
	13	015 30.0	N22 13.8	169 31.0	S27 32.0	54.0	10.2	2.8
	14	030 29.9	N22 14.1	184 00.2	S27 29.2	54.1	10.2	2.9
	15	045 29.8	N22 14.4	198 29.4	S27 26.2	54.1	10.2	3.1
	16	060 29.7	N22 14.7	212 58.6	S27 23.2	54.1	10.3	3.2
	17	075 29.6	N22 15.0	227 27.9	S27 20.0	54.1	10.3	3.3
	18	090 29.5	N22 15.4	241 57.2	S27 16.7	54.1	10.3	3.4
	19	105 29.4	N22 15.7	256 26.6	S27 13.2	54.1	10.4	3.6
	20	120 29.3	N22 16.0	270 55.9	S27 09.7	54.1	10.4	3.7
	21	135 29.2	N22 16.3	285 25.3	S27 06.0	54.1	10.4	3.8
	22	150 29.1	N22 16.6	299 54.7	S27 02.1	54.1	10.5	4.0
	23	165 29.0	N22 16.9	314 24.2	S26 58.1	54.1	10.5	4.1

Day 31 noon Sun: v -0.1 d 0.4 SD 15.8 | Moon SD 14.7

Day 1 noon Sun: v -0.1 d 0.3 SD 15.8 | Moon SD 14.7

Day 2 noon Sun: v -0.1 d 0.3 SD 15.8 | Moon SD 14.7

SUN: JUNE 1 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	0113	2247	--	--
64N	--	--	0158	2200	--	--
62N	--	--	0227	2130	--	--
60N	--	0126	0249	2107	2232	--
58N	--	0200	0307	2049	2157	--
56N	--	0225	0322	2034	2132	--
54N	0118	0244	0335	2022	2113	2240
52N	0150	0300	0346	2010	2057	2207
50N	0213	0313	0356	2000	2043	2144
45N	0253	0340	0417	1939	2016	2104
40N	0321	0401	0433	1923	1955	2035
35N	0342	0418	0447	1909	1938	2014
30N	0400	0432	0459	1856	1924	1956
25N	0414	0445	0510	1846	1911	1942
20N	0427	0456	0520	1836	1900	1929
15N	0438	0506	0529	1827	1850	1918
10N	0448	0515	0538	1818	1841	1908
05N	0457	0524	0546	1810	1832	1858
00N	0506	0532	0554	1801	1824	1850
05S	0514	0540	0602	1753	1816	1842
10S	0522	0548	0611	1745	1808	1834
15S	0529	0556	0619	1737	1800	1826
20S	0537	0604	0628	1728	1751	1819
25S	0544	0613	0637	1718	1743	1811
30S	0552	0622	0648	1708	1734	1803
35S	0600	0631	0659	1656	1724	1755
40S	0609	0642	0712	1643	1713	1747
45S	0618	0655	0728	1627	1701	1737
50S	0629	0709	0747	1608	1646	1727
55S	0641	0728	0812	1544	1628	1714
60S	0657	0752	0846	1509	1604	1659

MOON: RISE / SET | UTC HHMM

Lat	Day 31		Day 1		Day 2	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	--	--	--	--
62N	2353	0105	--	0057	0116	0121
60N	2245	0143	2343	0205	--	0254
58N	2210	0210	2307	0240	2343	0330
56N	2145	0232	2241	0305	2320	0356
54N	2125	0249	2220	0326	2301	0416
52N	2108	0304	2203	0343	2245	0434
50N	2054	0317	2148	0357	2232	0448
45N	2024	0344	2119	0427	2204	0518
40N	2002	0406	2055	0450	2142	0541
35N	1943	0423	2036	0509	2124	0600
30N	1927	0439	2019	0525	2108	0617
25N	1912	0452	2005	0540	2054	0631
20N	1859	0505	1952	0553	2041	0644
15N	1847	0516	1939	0605	2029	0657
10N	1836	0527	1928	0617	2018	0708
05N	1825	0538	1916	0628	2007	0719
00N	1814	0548	1905	0639	1957	0730
05S	1803	0558	1854	0650	1946	0741
10S	1752	0609	1843	0701	1935	0752
15S	1741	0620	1831	0713	1924	0804
20S	1729	0632	1819	0725	1912	0816
25S	1716	0644	1806	0738	1859	0829
30S	1702	0658	1751	0753	1845	0843
35S	1646	0713	1735	0809	1829	0859
40S	1628	0731	1716	0828	1811	0918
45S	1606	0753	1653	0851	1748	0941
50S	1537	0821	1623	0921	1720	1010
55S	1459	0859	1541	1002	1640	1050
60S	1355	1002	1430	1114	1533	1157

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JUNE 3 - JUNE 5

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
3	00	251 28.0	141 56.8	N24 12.0	212 27.7	N14 37.5	135 01.8	N21 38.2	239 10.0	N02 48.9
	01	266 30.5	156 56.1	N24 11.7	227 28.3	N14 38.1	150 03.7	N21 38.1	254 12.3	N02 49.0
	02	281 32.9	171 55.3	N24 11.3	242 29.0	N14 38.7	165 05.7	N21 38.0	269 14.5	N02 49.0
	03	296 35.4	186 54.6	N24 11.0	257 29.6	N14 39.3	180 07.6	N21 37.9	284 16.8	N02 49.1
	04	311 37.9	201 53.9	N24 10.6	272 30.3	N14 39.9	195 09.6	N21 37.8	299 19.1	N02 49.2
	05	326 40.3	216 53.1	N24 10.2	287 31.0	N14 40.4	210 11.6	N21 37.7	314 21.3	N02 49.3
	06	341 42.8	231 52.4	N24 09.9	302 31.6	N14 41.0	225 13.5	N21 37.7	329 23.6	N02 49.3
	07	356 45.2	246 51.6	N24 09.5	317 32.3	N14 41.6	240 15.5	N21 37.6	344 25.9	N02 49.4
	08	011 47.7	261 50.9	N24 09.1	332 32.9	N14 42.2	255 17.4	N21 37.5	359 28.2	N02 49.5
	09	026 50.2	276 50.2	N24 08.8	347 33.6	N14 42.8	270 19.4	N21 37.4	014 30.4	N02 49.5
	10	041 52.6	291 49.4	N24 08.4	002 34.2	N14 43.4	285 21.4	N21 37.3	029 32.7	N02 49.6
	11	056 55.1	306 48.7	N24 08.1	017 34.9	N14 44.0	300 23.3	N21 37.2	044 35.0	N02 49.7
	12	071 57.6	321 48.0	N24 07.7	032 35.5	N14 44.6	315 25.3	N21 37.2	059 37.2	N02 49.8
	13	087 00.0	336 47.2	N24 07.3	047 36.2	N14 45.2	330 27.2	N21 37.1	074 39.5	N02 49.8
	14	102 02.5	351 46.5	N24 06.9	062 36.8	N14 45.8	345 29.2	N21 37.0	089 41.8	N02 49.9
	15	117 05.0	006 45.8	N24 06.6	077 37.5	N14 46.4	000 31.1	N21 36.9	104 44.1	N02 50.0
	16	132 07.4	021 45.0	N24 06.2	092 38.2	N14 47.0	015 33.1	N21 36.8	119 46.3	N02 50.0
	17	147 09.9	036 44.3	N24 05.8	107 38.8	N14 47.6	030 35.0	N21 36.7	134 48.6	N02 50.1
	18	162 12.4	051 43.6	N24 05.5	122 39.5	N14 48.1	045 37.0	N21 36.7	149 50.9	N02 50.2
	19	177 14.8	066 42.8	N24 05.1	137 40.1	N14 48.7	060 39.0	N21 36.6	164 53.2	N02 50.2
	20	192 17.3	081 42.1	N24 04.7	152 40.8	N14 49.3	075 40.9	N21 36.5	179 55.4	N02 50.3
	21	207 19.7	096 41.4	N24 04.3	167 41.4	N14 49.9	090 42.9	N21 36.4	194 57.7	N02 50.4
	22	222 22.2	111 40.6	N24 03.9	182 42.1	N14 50.5	105 44.8	N21 36.3	210 00.0	N02 50.5
	23	237 24.7	126 39.9	N24 03.6	197 42.7	N14 51.1	120 46.8	N21 36.2	225 02.3	N02 50.5
4	00	252 27.1	141 39.2	N24 03.2	212 43.4	N14 51.7	135 48.7	N21 36.2	240 04.5	N02 50.6
	01	267 29.6	156 38.4	N24 02.8	227 44.0	N14 52.3	150 50.7	N21 36.1	255 06.8	N02 50.7
	02	282 32.1	171 37.7	N24 02.4	242 44.7	N14 52.9	165 52.6	N21 36.0	270 09.1	N02 50.7
	03	297 34.5	186 37.0	N24 02.0	257 45.4	N14 53.4	180 54.6	N21 35.9	285 11.4	N02 50.8
	04	312 37.0	201 36.3	N24 01.6	272 46.0	N14 54.0	195 56.6	N21 35.8	300 13.6	N02 50.9
	05	327 39.5	216 35.5	N24 01.3	287 46.7	N14 54.6	210 58.5	N21 35.7	315 15.9	N02 51.0
	06	342 41.9	231 34.8	N24 00.9	302 47.3	N14 55.2	226 00.5	N21 35.7	330 18.2	N02 51.0
	07	357 44.4	246 34.1	N24 00.5	317 48.0	N14 55.8	241 02.4	N21 35.6	345 20.5	N02 51.1
	08	012 46.9	261 33.3	N24 00.1	332 48.6	N14 56.4	256 04.4	N21 35.5	000 22.7	N02 51.2
	09	027 49.3	276 32.6	N23 59.7	347 49.3	N14 57.0	271 06.3	N21 35.4	015 25.0	N02 51.2
	10	042 51.8	291 31.9	N23 59.3	002 49.9	N14 57.6	286 08.3	N21 35.3	030 27.3	N02 51.3
	11	057 54.2	306 31.2	N23 58.9	017 50.6	N14 58.1	301 10.2	N21 35.2	045 29.6	N02 51.4
	12	072 56.7	321 30.4	N23 58.5	032 51.2	N14 58.7	316 12.2	N21 35.1	060 31.8	N02 51.4
	13	087 59.2	336 29.7	N23 58.1	047 51.9	N14 59.3	331 14.1	N21 35.1	075 34.1	N02 51.5
	14	103 01.6	351 29.0	N23 57.7	062 52.5	N14 59.9	346 16.1	N21 35.0	090 36.4	N02 51.6
	15	118 04.1	006 28.3	N23 57.3	077 53.2	N15 00.5	001 18.1	N21 34.9	105 38.7	N02 51.6
	16	133 06.6	021 27.5	N23 56.9	092 53.8	N15 01.1	016 20.0	N21 34.8	120 40.9	N02 51.7
	17	148 09.0	036 26.8	N23 56.5	107 54.5	N15 01.6	031 22.0	N21 34.7	135 43.2	N02 51.8
	18	163 11.5	051 26.1	N23 56.1	122 55.1	N15 02.2	046 23.9	N21 34.6	150 45.5	N02 51.9
	19	178 14.0	066 25.4	N23 55.7	137 55.8	N15 02.8	061 25.9	N21 34.6	165 47.8	N02 51.9
	20	193 16.4	081 24.7	N23 55.3	152 56.5	N15 03.4	076 27.8	N21 34.5	180 50.0	N02 52.0
	21	208 18.9	096 23.9	N23 54.9	167 57.1	N15 04.0	091 29.8	N21 34.4	195 52.3	N02 52.1
	22	223 21.3	111 23.2	N23 54.5	182 57.8	N15 04.6	106 31.7	N21 34.3	210 54.6	N02 52.1
	23	238 23.8	126 22.5	N23 54.1	197 58.4	N15 05.1	121 33.7	N21 34.2	225 56.9	N02 52.2
5	00	253 26.3	141 21.8	N23 53.7	212 59.1	N15 05.7	136 35.6	N21 34.1	240 59.1	N02 52.3
	01	268 28.7	156 21.1	N23 53.3	227 59.7	N15 06.3	151 37.6	N21 34.0	256 01.4	N02 52.3
	02	283 31.2	171 20.4	N23 52.9	243 00.4	N15 06.9	166 39.5	N21 34.0	271 03.7	N02 52.4
	03	298 33.7	186 19.6	N23 52.5	258 01.0	N15 07.5	181 41.5	N21 33.9	286 06.0	N02 52.5
	04	313 36.1	201 18.9	N23 52.0	273 01.7	N15 08.1	196 43.4	N21 33.8	301 08.3	N02 52.5
	05	328 38.6	216 18.2	N23 51.6	288 02.3	N15 08.6	211 45.4	N21 33.7	316 10.5	N02 52.6
	06	343 41.1	231 17.5	N23 51.2	303 03.0	N15 09.2	226 47.3	N21 33.6	331 12.8	N02 52.7
	07	358 43.5	246 16.8	N23 50.8	318 03.6	N15 09.8	241 49.3	N21 33.5	346 15.1	N02 52.7
	08	013 46.0	261 16.1	N23 50.4	333 04.3	N15 10.4	256 51.3	N21 33.5	001 17.4	N02 52.8
	09	028 48.5	276 15.3	N23 50.0	348 04.9	N15 11.0	271 53.2	N21 33.4	016 19.6	N02 52.9
	10	043 50.9	291 14.6	N23 49.5	003 05.6	N15 11.5	286 55.2	N21 33.3	031 21.9	N02 53.0
	11	058 53.4	306 13.9	N23 49.1	018 06.2	N15 12.1	301 57.1	N21 33.2	046 24.2	N02 53.0
	12	073 55.8	321 13.2	N23 48.7	033 06.9	N15 12.7	316 59.1	N21 33.1	061 26.5	N02 53.1
	13	088 58.3	336 12.5	N23 48.3	048 07.5	N15 13.3	332 01.0	N21 33.0	076 28.8	N02 53.2
	14	104 00.8	351 11.8	N23 47.8	063 08.2	N15 13.8	347 03.0	N21 32.9	091 31.0	N02 53.2
	15	119 03.2	006 11.1	N23 47.4	078 08.8	N15 14.4	002 04.9	N21 32.9	106 33.3	N02 53.3
	16	134 05.7	021 10.4	N23 47.0	093 09.5	N15 15.0	017 06.9	N21 32.8	121 35.6	N02 53.4
	17	149 08.2	036 09.6	N23 46.6	108 10.1	N15 15.6	032 08.8	N21 32.7	136 37.9	N02 53.4
	18	164 10.6	051 08.9	N23 46.1	123 10.8	N15 16.2	047 10.8	N21 32.6	151 40.1	N02 53.5
	19	179 13.1	066 08.2	N23 45.7	138 11.4	N15 16.7	062 12.7	N21 32.5	166 42.4	N02 53.6
	20	194 15.6	081 07.5	N23 45.3	153 12.1	N15 17.3	077 14.7	N21 32.4	181 44.7	N02 53.6
	21	209 18.0	096 06.8	N23 44.8	168 12.7	N15 17.9	092 16.6	N21 32.3	196 47.0	N02 53.7
	22	224 20.5	111 06.1	N23 44.4	183 13.4	N15 18.5	107 18.6	N21 32.3	211 49.3	N02 53.8
	23	239 23.0	126 05.4	N23 44.0	198 14.0	N15 19.0	122 20.5	N21 32.2	226 51.5	N02 53.8

Venus	Mars	Jupiter	Saturn
3: v -0.7 d -0.4	3: v 0.7 d 0.6	3: v 2.0 d -0.1	3: v 2.3 d 0.1
4: v -0.7 d -0.4	4: v 0.7 d 0.6	4: v 2.0 d -0.1	4: v 2.3 d 0.1
5: v -0.7 d -0.4	5: v 0.7 d 0.6	5: v 2.0 d -0.1	5: v 2.3 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.3	S40 11.8
Achernar	335 19.7	S57 05.9
Acrux	172 58.5	S63 15.1
Adhara	255 05.3	S29 00.6
Al Na'ir	027 31.4	S46 49.7
Aldebaran	290 38.6	N16 33.7
Alioth	166 11.7	N55 49.2
Alkaid	152 50.8	N49 11.0
Alnilam	275 36.9	S01 11.1
Alphard	217 46.8	S08 46.5
Alphecca	126 02.4	N26 37.5
Alpheratz	357 33.7	N29 14.0
Altair	061 58.6	N08 56.2
Ankaa	353 06.2	S42 09.5
Antares	112 14.0	S26 29.5
Arcturus	145 46.6	N19 02.7
Atria	107 06.7	S69 04.5
Avior	234 14.7	S59 35.9
Bellatrix	278 22.0	N06 22.4
Betelgeuse	270 51.2	N07 24.7
Canopus	263 52.4	S52 42.7
Capella	280 20.7	N46 01.4
Deneb	049 24.8	N45 22.3
Denebola	182 23.7	N14 25.5
Diphda	348 46.3	S17 50.4
Dubhe	193 39.6	N61 36.7
Elnath	278 00.8	N28 37.8
Eltanin	090 41.1	N51 29.0
Enif	033 37.6	N09 59.7
Fomalhaut	015 13.3	S29 28.8
Gacrux	171 50.1	S57 16.0
Gienah	175 42.3	S17 41.5
Hadar	148 33.9	S60 30.3
Hamal	327 50.2	N23 35.1
Kaus Australi	083 30.6	S34 22.3
Kochab	137 18.8	N74 02.9
Markab	013 28.8	N15 20.8
Menkar	314 05.2	N04 11.6
Menkent	147 55.9	S36 30.2
Miaplacidus	221 38.5	S69 49.8
Mirfak	308 27.1	N49 57.2
Nunki	075 46.0	S26 15.8
Peacock	053 03.5	S56 38.7
Polaris	313 52.9	N89 22.4
Pollux	243 16.2	N27 57.8
Procyon	244 49.9	N05 09.4
Rasalhague	095 57.1	N12 32.4
Regulus	207 33.3	N11 50.3
Rigel	281 03.1	S08 10.3
Rigil Kentaur	139 38.1	S60 56.9
Sabik	102 01.1	S15 45.5
Schedar	349 30.0	N56 40.7
Shaula	096 08.4	S37 07.4
Sirius	258 25.5	S16 45.2
Spica	158 20.9	S11 18.1
Suhail	222 45.7	S43 32.6
Vega	080 32.0	N38 48.3
Zubenelgenubi	136 54.4	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	248 33.7	1434
Mars	319 54.5	0949
Jupiter	243 15.5	1455
Saturn	347 35.1	0758

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
3	00	180 28.9	N22 17.2	328 53.7	S26 54.0	54.1	10.5	4.2
	01	195 28.8	N22 17.5	343 23.2	S26 49.8	54.1	10.6	4.4
	02	210 28.6	N22 17.9	357 52.7	S26 45.5	54.1	10.6	4.5
	03	225 28.5	N22 18.2	012 22.3	S26 41.0	54.1	10.6	4.6
	04	240 28.4	N22 18.5	026 51.9	S26 36.4	54.1	10.7	4.7
	05	255 28.3	N22 18.8	041 21.6	S26 31.6	54.2	10.7	4.9
	06	270 28.2	N22 19.1	055 51.3	S26 26.8	54.2	10.7	5.0
	07	285 28.1	N22 19.4	070 21.0	S26 21.8	54.2	10.8	5.1
	08	300 28.0	N22 19.7	084 50.8	S26 16.7	54.2	10.8	5.2
	09	315 27.9	N22 20.0	099 20.6	S26 11.4	54.2	10.9	5.4
	10	330 27.8	N22 20.3	113 50.5	S26 06.0	54.2	10.9	5.5
	11	345 27.7	N22 20.6	128 20.4	S26 00.6	54.2	10.9	5.6
	12	000 27.6	N22 20.9	142 50.3	S25 54.9	54.2	11.0	5.7
	13	015 27.5	N22 21.2	157 20.3	S25 49.2	54.2	11.0	5.9
	14	030 27.4	N22 21.5	171 50.4	S25 43.4	54.2	11.1	6.0
	15	045 27.3	N22 21.8	186 20.4	S25 37.4	54.2	11.1	6.1
	16	060 27.2	N22 22.1	200 50.6	S25 31.3	54.3	11.2	6.2
	17	075 27.1	N22 22.4	215 20.7	S25 25.1	54.3	11.2	6.3
	18	090 27.0	N22 22.7	229 50.9	S25 18.7	54.3	11.3	6.5
	19	105 26.9	N22 23.0	244 21.2	S25 12.3	54.3	11.3	6.6
	20	120 26.8	N22 23.3	258 51.5	S25 05.7	54.3	11.4	6.7
	21	135 26.7	N22 23.6	273 21.9	S24 59.0	54.3	11.4	6.8
	22	150 26.6	N22 23.9	287 52.3	S24 52.2	54.3	11.4	6.9
	23	165 26.5	N22 24.2	302 22.7	S24 45.2	54.3	11.5	7.0
4	00	180 26.4	N22 24.5	316 53.2	S24 38.2	54.3	11.5	7.2
	01	195 26.3	N22 24.8	331 23.7	S24 31.0	54.4	11.6	7.3
	02	210 26.2	N22 25.1	345 54.3	S24 23.8	54.4	11.6	7.4
	03	225 26.0	N22 25.4	000 25.0	S24 16.4	54.4	11.7	7.5
	04	240 25.9	N22 25.7	014 55.7	S24 08.9	54.4	11.7	7.6
	05	255 25.8	N22 25.9	029 26.4	S24 01.3	54.4	11.8	7.7
	06	270 25.7	N22 26.2	043 57.2	S23 53.5	54.4	11.8	7.8
	07	285 25.6	N22 26.5	058 28.1	S23 45.7	54.4	11.9	7.9
	08	300 25.5	N22 26.8	072 59.0	S23 37.7	54.5	11.9	8.1
	09	315 25.4	N22 27.1	087 29.9	S23 29.7	54.5	12.0	8.2
	10	330 25.3	N22 27.4	102 00.9	S23 21.5	54.5	12.1	8.3
	11	345 25.2	N22 27.7	116 32.0	S23 13.2	54.5	12.1	8.4
	12	000 25.1	N22 28.0	131 03.1	S23 04.8	54.5	12.2	8.5
	13	015 25.0	N22 28.3	145 34.2	S22 56.4	54.5	12.2	8.6
	14	030 24.9	N22 28.5	160 05.4	S22 47.8	54.5	12.3	8.7
	15	045 24.8	N22 28.8	174 36.7	S22 39.1	54.6	12.3	8.8
	16	060 24.7	N22 29.1	189 08.0	S22 30.2	54.6	12.4	8.9
	17	075 24.5	N22 29.4	203 39.4	S22 21.3	54.6	12.4	9.0
	18	090 24.4	N22 29.7	218 10.8	S22 12.3	54.6	12.5	9.1
	19	105 24.3	N22 30.0	232 42.2	S22 03.2	54.6	12.5	9.2
	20	120 24.2	N22 30.2	247 13.8	S21 54.0	54.6	12.6	9.3
	21	135 24.1	N22 30.5	261 45.3	S21 44.6	54.7	12.6	9.4
	22	150 24.0	N22 30.8	276 16.9	S21 35.2	54.7	12.7	9.5
	23	165 23.9	N22 31.1	290 48.6	S21 25.7	54.7	12.7	9.6
5	00	180 23.8	N22 31.3	305 20.3	S21 16.1	54.7	12.8	9.7
	01	195 23.7	N22 31.6	319 52.1	S21 06.4	54.7	12.8	9.8
	02	210 23.6	N22 31.9	334 23.9	S20 56.5	54.7	12.9	9.9
	03	225 23.5	N22 32.2	348 55.8	S20 46.6	54.8	12.9	10.0
	04	240 23.3	N22 32.5	003 27.7	S20 36.6	54.8	13.0	10.1
	05	255 23.2	N22 32.7	017 59.7	S20 26.5	54.8	13.0	10.2
	06	270 23.1	N22 33.0	032 31.7	S20 16.3	54.8	13.1	10.3
	07	285 23.0	N22 33.3	047 03.8	S20 06.0	54.8	13.1	10.4
	08	300 22.9	N22 33.5	061 35.9	S19 55.6	54.8	13.2	10.5
	09	315 22.8	N22 33.8	076 08.0	S19 45.1	54.9	13.2	10.6
	10	330 22.7	N22 34.1	090 40.3	S19 34.6	54.9	13.3	10.7
	11	345 22.6	N22 34.4	105 12.5	S19 23.9	54.9	13.3	10.8
	12	000 22.5	N22 34.6	119 44.8	S19 13.2	54.9	13.4	10.8
	13	015 22.4	N22 34.9	134 17.2	S19 02.3	54.9	13.4	10.9
	14	030 22.2	N22 35.2	148 49.6	S18 51.4	55.0	13.4	11.0
	15	045 22.1	N22 35.4	163 22.0	S18 40.4	55.0	13.5	11.1
	16	060 22.0	N22 35.7	177 54.5	S18 29.3	55.0	13.5	11.2
	17	075 21.9	N22 36.0	192 27.0	S18 18.1	55.0	13.6	11.3
	18	090 21.8	N22 36.2	206 59.6	S18 06.8	55.0	13.6	11.4
	19	105 21.7	N22 36.5	221 32.3	S17 55.4	55.1	13.7	11.4
	20	120 21.6	N22 36.8	236 04.9	S17 44.0	55.1	13.7	11.5
	21	135 21.5	N22 37.0	250 37.6	S17 32.4	55.1	13.7	11.6
	22	150 21.3	N22 37.3	265 10.4	S17 20.8	55.1	13.8	11.7
	23	165 21.2	N22 37.6	279 43.2	S17 09.1	55.2	13.8	11.8

Day 3 noon Sun: v -0.1 d 0.3 SD 15.8 | Moon SD 14.8

Day 4 noon Sun: v -0.1 d 0.3 SD 15.8 | Moon SD 14.9

Day 5 noon Sun: v -0.1 d 0.3 SD 15.8 | Moon SD 15.0

SUN: JUNE 4 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	0059	2302	--	--
64N	--	--	0151	2208	--	--
62N	--	--	0222	2136	--	--
60N	--	0118	0245	2112	2242	--
58N	--	0155	0304	2054	2203	--
56N	--	0220	0319	2038	2137	--
54N	0111	0240	0332	2025	2117	2248
52N	0145	0257	0344	2013	2101	2213
50N	0209	0311	0354	2003	2047	2149
45N	0250	0339	0415	1942	2019	2107
40N	0319	0400	0432	1925	1957	2038
35N	0341	0417	0446	1910	1940	2016
30N	0359	0432	0459	1858	1925	1958
25N	0414	0444	0510	1847	1913	1943
20N	0427	0455	0520	1837	1901	1930
15N	0438	0506	0529	1828	1851	1919
10N	0448	0515	0538	1819	1842	1909
05N	0458	0524	0546	1810	1833	1859
00N	0506	0532	0555	1802	1824	1850
05S	0515	0541	0603	1754	1816	1842
10S	0522	0549	0611	1745	1808	1834
15S	0530	0557	0620	1737	1800	1826
20S	0538	0605	0629	1728	1751	1819
25S	0546	0614	0639	1718	1743	1811
30S	0553	0623	0649	1707	1733	1803
35S	0602	0633	0701	1656	1723	1755
40S	0610	0644	0714	1642	1712	1746
45S	0620	0657	0730	1626	1700	1736
50S	0631	0712	0750	1606	1644	1725
55S	0644	0731	0815	1541	1626	1712
60S	0700	0755	0851	1505	1601	1656

MOON: RISE / SET | UTC HHMM

Lat	Day 3		Day 4		Day 5	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	0229	0518
66N	--	--	--	--	0142	0604
64N	--	--	0133	0434	0111	0634
62N	0057	0326	0052	0514	0048	0656
60N	0012	0411	0024	0541	0029	0714
58N	--	0440	0002	0603	0014	0729
56N	2345	0503	--	0620	0001	0742
54N	2329	0521	2349	0635	--	0753
52N	2316	0537	2339	0648	2356	0802
50N	2305	0550	2329	0659	2349	0811
45N	2241	0617	2310	0722	2334	0829
40N	2221	0639	2254	0741	2322	0844
35N	2205	0657	2241	0756	2312	0857
30N	2151	0712	2229	0809	2303	0907
25N	2138	0726	2218	0821	2255	0917
20N	2127	0738	2209	0832	2247	0926
15N	2116	0749	2200	0842	2240	0934
10N	2106	0800	2151	0852	2233	0942
05N	2056	0811	2143	0901	2227	0949
00N	2047	0821	2134	0910	2220	0957
05S	2037	0831	2126	0919	2214	1004
10S	2027	0842	2118	0928	2207	1012
15S	2017	0852	2109	0937	2201	1019
20S	2006	0904	2100	0947	2153	1027
25S	1954	0916	2050	0958	2146	1036
30S	1942	0929	2039	1009	2137	1045
35S	1927	0944	2027	1022	2128	1056
40S	1911	1001	2013	1037	2117	1107
45S	1851	1022	1957	1055	2105	1121
50S	1825	1048	1936	1116	2049	1138
55S	1751	1123	1909	1145	2029	1200
60S	1658	1217	1830	1225	2002	1229

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JUNE 6 - JUNE 8

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
6	00	254 25.4	141 04.7	N23 43.5	213 14.7	N15 19.6	137 22.5	N21 32.1	241 53.8	N02 53.9
	01	269 27.9	156 04.0	N23 43.1	228 15.3	N15 20.2	152 24.4	N21 32.0	256 56.1	N02 54.0
	02	284 30.3	171 03.3	N23 42.7	243 16.0	N15 20.8	167 26.4	N21 31.9	271 58.4	N02 54.0
	03	299 32.8	186 02.6	N23 42.2	258 16.6	N15 21.3	182 28.3	N21 31.8	287 00.7	N02 54.1
	04	314 35.3	201 01.9	N23 41.8	273 17.3	N15 21.9	197 30.3	N21 31.7	302 02.9	N02 54.2
	05	329 37.7	216 01.2	N23 41.3	288 17.9	N15 22.5	212 32.2	N21 31.7	317 05.2	N02 54.2
	06	344 40.2	231 00.5	N23 40.9	303 18.6	N15 23.1	227 34.2	N21 31.6	332 07.5	N02 54.3
	07	359 42.7	245 59.8	N23 40.5	318 19.2	N15 23.6	242 36.1	N21 31.5	347 09.8	N02 54.4
	08	014 45.1	260 59.0	N23 40.0	333 19.9	N15 24.2	257 38.1	N21 31.4	002 12.1	N02 54.4
	09	029 47.6	275 58.3	N23 39.6	348 20.5	N15 24.8	272 40.0	N21 31.3	017 14.3	N02 54.5
	10	044 50.1	290 57.6	N23 39.1	003 21.2	N15 25.4	287 42.0	N21 31.2	032 16.6	N02 54.6
	11	059 52.5	305 56.9	N23 38.7	018 21.8	N15 25.9	302 43.9	N21 31.1	047 18.9	N02 54.6
	12	074 55.0	320 56.2	N23 38.2	033 22.5	N15 26.5	317 45.9	N21 31.1	062 21.2	N02 54.7
	13	089 57.5	335 55.5	N23 37.8	048 23.1	N15 27.1	332 47.8	N21 31.0	077 23.5	N02 54.8
	14	104 59.9	350 54.8	N23 37.3	063 23.8	N15 27.7	347 49.8	N21 30.9	092 25.8	N02 54.8
	15	120 02.4	005 54.1	N23 36.9	078 24.4	N15 28.2	002 51.7	N21 30.8	107 28.0	N02 54.9
	16	135 04.8	020 53.4	N23 36.4	093 25.1	N15 28.8	017 53.7	N21 30.7	122 30.3	N02 55.0
	17	150 07.3	035 52.7	N23 36.0	108 25.7	N15 29.4	032 55.6	N21 30.6	137 32.6	N02 55.0
	18	165 09.8	050 52.0	N23 35.5	123 26.4	N15 29.9	047 57.6	N21 30.5	152 34.9	N02 55.1
	19	180 12.2	065 51.4	N23 35.1	138 27.0	N15 30.5	062 59.5	N21 30.4	167 37.2	N02 55.2
	20	195 14.7	080 50.7	N23 34.6	153 27.7	N15 31.1	078 01.4	N21 30.4	182 39.4	N02 55.2
	21	210 17.2	095 50.0	N23 34.1	168 28.3	N15 31.6	093 03.4	N21 30.3	197 41.7	N02 55.3
	22	225 19.6	110 49.3	N23 33.7	183 29.0	N15 32.2	108 05.3	N21 30.2	212 44.0	N02 55.4
	23	240 22.1	125 48.6	N23 33.2	198 29.6	N15 32.8	123 07.3	N21 30.1	227 46.3	N02 55.4
7	00	255 24.6	140 47.9	N23 32.8	213 30.3	N15 33.4	138 09.2	N21 30.0	242 48.6	N02 55.5
	01	270 27.0	155 47.2	N23 32.3	228 30.9	N15 33.9	153 11.2	N21 29.9	257 50.9	N02 55.6
	02	285 29.5	170 46.5	N23 31.8	243 31.6	N15 34.5	168 13.1	N21 29.8	272 53.1	N02 55.6
	03	300 31.9	185 45.8	N23 31.4	258 32.2	N15 35.1	183 15.1	N21 29.8	287 55.4	N02 55.7
	04	315 34.4	200 45.1	N23 30.9	273 32.9	N15 35.6	198 17.0	N21 29.7	302 57.7	N02 55.8
	05	330 36.9	215 44.4	N23 30.4	288 33.5	N15 36.2	213 19.0	N21 29.6	318 00.0	N02 55.8
	06	345 39.3	230 43.7	N23 30.0	303 34.2	N15 36.8	228 20.9	N21 29.5	333 02.3	N02 55.9
	07	000 41.8	245 43.0	N23 29.5	318 34.8	N15 37.3	243 22.9	N21 29.4	348 04.6	N02 56.0
	08	015 44.3	260 42.3	N23 29.0	333 35.5	N15 37.9	258 24.8	N21 29.3	003 06.8	N02 56.0
	09	030 46.7	275 41.6	N23 28.5	348 36.1	N15 38.5	273 26.8	N21 29.2	018 09.1	N02 56.1
	10	045 49.2	290 41.0	N23 28.1	003 36.8	N15 39.0	288 28.7	N21 29.1	033 11.4	N02 56.2
	11	060 51.7	305 40.3	N23 27.6	018 37.4	N15 39.6	303 30.7	N21 29.1	048 13.7	N02 56.2
	12	075 54.1	320 39.6	N23 27.1	033 38.1	N15 40.2	318 32.6	N21 29.0	063 16.0	N02 56.3
	13	090 56.6	335 38.9	N23 26.6	048 38.7	N15 40.7	333 34.5	N21 28.9	078 18.3	N02 56.4
	14	105 59.1	350 38.2	N23 26.2	063 39.3	N15 41.3	348 36.5	N21 28.8	093 20.5	N02 56.4
	15	121 01.5	005 37.5	N23 25.7	078 40.0	N15 41.9	003 38.4	N21 28.7	108 22.8	N02 56.5
	16	136 04.0	020 36.8	N23 25.2	093 40.6	N15 42.4	018 40.4	N21 28.6	123 25.1	N02 56.6
	17	151 06.4	035 36.2	N23 24.7	108 41.3	N15 43.0	033 42.3	N21 28.5	138 27.4	N02 56.6
	18	166 08.9	050 35.5	N23 24.3	123 41.9	N15 43.6	048 44.3	N21 28.4	153 29.7	N02 56.7
	19	181 11.4	065 34.8	N23 23.8	138 42.6	N15 44.1	063 46.2	N21 28.4	168 32.0	N02 56.8
	20	196 13.8	080 34.1	N23 23.3	153 43.2	N15 44.7	078 48.2	N21 28.3	183 34.2	N02 56.8
	21	211 16.3	095 33.4	N23 22.8	168 43.9	N15 45.2	093 50.1	N21 28.2	198 36.5	N02 56.9
	22	226 18.8	110 32.7	N23 22.3	183 44.5	N15 45.8	108 52.1	N21 28.1	213 38.8	N02 57.0
	23	241 21.2	125 32.0	N23 21.8	198 45.2	N15 46.4	123 54.0	N21 28.0	228 41.1	N02 57.0
8	00	256 23.7	140 31.4	N23 21.3	213 45.8	N15 46.9	138 55.9	N21 27.9	243 43.4	N02 57.1
	01	271 26.2	155 30.7	N23 20.8	228 46.5	N15 47.5	153 57.9	N21 27.8	258 45.7	N02 57.1
	02	286 28.6	170 30.0	N23 20.4	243 47.1	N15 48.1	168 59.8	N21 27.7	273 48.0	N02 57.2
	03	301 31.1	185 29.3	N23 19.9	258 47.8	N15 48.6	184 01.8	N21 27.7	288 50.2	N02 57.3
	04	316 33.6	200 28.6	N23 19.4	273 48.4	N15 49.2	199 03.7	N21 27.6	303 52.5	N02 57.3
	05	331 36.0	215 28.0	N23 18.9	288 49.1	N15 49.7	214 05.7	N21 27.5	318 54.8	N02 57.4
	06	346 38.5	230 27.3	N23 18.4	303 49.7	N15 50.3	229 07.6	N21 27.4	333 57.1	N02 57.5
	07	001 40.9	245 26.6	N23 17.9	318 50.3	N15 50.9	244 09.6	N21 27.3	348 59.4	N02 57.5
	08	016 43.4	260 25.9	N23 17.4	333 51.0	N15 51.4	259 11.5	N21 27.2	004 01.7	N02 57.6
	09	031 45.9	275 25.3	N23 16.9	348 51.6	N15 52.0	274 13.4	N21 27.1	019 04.0	N02 57.7
	10	046 48.3	290 24.6	N23 16.4	003 52.3	N15 52.5	289 15.4	N21 27.0	034 06.2	N02 57.7
	11	061 50.8	305 23.9	N23 15.9	018 52.9	N15 53.1	304 17.3	N21 26.9	049 08.5	N02 57.8
	12	076 53.3	320 23.2	N23 15.4	033 53.6	N15 53.7	319 19.3	N21 26.9	064 10.8	N02 57.9
	13	091 55.7	335 22.6	N23 14.9	048 54.2	N15 54.2	334 21.2	N21 26.8	079 13.1	N02 57.9
	14	106 58.2	350 21.9	N23 14.4	063 54.9	N15 54.8	349 23.2	N21 26.7	094 15.4	N02 58.0
	15	122 00.7	005 21.2	N23 13.9	078 55.5	N15 55.3	004 25.1	N21 26.6	109 17.7	N02 58.1
	16	137 03.1	020 20.5	N23 13.4	093 56.2	N15 55.9	019 27.1	N21 26.5	124 20.0	N02 58.1
	17	152 05.6	035 19.9	N23 12.9	108 56.8	N15 56.4	034 29.0	N21 26.4	139 22.3	N02 58.2
	18	167 08.0	050 19.2	N23 12.4	123 57.5	N15 57.0	049 30.9	N21 26.3	154 24.5	N02 58.2
	19	182 10.5	065 18.5	N23 11.9	138 58.1	N15 57.6	064 32.9	N21 26.2	169 26.8	N02 58.3
	20	197 13.0	080 17.9	N23 11.3	153 58.7	N15 58.1	079 34.8	N21 26.1	184 29.1	N02 58.4
	21	212 15.4	095 17.2	N23 10.8	168 59.4	N15 58.7	094 36.8	N21 26.1	199 31.4	N02 58.4
	22	227 17.9	110 16.5	N23 10.3	184 00.0	N15 59.2	109 38.7	N21 26.0	214 33.7	N02 58.5
	23	242 20.4	125 15.8	N23 09.8	199 00.7	N15 59.8	124 40.7	N21 25.9	229 36.0	N02 58.6

Venus	Mars	Jupiter	Saturn
6: v -0.7 d -0.4	6: v 0.6 d 0.6	6: v 1.9 d -0.1	6: v 2.3 d 0.1
7: v -0.7 d -0.5	7: v 0.6 d 0.6	7: v 1.9 d -0.1	7: v 2.3 d 0.1
8: v -0.7 d -0.5	8: v 0.6 d 0.6	8: v 1.9 d -0.1	8: v 2.3 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.3	S40 11.8
Achernar	335 19.7	S57 05.9
Acrux	172 58.5	S63 15.1
Adhara	255 05.3	S29 00.6
Al Na'ir	027 31.3	S46 49.7
Aldebaran	290 38.6	N16 33.7
Alioth	166 11.7	N55 49.2
Alkaid	152 50.8	N49 11.0
Alnilam	275 36.9	S01 11.1
Alphard	217 46.8	S08 46.5
Alphecca	126 02.4	N26 37.5
Alpheratz	357 33.7	N29 14.0
Altair	061 58.6	N08 56.2
Ankaa	353 06.2	S42 09.5
Antares	112 14.0	S26 29.5
Arcturus	145 46.6	N19 02.7
Atria	107 06.6	S69 04.5
Avior	234 14.7	S59 35.9
Bellatrix	278 22.0	N06 22.4
Betelgeuse	270 51.2	N07 24.7
Canopus	263 52.4	S52 42.6
Capella	280 20.7	N46 01.4
Deneb	049 24.7	N45 22.3
Denebola	182 23.7	N14 25.5
Diphda	348 46.3	S17 50.4
Dubhe	193 39.6	N61 36.7
Elnath	278 00.8	N28 37.8
Eltanin	090 41.1	N51 29.0
Enif	033 37.5	N09 59.7
Fomalhaut	015 13.2	S29 28.7
Gacrux	171 50.1	S57 16.0
Gienah	175 42.3	S17 41.5
Hadar	148 33.9	S60 30.3
Hamal	327 50.1	N23 35.2
Kaus Australi	083 30.6	S34 22.3
Kochab	137 18.8	N74 02.9
Markab	013 28.7	N15 20.8
Menkar	314 05.2	N04 11.6
Menkent	147 55.9	S36 30.2
Miaplacidus	221 38.5	S69 49.8
Mirfak	308 27.1	N49 57.2
Nunki	075 46.0	S26 15.8
Peacock	053 03.5	S56 38.8
Polaris	313 52.1	N89 22.3
Pollux	243 16.2	N27 57.8
Procyon	244 49.9	N05 09.4
Rasalhague	095 57.1	N12 32.4
Regulus	207 33.3	N11 50.3
Rigel	281 03.1	S08 10.3
Rigil Kentaur	139 38.1	S60 56.9
Sabik	102 01.1	S15 45.5
Schedar	349 30.0	N56 40.7
Shaula	096 08.4	S37 07.4
Sirius	258 25.5	S16 45.2
Spica	158 20.9	S11 18.1
Suhail	222 45.7	S43 32.6
Vega	080 32.0	N38 48.4
Zubenelgenubi	136 54.4	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	244 45.5	1437
Mars	317 43.9	0946
Jupiter	242 38.5	1445
Saturn	347 21.8	0748

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
6	00	180 21.1	N22 37.8	294 16.0	S16 57.4	55.2	13.9	11.9
	01	195 21.0	N22 38.1	308 48.9	S16 45.5	55.2	13.9	11.9
	02	210 20.9	N22 38.3	323 21.8	S16 33.6	55.2	13.9	12.0
	03	225 20.8	N22 38.6	337 54.7	S16 21.6	55.2	14.0	12.1
	04	240 20.7	N22 38.9	352 27.7	S16 09.5	55.3	14.0	12.2
	05	255 20.6	N22 39.1	007 00.7	S15 57.3	55.3	14.1	12.2
	06	270 20.4	N22 39.4	021 33.8	S15 45.1	55.3	14.1	12.3
	07	285 20.3	N22 39.6	036 06.9	S15 32.7	55.3	14.1	12.4
	08	300 20.2	N22 39.9	050 40.0	S15 20.3	55.4	14.2	12.5
	09	315 20.1	N22 40.1	065 13.2	S15 07.9	55.4	14.2	12.5
	10	330 20.0	N22 40.4	079 46.4	S14 55.3	55.4	14.2	12.6
	11	345 19.9	N22 40.7	094 19.6	S14 42.7	55.4	14.3	12.7
	12	000 19.8	N22 40.9	108 52.9	S14 30.0	55.5	14.3	12.8
	13	015 19.6	N22 41.2	123 26.2	S14 17.3	55.5	14.3	12.8
	14	030 19.5	N22 41.4	137 59.5	S14 04.4	55.5	14.4	12.9
	15	045 19.4	N22 41.7	152 32.9	S13 51.5	55.5	14.4	13.0
	16	060 19.3	N22 41.9	167 06.2	S13 38.6	55.6	14.4	13.0
	17	075 19.2	N22 42.2	181 39.7	S13 25.5	55.6	14.4	13.1
	18	090 19.1	N22 42.4	196 13.1	S13 12.4	55.6	14.5	13.2
	19	105 19.0	N22 42.7	210 46.6	S12 59.3	55.6	14.5	13.2
	20	120 18.8	N22 42.9	225 20.0	S12 46.0	55.7	14.5	13.3
	21	135 18.7	N22 43.2	239 53.6	S12 32.7	55.7	14.5	13.4
	22	150 18.6	N22 43.4	254 27.1	S12 19.4	55.7	14.6	13.4
	23	165 18.5	N22 43.6	269 00.6	S12 05.9	55.8	14.6	13.5
7	00	180 18.4	N22 43.9	283 34.2	S11 52.4	55.8	14.6	13.6
	01	195 18.3	N22 44.1	298 07.8	S11 38.9	55.8	14.6	13.6
	02	210 18.1	N22 44.4	312 41.4	S11 25.3	55.8	14.6	13.7
	03	225 18.0	N22 44.6	327 15.1	S11 11.6	55.9	14.7	13.7
	04	240 17.9	N22 44.9	341 48.7	S10 57.9	55.9	14.7	13.8
	05	255 17.8	N22 45.1	356 22.4	S10 44.1	55.9	14.7	13.9
	06	270 17.7	N22 45.3	010 56.1	S10 30.2	56.0	14.7	13.9
	07	285 17.6	N22 45.6	025 29.8	S10 16.3	56.0	14.7	14.0
	08	300 17.4	N22 45.8	040 03.5	S10 02.4	56.0	14.7	14.0
	09	315 17.3	N22 46.1	054 37.2	S09 48.3	56.0	14.7	14.1
	10	330 17.2	N22 46.3	069 10.9	S09 34.3	56.1	14.7	14.1
	11	345 17.1	N22 46.5	083 44.7	S09 20.1	56.1	14.8	14.2
	12	000 17.0	N22 46.8	098 18.4	S09 06.0	56.1	14.8	14.2
	13	015 16.9	N22 47.0	112 52.2	S08 51.7	56.2	14.8	14.3
	14	030 16.7	N22 47.2	127 26.0	S08 37.4	56.2	14.8	14.3
	15	045 16.6	N22 47.5	141 59.7	S08 23.1	56.2	14.8	14.4
	16	060 16.5	N22 47.7	156 33.5	S08 08.7	56.3	14.8	14.4
	17	075 16.4	N22 48.0	171 07.3	S07 54.3	56.3	14.8	14.5
	18	090 16.3	N22 48.2	185 41.1	S07 39.8	56.3	14.8	14.5
	19	105 16.1	N22 48.4	200 14.8	S07 25.3	56.4	14.8	14.6
	20	120 16.0	N22 48.6	214 48.6	S07 10.7	56.4	14.8	14.6
	21	135 15.9	N22 48.9	229 22.4	S06 56.0	56.4	14.8	14.7
	22	150 15.8	N22 49.1	243 56.2	S06 41.4	56.5	14.8	14.7
	23	165 15.7	N22 49.3	258 29.9	S06 26.7	56.5	14.8	14.8
8	00	180 15.5	N22 49.6	273 03.7	S06 11.9	56.5	14.8	14.8
	01	195 15.4	N22 49.8	287 37.5	S05 57.1	56.6	14.8	14.8
	02	210 15.3	N22 50.0	302 11.2	S05 42.3	56.6	14.7	14.9
	03	225 15.2	N22 50.2	316 45.0	S05 27.4	56.6	14.7	14.9
	04	240 15.1	N22 50.5	331 18.7	S05 12.4	56.7	14.7	15.0
	05	255 14.9	N22 50.7	345 52.4	S04 57.5	56.7	14.7	15.0
	06	270 14.8	N22 50.9	000 26.1	S04 42.5	56.7	14.7	15.0
	07	285 14.7	N22 51.1	014 59.8	S04 27.4	56.8	14.7	15.1
	08	300 14.6	N22 51.4	029 33.5	S04 12.4	56.8	14.7	15.1
	09	315 14.5	N22 51.6	044 07.2	S03 57.2	56.8	14.6	15.1
	10	330 14.3	N22 51.8	058 40.8	S03 42.1	56.9	14.6	15.2
	11	345 14.2	N22 52.0	073 14.5	S03 26.9	56.9	14.6	15.2
	12	000 14.1	N22 52.3	087 48.1	S03 11.7	56.9	14.6	15.2
	13	015 14.0	N22 52.5	102 21.7	S02 56.4	57.0	14.6	15.3
	14	030 13.9	N22 52.7	116 55.2	S02 41.2	57.0	14.5	15.3
	15	045 13.7	N22 52.9	131 28.8	S02 25.9	57.0	14.5	15.3
	16	060 13.6	N22 53.1	146 02.3	S02 10.5	57.1	14.5	15.4
	17	075 13.5	N22 53.3	160 35.8	S01 55.1	57.1	14.5	15.4
	18	090 13.4	N22 53.6	175 09.3	S01 39.7	57.1	14.4	15.4
	19	105 13.3	N22 53.8	189 42.7	S01 24.3	57.2	14.4	15.4
	20	120 13.1	N22 54.0	204 16.1	S01 08.9	57.2	14.4	15.5
	21	135 13.0	N22 54.2	218 49.5	S00 53.4	57.2	14.3	15.5
	22	150 12.9	N22 54.4	233 22.8	S00 37.9	57.3	14.3	15.5
	23	165 12.8	N22 54.6	247 56.1	S00 22.4	57.3	14.3	15.5

Day 6 noon Sun: v -0.1 d 0.3 SD 15.8 | Moon SD 15.1

Day 7 noon Sun: v -0.1 d 0.2 SD 15.8 | Moon SD 15.3

Day 8 noon Sun: v -0.1 d 0.2 SD 15.8 | Moon SD 15.5

SUN: JUNE 7 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	0045	2318	--	--
64N	--	--	0145	2215	--	--
62N	--	--	0218	2141	--	--
60N	--	0110	0242	2117	2250	--
58N	--	0150	0301	2058	2209	--
56N	--	0217	0317	2042	2142	--
54N	0104	0237	0330	2028	2121	2256
52N	0141	0254	0342	2016	2104	2218
50N	0206	0309	0352	2006	2050	2153
45N	0249	0337	0414	1944	2021	2110
40N	0318	0359	0431	1927	1959	2040
35N	0340	0416	0446	1912	1942	2018
30N	0358	0431	0458	1859	1927	2000
25N	0413	0444	0510	1848	1914	1945
20N	0426	0455	0520	1838	1902	1932
15N	0438	0506	0529	1829	1852	1920
10N	0448	0515	0538	1820	1843	1910
05N	0458	0524	0547	1811	1834	1900
00N	0507	0533	0555	1803	1825	1851
05S	0515	0541	0604	1754	1817	1843
10S	0523	0549	0612	1746	1808	1835
15S	0531	0558	0621	1737	1800	1827
20S	0539	0606	0630	1728	1751	1819
25S	0547	0615	0640	1718	1743	1811
30S	0555	0624	0651	1707	1733	1803
35S	0603	0635	0703	1655	1723	1755
40S	0612	0646	0716	1641	1712	1746
45S	0622	0659	0733	1625	1659	1736
50S	0633	0714	0752	1605	1643	1724
55S	0646	0734	0818	1539	1624	1711
60S	0703	0759	0855	1502	1559	1655

MOON: RISE / SET | UTC HHMM

Lat	Day 6		Day 7		Day 8	
72N	0251	0634	0145	0912	0106	1125
70N	0208	0716	0126	0929	0058	1130
68N	0138	0743	0111	0942	0051	1134
66N	0116	0804	0059	0953	0045	1137
64N	0059	0821	0049	1001	0040	1140
62N	0044	0834	0040	1009	0036	1143
60N	0031	0846	0032	1015	0032	1145
58N	0021	0855	0025	1021	0029	1147
56N	0011	0904	0019	1026	0026	1148
54N	0003	0912	0014	1030	0023	1150
52N	--	0918	0009	1034	0021	1151
50N	--	0924	0005	1038	0018	1152
45N	2355	0937	--	1046	0014	1155
40N	2347	0948	--	1052	0009	1157
35N	2340	0957	--	1058	0006	1159
30N	2334	1005	--	1103	0003	1201
25N	2328	1012	2400	1107	--	1202
20N	2323	1019	2357	1111	--	1204
15N	2318	1025	2355	1115	--	1205
10N	2313	1031	2352	1119	--	1206
05N	2309	1036	2350	1122	--	1207
00N	2305	1042	2348	1125	--	1209
05S	2300	1047	2346	1129	--	1210
10S	2256	1053	2343	1132	--	1211
15S	2251	1058	2341	1136	--	1212
20S	2246	1104	2338	1139	--	1213
25S	2241	1111	2336	1143	--	1215
30S	2235	1117	2333	1147	--	1216
35S	2229	1125	2330	1152	--	1217
40S	2221	1134	2326	1157	--	1219
45S	2213	1144	2322	1203	--	1221
50S	2203	1156	2317	1210	--	1223
55S	2150	1210	2310	1219	--	1226
60S	2133	1230	2302	1230	--	1230

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JUNE 9 - JUNE 11

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
9	00	257 22.8	140 15.2	N23 09.3	214 01.3	N16 00.3	139 42.6	N21 25.8	244 38.3	N02 58.6
	01	272 25.3	155 14.5	N23 08.8	229 02.0	N16 00.9	154 44.5	N21 25.7	259 40.6	N02 58.7
	02	287 27.8	170 13.8	N23 08.3	244 02.6	N16 01.5	169 46.5	N21 25.6	274 42.8	N02 58.8
	03	302 30.2	185 13.2	N23 07.7	259 03.3	N16 02.0	184 48.4	N21 25.5	289 45.1	N02 58.8
	04	317 32.7	200 12.5	N23 07.2	274 03.9	N16 02.6	199 50.4	N21 25.4	304 47.4	N02 58.9
	05	332 35.2	215 11.8	N23 06.7	289 04.5	N16 03.1	214 52.3	N21 25.3	319 49.7	N02 58.9
	06	347 37.6	230 11.2	N23 06.2	304 05.2	N16 03.7	229 54.2	N21 25.3	334 52.0	N02 59.0
	07	002 40.1	245 10.5	N23 05.7	319 05.8	N16 04.2	244 56.2	N21 25.2	349 54.3	N02 59.1
	08	017 42.5	260 09.8	N23 05.1	334 06.5	N16 04.8	259 58.1	N21 25.1	004 56.6	N02 59.1
	09	032 45.0	275 09.2	N23 04.6	349 07.1	N16 05.3	275 00.1	N21 25.0	019 58.9	N02 59.2
	10	047 47.5	290 08.5	N23 04.1	004 07.8	N16 05.9	290 02.0	N21 24.9	035 01.2	N02 59.3
	11	062 49.9	305 07.9	N23 03.6	019 08.4	N16 06.4	305 04.0	N21 24.8	050 03.5	N02 59.3
	12	077 52.4	320 07.2	N23 03.0	034 09.1	N16 07.0	320 05.9	N21 24.7	065 05.7	N02 59.4
	13	092 54.9	335 06.5	N23 02.5	049 09.7	N16 07.5	335 07.8	N21 24.6	080 08.0	N02 59.4
	14	107 57.3	350 05.9	N23 02.0	064 10.3	N16 08.1	350 09.8	N21 24.5	095 10.3	N02 59.5
	15	122 59.8	005 05.2	N23 01.4	079 11.0	N16 08.6	005 11.7	N21 24.4	110 12.6	N02 59.6
	16	138 02.3	020 04.6	N23 00.9	094 11.6	N16 09.2	020 13.7	N21 24.4	125 14.9	N02 59.6
	17	153 04.7	035 03.9	N23 00.4	109 12.3	N16 09.7	035 15.6	N21 24.3	140 17.2	N02 59.7
	18	168 07.2	050 03.2	N22 59.9	124 12.9	N16 10.3	050 17.5	N21 24.2	155 19.5	N02 59.8
	19	183 09.6	065 02.6	N22 59.3	139 13.6	N16 10.8	065 19.5	N21 24.1	170 21.8	N02 59.8
	20	198 12.1	080 01.9	N22 58.8	154 14.2	N16 11.4	080 21.4	N21 24.0	185 24.1	N02 59.9
	21	213 14.6	095 01.3	N22 58.2	169 14.9	N16 11.9	095 23.4	N21 23.9	200 26.4	N02 59.9
	22	228 17.0	110 00.6	N22 57.7	184 15.5	N16 12.5	110 25.3	N21 23.8	215 28.6	N03 00.0
	23	243 19.5	125 00.0	N22 57.2	199 16.1	N16 13.0	125 27.2	N21 23.7	230 30.9	N03 00.1
10	00	258 22.0	139 59.3	N22 56.6	214 16.8	N16 13.6	140 29.2	N21 23.6	245 33.2	N03 00.1
	01	273 24.4	154 58.6	N22 56.1	229 17.4	N16 14.1	155 31.1	N21 23.5	260 35.5	N03 00.2
	02	288 26.9	169 58.0	N22 55.5	244 18.1	N16 14.7	170 33.1	N21 23.5	275 37.8	N03 00.3
	03	303 29.4	184 57.3	N22 55.0	259 18.7	N16 15.2	185 35.0	N21 23.4	290 40.1	N03 00.3
	04	318 31.8	199 56.7	N22 54.5	274 19.4	N16 15.8	200 36.9	N21 23.3	305 42.4	N03 00.4
	05	333 34.3	214 56.0	N22 53.9	289 20.0	N16 16.3	215 38.9	N21 23.2	320 44.7	N03 00.4
	06	348 36.8	229 55.4	N22 53.4	304 20.6	N16 16.9	230 40.8	N21 23.1	335 47.0	N03 00.5
	07	003 39.2	244 54.7	N22 52.8	319 21.3	N16 17.4	245 42.8	N21 23.0	350 49.3	N03 00.6
	08	018 41.7	259 54.1	N22 52.3	334 21.9	N16 18.0	260 44.7	N21 22.9	005 51.6	N03 00.6
	09	033 44.1	274 53.4	N22 51.7	349 22.6	N16 18.5	275 46.6	N21 22.8	020 53.9	N03 00.7
	10	048 46.6	289 52.8	N22 51.2	004 23.2	N16 19.1	290 48.6	N21 22.7	035 56.1	N03 00.8
	11	063 49.1	304 52.1	N22 50.6	019 23.9	N16 19.6	305 50.5	N21 22.6	050 58.4	N03 00.8
	12	078 51.5	319 51.5	N22 50.1	034 24.5	N16 20.2	320 52.5	N21 22.6	066 00.7	N03 00.9
	13	093 54.0	334 50.8	N22 49.5	049 25.1	N16 20.7	335 54.4	N21 22.5	081 03.0	N03 00.9
	14	108 56.5	349 50.2	N22 49.0	064 25.8	N16 21.2	350 56.3	N21 22.4	096 05.3	N03 01.0
	15	123 58.9	004 49.5	N22 48.4	079 26.4	N16 21.8	005 58.3	N21 22.3	111 07.6	N03 01.1
	16	139 01.4	019 48.9	N22 47.8	094 27.1	N16 22.3	021 00.2	N21 22.2	126 09.9	N03 01.1
	17	154 03.9	034 48.3	N22 47.3	109 27.7	N16 22.9	036 02.2	N21 22.1	141 12.2	N03 01.2
	18	169 06.3	049 47.6	N22 46.7	124 28.4	N16 23.4	051 04.1	N21 22.0	156 14.5	N03 01.2
	19	184 08.8	064 47.0	N22 46.2	139 29.0	N16 24.0	066 06.0	N21 21.9	171 16.8	N03 01.3
	20	199 11.3	079 46.3	N22 45.6	154 29.6	N16 24.5	081 08.0	N21 21.8	186 19.1	N03 01.4
	21	214 13.7	094 45.7	N22 45.0	169 30.3	N16 25.0	096 09.9	N21 21.7	201 21.4	N03 01.4
	22	229 16.2	109 45.0	N22 44.5	184 30.9	N16 25.6	111 11.8	N21 21.6	216 23.7	N03 01.5
	23	244 18.6	124 44.4	N22 43.9	199 31.6	N16 26.1	126 13.8	N21 21.5	231 26.0	N03 01.5
11	00	259 21.1	139 43.8	N22 43.4	214 32.2	N16 26.7	141 15.7	N21 21.5	246 28.3	N03 01.6
	01	274 23.6	154 43.1	N22 42.8	229 32.8	N16 27.2	156 17.7	N21 21.4	261 30.5	N03 01.7
	02	289 26.0	169 42.5	N22 42.2	244 33.5	N16 27.8	171 19.6	N21 21.3	276 32.8	N03 01.7
	03	304 28.5	184 41.8	N22 41.7	259 34.1	N16 28.3	186 21.5	N21 21.2	291 35.1	N03 01.8
	04	319 31.0	199 41.2	N22 41.1	274 34.8	N16 28.8	201 23.5	N21 21.1	306 37.4	N03 01.9
	05	334 33.4	214 40.6	N22 40.5	289 35.4	N16 29.4	216 25.4	N21 21.0	321 39.7	N03 01.9
	06	349 35.9	229 39.9	N22 39.9	304 36.1	N16 29.9	231 27.3	N21 20.9	336 42.0	N03 02.0
	07	004 38.4	244 39.3	N22 39.4	319 36.7	N16 30.5	246 29.3	N21 20.8	351 44.3	N03 02.0
	08	019 40.8	259 38.7	N22 38.8	334 37.3	N16 31.0	261 31.2	N21 20.7	006 46.6	N03 02.1
	09	034 43.3	274 38.0	N22 38.2	349 38.0	N16 31.5	276 33.2	N21 20.6	021 48.9	N03 02.2
	10	049 45.7	289 37.4	N22 37.6	004 38.6	N16 32.1	291 35.1	N21 20.5	036 51.2	N03 02.2
	11	064 48.2	304 36.8	N22 37.1	019 39.3	N16 32.6	306 37.0	N21 20.5	051 53.5	N03 02.3
	12	079 50.7	319 36.1	N22 36.5	034 39.9	N16 33.1	321 39.0	N21 20.4	066 55.8	N03 02.3
	13	094 53.1	334 35.5	N22 35.9	049 40.5	N16 33.7	336 40.9	N21 20.3	081 58.1	N03 02.4
	14	109 55.6	349 34.9	N22 35.3	064 41.2	N16 34.2	351 42.8	N21 20.2	097 00.4	N03 02.5
	15	124 58.1	004 34.2	N22 34.8	079 41.8	N16 34.8	006 44.8	N21 20.1	112 02.7	N03 02.5
	16	140 00.5	019 33.6	N22 34.2	094 42.5	N16 35.3	021 46.7	N21 20.0	127 05.0	N03 02.6
	17	155 03.0	034 33.0	N22 33.6	109 43.1	N16 35.8	036 48.7	N21 19.9	142 07.3	N03 02.6
	18	170 05.5	049 32.3	N22 33.0	124 43.7	N16 36.4	051 50.6	N21 19.8	157 09.6	N03 02.7
	19	185 07.9	064 31.7	N22 32.4	139 44.4	N16 36.9	066 52.5	N21 19.7	172 11.9	N03 02.8
	20	200 10.4	079 31.1	N22 31.8	154 45.0	N16 37.4	081 54.5	N21 19.6	187 14.2	N03 02.8
	21	215 12.9	094 30.4	N22 31.2	169 45.7	N16 38.0	096 56.4	N21 19.5	202 16.5	N03 02.9
	22	230 15.3	109 29.8	N22 30.7	184 46.3	N16 38.5	111 58.3	N21 19.4	217 18.8	N03 02.9
	23	245 17.8	124 29.2	N22 30.1	199 46.9	N16 39.0	127 00.3	N21 19.3	232 21.1	N03 03.0

Venus	Mars	Jupiter	Saturn
9: v -0.7 d -0.5	9: v 0.6 d 0.6	9: v 1.9 d -0.1	9: v 2.3 d 0.1
10: v -0.6 d -0.6	10: v 0.6 d 0.5	10: v 1.9 d -0.1	10: v 2.3 d 0.1
11: v -0.6 d -0.6	11: v 0.6 d 0.5	11: v 1.9 d -0.1	11: v 2.3 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.3	S40 11.8
Achernar	335 19.7	S57 05.9
Acrux	172 58.6	S63 15.1
Adhara	255 05.3	S29 00.6
Al Na'ir	027 31.3	S46 49.7
Aldebaran	290 38.6	N16 33.7
Alioth	166 11.7	N55 49.2
Alkaid	152 50.8	N49 11.0
Alnilam	275 36.9	S01 11.1
Alphard	217 46.8	S08 46.5
Alphecca	126 02.4	N26 37.5
Alpheratz	357 33.6	N29 14.0
Altair	061 58.6	N08 56.2
Ankaa	353 06.1	S42 09.5
Antares	112 14.0	S26 29.5
Arcturus	145 46.6	N19 02.7
Atria	107 06.6	S69 04.5
Avior	234 14.7	S59 35.9
Bellatrix	278 22.0	N06 22.4
Betelgeuse	270 51.2	N07 24.7
Canopus	263 52.4	S52 42.6
Capella	280 20.7	N46 01.4
Deneb	049 24.7	N45 22.3
Denebola	182 23.7	N14 25.5
Diphda	348 46.3	S17 50.4
Dubhe	193 39.6	N61 36.7
Elnath	278 00.8	N28 37.8
Eltanin	090 41.1	N51 29.0
Enif	033 37.5	N09 59.7
Fomalhaut	015 13.2	S29 28.7
Gacrux	171 50.2	S57 16.0
Gienah	175 42.3	S17 41.5
Hadar	148 33.9	S60 30.3
Hamal	327 50.1	N23 35.2
Kaus Australi	083 30.6	S34 22.3
Kochab	137 18.9	N74 02.9
Markab	013 28.7	N15 20.8
Menkar	314 05.2	N04 11.6
Menkent	147 56.0	S36 30.2
Miaplacidus	221 38.6	S69 49.8
Mirfak	308 27.0	N49 57.2
Nunki	075 46.0	S26 15.8
Peacock	053 03.5	S56 38.8
Polaris	313 51.3	N89 22.3
Pollux	243 16.2	N27 57.8
Procyon	244 49.9	N05 09.4
Rasalhague	095 57.1	N12 32.4
Regulus	207 33.3	N11 50.3
Rigel	281 03.1	S08 10.3
Rigil Kentaur	139 38.2	S60 56.9
Sabik	102 01.1	S15 45.5
Schedar	349 29.9	N56 40.7
Shaula	096 08.4	S37 07.4
Sirius	258 25.5	S16 45.2
Spica	158 20.9	S11 18.1
Suhail	222 45.7	S43 32.6
Vega	080 32.0	N38 48.4
Zubenelgenubi	136 54.4	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	240 59.9	1441
Mars	315 33.0	0942
Jupiter	242 00.9	1436
Saturn	347 09.2	0737

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
9	00	180 12.7	N22 54.8	262 29.4	S00 06.8	57.4	14.2	15.6
	01	195 12.5	N22 55.0	277 02.6	N00 08.7	57.4	14.2	15.6
	02	210 12.4	N22 55.3	291 35.8	N00 24.3	57.4	14.1	15.6
	03	225 12.3	N22 55.5	306 08.9	N00 39.9	57.5	14.1	15.6
	04	240 12.2	N22 55.7	320 42.0	N00 55.5	57.5	14.1	15.6
	05	255 12.0	N22 55.9	335 15.1	N01 11.1	57.5	14.0	15.6
	06	270 11.9	N22 56.1	349 48.1	N01 26.8	57.6	14.0	15.7
	07	285 11.8	N22 56.3	004 21.1	N01 42.5	57.6	13.9	15.7
	08	300 11.7	N22 56.5	018 54.0	N01 58.1	57.7	13.9	15.7
	09	315 11.5	N22 56.7	033 26.9	N02 13.8	57.7	13.8	15.7
	10	330 11.4	N22 56.9	047 59.7	N02 29.5	57.7	13.8	15.7
	11	345 11.3	N22 57.1	062 32.5	N02 45.2	57.8	13.7	15.7
	12	000 11.2	N22 57.3	077 05.2	N03 01.0	57.8	13.7	15.7
	13	015 11.1	N22 57.5	091 37.9	N03 16.7	57.8	13.6	15.7
	14	030 10.9	N22 57.7	106 10.5	N03 32.4	57.9	13.6	15.7
	15	045 10.8	N22 57.9	120 43.1	N03 48.2	57.9	13.5	15.7
	16	060 10.7	N22 58.1	135 15.6	N04 03.9	58.0	13.4	15.7
	17	075 10.6	N22 58.3	149 48.0	N04 19.6	58.0	13.4	15.7
	18	090 10.4	N22 58.5	164 20.4	N04 35.4	58.0	13.3	15.7
	19	105 10.3	N22 58.7	178 52.7	N04 51.1	58.1	13.2	15.7
	20	120 10.2	N22 58.9	193 24.9	N05 06.9	58.1	13.2	15.7
	21	135 10.1	N22 59.1	207 57.1	N05 22.6	58.2	13.1	15.7
	22	150 09.9	N22 59.3	222 29.2	N05 38.4	58.2	13.0	15.7
	23	165 09.8	N22 59.5	237 01.3	N05 54.1	58.2	13.0	15.7
10	00	180 09.7	N22 59.7	251 33.2	N06 09.8	58.3	12.9	15.7
	01	195 09.6	N22 59.9	266 05.1	N06 25.6	58.3	12.8	15.7
	02	210 09.4	N23 00.1	280 37.0	N06 41.3	58.3	12.7	15.7
	03	225 09.3	N23 00.3	295 08.7	N06 57.0	58.4	12.7	15.7
	04	240 09.2	N23 00.5	309 40.4	N07 12.7	58.4	12.6	15.7
	05	255 09.1	N23 00.7	324 12.0	N07 28.4	58.5	12.5	15.7
	06	270 08.9	N23 00.9	338 43.5	N07 44.0	58.5	12.4	15.6
	07	285 08.8	N23 01.1	353 14.9	N07 59.7	58.5	12.4	15.6
	08	300 08.7	N23 01.2	007 46.3	N08 15.3	58.6	12.3	15.6
	09	315 08.6	N23 01.4	022 17.5	N08 30.9	58.6	12.2	15.6
	10	330 08.4	N23 01.6	036 48.7	N08 46.5	58.7	12.1	15.6
	11	345 08.3	N23 01.8	051 19.8	N09 02.1	58.7	12.0	15.5
	12	000 08.2	N23 02.0	065 50.8	N09 17.6	58.7	11.9	15.5
	13	015 08.1	N23 02.2	080 21.7	N09 33.1	58.8	11.8	15.5
	14	030 07.9	N23 02.4	094 52.6	N09 48.6	58.8	11.7	15.5
	15	045 07.8	N23 02.5	109 23.3	N10 04.1	58.9	11.6	15.4
	16	060 07.7	N23 02.7	123 53.9	N10 19.5	58.9	11.5	15.4
	17	075 07.5	N23 02.9	138 24.5	N10 35.0	58.9	11.4	15.4
	18	090 07.4	N23 03.1	152 54.9	N10 50.3	59.0	11.3	15.3
	19	105 07.3	N23 03.3	167 25.3	N11 05.7	59.0	11.2	15.3
	20	120 07.2	N23 03.5	181 55.5	N11 21.0	59.0	11.1	15.3
	21	135 07.0	N23 03.6	196 25.7	N11 36.2	59.1	11.0	15.2
	22	150 06.9	N23 03.8	210 55.7	N11 51.5	59.1	10.9	15.2
	23	165 06.8	N23 04.0	225 25.6	N12 06.7	59.2	10.8	15.1
11	00	180 06.7	N23 04.2	239 55.5	N12 21.8	59.2	10.7	15.1
	01	195 06.5	N23 04.3	254 25.2	N12 36.9	59.2	10.6	15.1
	02	210 06.4	N23 04.5	268 54.8	N12 51.9	59.3	10.5	15.0
	03	225 06.3	N23 04.7	283 24.3	N13 06.9	59.3	10.4	15.0
	04	240 06.1	N23 04.9	297 53.7	N13 21.9	59.3	10.3	14.9
	05	255 06.0	N23 05.0	312 23.0	N13 36.8	59.4	10.2	14.8
	06	270 05.9	N23 05.2	326 52.2	N13 51.6	59.4	10.1	14.8
	07	285 05.8	N23 05.4	341 21.2	N14 06.4	59.5	9.9	14.7
	08	300 05.6	N23 05.6	355 50.2	N14 21.2	59.5	9.8	14.7
	09	315 05.5	N23 05.7	010 19.0	N14 35.8	59.5	9.7	14.6
	10	330 05.4	N23 05.9	024 47.7	N14 50.4	59.6	9.6	14.5
	11	345 05.3	N23 06.1	039 16.3	N15 05.0	59.6	9.5	14.5
	12	000 05.1	N23 06.3	053 44.7	N15 19.5	59.6	9.3	14.4
	13	015 05.0	N23 06.4	068 13.1	N15 33.9	59.7	9.2	14.3
	14	030 04.9	N23 06.6	082 41.3	N15 48.2	59.7	9.1	14.3
	15	045 04.7	N23 06.8	097 09.4	N16 02.5	59.7	9.0	14.2
	16	060 04.6	N23 06.9	111 37.4	N16 16.7	59.8	8.8	14.1
	17	075 04.5	N23 07.1	126 05.2	N16 30.8	59.8	8.7	14.0
	18	090 04.3	N23 07.3	140 32.9	N16 44.9	59.9	8.6	14.0
	19	105 04.2	N23 07.4	155 00.5	N16 58.8	59.9	8.5	13.9
	20	120 04.1	N23 07.6	169 27.9	N17 12.7	59.9	8.3	13.8
	21	135 04.0	N23 07.7	183 55.3	N17 26.5	60.0	8.2	13.7
	22	150 03.8	N23 07.9	198 22.5	N17 40.2	60.0	8.1	13.6
	23	165 03.7	N23 08.1	212 49.5	N17 53.8	60.0	7.9	13.5

Day 9 noon Sun: v -0.1 d 0.2 SD 15.8 | Moon SD 15.8

Day 10 noon Sun: v -0.1 d 0.2 SD 15.8 | Moon SD 16.0

Day 11 noon Sun: v -0.1 d 0.2 SD 15.8 | Moon SD 16.3

SUN: JUNE 10 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	0029	2337	--	--
64N	--	--	0139	2221	--	--
62N	--	--	0214	2146	--	--
60N	--	0103	0239	2121	2259	--
58N	--	0146	0259	2101	2214	--
56N	--	0214	0315	2044	2146	--
54N	0057	0235	0329	2031	2124	2304
52N	0137	0253	0341	2019	2107	2223
50N	0203	0307	0351	2008	2052	2156
45N	0247	0336	0413	1946	2023	2112
40N	0317	0358	0431	1928	2001	2042
35N	0340	0416	0446	1913	1943	2020
30N	0358	0431	0458	1901	1928	2001
25N	0413	0444	0510	1849	1915	1946
20N	0426	0455	0520	1839	1904	1933
15N	0438	0506	0530	1829	1853	1921
10N	0449	0516	0539	1820	1843	1910
05N	0458	0525	0547	1812	1834	1901
00N	0507	0533	0556	1803	1826	1852
05S	0516	0542	0604	1755	1817	1843
10S	0524	0550	0613	1746	1809	1835
15S	0532	0559	0622	1737	1800	1827
20S	0540	0607	0631	1728	1752	1819
25S	0548	0616	0641	1718	1743	1811
30S	0556	0626	0652	1707	1733	1803
35S	0604	0636	0704	1655	1723	1754
40S	0614	0647	0718	1641	1711	1745
45S	0624	0701	0734	1624	1658	1735
50S	0635	0716	0755	1604	1642	1724
55S	0649	0736	0821	1538	1623	1710
60S	0705	0802	0859	1500	1557	1653

MOON: RISE / SET | UTC HHMM

Lat	Day 9		Day 10		Day 11	
72N	0032	1335	2315	1558	2145	1917
70N	0032	1331	0006	1541	2244	1820
68N	0032	1327	0013	1527	2319	1746
66N	0032	1323	0019	1516	0004	1722
64N	0032	1321	0024	1507	0015	1704
62N	0032	1318	0028	1459	0024	1649
60N	0032	1316	0032	1452	0032	1636
58N	0032	1314	0035	1446	0040	1625
56N	0032	1313	0038	1441	0046	1616
54N	0032	1311	0041	1437	0052	1608
52N	0032	1310	0043	1432	0057	1600
50N	0032	1309	0046	1429	0101	1554
45N	0032	1306	0050	1421	0112	1539
40N	0032	1304	0055	1414	0120	1528
35N	0032	1302	0058	1408	0128	1518
30N	0032	1300	0101	1403	0134	1509
25N	0032	1259	0104	1358	0140	1502
20N	0031	1258	0107	1354	0146	1454
15N	0031	1256	0110	1350	0151	1448
10N	0031	1255	0112	1346	0156	1442
05N	0031	1254	0114	1343	0200	1436
00N	0031	1253	0117	1339	0205	1430
05S	0032	1252	0119	1336	0210	1424
10S	0032	1250	0122	1332	0215	1418
15S	0032	1249	0124	1328	0220	1412
20S	0032	1248	0127	1325	0225	1405
25S	0032	1246	0129	1320	0231	1358
30S	0032	1245	0133	1316	0237	1351
35S	0032	1243	0136	1311	0244	1342
40S	0032	1241	0140	1305	0252	1333
45S	0032	1239	0145	1259	0301	1322
50S	0032	1237	0150	1251	0313	1309
55S	0032	1234	0157	1242	0327	1252
60S	0032	1230	0206	1230	0346	1230

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JUNE 12 - JUNE 14

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
12	00	260 20.2	139 28.6	N22 29.5	214 47.6	N16 39.6	142 02.2	N21 19.3	247 23.3	N03 03.1
	01	275 22.7	154 27.9	N22 28.9	229 48.2	N16 40.1	157 04.1	N21 19.2	262 25.6	N03 03.1
	02	290 25.2	169 27.3	N22 28.3	244 48.9	N16 40.7	172 06.1	N21 19.1	277 27.9	N03 03.2
	03	305 27.6	184 26.7	N22 27.7	259 49.5	N16 41.2	187 08.0	N21 19.0	292 30.2	N03 03.2
	04	320 30.1	199 26.1	N22 27.1	274 50.1	N16 41.7	202 09.9	N21 18.9	307 32.5	N03 03.3
	05	335 32.6	214 25.4	N22 26.5	289 50.8	N16 42.3	217 11.9	N21 18.8	322 34.8	N03 03.3
	06	350 35.0	229 24.8	N22 25.9	304 51.4	N16 42.8	232 13.8	N21 18.7	337 37.1	N03 03.4
	07	005 37.5	244 24.2	N22 25.3	319 52.1	N16 43.3	247 15.7	N21 18.6	352 39.4	N03 03.5
	08	020 40.0	259 23.6	N22 24.7	334 52.7	N16 43.9	262 17.7	N21 18.5	007 41.7	N03 03.5
	09	035 42.4	274 22.9	N22 24.1	349 53.3	N16 44.4	277 19.6	N21 18.4	022 44.0	N03 03.6
	10	050 44.9	289 22.3	N22 23.5	004 54.0	N16 44.9	292 21.6	N21 18.3	037 46.3	N03 03.6
	11	065 47.4	304 21.7	N22 22.9	019 54.6	N16 45.4	307 23.5	N21 18.2	052 48.6	N03 03.7
	12	080 49.8	319 21.1	N22 22.3	034 55.3	N16 46.0	322 25.4	N21 18.1	067 50.9	N03 03.8
	13	095 52.3	334 20.5	N22 21.7	049 55.9	N16 46.5	337 27.4	N21 18.0	082 53.2	N03 03.8
	14	110 54.7	349 19.9	N22 21.1	064 56.5	N16 47.0	352 29.3	N21 18.0	097 55.5	N03 03.9
	15	125 57.2	004 19.2	N22 20.5	079 57.2	N16 47.6	007 31.2	N21 17.9	112 57.8	N03 03.9
	16	140 59.7	019 18.6	N22 19.9	094 57.8	N16 48.1	022 33.2	N21 17.8	128 00.1	N03 04.0
	17	156 02.1	034 18.0	N22 19.3	109 58.5	N16 48.6	037 35.1	N21 17.7	143 02.4	N03 04.1
	18	171 04.6	049 17.4	N22 18.7	124 59.1	N16 49.2	052 37.0	N21 17.6	158 04.7	N03 04.1
	19	186 07.1	064 16.8	N22 18.1	139 59.7	N16 49.7	067 39.0	N21 17.5	173 07.0	N03 04.2
	20	201 09.5	079 16.2	N22 17.5	155 00.4	N16 50.2	082 40.9	N21 17.4	188 09.3	N03 04.2
	21	216 12.0	094 15.5	N22 16.9	170 01.0	N16 50.7	097 42.8	N21 17.3	203 11.6	N03 04.3
	22	231 14.5	109 14.9	N22 16.2	185 01.6	N16 51.3	112 44.8	N21 17.2	218 13.9	N03 04.3
	23	246 16.9	124 14.3	N22 15.6	200 02.3	N16 51.8	127 46.7	N21 17.1	233 16.2	N03 04.4
13	00	261 19.4	139 13.7	N22 15.0	215 02.9	N16 52.3	142 48.6	N21 17.0	248 18.5	N03 04.5
	01	276 21.9	154 13.1	N22 14.4	230 03.6	N16 52.9	157 50.6	N21 16.9	263 20.8	N03 04.5
	02	291 24.3	169 12.5	N22 13.8	245 04.2	N16 53.4	172 52.5	N21 16.8	278 23.1	N03 04.6
	03	306 26.8	184 11.9	N22 13.2	260 04.8	N16 53.9	187 54.4	N21 16.7	293 25.4	N03 04.6
	04	321 29.2	199 11.3	N22 12.6	275 05.5	N16 54.4	202 56.4	N21 16.6	308 27.7	N03 04.7
	05	336 31.7	214 10.7	N22 11.9	290 06.1	N16 55.0	217 58.3	N21 16.6	323 30.0	N03 04.8
	06	351 34.2	229 10.0	N22 11.3	305 06.8	N16 55.5	233 00.2	N21 16.5	338 32.3	N03 04.8
	07	006 36.6	244 09.4	N22 10.7	320 07.4	N16 56.0	248 02.2	N21 16.4	353 34.6	N03 04.9
	08	021 39.1	259 08.8	N22 10.1	335 08.0	N16 56.5	263 04.1	N21 16.3	008 36.9	N03 04.9
	09	036 41.6	274 08.2	N22 09.4	350 08.7	N16 57.1	278 06.0	N21 16.2	023 39.2	N03 05.0
	10	051 44.0	289 07.6	N22 08.8	005 09.3	N16 57.6	293 08.0	N21 16.1	038 41.5	N03 05.0
	11	066 46.5	304 07.0	N22 08.2	020 09.9	N16 58.1	308 09.9	N21 16.0	053 43.8	N03 05.1
	12	081 49.0	319 06.4	N22 07.6	035 10.6	N16 58.6	323 11.8	N21 15.9	068 46.1	N03 05.2
	13	096 51.4	334 05.8	N22 06.9	050 11.2	N16 59.2	338 13.8	N21 15.8	083 48.4	N03 05.2
	14	111 53.9	349 05.2	N22 06.3	065 11.9	N16 59.7	353 15.7	N21 15.7	098 50.7	N03 05.3
	15	126 56.4	004 04.6	N22 05.7	080 12.5	N17 00.2	008 17.6	N21 15.6	113 53.0	N03 05.3
	16	141 58.8	019 04.0	N22 05.1	095 13.1	N17 00.7	023 19.6	N21 15.5	128 55.3	N03 05.4
	17	157 01.3	034 03.4	N22 04.4	110 13.8	N17 01.2	038 21.5	N21 15.4	143 57.6	N03 05.4
	18	172 03.7	049 02.8	N22 03.8	125 14.4	N17 01.8	053 23.4	N21 15.3	158 59.9	N03 05.5
	19	187 06.2	064 02.2	N22 03.2	140 15.0	N17 02.3	068 25.3	N21 15.2	174 02.2	N03 05.6
	20	202 08.7	079 01.6	N22 02.5	155 15.7	N17 02.8	083 27.3	N21 15.1	189 04.6	N03 05.6
	21	217 11.1	094 01.0	N22 01.9	170 16.3	N17 03.3	098 29.2	N21 15.0	204 06.9	N03 05.7
	22	232 13.6	109 00.4	N22 01.3	185 16.9	N17 03.9	113 31.1	N21 15.0	219 09.2	N03 05.7
	23	247 16.1	123 59.8	N22 00.6	200 17.6	N17 04.4	128 33.1	N21 14.9	234 11.5	N03 05.8
14	00	262 18.5	138 59.2	N22 00.0	215 18.2	N17 04.9	143 35.0	N21 14.8	249 13.8	N03 05.8
	01	277 21.0	153 58.6	N21 59.3	230 18.9	N17 05.4	158 36.9	N21 14.7	264 16.1	N03 05.9
	02	292 23.5	168 58.0	N21 58.7	245 19.5	N17 05.9	173 38.9	N21 14.6	279 18.4	N03 06.0
	03	307 25.9	183 57.4	N21 58.1	260 20.1	N17 06.5	188 40.8	N21 14.5	294 20.7	N03 06.0
	04	322 28.4	198 56.8	N21 57.4	275 20.8	N17 07.0	203 42.7	N21 14.4	309 23.0	N03 06.1
	05	337 30.8	213 56.2	N21 56.8	290 21.4	N17 07.5	218 44.7	N21 14.3	324 25.3	N03 06.1
	06	352 33.3	228 55.6	N21 56.1	305 22.0	N17 08.0	233 46.6	N21 14.2	339 27.6	N03 06.2
	07	007 35.8	243 55.0	N21 55.5	320 22.7	N17 08.5	248 48.5	N21 14.1	354 29.9	N03 06.2
	08	022 38.2	258 54.5	N21 54.8	335 23.3	N17 09.0	263 50.4	N21 14.0	009 32.2	N03 06.3
	09	037 40.7	273 53.9	N21 54.2	350 23.9	N17 09.6	278 52.4	N21 13.9	024 34.5	N03 06.3
	10	052 43.2	288 53.3	N21 53.5	005 24.6	N17 10.1	293 54.3	N21 13.8	039 36.8	N03 06.4
	11	067 45.6	303 52.7	N21 52.9	020 25.2	N17 10.6	308 56.2	N21 13.7	054 39.1	N03 06.5
	12	082 48.1	318 52.1	N21 52.2	035 25.9	N17 11.1	323 58.2	N21 13.6	069 41.4	N03 06.5
	13	097 50.6	333 51.5	N21 51.6	050 26.5	N17 11.6	339 00.1	N21 13.5	084 43.7	N03 06.6
	14	112 53.0	348 50.9	N21 50.9	065 27.1	N17 12.2	354 02.0	N21 13.4	099 46.0	N03 06.6
	15	127 55.5	003 50.3	N21 50.3	080 27.8	N17 12.7	009 04.0	N21 13.3	114 48.3	N03 06.7
	16	142 58.0	018 49.7	N21 49.6	095 28.4	N17 13.2	024 05.9	N21 13.2	129 50.6	N03 06.7
	17	158 00.4	033 49.2	N21 49.0	110 29.0	N17 13.7	039 07.8	N21 13.2	144 52.9	N03 06.8
	18	173 02.9	048 48.6	N21 48.3	125 29.7	N17 14.2	054 09.7	N21 13.1	159 55.2	N03 06.9
	19	188 05.3	063 48.0	N21 47.7	140 30.3	N17 14.7	069 11.7	N21 13.0	174 57.6	N03 06.9
	20	203 07.8	078 47.4	N21 47.0	155 30.9	N17 15.2	084 13.6	N21 12.9	189 59.9	N03 07.0
	21	218 10.3	093 46.8	N21 46.4	170 31.6	N17 15.8	099 15.5	N21 12.8	205 02.2	N03 07.0
	22	233 12.7	108 46.2	N21 45.7	185 32.2	N17 16.3	114 17.5	N21 12.7	220 04.5	N03 07.1
	23	248 15.2	123 45.7	N21 45.0	200 32.8	N17 16.8	129 19.4	N21 12.6	235 06.8	N03 07.1

Venus	Mars	Jupiter	Saturn
12: v -0.6 d -0.6	12: v 0.6 d 0.5	12: v 1.9 d -0.1	12: v 2.3 d 0.1
13: v -0.6 d -0.6	13: v 0.6 d 0.5	13: v 1.9 d -0.1	13: v 2.3 d 0.1
14: v -0.6 d -0.7	14: v 0.6 d 0.5	14: v 1.9 d -0.1	14: v 2.3 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.2	S40 11.8
Achernar	335 19.7	S57 05.9
Acrux	172 58.6	S63 15.1
Adhara	255 05.3	S29 00.5
Al Na'ir	027 31.3	S46 49.7
Aldebaran	290 38.6	N16 33.7
Alioth	166 11.7	N55 49.2
Alkaid	152 50.8	N49 11.0
Alnilam	275 36.9	S01 11.1
Alphard	217 46.8	S08 46.5
Alphecca	126 02.4	N26 37.6
Alpheratz	357 33.6	N29 14.1
Altair	061 58.5	N08 56.3
Ankaa	353 06.1	S42 09.5
Antares	112 14.0	S26 29.5
Arcturus	145 46.6	N19 02.7
Atria	107 06.6	S69 04.5
Avior	234 14.8	S59 35.8
Bellatrix	278 22.0	N06 22.4
Betelgeuse	270 51.2	N07 24.7
Canopus	263 52.4	S52 42.6
Capella	280 20.6	N46 01.4
Deneb	049 24.7	N45 22.3
Denebola	182 23.7	N14 25.5
Diphda	348 46.2	S17 50.4
Dubhe	193 39.7	N61 36.7
Elnath	278 00.8	N28 37.7
Eltanin	090 41.1	N51 29.0
Enif	033 37.5	N09 59.7
Fomalhaut	015 13.2	S29 28.7
Gacrux	171 50.2	S57 16.0
Gienah	175 42.3	S17 41.5
Hadar	148 33.9	S60 30.3
Hamal	327 50.1	N23 35.2
Kaus Australi	083 30.6	S34 22.3
Kochab	137 18.9	N74 02.9
Markab	013 28.7	N15 20.8
Menkar	314 05.2	N04 11.6
Menkent	147 56.0	S36 30.2
Miaplacidus	221 38.6	S69 49.8
Mirfak	308 27.0	N49 57.2
Nunki	075 46.0	S26 15.8
Peacock	053 03.5	S56 38.8
Polaris	313 50.1	N89 22.3
Pollux	243 16.2	N27 57.8
Procyon	244 49.9	N05 09.4
Rasalhague	095 57.1	N12 32.4
Regulus	207 33.3	N11 50.3
Rigel	281 03.1	S08 10.3
Rigil Kentaur	139 38.2	S60 56.9
Sabik	102 01.1	S15 45.5
Schedar	349 29.9	N56 40.7
Shaula	096 08.4	S37 07.4
Sirius	258 25.5	S16 45.2
Spica	158 20.9	S11 18.1
Suhail	222 45.7	S43 32.6
Vega	080 32.0	N38 48.4
Zubenelgenubi	136 54.4	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	237 17.5	1444
Mars	313 21.6	0939
Jupiter	241 22.9	1427
Saturn	346 57.2	0726

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
12	00	180 03.6	N23 08.2	227 16.5	N18 07.3	60.1	7.8	13.4
	01	195 03.4	N23 08.4	241 43.3	N18 20.8	60.1	7.7	13.3
	02	210 03.3	N23 08.5	256 09.9	N18 34.1	60.1	7.5	13.2
	03	225 03.2	N23 08.7	270 36.4	N18 47.4	60.2	7.4	13.1
	04	240 03.1	N23 08.9	285 02.8	N19 00.5	60.2	7.3	13.0
	05	255 02.9	N23 09.0	299 29.1	N19 13.5	60.2	7.1	12.9
	06	270 02.8	N23 09.2	313 55.2	N19 26.5	60.3	7.0	12.8
	07	285 02.7	N23 09.3	328 21.2	N19 39.3	60.3	6.8	12.7
	08	300 02.5	N23 09.5	342 47.0	N19 52.0	60.3	6.7	12.6
	09	315 02.4	N23 09.6	357 12.7	N20 04.6	60.3	6.6	12.5
	10	330 02.3	N23 09.8	011 38.3	N20 17.1	60.4	6.4	12.4
	11	345 02.1	N23 10.0	026 03.7	N20 29.5	60.4	6.3	12.3
	12	000 02.0	N23 10.1	040 29.0	N20 41.8	60.4	6.2	12.1
	13	015 01.9	N23 10.3	054 54.2	N20 53.9	60.5	6.0	12.0
	14	030 01.7	N23 10.4	069 19.2	N21 05.9	60.5	5.9	11.9
	15	045 01.6	N23 10.6	083 44.1	N21 17.8	60.5	5.7	11.8
	16	060 01.5	N23 10.7	098 08.8	N21 29.6	60.6	5.6	11.6
	17	075 01.4	N23 10.9	112 33.4	N21 41.2	60.6	5.5	11.5
	18	090 01.2	N23 11.0	126 57.8	N21 52.7	60.6	5.3	11.4
	19	105 01.1	N23 11.2	141 22.2	N22 04.0	60.6	5.2	11.2
	20	120 01.0	N23 11.3	155 46.3	N22 15.3	60.7	5.0	11.1
	21	135 00.8	N23 11.4	170 10.4	N22 26.3	60.7	4.9	10.9
	22	150 00.7	N23 11.6	184 34.3	N22 37.3	60.7	4.8	10.8
	23	165 00.6	N23 11.7	198 58.1	N22 48.1	60.7	4.6	10.7
13	00	180 00.4	N23 11.9	213 21.7	N22 58.7	60.8	4.5	10.5
	01	195 00.3	N23 12.0	227 45.2	N23 09.2	60.8	4.4	10.3
	02	210 00.2	N23 12.2	242 08.5	N23 19.6	60.8	4.2	10.2
	03	225 00.0	N23 12.3	256 31.8	N23 29.8	60.8	4.1	10.0
	04	239 59.9	N23 12.4	270 54.9	N23 39.8	60.9	4.0	9.9
	05	254 59.8	N23 12.6	285 17.8	N23 49.7	60.9	3.8	9.7
	06	269 59.6	N23 12.7	299 40.6	N23 59.4	60.9	3.7	9.6
	07	284 59.5	N23 12.9	314 03.3	N24 09.0	60.9	3.6	9.4
	08	299 59.4	N23 13.0	328 25.9	N24 18.4	61.0	3.4	9.2
	09	314 59.3	N23 13.1	342 48.3	N24 27.6	61.0	3.3	9.1
	10	329 59.1	N23 13.3	357 10.7	N24 36.7	61.0	3.2	8.9
	11	344 59.0	N23 13.4	011 32.8	N24 45.5	61.0	3.1	8.7
	12	359 58.9	N23 13.5	025 54.9	N24 54.2	61.0	2.9	8.5
	13	014 58.7	N23 13.7	040 16.8	N25 02.8	61.1	2.8	8.4
	14	029 58.6	N23 13.8	054 38.7	N25 11.1	61.1	2.7	8.2
	15	044 58.5	N23 13.9	069 00.4	N25 19.3	61.1	2.6	8.0
	16	059 58.3	N23 14.1	083 22.0	N25 27.3	61.1	2.5	7.8
	17	074 58.2	N23 14.2	097 43.4	N25 35.1	61.1	2.4	7.6
	18	089 58.1	N23 14.3	112 04.8	N25 42.7	61.1	2.2	7.4
	19	104 57.9	N23 14.5	126 26.0	N25 50.1	61.2	2.1	7.2
	20	119 57.8	N23 14.6	140 47.2	N25 57.4	61.2	2.0	7.0
	21	134 57.7	N23 14.7	155 08.2	N26 04.4	61.2	1.9	6.9
	22	149 57.5	N23 14.9	169 29.1	N26 11.3	61.2	1.8	6.7
	23	164 57.4	N23 15.0	183 50.0	N26 17.9	61.2	1.7	6.5
14	00	179 57.3	N23 15.1	198 10.7	N26 24.4	61.2	1.6	6.3
	01	194 57.1	N23 15.2	212 31.3	N26 30.7	61.2	1.5	6.1
	02	209 57.0	N23 15.4	226 51.8	N26 36.7	61.3	1.4	5.9
	03	224 56.9	N23 15.5	241 12.3	N26 42.6	61.3	1.4	5.6
	04	239 56.7	N23 15.6	255 32.6	N26 48.2	61.3	1.3	5.4
	05	254 56.6	N23 15.7	269 52.9	N26 53.7	61.3	1.2	5.2
	06	269 56.5	N23 15.9	284 13.1	N26 58.9	61.3	1.1	5.0
	07	284 56.3	N23 16.0	298 33.2	N27 03.9	61.3	1.0	4.8
	08	299 56.2	N23 16.1	312 53.3	N27 08.7	61.3	1.0	4.6
	09	314 56.1	N23 16.2	327 13.2	N27 13.4	61.3	0.9	4.4
	10	329 55.9	N23 16.3	341 33.1	N27 17.7	61.3	0.8	4.2
	11	344 55.8	N23 16.5	355 52.9	N27 21.9	61.3	0.8	4.0
	12	359 55.7	N23 16.6	010 12.7	N27 25.9	61.4	0.7	3.7
	13	014 55.5	N23 16.7	024 32.4	N27 29.6	61.4	0.6	3.5
	14	029 55.4	N23 16.8	038 52.0	N27 33.2	61.4	0.6	3.3
	15	044 55.3	N23 16.9	053 11.6	N27 36.5	61.4	0.5	3.1
	16	059 55.1	N23 17.0	067 31.2	N27 39.5	61.4	0.5	2.9
	17	074 55.0	N23 17.2	081 50.7	N27 42.4	61.4	0.5	2.6
	18	089 54.8	N23 17.3	096 10.1	N27 45.1	61.4	0.4	2.4
	19	104 54.7	N23 17.4	110 29.5	N27 47.5	61.4	0.4	2.2
	20	119 54.6	N23 17.5	124 48.9	N27 49.7	61.4	0.4	2.0
	21	134 54.4	N23 17.6	139 08.3	N27 51.7	61.4	0.3	1.8
	22	149 54.3	N23 17.7	153 27.6	N27 53.4	61.4	0.3	1.5
	23	164 54.2	N23 17.8	167 46.9	N27 55.0	61.4	0.3	1.3

Day 12 noon Sun: v -0.1 d 0.2 SD 15.8 | Moon SD 16.5

Day 13 noon Sun: v -0.1 d 0.1 SD 15.7 | Moon SD 16.6

Day 14 noon Sun: v -0.1 d 0.1 SD 15.7 | Moon SD 16.7

SUN: JUNE 13 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	0135	2226	--	--
62N	--	--	0212	2149	--	--
60N	--	0056	0237	2124	2306	--
58N	--	0143	0257	2103	2218	--
56N	--	0212	0314	2047	2149	--
54N	0052	0234	0328	2033	2127	2310
52N	0135	0251	0340	2021	2109	2226
50N	0201	0306	0351	2010	2054	2159
45N	0246	0335	0413	1948	2025	2114
40N	0316	0358	0431	1930	2003	2044
35N	0339	0416	0446	1915	1944	2021
30N	0358	0431	0458	1902	1929	2003
25N	0413	0444	0510	1850	1916	1947
20N	0426	0456	0520	1840	1905	1934
15N	0438	0506	0530	1830	1854	1922
10N	0449	0516	0539	1821	1844	1911
05N	0459	0525	0548	1812	1835	1902
00N	0508	0534	0556	1804	1826	1852
05S	0516	0542	0605	1755	1818	1844
10S	0525	0551	0614	1746	1809	1836
15S	0533	0559	0623	1737	1801	1828
20S	0541	0608	0632	1728	1752	1820
25S	0549	0617	0642	1718	1743	1811
30S	0557	0627	0653	1707	1733	1803
35S	0606	0637	0705	1655	1723	1755
40S	0615	0649	0719	1641	1711	1745
45S	0625	0702	0736	1624	1658	1735
50S	0637	0718	0757	1603	1642	1723
55S	0650	0738	0823	1537	1622	1710
60S	0708	0804	0902	1458	1556	1652

MOON: RISE / SET | UTC HHMM

Lat	Day 12		Day 13		Day 14	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	2306	2000	--	--	--	--
64N	0004	1918	--	--	--	--
62N	0021	1850	0018	2103	0016	2316
60N	0035	1829	0040	2026	0054	2208
58N	0046	1811	0058	1959	0121	2133
56N	0057	1756	0114	1938	0142	2108
54N	0106	1744	0127	1921	0200	2048
52N	0114	1733	0138	1906	0215	2031
50N	0121	1723	0149	1853	0228	2016
45N	0137	1703	0211	1827	0255	1946
40N	0151	1646	0228	1806	0317	1923
35N	0202	1632	0243	1749	0335	1904
30N	0212	1620	0257	1734	0351	1847
25N	0221	1609	0308	1721	0404	1833
20N	0229	1600	0319	1709	0417	1820
15N	0237	1550	0329	1658	0429	1807
10N	0244	1542	0339	1647	0440	1756
05N	0251	1534	0348	1637	0451	1744
00N	0258	1525	0357	1627	0501	1733
05S	0305	1517	0406	1617	0512	1722
10S	0313	1509	0416	1607	0523	1711
15S	0320	1500	0425	1556	0534	1659
20S	0328	1451	0435	1545	0546	1647
25S	0336	1442	0447	1533	0559	1634
30S	0346	1431	0459	1520	0613	1619
35S	0356	1420	0512	1506	0629	1603
40S	0408	1406	0528	1449	0648	1544
45S	0423	1351	0547	1429	0711	1521
50S	0440	1331	0611	1404	0740	1451
55S	0503	1307	0644	1330	0820	1410
60S	0535	1233	0732	1240	0929	1301

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JUNE 15 - JUNE 17

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
15	00	263 17.7	138 45.1	N21 44.4	215 33.5	N17 17.3	144 21.3	N21 12.5	250 09.1	N03 07.2
	01	278 20.1	153 44.5	N21 43.7	230 34.1	N17 17.8	159 23.3	N21 12.4	265 11.4	N03 07.2
	02	293 22.6	168 43.9	N21 43.0	245 34.8	N17 18.3	174 25.2	N21 12.3	280 13.7	N03 07.3
	03	308 25.1	183 43.3	N21 42.4	260 35.4	N17 18.8	189 27.1	N21 12.2	295 16.0	N03 07.3
	04	323 27.5	198 42.8	N21 41.7	275 36.0	N17 19.3	204 29.0	N21 12.1	310 18.3	N03 07.4
	05	338 30.0	213 42.2	N21 41.0	290 36.7	N17 19.9	219 31.0	N21 12.0	325 20.6	N03 07.5
	06	353 32.5	228 41.6	N21 40.4	305 37.3	N17 20.4	234 32.9	N21 11.9	340 22.9	N03 07.5
	07	008 34.9	243 41.0	N21 39.7	320 37.9	N17 20.9	249 34.8	N21 11.8	355 25.2	N03 07.6
	08	023 37.4	258 40.4	N21 39.0	335 38.6	N17 21.4	264 36.8	N21 11.7	010 27.5	N03 07.6
	09	038 39.8	273 39.9	N21 38.4	350 39.2	N17 21.9	279 38.7	N21 11.6	025 29.8	N03 07.7
	10	053 42.3	288 39.3	N21 37.7	005 39.8	N17 22.4	294 40.6	N21 11.5	040 32.2	N03 07.7
	11	068 44.8	303 38.7	N21 37.0	020 40.5	N17 22.9	309 42.5	N21 11.4	055 34.5	N03 07.8
	12	083 47.2	318 38.1	N21 36.4	035 41.1	N17 23.4	324 44.5	N21 11.3	070 36.8	N03 07.8
	13	098 49.7	333 37.6	N21 35.7	050 41.7	N17 23.9	339 46.4	N21 11.2	085 39.1	N03 07.9
	14	113 52.2	348 37.0	N21 35.0	065 42.4	N17 24.4	354 48.3	N21 11.1	100 41.4	N03 08.0
	15	128 54.6	003 36.4	N21 34.3	080 43.0	N17 25.0	009 50.3	N21 11.0	115 43.7	N03 08.0
	16	143 57.1	018 35.9	N21 33.6	095 43.6	N17 25.5	024 52.2	N21 10.9	130 46.0	N03 08.1
	17	158 59.6	033 35.3	N21 33.0	110 44.3	N17 26.0	039 54.1	N21 10.9	145 48.3	N03 08.1
	18	174 02.0	048 34.7	N21 32.3	125 44.9	N17 26.5	054 56.0	N21 10.8	160 50.6	N03 08.2
	19	189 04.5	063 34.2	N21 31.6	140 45.5	N17 27.0	069 58.0	N21 10.7	175 52.9	N03 08.2
	20	204 07.0	078 33.6	N21 30.9	155 46.2	N17 27.5	084 59.9	N21 10.6	190 55.2	N03 08.3
	21	219 09.4	093 33.0	N21 30.2	170 46.8	N17 28.0	100 01.8	N21 10.5	205 57.5	N03 08.3
	22	234 11.9	108 32.4	N21 29.6	185 47.4	N17 28.5	115 03.7	N21 10.4	220 59.9	N03 08.4
	23	249 14.3	123 31.9	N21 28.9	200 48.1	N17 29.0	130 05.7	N21 10.3	236 02.2	N03 08.4
16	00	264 16.8	138 31.3	N21 28.2	215 48.7	N17 29.5	145 07.6	N21 10.2	251 04.5	N03 08.5
	01	279 19.3	153 30.7	N21 27.5	230 49.3	N17 30.0	160 09.5	N21 10.1	266 06.8	N03 08.5
	02	294 21.7	168 30.2	N21 26.8	245 50.0	N17 30.5	175 11.5	N21 10.0	281 09.1	N03 08.6
	03	309 24.2	183 29.6	N21 26.1	260 50.6	N17 31.0	190 13.4	N21 09.9	296 11.4	N03 08.7
	04	324 26.7	198 29.1	N21 25.4	275 51.2	N17 31.5	205 15.3	N21 09.8	311 13.7	N03 08.7
	05	339 29.1	213 28.5	N21 24.8	290 51.9	N17 32.0	220 17.2	N21 09.7	326 16.0	N03 08.8
	06	354 31.6	228 27.9	N21 24.1	305 52.5	N17 32.5	235 19.2	N21 09.6	341 18.3	N03 08.8
	07	009 34.1	243 27.4	N21 23.4	320 53.1	N17 33.0	250 21.1	N21 09.5	356 20.6	N03 08.9
	08	024 36.5	258 26.8	N21 22.7	335 53.8	N17 33.6	265 23.0	N21 09.4	011 23.0	N03 08.9
	09	039 39.0	273 26.3	N21 22.0	350 54.4	N17 34.1	280 24.9	N21 09.3	026 25.3	N03 09.0
	10	054 41.5	288 25.7	N21 21.3	005 55.0	N17 34.6	295 26.9	N21 09.2	041 27.6	N03 09.0
	11	069 43.9	303 25.1	N21 20.6	020 55.7	N17 35.1	310 28.8	N21 09.1	056 29.9	N03 09.1
	12	084 46.4	318 24.6	N21 19.9	035 56.3	N17 35.6	325 30.7	N21 09.0	071 32.2	N03 09.1
	13	099 48.8	333 24.0	N21 19.2	050 56.9	N17 36.1	340 32.6	N21 08.9	086 34.5	N03 09.2
	14	114 51.3	348 23.5	N21 18.5	065 57.6	N17 36.6	355 34.6	N21 08.8	101 36.8	N03 09.2
	15	129 53.8	003 22.9	N21 17.8	080 58.2	N17 37.1	010 36.5	N21 08.7	116 39.1	N03 09.3
	16	144 56.2	018 22.4	N21 17.1	095 58.8	N17 37.6	025 38.4	N21 08.6	131 41.5	N03 09.3
	17	159 58.7	033 21.8	N21 16.4	110 59.5	N17 38.1	040 40.3	N21 08.5	146 43.8	N03 09.4
	18	175 01.2	048 21.2	N21 15.7	126 00.1	N17 38.6	055 42.3	N21 08.4	161 46.1	N03 09.5
	19	190 03.6	063 20.7	N21 15.0	141 00.7	N17 39.1	070 44.2	N21 08.3	176 48.4	N03 09.5
	20	205 06.1	078 20.1	N21 14.3	156 01.4	N17 39.6	085 46.1	N21 08.2	191 50.7	N03 09.6
	21	220 08.6	093 19.6	N21 13.6	171 02.0	N17 40.1	100 48.1	N21 08.1	206 53.0	N03 09.6
	22	235 11.0	108 19.0	N21 12.9	186 02.6	N17 40.6	115 50.0	N21 08.0	221 55.3	N03 09.7
	23	250 13.5	123 18.5	N21 12.2	201 03.3	N17 41.1	130 51.9	N21 07.9	236 57.6	N03 09.7
17	00	265 16.0	138 17.9	N21 11.5	216 03.9	N17 41.6	145 53.8	N21 07.8	251 59.9	N03 09.8
	01	280 18.4	153 17.4	N21 10.8	231 04.5	N17 42.1	160 55.8	N21 07.7	267 02.3	N03 09.8
	02	295 20.9	168 16.8	N21 10.1	246 05.2	N17 42.6	175 57.7	N21 07.6	282 04.6	N03 09.9
	03	310 23.3	183 16.3	N21 09.4	261 05.8	N17 43.1	190 59.6	N21 07.6	297 06.9	N03 09.9
	04	325 25.8	198 15.7	N21 08.6	276 06.4	N17 43.6	206 01.5	N21 07.5	312 09.2	N03 10.0
	05	340 28.3	213 15.2	N21 07.9	291 07.1	N17 44.0	221 03.5	N21 07.4	327 11.5	N03 10.0
	06	355 30.7	228 14.6	N21 07.2	306 07.7	N17 44.5	236 05.4	N21 07.3	342 13.8	N03 10.1
	07	010 33.2	243 14.1	N21 06.5	321 08.3	N17 45.0	251 07.3	N21 07.2	357 16.1	N03 10.1
	08	025 35.7	258 13.6	N21 05.8	336 09.0	N17 45.5	266 09.2	N21 07.1	012 18.5	N03 10.2
	09	040 38.1	273 13.0	N21 05.1	351 09.6	N17 46.0	281 11.2	N21 07.0	027 20.8	N03 10.2
	10	055 40.6	288 12.5	N21 04.4	006 10.2	N17 46.5	296 13.1	N21 06.9	042 23.1	N03 10.3
	11	070 43.1	303 11.9	N21 03.6	021 10.9	N17 47.0	311 15.0	N21 06.8	057 25.4	N03 10.3
	12	085 45.5	318 11.4	N21 02.9	036 11.5	N17 47.5	326 16.9	N21 06.7	072 27.7	N03 10.4
	13	100 48.0	333 10.8	N21 02.2	051 12.1	N17 48.0	341 18.8	N21 06.6	087 30.0	N03 10.4
	14	115 50.5	348 10.3	N21 01.5	066 12.7	N17 48.5	356 20.8	N21 06.5	102 32.3	N03 10.5
	15	130 52.9	003 09.8	N21 00.8	081 13.4	N17 49.0	011 22.7	N21 06.4	117 34.7	N03 10.5
	16	145 55.4	018 09.2	N21 00.0	096 14.0	N17 49.5	026 24.6	N21 06.3	132 37.0	N03 10.6
	17	160 57.8	033 08.7	N20 59.3	111 14.6	N17 50.0	041 26.5	N21 06.2	147 39.3	N03 10.6
	18	176 00.3	048 08.1	N20 58.6	126 15.3	N17 50.5	056 28.5	N21 06.1	162 41.6	N03 10.7
	19	191 02.8	063 07.6	N20 57.9	141 15.9	N17 51.0	071 30.4	N21 06.0	177 43.9	N03 10.7
	20	206 05.2	078 07.1	N20 57.1	156 16.5	N17 51.5	086 32.3	N21 05.9	192 46.2	N03 10.8
	21	221 07.7	093 06.5	N20 56.4	171 17.2	N17 52.0	101 34.2	N21 05.8	207 48.5	N03 10.9
	22	236 10.2	108 06.0	N20 55.7	186 17.8	N17 52.4	116 36.2	N21 05.7	222 50.9	N03 10.9
	23	251 12.6	123 05.5	N20 55.0	201 18.4	N17 52.9	131 38.1	N21 05.6	237 53.2	N03 11.0

Venus	Mars	Jupiter	Saturn
15: v -0.6 d -0.7	15: v 0.6 d 0.5	15: v 1.9 d -0.1	15: v 2.3 d 0.1
16: v -0.6 d -0.7	16: v 0.6 d 0.5	16: v 1.9 d -0.1	16: v 2.3 d 0.1
17: v -0.5 d -0.7	17: v 0.6 d 0.5	17: v 1.9 d -0.1	17: v 2.3 d 0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.2	S40 11.7
Achernar	335 19.6	S57 05.9
Acrux	172 58.6	S63 15.1
Adhara	255 05.3	S29 00.5
Al Na'ir	027 31.2	S46 49.7
Aldebaran	290 38.6	N16 33.7
Alioth	166 11.7	N55 49.2
Alkaid	152 50.8	N49 11.0
Alnilam	275 36.9	S01 11.1
Alphard	217 46.8	S08 46.5
Alphecca	126 02.4	N26 37.6
Alpheratz	357 33.6	N29 14.1
Altair	061 58.5	N08 56.3
Ankaa	353 06.1	S42 09.5
Antares	112 14.0	S26 29.5
Arcturus	145 46.6	N19 02.7
Atria	107 06.6	S69 04.5
Avior	234 14.8	S59 35.8
Bellatrix	278 21.9	N06 22.4
Betelgeuse	270 51.1	N07 24.7
Canopus	263 52.4	S52 42.6
Capella	280 20.6	N46 01.4
Deneb	049 24.7	N45 22.3
Denebola	182 23.7	N14 25.5
Diphda	348 46.2	S17 50.4
Dubhe	193 39.7	N61 36.7
Elnath	278 00.8	N28 37.7
Eltanin	090 41.1	N51 29.1
Enif	033 37.5	N09 59.8
Fomalhaut	015 13.1	S29 28.7
Gacrux	171 50.2	S57 16.0
Gienah	175 42.3	S17 41.5
Hadar	148 33.9	S60 30.3
Hamal	327 50.1	N23 35.2
Kaus Australi	083 30.5	S34 22.3
Kochab	137 18.9	N74 02.9
Markab	013 28.7	N15 20.8
Menkar	314 05.2	N04 11.6
Menkent	147 56.0	S36 30.2
Miaplacidus	221 38.6	S69 49.8
Mirfak	308 27.0	N49 57.2
Nunki	075 45.9	S26 15.8
Peacock	053 03.4	S56 38.8
Polaris	313 48.7	N89 22.3
Pollux	243 16.2	N27 57.8
Procyon	244 49.9	N05 09.4
Rasalhague	095 57.1	N12 32.4
Regulus	207 33.3	N11 50.3
Rigel	281 03.1	S08 10.3
Rigil Kentaur	139 38.2	S60 56.9
Sabik	102 01.1	S15 45.5
Schedar	349 29.8	N56 40.7
Shaula	096 08.3	S37 07.4
Sirius	258 25.5	S16 45.2
Spica	158 20.9	S11 18.1
Suhail	222 45.7	S43 32.6
Vega	080 32.0	N38 48.4
Zubenelgenubi	136 54.4	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	233 38.2	1446
Mars	311 09.9	0936
Jupiter	240 44.3	1418
Saturn	346 45.8	0715

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
15	00	179 54.0	N23 17.9	182 06.2	N27 56.3	61.4	0.3	1.1
	01	194 53.9	N23 18.1	196 25.4	N27 57.3	61.4	0.3	0.9
	02	209 53.8	N23 18.2	210 44.7	N27 58.2	61.4	0.2	0.6
	03	224 53.6	N23 18.3	225 03.9	N27 58.8	61.4	0.2	0.4
	04	239 53.5	N23 18.4	239 23.2	N27 59.2	61.4	0.2	0.2
	05	254 53.4	N23 18.5	253 42.4	N27 59.4	61.4	0.2	0.0
	06	269 53.2	N23 18.6	268 01.7	N27 59.4	61.4	0.3	-0.3
	07	284 53.1	N23 18.7	282 20.9	N27 59.1	61.4	0.3	-0.5
	08	299 53.0	N23 18.8	296 40.2	N27 58.6	61.4	0.3	-0.7
	09	314 52.8	N23 18.9	310 59.5	N27 57.9	61.4	0.3	-0.9
	10	329 52.7	N23 19.0	325 18.8	N27 56.9	61.4	0.3	-1.2
	11	344 52.6	N23 19.1	339 38.1	N27 55.7	61.3	0.4	-1.4
	12	359 52.4	N23 19.2	353 57.5	N27 54.3	61.3	0.4	-1.6
	13	014 52.3	N23 19.3	008 16.8	N27 52.7	61.3	0.4	-1.8
	14	029 52.2	N23 19.4	022 36.3	N27 50.9	61.3	0.5	-2.1
	15	044 52.0	N23 19.5	036 55.7	N27 48.8	61.3	0.5	-2.3
	16	059 51.9	N23 19.6	051 15.2	N27 46.5	61.3	0.5	-2.5
	17	074 51.7	N23 19.7	065 34.8	N27 44.0	61.3	0.6	-2.7
	18	089 51.6	N23 19.8	079 54.4	N27 41.3	61.3	0.6	-2.9
	19	104 51.5	N23 19.9	094 14.0	N27 38.4	61.3	0.7	-3.2
	20	119 51.3	N23 20.0	108 33.7	N27 35.2	61.3	0.8	-3.4
	21	134 51.2	N23 20.1	122 53.5	N27 31.8	61.3	0.8	-3.6
	22	149 51.1	N23 20.2	137 13.3	N27 28.2	61.2	0.9	-3.8
	23	164 50.9	N23 20.3	151 33.2	N27 24.4	61.2	1.0	-4.0
16	00	179 50.8	N23 20.4	165 53.1	N27 20.4	61.2	1.0	-4.2
	01	194 50.7	N23 20.5	180 13.2	N27 16.1	61.2	1.1	-4.4
	02	209 50.5	N23 20.5	194 33.3	N27 11.7	61.2	1.2	-4.7
	03	224 50.4	N23 20.6	208 53.5	N27 07.0	61.2	1.3	-4.9
	04	239 50.3	N23 20.7	223 13.8	N27 02.2	61.2	1.4	-5.1
	05	254 50.1	N23 20.8	237 34.1	N26 57.1	61.1	1.5	-5.3
	06	269 50.0	N23 20.9	251 54.6	N26 51.8	61.1	1.5	-5.5
	07	284 49.8	N23 21.0	266 15.1	N26 46.3	61.1	1.6	-5.7
	08	299 49.7	N23 21.1	280 35.8	N26 40.6	61.1	1.7	-5.9
	09	314 49.6	N23 21.2	294 56.5	N26 34.7	61.1	1.8	-6.1
	10	329 49.4	N23 21.2	309 17.3	N26 28.7	61.0	1.9	-6.3
	11	344 49.3	N23 21.3	323 38.3	N26 22.4	61.0	2.0	-6.5
	12	359 49.2	N23 21.4	337 59.3	N26 15.9	61.0	2.2	-6.7
	13	014 49.0	N23 21.5	352 20.5	N26 09.2	61.0	2.3	-6.9
	14	029 48.9	N23 21.6	006 41.7	N26 02.4	61.0	2.4	-7.0
	15	044 48.8	N23 21.7	021 03.1	N25 55.3	60.9	2.5	-7.2
	16	059 48.6	N23 21.7	035 24.6	N25 48.1	60.9	2.6	-7.4
	17	074 48.5	N23 21.8	049 46.2	N25 40.7	60.9	2.7	-7.6
	18	089 48.3	N23 21.9	064 07.9	N25 33.1	60.9	2.8	-7.8
	19	104 48.2	N23 22.0	078 29.8	N25 25.3	60.8	3.0	-8.0
	20	119 48.1	N23 22.1	092 51.7	N25 17.3	60.8	3.1	-8.1
	21	134 47.9	N23 22.1	107 13.8	N25 09.2	60.8	3.2	-8.3
	22	149 47.8	N23 22.2	121 36.0	N25 00.8	60.8	3.3	-8.5
	23	164 47.7	N23 22.3	135 58.4	N24 52.4	60.8	3.5	-8.7
17	00	179 47.5	N23 22.4	150 20.8	N24 43.7	60.7	3.6	-8.8
	01	194 47.4	N23 22.4	164 43.4	N24 34.9	60.7	3.7	-9.0
	02	209 47.3	N23 22.5	179 06.2	N24 25.9	60.7	3.9	-9.2
	03	224 47.1	N23 22.6	193 29.0	N24 16.7	60.6	4.0	-9.3
	04	239 47.0	N23 22.7	207 52.0	N24 07.4	60.6	4.1	-9.5
	05	254 46.8	N23 22.7	222 15.2	N23 57.9	60.6	4.3	-9.6
	06	269 46.7	N23 22.8	236 38.4	N23 48.2	60.6	4.4	-9.8
	07	284 46.6	N23 22.9	251 01.8	N23 38.4	60.5	4.5	-9.9
	08	299 46.4	N23 22.9	265 25.4	N23 28.5	60.5	4.7	-10.1
	09	314 46.3	N23 23.0	279 49.1	N23 18.4	60.5	4.8	-10.2
	10	329 46.2	N23 23.1	294 12.9	N23 08.1	60.4	5.0	-10.4
	11	344 46.0	N23 23.1	308 36.8	N22 57.8	60.4	5.1	-10.5
	12	359 45.9	N23 23.2	323 00.9	N22 47.2	60.4	5.2	-10.7
	13	014 45.8	N23 23.3	337 25.2	N22 36.5	60.4	5.4	-10.8
	14	029 45.6	N23 23.3	351 49.5	N22 25.7	60.3	5.5	-11.0
	15	044 45.5	N23 23.4	006 14.1	N22 14.8	60.3	5.7	-11.1
	16	059 45.3	N23 23.5	020 38.7	N22 03.7	60.3	5.8	-11.2
	17	074 45.2	N23 23.5	035 03.5	N21 52.4	60.2	5.9	-11.4
	18	089 45.1	N23 23.6	049 28.5	N21 41.1	60.2	6.1	-11.5
	19	104 44.9	N23 23.7	063 53.6	N21 29.6	60.2	6.2	-11.6
	20	119 44.8	N23 23.7	078 18.8	N21 18.0	60.1	6.4	-11.7
	21	134 44.7	N23 23.8	092 44.2	N21 06.3	60.1	6.5	-11.8
	22	149 44.5	N23 23.8	107 09.7	N20 54.4	60.1	6.7	-12.0
	23	164 44.4	N23 23.9	121 35.3	N20 42.5	60.0	6.8	-12.1

Day 15 noon Sun: v -0.1 d 0.1 SD 15.7 | Moon SD 16.7

Day 16 noon Sun: v -0.1 d 0.1 SD 15.7 | Moon SD 16.6

Day 17 noon Sun: v -0.1 d 0.1 SD 15.7 | Moon SD 16.5

SUN: JUNE 16 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	0133	2230	--	--
62N	--	--	0210	2152	--	--
60N	--	0052	0236	2126	2311	--
58N	--	0141	0256	2105	2221	--
56N	--	0211	0313	2049	2151	--
54N	0047	0233	0327	2034	2129	2315
52N	0133	0251	0339	2022	2111	2229
50N	0200	0306	0350	2011	2056	2201
45N	0246	0335	0413	1949	2026	2116
40N	0316	0358	0431	1931	2004	2045
35N	0339	0416	0446	1916	1946	2022
30N	0358	0431	0459	1903	1930	2004
25N	0413	0444	0510	1851	1917	1948
20N	0427	0456	0521	1841	1905	1935
15N	0439	0507	0530	1831	1855	1923
10N	0449	0516	0540	1822	1845	1912
05N	0459	0526	0548	1813	1836	1902
00N	0508	0535	0557	1804	1827	1853
05S	0517	0543	0606	1756	1818	1844
10S	0525	0552	0614	1747	1810	1836
15S	0533	0600	0623	1738	1801	1828
20S	0541	0609	0633	1728	1753	1820
25S	0550	0618	0643	1718	1743	1812
30S	0558	0628	0654	1707	1734	1804
35S	0607	0638	0706	1655	1723	1755
40S	0616	0650	0721	1641	1711	1745
45S	0626	0703	0737	1624	1658	1735
50S	0638	0720	0758	1603	1642	1723
55S	0652	0740	0825	1536	1622	1709
60S	0709	0806	0904	1458	1555	1652

MOON: RISE / SET | UTC HHMM

Lat	Day 15		Day 16		Day 17	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	--	--	0344	0036
62N	0025	2356	0208	2356	0424	2353
60N	0132	2306	0258	2328	0451	2336
58N	0207	2235	0329	2306	0512	2321
56N	0233	2211	0352	2248	0530	2309
54N	0253	2152	0411	2232	0544	2258
52N	0311	2135	0427	2219	0557	2248
50N	0325	2121	0441	2208	0608	2239
45N	0355	2052	0509	2143	0632	2221
40N	0419	2030	0531	2124	0650	2205
35N	0438	2011	0550	2107	0706	2152
30N	0454	1955	0606	2053	0719	2141
25N	0509	1940	0620	2040	0731	2131
20N	0522	1927	0632	2028	0742	2121
15N	0535	1915	0644	2018	0752	2113
10N	0547	1904	0655	2007	0802	2104
05N	0558	1852	0706	1957	0811	2056
00N	0609	1841	0716	1947	0820	2048
05S	0620	1830	0727	1937	0829	2040
10S	0632	1819	0738	1927	0838	2032
15S	0643	1808	0749	1917	0848	2023
20S	0656	1755	0801	1906	0858	2014
25S	0709	1742	0813	1854	0908	2004
30S	0724	1727	0827	1840	0920	1954
35S	0741	1711	0843	1826	0933	1942
40S	0800	1651	0901	1808	0948	1928
45S	0824	1628	0922	1747	1006	1911
50S	0854	1558	0950	1721	1027	1851
55S	0937	1515	1027	1645	1056	1824
60S	1052	1401	1126	1547	1137	1745

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JUNE 18 - JUNE 20

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
18	00	266 15.1	138 04.9	N20 54.2	216 19.1	N17 53.4	146 40.0	N21 05.5	252 55.5	N03 11.0
	01	281 17.6	153 04.4	N20 53.5	231 19.7	N17 53.9	161 41.9	N21 05.4	267 57.8	N03 11.1
	02	296 20.0	168 03.9	N20 52.8	246 20.3	N17 54.4	176 43.9	N21 05.3	283 00.1	N03 11.1
	03	311 22.5	183 03.3	N20 52.0	261 21.0	N17 54.9	191 45.8	N21 05.2	298 02.4	N03 11.2
	04	326 25.0	198 02.8	N20 51.3	276 21.6	N17 55.4	206 47.7	N21 05.1	313 04.8	N03 11.2
	05	341 27.4	213 02.3	N20 50.6	291 22.2	N17 55.9	221 49.6	N21 05.0	328 07.1	N03 11.3
	06	356 29.9	228 01.7	N20 49.8	306 22.8	N17 56.4	236 51.5	N21 04.9	343 09.4	N03 11.3
	07	011 32.3	243 01.2	N20 49.1	321 23.5	N17 56.9	251 53.5	N21 04.8	358 11.7	N03 11.4
	08	026 34.8	258 00.7	N20 48.4	336 24.1	N17 57.3	266 55.4	N21 04.7	013 14.0	N03 11.4
	09	041 37.3	273 00.2	N20 47.6	351 24.7	N17 57.8	281 57.3	N21 04.6	028 16.3	N03 11.5
	10	056 39.7	287 59.6	N20 46.9	006 25.4	N17 58.3	296 59.2	N21 04.5	043 18.7	N03 11.5
	11	071 42.2	302 59.1	N20 46.1	021 26.0	N17 58.8	312 01.2	N21 04.4	058 21.0	N03 11.6
	12	086 44.7	317 58.6	N20 45.4	036 26.6	N17 59.3	327 03.1	N21 04.3	073 23.3	N03 11.6
	13	101 47.1	332 58.1	N20 44.7	051 27.3	N17 59.8	342 05.0	N21 04.2	088 25.6	N03 11.7
	14	116 49.6	347 57.5	N20 43.9	066 27.9	N18 00.3	357 06.9	N21 04.1	103 27.9	N03 11.7
	15	131 52.1	002 57.0	N20 43.2	081 28.5	N18 00.8	012 08.8	N21 04.0	118 30.3	N03 11.8
	16	146 54.5	017 56.5	N20 42.4	096 29.1	N18 01.2	027 10.8	N21 03.9	133 32.6	N03 11.8
	17	161 57.0	032 56.0	N20 41.7	111 29.8	N18 01.7	042 12.7	N21 03.8	148 34.9	N03 11.9
	18	176 59.5	047 55.4	N20 40.9	126 30.4	N18 02.2	057 14.6	N21 03.7	163 37.2	N03 11.9
	19	192 01.9	062 54.9	N20 40.2	141 31.0	N18 02.7	072 16.5	N21 03.6	178 39.5	N03 12.0
	20	207 04.4	077 54.4	N20 39.4	156 31.7	N18 03.2	087 18.5	N21 03.5	193 41.8	N03 12.0
	21	222 06.8	092 53.9	N20 38.7	171 32.3	N18 03.7	102 20.4	N21 03.4	208 44.2	N03 12.1
	22	237 09.3	107 53.4	N20 37.9	186 32.9	N18 04.1	117 22.3	N21 03.3	223 46.5	N03 12.1
	23	252 11.8	122 52.8	N20 37.2	201 33.6	N18 04.6	132 24.2	N21 03.2	238 48.8	N03 12.2
19	00	267 14.2	137 52.3	N20 36.4	216 34.2	N18 05.1	147 26.1	N21 03.1	253 51.1	N03 12.2
	01	282 16.7	152 51.8	N20 35.7	231 34.8	N18 05.6	162 28.1	N21 03.0	268 53.4	N03 12.3
	02	297 19.2	167 51.3	N20 34.9	246 35.4	N18 06.1	177 30.0	N21 02.9	283 55.8	N03 12.3
	03	312 21.6	182 50.8	N20 34.2	261 36.1	N18 06.6	192 31.9	N21 02.8	298 58.1	N03 12.4
	04	327 24.1	197 50.3	N20 33.4	276 36.7	N18 07.0	207 33.8	N21 02.7	314 00.4	N03 12.4
	05	342 26.6	212 49.8	N20 32.7	291 37.3	N18 07.5	222 35.8	N21 02.6	329 02.7	N03 12.5
	06	357 29.0	227 49.2	N20 31.9	306 38.0	N18 08.0	237 37.7	N21 02.5	344 05.0	N03 12.5
	07	012 31.5	242 48.7	N20 31.2	321 38.6	N18 08.5	252 39.6	N21 02.4	359 07.4	N03 12.6
	08	027 33.9	257 48.2	N20 30.4	336 39.2	N18 09.0	267 41.5	N21 02.3	014 09.7	N03 12.6
	09	042 36.4	272 47.7	N20 29.6	351 39.8	N18 09.4	282 43.4	N21 02.2	029 12.0	N03 12.6
	10	057 38.9	287 47.2	N20 28.9	006 40.5	N18 09.9	297 45.4	N21 02.1	044 14.3	N03 12.7
	11	072 41.3	302 46.7	N20 28.1	021 41.1	N18 10.4	312 47.3	N21 02.0	059 16.6	N03 12.7
	12	087 43.8	317 46.2	N20 27.4	036 41.7	N18 10.9	327 49.2	N21 01.9	074 19.0	N03 12.8
	13	102 46.3	332 45.7	N20 26.6	051 42.4	N18 11.4	342 51.1	N21 01.8	089 21.3	N03 12.8
	14	117 48.7	347 45.2	N20 25.8	066 43.0	N18 11.8	357 53.0	N21 01.7	104 23.6	N03 12.9
	15	132 51.2	002 44.7	N20 25.1	081 43.6	N18 12.3	012 55.0	N21 01.6	119 25.9	N03 12.9
	16	147 53.7	017 44.1	N20 24.3	096 44.2	N18 12.8	027 56.9	N21 01.5	134 28.3	N03 13.0
	17	162 56.1	032 43.6	N20 23.5	111 44.9	N18 13.3	042 58.8	N21 01.4	149 30.6	N03 13.0
	18	177 58.6	047 43.1	N20 22.8	126 45.5	N18 13.8	058 00.7	N21 01.3	164 32.9	N03 13.1
	19	193 01.1	062 42.6	N20 22.0	141 46.1	N18 14.2	073 02.6	N21 01.2	179 35.2	N03 13.1
	20	208 03.5	077 42.1	N20 21.2	156 46.8	N18 14.7	088 04.6	N21 01.1	194 37.5	N03 13.2
	21	223 06.0	092 41.6	N20 20.5	171 47.4	N18 15.2	103 06.5	N21 01.0	209 39.9	N03 13.2
	22	238 08.4	107 41.1	N20 19.7	186 48.0	N18 15.7	118 08.4	N21 00.9	224 42.2	N03 13.3
	23	253 10.9	122 40.6	N20 18.9	201 48.6	N18 16.1	133 10.3	N21 00.8	239 44.5	N03 13.3
20	00	268 13.4	137 40.1	N20 18.2	216 49.3	N18 16.6	148 12.2	N21 00.7	254 46.8	N03 13.4
	01	283 15.8	152 39.6	N20 17.4	231 49.9	N18 17.1	163 14.2	N21 00.6	269 49.2	N03 13.4
	02	298 18.3	167 39.1	N20 16.6	246 50.5	N18 17.6	178 16.1	N21 00.5	284 51.5	N03 13.5
	03	313 20.8	182 38.6	N20 15.8	261 51.2	N18 18.0	193 18.0	N21 00.4	299 53.8	N03 13.5
	04	328 23.2	197 38.1	N20 15.1	276 51.8	N18 18.5	208 19.9	N21 00.3	314 56.1	N03 13.6
	05	343 25.7	212 37.6	N20 14.3	291 52.4	N18 19.0	223 21.8	N21 00.2	329 58.4	N03 13.6
	06	358 28.2	227 37.1	N20 13.5	306 53.0	N18 19.5	238 23.8	N21 00.1	345 00.8	N03 13.7
	07	013 30.6	242 36.6	N20 12.7	321 53.7	N18 19.9	253 25.7	N21 00.0	000 03.1	N03 13.7
	08	028 33.1	257 36.1	N20 11.9	336 54.3	N18 20.4	268 27.6	N20 59.9	015 05.4	N03 13.8
	09	043 35.6	272 35.6	N20 11.2	351 54.9	N18 20.9	283 29.5	N20 59.8	030 07.7	N03 13.8
	10	058 38.0	287 35.2	N20 10.4	006 55.6	N18 21.3	298 31.4	N20 59.7	045 10.1	N03 13.9
	11	073 40.5	302 34.7	N20 09.6	021 56.2	N18 21.8	313 33.4	N20 59.6	060 12.4	N03 13.9
	12	088 42.9	317 34.2	N20 08.8	036 56.8	N18 22.3	328 35.3	N20 59.5	075 14.7	N03 13.9
	13	103 45.4	332 33.7	N20 08.0	051 57.4	N18 22.8	343 37.2	N20 59.4	090 17.0	N03 14.0
	14	118 47.9	347 33.2	N20 07.2	066 58.1	N18 23.2	358 39.1	N20 59.3	105 19.4	N03 14.0
	15	133 50.3	002 32.7	N20 06.5	081 58.7	N18 23.7	013 41.0	N20 59.2	120 21.7	N03 14.1
	16	148 52.8	017 32.2	N20 05.7	096 59.3	N18 24.2	028 43.0	N20 59.1	135 24.0	N03 14.1
	17	163 55.3	032 31.7	N20 04.9	111 59.9	N18 24.6	043 44.9	N20 59.0	150 26.3	N03 14.2
	18	178 57.7	047 31.2	N20 04.1	127 00.6	N18 25.1	058 46.8	N20 58.9	165 28.7	N03 14.2
	19	194 00.2	062 30.7	N20 03.3	142 01.2	N18 25.6	073 48.7	N20 58.8	180 31.0	N03 14.3
	20	209 02.7	077 30.3	N20 02.5	157 01.8	N18 26.1	088 50.6	N20 58.7	195 33.3	N03 14.3
	21	224 05.1	092 29.8	N20 01.7	172 02.5	N18 26.5	103 52.5	N20 58.6	210 35.6	N03 14.4
	22	239 07.6	107 29.3	N20 00.9	187 03.1	N18 27.0	118 54.5	N20 58.5	225 38.0	N03 14.4
	23	254 10.0	122 28.8	N20 00.2	202 03.7	N18 27.5	133 56.4	N20 58.4	240 40.3	N03 14.5

Venus	Mars	Jupiter	Saturn
18: v -0.5 d -0.7	18: v 0.6 d 0.5	18: v 1.9 d -0.1	18: v 2.3 d 0.1
19: v -0.5 d -0.8	19: v 0.6 d 0.5	19: v 1.9 d -0.1	19: v 2.3 d 0.0
20: v -0.5 d -0.8	20: v 0.6 d 0.5	20: v 1.9 d -0.1	20: v 2.3 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.2	S40 11.7
Achernar	335 19.6	S57 05.8
Acrux	172 58.6	S63 15.1
Adhara	255 05.3	S29 00.5
Al Na'ir	027 31.2	S46 49.7
Aldebaran	290 38.6	N16 33.7
Alioth	166 11.8	N55 49.2
Alkaid	152 50.8	N49 11.0
Alnilam	275 36.9	S01 11.1
Alphard	217 46.8	S08 46.5
Alphecca	126 02.4	N26 37.6
Alpheratz	357 33.6	N29 14.1
Altair	061 58.5	N08 56.3
Ankaa	353 06.0	S42 09.5
Antares	112 14.0	S26 29.5
Arcturus	145 46.6	N19 02.7
Atria	107 06.6	S69 04.6
Avior	234 14.8	S59 35.8
Bellatrix	278 21.9	N06 22.4
Betelgeuse	270 51.1	N07 24.7
Canopus	263 52.4	S52 42.6
Capella	280 20.6	N46 01.4
Deneb	049 24.6	N45 22.3
Denebola	182 23.7	N14 25.5
Diphda	348 46.2	S17 50.3
Dubhe	193 39.7	N61 36.7
Elnath	278 00.7	N28 37.7
Eltanin	090 41.1	N51 29.1
Enif	033 37.4	N09 59.8
Fomalhaut	015 13.1	S29 28.7
Gacrux	171 50.2	S57 16.0
Gienah	175 42.3	S17 41.5
Hadar	148 33.9	S60 30.3
Hamal	327 50.0	N23 35.2
Kaus Australi	083 30.5	S34 22.3
Kochab	137 19.0	N74 02.9
Markab	013 28.6	N15 20.8
Menkar	314 05.1	N04 11.6
Menkent	147 56.0	S36 30.2
Miaplacidus	221 38.7	S69 49.8
Mirfak	308 26.9	N49 57.2
Nunki	075 45.9	S26 15.8
Peacock	053 03.4	S56 38.8
Polaris	313 47.5	N89 22.3
Pollux	243 16.2	N27 57.8
Procyon	244 49.9	N05 09.4
Rasalhague	095 57.1	N12 32.4
Regulus	207 33.3	N11 50.3
Rigel	281 03.1	S08 10.2
Rigil Kentaur	139 38.2	S60 56.9
Sabik	102 01.1	S15 45.5
Schedar	349 29.8	N56 40.7
Shaula	096 08.3	S37 07.4
Sirius	258 25.5	S16 45.2
Spica	158 20.9	S11 18.1
Suhail	222 45.7	S43 32.6
Vega	080 32.0	N38 48.4
Zubenelgenubi	136 54.4	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	230 02.4	1449
Mars	308 57.9	0933
Jupiter	240 05.4	1408
Saturn	346 35.2	0704

2026 | JUNE 18 - JUNE 20

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
18	00	179 44.2	N23 24.0	136 01.1	N20 30.4	60.0	6.9	-12.2
	01	194 44.1	N23 24.0	150 27.1	N20 18.2	60.0	7.1	-12.3
	02	209 44.0	N23 24.1	164 53.1	N20 05.9	59.9	7.2	-12.4
	03	224 43.8	N23 24.1	179 19.4	N19 53.5	59.9	7.4	-12.5
	04	239 43.7	N23 24.2	193 45.7	N19 41.0	59.9	7.5	-12.6
	05	254 43.6	N23 24.2	208 12.2	N19 28.3	59.8	7.6	-12.7
	06	269 43.4	N23 24.3	222 38.9	N19 15.6	59.8	7.8	-12.8
	07	284 43.3	N23 24.3	237 05.6	N19 02.8	59.7	7.9	-12.9
	08	299 43.2	N23 24.4	251 32.5	N18 49.9	59.7	8.0	-13.0
	09	314 43.0	N23 24.4	265 59.6	N18 36.9	59.7	8.2	-13.1
	10	329 42.9	N23 24.5	280 26.8	N18 23.7	59.6	8.3	-13.2
	11	344 42.7	N23 24.6	294 54.1	N18 10.5	59.6	8.5	-13.3
	12	359 42.6	N23 24.6	309 21.6	N17 57.2	59.6	8.6	-13.4
	13	014 42.5	N23 24.6	323 49.1	N17 43.9	59.5	8.7	-13.5
	14	029 42.3	N23 24.7	338 16.9	N17 30.4	59.5	8.9	-13.5
	15	044 42.2	N23 24.7	352 44.7	N17 16.8	59.5	9.0	-13.6
	16	059 42.1	N23 24.8	007 12.7	N17 03.2	59.4	9.1	-13.7
	17	074 41.9	N23 24.8	021 40.8	N16 49.5	59.4	9.2	-13.8
	18	089 41.8	N23 24.9	036 09.1	N16 35.7	59.3	9.4	-13.9
	19	104 41.6	N23 24.9	050 37.4	N16 21.9	59.3	9.5	-13.9
	20	119 41.5	N23 25.0	065 05.9	N16 07.9	59.3	9.6	-14.0
	21	134 41.4	N23 25.0	079 34.6	N15 53.9	59.2	9.8	-14.1
	22	149 41.2	N23 25.1	094 03.3	N15 39.9	59.2	9.9	-14.1
	23	164 41.1	N23 25.1	108 32.2	N15 25.7	59.2	10.0	-14.2
19	00	179 41.0	N23 25.1	123 01.2	N15 11.5	59.1	10.1	-14.3
	01	194 40.8	N23 25.2	137 30.3	N14 57.3	59.1	10.2	-14.3
	02	209 40.7	N23 25.2	151 59.5	N14 43.0	59.0	10.4	-14.4
	03	224 40.5	N23 25.3	166 28.9	N14 28.6	59.0	10.5	-14.4
	04	239 40.4	N23 25.3	180 58.4	N14 14.1	59.0	10.6	-14.5
	05	254 40.3	N23 25.3	195 28.0	N13 59.6	58.9	10.7	-14.5
	06	269 40.1	N23 25.4	209 57.7	N13 45.1	58.9	10.8	-14.6
	07	284 40.0	N23 25.4	224 27.5	N13 30.5	58.8	10.9	-14.6
	08	299 39.9	N23 25.4	238 57.4	N13 15.8	58.8	11.0	-14.7
	09	314 39.7	N23 25.5	253 27.5	N13 01.1	58.8	11.2	-14.7
	10	329 39.6	N23 25.5	267 57.6	N12 46.4	58.7	11.3	-14.8
	11	344 39.4	N23 25.5	282 27.9	N12 31.6	58.7	11.4	-14.8
	12	359 39.3	N23 25.6	296 58.2	N12 16.8	58.6	11.5	-14.9
	13	014 39.2	N23 25.6	311 28.7	N12 01.9	58.6	11.6	-14.9
	14	029 39.0	N23 25.6	325 59.3	N11 47.0	58.6	11.7	-15.0
	15	044 38.9	N23 25.7	340 30.0	N11 32.0	58.5	11.8	-15.0
	16	059 38.8	N23 25.7	355 00.8	N11 17.1	58.5	11.9	-15.0
	17	074 38.6	N23 25.7	009 31.6	N11 02.0	58.4	12.0	-15.1
	18	089 38.5	N23 25.7	024 02.6	N10 47.0	58.4	12.1	-15.1
	19	104 38.4	N23 25.8	038 33.7	N10 31.9	58.4	12.2	-15.1
	20	119 38.2	N23 25.8	053 04.9	N10 16.8	58.3	12.3	-15.1
	21	134 38.1	N23 25.8	067 36.1	N10 01.6	58.3	12.4	-15.2
	22	149 37.9	N23 25.9	082 07.5	N09 46.5	58.2	12.5	-15.2
	23	164 37.8	N23 25.9	096 38.9	N09 31.3	58.2	12.5	-15.2
20	00	179 37.7	N23 25.9	111 10.5	N09 16.0	58.2	12.6	-15.2
	01	194 37.5	N23 25.9	125 42.1	N09 00.8	58.1	12.7	-15.3
	02	209 37.4	N23 25.9	140 13.8	N08 45.5	58.1	12.8	-15.3
	03	224 37.3	N23 26.0	154 45.6	N08 30.2	58.0	12.9	-15.3
	04	239 37.1	N23 26.0	169 17.5	N08 14.9	58.0	13.0	-15.3
	05	254 37.0	N23 26.0	183 49.5	N07 59.6	58.0	13.0	-15.3
	06	269 36.8	N23 26.0	198 21.5	N07 44.3	57.9	13.1	-15.4
	07	284 36.7	N23 26.0	212 53.7	N07 28.9	57.9	13.2	-15.4
	08	299 36.6	N23 26.1	227 25.9	N07 13.6	57.9	13.3	-15.4
	09	314 36.4	N23 26.1	241 58.2	N06 58.2	57.8	13.4	-15.4
	10	329 36.3	N23 26.1	256 30.5	N06 42.8	57.8	13.4	-15.4
	11	344 36.2	N23 26.1	271 03.0	N06 27.4	57.7	13.5	-15.4
	12	359 36.0	N23 26.1	285 35.5	N06 12.0	57.7	13.6	-15.4
	13	014 35.9	N23 26.1	300 08.0	N05 56.6	57.7	13.6	-15.4
	14	029 35.7	N23 26.2	314 40.7	N05 41.2	57.6	13.7	-15.4
	15	044 35.6	N23 26.2	329 13.4	N05 25.8	57.6	13.8	-15.4
	16	059 35.5	N23 26.2	343 46.2	N05 10.3	57.5	13.8	-15.4
	17	074 35.3	N23 26.2	358 19.0	N04 54.9	57.5	13.9	-15.4
	18	089 35.2	N23 26.2	012 51.9	N04 39.5	57.5	14.0	-15.4
	19	104 35.1	N23 26.2	027 24.9	N04 24.1	57.4	14.0	-15.4
	20	119 34.9	N23 26.2	041 57.9	N04 08.6	57.4	14.1	-15.4
	21	134 34.8	N23 26.2	056 31.0	N03 53.2	57.3	14.1	-15.4
	22	149 34.7	N23 26.2	071 04.2	N03 37.8	57.3	14.2	-15.4
	23	164 34.5	N23 26.2	085 37.4	N03 22.4	57.3	14.3	-15.4

Day 18 noon Sun: v -0.1 d 0.0 SD 15.7 | Moon SD 16.2

Day 19 noon Sun: v -0.1 d 0.0 SD 15.7 | Moon SD 16.0

Day 20 noon Sun: v -0.1 d 0.0 SD 15.7 | Moon SD 15.7

SUN: JUNE 19 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	0131	2232	--	--
62N	--	--	0209	2154	--	--
60N	--	0049	0236	2127	2314	--
58N	--	0140	0256	2107	2223	--
56N	--	0210	0313	2050	2153	--
54N	0045	0233	0327	2036	2130	2318
52N	0132	0251	0340	2023	2112	2231
50N	0200	0306	0350	2012	2057	2203
45N	0246	0335	0413	1950	2027	2117
40N	0316	0358	0431	1932	2005	2046
35N	0340	0416	0446	1917	1947	2023
30N	0358	0432	0459	1904	1931	2005
25N	0414	0445	0511	1852	1918	1949
20N	0427	0457	0521	1842	1906	1935
15N	0439	0507	0531	1832	1856	1924
10N	0450	0517	0540	1823	1846	1913
05N	0500	0526	0549	1814	1836	1903
00N	0509	0535	0558	1805	1828	1854
05S	0518	0544	0606	1756	1819	1845
10S	0526	0552	0615	1748	1810	1837
15S	0534	0601	0624	1739	1802	1829
20S	0542	0610	0634	1729	1753	1821
25S	0550	0619	0644	1719	1744	1812
30S	0559	0629	0655	1708	1734	1804
35S	0607	0639	0707	1655	1724	1755
40S	0617	0651	0722	1641	1712	1746
45S	0627	0704	0738	1624	1658	1736
50S	0639	0721	0759	1604	1642	1724
55S	0653	0741	0826	1536	1622	1710
60S	0710	0807	0905	1457	1555	1652

MOON: RISE / SET | UTC HHMM

Lat	Day 18		Day 19		Day 20	
72N	--	--	0654	0126	0928	0033
70N	0356	0231	0721	0056	0938	0020
68N	0507	0118	0742	0034	0947	0009
66N	0544	0040	0758	0016	0954	2346
64N	0609	0014	0811	0002	0959	2344
62N	0629	2349	0822	2346	1004	2342
60N	0645	2339	0831	2340	1009	2340
58N	0659	2330	0839	2335	1012	2338
56N	0711	2321	0846	2330	1016	2337
54N	0721	2314	0853	2326	1019	2335
52N	0730	2308	0858	2322	1021	2334
50N	0738	2302	0903	2319	1024	2333
45N	0755	2249	0914	2311	1029	2331
40N	0809	2238	0923	2305	1034	2329
35N	0820	2229	0931	2300	1037	2327
30N	0831	2221	0938	2255	1041	2325
25N	0840	2213	0944	2250	1044	2324
20N	0848	2207	0949	2246	1046	2322
15N	0856	2200	0955	2243	1049	2321
10N	0903	2154	1000	2239	1051	2320
05N	0910	2148	1004	2235	1054	2319
00N	0917	2143	1009	2232	1056	2318
05S	0924	2137	1014	2228	1059	2316
10S	0931	2131	1018	2225	1101	2315
15S	0939	2124	1023	2221	1103	2314
20S	0946	2118	1028	2217	1106	2312
25S	0954	2111	1034	2213	1109	2311
30S	1003	2103	1040	2208	1112	2309
35S	1013	2055	1046	2203	1115	2308
40S	1024	2045	1054	2157	1119	2306
45S	1038	2033	1102	2151	1123	2303
50S	1054	2019	1113	2142	1128	2301
55S	1114	2001	1125	2132	1134	2257
60S	1141	1936	1142	2118	1142	2253

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JUNE 21 - JUNE 23

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
21	00	269 12.5	137 28.3	N19 59.4	217 04.3	N18 27.9	148 58.3	N20 58.3	255 42.6	N03 14.5
	01	284 15.0	152 27.8	N19 58.6	232 05.0	N18 28.4	164 00.2	N20 58.2	270 44.9	N03 14.6
	02	299 17.4	167 27.3	N19 57.8	247 05.6	N18 28.9	179 02.1	N20 58.1	285 47.3	N03 14.6
	03	314 19.9	182 26.9	N19 57.0	262 06.2	N18 29.3	194 04.1	N20 58.0	300 49.6	N03 14.6
	04	329 22.4	197 26.4	N19 56.2	277 06.8	N18 29.8	209 06.0	N20 57.9	315 51.9	N03 14.7
	05	344 24.8	212 25.9	N19 55.4	292 07.5	N18 30.3	224 07.9	N20 57.8	330 54.2	N03 14.7
	06	359 27.3	227 25.4	N19 54.6	307 08.1	N18 30.7	239 09.8	N20 57.7	345 56.6	N03 14.8
	07	014 29.8	242 24.9	N19 53.8	322 08.7	N18 31.2	254 11.7	N20 57.6	000 58.9	N03 14.8
	08	029 32.2	257 24.5	N19 53.0	337 09.3	N18 31.7	269 13.6	N20 57.5	016 01.2	N03 14.9
	09	044 34.7	272 24.0	N19 52.2	352 10.0	N18 32.1	284 15.6	N20 57.4	031 03.6	N03 14.9
	10	059 37.2	287 23.5	N19 51.4	007 10.6	N18 32.6	299 17.5	N20 57.2	046 05.9	N03 15.0
	11	074 39.6	302 23.0	N19 50.6	022 11.2	N18 33.1	314 19.4	N20 57.1	061 08.2	N03 15.0
	12	089 42.1	317 22.6	N19 49.8	037 11.9	N18 33.5	329 21.3	N20 57.0	076 10.5	N03 15.1
	13	104 44.5	332 22.1	N19 49.0	052 12.5	N18 34.0	344 23.2	N20 56.9	091 12.9	N03 15.1
	14	119 47.0	347 21.6	N19 48.2	067 13.1	N18 34.4	359 25.1	N20 56.8	106 15.2	N03 15.1
	15	134 49.5	002 21.1	N19 47.4	082 13.7	N18 34.9	014 27.1	N20 56.7	121 17.5	N03 15.2
	16	149 51.9	017 20.7	N19 46.6	097 14.4	N18 35.4	029 29.0	N20 56.6	136 19.8	N03 15.2
	17	164 54.4	032 20.2	N19 45.7	112 15.0	N18 35.8	044 30.9	N20 56.5	151 22.2	N03 15.3
	18	179 56.9	047 19.7	N19 44.9	127 15.6	N18 36.3	059 32.8	N20 56.4	166 24.5	N03 15.3
	19	194 59.3	062 19.3	N19 44.1	142 16.2	N18 36.8	074 34.7	N20 56.3	181 26.8	N03 15.4
	20	210 01.8	077 18.8	N19 43.3	157 16.9	N18 37.2	089 36.7	N20 56.2	196 29.2	N03 15.4
	21	225 04.3	092 18.3	N19 42.5	172 17.5	N18 37.7	104 38.6	N20 56.1	211 31.5	N03 15.5
	22	240 06.7	107 17.8	N19 41.7	187 18.1	N18 38.1	119 40.5	N20 56.0	226 33.8	N03 15.5
	23	255 09.2	122 17.4	N19 40.9	202 18.7	N18 38.6	134 42.4	N20 55.9	241 36.1	N03 15.6
22	00	270 11.7	137 16.9	N19 40.1	217 19.4	N18 39.1	149 44.3	N20 55.8	256 38.5	N03 15.6
	01	285 14.1	152 16.4	N19 39.3	232 20.0	N18 39.5	164 46.2	N20 55.7	271 40.8	N03 15.6
	02	300 16.6	167 16.0	N19 38.4	247 20.6	N18 40.0	179 48.2	N20 55.6	286 43.1	N03 15.7
	03	315 19.0	182 15.5	N19 37.6	262 21.2	N18 40.4	194 50.1	N20 55.5	301 45.5	N03 15.7
	04	330 21.5	197 15.1	N19 36.8	277 21.9	N18 40.9	209 52.0	N20 55.4	316 47.8	N03 15.8
	05	345 24.0	212 14.6	N19 36.0	292 22.5	N18 41.4	224 53.9	N20 55.3	331 50.1	N03 15.8
	06	000 26.4	227 14.1	N19 35.2	307 23.1	N18 41.8	239 55.8	N20 55.2	346 52.5	N03 15.9
	07	015 28.9	242 13.7	N19 34.4	322 23.7	N18 42.3	254 57.7	N20 55.1	001 54.8	N03 15.9
	08	030 31.4	257 13.2	N19 33.5	337 24.4	N18 42.7	269 59.6	N20 55.0	016 57.1	N03 16.0
	09	045 33.8	272 12.7	N19 32.7	352 25.0	N18 43.2	285 01.6	N20 54.9	031 59.4	N03 16.0
	10	060 36.3	287 12.3	N19 31.9	007 25.6	N18 43.6	300 03.5	N20 54.8	047 01.8	N03 16.0
	11	075 38.8	302 11.8	N19 31.1	022 26.2	N18 44.1	315 05.4	N20 54.7	062 04.1	N03 16.1
	12	090 41.2	317 11.4	N19 30.2	037 26.9	N18 44.6	330 07.3	N20 54.6	077 06.4	N03 16.1
	13	105 43.7	332 10.9	N19 29.4	052 27.5	N18 45.0	345 09.2	N20 54.5	092 08.8	N03 16.2
	14	120 46.1	347 10.4	N19 28.6	067 28.1	N18 45.5	000 11.1	N20 54.4	107 11.1	N03 16.2
	15	135 48.6	002 10.0	N19 27.8	082 28.7	N18 45.9	015 13.1	N20 54.3	122 13.4	N03 16.3
	16	150 51.1	017 09.5	N19 26.9	097 29.4	N18 46.4	030 15.0	N20 54.2	137 15.8	N03 16.3
	17	165 53.5	032 09.1	N19 26.1	112 30.0	N18 46.8	045 16.9	N20 54.1	152 18.1	N03 16.4
	18	180 56.0	047 08.6	N19 25.3	127 30.6	N18 47.3	060 18.8	N20 54.0	167 20.4	N03 16.4
	19	195 58.5	062 08.2	N19 24.5	142 31.2	N18 47.7	075 20.7	N20 53.9	182 22.8	N03 16.4
	20	211 00.9	077 07.7	N19 23.6	157 31.9	N18 48.2	090 22.6	N20 53.7	197 25.1	N03 16.5
	21	226 03.4	092 07.3	N19 22.8	172 32.5	N18 48.6	105 24.6	N20 53.6	212 27.4	N03 16.5
	22	241 05.9	107 06.8	N19 22.0	187 33.1	N18 49.1	120 26.5	N20 53.5	227 29.8	N03 16.6
	23	256 08.3	122 06.4	N19 21.1	202 33.7	N18 49.5	135 28.4	N20 53.4	242 32.1	N03 16.6
23	00	271 10.8	137 05.9	N19 20.3	217 34.4	N18 50.0	150 30.3	N20 53.3	257 34.4	N03 16.7
	01	286 13.3	152 05.5	N19 19.5	232 35.0	N18 50.5	165 32.2	N20 53.2	272 36.8	N03 16.7
	02	301 15.7	167 05.0	N19 18.6	247 35.6	N18 50.9	180 34.1	N20 53.1	287 39.1	N03 16.7
	03	316 18.2	182 04.6	N19 17.8	262 36.2	N18 51.4	195 36.0	N20 53.0	302 41.4	N03 16.8
	04	331 20.6	197 04.1	N19 17.0	277 36.9	N18 51.8	210 38.0	N20 52.9	317 43.8	N03 16.8
	05	346 23.1	212 03.7	N19 16.1	292 37.5	N18 52.3	225 39.9	N20 52.8	332 46.1	N03 16.9
	06	001 25.6	227 03.2	N19 15.3	307 38.1	N18 52.7	240 41.8	N20 52.7	347 48.4	N03 16.9
	07	016 28.0	242 02.8	N19 14.4	322 38.7	N18 53.2	255 43.7	N20 52.6	002 50.8	N03 17.0
	08	031 30.5	257 02.3	N19 13.6	337 39.4	N18 53.6	270 45.6	N20 52.5	017 53.1	N03 17.0
	09	046 33.0	272 01.9	N19 12.8	352 40.0	N18 54.1	285 47.5	N20 52.4	032 55.4	N03 17.0
	10	061 35.4	287 01.5	N19 11.9	007 40.6	N18 54.5	300 49.4	N20 52.3	047 57.8	N03 17.1
	11	076 37.9	302 01.0	N19 11.1	022 41.2	N18 55.0	315 51.4	N20 52.2	063 00.1	N03 17.1
	12	091 40.4	317 00.6	N19 10.2	037 41.8	N18 55.4	330 53.3	N20 52.1	078 02.4	N03 17.2
	13	106 42.8	332 00.1	N19 09.4	052 42.5	N18 55.8	345 55.2	N20 52.0	093 04.8	N03 17.2
	14	121 45.3	346 59.7	N19 08.6	067 43.1	N18 56.3	000 57.1	N20 51.9	108 07.1	N03 17.3
	15	136 47.7	001 59.3	N19 07.7	082 43.7	N18 56.7	015 59.0	N20 51.8	123 09.4	N03 17.3
	16	151 50.2	016 58.8	N19 06.9	097 44.3	N18 57.2	031 00.9	N20 51.7	138 11.8	N03 17.3
	17	166 52.7	031 58.4	N19 06.0	112 45.0	N18 57.6	046 02.8	N20 51.6	153 14.1	N03 17.4
	18	181 55.1	046 57.9	N19 05.2	127 45.6	N18 58.1	061 04.8	N20 51.5	168 16.4	N03 17.4
	19	196 57.6	061 57.5	N19 04.3	142 46.2	N18 58.5	076 06.7	N20 51.4	183 18.8	N03 17.5
	20	212 00.1	076 57.1	N19 03.5	157 46.8	N18 59.0	091 08.6	N20 51.2	198 21.1	N03 17.5
	21	227 02.5	091 56.6	N19 02.6	172 47.5	N18 59.4	106 10.5	N20 51.1	213 23.4	N03 17.6
	22	242 05.0	106 56.2	N19 01.8	187 48.1	N18 59.9	121 12.4	N20 51.0	228 25.8	N03 17.6
	23	257 07.5	121 55.8	N19 00.9	202 48.7	N19 00.3	136 14.3	N20 50.9	243 28.1	N03 17.6

Venus	Mars	Jupiter	Saturn
21: v -0.5 d -0.8	21: v 0.6 d 0.5	21: v 1.9 d -0.1	21: v 2.3 d 0.0
22: v -0.5 d -0.8	22: v 0.6 d 0.5	22: v 1.9 d -0.1	22: v 2.3 d 0.0
23: v -0.4 d -0.8	23: v 0.6 d 0.4	23: v 1.9 d -0.1	23: v 2.3 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.2	S40 11.7
Achernar	335 19.5	S57 05.8
Acrux	172 58.7	S63 15.1
Adhara	255 05.3	S29 00.5
Al Na'ir	027 31.2	S46 49.7
Aldebaran	290 38.6	N16 33.7
Alioth	166 11.8	N55 49.2
Alkaid	152 50.8	N49 11.0
Alnilam	275 36.8	S01 11.1
Alphard	217 46.8	S08 46.5
Alphecca	126 02.4	N26 37.6
Alpheratz	357 33.5	N29 14.1
Altair	061 58.5	N08 56.3
Ankaa	353 06.0	S42 09.4
Antares	112 14.0	S26 29.5
Arcturus	145 46.6	N19 02.7
Atria	107 06.6	S69 04.6
Avior	234 14.8	S59 35.8
Bellatrix	278 21.9	N06 22.4
Betelgeuse	270 51.1	N07 24.7
Canopus	263 52.4	S52 42.6
Capella	280 20.6	N46 01.4
Deneb	049 24.6	N45 22.3
Denebola	182 23.7	N14 25.5
Diphda	348 46.2	S17 50.3
Dubhe	193 39.7	N61 36.7
Elnath	278 00.7	N28 37.7
Eltanin	090 41.1	N51 29.1
Enif	033 37.4	N09 59.8
Fomalhaut	015 13.1	S29 28.7
Gacrux	171 50.2	S57 16.0
Gienah	175 42.3	S17 41.5
Hadar	148 33.9	S60 30.3
Hamal	327 50.0	N23 35.2
Kaus Australi	083 30.5	S34 22.3
Kochab	137 19.0	N74 02.9
Markab	013 28.6	N15 20.8
Menkar	314 05.1	N04 11.6
Menkent	147 56.0	S36 30.2
Miaplacidus	221 38.7	S69 49.8
Mirfak	308 26.9	N49 57.2
Nunki	075 45.9	S26 15.8
Peacock	053 03.3	S56 38.8
Polaris	313 46.5	N89 22.3
Pollux	243 16.2	N27 57.8
Procyon	244 49.9	N05 09.4
Rasalhague	095 57.1	N12 32.4
Regulus	207 33.3	N11 50.3
Rigel	281 03.0	S08 10.2
Rigil Kentaur	139 38.2	S60 56.9
Sabik	102 01.1	S15 45.5
Schedar	349 29.8	N56 40.7
Shaula	096 08.3	S37 07.4
Sirius	258 25.5	S16 45.2
Spica	158 20.9	S11 18.1
Suhail	222 45.8	S43 32.5
Vega	080 32.0	N38 48.4
Zubenelgenubi	136 54.4	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	226 30.1	1451
Mars	306 45.6	0930
Jupiter	239 26.1	1359
Saturn	346 25.2	0652

2026 | JUNE 21 - JUNE 23

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
21	00	179 34.4	N23 26.3	100 10.6	N03 07.0	57.2	14.3	-15.4
	01	194 34.2	N23 26.3	114 43.9	N02 51.6	57.2	14.4	-15.4
	02	209 34.1	N23 26.3	129 17.3	N02 36.2	57.2	14.4	-15.4
	03	224 34.0	N23 26.3	143 50.7	N02 20.8	57.1	14.5	-15.4
	04	239 33.8	N23 26.3	158 24.2	N02 05.4	57.1	14.5	-15.4
	05	254 33.7	N23 26.3	172 57.7	N01 50.1	57.1	14.6	-15.3
	06	269 33.6	N23 26.3	187 31.2	N01 34.7	57.0	14.6	-15.3
	07	284 33.4	N23 26.3	202 04.8	N01 19.4	57.0	14.6	-15.3
	08	299 33.3	N23 26.3	216 38.5	N01 04.1	56.9	14.7	-15.3
	09	314 33.2	N23 26.3	231 12.2	N00 48.8	56.9	14.7	-15.3
	10	329 33.0	N23 26.3	245 45.9	N00 33.5	56.9	14.8	-15.3
	11	344 32.9	N23 26.3	260 19.7	N00 18.2	56.8	14.8	-15.3
	12	359 32.7	N23 26.3	274 53.5	N00 02.9	56.8	14.8	-15.2
	13	014 32.6	N23 26.3	289 27.3	S00 12.3	56.8	14.9	-15.2
	14	029 32.5	N23 26.3	304 01.2	S00 27.5	56.7	14.9	-15.2
	15	044 32.3	N23 26.3	318 35.1	S00 42.7	56.7	14.9	-15.2
	16	059 32.2	N23 26.3	333 09.0	S00 57.9	56.7	15.0	-15.1
	17	074 32.1	N23 26.2	347 43.0	S01 13.0	56.6	15.0	-15.1
	18	089 31.9	N23 26.2	002 17.0	S01 28.1	56.6	15.0	-15.1
	19	104 31.8	N23 26.2	016 51.0	S01 43.2	56.6	15.1	-15.1
	20	119 31.7	N23 26.2	031 25.1	S01 58.3	56.5	15.1	-15.0
	21	134 31.5	N23 26.2	045 59.2	S02 13.4	56.5	15.1	-15.0
	22	149 31.4	N23 26.2	060 33.3	S02 28.4	56.5	15.1	-15.0
	23	164 31.2	N23 26.2	075 07.4	S02 43.4	56.4	15.2	-15.0
22	00	179 31.1	N23 26.2	089 41.6	S02 58.4	56.4	15.2	-14.9
	01	194 31.0	N23 26.2	104 15.7	S03 13.3	56.4	15.2	-14.9
	02	209 30.8	N23 26.2	118 49.9	S03 28.2	56.3	15.2	-14.9
	03	224 30.7	N23 26.2	133 24.1	S03 43.1	56.3	15.2	-14.8
	04	239 30.6	N23 26.1	147 58.4	S03 57.9	56.3	15.2	-14.8
	05	254 30.4	N23 26.1	162 32.6	S04 12.7	56.2	15.3	-14.8
	06	269 30.3	N23 26.1	177 06.9	S04 27.5	56.2	15.3	-14.7
	07	284 30.2	N23 26.1	191 41.1	S04 42.2	56.2	15.3	-14.7
	08	299 30.0	N23 26.1	206 15.4	S04 56.9	56.1	15.3	-14.7
	09	314 29.9	N23 26.1	220 49.7	S05 11.6	56.1	15.3	-14.6
	10	329 29.7	N23 26.0	235 24.0	S05 26.2	56.1	15.3	-14.6
	11	344 29.6	N23 26.0	249 58.3	S05 40.8	56.0	15.3	-14.6
	12	359 29.5	N23 26.0	264 32.6	S05 55.4	56.0	15.3	-14.5
	13	014 29.3	N23 26.0	279 07.0	S06 09.9	56.0	15.3	-14.5
	14	029 29.2	N23 26.0	293 41.3	S06 24.4	55.9	15.3	-14.4
	15	044 29.1	N23 25.9	308 15.6	S06 38.8	55.9	15.3	-14.4
	16	059 28.9	N23 25.9	322 50.0	S06 53.2	55.9	15.3	-14.4
	17	074 28.8	N23 25.9	337 24.3	S07 07.6	55.8	15.3	-14.3
	18	089 28.7	N23 25.9	351 58.6	S07 21.9	55.8	15.3	-14.3
	19	104 28.5	N23 25.8	006 33.0	S07 36.1	55.8	15.3	-14.2
	20	119 28.4	N23 25.8	021 07.3	S07 50.3	55.8	15.3	-14.2
	21	134 28.3	N23 25.8	035 41.6	S08 04.5	55.7	15.3	-14.1
	22	149 28.1	N23 25.8	050 15.9	S08 18.6	55.7	15.3	-14.1
	23	164 28.0	N23 25.7	064 50.2	S08 32.7	55.7	15.3	-14.0
23	00	179 27.8	N23 25.7	079 24.6	S08 46.8	55.6	15.3	-14.0
	01	194 27.7	N23 25.7	093 58.9	S09 00.7	55.6	15.3	-13.9
	02	209 27.6	N23 25.7	108 33.1	S09 14.7	55.6	15.3	-13.9
	03	224 27.4	N23 25.6	123 07.4	S09 28.6	55.6	15.3	-13.8
	04	239 27.3	N23 25.6	137 41.7	S09 42.4	55.5	15.3	-13.8
	05	254 27.2	N23 25.6	152 15.9	S09 56.2	55.5	15.2	-13.7
	06	269 27.0	N23 25.5	166 50.2	S10 09.9	55.5	15.2	-13.7
	07	284 26.9	N23 25.5	181 24.4	S10 23.6	55.5	15.2	-13.6
	08	299 26.8	N23 25.5	195 58.6	S10 37.2	55.4	15.2	-13.6
	09	314 26.6	N23 25.4	210 32.8	S10 50.8	55.4	15.2	-13.5
	10	329 26.5	N23 25.4	225 07.0	S11 04.3	55.4	15.2	-13.5
	11	344 26.4	N23 25.4	239 41.2	S11 17.7	55.4	15.1	-13.4
	12	359 26.2	N23 25.3	254 15.3	S11 31.1	55.3	15.1	-13.3
	13	014 26.1	N23 25.3	268 49.4	S11 44.5	55.3	15.1	-13.3
	14	029 26.0	N23 25.2	283 23.5	S11 57.8	55.3	15.1	-13.2
	15	044 25.8	N23 25.2	297 57.6	S12 11.0	55.3	15.1	-13.2
	16	059 25.7	N23 25.2	312 31.6	S12 24.2	55.2	15.0	-13.1
	17	074 25.6	N23 25.1	327 05.7	S12 37.3	55.2	15.0	-13.0
	18	089 25.4	N23 25.1	341 39.7	S12 50.3	55.2	15.0	-13.0
	19	104 25.3	N23 25.0	356 13.6	S13 03.3	55.2	14.9	-12.9
	20	119 25.2	N23 25.0	010 47.6	S13 16.2	55.1	14.9	-12.9
	21	134 25.0	N23 25.0	025 21.5	S13 29.1	55.1	14.9	-12.8
	22	149 24.9	N23 24.9	039 55.4	S13 41.9	55.1	14.9	-12.7
	23	164 24.7	N23 24.9	054 29.3	S13 54.6	55.1	14.8	-12.7

Day 21 noon Sun: v -0.1 d 0.0 SD 15.7 | Moon SD 15.5

Day 22 noon Sun: v -0.1 d 0.0 SD 15.7 | Moon SD 15.3

Day 23 noon Sun: v -0.1 d 0.0 SD 15.7 | Moon SD 15.1

SUN: JUNE 22 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	0131	2232	--	--
62N	--	--	0210	2154	--	--
60N	--	0049	0236	2128	2314	--
58N	--	0141	0257	2107	2223	--
56N	--	0211	0313	2051	2153	--
54N	0045	0233	0328	2036	2131	2319
52N	0133	0251	0340	2024	2113	2231
50N	0201	0306	0351	2013	2058	2203
45N	0246	0336	0414	1951	2028	2118
40N	0317	0359	0432	1932	2005	2047
35N	0340	0417	0447	1917	1947	2024
30N	0359	0432	0500	1904	1932	2005
25N	0414	0445	0511	1853	1919	1950
20N	0428	0457	0522	1842	1907	1936
15N	0440	0508	0532	1833	1856	1924
10N	0451	0518	0541	1823	1846	1913
05N	0500	0527	0550	1814	1837	1904
00N	0510	0536	0558	1806	1828	1854
05S	0518	0544	0607	1757	1820	1846
10S	0527	0553	0616	1748	1811	1837
15S	0535	0602	0625	1739	1803	1829
20S	0543	0610	0634	1730	1754	1821
25S	0551	0620	0645	1719	1745	1813
30S	0559	0629	0656	1708	1735	1805
35S	0608	0640	0708	1656	1724	1756
40S	0618	0652	0722	1642	1712	1747
45S	0628	0705	0739	1625	1659	1736
50S	0640	0721	0800	1604	1643	1724
55S	0654	0741	0827	1537	1623	1710
60S	0711	0808	0906	1458	1556	1653

MOON: RISE / SET | UTC HHMM

Lat	Day 21		Day 22		Day 23	
72N	1140	2324	1347	2249	1602	2204
70N	1140	2328	1337	2302	1538	2230
68N	1140	2331	1329	2312	1520	2250
66N	1140	2334	1322	2320	1506	2306
64N	1140	2336	1317	2328	1454	2319
62N	1140	2338	1312	2334	1444	2330
60N	1140	2340	1308	2339	1436	2340
58N	1140	2341	1304	2344	1428	2348
56N	1140	2343	1301	2349	1422	2355
54N	1140	2344	1258	2352	1416	--
52N	1140	2345	1256	2356	1411	--
50N	1140	2346	1254	2359	1406	--
45N	1140	2349	1248	--	1356	0006
40N	1140	2350	1244	--	1347	0012
35N	1140	2352	1241	--	1340	0017
30N	1140	2354	1238	--	1334	0022
25N	1140	2355	1235	--	1328	0026
20N	1140	2356	1232	--	1323	0030
15N	1140	2357	1230	--	1319	0033
10N	1140	2359	1227	--	1314	0037
05N	1140	2400	1225	--	1310	0040
00N	1140	--	1223	0001	1305	0043
05S	1140	--	1221	0002	1301	0046
10S	1140	--	1219	0003	1257	0050
15S	1141	--	1216	0004	1252	0053
20S	1141	--	1214	0005	1248	0057
25S	1141	--	1211	0006	1243	0101
30S	1141	--	1209	0008	1237	0105
35S	1141	--	1206	0009	1231	0109
40S	1141	--	1202	0011	1225	0115
45S	1141	--	1159	0013	1217	0121
50S	1141	--	1154	0015	1208	0128
55S	1141	--	1148	0018	1156	0138
60S	1142	--	1141	0022	1141	0150

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JUNE 24 - JUNE 26

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
24	00	272 09.9	136 55.3	N19 00.1	217 49.3	N19 00.8	151 16.2	N20 50.8	258 30.4	N03 17.7
	01	287 12.4	151 54.9	N18 59.2	232 50.0	N19 01.2	166 18.2	N20 50.7	273 32.8	N03 17.7
	02	302 14.9	166 54.5	N18 58.4	247 50.6	N19 01.6	181 20.1	N20 50.6	288 35.1	N03 17.8
	03	317 17.3	181 54.0	N18 57.5	262 51.2	N19 02.1	196 22.0	N20 50.5	303 37.5	N03 17.8
	04	332 19.8	196 53.6	N18 56.7	277 51.8	N19 02.5	211 23.9	N20 50.4	318 39.8	N03 17.9
	05	347 22.2	211 53.2	N18 55.8	292 52.4	N19 03.0	226 25.8	N20 50.3	333 42.1	N03 17.9
	06	002 24.7	226 52.8	N18 54.9	307 53.1	N19 03.4	241 27.7	N20 50.2	348 44.5	N03 17.9
	07	017 27.2	241 52.3	N18 54.1	322 53.7	N19 03.9	256 29.6	N20 50.1	003 46.8	N03 18.0
	08	032 29.6	256 51.9	N18 53.2	337 54.3	N19 04.3	271 31.6	N20 50.0	018 49.1	N03 18.0
	09	047 32.1	271 51.5	N18 52.4	352 54.9	N19 04.7	286 33.5	N20 49.9	033 51.5	N03 18.1
	10	062 34.6	286 51.0	N18 51.5	007 55.6	N19 05.2	301 35.4	N20 49.8	048 53.8	N03 18.1
	11	077 37.0	301 50.6	N18 50.6	022 56.2	N19 05.6	316 37.3	N20 49.7	063 56.2	N03 18.1
	12	092 39.5	316 50.2	N18 49.8	037 56.8	N19 06.1	331 39.2	N20 49.6	078 58.5	N03 18.2
	13	107 42.0	331 49.8	N18 48.9	052 57.4	N19 06.5	346 41.1	N20 49.5	094 00.8	N03 18.2
	14	122 44.4	346 49.4	N18 48.1	067 58.0	N19 06.9	001 43.0	N20 49.4	109 03.2	N03 18.3
	15	137 46.9	001 48.9	N18 47.2	082 58.7	N19 07.4	016 44.9	N20 49.2	124 05.5	N03 18.3
	16	152 49.4	016 48.5	N18 46.3	097 59.3	N19 07.8	031 46.9	N20 49.1	139 07.8	N03 18.3
	17	167 51.8	031 48.1	N18 45.5	112 59.9	N19 08.3	046 48.8	N20 49.0	154 10.2	N03 18.4
	18	182 54.3	046 47.7	N18 44.6	128 00.5	N19 08.7	061 50.7	N20 48.9	169 12.5	N03 18.4
	19	197 56.7	061 47.3	N18 43.7	143 01.2	N19 09.1	076 52.6	N20 48.8	184 14.9	N03 18.5
	20	212 59.2	076 46.8	N18 42.9	158 01.8	N19 09.6	091 54.5	N20 48.7	199 17.2	N03 18.5
	21	228 01.7	091 46.4	N18 42.0	173 02.4	N19 10.0	106 56.4	N20 48.6	214 19.5	N03 18.6
	22	243 04.1	106 46.0	N18 41.1	188 03.0	N19 10.4	121 58.3	N20 48.5	229 21.9	N03 18.6
	23	258 06.6	121 45.6	N18 40.3	203 03.6	N19 10.9	137 00.2	N20 48.4	244 24.2	N03 18.6
25	00	273 09.1	136 45.2	N18 39.4	218 04.3	N19 11.3	152 02.2	N20 48.3	259 26.6	N03 18.7
	01	288 11.5	151 44.8	N18 38.5	233 04.9	N19 11.8	167 04.1	N20 48.2	274 28.9	N03 18.7
	02	303 14.0	166 44.3	N18 37.6	248 05.5	N19 12.2	182 06.0	N20 48.1	289 31.2	N03 18.8
	03	318 16.5	181 43.9	N18 36.8	263 06.1	N19 12.6	197 07.9	N20 48.0	304 33.6	N03 18.8
	04	333 18.9	196 43.5	N18 35.9	278 06.8	N19 13.1	212 09.8	N20 47.9	319 35.9	N03 18.8
	05	348 21.4	211 43.1	N18 35.0	293 07.4	N19 13.5	227 11.7	N20 47.8	334 38.3	N03 18.9
	06	003 23.9	226 42.7	N18 34.1	308 08.0	N19 13.9	242 13.6	N20 47.7	349 40.6	N03 18.9
	07	018 26.3	241 42.3	N18 33.3	323 08.6	N19 14.4	257 15.5	N20 47.6	004 42.9	N03 19.0
	08	033 28.8	256 41.9	N18 32.4	338 09.2	N19 14.8	272 17.5	N20 47.4	019 45.3	N03 19.0
	09	048 31.2	271 41.5	N18 31.5	353 09.9	N19 15.2	287 19.4	N20 47.3	034 47.6	N03 19.0
	10	063 33.7	286 41.1	N18 30.6	008 10.5	N19 15.7	302 21.3	N20 47.2	049 50.0	N03 19.1
	11	078 36.2	301 40.6	N18 29.7	023 11.1	N19 16.1	317 23.2	N20 47.1	064 52.3	N03 19.1
	12	093 38.6	316 40.2	N18 28.9	038 11.7	N19 16.5	332 25.1	N20 47.0	079 54.6	N03 19.2
	13	108 41.1	331 39.8	N18 28.0	053 12.3	N19 17.0	347 27.0	N20 46.9	094 57.0	N03 19.2
	14	123 43.6	346 39.4	N18 27.1	068 13.0	N19 17.4	002 28.9	N20 46.8	109 59.3	N03 19.2
	15	138 46.0	001 39.0	N18 26.2	083 13.6	N19 17.8	017 30.8	N20 46.7	125 01.7	N03 19.3
	16	153 48.5	016 38.6	N18 25.3	098 14.2	N19 18.3	032 32.7	N20 46.6	140 04.0	N03 19.3
	17	168 51.0	031 38.2	N18 24.5	113 14.8	N19 18.7	047 34.7	N20 46.5	155 06.3	N03 19.4
	18	183 53.4	046 37.8	N18 23.6	128 15.5	N19 19.1	062 36.6	N20 46.4	170 08.7	N03 19.4
	19	198 55.9	061 37.4	N18 22.7	143 16.1	N19 19.5	077 38.5	N20 46.3	185 11.0	N03 19.4
	20	213 58.3	076 37.0	N18 21.8	158 16.7	N19 20.0	092 40.4	N20 46.2	200 13.4	N03 19.5
	21	229 00.8	091 36.6	N18 20.9	173 17.3	N19 20.4	107 42.3	N20 46.1	215 15.7	N03 19.5
	22	244 03.3	106 36.2	N18 20.0	188 17.9	N19 20.8	122 44.2	N20 46.0	230 18.1	N03 19.5
	23	259 05.7	121 35.8	N18 19.1	203 18.6	N19 21.3	137 46.1	N20 45.9	245 20.4	N03 19.6
26	00	274 08.2	136 35.4	N18 18.2	218 19.2	N19 21.7	152 48.0	N20 45.7	260 22.7	N03 19.6
	01	289 10.7	151 35.0	N18 17.4	233 19.8	N19 22.1	167 49.9	N20 45.6	275 25.1	N03 19.7
	02	304 13.1	166 34.6	N18 16.5	248 20.4	N19 22.6	182 51.9	N20 45.5	290 27.4	N03 19.7
	03	319 15.6	181 34.2	N18 15.6	263 21.0	N19 23.0	197 53.8	N20 45.4	305 29.8	N03 19.7
	04	334 18.1	196 33.8	N18 14.7	278 21.7	N19 23.4	212 55.7	N20 45.3	320 32.1	N03 19.8
	05	349 20.5	211 33.4	N18 13.8	293 22.3	N19 23.8	227 57.6	N20 45.2	335 34.5	N03 19.8
	06	004 23.0	226 33.0	N18 12.9	308 22.9	N19 24.3	242 59.5	N20 45.1	350 36.8	N03 19.9
	07	019 25.5	241 32.6	N18 12.0	323 23.5	N19 24.7	258 01.4	N20 45.0	005 39.2	N03 19.9
	08	034 27.9	256 32.3	N18 11.1	338 24.1	N19 25.1	273 03.3	N20 44.9	020 41.5	N03 19.9
	09	049 30.4	271 31.9	N18 10.2	353 24.8	N19 25.5	288 05.2	N20 44.8	035 43.8	N03 20.0
	10	064 32.8	286 31.5	N18 09.3	008 25.4	N19 26.0	303 07.1	N20 44.7	050 46.2	N03 20.0
	11	079 35.3	301 31.1	N18 08.4	023 26.0	N19 26.4	318 09.0	N20 44.6	065 48.5	N03 20.0
	12	094 37.8	316 30.7	N18 07.5	038 26.6	N19 26.8	333 11.0	N20 44.5	080 50.9	N03 20.1
	13	109 40.2	331 30.3	N18 06.6	053 27.2	N19 27.2	348 12.9	N20 44.4	095 53.2	N03 20.1
	14	124 42.7	346 29.9	N18 05.7	068 27.9	N19 27.7	003 14.8	N20 44.2	110 55.6	N03 20.2
	15	139 45.2	001 29.5	N18 04.8	083 28.5	N19 28.1	018 16.7	N20 44.1	125 57.9	N03 20.2
	16	154 47.6	016 29.1	N18 03.9	098 29.1	N19 28.5	033 18.6	N20 44.0	141 00.3	N03 20.2
	17	169 50.1	031 28.8	N18 03.0	113 29.7	N19 28.9	048 20.5	N20 43.9	156 02.6	N03 20.3
	18	184 52.6	046 28.4	N18 02.1	128 30.3	N19 29.4	063 22.4	N20 43.8	171 04.9	N03 20.3
	19	199 55.0	061 28.0	N18 01.2	143 31.0	N19 29.8	078 24.3	N20 43.7	186 07.3	N03 20.4
	20	214 57.5	076 27.6	N18 00.3	158 31.6	N19 30.2	093 26.2	N20 43.6	201 09.6	N03 20.4
	21	230 00.0	091 27.2	N17 59.4	173 32.2	N19 30.6	108 28.1	N20 43.5	216 12.0	N03 20.4
	22	245 02.4	106 26.8	N17 58.5	188 32.8	N19 31.0	123 30.1	N20 43.4	231 14.3	N03 20.5
	23	260 04.9	121 26.5	N17 57.6	203 33.4	N19 31.5	138 32.0	N20 43.3	246 16.7	N03 20.5

Venus	Mars	Jupiter	Saturn
24: v -0.4 d -0.9	24: v 0.6 d 0.4	24: v 1.9 d -0.1	24: v 2.3 d 0.0
25: v -0.4 d -0.9	25: v 0.6 d 0.4	25: v 1.9 d -0.1	25: v 2.3 d 0.0
26: v -0.4 d -0.9	26: v 0.6 d 0.4	26: v 1.9 d -0.1	26: v 2.3 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.2	S40 11.7
Achernar	335 19.5	S57 05.8
Acrux	172 58.7	S63 15.1
Adhara	255 05.3	S29 00.5
Al Na'ir	027 31.2	S46 49.7
Aldebaran	290 38.6	N16 33.7
Alioth	166 11.8	N55 49.2
Alkaid	152 50.8	N49 11.0
Alnilam	275 36.8	S01 11.1
Alphard	217 46.8	S08 46.5
Alphecca	126 02.4	N26 37.6
Alpheratz	357 33.5	N29 14.1
Altair	061 58.5	N08 56.3
Ankaa	353 06.0	S42 09.4
Antares	112 14.0	S26 29.5
Arcturus	145 46.6	N19 02.7
Atria	107 06.6	S69 04.6
Avior	234 14.8	S59 35.8
Bellatrix	278 21.9	N06 22.4
Betelgeuse	270 51.1	N07 24.7
Canopus	263 52.4	S52 42.6
Capella	280 20.6	N46 01.4
Deneb	049 24.6	N45 22.4
Denebola	182 23.8	N14 25.5
Diphda	348 46.1	S17 50.3
Dubhe	193 39.8	N61 36.7
Elnath	278 00.7	N28 37.7
Eltanin	090 41.1	N51 29.1
Enif	033 37.4	N09 59.8
Fomalhaut	015 13.1	S29 28.7
Gacrux	171 50.2	S57 16.0
Gienah	175 42.3	S17 41.5
Hadar	148 34.0	S60 30.3
Hamal	327 50.0	N23 35.2
Kaus Australi	083 30.5	S34 22.3
Kochab	137 19.1	N74 03.0
Markab	013 28.6	N15 20.8
Menkar	314 05.1	N04 11.6
Menkent	147 56.0	S36 30.2
Miaplacidus	221 38.7	S69 49.8
Mirfak	308 26.9	N49 57.2
Nunki	075 45.9	S26 15.8
Peacock	053 03.3	S56 38.8
Polaris	313 45.2	N89 22.3
Pollux	243 16.2	N27 57.8
Procyon	244 49.9	N05 09.4
Rasalhague	095 57.1	N12 32.5
Regulus	207 33.3	N11 50.3
Rigel	281 03.0	S08 10.2
Rigil Kentaur	139 38.2	S60 56.9
Sabik	102 01.1	S15 45.5
Schedar	349 29.7	N56 40.7
Shaula	096 08.3	S37 07.4
Sirius	258 25.5	S16 45.2
Spica	158 20.9	S11 18.1
Suhail	222 45.8	S43 32.5
Vega	080 32.0	N38 48.5
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	223 01.6	1453
Mars	304 33.1	0927
Jupiter	238 46.5	1350
Saturn	346 16.0	0641

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
24	00	179 24.6	N23 24.8	069 03.1	S14 07.3	55.0	14.8	-12.6
	01	194 24.5	N23 24.8	083 36.9	S14 19.9	55.0	14.8	-12.5
	02	209 24.3	N23 24.7	098 10.7	S14 32.4	55.0	14.7	-12.5
	03	224 24.2	N23 24.7	112 44.4	S14 44.9	55.0	14.7	-12.4
	04	239 24.1	N23 24.6	127 18.1	S14 57.3	55.0	14.7	-12.3
	05	254 23.9	N23 24.6	141 51.8	S15 09.6	54.9	14.6	-12.3
	06	269 23.8	N23 24.5	156 25.4	S15 21.9	54.9	14.6	-12.2
	07	284 23.7	N23 24.5	170 59.0	S15 34.1	54.9	14.6	-12.1
	08	299 23.5	N23 24.4	185 32.5	S15 46.2	54.9	14.5	-12.0
	09	314 23.4	N23 24.4	200 06.0	S15 58.2	54.9	14.5	-12.0
	10	329 23.3	N23 24.3	214 39.5	S16 10.2	54.8	14.4	-11.9
	11	344 23.1	N23 24.3	229 12.9	S16 22.1	54.8	14.4	-11.8
	12	359 23.0	N23 24.2	243 46.3	S16 33.9	54.8	14.4	-11.8
	13	014 22.9	N23 24.2	258 19.7	S16 45.7	54.8	14.3	-11.7
	14	029 22.7	N23 24.1	272 53.0	S16 57.4	54.8	14.3	-11.6
	15	044 22.6	N23 24.1	287 26.3	S17 09.0	54.7	14.2	-11.5
	16	059 22.5	N23 24.0	301 59.5	S17 20.5	54.7	14.2	-11.4
	17	074 22.3	N23 23.9	316 32.7	S17 31.9	54.7	14.1	-11.4
	18	089 22.2	N23 23.9	331 05.8	S17 43.3	54.7	14.1	-11.3
	19	104 22.1	N23 23.8	345 38.9	S17 54.6	54.7	14.0	-11.2
	20	119 21.9	N23 23.8	000 12.0	S18 05.8	54.6	14.0	-11.1
	21	134 21.8	N23 23.7	014 45.0	S18 16.9	54.6	14.0	-11.0
	22	149 21.7	N23 23.6	029 17.9	S18 27.9	54.6	13.9	-11.0
	23	164 21.5	N23 23.6	043 50.8	S18 38.9	54.6	13.9	-10.9
25	00	179 21.4	N23 23.5	058 23.7	S18 49.8	54.6	13.8	-10.8
	01	194 21.3	N23 23.5	072 56.5	S19 00.6	54.6	13.8	-10.7
	02	209 21.1	N23 23.4	087 29.3	S19 11.3	54.6	13.7	-10.6
	03	224 21.0	N23 23.3	102 02.0	S19 21.9	54.5	13.7	-10.5
	04	239 20.9	N23 23.3	116 34.6	S19 32.4	54.5	13.6	-10.5
	05	254 20.7	N23 23.2	131 07.3	S19 42.9	54.5	13.6	-10.4
	06	269 20.6	N23 23.1	145 39.8	S19 53.3	54.5	13.5	-10.3
	07	284 20.5	N23 23.1	160 12.3	S20 03.5	54.5	13.5	-10.2
	08	299 20.3	N23 23.0	174 44.8	S20 13.7	54.5	13.4	-10.1
	09	314 20.2	N23 22.9	189 17.2	S20 23.8	54.4	13.4	-10.0
	10	329 20.1	N23 22.9	203 49.6	S20 33.8	54.4	13.3	-9.9
	11	344 19.9	N23 22.8	218 21.9	S20 43.7	54.4	13.2	-9.8
	12	359 19.8	N23 22.7	232 54.1	S20 53.6	54.4	13.2	-9.7
	13	014 19.7	N23 22.6	247 26.3	S21 03.3	54.4	13.1	-9.6
	14	029 19.6	N23 22.6	261 58.4	S21 12.9	54.4	13.1	-9.5
	15	044 19.4	N23 22.5	276 30.5	S21 22.5	54.4	13.0	-9.4
	16	059 19.3	N23 22.4	291 02.6	S21 31.9	54.4	13.0	-9.3
	17	074 19.2	N23 22.3	305 34.6	S21 41.3	54.3	12.9	-9.3
	18	089 19.0	N23 22.3	320 06.5	S21 50.5	54.3	12.9	-9.2
	19	104 18.9	N23 22.2	334 38.4	S21 59.7	54.3	12.8	-9.1
	20	119 18.8	N23 22.1	349 10.2	S22 08.7	54.3	12.8	-9.0
	21	134 18.6	N23 22.0	003 41.9	S22 17.7	54.3	12.7	-8.9
	22	149 18.5	N23 22.0	018 13.6	S22 26.5	54.3	12.7	-8.8
	23	164 18.4	N23 21.9	032 45.3	S22 35.3	54.3	12.6	-8.7
26	00	179 18.2	N23 21.8	047 16.9	S22 44.0	54.3	12.5	-8.6
	01	194 18.1	N23 21.7	061 48.4	S22 52.5	54.2	12.5	-8.5
	02	209 18.0	N23 21.6	076 19.9	S23 01.0	54.2	12.4	-8.3
	03	224 17.8	N23 21.6	090 51.3	S23 09.3	54.2	12.4	-8.2
	04	239 17.7	N23 21.5	105 22.7	S23 17.6	54.2	12.3	-8.1
	05	254 17.6	N23 21.4	119 54.0	S23 25.7	54.2	12.3	-8.0
	06	269 17.4	N23 21.3	134 25.3	S23 33.7	54.2	12.2	-7.9
	07	284 17.3	N23 21.2	148 56.5	S23 41.7	54.2	12.2	-7.8
	08	299 17.2	N23 21.1	163 27.7	S23 49.5	54.2	12.1	-7.7
	09	314 17.1	N23 21.1	177 58.8	S23 57.2	54.2	12.0	-7.6
	10	329 16.9	N23 21.0	192 29.8	S24 04.8	54.2	12.0	-7.5
	11	344 16.8	N23 20.9	207 00.8	S24 12.3	54.2	11.9	-7.4
	12	359 16.7	N23 20.8	221 31.8	S24 19.7	54.1	11.9	-7.3
	13	014 16.5	N23 20.7	236 02.6	S24 27.0	54.1	11.8	-7.2
	14	029 16.4	N23 20.6	250 33.5	S24 34.1	54.1	11.8	-7.1
	15	044 16.3	N23 20.5	265 04.3	S24 41.2	54.1	11.7	-6.9
	16	059 16.1	N23 20.4	279 35.0	S24 48.1	54.1	11.7	-6.8
	17	074 16.0	N23 20.3	294 05.7	S24 54.9	54.1	11.6	-6.7
	18	089 15.9	N23 20.3	308 36.3	S25 01.7	54.1	11.6	-6.6
	19	104 15.7	N23 20.2	323 06.8	S25 08.3	54.1	11.5	-6.5
	20	119 15.6	N23 20.1	337 37.4	S25 14.7	54.1	11.5	-6.4
	21	134 15.5	N23 20.0	352 07.8	S25 21.1	54.1	11.4	-6.2
	22	149 15.4	N23 19.9	006 38.2	S25 27.4	54.1	11.4	-6.1
	23	164 15.2	N23 19.8	021 08.6	S25 33.5	54.1	11.3	-6.0

Day 24 noon Sun: v -0.1 d -0.1 SD 15.7 | Moon SD 14.9

Day 25 noon Sun: v -0.1 d -0.1 SD 15.7 | Moon SD 14.8

Day 26 noon Sun: v -0.1 d -0.1 SD 15.7 | Moon SD 14.8

SUN: JUNE 25 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	0133	2231	--	--
62N	--	--	0211	2154	--	--
60N	--	0052	0237	2128	2312	--
58N	--	0142	0258	2107	2223	--
56N	--	0212	0315	2051	2153	--
54N	0048	0234	0329	2036	2131	2317
52N	0134	0252	0341	2024	2113	2231
50N	0202	0307	0352	2013	2058	2203
45N	0247	0337	0414	1951	2028	2118
40N	0318	0400	0432	1933	2006	2047
35N	0341	0418	0447	1918	1948	2024
30N	0400	0433	0500	1905	1932	2006
25N	0415	0446	0512	1853	1919	1950
20N	0429	0458	0523	1843	1907	1937
15N	0441	0509	0532	1833	1857	1925
10N	0451	0518	0541	1824	1847	1914
05N	0501	0528	0550	1815	1838	1904
00N	0510	0536	0559	1806	1829	1855
05S	0519	0545	0608	1758	1820	1846
10S	0527	0554	0616	1749	1812	1838
15S	0535	0602	0625	1740	1803	1830
20S	0543	0611	0635	1730	1754	1822
25S	0552	0620	0645	1720	1745	1814
30S	0600	0630	0656	1709	1736	1805
35S	0609	0640	0709	1657	1725	1757
40S	0618	0652	0723	1643	1713	1747
45S	0628	0706	0740	1626	1700	1737
50S	0640	0722	0800	1605	1644	1725
55S	0654	0742	0827	1538	1624	1711
60S	0711	0808	0906	1459	1557	1654

MOON: RISE / SET | UTC HHMM

Lat	Day 24		Day 25		Day 26	
72N	--	--	--	--	--	--
70N	1804	2135	--	--	--	--
68N	1723	2217	--	--	--	--
66N	1656	2246	1905	2212	--	--
64N	1635	2308	1824	2253	2038	2218
62N	1618	2326	1756	2322	1940	2317
60N	1604	2341	1735	2344	1907	2351
58N	1552	2353	1718	--	1842	0001
56N	1542	--	1703	0004	1823	0017
54N	1533	0002	1651	0014	1807	0030
52N	1525	0008	1640	0022	1753	0041
50N	1518	0013	1630	0030	1741	0051
45N	1503	0025	1610	0047	1716	0113
40N	1450	0035	1553	0100	1656	0130
35N	1440	0043	1540	0112	1639	0145
30N	1431	0051	1528	0122	1625	0157
25N	1422	0058	1517	0132	1612	0209
20N	1415	0104	1507	0140	1601	0219
15N	1408	0110	1458	0148	1550	0229
10N	1401	0115	1450	0155	1540	0238
05N	1355	0121	1442	0203	1530	0247
00N	1349	0126	1434	0210	1521	0256
05S	1342	0131	1425	0217	1511	0305
10S	1336	0137	1417	0225	1502	0314
15S	1329	0142	1409	0232	1452	0323
20S	1322	0148	1400	0240	1441	0333
25S	1315	0154	1351	0249	1430	0344
30S	1307	0201	1340	0258	1417	0355
35S	1258	0209	1329	0309	1404	0408
40S	1248	0218	1316	0321	1348	0424
45S	1237	0228	1300	0335	1329	0442
50S	1223	0241	1241	0353	1305	0504
55S	1205	0256	1217	0416	1234	0534
60S	1142	0318	1144	0447	1149	0618

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JUNE 27 - JUNE 29

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
27	00	275 07.3	136 26.1	N17 56.7	218 34.1	N19 31.9	153 33.9	N20 43.2	261 19.0	N03 20.5
	01	290 09.8	151 25.7	N17 55.8	233 34.7	N19 32.3	168 35.8	N20 43.1	276 21.4	N03 20.6
	02	305 12.3	166 25.3	N17 54.9	248 35.3	N19 32.7	183 37.7	N20 43.0	291 23.7	N03 20.6
	03	320 14.7	181 24.9	N17 54.0	263 35.9	N19 33.1	198 39.6	N20 42.8	306 26.1	N03 20.7
	04	335 17.2	196 24.6	N17 53.0	278 36.5	N19 33.6	213 41.5	N20 42.7	321 28.4	N03 20.7
	05	350 19.7	211 24.2	N17 52.1	293 37.2	N19 34.0	228 43.4	N20 42.6	336 30.8	N03 20.7
	06	005 22.1	226 23.8	N17 51.2	308 37.8	N19 34.4	243 45.3	N20 42.5	351 33.1	N03 20.8
	07	020 24.6	241 23.4	N17 50.3	323 38.4	N19 34.8	258 47.2	N20 42.4	006 35.4	N03 20.8
	08	035 27.1	256 23.1	N17 49.4	338 39.0	N19 35.2	273 49.2	N20 42.3	021 37.8	N03 20.8
	09	050 29.5	271 22.7	N17 48.5	353 39.6	N19 35.6	288 51.1	N20 42.2	036 40.1	N03 20.9
	10	065 32.0	286 22.3	N17 47.6	008 40.3	N19 36.1	303 53.0	N20 42.1	051 42.5	N03 20.9
	11	080 34.5	301 21.9	N17 46.7	023 40.9	N19 36.5	318 54.9	N20 42.0	066 44.8	N03 20.9
	12	095 36.9	316 21.6	N17 45.7	038 41.5	N19 36.9	333 56.8	N20 41.9	081 47.2	N03 21.0
	13	110 39.4	331 21.2	N17 44.8	053 42.1	N19 37.3	348 58.7	N20 41.8	096 49.5	N03 21.0
	14	125 41.8	346 20.8	N17 43.9	068 42.7	N19 37.7	004 00.6	N20 41.7	111 51.9	N03 21.1
	15	140 44.3	001 20.5	N17 43.0	083 43.3	N19 38.1	019 02.5	N20 41.5	126 54.2	N03 21.1
	16	155 46.8	016 20.1	N17 42.1	098 44.0	N19 38.6	034 04.4	N20 41.4	141 56.6	N03 21.1
	17	170 49.2	031 19.7	N17 41.2	113 44.6	N19 39.0	049 06.3	N20 41.3	156 58.9	N03 21.2
	18	185 51.7	046 19.3	N17 40.2	128 45.2	N19 39.4	064 08.2	N20 41.2	172 01.3	N03 21.2
	19	200 54.2	061 19.0	N17 39.3	143 45.8	N19 39.8	079 10.2	N20 41.1	187 03.6	N03 21.2
	20	215 56.6	076 18.6	N17 38.4	158 46.4	N19 40.2	094 12.1	N20 41.0	202 06.0	N03 21.3
	21	230 59.1	091 18.2	N17 37.5	173 47.1	N19 40.6	109 14.0	N20 40.9	217 08.3	N03 21.3
	22	246 01.6	106 17.9	N17 36.5	188 47.7	N19 41.0	124 15.9	N20 40.8	232 10.7	N03 21.3
	23	261 04.0	121 17.5	N17 35.6	203 48.3	N19 41.5	139 17.8	N20 40.7	247 13.0	N03 21.4
28	00	276 06.5	136 17.2	N17 34.7	218 48.9	N19 41.9	154 19.7	N20 40.6	262 15.4	N03 21.4
	01	291 08.9	151 16.8	N17 33.8	233 49.5	N19 42.3	169 21.6	N20 40.5	277 17.7	N03 21.5
	02	306 11.4	166 16.4	N17 32.8	248 50.2	N19 42.7	184 23.5	N20 40.3	292 20.1	N03 21.5
	03	321 13.9	181 16.1	N17 31.9	263 50.8	N19 43.1	199 25.4	N20 40.2	307 22.4	N03 21.5
	04	336 16.3	196 15.7	N17 31.0	278 51.4	N19 43.5	214 27.3	N20 40.1	322 24.8	N03 21.6
	05	351 18.8	211 15.3	N17 30.1	293 52.0	N19 43.9	229 29.2	N20 40.0	337 27.1	N03 21.6
	06	006 21.3	226 15.0	N17 29.1	308 52.6	N19 44.3	244 31.1	N20 39.9	352 29.5	N03 21.6
	07	021 23.7	241 14.6	N17 28.2	323 53.2	N19 44.7	259 33.1	N20 39.8	007 31.8	N03 21.7
	08	036 26.2	256 14.3	N17 27.3	338 53.9	N19 45.2	274 35.0	N20 39.7	022 34.2	N03 21.7
	09	051 28.7	271 13.9	N17 26.3	353 54.5	N19 45.6	289 36.9	N20 39.6	037 36.5	N03 21.7
	10	066 31.1	286 13.6	N17 25.4	008 55.1	N19 46.0	304 38.8	N20 39.5	052 38.9	N03 21.8
	11	081 33.6	301 13.2	N17 24.5	023 55.7	N19 46.4	319 40.7	N20 39.4	067 41.2	N03 21.8
	12	096 36.1	316 12.9	N17 23.6	038 56.3	N19 46.8	334 42.6	N20 39.3	082 43.6	N03 21.8
	13	111 38.5	331 12.5	N17 22.6	053 57.0	N19 47.2	349 44.5	N20 39.1	097 45.9	N03 21.9
	14	126 41.0	346 12.1	N17 21.7	068 57.6	N19 47.6	004 46.4	N20 39.0	112 48.3	N03 21.9
	15	141 43.4	001 11.8	N17 20.7	083 58.2	N19 48.0	019 48.3	N20 38.9	127 50.6	N03 21.9
	16	156 45.9	016 11.4	N17 19.8	098 58.8	N19 48.4	034 50.2	N20 38.8	142 53.0	N03 22.0
	17	171 48.4	031 11.1	N17 18.9	113 59.4	N19 48.8	049 52.1	N20 38.7	157 55.3	N03 22.0
	18	186 50.8	046 10.7	N17 17.9	129 00.0	N19 49.2	064 54.0	N20 38.6	172 57.7	N03 22.1
	19	201 53.3	061 10.4	N17 17.0	144 00.7	N19 49.6	079 55.9	N20 38.5	188 00.1	N03 22.1
	20	216 55.8	076 10.0	N17 16.1	159 01.3	N19 50.0	094 57.9	N20 38.4	203 02.4	N03 22.1
	21	231 58.2	091 09.7	N17 15.1	174 01.9	N19 50.5	109 59.8	N20 38.3	218 04.8	N03 22.2
	22	247 00.7	106 09.3	N17 14.2	189 02.5	N19 50.9	125 01.7	N20 38.2	233 07.1	N03 22.2
	23	262 03.2	121 09.0	N17 13.2	204 03.1	N19 51.3	140 03.6	N20 38.1	248 09.5	N03 22.2
29	00	277 05.6	136 08.6	N17 12.3	219 03.7	N19 51.7	155 05.5	N20 37.9	263 11.8	N03 22.3
	01	292 08.1	151 08.3	N17 11.4	234 04.4	N19 52.1	170 07.4	N20 37.8	278 14.2	N03 22.3
	02	307 10.6	166 08.0	N17 10.4	249 05.0	N19 52.5	185 09.3	N20 37.7	293 16.5	N03 22.3
	03	322 13.0	181 07.6	N17 09.5	264 05.6	N19 52.9	200 11.2	N20 37.6	308 18.9	N03 22.4
	04	337 15.5	196 07.3	N17 08.5	279 06.2	N19 53.3	215 13.1	N20 37.5	323 21.2	N03 22.4
	05	352 17.9	211 06.9	N17 07.6	294 06.8	N19 53.7	230 15.0	N20 37.4	338 23.6	N03 22.4
	06	007 20.4	226 06.6	N17 06.6	309 07.5	N19 54.1	245 16.9	N20 37.3	353 25.9	N03 22.5
	07	022 22.9	241 06.2	N17 05.7	324 08.1	N19 54.5	260 18.8	N20 37.2	008 28.3	N03 22.5
	08	037 25.3	256 05.9	N17 04.8	339 08.7	N19 54.9	275 20.7	N20 37.1	023 30.6	N03 22.5
	09	052 27.8	271 05.6	N17 03.8	354 09.3	N19 55.3	290 22.6	N20 37.0	038 33.0	N03 22.6
	10	067 30.3	286 05.2	N17 02.9	009 09.9	N19 55.7	305 24.5	N20 36.8	053 35.4	N03 22.6
	11	082 32.7	301 04.9	N17 01.9	024 10.5	N19 56.1	320 26.5	N20 36.7	068 37.7	N03 22.6
	12	097 35.2	316 04.6	N17 01.0	039 11.2	N19 56.5	335 28.4	N20 36.6	083 40.1	N03 22.7
	13	112 37.7	331 04.2	N17 00.0	054 11.8	N19 56.9	350 30.3	N20 36.5	098 42.4	N03 22.7
	14	127 40.1	346 03.9	N16 59.1	069 12.4	N19 57.3	005 32.2	N20 36.4	113 44.8	N03 22.7
	15	142 42.6	001 03.5	N16 58.1	084 13.0	N19 57.7	020 34.1	N20 36.3	128 47.1	N03 22.8
	16	157 45.1	016 03.2	N16 57.2	099 13.6	N19 58.1	035 36.0	N20 36.2	143 49.5	N03 22.8
	17	172 47.5	031 02.9	N16 56.2	114 14.2	N19 58.5	050 37.9	N20 36.1	158 51.8	N03 22.8
	18	187 50.0	046 02.5	N16 55.2	129 14.9	N19 58.9	065 39.8	N20 36.0	173 54.2	N03 22.9
	19	202 52.4	061 02.2	N16 54.3	144 15.5	N19 59.3	080 41.7	N20 35.8	188 56.6	N03 22.9
	20	217 54.9	076 01.9	N16 53.3	159 16.1	N19 59.7	095 43.6	N20 35.7	203 58.9	N03 22.9
	21	232 57.4	091 01.5	N16 52.4	174 16.7	N20 00.1	110 45.5	N20 35.6	219 01.3	N03 23.0
	22	247 59.8	106 01.2	N16 51.4	189 17.3	N20 00.5	125 47.4	N20 35.5	234 03.6	N03 23.0
	23	263 02.3	121 00.9	N16 50.5	204 17.9	N20 00.9	140 49.3	N20 35.4	249 06.0	N03 23.0

Venus	Mars	Jupiter	Saturn
27: v -0.4 d -0.9	27: v 0.6 d 0.4	27: v 1.9 d -0.1	27: v 2.3 d 0.0
28: v -0.4 d -0.9	28: v 0.6 d 0.4	28: v 1.9 d -0.1	28: v 2.4 d 0.0
29: v -0.3 d -0.9	29: v 0.6 d 0.4	29: v 1.9 d -0.1	29: v 2.4 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.1	S40 11.7
Achernar	335 19.5	S57 05.8
Acrux	172 58.7	S63 15.1
Adhara	255 05.3	S29 00.5
Al Na'ir	027 31.1	S46 49.7
Aldebaran	290 38.5	N16 33.7
Alioth	166 11.8	N55 49.2
Alkaid	152 50.9	N49 11.0
Alnilam	275 36.8	S01 11.1
Alphard	217 46.8	S08 46.5
Alphecca	126 02.4	N26 37.6
Alpheratz	357 33.5	N29 14.1
Altair	061 58.5	N08 56.3
Ankaa	353 06.0	S42 09.4
Antares	112 14.0	S26 29.5
Arcturus	145 46.6	N19 02.7
Atria	107 06.6	S69 04.6
Avior	234 14.8	S59 35.8
Bellatrix	278 21.9	N06 22.4
Betelgeuse	270 51.1	N07 24.7
Canopus	263 52.4	S52 42.5
Capella	280 20.6	N46 01.4
Deneb	049 24.6	N45 22.4
Denebola	182 23.8	N14 25.5
Diphda	348 46.1	S17 50.3
Dubhe	193 39.8	N61 36.7
Elnath	278 00.7	N28 37.7
Eltanin	090 41.1	N51 29.1
Enif	033 37.4	N09 59.8
Fomalhaut	015 13.0	S29 28.7
Gacrux	171 50.3	S57 16.0
Gienah	175 42.3	S17 41.5
Hadar	148 34.0	S60 30.3
Hamal	327 50.0	N23 35.2
Kaus Australi	083 30.5	S34 22.3
Kochab	137 19.1	N74 03.0
Markab	013 28.6	N15 20.8
Menkar	314 05.1	N04 11.6
Menkent	147 56.0	S36 30.2
Miaplacidus	221 38.7	S69 49.8
Mirfak	308 26.9	N49 57.1
Nunki	075 45.9	S26 15.8
Peacock	053 03.3	S56 38.8
Polaris	313 43.7	N89 22.3
Pollux	243 16.2	N27 57.8
Procyon	244 49.9	N05 09.4
Rasalhague	095 57.1	N12 32.5
Regulus	207 33.3	N11 50.3
Rigel	281 03.0	S08 10.2
Rigil Kentaur	139 38.2	S60 56.9
Sabik	102 01.0	S15 45.5
Schedar	349 29.7	N56 40.7
Shaula	096 08.3	S37 07.4
Sirius	258 25.5	S16 45.1
Spica	158 20.9	S11 18.1
Suhail	222 45.8	S43 32.5
Vega	080 32.0	N38 48.5
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	219 36.8	1455
Mars	302 20.3	0924
Jupiter	238 06.5	1341
Saturn	346 07.5	0630

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
27	00	179 15.1	N23 19.7	035 38.9	S25 39.5	54.1	11.3	-5.9
	01	194 15.0	N23 19.6	050 09.2	S25 45.4	54.1	11.2	-5.8
	02	209 14.8	N23 19.5	064 39.4	S25 51.2	54.0	11.2	-5.7
	03	224 14.7	N23 19.4	079 09.6	S25 56.8	54.0	11.1	-5.5
	04	239 14.6	N23 19.3	093 39.7	S26 02.4	54.0	11.1	-5.4
	05	254 14.5	N23 19.2	108 09.8	S26 07.8	54.0	11.0	-5.3
	06	269 14.3	N23 19.1	122 39.8	S26 13.1	54.0	11.0	-5.2
	07	284 14.2	N23 19.0	137 09.8	S26 18.2	54.0	10.9	-5.0
	08	299 14.1	N23 18.9	151 39.7	S26 23.3	54.0	10.9	-4.9
	09	314 13.9	N23 18.8	166 09.6	S26 28.2	54.0	10.8	-4.8
	10	329 13.8	N23 18.7	180 39.4	S26 33.0	54.0	10.8	-4.7
	11	344 13.7	N23 18.6	195 09.2	S26 37.7	54.0	10.8	-4.6
	12	359 13.5	N23 18.5	209 39.0	S26 42.2	54.0	10.7	-4.4
	13	014 13.4	N23 18.4	224 08.7	S26 46.7	54.0	10.7	-4.3
	14	029 13.3	N23 18.3	238 38.4	S26 51.0	54.0	10.6	-4.2
	15	044 13.2	N23 18.1	253 08.1	S26 55.1	54.0	10.6	-4.0
	16	059 13.0	N23 18.0	267 37.7	S26 59.2	54.0	10.6	-3.9
	17	074 12.9	N23 17.9	282 07.2	S27 03.1	54.0	10.5	-3.8
	18	089 12.8	N23 17.8	296 36.8	S27 06.9	54.0	10.5	-3.7
	19	104 12.6	N23 17.7	311 06.3	S27 10.5	54.0	10.5	-3.5
	20	119 12.5	N23 17.6	325 35.7	S27 14.1	54.0	10.4	-3.4
	21	134 12.4	N23 17.5	340 05.1	S27 17.5	54.0	10.4	-3.3
	22	149 12.3	N23 17.4	354 34.5	S27 20.8	54.0	10.4	-3.1
	23	164 12.1	N23 17.3	009 03.9	S27 23.9	54.0	10.3	-3.0
28	00	179 12.0	N23 17.1	023 33.2	S27 26.9	54.0	10.3	-2.9
	01	194 11.9	N23 17.0	038 02.5	S27 29.8	54.0	10.3	-2.7
	02	209 11.8	N23 16.9	052 31.8	S27 32.5	54.0	10.2	-2.6
	03	224 11.6	N23 16.8	067 01.0	S27 35.2	54.0	10.2	-2.5
	04	239 11.5	N23 16.7	081 30.3	S27 37.6	54.0	10.2	-2.4
	05	254 11.4	N23 16.6	095 59.5	S27 40.0	54.0	10.2	-2.2
	06	269 11.2	N23 16.5	110 28.6	S27 42.2	54.0	10.1	-2.1
	07	284 11.1	N23 16.3	124 57.8	S27 44.3	54.0	10.1	-2.0
	08	299 11.0	N23 16.2	139 26.9	S27 46.2	54.0	10.1	-1.8
	09	314 10.9	N23 16.1	153 56.0	S27 48.1	54.0	10.1	-1.7
	10	329 10.7	N23 16.0	168 25.1	S27 49.8	54.0	10.1	-1.6
	11	344 10.6	N23 15.9	182 54.1	S27 51.3	54.0	10.0	-1.4
	12	359 10.5	N23 15.7	197 23.2	S27 52.7	54.0	10.0	-1.3
	13	014 10.4	N23 15.6	211 52.2	S27 54.0	54.0	10.0	-1.1
	14	029 10.2	N23 15.5	226 21.2	S27 55.2	54.0	10.0	-1.0
	15	044 10.1	N23 15.4	240 50.2	S27 56.2	54.0	10.0	-0.9
	16	059 10.0	N23 15.2	255 19.2	S27 57.0	54.0	10.0	-0.7
	17	074 09.8	N23 15.1	269 48.2	S27 57.8	54.0	10.0	-0.6
	18	089 09.7	N23 15.0	284 17.1	S27 58.4	54.0	10.0	-0.5
	19	104 09.6	N23 14.9	298 46.1	S27 58.9	54.0	9.9	-0.3
	20	119 09.5	N23 14.7	313 15.0	S27 59.2	54.0	9.9	-0.2
	21	134 09.3	N23 14.6	327 44.0	S27 59.4	54.0	9.9	-0.1
	22	149 09.2	N23 14.5	342 12.9	S27 59.5	54.0	9.9	0.1
	23	164 09.1	N23 14.3	356 41.8	S27 59.4	54.0	9.9	0.2
29	00	179 09.0	N23 14.2	011 10.7	S27 59.2	54.0	9.9	0.3
	01	194 08.8	N23 14.1	025 39.7	S27 58.8	54.0	9.9	0.5
	02	209 08.7	N23 13.9	040 08.6	S27 58.4	54.0	9.9	0.6
	03	224 08.6	N23 13.8	054 37.5	S27 57.7	54.0	9.9	0.8
	04	239 08.5	N23 13.7	069 06.4	S27 57.0	54.0	9.9	0.9
	05	254 08.3	N23 13.5	083 35.4	S27 56.1	54.0	9.9	1.0
	06	269 08.2	N23 13.4	098 04.3	S27 55.1	54.0	9.9	1.2
	07	284 08.1	N23 13.3	112 33.2	S27 53.9	54.0	9.9	1.3
	08	299 08.0	N23 13.1	127 02.2	S27 52.6	54.0	10.0	1.4
	09	314 07.8	N23 13.0	141 31.1	S27 51.2	54.0	10.0	1.6
	10	329 07.7	N23 12.9	156 00.1	S27 49.6	54.0	10.0	1.7
	11	344 07.6	N23 12.7	170 29.1	S27 47.9	54.0	10.0	1.8
	12	359 07.5	N23 12.6	184 58.1	S27 46.1	54.0	10.0	2.0
	13	014 07.3	N23 12.4	199 27.1	S27 44.1	54.0	10.0	2.1
	14	029 07.2	N23 12.3	213 56.1	S27 42.0	54.1	10.0	2.2
	15	044 07.1	N23 12.2	228 25.1	S27 39.8	54.1	10.0	2.4
	16	059 07.0	N23 12.0	242 54.2	S27 37.4	54.1	10.1	2.5
	17	074 06.8	N23 11.9	257 23.2	S27 34.9	54.1	10.1	2.6
	18	089 06.7	N23 11.7	271 52.3	S27 32.2	54.1	10.1	2.8
	19	104 06.6	N23 11.6	286 21.4	S27 29.5	54.1	10.1	2.9
	20	119 06.5	N23 11.4	300 50.6	S27 26.6	54.1	10.2	3.0
	21	134 06.3	N23 11.3	315 19.7	S27 23.5	54.1	10.2	3.2
	22	149 06.2	N23 11.2	329 48.9	S27 20.3	54.1	10.2	3.3
	23	164 06.1	N23 11.0	344 18.1	S27 17.0	54.1	10.2	3.4

Day 27 noon Sun: v -0.1 d -0.1 SD 15.7 | Moon SD 14.7

Day 28 noon Sun: v -0.1 d -0.1 SD 15.7 | Moon SD 14.7

Day 29 noon Sun: v -0.1 d -0.1 SD 15.7 | Moon SD 14.7

SUN: JUNE 28 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	0137	2229	--	--
62N	--	--	0214	2152	--	--
60N	--	0057	0239	2127	2308	--
58N	--	0145	0300	2107	2221	--
56N	--	0214	0316	2050	2152	--
54N	0052	0236	0330	2036	2130	2313
52N	0136	0254	0343	2024	2112	2229
50N	0204	0309	0353	2013	2058	2202
45N	0249	0338	0416	1951	2028	2118
40N	0319	0401	0434	1933	2006	2047
35N	0342	0419	0448	1918	1948	2024
30N	0401	0434	0501	1905	1933	2006
25N	0416	0447	0513	1854	1919	1950
20N	0430	0459	0523	1843	1908	1937
15N	0441	0509	0533	1834	1857	1925
10N	0452	0519	0542	1824	1847	1915
05N	0502	0528	0551	1816	1838	1905
00N	0511	0537	0600	1807	1829	1856
05S	0520	0546	0608	1758	1821	1847
10S	0528	0554	0617	1750	1812	1839
15S	0536	0603	0626	1741	1804	1831
20S	0544	0611	0635	1731	1755	1823
25S	0552	0620	0645	1721	1746	1815
30S	0600	0630	0656	1710	1737	1806
35S	0609	0641	0709	1658	1726	1758
40S	0618	0652	0723	1644	1714	1748
45S	0629	0706	0740	1627	1701	1738
50S	0640	0722	0800	1607	1645	1727
55S	0654	0742	0827	1540	1625	1713
60S	0711	0808	0905	1501	1559	1656

MOON: RISE / SET | UTC HHMM

Lat	Day 27		Day 28		Day 29	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	--	--	--	--
62N	2129	2311	--	--	2310	--
60N	2033	--	2141	0008	2217	0047
58N	2001	0015	2104	0040	2145	0124
56N	1937	0035	2037	0105	2121	0150
54N	1917	0052	2017	0124	2102	0211
52N	1901	0106	1959	0141	2045	0228
50N	1847	0119	1944	0155	2031	0243
45N	1818	0144	1914	0224	2003	0313
40N	1756	0205	1851	0247	1940	0336
35N	1737	0222	1832	0306	1921	0356
30N	1721	0237	1815	0322	1905	0412
25N	1707	0250	1801	0336	1851	0427
20N	1655	0302	1747	0349	1838	0440
15N	1643	0313	1735	0401	1826	0452
10N	1632	0324	1723	0413	1815	0504
05N	1621	0334	1712	0424	1803	0515
00N	1610	0344	1701	0435	1753	0526
05S	1600	0355	1650	0446	1742	0537
10S	1549	0405	1639	0457	1731	0548
15S	1538	0416	1627	0508	1719	0600
20S	1526	0427	1615	0520	1707	0612
25S	1514	0439	1602	0533	1654	0625
30S	1500	0452	1547	0548	1640	0640
35S	1444	0507	1531	0604	1624	0656
40S	1426	0525	1512	0623	1605	0715
45S	1405	0546	1449	0646	1542	0738
50S	1337	0613	1419	0715	1513	0808
55S	1300	0650	1338	0756	1432	0849
60S	1201	0748	1228	0906	1323	0958

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JUNE 30 - JULY 2

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
30	00	278 04.8	136 00.6	N16 49.5	219 18.6	N20 01.3	155 51.2	N20 35.3	264 08.3	N03 23.1
	01	293 07.2	151 00.2	N16 48.6	234 19.2	N20 01.7	170 53.1	N20 35.2	279 10.7	N03 23.1
	02	308 09.7	165 59.9	N16 47.6	249 19.8	N20 02.1	185 55.0	N20 35.1	294 13.1	N03 23.1
	03	323 12.2	180 59.6	N16 46.6	264 20.4	N20 02.5	200 57.0	N20 35.0	309 15.4	N03 23.2
	04	338 14.6	195 59.2	N16 45.7	279 21.0	N20 02.9	215 58.9	N20 34.9	324 17.8	N03 23.2
	05	353 17.1	210 58.9	N16 44.7	294 21.6	N20 03.2	231 00.8	N20 34.7	339 20.1	N03 23.2
	06	008 19.6	225 58.6	N16 43.8	309 22.3	N20 03.6	246 02.7	N20 34.6	354 22.5	N03 23.3
	07	023 22.0	240 58.3	N16 42.8	324 22.9	N20 04.0	261 04.6	N20 34.5	009 24.8	N03 23.3
	08	038 24.5	255 58.0	N16 41.8	339 23.5	N20 04.4	276 06.5	N20 34.4	024 27.2	N03 23.3
	09	053 26.9	270 57.6	N16 40.9	354 24.1	N20 04.8	291 08.4	N20 34.3	039 29.6	N03 23.4
	10	068 29.4	285 57.3	N16 39.9	009 24.7	N20 05.2	306 10.3	N20 34.2	054 31.9	N03 23.4
	11	083 31.9	300 57.0	N16 38.9	024 25.3	N20 05.6	321 12.2	N20 34.1	069 34.3	N03 23.4
	12	098 34.3	315 56.7	N16 38.0	039 25.9	N20 06.0	336 14.1	N20 34.0	084 36.6	N03 23.5
	13	113 36.8	330 56.3	N16 37.0	054 26.6	N20 06.4	351 16.0	N20 33.9	099 39.0	N03 23.5
	14	128 39.3	345 56.0	N16 36.0	069 27.2	N20 06.8	006 17.9	N20 33.7	114 41.4	N03 23.5
	15	143 41.7	000 55.7	N16 35.1	084 27.8	N20 07.2	021 19.8	N20 33.6	129 43.7	N03 23.5
	16	158 44.2	015 55.4	N16 34.1	099 28.4	N20 07.6	036 21.7	N20 33.5	144 46.1	N03 23.6
	17	173 46.7	030 55.1	N16 33.1	114 29.0	N20 08.0	051 23.6	N20 33.4	159 48.4	N03 23.6
	18	188 49.1	045 54.8	N16 32.2	129 29.6	N20 08.3	066 25.5	N20 33.3	174 50.8	N03 23.6
	19	203 51.6	060 54.4	N16 31.2	144 30.3	N20 08.7	081 27.4	N20 33.2	189 53.2	N03 23.7
	20	218 54.1	075 54.1	N16 30.2	159 30.9	N20 09.1	096 29.3	N20 33.1	204 55.5	N03 23.7
	21	233 56.5	090 53.8	N16 29.3	174 31.5	N20 09.5	111 31.3	N20 33.0	219 57.9	N03 23.7
	22	248 59.0	105 53.5	N16 28.3	189 32.1	N20 09.9	126 33.2	N20 32.8	235 00.2	N03 23.8
	23	264 01.4	120 53.2	N16 27.3	204 32.7	N20 10.3	141 35.1	N20 32.7	250 02.6	N03 23.8
1	00	279 03.9	135 52.9	N16 26.3	219 33.3	N20 10.7	156 37.0	N20 32.6	265 05.0	N03 23.8
	01	294 06.4	150 52.6	N16 25.4	234 34.0	N20 11.1	171 38.9	N20 32.5	280 07.3	N03 23.9
	02	309 08.8	165 52.3	N16 24.4	249 34.6	N20 11.5	186 40.8	N20 32.4	295 09.7	N03 23.9
	03	324 11.3	180 52.0	N16 23.4	264 35.2	N20 11.8	201 42.7	N20 32.3	310 12.0	N03 23.9
	04	339 13.8	195 51.6	N16 22.4	279 35.8	N20 12.2	216 44.6	N20 32.2	325 14.4	N03 24.0
	05	354 16.2	210 51.3	N16 21.5	294 36.4	N20 12.6	231 46.5	N20 32.1	340 16.8	N03 24.0
	06	009 18.7	225 51.0	N16 20.5	309 37.0	N20 13.0	246 48.4	N20 32.0	355 19.1	N03 24.0
	07	024 21.2	240 50.7	N16 19.5	324 37.6	N20 13.4	261 50.3	N20 31.8	010 21.5	N03 24.0
	08	039 23.6	255 50.4	N16 18.5	339 38.3	N20 13.8	276 52.2	N20 31.7	025 23.8	N03 24.1
	09	054 26.1	270 50.1	N16 17.6	354 38.9	N20 14.2	291 54.1	N20 31.6	040 26.2	N03 24.1
	10	069 28.5	285 49.8	N16 16.6	009 39.5	N20 14.5	306 56.0	N20 31.5	055 28.6	N03 24.1
	11	084 31.0	300 49.5	N16 15.6	024 40.1	N20 14.9	321 57.9	N20 31.4	070 30.9	N03 24.2
	12	099 33.5	315 49.2	N16 14.6	039 40.7	N20 15.3	336 59.8	N20 31.3	085 33.3	N03 24.2
	13	114 35.9	330 48.9	N16 13.6	054 41.3	N20 15.7	352 01.7	N20 31.2	100 35.7	N03 24.2
	14	129 38.4	345 48.6	N16 12.7	069 41.9	N20 16.1	007 03.6	N20 31.1	115 38.0	N03 24.3
	15	144 40.9	000 48.3	N16 11.7	084 42.6	N20 16.5	022 05.5	N20 30.9	130 40.4	N03 24.3
	16	159 43.3	015 48.0	N16 10.7	099 43.2	N20 16.8	037 07.4	N20 30.8	145 42.7	N03 24.3
	17	174 45.8	030 47.7	N16 09.7	114 43.8	N20 17.2	052 09.3	N20 30.7	160 45.1	N03 24.4
	18	189 48.3	045 47.4	N16 08.7	129 44.4	N20 17.6	067 11.3	N20 30.6	175 47.5	N03 24.4
	19	204 50.7	060 47.1	N16 07.7	144 45.0	N20 18.0	082 13.2	N20 30.5	190 49.8	N03 24.4
	20	219 53.2	075 46.8	N16 06.7	159 45.6	N20 18.4	097 15.1	N20 30.4	205 52.2	N03 24.4
	21	234 55.7	090 46.5	N16 05.8	174 46.3	N20 18.7	112 17.0	N20 30.3	220 54.6	N03 24.5
	22	249 58.1	105 46.2	N16 04.8	189 46.9	N20 19.1	127 18.9	N20 30.2	235 56.9	N03 24.5
	23	265 00.6	120 45.9	N16 03.8	204 47.5	N20 19.5	142 20.8	N20 30.0	250 59.3	N03 24.5
2	00	280 03.0	135 45.6	N16 02.8	219 48.1	N20 19.9	157 22.7	N20 29.9	266 01.6	N03 24.6
	01	295 05.5	150 45.3	N16 01.8	234 48.7	N20 20.3	172 24.6	N20 29.8	281 04.0	N03 24.6
	02	310 08.0	165 45.0	N16 00.8	249 49.3	N20 20.6	187 26.5	N20 29.7	296 06.4	N03 24.6
	03	325 10.4	180 44.7	N15 59.8	264 49.9	N20 21.0	202 28.4	N20 29.6	311 08.7	N03 24.7
	04	340 12.9	195 44.4	N15 58.8	279 50.6	N20 21.4	217 30.3	N20 29.5	326 11.1	N03 24.7
	05	355 15.4	210 44.2	N15 57.8	294 51.2	N20 21.8	232 32.2	N20 29.4	341 13.5	N03 24.7
	06	010 17.8	225 43.9	N15 56.9	309 51.8	N20 22.2	247 34.1	N20 29.3	356 15.8	N03 24.7
	07	025 20.3	240 43.6	N15 55.9	324 52.4	N20 22.5	262 36.0	N20 29.1	011 18.2	N03 24.8
	08	040 22.8	255 43.3	N15 54.9	339 53.0	N20 22.9	277 37.9	N20 29.0	026 20.6	N03 24.8
	09	055 25.2	270 43.0	N15 53.9	354 53.6	N20 23.3	292 39.8	N20 28.9	041 22.9	N03 24.8
	10	070 27.7	285 42.7	N15 52.9	009 54.2	N20 23.7	307 41.7	N20 28.8	056 25.3	N03 24.9
	11	085 30.2	300 42.4	N15 51.9	024 54.9	N20 24.0	322 43.6	N20 28.7	071 27.7	N03 24.9
	12	100 32.6	315 42.1	N15 50.9	039 55.5	N20 24.4	337 45.5	N20 28.6	086 30.0	N03 24.9
	13	115 35.1	330 41.9	N15 49.9	054 56.1	N20 24.8	352 47.4	N20 28.5	101 32.4	N03 24.9
	14	130 37.5	345 41.6	N15 48.9	069 56.7	N20 25.2	007 49.3	N20 28.4	116 34.8	N03 25.0
	15	145 40.0	000 41.3	N15 47.9	084 57.3	N20 25.5	022 51.2	N20 28.2	131 37.1	N03 25.0
	16	160 42.5	015 41.0	N15 46.9	099 57.9	N20 25.9	037 53.1	N20 28.1	146 39.5	N03 25.0
	17	175 44.9	030 40.7	N15 45.9	114 58.5	N20 26.3	052 55.0	N20 28.0	161 41.9	N03 25.1
	18	190 47.4	045 40.4	N15 44.9	129 59.2	N20 26.7	067 56.9	N20 27.9	176 44.2	N03 25.1
	19	205 49.9	060 40.2	N15 43.9	144 59.8	N20 27.0	082 58.8	N20 27.8	191 46.6	N03 25.1
	20	220 52.3	075 39.9	N15 42.9	160 00.4	N20 27.4	098 00.7	N20 27.7	206 49.0	N03 25.1
	21	235 54.8	090 39.6	N15 41.9	175 01.0	N20 27.8	113 02.6	N20 27.6	221 51.3	N03 25.2
	22	250 57.3	105 39.3	N15 40.9	190 01.6	N20 28.2	128 04.6	N20 27.4	236 53.7	N03 25.2
	23	265 59.7	120 39.0	N15 39.9	205 02.2	N20 28.5	143 06.5	N20 27.3	251 56.1	N03 25.2

Venus	Mars	Jupiter	Saturn
30: v -0.3 d -1.0	30: v 0.6 d 0.4	30: v 1.9 d -0.1	30: v 2.4 d 0.0
1: v -0.3 d -1.0	1: v 0.6 d 0.4	1: v 1.9 d -0.1	1: v 2.4 d 0.0
2: v -0.3 d -1.0	2: v 0.6 d 0.4	2: v 1.9 d -0.1	2: v 2.4 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.1	S40 11.7
Achernar	335 19.5	S57 05.8
Acrux	172 58.7	S63 15.1
Adhara	255 05.3	S29 00.5
Al Na'ir	027 31.1	S46 49.7
Aldebaran	290 38.5	N16 33.7
Alioth	166 11.8	N55 49.2
Alkaid	152 50.9	N49 11.1
Alnilam	275 36.8	S01 11.1
Alphard	217 46.8	S08 46.5
Alphecca	126 02.4	N26 37.6
Alpheratz	357 33.5	N29 14.1
Altair	061 58.4	N08 56.3
Ankaa	353 05.9	S42 09.4
Antares	112 14.0	S26 29.5
Arcturus	145 46.6	N19 02.7
Atria	107 06.6	S69 04.6
Avior	234 14.8	S59 35.8
Bellatrix	278 21.9	N06 22.4
Betelgeuse	270 51.1	N07 24.7
Canopus	263 52.4	S52 42.5
Capella	280 20.5	N46 01.4
Deneb	049 24.6	N45 22.4
Denebola	182 23.8	N14 25.5
Diphda	348 46.1	S17 50.3
Dubhe	193 39.8	N61 36.7
Elnath	278 00.7	N28 37.7
Eltanin	090 41.1	N51 29.1
Enif	033 37.4	N09 59.8
Fomalhaut	015 13.0	S29 28.7
Gacrux	171 50.3	S57 16.0
Gienah	175 42.3	S17 41.5
Hadar	148 34.0	S60 30.3
Hamal	327 50.0	N23 35.2
Kaus Australi	083 30.5	S34 22.3
Kochab	137 19.2	N74 03.0
Markab	013 28.5	N15 20.9
Menkar	314 05.1	N04 11.7
Menkent	147 56.0	S36 30.2
Miaplacidus	221 38.8	S69 49.7
Mirfak	308 26.8	N49 57.1
Nunki	075 45.9	S26 15.8
Peacock	053 03.3	S56 38.8
Polaris	313 42.2	N89 22.3
Pollux	243 16.2	N27 57.8
Procyon	244 49.9	N05 09.4
Rasalhague	095 57.1	N12 32.5
Regulus	207 33.3	N11 50.3
Rigel	281 03.0	S08 10.2
Rigil Kentaur	139 38.2	S60 57.0
Sabik	102 01.0	S15 45.5
Schedar	349 29.6	N56 40.7
Shaula	096 08.3	S37 07.4
Sirius	258 25.5	S16 45.1
Spica	158 20.9	S11 18.1
Suhail	222 45.8	S43 32.5
Vega	080 32.0	N38 48.5
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	216 15.7	1457
Mars	300 07.2	0921
Jupiter	237 26.3	1332
Saturn	345 59.8	0619

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
30	00	179 06.0	N23 10.9	358 47.3	S27 13.6	54.1	10.3	3.6
	01	194 05.9	N23 10.7	013 16.6	S27 10.0	54.1	10.3	3.7
	02	209 05.7	N23 10.6	027 45.8	S27 06.3	54.1	10.3	3.8
	03	224 05.6	N23 10.4	042 15.2	S27 02.5	54.1	10.3	4.0
	04	239 05.5	N23 10.3	056 44.5	S26 58.5	54.1	10.4	4.1
	05	254 05.4	N23 10.1	071 13.9	S26 54.4	54.1	10.4	4.2
	06	269 05.2	N23 10.0	085 43.3	S26 50.2	54.1	10.4	4.4
	07	284 05.1	N23 09.8	100 12.7	S26 45.8	54.2	10.5	4.5
	08	299 05.0	N23 09.7	114 42.2	S26 41.3	54.2	10.5	4.6
	09	314 04.9	N23 09.5	129 11.7	S26 36.7	54.2	10.5	4.7
	10	329 04.7	N23 09.3	143 41.2	S26 32.0	54.2	10.6	4.9
	11	344 04.6	N23 09.2	158 10.8	S26 27.1	54.2	10.6	5.0
	12	359 04.5	N23 09.0	172 40.4	S26 22.1	54.2	10.7	5.1
	13	014 04.4	N23 08.9	187 10.1	S26 17.0	54.2	10.7	5.2
	14	029 04.3	N23 08.7	201 39.7	S26 11.7	54.2	10.7	5.4
	15	044 04.1	N23 08.6	216 09.5	S26 06.4	54.2	10.8	5.5
	16	059 04.0	N23 08.4	230 39.3	S26 00.9	54.2	10.8	5.6
	17	074 03.9	N23 08.2	245 09.1	S25 55.2	54.2	10.9	5.7
	18	089 03.8	N23 08.1	259 38.9	S25 49.5	54.2	10.9	5.9
	19	104 03.7	N23 07.9	274 08.8	S25 43.6	54.3	10.9	6.0
	20	119 03.5	N23 07.8	288 38.8	S25 37.6	54.3	11.0	6.1
	21	134 03.4	N23 07.6	303 08.8	S25 31.5	54.3	11.0	6.2
	22	149 03.3	N23 07.4	317 38.8	S25 25.3	54.3	11.1	6.4
	23	164 03.2	N23 07.3	332 08.9	S25 18.9	54.3	11.1	6.5
1	00	179 03.0	N23 07.1	346 39.0	S25 12.4	54.3	11.2	6.6
	01	194 02.9	N23 06.9	001 09.2	S25 05.8	54.3	11.2	6.7
	02	209 02.8	N23 06.8	015 39.4	S24 59.1	54.3	11.3	6.8
	03	224 02.7	N23 06.6	030 09.7	S24 52.3	54.3	11.3	7.0
	04	239 02.6	N23 06.4	044 40.0	S24 45.3	54.3	11.4	7.1
	05	254 02.4	N23 06.3	059 10.4	S24 38.3	54.4	11.4	7.2
	06	269 02.3	N23 06.1	073 40.8	S24 31.1	54.4	11.5	7.3
	07	284 02.2	N23 05.9	088 11.2	S24 23.8	54.4	11.5	7.4
	08	299 02.1	N23 05.8	102 41.8	S24 16.4	54.4	11.6	7.5
	09	314 02.0	N23 05.6	117 12.3	S24 08.8	54.4	11.6	7.6
	10	329 01.8	N23 05.4	131 43.0	S24 01.2	54.4	11.7	7.8
	11	344 01.7	N23 05.3	146 13.6	S23 53.4	54.4	11.7	7.9
	12	359 01.6	N23 05.1	160 44.4	S23 45.6	54.4	11.8	8.0
	13	014 01.5	N23 04.9	175 15.1	S23 37.6	54.4	11.8	8.1
	14	029 01.4	N23 04.7	189 46.0	S23 29.5	54.5	11.9	8.2
	15	044 01.2	N23 04.6	204 16.8	S23 21.3	54.5	11.9	8.3
	16	059 01.1	N23 04.4	218 47.8	S23 13.0	54.5	12.0	8.4
	17	074 01.0	N23 04.2	233 18.8	S23 04.6	54.5	12.0	8.5
	18	089 00.9	N23 04.0	247 49.8	S22 56.0	54.5	12.1	8.6
	19	104 00.8	N23 03.9	262 20.9	S22 47.4	54.5	12.1	8.7
	20	119 00.7	N23 03.7	276 52.1	S22 38.7	54.5	12.2	8.8
	21	134 00.5	N23 03.5	291 23.3	S22 29.8	54.5	12.3	8.9
	22	149 00.4	N23 03.3	305 54.5	S22 20.9	54.6	12.3	9.1
	23	164 00.3	N23 03.1	320 25.8	S22 11.8	54.6	12.4	9.2
2	00	179 00.2	N23 03.0	334 57.2	S22 02.7	54.6	12.4	9.3
	01	194 00.1	N23 02.8	349 28.6	S21 53.4	54.6	12.5	9.4
	02	208 59.9	N23 02.6	004 00.1	S21 44.1	54.6	12.5	9.5
	03	223 59.8	N23 02.4	018 31.6	S21 34.6	54.6	12.6	9.6
	04	238 59.7	N23 02.2	033 03.2	S21 25.0	54.6	12.6	9.7
	05	253 59.6	N23 02.0	047 34.8	S21 15.4	54.7	12.7	9.8
	06	268 59.5	N23 01.9	062 06.5	S21 05.6	54.7	12.7	9.9
	07	283 59.4	N23 01.7	076 38.3	S20 55.8	54.7	12.8	9.9
	08	298 59.2	N23 01.5	091 10.1	S20 45.8	54.7	12.8	10.0
	09	313 59.1	N23 01.3	105 41.9	S20 35.8	54.7	12.9	10.1
	10	328 59.0	N23 01.1	120 13.8	S20 25.7	54.7	13.0	10.2
	11	343 58.9	N23 00.9	134 45.8	S20 15.4	54.7	13.0	10.3
	12	358 58.8	N23 00.7	149 17.8	S20 05.1	54.8	13.1	10.4
	13	013 58.7	N23 00.5	163 49.8	S19 54.7	54.8	13.1	10.5
	14	028 58.5	N23 00.3	178 21.9	S19 44.2	54.8	13.2	10.6
	15	043 58.4	N23 00.2	192 54.1	S19 33.6	54.8	13.2	10.7
	16	058 58.3	N23 00.0	207 26.3	S19 22.9	54.8	13.3	10.8
	17	073 58.2	N22 59.8	221 58.6	S19 12.1	54.8	13.3	10.9
	18	088 58.1	N22 59.6	236 30.9	S19 01.3	54.8	13.4	11.0
	19	103 58.0	N22 59.4	251 03.3	S18 50.3	54.9	13.4	11.0
	20	118 57.8	N22 59.2	265 35.7	S18 39.3	54.9	13.5	11.1
	21	133 57.7	N22 59.0	280 08.2	S18 28.1	54.9	13.5	11.2
	22	148 57.6	N22 58.8	294 40.7	S18 16.9	54.9	13.6	11.3
	23	163 57.5	N22 58.6	309 13.2	S18 05.6	54.9	13.6	11.4

Day 30 noon Sun: v -0.1 d -0.2 SD 15.7 | Moon SD 14.8

Day 1 noon Sun: v -0.1 d -0.2 SD 15.7 | Moon SD 14.8

Day 2 noon Sun: v -0.1 d -0.2 SD 15.7 | Moon SD 14.9

SUN: JULY 1 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	0020	2339	--	--
64N	--	--	0141	2225	--	--
62N	--	--	0217	2150	--	--
60N	--	0103	0242	2125	2303	--
58N	--	0148	0302	2105	2218	--
56N	--	0217	0318	2049	2150	--
54N	0058	0239	0332	2035	2129	2308
52N	0140	0256	0344	2023	2111	2227
50N	0206	0311	0355	2012	2057	2201
45N	0251	0340	0417	1950	2028	2117
40N	0321	0402	0435	1933	2005	2047
35N	0344	0420	0450	1918	1948	2024
30N	0402	0435	0503	1905	1933	2006
25N	0417	0448	0514	1854	1920	1950
20N	0431	0500	0524	1843	1908	1937
15N	0442	0510	0534	1834	1858	1925
10N	0453	0520	0543	1825	1848	1915
05N	0503	0529	0552	1816	1839	1905
00N	0512	0538	0600	1808	1830	1856
05S	0520	0546	0609	1759	1822	1848
10S	0528	0555	0617	1750	1813	1839
15S	0536	0603	0626	1741	1805	1831
20S	0544	0612	0636	1732	1756	1824
25S	0552	0621	0646	1722	1747	1816
30S	0600	0630	0657	1711	1738	1807
35S	0609	0641	0709	1659	1727	1759
40S	0618	0652	0723	1645	1716	1750
45S	0628	0706	0739	1629	1702	1740
50S	0640	0721	0800	1608	1647	1728
55S	0654	0741	0826	1542	1627	1714
60S	0710	0807	0904	1504	1601	1658

MOON: RISE / SET | UTC HHMM

Lat	Day 30		Day 1		Day 2	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	0123	0219
66N	--	--	--	--	0004	0336
64N	2356	--	2327	0203	2313	0413
62N	2305	0105	2300	0254	2256	0439
60N	2233	0157	2239	0326	2242	0459
58N	2209	0229	2222	0349	2230	0516
56N	2149	0253	2208	0408	2220	0529
54N	2133	0312	2155	0424	2210	0542
52N	2119	0328	2144	0438	2202	0552
50N	2107	0342	2134	0450	2155	0601
45N	2042	0410	2113	0514	2139	0621
40N	2021	0433	2056	0534	2126	0637
35N	2005	0451	2042	0550	2114	0650
30N	1950	0507	2030	0604	2105	0702
25N	1937	0521	2018	0616	2056	0712
20N	1925	0533	2008	0628	2048	0722
15N	1914	0545	1959	0638	2040	0731
10N	1903	0556	1950	0648	2033	0739
05N	1853	0607	1941	0658	2026	0747
00N	1843	0617	1932	0707	2019	0755
05S	1833	0628	1923	0716	2012	0803
10S	1823	0638	1915	0726	2005	0811
15S	1812	0649	1905	0736	1957	0819
20S	1801	0701	1856	0746	1949	0827
25S	1749	0714	1845	0757	1941	0837
30S	1736	0727	1834	0809	1932	0847
35S	1721	0743	1821	0823	1922	0858
40S	1704	0800	1806	0838	1910	0910
45S	1643	0822	1749	0857	1856	0925
50S	1617	0849	1727	0920	1840	0944
55S	1541	0925	1658	0950	1818	1007
60S	1444	1023	1615	1034	1748	1039

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JULY 3 - JULY 5

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
3	00	281 02.2	135 38.8	N15 38.9	220 02.8	N20 28.9	158 08.4	N20 27.2	266 58.4	N03 25.3
	01	296 04.7	150 38.5	N15 37.9	235 03.4	N20 29.3	173 10.3	N20 27.1	282 00.8	N03 25.3
	02	311 07.1	165 38.2	N15 36.9	250 04.1	N20 29.6	188 12.2	N20 27.0	297 03.2	N03 25.3
	03	326 09.6	180 37.9	N15 35.9	265 04.7	N20 30.0	203 14.1	N20 26.9	312 05.5	N03 25.3
	04	341 12.0	195 37.7	N15 34.9	280 05.3	N20 30.4	218 16.0	N20 26.8	327 07.9	N03 25.4
	05	356 14.5	210 37.4	N15 33.9	295 05.9	N20 30.8	233 17.9	N20 26.7	342 10.3	N03 25.4
	06	011 17.0	225 37.1	N15 32.9	310 06.5	N20 31.1	248 19.8	N20 26.5	357 12.6	N03 25.4
	07	026 19.4	240 36.8	N15 31.9	325 07.1	N20 31.5	263 21.7	N20 26.4	012 15.0	N03 25.4
	08	041 21.9	255 36.6	N15 30.8	340 07.7	N20 31.9	278 23.6	N20 26.3	027 17.4	N03 25.5
	09	056 24.4	270 36.3	N15 29.8	355 08.4	N20 32.2	293 25.5	N20 26.2	042 19.7	N03 25.5
	10	071 26.8	285 36.0	N15 28.8	010 09.0	N20 32.6	308 27.4	N20 26.1	057 22.1	N03 25.5
	11	086 29.3	300 35.8	N15 27.8	025 09.6	N20 33.0	323 29.3	N20 26.0	072 24.5	N03 25.6
	12	101 31.8	315 35.5	N15 26.8	040 10.2	N20 33.3	338 31.2	N20 25.9	087 26.9	N03 25.6
	13	116 34.2	330 35.2	N15 25.8	055 10.8	N20 33.7	353 33.1	N20 25.7	102 29.2	N03 25.6
	14	131 36.7	345 35.0	N15 24.8	070 11.4	N20 34.1	008 35.0	N20 25.6	117 31.6	N03 25.6
	15	146 39.1	000 34.7	N15 23.8	085 12.0	N20 34.4	023 36.9	N20 25.5	132 34.0	N03 25.7
	16	161 41.6	015 34.4	N15 22.8	100 12.6	N20 34.8	038 38.8	N20 25.4	147 36.3	N03 25.7
	17	176 44.1	030 34.2	N15 21.7	115 13.3	N20 35.2	053 40.7	N20 25.3	162 38.7	N03 25.7
	18	191 46.5	045 33.9	N15 20.7	130 13.9	N20 35.5	068 42.6	N20 25.2	177 41.1	N03 25.7
	19	206 49.0	060 33.6	N15 19.7	145 14.5	N20 35.9	083 44.5	N20 25.1	192 43.4	N03 25.8
	20	221 51.5	075 33.4	N15 18.7	160 15.1	N20 36.3	098 46.4	N20 24.9	207 45.8	N03 25.8
	21	236 53.9	090 33.1	N15 17.7	175 15.7	N20 36.6	113 48.3	N20 24.8	222 48.2	N03 25.8
	22	251 56.4	105 32.8	N15 16.7	190 16.3	N20 37.0	128 50.2	N20 24.7	237 50.6	N03 25.9
	23	266 58.9	120 32.6	N15 15.7	205 16.9	N20 37.3	143 52.1	N20 24.6	252 52.9	N03 25.9
4	00	282 01.3	135 32.3	N15 14.6	220 17.6	N20 37.7	158 54.0	N20 24.5	267 55.3	N03 25.9
	01	297 03.8	150 32.1	N15 13.6	235 18.2	N20 38.1	173 55.9	N20 24.4	282 57.7	N03 25.9
	02	312 06.3	165 31.8	N15 12.6	250 18.8	N20 38.4	188 57.8	N20 24.3	298 00.0	N03 26.0
	03	327 08.7	180 31.5	N15 11.6	265 19.4	N20 38.8	203 59.7	N20 24.1	313 02.4	N03 26.0
	04	342 11.2	195 31.3	N15 10.6	280 20.0	N20 39.2	219 01.6	N20 24.0	328 04.8	N03 26.0
	05	357 13.6	210 31.0	N15 09.5	295 20.6	N20 39.5	234 03.5	N20 23.9	343 07.2	N03 26.0
	06	012 16.1	225 30.8	N15 08.5	310 21.2	N20 39.9	249 05.4	N20 23.8	358 09.5	N03 26.1
	07	027 18.6	240 30.5	N15 07.5	325 21.8	N20 40.2	264 07.3	N20 23.7	013 11.9	N03 26.1
	08	042 21.0	255 30.3	N15 06.5	340 22.5	N20 40.6	279 09.2	N20 23.6	028 14.3	N03 26.1
	09	057 23.5	270 30.0	N15 05.5	355 23.1	N20 41.0	294 11.1	N20 23.4	043 16.7	N03 26.1
	10	072 26.0	285 29.7	N15 04.4	010 23.7	N20 41.3	309 13.0	N20 23.3	058 19.0	N03 26.2
	11	087 28.4	300 29.5	N15 03.4	025 24.3	N20 41.7	324 14.9	N20 23.2	073 21.4	N03 26.2
	12	102 30.9	315 29.2	N15 02.4	040 24.9	N20 42.0	339 16.8	N20 23.1	088 23.8	N03 26.2
	13	117 33.4	330 29.0	N15 01.4	055 25.5	N20 42.4	354 18.7	N20 23.0	103 26.1	N03 26.2
	14	132 35.8	345 28.7	N15 00.3	070 26.1	N20 42.8	009 20.6	N20 22.9	118 28.5	N03 26.3
	15	147 38.3	000 28.5	N14 59.3	085 26.7	N20 43.1	024 22.5	N20 22.8	133 30.9	N03 26.3
	16	162 40.8	015 28.2	N14 58.3	100 27.4	N20 43.5	039 24.4	N20 22.6	148 33.3	N03 26.3
	17	177 43.2	030 28.0	N14 57.3	115 28.0	N20 43.8	054 26.3	N20 22.5	163 35.6	N03 26.3
	18	192 45.7	045 27.7	N14 56.2	130 28.6	N20 44.2	069 28.2	N20 22.4	178 38.0	N03 26.4
	19	207 48.1	060 27.5	N14 55.2	145 29.2	N20 44.5	084 30.1	N20 22.3	193 40.4	N03 26.4
	20	222 50.6	075 27.3	N14 54.2	160 29.8	N20 44.9	099 32.0	N20 22.2	208 42.8	N03 26.4
	21	237 53.1	090 27.0	N14 53.1	175 30.4	N20 45.3	114 33.9	N20 22.1	223 45.1	N03 26.4
	22	252 55.5	105 26.8	N14 52.1	190 31.0	N20 45.6	129 35.8	N20 22.0	238 47.5	N03 26.5
	23	267 58.0	120 26.5	N14 51.1	205 31.6	N20 46.0	144 37.7	N20 21.8	253 49.9	N03 26.5
5	00	283 00.5	135 26.3	N14 50.0	220 32.3	N20 46.3	159 39.7	N20 21.7	268 52.3	N03 26.5
	01	298 02.9	150 26.0	N14 49.0	235 32.9	N20 46.7	174 41.6	N20 21.6	283 54.6	N03 26.5
	02	313 05.4	165 25.8	N14 48.0	250 33.5	N20 47.0	189 43.5	N20 21.5	298 57.0	N03 26.6
	03	328 07.9	180 25.5	N14 47.0	265 34.1	N20 47.4	204 45.4	N20 21.4	313 59.4	N03 26.6
	04	343 10.3	195 25.3	N14 45.9	280 34.7	N20 47.7	219 47.3	N20 21.3	329 01.8	N03 26.6
	05	358 12.8	210 25.1	N14 44.9	295 35.3	N20 48.1	234 49.2	N20 21.1	344 04.1	N03 26.6
	06	013 15.2	225 24.8	N14 43.8	310 35.9	N20 48.4	249 51.1	N20 21.0	359 06.5	N03 26.7
	07	028 17.7	240 24.6	N14 42.8	325 36.5	N20 48.8	264 53.0	N20 20.9	014 08.9	N03 26.7
	08	043 20.2	255 24.3	N14 41.8	340 37.1	N20 49.1	279 54.9	N20 20.8	029 11.3	N03 26.7
	09	058 22.6	270 24.1	N14 40.7	355 37.8	N20 49.5	294 56.8	N20 20.7	044 13.6	N03 26.7
	10	073 25.1	285 23.9	N14 39.7	010 38.4	N20 49.9	309 58.7	N20 20.6	059 16.0	N03 26.8
	11	088 27.6	300 23.6	N14 38.7	025 39.0	N20 50.2	325 00.6	N20 20.4	074 18.4	N03 26.8
	12	103 30.0	315 23.4	N14 37.6	040 39.6	N20 50.6	340 02.5	N20 20.3	089 20.8	N03 26.8
	13	118 32.5	330 23.2	N14 36.6	055 40.2	N20 50.9	355 04.4	N20 20.2	104 23.2	N03 26.8
	14	133 35.0	345 22.9	N14 35.6	070 40.8	N20 51.3	010 06.3	N20 20.1	119 25.5	N03 26.9
	15	148 37.4	000 22.7	N14 34.5	085 41.4	N20 51.6	025 08.2	N20 20.0	134 27.9	N03 26.9
	16	163 39.9	015 22.5	N14 33.5	100 42.0	N20 52.0	040 10.1	N20 19.9	149 30.3	N03 26.9
	17	178 42.4	030 22.2	N14 32.4	115 42.7	N20 52.3	055 12.0	N20 19.8	164 32.7	N03 26.9
	18	193 44.8	045 22.0	N14 31.4	130 43.3	N20 52.6	070 13.9	N20 19.6	179 35.0	N03 27.0
	19	208 47.3	060 21.8	N14 30.3	145 43.9	N20 53.0	085 15.8	N20 19.5	194 37.4	N03 27.0
	20	223 49.7	075 21.5	N14 29.3	160 44.5	N20 53.3	100 17.7	N20 19.4	209 39.8	N03 27.0
	21	238 52.2	090 21.3	N14 28.3	175 45.1	N20 53.7	115 19.6	N20 19.3	224 42.2	N03 27.0
	22	253 54.7	105 21.1	N14 27.2	190 45.7	N20 54.0	130 21.5	N20 19.2	239 44.6	N03 27.1
	23	268 57.1	120 20.9	N14 26.2	205 46.3	N20 54.4	145 23.4	N20 19.1	254 46.9	N03 27.1

Venus	Mars	Jupiter	Saturn
3: v -0.3 d -1.0	3: v 0.6 d 0.4	3: v 1.9 d -0.1	3: v 2.4 d 0.0
4: v -0.3 d -1.0	4: v 0.6 d 0.4	4: v 1.9 d -0.1	4: v 2.4 d 0.0
5: v -0.2 d -1.0	5: v 0.6 d 0.4	5: v 1.9 d -0.1	5: v 2.4 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.1	S40 11.6
Achernar	335 19.4	S57 05.8
Acrux	172 58.8	S63 15.1
Adhara	255 05.3	S29 00.5
Al Na'ir	027 31.1	S46 49.7
Aldebaran	290 38.5	N16 33.7
Alioth	166 11.9	N55 49.2
Alkaid	152 50.9	N49 11.1
Alnilam	275 36.8	S01 11.1
Alphard	217 46.8	S08 46.5
Alphecca	126 02.4	N26 37.6
Alpheratz	357 33.4	N29 14.1
Altair	061 58.4	N08 56.3
Ankaa	353 05.9	S42 09.4
Antares	112 14.0	S26 29.5
Arcturus	145 46.6	N19 02.7
Atria	107 06.6	S69 04.6
Avior	234 14.8	S59 35.8
Bellatrix	278 21.9	N06 22.4
Betelgeuse	270 51.1	N07 24.7
Canopus	263 52.4	S52 42.5
Capella	280 20.5	N46 01.4
Deneb	049 24.5	N45 22.4
Denebola	182 23.8	N14 25.5
Diphda	348 46.1	S17 50.3
Dubhe	193 39.8	N61 36.7
Elnath	278 00.7	N28 37.7
Eltanin	090 41.1	N51 29.1
Enif	033 37.3	N09 59.8
Fomalhaut	015 13.0	S29 28.7
Gacrux	171 50.3	S57 16.0
Gienah	175 42.4	S17 41.5
Hadar	148 34.0	S60 30.3
Hamal	327 49.9	N23 35.2
Kaus Australi	083 30.5	S34 22.3
Kochab	137 19.2	N74 03.0
Markab	013 28.5	N15 20.9
Menkar	314 05.0	N04 11.7
Menkent	147 56.0	S36 30.2
Miaplacidus	221 38.8	S69 49.7
Mirfak	308 26.8	N49 57.1
Nunki	075 45.9	S26 15.8
Peacock	053 03.2	S56 38.8
Polaris	313 41.0	N89 22.3
Pollux	243 16.2	N27 57.8
Procyon	244 49.9	N05 09.4
Rasalhague	095 57.1	N12 32.5
Regulus	207 33.3	N11 50.3
Rigel	281 03.0	S08 10.2
Rigil Kentaur	139 38.2	S60 57.0
Sabik	102 01.0	S15 45.5
Schedar	349 29.6	N56 40.7
Shaula	096 08.3	S37 07.4
Sirius	258 25.5	S16 45.1
Spica	158 20.9	S11 18.1
Suhail	222 45.8	S43 32.5
Vega	080 32.0	N38 48.5
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	212 58.3	1458
Mars	297 54.0	0918
Jupiter	236 45.9	1323
Saturn	345 52.9	0607

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
3	00	178 57.4	N22 58.4	323 45.9	S17 54.3	54.9	13.7	11.5
	01	193 57.3	N22 58.2	338 18.5	S17 42.8	55.0	13.7	11.5
	02	208 57.1	N22 58.0	352 51.2	S17 31.3	55.0	13.8	11.6
	03	223 57.0	N22 57.8	007 24.0	S17 19.6	55.0	13.8	11.7
	04	238 56.9	N22 57.6	021 56.8	S17 08.0	55.0	13.8	11.8
	05	253 56.8	N22 57.4	036 29.6	S16 56.2	55.0	13.9	11.9
	06	268 56.7	N22 57.2	051 02.5	S16 44.3	55.1	13.9	11.9
	07	283 56.6	N22 57.0	065 35.5	S16 32.4	55.1	14.0	12.0
	08	298 56.5	N22 56.8	080 08.5	S16 20.4	55.1	14.0	12.1
	09	313 56.3	N22 56.6	094 41.5	S16 08.3	55.1	14.1	12.2
	10	328 56.2	N22 56.4	109 14.5	S15 56.1	55.1	14.1	12.2
	11	343 56.1	N22 56.2	123 47.7	S15 43.9	55.1	14.2	12.3
	12	358 56.0	N22 56.0	138 20.8	S15 31.6	55.2	14.2	12.4
	13	013 55.9	N22 55.8	152 54.0	S15 19.2	55.2	14.2	12.4
	14	028 55.8	N22 55.6	167 27.2	S15 06.8	55.2	14.3	12.5
	15	043 55.7	N22 55.3	182 00.5	S14 54.2	55.2	14.3	12.6
	16	058 55.5	N22 55.1	196 33.8	S14 41.7	55.2	14.4	12.7
	17	073 55.4	N22 54.9	211 07.2	S14 29.0	55.3	14.4	12.7
	18	088 55.3	N22 54.7	225 40.6	S14 16.3	55.3	14.4	12.8
	19	103 55.2	N22 54.5	240 14.0	S14 03.5	55.3	14.5	12.9
	20	118 55.1	N22 54.3	254 47.5	S13 50.6	55.3	14.5	12.9
	21	133 55.0	N22 54.1	269 20.9	S13 37.7	55.3	14.5	13.0
	22	148 54.9	N22 53.9	283 54.5	S13 24.7	55.4	14.6	13.1
	23	163 54.8	N22 53.7	298 28.0	S13 11.7	55.4	14.6	13.1
4	00	178 54.6	N22 53.4	313 01.6	S12 58.5	55.4	14.6	13.2
	01	193 54.5	N22 53.2	327 35.3	S12 45.4	55.4	14.7	13.2
	02	208 54.4	N22 53.0	342 08.9	S12 32.1	55.4	14.7	13.3
	03	223 54.3	N22 52.8	356 42.6	S12 18.8	55.5	14.7	13.4
	04	238 54.2	N22 52.6	011 16.3	S12 05.5	55.5	14.7	13.4
	05	253 54.1	N22 52.4	025 50.1	S11 52.1	55.5	14.8	13.5
	06	268 54.0	N22 52.1	040 23.8	S11 38.6	55.5	14.8	13.5
	07	283 53.9	N22 51.9	054 57.6	S11 25.1	55.5	14.8	13.6
	08	298 53.8	N22 51.7	069 31.5	S11 11.5	55.6	14.8	13.6
	09	313 53.6	N22 51.5	084 05.3	S10 57.8	55.6	14.9	13.7
	10	328 53.5	N22 51.3	098 39.2	S10 44.1	55.6	14.9	13.8
	11	343 53.4	N22 51.0	113 13.1	S10 30.4	55.6	14.9	13.8
	12	358 53.3	N22 50.8	127 47.0	S10 16.6	55.7	14.9	13.9
	13	013 53.2	N22 50.6	142 20.9	S10 02.7	55.7	15.0	13.9
	14	028 53.1	N22 50.4	156 54.9	S09 48.8	55.7	15.0	14.0
	15	043 53.0	N22 50.1	171 28.9	S09 34.9	55.7	15.0	14.0
	16	058 52.9	N22 49.9	186 02.9	S09 20.9	55.8	15.0	14.1
	17	073 52.8	N22 49.7	200 36.9	S09 06.8	55.8	15.0	14.1
	18	088 52.6	N22 49.5	215 10.9	S08 52.7	55.8	15.0	14.1
	19	103 52.5	N22 49.2	229 45.0	S08 38.6	55.8	15.1	14.2
	20	118 52.4	N22 49.0	244 19.0	S08 24.4	55.8	15.1	14.2
	21	133 52.3	N22 48.8	258 53.1	S08 10.1	55.9	15.1	14.3
	22	148 52.2	N22 48.5	273 27.2	S07 55.8	55.9	15.1	14.3
	23	163 52.1	N22 48.3	288 01.3	S07 41.5	55.9	15.1	14.4
5	00	178 52.0	N22 48.1	302 35.4	S07 27.1	55.9	15.1	14.4
	01	193 51.9	N22 47.8	317 09.5	S07 12.7	56.0	15.1	14.5
	02	208 51.8	N22 47.6	331 43.6	S06 58.3	56.0	15.1	14.5
	03	223 51.7	N22 47.4	346 17.7	S06 43.8	56.0	15.1	14.5
	04	238 51.6	N22 47.2	000 51.8	S06 29.3	56.0	15.1	14.6
	05	253 51.4	N22 46.9	015 26.0	S06 14.7	56.1	15.1	14.6
	06	268 51.3	N22 46.7	030 00.1	S06 00.1	56.1	15.1	14.6
	07	283 51.2	N22 46.4	044 34.2	S05 45.4	56.1	15.1	14.7
	08	298 51.1	N22 46.2	059 08.4	S05 30.7	56.1	15.1	14.7
	09	313 51.0	N22 46.0	073 42.5	S05 16.0	56.2	15.1	14.7
	10	328 50.9	N22 45.7	088 16.6	S05 01.3	56.2	15.1	14.8
	11	343 50.8	N22 45.5	102 50.8	S04 46.5	56.2	15.1	14.8
	12	358 50.7	N22 45.3	117 24.9	S04 31.7	56.2	15.1	14.8
	13	013 50.6	N22 45.0	131 59.0	S04 16.8	56.3	15.1	14.9
	14	028 50.5	N22 44.8	146 33.1	S04 02.0	56.3	15.1	14.9
	15	043 50.4	N22 44.5	161 07.3	S03 47.1	56.3	15.1	14.9
	16	058 50.3	N22 44.3	175 41.4	S03 32.1	56.4	15.1	15.0
	17	073 50.2	N22 44.0	190 15.4	S03 17.2	56.4	15.1	15.0
	18	088 50.1	N22 43.8	204 49.5	S03 02.2	56.4	15.1	15.0
	19	103 49.9	N22 43.6	219 23.6	S02 47.1	56.4	15.1	15.0
	20	118 49.8	N22 43.3	233 57.6	S02 32.1	56.5	15.0	15.1
	21	133 49.7	N22 43.1	248 31.7	S02 17.0	56.5	15.0	15.1
	22	148 49.6	N22 42.8	263 05.7	S02 01.9	56.5	15.0	15.1
	23	163 49.5	N22 42.6	277 39.7	S01 46.8	56.5	15.0	15.1

Day 3 noon Sun: v -0.1 d -0.2 SD 15.7 | Moon SD 15.0

Day 4 noon Sun: v -0.1 d -0.2 SD 15.7 | Moon SD 15.2

Day 5 noon Sun: v -0.1 d -0.2 SD 15.7 | Moon SD 15.3

SUN: JULY 4 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	0042	2322	--	--
64N	--	--	0147	2220	--	--
62N	--	--	0221	2147	--	--
60N	--	0111	0246	2122	2256	--
58N	--	0153	0305	2103	2215	--
56N	--	0221	0321	2047	2147	--
54N	0105	0242	0335	2034	2127	2302
52N	0144	0259	0347	2022	2110	2224
50N	0210	0313	0357	2011	2055	2158
45N	0253	0342	0419	1950	2027	2115
40N	0323	0404	0436	1932	2005	2046
35N	0345	0422	0451	1918	1947	2023
30N	0403	0436	0504	1905	1932	2005
25N	0419	0449	0515	1854	1919	1950
20N	0432	0501	0525	1844	1908	1937
15N	0443	0511	0535	1834	1858	1926
10N	0454	0521	0544	1825	1848	1915
05N	0503	0530	0552	1817	1839	1906
00N	0512	0538	0601	1808	1831	1857
05S	0521	0547	0609	1800	1822	1848
10S	0529	0555	0618	1751	1814	1840
15S	0537	0603	0627	1742	1806	1832
20S	0545	0612	0636	1733	1757	1824
25S	0552	0621	0646	1723	1748	1817
30S	0600	0630	0657	1712	1739	1809
35S	0609	0640	0709	1700	1729	1800
40S	0618	0652	0722	1647	1717	1751
45S	0628	0705	0739	1630	1704	1741
50S	0639	0721	0759	1610	1649	1730
55S	0653	0740	0825	1544	1629	1717
60S	0709	0805	0902	1507	1604	1700

MOON: RISE / SET | UTC HHMM

Lat	Day 3		Day 4		Day 5	
72N	0143	0337	0010	0643	2253	0857
70N	0036	0443	2316	0704	2251	0906
68N	2329	0518	2307	0720	2248	0912
66N	2314	0543	2300	0733	2247	0917
64N	2302	0602	2253	0744	2245	0922
62N	2252	0618	2248	0753	2244	0926
60N	2243	0631	2243	0801	2243	0929
58N	2235	0642	2239	0808	2242	0932
56N	2228	0652	2235	0814	2241	0935
54N	2222	0700	2231	0819	2240	0937
52N	2216	0708	2228	0824	2239	0939
50N	2211	0715	2225	0828	2238	0941
45N	2200	0729	2219	0837	2237	0945
40N	2151	0741	2214	0845	2236	0949
35N	2143	0751	2209	0852	2234	0952
30N	2136	0800	2205	0857	2234	0955
25N	2130	0808	2202	0903	2233	0957
20N	2124	0815	2158	0907	2232	0959
15N	2118	0822	2155	0912	2231	1001
10N	2113	0828	2152	0916	2230	1003
05N	2108	0834	2149	0920	2230	1005
00N	2103	0840	2146	0924	2229	1007
05S	2058	0846	2143	0928	2228	1008
10S	2053	0852	2140	0932	2228	1010
15S	2048	0859	2137	0936	2227	1012
20S	2042	0905	2134	0940	2226	1014
25S	2036	0912	2131	0945	2225	1016
30S	2030	0920	2127	0950	2224	1018
35S	2023	0928	2123	0955	2223	1021
40S	2014	0938	2118	1001	2222	1024
45S	2005	0949	2113	1009	2221	1027
50S	1953	1002	2106	1017	2220	1030
55S	1938	1019	2058	1028	2218	1035
60S	1918	1041	2047	1041	2215	1041

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JULY 6 - JULY 8

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
6	00	283 59.6	135 20.6	N14 25.1	220 46.9	N20 54.7	160 25.3	N20 18.9	269 49.3	N03 27.1
	01	299 02.1	150 20.4	N14 24.1	235 47.5	N20 55.1	175 27.2	N20 18.8	284 51.7	N03 27.1
	02	314 04.5	165 20.2	N14 23.0	250 48.2	N20 55.4	190 29.1	N20 18.7	299 54.1	N03 27.1
	03	329 07.0	180 20.0	N14 22.0	265 48.8	N20 55.8	205 31.0	N20 18.6	314 56.4	N03 27.2
	04	344 09.5	195 19.7	N14 20.9	280 49.4	N20 56.1	220 32.9	N20 18.5	329 58.8	N03 27.2
	05	359 11.9	210 19.5	N14 19.9	295 50.0	N20 56.5	235 34.8	N20 18.4	345 01.2	N03 27.2
	06	014 14.4	225 19.3	N14 18.9	310 50.6	N20 56.8	250 36.7	N20 18.2	000 03.6	N03 27.2
	07	029 16.9	240 19.1	N14 17.8	325 51.2	N20 57.1	265 38.6	N20 18.1	015 06.0	N03 27.3
	08	044 19.3	255 18.8	N14 16.8	340 51.8	N20 57.5	280 40.5	N20 18.0	030 08.3	N03 27.3
	09	059 21.8	270 18.6	N14 15.7	355 52.4	N20 57.8	295 42.4	N20 17.9	045 10.7	N03 27.3
	10	074 24.2	285 18.4	N14 14.7	010 53.0	N20 58.2	310 44.3	N20 17.8	060 13.1	N03 27.3
	11	089 26.7	300 18.2	N14 13.6	025 53.7	N20 58.5	325 46.2	N20 17.7	075 15.5	N03 27.4
	12	104 29.2	315 18.0	N14 12.6	040 54.3	N20 58.9	340 48.1	N20 17.5	090 17.9	N03 27.4
	13	119 31.6	330 17.7	N14 11.5	055 54.9	N20 59.2	355 50.0	N20 17.4	105 20.2	N03 27.4
	14	134 34.1	345 17.5	N14 10.5	070 55.5	N20 59.5	010 51.9	N20 17.3	120 22.6	N03 27.4
	15	149 36.6	000 17.3	N14 09.4	085 56.1	N20 59.9	025 53.8	N20 17.2	135 25.0	N03 27.4
	16	164 39.0	015 17.1	N14 08.3	100 56.7	N21 00.2	040 55.7	N20 17.1	150 27.4	N03 27.5
	17	179 41.5	030 16.9	N14 07.3	115 57.3	N21 00.6	055 57.6	N20 17.0	165 29.8	N03 27.5
	18	194 44.0	045 16.7	N14 06.2	130 57.9	N21 00.9	070 59.5	N20 16.8	180 32.2	N03 27.5
	19	209 46.4	060 16.5	N14 05.2	145 58.5	N21 01.2	086 01.4	N20 16.7	195 34.5	N03 27.5
	20	224 48.9	075 16.2	N14 04.1	160 59.2	N21 01.6	101 03.3	N20 16.6	210 36.9	N03 27.6
	21	239 51.3	090 16.0	N14 03.1	175 59.8	N21 01.9	116 05.2	N20 16.5	225 39.3	N03 27.6
	22	254 53.8	105 15.8	N14 02.0	191 00.4	N21 02.3	131 07.1	N20 16.4	240 41.7	N03 27.6
	23	269 56.3	120 15.6	N14 01.0	206 01.0	N21 02.6	146 09.0	N20 16.3	255 44.1	N03 27.6
7	00	284 58.7	135 15.4	N13 59.9	221 01.6	N21 02.9	161 10.9	N20 16.1	270 46.4	N03 27.6
	01	300 01.2	150 15.2	N13 58.8	236 02.2	N21 03.3	176 12.8	N20 16.0	285 48.8	N03 27.7
	02	315 03.7	165 15.0	N13 57.8	251 02.8	N21 03.6	191 14.7	N20 15.9	300 51.2	N03 27.7
	03	330 06.1	180 14.8	N13 56.7	266 03.4	N21 04.0	206 16.6	N20 15.8	315 53.6	N03 27.7
	04	345 08.6	195 14.6	N13 55.7	281 04.0	N21 04.3	221 18.5	N20 15.7	330 56.0	N03 27.7
	05	000 11.1	210 14.4	N13 54.6	296 04.7	N21 04.6	236 20.4	N20 15.5	345 58.4	N03 27.7
	06	015 13.5	225 14.1	N13 53.5	311 05.3	N21 05.0	251 22.3	N20 15.4	001 00.7	N03 27.8
	07	030 16.0	240 13.9	N13 52.5	326 05.9	N21 05.3	266 24.2	N20 15.3	016 03.1	N03 27.8
	08	045 18.5	255 13.7	N13 51.4	341 06.5	N21 05.6	281 26.1	N20 15.2	031 05.5	N03 27.8
	09	060 20.9	270 13.5	N13 50.4	356 07.1	N21 06.0	296 28.0	N20 15.1	046 07.9	N03 27.8
	10	075 23.4	285 13.3	N13 49.3	011 07.7	N21 06.3	311 29.9	N20 15.0	061 10.3	N03 27.9
	11	090 25.8	300 13.1	N13 48.2	026 08.3	N21 06.6	326 31.8	N20 14.8	076 12.7	N03 27.9
	12	105 28.3	315 12.9	N13 47.2	041 08.9	N21 07.0	341 33.7	N20 14.7	091 15.0	N03 27.9
	13	120 30.8	330 12.7	N13 46.1	056 09.5	N21 07.3	356 35.6	N20 14.6	106 17.4	N03 27.9
	14	135 33.2	345 12.5	N13 45.0	071 10.2	N21 07.6	011 37.5	N20 14.5	121 19.8	N03 27.9
	15	150 35.7	000 12.3	N13 44.0	086 10.8	N21 08.0	026 39.4	N20 14.4	136 22.2	N03 28.0
	16	165 38.2	015 12.1	N13 42.9	101 11.4	N21 08.3	041 41.2	N20 14.3	151 24.6	N03 28.0
	17	180 40.6	030 11.9	N13 41.8	116 12.0	N21 08.6	056 43.1	N20 14.1	166 27.0	N03 28.0
	18	195 43.1	045 11.7	N13 40.8	131 12.6	N21 09.0	071 45.0	N20 14.0	181 29.4	N03 28.0
	19	210 45.6	060 11.5	N13 39.7	146 13.2	N21 09.3	086 46.9	N20 13.9	196 31.7	N03 28.0
	20	225 48.0	075 11.3	N13 38.6	161 13.8	N21 09.6	101 48.8	N20 13.8	211 34.1	N03 28.1
	21	240 50.5	090 11.1	N13 37.6	176 14.4	N21 10.0	116 50.7	N20 13.7	226 36.5	N03 28.1
	22	255 53.0	105 10.9	N13 36.5	191 15.0	N21 10.3	131 52.6	N20 13.5	241 38.9	N03 28.1
	23	270 55.4	120 10.7	N13 35.4	206 15.6	N21 10.6	146 54.5	N20 13.4	256 41.3	N03 28.1
8	00	285 57.9	135 10.5	N13 34.4	221 16.3	N21 10.9	161 56.4	N20 13.3	271 43.7	N03 28.1
	01	301 00.3	150 10.4	N13 33.3	236 16.9	N21 11.3	176 58.3	N20 13.2	286 46.1	N03 28.2
	02	316 02.8	165 10.2	N13 32.2	251 17.5	N21 11.6	192 00.2	N20 13.1	301 48.4	N03 28.2
	03	331 05.3	180 10.0	N13 31.2	266 18.1	N21 11.9	207 02.1	N20 13.0	316 50.8	N03 28.2
	04	346 07.7	195 09.8	N13 30.1	281 18.7	N21 12.3	222 04.0	N20 12.8	331 53.2	N03 28.2
	05	001 10.2	210 09.6	N13 29.0	296 19.3	N21 12.6	237 05.9	N20 12.7	346 55.6	N03 28.2
	06	016 12.7	225 09.4	N13 27.9	311 19.9	N21 12.9	252 07.8	N20 12.6	001 58.0	N03 28.3
	07	031 15.1	240 09.2	N13 26.9	326 20.5	N21 13.2	267 09.7	N20 12.5	017 00.4	N03 28.3
	08	046 17.6	255 09.0	N13 25.8	341 21.1	N21 13.6	282 11.6	N20 12.4	032 02.8	N03 28.3
	09	061 20.1	270 08.8	N13 24.7	356 21.7	N21 13.9	297 13.5	N20 12.2	047 05.2	N03 28.3
	10	076 22.5	285 08.6	N13 23.6	011 22.4	N21 14.2	312 15.4	N20 12.1	062 07.5	N03 28.3
	11	091 25.0	300 08.5	N13 22.6	026 23.0	N21 14.5	327 17.3	N20 12.0	077 09.9	N03 28.4
	12	106 27.4	315 08.3	N13 21.5	041 23.6	N21 14.9	342 19.2	N20 11.9	092 12.3	N03 28.4
	13	121 29.9	330 08.1	N13 20.4	056 24.2	N21 15.2	357 21.1	N20 11.8	107 14.7	N03 28.4
	14	136 32.4	345 07.9	N13 19.3	071 24.8	N21 15.5	012 23.0	N20 11.6	122 17.1	N03 28.4
	15	151 34.8	000 07.7	N13 18.3	086 25.4	N21 15.8	027 24.9	N20 11.5	137 19.5	N03 28.4
	16	166 37.3	015 07.5	N13 17.2	101 26.0	N21 16.2	042 26.8	N20 11.4	152 21.9	N03 28.5
	17	181 39.8	030 07.4	N13 16.1	116 26.6	N21 16.5	057 28.7	N20 11.3	167 24.3	N03 28.5
	18	196 42.2	045 07.2	N13 15.0	131 27.2	N21 16.8	072 30.6	N20 11.2	182 26.6	N03 28.5
	19	211 44.7	060 07.0	N13 13.9	146 27.9	N21 17.1	087 32.5	N20 11.1	197 29.0	N03 28.5
	20	226 47.2	075 06.8	N13 12.9	161 28.5	N21 17.5	102 34.4	N20 10.9	212 31.4	N03 28.5
	21	241 49.6	090 06.6	N13 11.8	176 29.1	N21 17.8	117 36.3	N20 10.8	227 33.8	N03 28.5
	22	256 52.1	105 06.5	N13 10.7	191 29.7	N21 18.1	132 38.2	N20 10.7	242 36.2	N03 28.6
	23	271 54.6	120 06.3	N13 09.6	206 30.3	N21 18.4	147 40.1	N20 10.6	257 38.6	N03 28.6

Venus	Mars	Jupiter	Saturn
6: v -0.2 d -1.1	6: v 0.6 d 0.3	6: v 1.9 d -0.1	6: v 2.4 d 0.0
7: v -0.2 d -1.1	7: v 0.6 d 0.3	7: v 1.9 d -0.1	7: v 2.4 d 0.0
8: v -0.2 d -1.1	8: v 0.6 d 0.3	8: v 1.9 d -0.1	8: v 2.4 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.1	S40 11.6
Achernar	335 19.4	S57 05.8
Acrux	172 58.8	S63 15.1
Adhara	255 05.3	S29 00.4
Al Na'ir	027 31.0	S46 49.7
Aldebaran	290 38.5	N16 33.7
Alioth	166 11.9	N55 49.2
Alkaid	152 50.9	N49 11.1
Alnilam	275 36.8	S01 11.1
Alphard	217 46.8	S08 46.4
Alphecca	126 02.4	N26 37.6
Alpheratz	357 33.4	N29 14.1
Altair	061 58.4	N08 56.3
Ankaa	353 05.9	S42 09.4
Antares	112 14.0	S26 29.5
Arcturus	145 46.7	N19 02.7
Atria	107 06.6	S69 04.6
Avior	234 14.9	S59 35.7
Bellatrix	278 21.9	N06 22.4
Betelgeuse	270 51.1	N07 24.7
Canopus	263 52.4	S52 42.5
Capella	280 20.5	N46 01.4
Deneb	049 24.5	N45 22.4
Denebola	182 23.8	N14 25.5
Diphda	348 46.0	S17 50.3
Dubhe	193 39.8	N61 36.7
Elnath	278 00.7	N28 37.7
Eltanin	090 41.1	N51 29.2
Enif	033 37.3	N09 59.8
Fomalhaut	015 13.0	S29 28.7
Gacrux	171 50.3	S57 16.0
Gienah	175 42.4	S17 41.5
Hadar	148 34.0	S60 30.3
Hamal	327 49.9	N23 35.2
Kaus Australi	083 30.5	S34 22.3
Kochab	137 19.2	N74 03.0
Markab	013 28.5	N15 20.9
Menkar	314 05.0	N04 11.7
Menkent	147 56.0	S36 30.2
Miaplacidus	221 38.8	S69 49.7
Mirfak	308 26.8	N49 57.1
Nunki	075 45.8	S26 15.8
Peacock	053 03.2	S56 38.8
Polaris	313 39.7	N89 22.3
Pollux	243 16.2	N27 57.8
Procyon	244 49.9	N05 09.4
Rasalhague	095 57.1	N12 32.5
Regulus	207 33.4	N11 50.3
Rigel	281 03.0	S08 10.2
Rigil Kentaur	139 38.3	S60 57.0
Sabik	102 01.0	S15 45.5
Schedar	349 29.6	N56 40.8
Shaula	096 08.3	S37 07.4
Sirius	258 25.5	S16 45.1
Spica	158 20.9	S11 18.1
Suhail	222 45.8	S43 32.5
Vega	080 32.0	N38 48.5
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	209 44.6	1459
Mars	295 40.6	0916
Jupiter	236 05.3	1314
Saturn	345 46.7	0556

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
6	00	178 49.4	N22 42.3	292 13.7	S01 31.7	56.6	15.0	15.2
	01	193 49.3	N22 42.1	306 47.6	S01 16.5	56.6	14.9	15.2
	02	208 49.2	N22 41.8	321 21.6	S01 01.4	56.6	14.9	15.2
	03	223 49.1	N22 41.6	335 55.5	S00 46.2	56.7	14.9	15.2
	04	238 49.0	N22 41.3	350 29.4	S00 31.0	56.7	14.9	15.2
	05	253 48.9	N22 41.1	005 03.3	S00 15.7	56.7	14.8	15.2
	06	268 48.8	N22 40.8	019 37.1	S00 00.5	56.7	14.8	15.3
	07	283 48.7	N22 40.6	034 10.9	N00 14.8	56.8	14.8	15.3
	08	298 48.6	N22 40.3	048 44.7	N00 30.0	56.8	14.8	15.3
	09	313 48.5	N22 40.1	063 18.5	N00 45.3	56.8	14.7	15.3
	10	328 48.4	N22 39.8	077 52.2	N01 00.6	56.9	14.7	15.3
	11	343 48.3	N22 39.6	092 25.9	N01 15.9	56.9	14.7	15.3
	12	358 48.2	N22 39.3	106 59.6	N01 31.2	56.9	14.6	15.3
	13	013 48.1	N22 39.0	121 33.2	N01 46.6	57.0	14.6	15.3
	14	028 48.0	N22 38.8	136 06.8	N02 01.9	57.0	14.5	15.3
	15	043 47.9	N22 38.5	150 40.3	N02 17.3	57.0	14.5	15.3
	16	058 47.7	N22 38.3	165 13.8	N02 32.6	57.0	14.5	15.4
	17	073 47.6	N22 38.0	179 47.3	N02 48.0	57.1	14.4	15.4
	18	088 47.5	N22 37.8	194 20.7	N03 03.3	57.1	14.4	15.4
	19	103 47.4	N22 37.5	208 54.1	N03 18.7	57.1	14.3	15.4
	20	118 47.3	N22 37.2	223 27.4	N03 34.0	57.2	14.3	15.4
	21	133 47.2	N22 37.0	238 00.7	N03 49.4	57.2	14.2	15.4
	22	148 47.1	N22 36.7	252 33.9	N04 04.8	57.2	14.2	15.4
	23	163 47.0	N22 36.4	267 07.1	N04 20.1	57.3	14.1	15.4
7	00	178 46.9	N22 36.2	281 40.3	N04 35.5	57.3	14.1	15.4
	01	193 46.8	N22 35.9	296 13.3	N04 50.8	57.3	14.0	15.4
	02	208 46.7	N22 35.6	310 46.4	N05 06.2	57.4	14.0	15.3
	03	223 46.6	N22 35.4	325 19.4	N05 21.5	57.4	13.9	15.3
	04	238 46.5	N22 35.1	339 52.3	N05 36.9	57.4	13.9	15.3
	05	253 46.4	N22 34.8	354 25.1	N05 52.2	57.4	13.8	15.3
	06	268 46.3	N22 34.6	008 57.9	N06 07.5	57.5	13.7	15.3
	07	283 46.2	N22 34.3	023 30.7	N06 22.8	57.5	13.7	15.3
	08	298 46.1	N22 34.0	038 03.4	N06 38.1	57.5	13.6	15.3
	09	313 46.0	N22 33.8	052 36.0	N06 53.4	57.6	13.6	15.3
	10	328 45.9	N22 33.5	067 08.5	N07 08.7	57.6	13.5	15.3
	11	343 45.8	N22 33.2	081 41.0	N07 24.0	57.6	13.4	15.2
	12	358 45.7	N22 33.0	096 13.4	N07 39.2	57.7	13.3	15.2
	13	013 45.6	N22 32.7	110 45.8	N07 54.4	57.7	13.3	15.2
	14	028 45.5	N22 32.4	125 18.1	N08 09.6	57.7	13.2	15.2
	15	043 45.4	N22 32.1	139 50.3	N08 24.8	57.8	13.1	15.2
	16	058 45.3	N22 31.9	154 22.4	N08 40.0	57.8	13.1	15.1
	17	073 45.2	N22 31.6	168 54.5	N08 55.1	57.8	13.0	15.1
	18	088 45.1	N22 31.3	183 26.4	N09 10.2	57.9	12.9	15.1
	19	103 45.0	N22 31.0	197 58.3	N09 25.3	57.9	12.8	15.1
	20	118 44.9	N22 30.8	212 30.2	N09 40.4	57.9	12.7	15.0
	21	133 44.8	N22 30.5	227 01.9	N09 55.4	58.0	12.7	15.0
	22	148 44.7	N22 30.2	241 33.6	N10 10.4	58.0	12.6	15.0
	23	163 44.6	N22 29.9	256 05.1	N10 25.4	58.0	12.5	14.9
8	00	178 44.5	N22 29.6	270 36.6	N10 40.3	58.1	12.4	14.9
	01	193 44.4	N22 29.4	285 08.0	N10 55.2	58.1	12.3	14.9
	02	208 44.3	N22 29.1	299 39.4	N11 10.1	58.1	12.2	14.8
	03	223 44.2	N22 28.8	314 10.6	N11 24.9	58.2	12.1	14.8
	04	238 44.1	N22 28.5	328 41.7	N11 39.7	58.2	12.0	14.8
	05	253 44.0	N22 28.2	343 12.8	N11 54.5	58.2	12.0	14.7
	06	268 43.9	N22 27.9	357 43.7	N12 09.2	58.3	11.9	14.7
	07	283 43.8	N22 27.7	012 14.6	N12 23.9	58.3	11.8	14.6
	08	298 43.7	N22 27.4	026 45.3	N12 38.5	58.3	11.7	14.6
	09	313 43.7	N22 27.1	041 16.0	N12 53.1	58.4	11.6	14.5
	10	328 43.6	N22 26.8	055 46.6	N13 07.6	58.4	11.5	14.5
	11	343 43.5	N22 26.5	070 17.0	N13 22.1	58.4	11.4	14.4
	12	358 43.4	N22 26.2	084 47.4	N13 36.6	58.5	11.3	14.4
	13	013 43.3	N22 25.9	099 17.7	N13 50.9	58.5	11.2	14.3
	14	028 43.2	N22 25.6	113 47.8	N14 05.3	58.5	11.1	14.3
	15	043 43.1	N22 25.4	128 17.9	N14 19.5	58.6	10.9	14.2
	16	058 43.0	N22 25.1	142 47.8	N14 33.8	58.6	10.8	14.2
	17	073 42.9	N22 24.8	157 17.6	N14 47.9	58.6	10.7	14.1
	18	088 42.8	N22 24.5	171 47.4	N15 02.0	58.7	10.6	14.0
	19	103 42.7	N22 24.2	186 17.0	N15 16.1	58.7	10.5	14.0
	20	118 42.6	N22 23.9	200 46.5	N15 30.0	58.7	10.4	13.9
	21	133 42.5	N22 23.6	215 15.9	N15 44.0	58.8	10.3	13.8
	22	148 42.4	N22 23.3	229 45.2	N15 57.8	58.8	10.2	13.8
	23	163 42.3	N22 23.0	244 14.3	N16 11.6	58.8	10.0	13.7

Day 6 noon Sun: v -0.1 d -0.3 SD 15.7 | Moon SD 15.5

Day 7 noon Sun: v -0.1 d -0.3 SD 15.7 | Moon SD 15.7

Day 8 noon Sun: v -0.1 d -0.3 SD 15.7 | Moon SD 15.9

SUN: JULY 7 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	0058	2307	--	--
64N	--	--	0154	2214	--	--
62N	--	--	0226	2142	--	--
60N	--	0120	0250	2119	2248	--
58N	--	0158	0309	2100	2210	--
56N	--	0225	0324	2045	2144	--
54N	0113	0245	0338	2032	2124	2254
52N	0149	0302	0349	2020	2107	2219
50N	0214	0316	0400	2010	2053	2155
45N	0256	0344	0421	1949	2025	2113
40N	0325	0406	0438	1931	2004	2045
35N	0347	0423	0453	1917	1946	2023
30N	0405	0438	0505	1905	1932	2005
25N	0420	0451	0516	1854	1919	1950
20N	0433	0502	0526	1844	1908	1937
15N	0444	0512	0536	1834	1858	1926
10N	0455	0521	0544	1825	1848	1915
05N	0504	0530	0553	1817	1839	1906
00N	0513	0539	0601	1809	1831	1857
05S	0521	0547	0610	1800	1823	1849
10S	0529	0555	0618	1752	1815	1841
15S	0537	0604	0627	1743	1806	1833
20S	0545	0612	0636	1734	1758	1825
25S	0552	0621	0646	1724	1749	1818
30S	0600	0630	0656	1714	1740	1810
35S	0609	0640	0708	1702	1730	1801
40S	0618	0651	0722	1648	1719	1753
45S	0627	0704	0738	1632	1706	1743
50S	0638	0719	0757	1613	1651	1732
55S	0651	0738	0823	1547	1632	1719
60S	0707	0803	0859	1511	1607	1703

MOON: RISE / SET | UTC HHMM

Lat	Day 6		Day 7		Day 8	
72N	2220	1105	2142	1318	2043	1558
70N	2226	1103	2158	1305	2118	1525
68N	2230	1102	2210	1256	2143	1502
66N	2234	1100	2220	1247	2203	1444
64N	2237	1059	2229	1241	2219	1429
62N	2240	1059	2236	1235	2232	1417
60N	2242	1058	2243	1230	2244	1407
58N	2245	1057	2248	1225	2254	1358
56N	2247	1057	2253	1221	2302	1350
54N	2248	1056	2258	1218	2310	1344
52N	2250	1056	2302	1215	2317	1337
50N	2252	1055	2306	1212	2323	1332
45N	2255	1054	2314	1205	2337	1320
40N	2258	1054	2321	1200	2348	1310
35N	2300	1053	2327	1156	2358	1302
30N	2302	1052	2333	1152	--	1255
25N	2304	1052	2337	1148	--	1248
20N	2306	1051	2342	1145	--	1242
15N	2308	1051	2346	1142	--	1236
10N	2309	1050	2350	1139	--	1231
05N	2311	1050	2354	1137	--	1226
00N	2312	1049	2358	1134	--	1221
05S	2314	1049	--	1131	0002	1216
10S	2316	1049	--	1128	0006	1211
15S	2317	1048	--	1125	0010	1206
20S	2319	1048	--	1122	0014	1200
25S	2321	1047	--	1119	0019	1154
30S	2323	1047	--	1116	0024	1148
35S	2325	1046	--	1112	0030	1141
40S	2328	1045	--	1108	0036	1133
45S	2331	1044	--	1103	0044	1123
50S	2335	1043	--	1057	0053	1112
55S	2339	1042	--	1050	0105	1058
60S	2345	1041	--	1040	0120	1040

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JULY 9 - JULY 11

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
9	00	286 57.0	135 06.1	N13 08.5	221 30.9	N21 18.7	162 42.0	N20 10.5	272 41.0	N03 28.6
	01	301 59.5	150 05.9	N13 07.5	236 31.5	N21 19.1	177 43.9	N20 10.3	287 43.4	N03 28.6
	02	317 01.9	165 05.7	N13 06.4	251 32.1	N21 19.4	192 45.8	N20 10.2	302 45.8	N03 28.6
	03	332 04.4	180 05.6	N13 05.3	266 32.7	N21 19.7	207 47.7	N20 10.1	317 48.2	N03 28.7
	04	347 06.9	195 05.4	N13 04.2	281 33.3	N21 20.0	222 49.6	N20 10.0	332 50.5	N03 28.7
	05	002 09.3	210 05.2	N13 03.1	296 33.9	N21 20.3	237 51.5	N20 09.9	347 52.9	N03 28.7
	06	017 11.8	225 05.0	N13 02.0	311 34.6	N21 20.7	252 53.4	N20 09.7	002 55.3	N03 28.7
	07	032 14.3	240 04.9	N13 00.9	326 35.2	N21 21.0	267 55.3	N20 09.6	017 57.7	N03 28.7
	08	047 16.7	255 04.7	N12 59.9	341 35.8	N21 21.3	282 57.2	N20 09.5	033 00.1	N03 28.7
	09	062 19.2	270 04.5	N12 58.8	356 36.4	N21 21.6	297 59.1	N20 09.4	048 02.5	N03 28.8
	10	077 21.7	285 04.4	N12 57.7	011 37.0	N21 21.9	313 01.0	N20 09.3	063 04.9	N03 28.8
	11	092 24.1	300 04.2	N12 56.6	026 37.6	N21 22.3	328 02.9	N20 09.1	078 07.3	N03 28.8
	12	107 26.6	315 04.0	N12 55.5	041 38.2	N21 22.6	343 04.8	N20 09.0	093 09.7	N03 28.8
	13	122 29.1	330 03.8	N12 54.4	056 38.8	N21 22.9	358 06.7	N20 08.9	108 12.1	N03 28.8
	14	137 31.5	345 03.7	N12 53.3	071 39.4	N21 23.2	013 08.6	N20 08.8	123 14.5	N03 28.9
	15	152 34.0	000 03.5	N12 52.3	086 40.0	N21 23.5	028 10.5	N20 08.7	138 16.9	N03 28.9
	16	167 36.4	015 03.3	N12 51.2	101 40.7	N21 23.8	043 12.4	N20 08.5	153 19.2	N03 28.9
	17	182 38.9	030 03.2	N12 50.1	116 41.3	N21 24.1	058 14.3	N20 08.4	168 21.6	N03 28.9
	18	197 41.4	045 03.0	N12 49.0	131 41.9	N21 24.5	073 16.2	N20 08.3	183 24.0	N03 28.9
	19	212 43.8	060 02.8	N12 47.9	146 42.5	N21 24.8	088 18.1	N20 08.2	198 26.4	N03 28.9
	20	227 46.3	075 02.7	N12 46.8	161 43.1	N21 25.1	103 20.0	N20 08.1	213 28.8	N03 29.0
	21	242 48.8	090 02.5	N12 45.7	176 43.7	N21 25.4	118 21.9	N20 07.9	228 31.2	N03 29.0
	22	257 51.2	105 02.4	N12 44.6	191 44.3	N21 25.7	133 23.7	N20 07.8	243 33.6	N03 29.0
	23	272 53.7	120 02.2	N12 43.5	206 44.9	N21 26.0	148 25.6	N20 07.7	258 36.0	N03 29.0
10	00	287 56.2	135 02.0	N12 42.4	221 45.5	N21 26.3	163 27.5	N20 07.6	273 38.4	N03 29.0
	01	302 58.6	150 01.9	N12 41.3	236 46.1	N21 26.7	178 29.4	N20 07.5	288 40.8	N03 29.0
	02	318 01.1	165 01.7	N12 40.2	251 46.8	N21 27.0	193 31.3	N20 07.3	303 43.2	N03 29.1
	03	333 03.5	180 01.6	N12 39.1	266 47.4	N21 27.3	208 33.2	N20 07.2	318 45.6	N03 29.1
	04	348 06.0	195 01.4	N12 38.0	281 48.0	N21 27.6	223 35.1	N20 07.1	333 48.0	N03 29.1
	05	003 08.5	210 01.2	N12 37.0	296 48.6	N21 27.9	238 37.0	N20 07.0	348 50.4	N03 29.1
	06	018 10.9	225 01.1	N12 35.9	311 49.2	N21 28.2	253 38.9	N20 06.9	003 52.8	N03 29.1
	07	033 13.4	240 00.9	N12 34.8	326 49.8	N21 28.5	268 40.8	N20 06.7	018 55.2	N03 29.1
	08	048 15.9	255 00.8	N12 33.7	341 50.4	N21 28.8	283 42.7	N20 06.6	033 57.5	N03 29.2
	09	063 18.3	270 00.6	N12 32.6	356 51.0	N21 29.1	298 44.6	N20 06.5	048 59.9	N03 29.2
	10	078 20.8	285 00.5	N12 31.5	011 51.6	N21 29.4	313 46.5	N20 06.4	064 02.3	N03 29.2
	11	093 23.3	300 00.3	N12 30.4	026 52.2	N21 29.8	328 48.4	N20 06.3	079 04.7	N03 29.2
	12	108 25.7	315 00.1	N12 29.3	041 52.8	N21 30.1	343 50.3	N20 06.1	094 07.1	N03 29.2
	13	123 28.2	330 00.0	N12 28.2	056 53.5	N21 30.4	358 52.2	N20 06.0	109 09.5	N03 29.2
	14	138 30.7	344 59.8	N12 27.1	071 54.1	N21 30.7	013 54.1	N20 05.9	124 11.9	N03 29.3
	15	153 33.1	359 59.7	N12 26.0	086 54.7	N21 31.0	028 56.0	N20 05.8	139 14.3	N03 29.3
	16	168 35.6	014 59.5	N12 24.9	101 55.3	N21 31.3	043 57.9	N20 05.7	154 16.7	N03 29.3
	17	183 38.0	029 59.4	N12 23.8	116 55.9	N21 31.6	058 59.8	N20 05.5	169 19.1	N03 29.3
	18	198 40.5	044 59.2	N12 22.7	131 56.5	N21 31.9	074 01.7	N20 05.4	184 21.5	N03 29.3
	19	213 43.0	059 59.1	N12 21.6	146 57.1	N21 32.2	089 03.6	N20 05.3	199 23.9	N03 29.3
	20	228 45.4	074 58.9	N12 20.5	161 57.7	N21 32.5	104 05.5	N20 05.2	214 26.3	N03 29.3
	21	243 47.9	089 58.8	N12 19.4	176 58.3	N21 32.8	119 07.4	N20 05.1	229 28.7	N03 29.4
	22	258 50.4	104 58.6	N12 18.3	191 58.9	N21 33.1	134 09.3	N20 04.9	244 31.1	N03 29.4
	23	273 52.8	119 58.5	N12 17.2	206 59.6	N21 33.4	149 11.2	N20 04.8	259 33.5	N03 29.4
11	00	288 55.3	134 58.4	N12 16.0	222 00.2	N21 33.7	164 13.1	N20 04.7	274 35.9	N03 29.4
	01	303 57.8	149 58.2	N12 14.9	237 00.8	N21 34.0	179 15.0	N20 04.6	289 38.3	N03 29.4
	02	319 00.2	164 58.1	N12 13.8	252 01.4	N21 34.3	194 16.9	N20 04.5	304 40.7	N03 29.4
	03	334 02.7	179 57.9	N12 12.7	267 02.0	N21 34.6	209 18.8	N20 04.3	319 43.1	N03 29.5
	04	349 05.2	194 57.8	N12 11.6	282 02.6	N21 34.9	224 20.7	N20 04.2	334 45.5	N03 29.5
	05	004 07.6	209 57.6	N12 10.5	297 03.2	N21 35.2	239 22.6	N20 04.1	349 47.9	N03 29.5
	06	019 10.1	224 57.5	N12 09.4	312 03.8	N21 35.5	254 24.5	N20 04.0	004 50.3	N03 29.5
	07	034 12.5	239 57.4	N12 08.3	327 04.4	N21 35.9	269 26.3	N20 03.8	019 52.7	N03 29.5
	08	049 15.0	254 57.2	N12 07.2	342 05.0	N21 36.2	284 28.2	N20 03.7	034 55.1	N03 29.5
	09	064 17.5	269 57.1	N12 06.1	357 05.6	N21 36.5	299 30.1	N20 03.6	049 57.5	N03 29.5
	10	079 19.9	284 56.9	N12 05.0	012 06.3	N21 36.8	314 32.0	N20 03.5	064 59.9	N03 29.6
	11	094 22.4	299 56.8	N12 03.9	027 06.9	N21 37.1	329 33.9	N20 03.4	080 02.3	N03 29.6
	12	109 24.9	314 56.7	N12 02.8	042 07.5	N21 37.4	344 35.8	N20 03.2	095 04.7	N03 29.6
	13	124 27.3	329 56.5	N12 01.7	057 08.1	N21 37.7	359 37.7	N20 03.1	110 07.1	N03 29.6
	14	139 29.8	344 56.4	N12 00.5	072 08.7	N21 38.0	014 39.6	N20 03.0	125 09.5	N03 29.6
	15	154 32.3	359 56.2	N11 59.4	087 09.3	N21 38.2	029 41.5	N20 02.9	140 11.9	N03 29.6
	16	169 34.7	014 56.1	N11 58.3	102 09.9	N21 38.5	044 43.4	N20 02.8	155 14.3	N03 29.6
	17	184 37.2	029 56.0	N11 57.2	117 10.5	N21 38.8	059 45.3	N20 02.6	170 16.7	N03 29.7
	18	199 39.7	044 55.8	N11 56.1	132 11.1	N21 39.1	074 47.2	N20 02.5	185 19.1	N03 29.7
	19	214 42.1	059 55.7	N11 55.0	147 11.7	N21 39.4	089 49.1	N20 02.4	200 21.5	N03 29.7
	20	229 44.6	074 55.6	N11 53.9	162 12.3	N21 39.7	104 51.0	N20 02.3	215 23.9	N03 29.7
	21	244 47.0	089 55.4	N11 52.8	177 13.0	N21 40.0	119 52.9	N20 02.1	230 26.3	N03 29.7
	22	259 49.5	104 55.3	N11 51.6	192 13.6	N21 40.3	134 54.8	N20 02.0	245 28.7	N03 29.7
	23	274 52.0	119 55.2	N11 50.5	207 14.2	N21 40.6	149 56.7	N20 01.9	260 31.1	N03 29.7

Venus	Mars	Jupiter	Saturn
9: v -0.2 d -1.1	9: v 0.6 d 0.3	9: v 1.9 d -0.1	9: v 2.4 d 0.0
10: v -0.2 d -1.1	10: v 0.6 d 0.3	10: v 1.9 d -0.1	10: v 2.4 d 0.0
11: v -0.1 d -1.1	11: v 0.6 d 0.3	11: v 1.9 d -0.1	11: v 2.4 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.0	S40 11.6
Achernar	335 19.4	S57 05.8
Acrux	172 58.8	S63 15.1
Adhara	255 05.3	S29 00.4
Al Na'ir	027 31.0	S46 49.7
Aldebaran	290 38.5	N16 33.7
Alioth	166 11.9	N55 49.2
Alkaid	152 50.9	N49 11.1
Alnilam	275 36.8	S01 11.0
Alphard	217 46.8	S08 46.4
Alphecca	126 02.5	N26 37.6
Alpheratz	357 33.4	N29 14.1
Altair	061 58.4	N08 56.4
Ankaa	353 05.8	S42 09.4
Antares	112 14.0	S26 29.5
Arcturus	145 46.7	N19 02.7
Atria	107 06.6	S69 04.6
Avior	234 14.9	S59 35.7
Bellatrix	278 21.8	N06 22.4
Betelgeuse	270 51.1	N07 24.7
Canopus	263 52.4	S52 42.5
Capella	280 20.5	N46 01.4
Deneb	049 24.5	N45 22.4
Denebola	182 23.8	N14 25.5
Diphda	348 46.0	S17 50.3
Dubhe	193 39.9	N61 36.7
Elnath	278 00.6	N28 37.7
Eltanin	090 41.1	N51 29.2
Enif	033 37.3	N09 59.8
Fomalhaut	015 12.9	S29 28.7
Gacrux	171 50.3	S57 16.0
Gienah	175 42.4	S17 41.5
Hadar	148 34.0	S60 30.3
Hamal	327 49.9	N23 35.2
Kaus Australi	083 30.5	S34 22.3
Kochab	137 19.3	N74 03.0
Markab	013 28.5	N15 20.9
Menkar	314 05.0	N04 11.7
Menkent	147 56.0	S36 30.2
Miaplacidus	221 38.9	S69 49.7
Mirfak	308 26.8	N49 57.1
Nunki	075 45.8	S26 15.8
Peacock	053 03.2	S56 38.8
Polaris	313 38.2	N89 22.2
Pollux	243 16.2	N27 57.7
Procyon	244 49.9	N05 09.4
Rasalhague	095 57.1	N12 32.5
Regulus	207 33.4	N11 50.3
Rigel	281 03.0	S08 10.2
Rigil Kentaur	139 38.3	S60 57.0
Sabik	102 01.0	S15 45.5
Schedar	349 29.5	N56 40.8
Shaula	096 08.3	S37 07.4
Sirius	258 25.5	S16 45.1
Spica	158 21.0	S11 18.1
Suhail	222 45.8	S43 32.5
Vega	080 31.9	N38 48.5
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	206 34.4	1500
Mars	293 27.1	0913
Jupiter	235 24.6	1305
Saturn	345 41.4	0545

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
9	00	178 42.2	N22 22.7	258 43.4	N16 25.3	58.9	9.9	13.6
	01	193 42.1	N22 22.4	273 12.3	N16 38.9	58.9	9.8	13.6
	02	208 42.0	N22 22.1	287 41.1	N16 52.5	58.9	9.7	13.5
	03	223 41.9	N22 21.8	302 09.8	N17 05.9	59.0	9.6	13.4
	04	238 41.8	N22 21.5	316 38.4	N17 19.3	59.0	9.4	13.3
	05	253 41.8	N22 21.2	331 06.8	N17 32.7	59.0	9.3	13.2
	06	268 41.7	N22 20.9	345 35.2	N17 45.9	59.1	9.2	13.2
	07	283 41.6	N22 20.6	000 03.4	N17 59.1	59.1	9.1	13.1
	08	298 41.5	N22 20.3	014 31.4	N18 12.1	59.1	9.0	13.0
	09	313 41.4	N22 20.0	028 59.4	N18 25.1	59.2	8.8	12.9
	10	328 41.3	N22 19.7	043 27.2	N18 38.0	59.2	8.7	12.8
	11	343 41.2	N22 19.4	057 54.9	N18 50.8	59.2	8.6	12.7
	12	358 41.1	N22 19.1	072 22.5	N19 03.5	59.3	8.4	12.6
	13	013 41.0	N22 18.8	086 49.9	N19 16.1	59.3	8.3	12.5
	14	028 40.9	N22 18.5	101 17.2	N19 28.6	59.3	8.2	12.4
	15	043 40.8	N22 18.2	115 44.4	N19 41.1	59.4	8.1	12.3
	16	058 40.7	N22 17.9	130 11.5	N19 53.4	59.4	7.9	12.2
	17	073 40.6	N22 17.6	144 38.4	N20 05.6	59.4	7.8	12.1
	18	088 40.6	N22 17.3	159 05.2	N20 17.7	59.5	7.7	12.0
	19	103 40.5	N22 16.9	173 31.8	N20 29.7	59.5	7.5	11.9
	20	118 40.4	N22 16.6	187 58.4	N20 41.6	59.5	7.4	11.8
	21	133 40.3	N22 16.3	202 24.7	N20 53.4	59.5	7.3	11.7
	22	148 40.2	N22 16.0	216 51.0	N21 05.0	59.6	7.1	11.5
	23	163 40.1	N22 15.7	231 17.1	N21 16.6	59.6	7.0	11.4
10	00	178 40.0	N22 15.4	245 43.1	N21 28.0	59.6	6.9	11.3
	01	193 39.9	N22 15.1	260 09.0	N21 39.3	59.7	6.7	11.2
	02	208 39.8	N22 14.8	274 34.7	N21 50.5	59.7	6.6	11.1
	03	223 39.7	N22 14.4	289 00.3	N22 01.6	59.7	6.4	10.9
	04	238 39.7	N22 14.1	303 25.7	N22 12.5	59.8	6.3	10.8
	05	253 39.6	N22 13.8	317 51.0	N22 23.3	59.8	6.2	10.7
	06	268 39.5	N22 13.5	332 16.2	N22 34.0	59.8	6.0	10.5
	07	283 39.4	N22 13.2	346 41.2	N22 44.5	59.8	5.9	10.4
	08	298 39.3	N22 12.9	001 06.1	N22 54.9	59.9	5.8	10.3
	09	313 39.2	N22 12.5	015 30.9	N23 05.2	59.9	5.6	10.1
	10	328 39.1	N22 12.2	029 55.5	N23 15.3	59.9	5.5	10.0
	11	343 39.0	N22 11.9	044 20.1	N23 25.3	60.0	5.4	9.8
	12	358 38.9	N22 11.6	058 44.4	N23 35.2	60.0	5.2	9.7
	13	013 38.9	N22 11.3	073 08.7	N23 44.9	60.0	5.1	9.6
	14	028 38.8	N22 10.9	087 32.8	N23 54.4	60.0	5.0	9.4
	15	043 38.7	N22 10.6	101 56.7	N24 03.8	60.1	4.8	9.3
	16	058 38.6	N22 10.3	116 20.6	N24 13.1	60.1	4.7	9.1
	17	073 38.5	N22 10.0	130 44.3	N24 22.2	60.1	4.6	8.9
	18	088 38.4	N22 09.6	145 07.9	N24 31.1	60.2	4.5	8.8
	19	103 38.3	N22 09.3	159 31.3	N24 39.9	60.2	4.3	8.6
	20	118 38.2	N22 09.0	173 54.7	N24 48.5	60.2	4.2	8.5
	21	133 38.2	N22 08.7	188 17.9	N24 57.0	60.2	4.1	8.3
	22	148 38.1	N22 08.3	202 40.9	N25 05.3	60.3	3.9	8.1
	23	163 38.0	N22 08.0	217 03.9	N25 13.4	60.3	3.8	8.0
11	00	178 37.9	N22 07.7	231 26.7	N25 21.4	60.3	3.7	7.8
	01	193 37.8	N22 07.4	245 49.4	N25 29.2	60.3	3.6	7.6
	02	208 37.7	N22 07.0	260 12.0	N25 36.8	60.4	3.5	7.4
	03	223 37.6	N22 06.7	274 34.5	N25 44.2	60.4	3.3	7.3
	04	238 37.6	N22 06.4	288 56.8	N25 51.5	60.4	3.2	7.1
	05	253 37.5	N22 06.0	303 19.0	N25 58.6	60.4	3.1	6.9
	06	268 37.4	N22 05.7	317 41.2	N26 05.5	60.5	3.0	6.7
	07	283 37.3	N22 05.4	332 03.2	N26 12.2	60.5	2.9	6.5
	08	298 37.2	N22 05.0	346 25.1	N26 18.7	60.5	2.8	6.4
	09	313 37.1	N22 04.7	000 46.9	N26 25.1	60.5	2.7	6.2
	10	328 37.1	N22 04.4	015 08.5	N26 31.3	60.5	2.6	6.0
	11	343 37.0	N22 04.0	029 30.1	N26 37.2	60.6	2.5	5.8
	12	358 36.9	N22 03.7	043 51.6	N26 43.0	60.6	2.4	5.6
	13	013 36.8	N22 03.3	058 13.0	N26 48.6	60.6	2.3	5.4
	14	028 36.7	N22 03.0	072 34.3	N26 54.0	60.6	2.2	5.2
	15	043 36.6	N22 02.7	086 55.5	N26 59.2	60.6	2.1	5.0
	16	058 36.6	N22 02.3	101 16.6	N27 04.2	60.7	2.0	4.8
	17	073 36.5	N22 02.0	115 37.6	N27 09.1	60.7	1.9	4.6
	18	088 36.4	N22 01.7	129 58.5	N27 13.7	60.7	1.8	4.4
	19	103 36.3	N22 01.3	144 19.3	N27 18.1	60.7	1.8	4.2
	20	118 36.2	N22 01.0	158 40.1	N27 22.3	60.7	1.7	4.0
	21	133 36.1	N22 00.6	173 00.8	N27 26.3	60.8	1.6	3.8
	22	148 36.1	N22 00.3	187 21.4	N27 30.1	60.8	1.5	3.6
	23	163 36.0	N21 59.9	201 41.9	N27 33.6	60.8	1.5	3.4

Day 9 noon Sun: v -0.1 d -0.3 SD 15.7 | Moon SD 16.1

Day 10 noon Sun: v -0.1 d -0.3 SD 15.7 | Moon SD 16.3

Day 11 noon Sun: v -0.1 d -0.3 SD 15.7 | Moon SD 16.5

SUN: JULY 10 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	0113	2254	--	--
64N	--	--	0202	2207	--	--
62N	--	--	0232	2137	--	--
60N	--	0129	0255	2115	2239	--
58N	--	0205	0313	2057	2205	--
56N	--	0230	0328	2042	2140	--
54N	0122	0249	0341	2029	2121	2247
52N	0155	0305	0352	2018	2105	2215
50N	0218	0319	0402	2008	2051	2152
45N	0259	0347	0423	1947	2024	2111
40N	0327	0408	0440	1930	2003	2043
35N	0349	0425	0454	1916	1946	2021
30N	0407	0439	0507	1904	1931	2004
25N	0421	0452	0517	1853	1919	1949
20N	0434	0503	0527	1843	1908	1937
15N	0445	0513	0536	1834	1858	1925
10N	0455	0522	0545	1826	1848	1915
05N	0505	0531	0554	1817	1840	1906
00N	0513	0539	0602	1809	1831	1857
05S	0522	0548	0610	1801	1823	1849
10S	0529	0556	0618	1753	1815	1841
15S	0537	0604	0627	1744	1807	1834
20S	0545	0612	0636	1735	1759	1826
25S	0552	0620	0645	1726	1750	1819
30S	0600	0630	0656	1715	1741	1811
35S	0608	0639	0707	1704	1732	1803
40S	0617	0650	0721	1650	1721	1754
45S	0626	0703	0736	1635	1708	1745
50S	0637	0718	0756	1616	1653	1734
55S	0650	0736	0821	1551	1635	1722
60S	0705	0801	0856	1516	1611	1706

MOON: RISE / SET | UTC HHMM

Lat	Day 9		Day 10		Day 11	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	2053	1742	--	--	--	--
66N	2137	1700	--	--	--	--
64N	2206	1631	2141	1858	--	--
62N	2229	1610	2226	1814	2225	2028
60N	2247	1552	2255	1745	2318	1935
58N	2302	1538	2318	1722	2351	1903
56N	2315	1525	2337	1704	--	1839
54N	2327	1515	2353	1649	--	1820
52N	2337	1505	--	1636	0006	1803
50N	2346	1457	--	1624	0019	1749
45N	--	1439	0006	1600	0044	1721
40N	--	1424	0022	1541	0104	1658
35N	--	1412	0035	1525	0120	1640
30N	0007	1401	0047	1512	0135	1624
25N	0015	1352	0057	1459	0148	1610
20N	0022	1343	0107	1448	0200	1557
15N	0028	1335	0116	1438	0211	1545
10N	0035	1327	0125	1428	0221	1534
05N	0041	1320	0133	1419	0232	1523
00N	0047	1312	0142	1409	0242	1512
05S	0054	1305	0150	1400	0252	1501
10S	0100	1258	0159	1351	0302	1451
15S	0106	1250	0207	1341	0313	1439
20S	0113	1242	0217	1331	0324	1427
25S	0121	1234	0227	1320	0336	1415
30S	0129	1224	0238	1308	0350	1401
35S	0138	1214	0250	1255	0405	1345
40S	0149	1202	0305	1239	0422	1327
45S	0201	1148	0322	1221	0444	1305
50S	0216	1132	0343	1158	0511	1237
55S	0235	1110	0411	1129	0548	1159
60S	0302	1042	0452	1046	0648	1058

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JULY 12 - JULY 14

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
12	00	289 54.4	134 55.1	N11 49.4	222 14.8	N21 40.9	164 58.6	N20 01.8	275 33.5	N03 29.8
	01	304 56.9	149 54.9	N11 48.3	237 15.4	N21 41.2	180 00.5	N20 01.7	290 35.9	N03 29.8
	02	319 59.4	164 54.8	N11 47.2	252 16.0	N21 41.5	195 02.4	N20 01.5	305 38.3	N03 29.8
	03	335 01.8	179 54.7	N11 46.1	267 16.6	N21 41.8	210 04.3	N20 01.4	320 40.7	N03 29.8
	04	350 04.3	194 54.5	N11 44.9	282 17.2	N21 42.1	225 06.2	N20 01.3	335 43.1	N03 29.8
	05	005 06.8	209 54.4	N11 43.8	297 17.8	N21 42.4	240 08.1	N20 01.2	350 45.5	N03 29.8
	06	020 09.2	224 54.3	N11 42.7	312 18.4	N21 42.7	255 10.0	N20 01.0	005 47.9	N03 29.8
	07	035 11.7	239 54.2	N11 41.6	327 19.1	N21 43.0	270 11.9	N20 00.9	020 50.3	N03 29.8
	08	050 14.2	254 54.0	N11 40.5	342 19.7	N21 43.3	285 13.8	N20 00.8	035 52.7	N03 29.9
	09	065 16.6	269 53.9	N11 39.4	357 20.3	N21 43.6	300 15.6	N20 00.7	050 55.1	N03 29.9
	10	080 19.1	284 53.8	N11 38.2	012 20.9	N21 43.9	315 17.5	N20 00.6	065 57.5	N03 29.9
	11	095 21.5	299 53.7	N11 37.1	027 21.5	N21 44.1	330 19.4	N20 00.4	080 59.9	N03 29.9
	12	110 24.0	314 53.5	N11 36.0	042 22.1	N21 44.4	345 21.3	N20 00.3	096 02.3	N03 29.9
	13	125 26.5	329 53.4	N11 34.9	057 22.7	N21 44.7	000 23.2	N20 00.2	111 04.7	N03 29.9
	14	140 28.9	344 53.3	N11 33.8	072 23.3	N21 45.0	015 25.1	N20 00.1	126 07.1	N03 29.9
	15	155 31.4	359 53.2	N11 32.6	087 23.9	N21 45.3	030 27.0	N19 59.9	141 09.5	N03 30.0
	16	170 33.9	014 53.1	N11 31.5	102 24.5	N21 45.6	045 28.9	N19 59.8	156 11.9	N03 30.0
	17	185 36.3	029 52.9	N11 30.4	117 25.1	N21 45.9	060 30.8	N19 59.7	171 14.3	N03 30.0
	18	200 38.8	044 52.8	N11 29.3	132 25.8	N21 46.2	075 32.7	N19 59.6	186 16.7	N03 30.0
	19	215 41.3	059 52.7	N11 28.1	147 26.4	N21 46.5	090 34.6	N19 59.5	201 19.1	N03 30.0
	20	230 43.7	074 52.6	N11 27.0	162 27.0	N21 46.7	105 36.5	N19 59.3	216 21.5	N03 30.0
	21	245 46.2	089 52.5	N11 25.9	177 27.6	N21 47.0	120 38.4	N19 59.2	231 23.9	N03 30.0
	22	260 48.7	104 52.4	N11 24.8	192 28.2	N21 47.3	135 40.3	N19 59.1	246 26.4	N03 30.0
	23	275 51.1	119 52.2	N11 23.7	207 28.8	N21 47.6	150 42.2	N19 59.0	261 28.8	N03 30.0
13	00	290 53.6	134 52.1	N11 22.5	222 29.4	N21 47.9	165 44.1	N19 58.8	276 31.2	N03 30.1
	01	305 56.0	149 52.0	N11 21.4	237 30.0	N21 48.2	180 46.0	N19 58.7	291 33.6	N03 30.1
	02	320 58.5	164 51.9	N11 20.3	252 30.6	N21 48.5	195 47.9	N19 58.6	306 36.0	N03 30.1
	03	336 01.0	179 51.8	N11 19.2	267 31.2	N21 48.8	210 49.8	N19 58.5	321 38.4	N03 30.1
	04	351 03.4	194 51.7	N11 18.0	282 31.8	N21 49.0	225 51.7	N19 58.4	336 40.8	N03 30.1
	05	006 05.9	209 51.6	N11 16.9	297 32.5	N21 49.3	240 53.6	N19 58.2	351 43.2	N03 30.1
	06	021 08.4	224 51.5	N11 15.8	312 33.1	N21 49.6	255 55.5	N19 58.1	006 45.6	N03 30.1
	07	036 10.8	239 51.3	N11 14.6	327 33.7	N21 49.9	270 57.4	N19 58.0	021 48.0	N03 30.1
	08	051 13.3	254 51.2	N11 13.5	342 34.3	N21 50.2	285 59.3	N19 57.9	036 50.4	N03 30.2
	09	066 15.8	269 51.1	N11 12.4	357 34.9	N21 50.5	301 01.1	N19 57.7	051 52.8	N03 30.2
	10	081 18.2	284 51.0	N11 11.3	012 35.5	N21 50.7	316 03.0	N19 57.6	066 55.2	N03 30.2
	11	096 20.7	299 50.9	N11 10.1	027 36.1	N21 51.0	331 04.9	N19 57.5	081 57.6	N03 30.2
	12	111 23.2	314 50.8	N11 09.0	042 36.7	N21 51.3	346 06.8	N19 57.4	097 00.0	N03 30.2
	13	126 25.6	329 50.7	N11 07.9	057 37.3	N21 51.6	001 08.7	N19 57.2	112 02.4	N03 30.2
	14	141 28.1	344 50.6	N11 06.7	072 37.9	N21 51.9	016 10.6	N19 57.1	127 04.9	N03 30.2
	15	156 30.5	359 50.5	N11 05.6	087 38.5	N21 52.2	031 12.5	N19 57.0	142 07.3	N03 30.2
	16	171 33.0	014 50.4	N11 04.5	102 39.2	N21 52.4	046 14.4	N19 56.9	157 09.7	N03 30.2
	17	186 35.5	029 50.3	N11 03.3	117 39.8	N21 52.7	061 16.3	N19 56.8	172 12.1	N03 30.3
	18	201 37.9	044 50.2	N11 02.2	132 40.4	N21 53.0	076 18.2	N19 56.6	187 14.5	N03 30.3
	19	216 40.4	059 50.1	N11 01.1	147 41.0	N21 53.3	091 20.1	N19 56.5	202 16.9	N03 30.3
	20	231 42.9	074 50.0	N10 59.9	162 41.6	N21 53.6	106 22.0	N19 56.4	217 19.3	N03 30.3
	21	246 45.3	089 49.9	N10 58.8	177 42.2	N21 53.8	121 23.9	N19 56.3	232 21.7	N03 30.3
	22	261 47.8	104 49.8	N10 57.7	192 42.8	N21 54.1	136 25.8	N19 56.1	247 24.1	N03 30.3
	23	276 50.3	119 49.7	N10 56.5	207 43.4	N21 54.4	151 27.7	N19 56.0	262 26.5	N03 30.3
14	00	291 52.7	134 49.6	N10 55.4	222 44.0	N21 54.7	166 29.6	N19 55.9	277 28.9	N03 30.3
	01	306 55.2	149 49.5	N10 54.3	237 44.6	N21 54.9	181 31.5	N19 55.8	292 31.3	N03 30.3
	02	321 57.7	164 49.4	N10 53.1	252 45.3	N21 55.2	196 33.4	N19 55.6	307 33.8	N03 30.3
	03	337 00.1	179 49.3	N10 52.0	267 45.9	N21 55.5	211 35.3	N19 55.5	322 36.2	N03 30.4
	04	352 02.6	194 49.2	N10 50.9	282 46.5	N21 55.8	226 37.2	N19 55.4	337 38.6	N03 30.4
	05	007 05.0	209 49.1	N10 49.7	297 47.1	N21 56.1	241 39.1	N19 55.3	352 41.0	N03 30.4
	06	022 07.5	224 49.0	N10 48.6	312 47.7	N21 56.3	256 40.9	N19 55.1	007 43.4	N03 30.4
	07	037 10.0	239 48.9	N10 47.5	327 48.3	N21 56.6	271 42.8	N19 55.0	022 45.8	N03 30.4
	08	052 12.4	254 48.8	N10 46.3	342 48.9	N21 56.9	286 44.7	N19 54.9	037 48.2	N03 30.4
	09	067 14.9	269 48.7	N10 45.2	357 49.5	N21 57.2	301 46.6	N19 54.8	052 50.6	N03 30.4
	10	082 17.4	284 48.6	N10 44.0	012 50.1	N21 57.4	316 48.5	N19 54.7	067 53.0	N03 30.4
	11	097 19.8	299 48.5	N10 42.9	027 50.7	N21 57.7	331 50.4	N19 54.5	082 55.4	N03 30.4
	12	112 22.3	314 48.4	N10 41.8	042 51.3	N21 58.0	346 52.3	N19 54.4	097 57.9	N03 30.4
	13	127 24.8	329 48.4	N10 40.6	057 52.0	N21 58.3	001 54.2	N19 54.3	113 00.3	N03 30.5
	14	142 27.2	344 48.3	N10 39.5	072 52.6	N21 58.5	016 56.1	N19 54.2	128 02.7	N03 30.5
	15	157 29.7	359 48.2	N10 38.4	087 53.2	N21 58.8	031 58.0	N19 54.0	143 05.1	N03 30.5
	16	172 32.2	014 48.1	N10 37.2	102 53.8	N21 59.1	046 59.9	N19 53.9	158 07.5	N03 30.5
	17	187 34.6	029 48.0	N10 36.1	117 54.4	N21 59.3	062 01.8	N19 53.8	173 09.9	N03 30.5
	18	202 37.1	044 47.9	N10 34.9	132 55.0	N21 59.6	077 03.7	N19 53.7	188 12.3	N03 30.5
	19	217 39.5	059 47.8	N10 33.8	147 55.6	N21 59.9	092 05.6	N19 53.5	203 14.7	N03 30.5
	20	232 42.0	074 47.7	N10 32.6	162 56.2	N22 00.2	107 07.5	N19 53.4	218 17.2	N03 30.5
	21	247 44.5	089 47.7	N10 31.5	177 56.8	N22 00.4	122 09.4	N19 53.3	233 19.6	N03 30.5
	22	262 46.9	104 47.6	N10 30.4	192 57.4	N22 00.7	137 11.3	N19 53.2	248 22.0	N03 30.5
	23	277 49.4	119 47.5	N10 29.2	207 58.1	N22 01.0	152 13.2	N19 53.0	263 24.4	N03 30.5

Venus	Mars	Jupiter	Saturn
12: v -0.1 d -1.1	12: v 0.6 d 0.3	12: v 1.9 d -0.1	12: v 2.4 d 0.0
13: v -0.1 d -1.1	13: v 0.6 d 0.3	13: v 1.9 d -0.1	13: v 2.4 d 0.0
14: v -0.1 d -1.1	14: v 0.6 d 0.3	14: v 1.9 d -0.1	14: v 2.4 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.0	S40 11.6
Achernar	335 19.3	S57 05.8
Acrux	172 58.8	S63 15.1
Adhara	255 05.3	S29 00.4
Al Na'ir	027 31.0	S46 49.7
Aldebaran	290 38.4	N16 33.7
Alioth	166 11.9	N55 49.2
Alkaid	152 50.9	N49 11.1
Alnilam	275 36.8	S01 11.0
Alphard	217 46.8	S08 46.4
Alphecca	126 02.5	N26 37.6
Alpheratz	357 33.4	N29 14.2
Altair	061 58.4	N08 56.4
Ankaa	353 05.8	S42 09.4
Antares	112 14.0	S26 29.5
Arcturus	145 46.7	N19 02.8
Atria	107 06.6	S69 04.6
Avior	234 14.9	S59 35.7
Bellatrix	278 21.8	N06 22.5
Betelgeuse	270 51.0	N07 24.7
Canopus	263 52.4	S52 42.5
Capella	280 20.4	N46 01.4
Deneb	049 24.5	N45 22.5
Denebola	182 23.8	N14 25.5
Diphda	348 46.0	S17 50.3
Dubhe	193 39.9	N61 36.7
Elnath	278 00.6	N28 37.7
Eltanin	090 41.1	N51 29.2
Enif	033 37.3	N09 59.9
Fomalhaut	015 12.9	S29 28.7
Gacrux	171 50.3	S57 16.0
Gienah	175 42.4	S17 41.5
Hadar	148 34.1	S60 30.3
Hamal	327 49.8	N23 35.2
Kaus Australi	083 30.4	S34 22.3
Kochab	137 19.4	N74 03.0
Markab	013 28.5	N15 20.9
Menkar	314 05.0	N04 11.7
Menkent	147 56.0	S36 30.2
Miaplacidus	221 38.9	S69 49.7
Mirfak	308 26.7	N49 57.1
Nunki	075 45.8	S26 15.8
Peacock	053 03.2	S56 38.8
Polaris	313 36.4	N89 22.2
Pollux	243 16.1	N27 57.7
Procyon	244 49.9	N05 09.4
Rasalhague	095 57.1	N12 32.5
Regulus	207 33.4	N11 50.3
Rigel	281 02.9	S08 10.2
Rigil Kentaur	139 38.3	S60 57.0
Sabik	102 01.0	S15 45.5
Schedar	349 29.5	N56 40.8
Shaula	096 08.3	S37 07.4
Sirius	258 25.5	S16 45.1
Spica	158 21.0	S11 18.1
Suhail	222 45.8	S43 32.5
Vega	080 31.9	N38 48.5
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	203 27.7	1501
Mars	291 13.6	0910
Jupiter	234 43.7	1255
Saturn	345 36.9	0533

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
12	00	178 35.9	N21 59.6	216 02.4	N27 37.0	60.8	1.4	3.2
	01	193 35.8	N21 59.3	230 22.8	N27 40.2	60.8	1.3	3.0
	02	208 35.7	N21 58.9	244 43.1	N27 43.1	60.8	1.3	2.7
	03	223 35.7	N21 58.6	259 03.4	N27 45.9	60.8	1.2	2.5
	04	238 35.6	N21 58.2	273 23.6	N27 48.4	60.9	1.2	2.3
	05	253 35.5	N21 57.9	287 43.8	N27 50.7	60.9	1.1	2.1
	06	268 35.4	N21 57.5	302 03.9	N27 52.8	60.9	1.1	1.9
	07	283 35.3	N21 57.2	316 23.9	N27 54.7	60.9	1.0	1.7
	08	298 35.3	N21 56.8	330 44.0	N27 56.4	60.9	1.0	1.5
	09	313 35.2	N21 56.5	345 03.9	N27 57.9	60.9	0.9	1.2
	10	328 35.1	N21 56.1	359 23.9	N27 59.1	60.9	0.9	1.0
	11	343 35.0	N21 55.8	013 43.8	N28 00.1	60.9	0.9	0.8
	12	358 34.9	N21 55.4	028 03.7	N28 00.9	61.0	0.9	0.6
	13	013 34.9	N21 55.1	042 23.5	N28 01.5	61.0	0.8	0.4
	14	028 34.8	N21 54.7	056 43.4	N28 01.9	61.0	0.8	0.1
	15	043 34.7	N21 54.4	071 03.2	N28 02.0	61.0	0.8	-0.1
	16	058 34.6	N21 54.0	085 23.0	N28 02.0	61.0	0.8	-0.3
	17	073 34.5	N21 53.6	099 42.8	N28 01.7	61.0	0.8	-0.5
	18	088 34.5	N21 53.3	114 02.6	N28 01.2	61.0	0.8	-0.7
	19	103 34.4	N21 52.9	128 22.4	N28 00.4	61.0	0.8	-1.0
	20	118 34.3	N21 52.6	142 42.1	N27 59.5	61.0	0.8	-1.2
	21	133 34.2	N21 52.2	157 01.9	N27 58.3	61.0	0.8	-1.4
	22	148 34.2	N21 51.9	171 21.7	N27 56.9	61.0	0.8	-1.6
	23	163 34.1	N21 51.5	185 41.5	N27 55.3	61.0	0.8	-1.8
13	00	178 34.0	N21 51.1	200 01.3	N27 53.4	61.0	0.8	-2.1
	01	193 33.9	N21 50.8	214 21.2	N27 51.4	61.0	0.9	-2.3
	02	208 33.9	N21 50.4	228 41.0	N27 49.1	61.1	0.9	-2.5
	03	223 33.8	N21 50.0	243 00.9	N27 46.6	61.1	0.9	-2.7
	04	238 33.7	N21 49.7	257 20.8	N27 43.9	61.1	0.9	-2.9
	05	253 33.6	N21 49.3	271 40.8	N27 41.0	61.1	1.0	-3.1
	06	268 33.6	N21 49.0	286 00.7	N27 37.9	61.1	1.0	-3.4
	07	283 33.5	N21 48.6	300 20.7	N27 34.5	61.1	1.1	-3.6
	08	298 33.4	N21 48.2	314 40.8	N27 30.9	61.1	1.1	-3.8
	09	313 33.3	N21 47.9	329 00.9	N27 27.1	61.1	1.2	-4.0
	10	328 33.3	N21 47.5	343 21.1	N27 23.1	61.1	1.2	-4.2
	11	343 33.2	N21 47.1	357 41.3	N27 18.9	61.1	1.3	-4.4
	12	358 33.1	N21 46.8	012 01.5	N27 14.5	61.1	1.3	-4.6
	13	013 33.0	N21 46.4	026 21.9	N27 09.9	61.1	1.4	-4.8
	14	028 33.0	N21 46.0	040 42.2	N27 05.0	61.1	1.4	-5.1
	15	043 32.9	N21 45.7	055 02.7	N27 00.0	61.0	1.5	-5.3
	16	058 32.8	N21 45.3	069 23.2	N26 54.7	61.0	1.6	-5.5
	17	073 32.7	N21 44.9	083 43.8	N26 49.2	61.0	1.7	-5.7
	18	088 32.7	N21 44.5	098 04.4	N26 43.5	61.0	1.7	-5.9
	19	103 32.6	N21 44.2	112 25.2	N26 37.7	61.0	1.8	-6.1
	20	118 32.5	N21 43.8	126 46.0	N26 31.6	61.0	1.9	-6.3
	21	133 32.4	N21 43.4	141 06.9	N26 25.3	61.0	2.0	-6.5
	22	148 32.4	N21 43.0	155 27.9	N26 18.8	61.0	2.1	-6.7
	23	163 32.3	N21 42.7	169 49.0	N26 12.2	61.0	2.2	-6.9
14	00	178 32.2	N21 42.3	184 10.1	N26 05.3	61.0	2.3	-7.1
	01	193 32.2	N21 41.9	198 31.4	N25 58.2	61.0	2.4	-7.3
	02	208 32.1	N21 41.5	212 52.7	N25 51.0	61.0	2.5	-7.4
	03	223 32.0	N21 41.2	227 14.2	N25 43.5	61.0	2.6	-7.6
	04	238 31.9	N21 40.8	241 35.7	N25 35.9	61.0	2.7	-7.8
	05	253 31.9	N21 40.4	255 57.4	N25 28.1	60.9	2.8	-8.0
	06	268 31.8	N21 40.0	270 19.2	N25 20.1	60.9	2.9	-8.2
	07	283 31.7	N21 39.6	284 41.0	N25 11.9	60.9	3.0	-8.4
	08	298 31.7	N21 39.3	299 03.0	N25 03.5	60.9	3.1	-8.6
	09	313 31.6	N21 38.9	313 25.1	N24 55.0	60.9	3.2	-8.7
	10	328 31.5	N21 38.5	327 47.3	N24 46.2	60.9	3.3	-8.9
	11	343 31.5	N21 38.1	342 09.6	N24 37.3	60.9	3.4	-9.1
	12	358 31.4	N21 37.7	356 32.0	N24 28.3	60.9	3.5	-9.2
	13	013 31.3	N21 37.4	010 54.5	N24 19.0	60.8	3.7	-9.4
	14	028 31.3	N21 37.0	025 17.2	N24 09.6	60.8	3.8	-9.6
	15	043 31.2	N21 36.6	039 40.0	N24 00.0	60.8	3.9	-9.7
	16	058 31.1	N21 36.2	054 02.9	N23 50.3	60.8	4.0	-9.9
	17	073 31.0	N21 35.8	068 25.9	N23 40.3	60.8	4.1	-10.1
	18	088 31.0	N21 35.4	082 49.0	N23 30.3	60.8	4.3	-10.2
	19	103 30.9	N21 35.0	097 12.3	N23 20.0	60.7	4.4	-10.4
	20	118 30.8	N21 34.6	111 35.7	N23 09.7	60.7	4.5	-10.5
	21	133 30.8	N21 34.3	125 59.2	N22 59.1	60.7	4.6	-10.7
	22	148 30.7	N21 33.9	140 22.8	N22 48.4	60.7	4.8	-10.8
	23	163 30.6	N21 33.5	154 46.6	N22 37.6	60.7	4.9	-11.0

Day 12 noon Sun: v -0.1 d -0.4 SD 15.7 | Moon SD 16.6

Day 13 noon Sun: v -0.1 d -0.4 SD 15.7 | Moon SD 16.6

Day 14 noon Sun: v -0.1 d -0.4 SD 15.7 | Moon SD 16.6

SUN: JULY 13 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	0127	2241	--	--
64N	--	--	0210	2200	--	--
62N	--	0031	0238	2132	2331	--
60N	--	0138	0300	2110	2231	--
58N	--	0211	0317	2053	2159	--
56N	0029	0235	0332	2039	2135	2334
54N	0130	0254	0345	2026	2117	2239
52N	0201	0309	0356	2015	2101	2209
50N	0223	0323	0405	2006	2048	2147
45N	0302	0350	0426	1945	2021	2108
40N	0330	0410	0442	1929	2001	2041
35N	0351	0427	0456	1915	1944	2020
30N	0408	0441	0508	1903	1930	2003
25N	0423	0453	0519	1853	1918	1948
20N	0435	0504	0528	1843	1907	1936
15N	0446	0514	0537	1834	1857	1925
10N	0456	0523	0546	1826	1848	1915
05N	0506	0532	0554	1817	1840	1906
00N	0514	0540	0602	1809	1832	1858
05S	0522	0548	0610	1801	1824	1850
10S	0530	0556	0618	1753	1816	1842
15S	0537	0604	0627	1745	1808	1835
20S	0545	0612	0635	1736	1800	1827
25S	0552	0620	0645	1727	1752	1820
30S	0559	0629	0655	1717	1743	1812
35S	0607	0639	0706	1705	1733	1804
40S	0616	0649	0719	1652	1723	1756
45S	0625	0702	0735	1637	1710	1747
50S	0635	0716	0753	1618	1656	1737
55S	0648	0734	0818	1554	1638	1724
60S	0703	0757	0851	1521	1615	1710

MOON: RISE / SET | UTC HHMM

Lat	Day 12		Day 13		Day 14	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	2313
64N	--	--	--	2331	0004	2233
62N	2312	2203	--	2208	0127	2205
60N	--	2055	0019	2130	0203	2143
58N	--	2020	0054	2104	0229	2125
56N	0015	1955	0120	2043	0250	2110
54N	0035	1934	0140	2025	0307	2057
52N	0051	1917	0157	2010	0322	2046
50N	0106	1902	0212	1957	0334	2036
45N	0135	1833	0241	1930	0400	2014
40N	0158	1809	0304	1909	0421	1957
35N	0216	1750	0324	1851	0438	1942
30N	0233	1733	0340	1836	0453	1929
25N	0247	1719	0354	1822	0506	1917
20N	0300	1705	0408	1809	0518	1907
15N	0313	1653	0420	1758	0529	1857
10N	0324	1641	0432	1747	0539	1847
05N	0336	1630	0443	1736	0550	1838
00N	0347	1619	0454	1725	0559	1829
05S	0358	1607	0505	1715	0609	1820
10S	0409	1556	0516	1704	0619	1811
15S	0421	1544	0528	1653	0630	1801
20S	0433	1532	0540	1641	0641	1751
25S	0446	1518	0553	1628	0653	1740
30S	0501	1503	0608	1614	0705	1728
35S	0518	1447	0624	1558	0720	1715
40S	0537	1427	0643	1539	0737	1659
45S	0601	1403	0706	1517	0756	1640
50S	0631	1333	0735	1448	0821	1616
55S	0714	1250	0816	1408	0854	1545
60S	0830	1134	0925	1300	0943	1457

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JULY 15 - JULY 17

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
15	00	292 51.9	134 47.4	N10 28.1	222 58.7	N22 01.2	167 15.1	N19 52.9	278 26.8	N03 30.6
	01	307 54.3	149 47.3	N10 26.9	237 59.3	N22 01.5	182 17.0	N19 52.8	293 29.2	N03 30.6
	02	322 56.8	164 47.2	N10 25.8	252 59.9	N22 01.8	197 18.8	N19 52.7	308 31.6	N03 30.6
	03	337 59.3	179 47.2	N10 24.6	268 00.5	N22 02.0	212 20.7	N19 52.5	323 34.0	N03 30.6
	04	353 01.7	194 47.1	N10 23.5	283 01.1	N22 02.3	227 22.6	N19 52.4	338 36.5	N03 30.6
	05	008 04.2	209 47.0	N10 22.4	298 01.7	N22 02.6	242 24.5	N19 52.3	353 38.9	N03 30.6
	06	023 06.6	224 46.9	N10 21.2	313 02.3	N22 02.8	257 26.4	N19 52.2	008 41.3	N03 30.6
	07	038 09.1	239 46.8	N10 20.1	328 02.9	N22 03.1	272 28.3	N19 52.0	023 43.7	N03 30.6
	08	053 11.6	254 46.8	N10 18.9	343 03.5	N22 03.4	287 30.2	N19 51.9	038 46.1	N03 30.6
	09	068 14.0	269 46.7	N10 17.8	358 04.2	N22 03.6	302 32.1	N19 51.8	053 48.5	N03 30.6
	10	083 16.5	284 46.6	N10 16.6	013 04.8	N22 03.9	317 34.0	N19 51.7	068 50.9	N03 30.6
	11	098 19.0	299 46.5	N10 15.5	028 05.4	N22 04.2	332 35.9	N19 51.5	083 53.4	N03 30.6
	12	113 21.4	314 46.5	N10 14.3	043 06.0	N22 04.4	347 37.8	N19 51.4	098 55.8	N03 30.7
	13	128 23.9	329 46.4	N10 13.2	058 06.6	N22 04.7	002 39.7	N19 51.3	113 58.2	N03 30.7
	14	143 26.4	344 46.3	N10 12.0	073 07.2	N22 05.0	017 41.6	N19 51.2	129 00.6	N03 30.7
	15	158 28.8	359 46.2	N10 10.9	088 07.8	N22 05.2	032 43.5	N19 51.0	144 03.0	N03 30.7
	16	173 31.3	014 46.2	N10 09.7	103 08.4	N22 05.5	047 45.4	N19 50.9	159 05.4	N03 30.7
	17	188 33.8	029 46.1	N10 08.6	118 09.0	N22 05.8	062 47.3	N19 50.8	174 07.9	N03 30.7
	18	203 36.2	044 46.0	N10 07.4	133 09.6	N22 06.0	077 49.2	N19 50.7	189 10.3	N03 30.7
	19	218 38.7	059 45.9	N10 06.3	148 10.3	N22 06.3	092 51.1	N19 50.5	204 12.7	N03 30.7
	20	233 41.1	074 45.9	N10 05.1	163 10.9	N22 06.5	107 53.0	N19 50.4	219 15.1	N03 30.7
	21	248 43.6	089 45.8	N10 04.0	178 11.5	N22 06.8	122 54.8	N19 50.3	234 17.5	N03 30.7
	22	263 46.1	104 45.7	N10 02.8	193 12.1	N22 07.1	137 56.7	N19 50.2	249 19.9	N03 30.7
	23	278 48.5	119 45.7	N10 01.7	208 12.7	N22 07.3	152 58.6	N19 50.0	264 22.4	N03 30.7
16	00	293 51.0	134 45.6	N10 00.5	223 13.3	N22 07.6	168 00.5	N19 49.9	279 24.8	N03 30.7
	01	308 53.5	149 45.5	N09 59.4	238 13.9	N22 07.9	183 02.4	N19 49.8	294 27.2	N03 30.7
	02	323 55.9	164 45.5	N09 58.2	253 14.5	N22 08.1	198 04.3	N19 49.7	309 29.6	N03 30.8
	03	338 58.4	179 45.4	N09 57.1	268 15.1	N22 08.4	213 06.2	N19 49.5	324 32.0	N03 30.8
	04	354 00.9	194 45.3	N09 55.9	283 15.7	N22 08.6	228 08.1	N19 49.4	339 34.4	N03 30.8
	05	009 03.3	209 45.3	N09 54.8	298 16.4	N22 08.9	243 10.0	N19 49.3	354 36.9	N03 30.8
	06	024 05.8	224 45.2	N09 53.6	313 17.0	N22 09.2	258 11.9	N19 49.2	009 39.3	N03 30.8
	07	039 08.3	239 45.1	N09 52.5	328 17.6	N22 09.4	273 13.8	N19 49.0	024 41.7	N03 30.8
	08	054 10.7	254 45.1	N09 51.3	343 18.2	N22 09.7	288 15.7	N19 48.9	039 44.1	N03 30.8
	09	069 13.2	269 45.0	N09 50.1	358 18.8	N22 09.9	303 17.6	N19 48.8	054 46.5	N03 30.8
	10	084 15.6	284 45.0	N09 49.0	013 19.4	N22 10.2	318 19.5	N19 48.7	069 48.9	N03 30.8
	11	099 18.1	299 44.9	N09 47.8	028 20.0	N22 10.4	333 21.4	N19 48.5	084 51.4	N03 30.8
	12	114 20.6	314 44.8	N09 46.7	043 20.6	N22 10.7	348 23.3	N19 48.4	099 53.8	N03 30.8
	13	129 23.0	329 44.8	N09 45.5	058 21.2	N22 11.0	003 25.2	N19 48.3	114 56.2	N03 30.8
	14	144 25.5	344 44.7	N09 44.4	073 21.8	N22 11.2	018 27.1	N19 48.2	129 58.6	N03 30.8
	15	159 28.0	359 44.7	N09 43.2	088 22.5	N22 11.5	033 29.0	N19 48.0	145 01.0	N03 30.8
	16	174 30.4	014 44.6	N09 42.0	103 23.1	N22 11.7	048 30.8	N19 47.9	160 03.5	N03 30.8
	17	189 32.9	029 44.5	N09 40.9	118 23.7	N22 12.0	063 32.7	N19 47.8	175 05.9	N03 30.9
	18	204 35.4	044 44.5	N09 39.7	133 24.3	N22 12.2	078 34.6	N19 47.7	190 08.3	N03 30.9
	19	219 37.8	059 44.4	N09 38.6	148 24.9	N22 12.5	093 36.5	N19 47.5	205 10.7	N03 30.9
	20	234 40.3	074 44.4	N09 37.4	163 25.5	N22 12.7	108 38.4	N19 47.4	220 13.1	N03 30.9
	21	249 42.8	089 44.3	N09 36.3	178 26.1	N22 13.0	123 40.3	N19 47.3	235 15.6	N03 30.9
	22	264 45.2	104 44.3	N09 35.1	193 26.7	N22 13.2	138 42.2	N19 47.2	250 18.0	N03 30.9
	23	279 47.7	119 44.2	N09 33.9	208 27.3	N22 13.5	153 44.1	N19 47.0	265 20.4	N03 30.9
17	00	294 50.1	134 44.2	N09 32.8	223 28.0	N22 13.7	168 46.0	N19 46.9	280 22.8	N03 30.9
	01	309 52.6	149 44.1	N09 31.6	238 28.6	N22 14.0	183 47.9	N19 46.8	295 25.2	N03 30.9
	02	324 55.1	164 44.1	N09 30.5	253 29.2	N22 14.2	198 49.8	N19 46.7	310 27.7	N03 30.9
	03	339 57.5	179 44.0	N09 29.3	268 29.8	N22 14.5	213 51.7	N19 46.5	325 30.1	N03 30.9
	04	355 00.0	194 44.0	N09 28.1	283 30.4	N22 14.7	228 53.6	N19 46.4	340 32.5	N03 30.9
	05	010 02.5	209 43.9	N09 27.0	298 31.0	N22 15.0	243 55.5	N19 46.3	355 34.9	N03 30.9
	06	025 04.9	224 43.9	N09 25.8	313 31.6	N22 15.2	258 57.4	N19 46.2	010 37.4	N03 30.9
	07	040 07.4	239 43.8	N09 24.6	328 32.2	N22 15.5	273 59.3	N19 46.0	025 39.8	N03 30.9
	08	055 09.9	254 43.8	N09 23.5	343 32.8	N22 15.7	289 01.2	N19 45.9	040 42.2	N03 30.9
	09	070 12.3	269 43.7	N09 22.3	358 33.4	N22 16.0	304 03.1	N19 45.8	055 44.6	N03 30.9
	10	085 14.8	284 43.7	N09 21.2	013 34.1	N22 16.2	319 04.9	N19 45.6	070 47.0	N03 30.9
	11	100 17.2	299 43.6	N09 20.0	028 34.7	N22 16.5	334 06.8	N19 45.5	085 49.5	N03 30.9
	12	115 19.7	314 43.6	N09 18.8	043 35.3	N22 16.7	349 08.7	N19 45.4	100 51.9	N03 30.9
	13	130 22.2	329 43.5	N09 17.7	058 35.9	N22 17.0	004 10.6	N19 45.3	115 54.3	N03 31.0
	14	145 24.6	344 43.5	N09 16.5	073 36.5	N22 17.2	019 12.5	N19 45.1	130 56.7	N03 31.0
	15	160 27.1	359 43.4	N09 15.3	088 37.1	N22 17.5	034 14.4	N19 45.0	145 59.2	N03 31.0
	16	175 29.6	014 43.4	N09 14.2	103 37.7	N22 17.7	049 16.3	N19 44.9	161 01.6	N03 31.0
	17	190 32.0	029 43.4	N09 13.0	118 38.3	N22 18.0	064 18.2	N19 44.8	176 04.0	N03 31.0
	18	205 34.5	044 43.3	N09 11.8	133 38.9	N22 18.2	079 20.1	N19 44.6	191 06.4	N03 31.0
	19	220 37.0	059 43.3	N09 10.7	148 39.6	N22 18.5	094 22.0	N19 44.5	206 08.9	N03 31.0
	20	235 39.4	074 43.2	N09 09.5	163 40.2	N22 18.7	109 23.9	N19 44.4	221 11.3	N03 31.0
	21	250 41.9	089 43.2	N09 08.3	178 40.8	N22 19.0	124 25.8	N19 44.3	236 13.7	N03 31.0
	22	265 44.4	104 43.2	N09 07.2	193 41.4	N22 19.2	139 27.7	N19 44.1	251 16.1	N03 31.0
	23	280 46.8	119 43.1	N09 06.0	208 42.0	N22 19.4	154 29.6	N19 44.0	266 18.6	N03 31.0

Venus	Mars	Jupiter	Saturn
15: v -0.1 d -1.1	15: v 0.6 d 0.3	15: v 1.9 d -0.1	15: v 2.4 d 0.0
16: v -0.1 d -1.2	16: v 0.6 d 0.3	16: v 1.9 d -0.1	16: v 2.4 d 0.0
17: v 0.0 d -1.2	17: v 0.6 d 0.2	17: v 1.9 d -0.1	17: v 2.4 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.0	S40 11.6
Achernar	335 19.3	S57 05.7
Acrux	172 58.9	S63 15.1
Adhara	255 05.2	S29 00.4
Al Na'ir	027 31.0	S46 49.7
Aldebaran	290 38.4	N16 33.8
Alioth	166 11.9	N55 49.2
Alkaid	152 51.0	N49 11.1
Alnilam	275 36.7	S01 11.0
Alphard	217 46.8	S08 46.4
Alphecca	126 02.5	N26 37.6
Alpheratz	357 33.3	N29 14.2
Altair	061 58.4	N08 56.4
Ankaa	353 05.8	S42 09.4
Antares	112 14.0	S26 29.5
Arcturus	145 46.7	N19 02.8
Atria	107 06.6	S69 04.7
Avior	234 14.9	S59 35.7
Bellatrix	278 21.8	N06 22.5
Betelgeuse	270 51.0	N07 24.8
Canopus	263 52.4	S52 42.4
Capella	280 20.4	N46 01.4
Deneb	049 24.5	N45 22.5
Denebola	182 23.8	N14 25.5
Diphda	348 46.0	S17 50.2
Dubhe	193 39.9	N61 36.7
Elnath	278 00.6	N28 37.7
Eltanin	090 41.1	N51 29.2
Enif	033 37.3	N09 59.9
Fomalhaut	015 12.9	S29 28.7
Gacrux	171 50.4	S57 16.0
Gienah	175 42.4	S17 41.5
Hadar	148 34.1	S60 30.4
Hamal	327 49.8	N23 35.2
Kaus Australi	083 30.4	S34 22.3
Kochab	137 19.4	N74 03.0
Markab	013 28.4	N15 20.9
Menkar	314 05.0	N04 11.7
Menkent	147 56.0	S36 30.2
Miaplacidus	221 38.9	S69 49.7
Mirfak	308 26.7	N49 57.2
Nunki	075 45.8	S26 15.8
Peacock	053 03.1	S56 38.8
Polaris	313 34.8	N89 22.2
Pollux	243 16.1	N27 57.7
Procyon	244 49.8	N05 09.4
Rasalhague	095 57.1	N12 32.5
Regulus	207 33.4	N11 50.3
Rigel	281 02.9	S08 10.2
Rigil Kentaur	139 38.3	S60 57.0
Sabik	102 01.0	S15 45.5
Schedar	349 29.5	N56 40.8
Shaula	096 08.3	S37 07.4
Sirius	258 25.5	S16 45.1
Spica	158 21.0	S11 18.1
Suhail	222 45.8	S43 32.5
Vega	080 31.9	N38 48.6
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	200 24.3	1501
Mars	289 00.1	0907
Jupiter	234 02.7	1246
Saturn	345 33.2	0521

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
15	00	178 30.6	N21 33.1	169 10.5	N22 26.6	60.6	5.0	-11.1
	01	193 30.5	N21 32.7	183 34.5	N22 15.5	60.6	5.2	-11.3
	02	208 30.4	N21 32.3	197 58.7	N22 04.2	60.6	5.3	-11.4
	03	223 30.4	N21 31.9	212 23.0	N21 52.8	60.6	5.4	-11.6
	04	238 30.3	N21 31.5	226 47.4	N21 41.2	60.6	5.6	-11.7
	05	253 30.3	N21 31.1	241 11.9	N21 29.5	60.5	5.7	-11.8
	06	268 30.2	N21 30.7	255 36.6	N21 17.7	60.5	5.8	-12.0
	07	283 30.1	N21 30.3	270 01.4	N21 05.8	60.5	5.9	-12.1
	08	298 30.1	N21 29.9	284 26.4	N20 53.7	60.5	6.1	-12.2
	09	313 30.0	N21 29.5	298 51.5	N20 41.5	60.4	6.2	-12.3
	10	328 29.9	N21 29.1	313 16.7	N20 29.1	60.4	6.3	-12.5
	11	343 29.9	N21 28.7	327 42.0	N20 16.7	60.4	6.5	-12.6
	12	358 29.8	N21 28.3	342 07.5	N20 04.1	60.4	6.6	-12.7
	13	013 29.7	N21 27.9	356 33.1	N19 51.4	60.3	6.7	-12.8
	14	028 29.7	N21 27.5	010 58.8	N19 38.6	60.3	6.9	-12.9
	15	043 29.6	N21 27.1	025 24.7	N19 25.7	60.3	7.0	-13.0
	16	058 29.5	N21 26.7	039 50.7	N19 12.7	60.3	7.1	-13.1
	17	073 29.5	N21 26.3	054 16.8	N18 59.6	60.2	7.3	-13.2
	18	088 29.4	N21 25.9	068 43.1	N18 46.3	60.2	7.4	-13.3
	19	103 29.4	N21 25.5	083 09.5	N18 33.0	60.2	7.5	-13.4
	20	118 29.3	N21 25.1	097 36.0	N18 19.5	60.1	7.7	-13.5
	21	133 29.2	N21 24.7	112 02.7	N18 06.0	60.1	7.8	-13.6
	22	148 29.2	N21 24.3	126 29.4	N17 52.4	60.1	7.9	-13.7
	23	163 29.1	N21 23.9	140 56.3	N17 38.6	60.1	8.0	-13.8
16	00	178 29.1	N21 23.5	155 23.4	N17 24.8	60.0	8.2	-13.9
	01	193 29.0	N21 23.1	169 50.5	N17 10.9	60.0	8.3	-14.0
	02	208 28.9	N21 22.7	184 17.8	N16 56.9	60.0	8.4	-14.1
	03	223 28.9	N21 22.3	198 45.2	N16 42.8	59.9	8.5	-14.2
	04	238 28.8	N21 21.9	213 12.8	N16 28.7	59.9	8.7	-14.2
	05	253 28.8	N21 21.5	227 40.4	N16 14.4	59.9	8.8	-14.3
	06	268 28.7	N21 21.1	242 08.2	N16 00.1	59.8	8.9	-14.4
	07	283 28.6	N21 20.6	256 36.1	N15 45.7	59.8	9.0	-14.5
	08	298 28.6	N21 20.2	271 04.2	N15 31.2	59.8	9.1	-14.5
	09	313 28.5	N21 19.8	285 32.3	N15 16.7	59.7	9.3	-14.6
	10	328 28.5	N21 19.4	300 00.6	N15 02.0	59.7	9.4	-14.7
	11	343 28.4	N21 19.0	314 29.0	N14 47.4	59.7	9.5	-14.8
	12	358 28.3	N21 18.6	328 57.5	N14 32.6	59.6	9.6	-14.8
	13	013 28.3	N21 18.2	343 26.1	N14 17.8	59.6	9.7	-14.9
	14	028 28.2	N21 17.8	357 54.8	N14 02.9	59.6	9.8	-14.9
	15	043 28.2	N21 17.3	012 23.7	N13 48.0	59.5	10.0	-15.0
	16	058 28.1	N21 16.9	026 52.6	N13 33.0	59.5	10.1	-15.1
	17	073 28.1	N21 16.5	041 21.7	N13 17.9	59.5	10.2	-15.1
	18	088 28.0	N21 16.1	055 50.9	N13 02.8	59.4	10.3	-15.2
	19	103 27.9	N21 15.7	070 20.2	N12 47.7	59.4	10.4	-15.2
	20	118 27.9	N21 15.3	084 49.6	N12 32.4	59.4	10.5	-15.3
	21	133 27.8	N21 14.8	099 19.1	N12 17.2	59.3	10.6	-15.3
	22	148 27.8	N21 14.4	113 48.7	N12 01.9	59.3	10.7	-15.3
	23	163 27.7	N21 14.0	128 18.4	N11 46.5	59.3	10.8	-15.4
17	00	178 27.7	N21 13.6	142 48.3	N11 31.2	59.2	10.9	-15.4
	01	193 27.6	N21 13.1	157 18.2	N11 15.7	59.2	11.0	-15.5
	02	208 27.5	N21 12.7	171 48.2	N11 00.3	59.1	11.1	-15.5
	03	223 27.5	N21 12.3	186 18.3	N10 44.8	59.1	11.2	-15.5
	04	238 27.4	N21 11.9	200 48.6	N10 29.2	59.1	11.3	-15.6
	05	253 27.4	N21 11.5	215 18.9	N10 13.6	59.0	11.4	-15.6
	06	268 27.3	N21 11.0	229 49.3	N09 58.0	59.0	11.5	-15.6
	07	283 27.3	N21 10.6	244 19.8	N09 42.4	59.0	11.6	-15.7
	08	298 27.2	N21 10.2	258 50.4	N09 26.7	58.9	11.7	-15.7
	09	313 27.2	N21 09.7	273 21.1	N09 11.0	58.9	11.8	-15.7
	10	328 27.1	N21 09.3	287 51.9	N08 55.3	58.8	11.9	-15.7
	11	343 27.1	N21 08.9	302 22.8	N08 39.6	58.8	12.0	-15.8
	12	358 27.0	N21 08.5	316 53.7	N08 23.8	58.8	12.0	-15.8
	13	013 27.0	N21 08.0	331 24.8	N08 08.0	58.7	12.1	-15.8
	14	028 26.9	N21 07.6	345 55.9	N07 52.3	58.7	12.2	-15.8
	15	043 26.9	N21 07.2	000 27.1	N07 36.4	58.7	12.3	-15.8
	16	058 26.8	N21 06.7	014 58.4	N07 20.6	58.6	12.4	-15.8
	17	073 26.8	N21 06.3	029 29.8	N07 04.8	58.6	12.5	-15.9
	18	088 26.7	N21 05.9	044 01.2	N06 48.9	58.5	12.5	-15.9
	19	103 26.7	N21 05.4	058 32.7	N06 33.0	58.5	12.6	-15.9
	20	118 26.6	N21 05.0	073 04.4	N06 17.2	58.5	12.7	-15.9
	21	133 26.6	N21 04.6	087 36.0	N06 01.3	58.4	12.8	-15.9
	22	148 26.5	N21 04.1	102 07.8	N05 45.4	58.4	12.8	-15.9
	23	163 26.5	N21 03.7	116 39.6	N05 29.5	58.3	12.9	-15.9

Day 15 noon Sun: v -0.1 d -0.4 SD 15.7 | Moon SD 16.4

Day 16 noon Sun: v -0.1 d -0.4 SD 15.7 | Moon SD 16.3

Day 17 noon Sun: v -0.1 d -0.4 SD 15.7 | Moon SD 16.0

SUN: JULY 16 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	0140	2229	--	--
64N	--	--	0218	2151	--	--
62N	--	0057	0245	2125	2309	--
60N	--	0148	0306	2105	2221	--
58N	--	0218	0322	2049	2152	--
56N	0052	0241	0336	2035	2130	2315
54N	0139	0259	0349	2023	2112	2231
52N	0207	0314	0359	2012	2057	2203
50N	0228	0327	0409	2003	2045	2143
45N	0306	0353	0429	1943	2019	2105
40N	0333	0413	0445	1927	1959	2039
35N	0354	0429	0458	1914	1943	2018
30N	0410	0443	0510	1902	1929	2001
25N	0425	0455	0520	1852	1917	1947
20N	0437	0505	0530	1843	1907	1935
15N	0448	0515	0538	1834	1857	1924
10N	0457	0524	0547	1825	1848	1915
05N	0506	0532	0555	1818	1840	1906
00N	0514	0540	0603	1810	1832	1858
05S	0522	0548	0610	1802	1824	1850
10S	0530	0556	0618	1754	1817	1842
15S	0537	0603	0626	1746	1809	1835
20S	0544	0611	0635	1737	1801	1828
25S	0551	0619	0644	1728	1753	1821
30S	0559	0628	0654	1718	1744	1814
35S	0606	0638	0705	1707	1735	1806
40S	0614	0648	0718	1655	1725	1758
45S	0623	0700	0733	1640	1713	1749
50S	0633	0714	0751	1622	1659	1739
55S	0645	0731	0814	1558	1642	1728
60S	0659	0754	0847	1526	1619	1713

MOON: RISE / SET | UTC HHMM

Lat	Day 15		Day 16		Day 17	
72N	--	--	0324	0026	0636	2221
70N	--	2334	0415	2245	0652	2214
68N	--	2301	0446	2230	0705	2208
66N	0234	2237	0509	2217	0715	2202
64N	0313	2217	0527	2207	0724	2158
62N	0340	2202	0541	2158	0731	2154
60N	0401	2148	0553	2150	0737	2151
58N	0418	2137	0604	2143	0743	2147
56N	0432	2127	0613	2137	0748	2145
54N	0444	2118	0621	2132	0752	2142
52N	0455	2110	0628	2127	0756	2140
50N	0505	2102	0635	2122	0800	2138
45N	0525	2047	0648	2112	0808	2133
40N	0541	2034	0700	2104	0814	2130
35N	0555	2023	0709	2057	0819	2126
30N	0607	2013	0718	2051	0824	2123
25N	0617	2005	0725	2045	0829	2121
20N	0627	1956	0732	2040	0833	2118
15N	0636	1949	0738	2035	0836	2116
10N	0644	1942	0745	2030	0840	2114
05N	0653	1935	0750	2025	0843	2111
00N	0701	1928	0756	2021	0847	2109
05S	0709	1921	0802	2016	0850	2107
10S	0717	1914	0808	2011	0854	2105
15S	0725	1906	0814	2007	0857	2103
20S	0734	1859	0820	2002	0901	2100
25S	0744	1850	0827	1956	0905	2058
30S	0754	1841	0834	1950	0909	2055
35S	0805	1831	0842	1943	0914	2052
40S	0818	1819	0852	1936	0919	2048
45S	0834	1805	0902	1927	0925	2044
50S	0853	1748	0915	1916	0932	2039
55S	0917	1725	0931	1902	0941	2032
60S	0950	1654	0952	1844	0953	2024

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JULY 18 - JULY 20

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
18	00	295 49.3	134 43.1	N09 04.8	223 42.6	N22 19.7	169 31.5	N19 43.9	281 21.0	N03 31.0
	01	310 51.7	149 43.0	N09 03.7	238 43.2	N22 19.9	184 33.4	N19 43.7	296 23.4	N03 31.0
	02	325 54.2	164 43.0	N09 02.5	253 43.8	N22 20.2	199 35.3	N19 43.6	311 25.8	N03 31.0
	03	340 56.7	179 43.0	N09 01.3	268 44.4	N22 20.4	214 37.1	N19 43.5	326 28.3	N03 31.0
	04	355 59.1	194 42.9	N09 00.2	283 45.1	N22 20.7	229 39.0	N19 43.4	341 30.7	N03 31.0
	05	011 01.6	209 42.9	N08 59.0	298 45.7	N22 20.9	244 40.9	N19 43.2	356 33.1	N03 31.0
	06	026 04.1	224 42.9	N08 57.8	313 46.3	N22 21.1	259 42.8	N19 43.1	011 35.5	N03 31.0
	07	041 06.5	239 42.8	N08 56.7	328 46.9	N22 21.4	274 44.7	N19 43.0	026 38.0	N03 31.0
	08	056 09.0	254 42.8	N08 55.5	343 47.5	N22 21.6	289 46.6	N19 42.9	041 40.4	N03 31.0
	09	071 11.5	269 42.8	N08 54.3	358 48.1	N22 21.9	304 48.5	N19 42.7	056 42.8	N03 31.0
	10	086 13.9	284 42.7	N08 53.2	013 48.7	N22 22.1	319 50.4	N19 42.6	071 45.2	N03 31.0
	11	101 16.4	299 42.7	N08 52.0	028 49.3	N22 22.3	334 52.3	N19 42.5	086 47.7	N03 31.0
	12	116 18.9	314 42.7	N08 50.8	043 49.9	N22 22.6	349 54.2	N19 42.4	101 50.1	N03 31.0
	13	131 21.3	329 42.7	N08 49.6	058 50.6	N22 22.8	004 56.1	N19 42.2	116 52.5	N03 31.0
	14	146 23.8	344 42.6	N08 48.5	073 51.2	N22 23.1	019 58.0	N19 42.1	131 54.9	N03 31.0
	15	161 26.2	359 42.6	N08 47.3	088 51.8	N22 23.3	034 59.9	N19 42.0	146 57.4	N03 31.0
	16	176 28.7	014 42.6	N08 46.1	103 52.4	N22 23.5	050 01.8	N19 41.8	161 59.8	N03 31.0
	17	191 31.2	029 42.5	N08 44.9	118 53.0	N22 23.8	065 03.7	N19 41.7	177 02.2	N03 31.0
	18	206 33.6	044 42.5	N08 43.8	133 53.6	N22 24.0	080 05.6	N19 41.6	192 04.7	N03 31.1
	19	221 36.1	059 42.5	N08 42.6	148 54.2	N22 24.2	095 07.5	N19 41.5	207 07.1	N03 31.1
	20	236 38.6	074 42.5	N08 41.4	163 54.8	N22 24.5	110 09.3	N19 41.3	222 09.5	N03 31.1
	21	251 41.0	089 42.4	N08 40.3	178 55.5	N22 24.7	125 11.2	N19 41.2	237 11.9	N03 31.1
	22	266 43.5	104 42.4	N08 39.1	193 56.1	N22 24.9	140 13.1	N19 41.1	252 14.4	N03 31.1
	23	281 46.0	119 42.4	N08 37.9	208 56.7	N22 25.2	155 15.0	N19 40.9	267 16.8	N03 31.1
19	00	296 48.4	134 42.4	N08 36.7	223 57.3	N22 25.4	170 16.9	N19 40.8	282 19.2	N03 31.1
	01	311 50.9	149 42.3	N08 35.6	238 57.9	N22 25.6	185 18.8	N19 40.7	297 21.6	N03 31.1
	02	326 53.3	164 42.3	N08 34.4	253 58.5	N22 25.9	200 20.7	N19 40.6	312 24.1	N03 31.1
	03	341 55.8	179 42.3	N08 33.2	268 59.1	N22 26.1	215 22.6	N19 40.4	327 26.5	N03 31.1
	04	356 58.3	194 42.3	N08 32.0	283 59.7	N22 26.3	230 24.5	N19 40.3	342 28.9	N03 31.1
	05	012 00.7	209 42.3	N08 30.9	299 00.3	N22 26.6	245 26.4	N19 40.2	357 31.4	N03 31.1
	06	027 03.2	224 42.2	N08 29.7	314 01.0	N22 26.8	260 28.3	N19 40.1	012 33.8	N03 31.1
	07	042 05.7	239 42.2	N08 28.5	329 01.6	N22 27.0	275 30.2	N19 39.9	027 36.2	N03 31.1
	08	057 08.1	254 42.2	N08 27.3	344 02.2	N22 27.3	290 32.1	N19 39.8	042 38.7	N03 31.1
	09	072 10.6	269 42.2	N08 26.1	359 02.8	N22 27.5	305 34.0	N19 39.7	057 41.1	N03 31.1
	10	087 13.1	284 42.2	N08 25.0	014 03.4	N22 27.7	320 35.9	N19 39.5	072 43.5	N03 31.1
	11	102 15.5	299 42.2	N08 23.8	029 04.0	N22 28.0	335 37.8	N19 39.4	087 45.9	N03 31.1
	12	117 18.0	314 42.1	N08 22.6	044 04.6	N22 28.2	350 39.7	N19 39.3	102 48.4	N03 31.1
	13	132 20.5	329 42.1	N08 21.4	059 05.2	N22 28.4	005 41.5	N19 39.2	117 50.8	N03 31.1
	14	147 22.9	344 42.1	N08 20.3	074 05.9	N22 28.7	020 43.4	N19 39.0	132 53.2	N03 31.1
	15	162 25.4	359 42.1	N08 19.1	089 06.5	N22 28.9	035 45.3	N19 38.9	147 55.7	N03 31.1
	16	177 27.8	014 42.1	N08 17.9	104 07.1	N22 29.1	050 47.2	N19 38.8	162 58.1	N03 31.1
	17	192 30.3	029 42.1	N08 16.7	119 07.7	N22 29.3	065 49.1	N19 38.6	178 00.5	N03 31.1
	18	207 32.8	044 42.1	N08 15.5	134 08.3	N22 29.6	080 51.0	N19 38.5	193 03.0	N03 31.1
	19	222 35.2	059 42.1	N08 14.4	149 08.9	N22 29.8	095 52.9	N19 38.4	208 05.4	N03 31.1
	20	237 37.7	074 42.0	N08 13.2	164 09.5	N22 30.0	110 54.8	N19 38.3	223 07.8	N03 31.1
	21	252 40.2	089 42.0	N08 12.0	179 10.1	N22 30.3	125 56.7	N19 38.1	238 10.3	N03 31.1
	22	267 42.6	104 42.0	N08 10.8	194 10.8	N22 30.5	140 58.6	N19 38.0	253 12.7	N03 31.1
	23	282 45.1	119 42.0	N08 09.6	209 11.4	N22 30.7	156 00.5	N19 37.9	268 15.1	N03 31.1
20	00	297 47.6	134 42.0	N08 08.5	224 12.0	N22 30.9	171 02.4	N19 37.8	283 17.6	N03 31.1
	01	312 50.0	149 42.0	N08 07.3	239 12.6	N22 31.2	186 04.3	N19 37.6	298 20.0	N03 31.1
	02	327 52.5	164 42.0	N08 06.1	254 13.2	N22 31.4	201 06.2	N19 37.5	313 22.4	N03 31.1
	03	342 54.9	179 42.0	N08 04.9	269 13.8	N22 31.6	216 08.1	N19 37.4	328 24.9	N03 31.1
	04	357 57.4	194 42.0	N08 03.7	284 14.4	N22 31.8	231 10.0	N19 37.2	343 27.3	N03 31.1
	05	012 59.9	209 42.0	N08 02.6	299 15.0	N22 32.1	246 11.9	N19 37.1	358 29.7	N03 31.1
	06	028 02.3	224 42.0	N08 01.4	314 15.7	N22 32.3	261 13.7	N19 37.0	013 32.2	N03 31.1
	07	043 04.8	239 42.0	N08 00.2	329 16.3	N22 32.5	276 15.6	N19 36.9	028 34.6	N03 31.1
	08	058 07.3	254 42.0	N07 59.0	344 16.9	N22 32.7	291 17.5	N19 36.7	043 37.0	N03 31.1
	09	073 09.7	269 42.0	N07 57.8	359 17.5	N22 33.0	306 19.4	N19 36.6	058 39.5	N03 31.1
	10	088 12.2	284 42.0	N07 56.6	014 18.1	N22 33.2	321 21.3	N19 36.5	073 41.9	N03 31.1
	11	103 14.7	299 42.0	N07 55.5	029 18.7	N22 33.4	336 23.2	N19 36.3	088 44.3	N03 31.1
	12	118 17.1	314 42.0	N07 54.3	044 19.3	N22 33.6	351 25.1	N19 36.2	103 46.8	N03 31.1
	13	133 19.6	329 42.0	N07 53.1	059 19.9	N22 33.8	006 27.0	N19 36.1	118 49.2	N03 31.1
	14	148 22.1	344 42.0	N07 51.9	074 20.6	N22 34.1	021 28.9	N19 36.0	133 51.6	N03 31.1
	15	163 24.5	359 42.0	N07 50.7	089 21.2	N22 34.3	036 30.8	N19 35.8	148 54.1	N03 31.1
	16	178 27.0	014 42.0	N07 49.5	104 21.8	N22 34.5	051 32.7	N19 35.7	163 56.5	N03 31.1
	17	193 29.4	029 42.0	N07 48.3	119 22.4	N22 34.7	066 34.6	N19 35.6	178 58.9	N03 31.1
	18	208 31.9	044 42.0	N07 47.2	134 23.0	N22 34.9	081 36.5	N19 35.4	194 01.4	N03 31.1
	19	223 34.4	059 42.0	N07 46.0	149 23.6	N22 35.2	096 38.4	N19 35.3	209 03.8	N03 31.1
	20	238 36.8	074 42.0	N07 44.8	164 24.2	N22 35.4	111 40.3	N19 35.2	224 06.2	N03 31.1
	21	253 39.3	089 42.0	N07 43.6	179 24.9	N22 35.6	126 42.2	N19 35.0	239 08.7	N03 31.1
	22	268 41.8	104 42.0	N07 42.4	194 25.5	N22 35.8	141 44.0	N19 34.9	254 11.1	N03 31.1
	23	283 44.2	119 42.0	N07 41.2	209 26.1	N22 36.0	156 45.9	N19 34.8	269 13.6	N03 31.1

Venus	Mars	Jupiter	Saturn
18: v 0.0 d -1.2	18: v 0.6 d 0.2	18: v 1.9 d -0.1	18: v 2.4 d 0.0
19: v 0.0 d -1.2	19: v 0.6 d 0.2	19: v 1.9 d -0.1	19: v 2.4 d 0.0
20: v 0.0 d -1.2	20: v 0.6 d 0.2	20: v 1.9 d -0.1	20: v 2.4 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 11.0	S40 11.6
Achernar	335 19.2	S57 05.7
Acrux	172 58.9	S63 15.1
Adhara	255 05.2	S29 00.4
Al Na'ir	027 30.9	S46 49.7
Aldebaran	290 38.4	N16 33.8
Alioth	166 12.0	N55 49.2
Alkaid	152 51.0	N49 11.1
Alnilam	275 36.7	S01 11.0
Alphard	217 46.8	S08 46.4
Alphecca	126 02.5	N26 37.6
Alpheratz	357 33.3	N29 14.2
Altair	061 58.4	N08 56.4
Ankaa	353 05.7	S42 09.4
Antares	112 14.0	S26 29.5
Arcturus	145 46.7	N19 02.8
Atria	107 06.6	S69 04.7
Avior	234 14.9	S59 35.7
Bellatrix	278 21.8	N06 22.5
Betelgeuse	270 51.0	N07 24.8
Canopus	263 52.4	S52 42.4
Capella	280 20.4	N46 01.4
Deneb	049 24.5	N45 22.5
Denebola	182 23.8	N14 25.5
Diphda	348 45.9	S17 50.2
Dubhe	193 39.9	N61 36.7
Elnath	278 00.6	N28 37.7
Eltanin	090 41.1	N51 29.2
Enif	033 37.3	N09 59.9
Fomalhaut	015 12.9	S29 28.7
Gacrux	171 50.4	S57 16.0
Gienah	175 42.4	S17 41.5
Hadar	148 34.1	S60 30.4
Hamal	327 49.8	N23 35.2
Kaus Australi	083 30.4	S34 22.3
Kochab	137 19.5	N74 03.0
Markab	013 28.4	N15 20.9
Menkar	314 04.9	N04 11.7
Menkent	147 56.1	S36 30.2
Miaplacidus	221 38.9	S69 49.7
Mirfak	308 26.6	N49 57.2
Nunki	075 45.8	S26 15.8
Peacock	053 03.1	S56 38.8
Polaris	313 33.4	N89 22.2
Pollux	243 16.1	N27 57.7
Procyon	244 49.8	N05 09.4
Rasalhague	095 57.1	N12 32.5
Regulus	207 33.4	N11 50.3
Rigel	281 02.9	S08 10.1
Rigil Kentaur	139 38.3	S60 57.0
Sabik	102 01.0	S15 45.5
Schedar	349 29.4	N56 40.8
Shaula	096 08.3	S37 07.4
Sirius	258 25.5	S16 45.1
Spica	158 21.0	S11 18.1
Suhail	222 45.8	S43 32.4
Vega	080 31.9	N38 48.6
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	197 24.2	1501
Mars	286 46.6	0904
Jupiter	233 21.7	1237
Saturn	345 30.4	0510

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
18	00	178 26.4	N21 03.3	131 11.5	N05 13.6	58.3	13.0	-15.9
	01	193 26.4	N21 02.8	145 43.5	N04 57.7	58.3	13.0	-15.9
	02	208 26.3	N21 02.4	160 15.5	N04 41.8	58.2	13.1	-15.9
	03	223 26.3	N21 02.0	174 47.6	N04 25.9	58.2	13.2	-15.9
	04	238 26.2	N21 01.5	189 19.8	N04 10.0	58.1	13.2	-15.9
	05	253 26.2	N21 01.1	203 52.0	N03 54.1	58.1	13.3	-15.9
	06	268 26.1	N21 00.6	218 24.3	N03 38.2	58.1	13.4	-15.9
	07	283 26.1	N21 00.2	232 56.6	N03 22.3	58.0	13.4	-15.9
	08	298 26.0	N20 59.8	247 29.1	N03 06.4	58.0	13.5	-15.9
	09	313 26.0	N20 59.3	262 01.5	N02 50.5	58.0	13.5	-15.9
	10	328 25.9	N20 58.9	276 34.1	N02 34.7	57.9	13.6	-15.9
	11	343 25.9	N20 58.4	291 06.6	N02 18.8	57.9	13.6	-15.8
	12	358 25.8	N20 58.0	305 39.3	N02 03.0	57.8	13.7	-15.8
	13	013 25.8	N20 57.5	320 11.9	N01 47.1	57.8	13.7	-15.8
	14	028 25.7	N20 57.1	334 44.7	N01 31.3	57.8	13.8	-15.8
	15	043 25.7	N20 56.7	349 17.5	N01 15.5	57.7	13.8	-15.8
	16	058 25.6	N20 56.2	003 50.3	N00 59.7	57.7	13.9	-15.8
	17	073 25.6	N20 55.8	018 23.2	N00 44.0	57.6	13.9	-15.7
	18	088 25.5	N20 55.3	032 56.1	N00 28.2	57.6	14.0	-15.7
	19	103 25.5	N20 54.9	047 29.1	N00 12.5	57.6	14.0	-15.7
	20	118 25.5	N20 54.4	062 02.1	S00 03.2	57.5	14.1	-15.7
	21	133 25.4	N20 54.0	076 35.1	S00 18.9	57.5	14.1	-15.7
	22	148 25.4	N20 53.5	091 08.2	S00 34.6	57.4	14.1	-15.6
	23	163 25.3	N20 53.1	105 41.4	S00 50.2	57.4	14.2	-15.6
19	00	178 25.3	N20 52.6	120 14.5	S01 05.8	57.4	14.2	-15.6
	01	193 25.2	N20 52.2	134 47.7	S01 21.4	57.3	14.2	-15.6
	02	208 25.2	N20 51.7	149 21.0	S01 36.9	57.3	14.3	-15.5
	03	223 25.1	N20 51.3	163 54.3	S01 52.5	57.3	14.3	-15.5
	04	238 25.1	N20 50.8	178 27.6	S02 08.0	57.2	14.3	-15.5
	05	253 25.1	N20 50.4	193 00.9	S02 23.4	57.2	14.4	-15.4
	06	268 25.0	N20 49.9	207 34.3	S02 38.9	57.1	14.4	-15.4
	07	283 25.0	N20 49.4	222 07.7	S02 54.3	57.1	14.4	-15.4
	08	298 24.9	N20 49.0	236 41.1	S03 09.6	57.1	14.4	-15.3
	09	313 24.9	N20 48.5	251 14.5	S03 25.0	57.0	14.5	-15.3
	10	328 24.9	N20 48.1	265 48.0	S03 40.3	57.0	14.5	-15.3
	11	343 24.8	N20 47.6	280 21.5	S03 55.5	57.0	14.5	-15.2
	12	358 24.8	N20 47.2	294 55.0	S04 10.8	56.9	14.5	-15.2
	13	013 24.7	N20 46.7	309 28.5	S04 25.9	56.9	14.6	-15.1
	14	028 24.7	N20 46.2	324 02.1	S04 41.1	56.8	14.6	-15.1
	15	043 24.7	N20 45.8	338 35.7	S04 56.2	56.8	14.6	-15.1
	16	058 24.6	N20 45.3	353 09.2	S05 11.3	56.8	14.6	-15.0
	17	073 24.6	N20 44.9	007 42.8	S05 26.3	56.7	14.6	-15.0
	18	088 24.5	N20 44.4	022 16.5	S05 41.3	56.7	14.6	-14.9
	19	103 24.5	N20 43.9	036 50.1	S05 56.2	56.7	14.6	-14.9
	20	118 24.5	N20 43.5	051 23.7	S06 11.1	56.6	14.7	-14.9
	21	133 24.4	N20 43.0	065 57.4	S06 26.0	56.6	14.7	-14.8
	22	148 24.4	N20 42.5	080 31.1	S06 40.8	56.6	14.7	-14.8
	23	163 24.3	N20 42.1	095 04.7	S06 55.5	56.5	14.7	-14.7
20	00	178 24.3	N20 41.6	109 38.4	S07 10.2	56.5	14.7	-14.7
	01	193 24.3	N20 41.1	124 12.1	S07 24.9	56.5	14.7	-14.6
	02	208 24.2	N20 40.7	138 45.8	S07 39.5	56.4	14.7	-14.6
	03	223 24.2	N20 40.2	153 19.5	S07 54.1	56.4	14.7	-14.5
	04	238 24.2	N20 39.7	167 53.2	S08 08.6	56.4	14.7	-14.5
	05	253 24.1	N20 39.3	182 26.9	S08 23.0	56.3	14.7	-14.4
	06	268 24.1	N20 38.8	197 00.6	S08 37.4	56.3	14.7	-14.4
	07	283 24.0	N20 38.3	211 34.3	S08 51.8	56.2	14.7	-14.3
	08	298 24.0	N20 37.9	226 07.9	S09 06.1	56.2	14.7	-14.2
	09	313 24.0	N20 37.4	240 41.6	S09 20.3	56.2	14.7	-14.2
	10	328 23.9	N20 36.9	255 15.3	S09 34.5	56.1	14.7	-14.1
	11	343 23.9	N20 36.4	269 49.0	S09 48.7	56.1	14.7	-14.1
	12	358 23.9	N20 36.0	284 22.7	S10 02.7	56.1	14.7	-14.0
	13	013 23.8	N20 35.5	298 56.3	S10 16.7	56.1	14.7	-14.0
	14	028 23.8	N20 35.0	313 30.0	S10 30.7	56.0	14.6	-13.9
	15	043 23.8	N20 34.6	328 03.7	S10 44.6	56.0	14.6	-13.8
	16	058 23.7	N20 34.1	342 37.3	S10 58.4	56.0	14.6	-13.8
	17	073 23.7	N20 33.6	357 10.9	S11 12.2	55.9	14.6	-13.7
	18	088 23.7	N20 33.1	011 44.5	S11 25.9	55.9	14.6	-13.7
	19	103 23.6	N20 32.6	026 18.1	S11 39.6	55.9	14.6	-13.6
	20	118 23.6	N20 32.2	040 51.7	S11 53.2	55.8	14.6	-13.5
	21	133 23.6	N20 31.7	055 25.3	S12 06.7	55.8	14.6	-13.5
	22	148 23.5	N20 31.2	069 58.8	S12 20.2	55.8	14.5	-13.4
	23	163 23.5	N20 30.7	084 32.4	S12 33.6	55.7	14.5	-13.3

Day 18 noon Sun: v 0.0 d -0.4 SD 15.7 | Moon SD 15.8

Day 19 noon Sun: v 0.0 d -0.5 SD 15.7 | Moon SD 15.5

Day 20 noon Sun: v 0.0 d -0.5 SD 15.7 | Moon SD 15.3

SUN: JULY 19 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	0046	2316	--	--
66N	--	--	0153	2216	--	--
64N	--	--	0227	2143	--	--
62N	--	0115	0252	2119	2253	--
60N	--	0158	0312	2100	2212	--
58N	--	0226	0328	2044	2145	--
56N	0109	0247	0341	2031	2124	2259
54N	0148	0304	0353	2019	2108	2222
52N	0214	0318	0403	2009	2053	2157
50N	0234	0331	0412	2000	2041	2138
45N	0310	0356	0431	1941	2016	2102
40N	0336	0415	0447	1925	1957	2036
35N	0356	0431	0500	1912	1941	2016
30N	0412	0445	0511	1901	1928	2000
25N	0426	0456	0521	1851	1916	1946
20N	0438	0507	0531	1842	1906	1934
15N	0449	0516	0539	1833	1857	1924
10N	0458	0525	0547	1825	1848	1914
05N	0507	0533	0555	1818	1840	1906
00N	0515	0541	0603	1810	1832	1858
05S	0523	0548	0610	1802	1825	1850
10S	0530	0556	0618	1755	1817	1843
15S	0537	0603	0626	1747	1810	1836
20S	0544	0611	0634	1738	1802	1829
25S	0551	0619	0643	1730	1754	1822
30S	0558	0627	0653	1720	1746	1815
35S	0605	0636	0704	1709	1737	1808
40S	0613	0646	0716	1657	1727	1800
45S	0621	0658	0730	1643	1715	1752
50S	0631	0711	0748	1625	1702	1742
55S	0642	0728	0811	1603	1645	1731
60S	0656	0749	0842	1531	1624	1718

MOON: RISE / SET | UTC HHMM

Lat	Day 18		Day 19		Day 20	
72N	0858	2147	1110	2113	1324	2032
70N	0902	2148	1104	2122	1306	2052
68N	0906	2149	1059	2130	1252	2108
66N	0908	2149	1055	2136	1240	2122
64N	0910	2150	1052	2141	1231	2133
62N	0912	2150	1049	2146	1223	2142
60N	0914	2150	1046	2150	1216	2150
58N	0916	2151	1044	2154	1210	2157
56N	0917	2151	1042	2157	1204	2204
54N	0918	2151	1040	2200	1200	2209
52N	0919	2152	1038	2203	1155	2214
50N	0920	2152	1037	2205	1152	2219
45N	0922	2152	1034	2210	1143	2229
40N	0924	2153	1031	2215	1136	2238
35N	0926	2153	1029	2219	1130	2245
30N	0927	2153	1027	2222	1125	2252
25N	0928	2154	1025	2225	1120	2257
20N	0929	2154	1024	2228	1116	2303
15N	0930	2154	1022	2231	1112	2308
10N	0932	2154	1021	2234	1108	2313
05N	0932	2155	1019	2236	1105	2317
00N	0933	2155	1018	2239	1101	2322
05S	0934	2155	1016	2241	1058	2327
10S	0935	2155	1015	2244	1054	2331
15S	0936	2155	1014	2246	1050	2336
20S	0938	2156	1012	2249	1046	2341
25S	0939	2156	1011	2252	1042	2347
30S	0940	2156	1009	2255	1038	2353
35S	0941	2156	1007	2259	1033	2400
40S	0943	2157	1005	2303	1027	--
45S	0945	2157	1003	2307	1021	--
50S	0947	2157	1000	2313	1013	--
55S	0949	2158	0957	2320	1004	--
60S	0953	2158	0952	2329	0952	--

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JULY 21 - JULY 23

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
21	00	298 46.7	134 42.0	N07 40.0	224 26.7	N22 36.2	171 47.8	N19 34.7	284 16.0	N03 31.1
	01	313 49.2	149 42.0	N07 38.8	239 27.3	N22 36.5	186 49.7	N19 34.5	299 18.4	N03 31.1
	02	328 51.6	164 42.0	N07 37.7	254 27.9	N22 36.7	201 51.6	N19 34.4	314 20.9	N03 31.1
	03	343 54.1	179 42.0	N07 36.5	269 28.5	N22 36.9	216 53.5	N19 34.3	329 23.3	N03 31.1
	04	358 56.6	194 42.1	N07 35.3	284 29.1	N22 37.1	231 55.4	N19 34.1	344 25.7	N03 31.1
	05	013 59.0	209 42.1	N07 34.1	299 29.8	N22 37.3	246 57.3	N19 34.0	359 28.2	N03 31.1
	06	029 01.5	224 42.1	N07 32.9	314 30.4	N22 37.5	261 59.2	N19 33.9	014 30.6	N03 31.1
	07	044 03.9	239 42.1	N07 31.7	329 31.0	N22 37.8	277 01.1	N19 33.8	029 33.1	N03 31.1
	08	059 06.4	254 42.1	N07 30.5	344 31.6	N22 38.0	292 03.0	N19 33.6	044 35.5	N03 31.1
	09	074 08.9	269 42.1	N07 29.3	359 32.2	N22 38.2	307 04.9	N19 33.5	059 37.9	N03 31.1
	10	089 11.3	284 42.1	N07 28.2	014 32.8	N22 38.4	322 06.8	N19 33.4	074 40.4	N03 31.1
	11	104 13.8	299 42.1	N07 27.0	029 33.4	N22 38.6	337 08.7	N19 33.2	089 42.8	N03 31.1
	12	119 16.3	314 42.1	N07 25.8	044 34.1	N22 38.8	352 10.6	N19 33.1	104 45.2	N03 31.1
	13	134 18.7	329 42.2	N07 24.6	059 34.7	N22 39.0	007 12.5	N19 33.0	119 47.7	N03 31.1
	14	149 21.2	344 42.2	N07 23.4	074 35.3	N22 39.3	022 14.4	N19 32.9	134 50.1	N03 31.1
	15	164 23.7	359 42.2	N07 22.2	089 35.9	N22 39.5	037 16.2	N19 32.7	149 52.6	N03 31.1
	16	179 26.1	014 42.2	N07 21.0	104 36.5	N22 39.7	052 18.1	N19 32.6	164 55.0	N03 31.1
	17	194 28.6	029 42.2	N07 19.8	119 37.1	N22 39.9	067 20.0	N19 32.5	179 57.4	N03 31.1
	18	209 31.0	044 42.2	N07 18.6	134 37.7	N22 40.1	082 21.9	N19 32.3	194 59.9	N03 31.0
	19	224 33.5	059 42.3	N07 17.4	149 38.4	N22 40.3	097 23.8	N19 32.2	210 02.3	N03 31.0
	20	239 36.0	074 42.3	N07 16.2	164 39.0	N22 40.5	112 25.7	N19 32.1	225 04.8	N03 31.0
	21	254 38.4	089 42.3	N07 15.0	179 39.6	N22 40.7	127 27.6	N19 31.9	240 07.2	N03 31.0
	22	269 40.9	104 42.3	N07 13.9	194 40.2	N22 40.9	142 29.5	N19 31.8	255 09.6	N03 31.0
	23	284 43.4	119 42.4	N07 12.7	209 40.8	N22 41.1	157 31.4	N19 31.7	270 12.1	N03 31.0
22	00	299 45.8	134 42.4	N07 11.5	224 41.4	N22 41.4	172 33.3	N19 31.6	285 14.5	N03 31.0
	01	314 48.3	149 42.4	N07 10.3	239 42.0	N22 41.6	187 35.2	N19 31.4	300 17.0	N03 31.0
	02	329 50.8	164 42.4	N07 09.1	254 42.7	N22 41.8	202 37.1	N19 31.3	315 19.4	N03 31.0
	03	344 53.2	179 42.4	N07 07.9	269 43.3	N22 42.0	217 39.0	N19 31.2	330 21.8	N03 31.0
	04	359 55.7	194 42.5	N07 06.7	284 43.9	N22 42.2	232 40.9	N19 31.0	345 24.3	N03 31.0
	05	014 58.2	209 42.5	N07 05.5	299 44.5	N22 42.4	247 42.8	N19 30.9	000 26.7	N03 31.0
	06	030 00.6	224 42.5	N07 04.3	314 45.1	N22 42.6	262 44.7	N19 30.8	015 29.2	N03 31.0
	07	045 03.1	239 42.5	N07 03.1	329 45.7	N22 42.8	277 46.6	N19 30.6	030 31.6	N03 31.0
	08	060 05.5	254 42.6	N07 01.9	344 46.3	N22 43.0	292 48.4	N19 30.5	045 34.1	N03 31.0
	09	075 08.0	269 42.6	N07 00.7	359 47.0	N22 43.2	307 50.3	N19 30.4	060 36.5	N03 31.0
	10	090 10.5	284 42.6	N06 59.5	014 47.6	N22 43.4	322 52.2	N19 30.3	075 38.9	N03 31.0
	11	105 12.9	299 42.7	N06 58.3	029 48.2	N22 43.6	337 54.1	N19 30.1	090 41.4	N03 31.0
	12	120 15.4	314 42.7	N06 57.1	044 48.8	N22 43.8	352 56.0	N19 30.0	105 43.8	N03 31.0
	13	135 17.9	329 42.7	N06 55.9	059 49.4	N22 44.0	007 57.9	N19 29.9	120 46.3	N03 31.0
	14	150 20.3	344 42.7	N06 54.7	074 50.0	N22 44.2	022 59.8	N19 29.7	135 48.7	N03 31.0
	15	165 22.8	359 42.8	N06 53.6	089 50.7	N22 44.4	038 01.7	N19 29.6	150 51.2	N03 31.0
	16	180 25.3	014 42.8	N06 52.4	104 51.3	N22 44.6	053 03.6	N19 29.5	165 53.6	N03 31.0
	17	195 27.7	029 42.8	N06 51.2	119 51.9	N22 44.8	068 05.5	N19 29.3	180 56.0	N03 31.0
	18	210 30.2	044 42.9	N06 50.0	134 52.5	N22 45.0	083 07.4	N19 29.2	195 58.5	N03 31.0
	19	225 32.7	059 42.9	N06 48.8	149 53.1	N22 45.2	098 09.3	N19 29.1	211 00.9	N03 31.0
	20	240 35.1	074 42.9	N06 47.6	164 53.7	N22 45.4	113 11.2	N19 29.0	226 03.4	N03 31.0
	21	255 37.6	089 43.0	N06 46.4	179 54.3	N22 45.6	128 13.1	N19 28.8	241 05.8	N03 31.0
	22	270 40.0	104 43.0	N06 45.2	194 55.0	N22 45.8	143 15.0	N19 28.7	256 08.3	N03 31.0
	23	285 42.5	119 43.0	N06 44.0	209 55.6	N22 46.0	158 16.9	N19 28.6	271 10.7	N03 30.9
23	00	300 45.0	134 43.1	N06 42.8	224 56.2	N22 46.2	173 18.8	N19 28.4	286 13.1	N03 30.9
	01	315 47.4	149 43.1	N06 41.6	239 56.8	N22 46.4	188 20.6	N19 28.3	301 15.6	N03 30.9
	02	330 49.9	164 43.2	N06 40.4	254 57.4	N22 46.6	203 22.5	N19 28.2	316 18.0	N03 30.9
	03	345 52.4	179 43.2	N06 39.2	269 58.0	N22 46.8	218 24.4	N19 28.0	331 20.5	N03 30.9
	04	000 54.8	194 43.2	N06 38.0	284 58.7	N22 47.0	233 26.3	N19 27.9	346 22.9	N03 30.9
	05	015 57.3	209 43.3	N06 36.8	299 59.3	N22 47.2	248 28.2	N19 27.8	001 25.4	N03 30.9
	06	030 59.8	224 43.3	N06 35.6	314 59.9	N22 47.4	263 30.1	N19 27.6	016 27.8	N03 30.9
	07	046 02.2	239 43.4	N06 34.4	330 00.5	N22 47.6	278 32.0	N19 27.5	031 30.3	N03 30.9
	08	061 04.7	254 43.4	N06 33.2	345 01.1	N22 47.8	293 33.9	N19 27.4	046 32.7	N03 30.9
	09	076 07.1	269 43.4	N06 32.0	000 01.7	N22 48.0	308 35.8	N19 27.3	061 35.2	N03 30.9
	10	091 09.6	284 43.5	N06 30.8	015 02.3	N22 48.2	323 37.7	N19 27.1	076 37.6	N03 30.9
	11	106 12.1	299 43.5	N06 29.6	030 03.0	N22 48.4	338 39.6	N19 27.0	091 40.0	N03 30.9
	12	121 14.5	314 43.6	N06 28.4	045 03.6	N22 48.6	353 41.5	N19 26.9	106 42.5	N03 30.9
	13	136 17.0	329 43.6	N06 27.2	060 04.2	N22 48.8	008 43.4	N19 26.7	121 44.9	N03 30.9
	14	151 19.5	344 43.7	N06 26.0	075 04.8	N22 49.0	023 45.3	N19 26.6	136 47.4	N03 30.9
	15	166 21.9	359 43.7	N06 24.8	090 05.4	N22 49.2	038 47.2	N19 26.5	151 49.8	N03 30.9
	16	181 24.4	014 43.7	N06 23.6	105 06.0	N22 49.4	053 49.1	N19 26.3	166 52.3	N03 30.9
	17	196 26.9	029 43.8	N06 22.4	120 06.7	N22 49.6	068 51.0	N19 26.2	181 54.7	N03 30.9
	18	211 29.3	044 43.8	N06 21.2	135 07.3	N22 49.8	083 52.8	N19 26.1	196 57.2	N03 30.9
	19	226 31.8	059 43.9	N06 20.0	150 07.9	N22 50.0	098 54.7	N19 25.9	211 59.6	N03 30.8
	20	241 34.3	074 43.9	N06 18.8	165 08.5	N22 50.2	113 56.6	N19 25.8	227 02.1	N03 30.8
	21	256 36.7	089 44.0	N06 17.6	180 09.1	N22 50.4	128 58.5	N19 25.7	242 04.5	N03 30.8
	22	271 39.2	104 44.0	N06 16.4	195 09.7	N22 50.6	144 00.4	N19 25.5	257 07.0	N03 30.8
	23	286 41.6	119 44.1	N06 15.2	210 10.4	N22 50.7	159 02.3	N19 25.4	272 09.4	N03 30.8

Venus	Mars	Jupiter	Saturn
21: v 0.0 d -1.2	21: v 0.6 d 0.2	21: v 1.9 d -0.1	21: v 2.4 d 0.0
22: v 0.0 d -1.2	22: v 0.6 d 0.2	22: v 1.9 d -0.1	22: v 2.4 d 0.0
23: v 0.0 d -1.2	23: v 0.6 d 0.2	23: v 1.9 d -0.1	23: v 2.4 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.9	S40 11.6
Achernar	335 19.2	S57 05.7
Acrux	172 58.9	S63 15.1
Adhara	255 05.2	S29 00.4
Al Na'ir	027 30.9	S46 49.7
Aldebaran	290 38.4	N16 33.8
Alioth	166 12.0	N55 49.2
Alkaid	152 51.0	N49 11.1
Alnilam	275 36.7	S01 11.0
Alphard	217 46.8	S08 46.4
Alphecca	126 02.5	N26 37.7
Alpheratz	357 33.3	N29 14.2
Altair	061 58.4	N08 56.4
Ankaa	353 05.7	S42 09.4
Antares	112 14.0	S26 29.5
Arcturus	145 46.7	N19 02.8
Atria	107 06.7	S69 04.7
Avior	234 14.9	S59 35.7
Bellatrix	278 21.8	N06 22.5
Betelgeuse	270 51.0	N07 24.8
Canopus	263 52.3	S52 42.4
Capella	280 20.4	N46 01.4
Deneb	049 24.5	N45 22.5
Denebola	182 23.8	N14 25.5
Diphda	348 45.9	S17 50.2
Dubhe	193 39.9	N61 36.7
Elnath	278 00.6	N28 37.7
Eltanin	090 41.1	N51 29.2
Enif	033 37.2	N09 59.9
Fomalhaut	015 12.8	S29 28.7
Gacrux	171 50.4	S57 16.0
Gienah	175 42.4	S17 41.4
Hadar	148 34.1	S60 30.4
Hamal	327 49.8	N23 35.3
Kaus Australi	083 30.4	S34 22.3
Kochab	137 19.5	N74 03.0
Markab	013 28.4	N15 20.9
Menkar	314 04.9	N04 11.7
Menkent	147 56.1	S36 30.2
Miaplacidus	221 38.9	S69 49.7
Mirfak	308 26.6	N49 57.2
Nunki	075 45.8	S26 15.8
Peacock	053 03.1	S56 38.8
Polaris	313 31.9	N89 22.2
Pollux	243 16.1	N27 57.7
Procyon	244 49.8	N05 09.5
Rasalhague	095 57.1	N12 32.5
Regulus	207 33.4	N11 50.3
Rigel	281 02.9	S08 10.1
Rigil Kentaur	139 38.4	S60 57.0
Sabik	102 01.0	S15 45.5
Schedar	349 29.4	N56 40.8
Shaula	096 08.3	S37 07.4
Sirius	258 25.4	S16 45.1
Spica	158 21.0	S11 18.0
Suhail	222 45.8	S43 32.4
Vega	080 31.9	N38 48.6
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	194 27.3	1501
Mars	284 33.4	0901
Jupiter	232 40.6	1228
Saturn	345 28.4	0458

2026 | JULY 21 - JULY 23

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
21	00	178 23.5	N20 30.3	099 05.9	S12 46.9	55.7	14.5	-13.3
	01	193 23.4	N20 29.8	113 39.4	S13 00.1	55.7	14.5	-13.2
	02	208 23.4	N20 29.3	128 12.9	S13 13.3	55.7	14.5	-13.1
	03	223 23.4	N20 28.8	142 46.3	S13 26.5	55.6	14.4	-13.1
	04	238 23.3	N20 28.3	157 19.8	S13 39.5	55.6	14.4	-13.0
	05	253 23.3	N20 27.8	171 53.2	S13 52.5	55.6	14.4	-12.9
	06	268 23.3	N20 27.4	186 26.5	S14 05.4	55.5	14.4	-12.8
	07	283 23.2	N20 26.9	200 59.9	S14 18.3	55.5	14.3	-12.8
	08	298 23.2	N20 26.4	215 33.2	S14 31.0	55.5	14.3	-12.7
	09	313 23.2	N20 25.9	230 06.6	S14 43.7	55.5	14.3	-12.6
	10	328 23.2	N20 25.4	244 39.8	S14 56.4	55.4	14.3	-12.6
	11	343 23.1	N20 24.9	259 13.1	S15 08.9	55.4	14.2	-12.5
	12	358 23.1	N20 24.4	273 46.3	S15 21.4	55.4	14.2	-12.4
	13	013 23.1	N20 24.0	288 19.5	S15 33.8	55.3	14.2	-12.3
	14	028 23.0	N20 23.5	302 52.7	S15 46.1	55.3	14.1	-12.2
	15	043 23.0	N20 23.0	317 25.8	S15 58.4	55.3	14.1	-12.2
	16	058 23.0	N20 22.5	331 58.9	S16 10.5	55.3	14.1	-12.1
	17	073 23.0	N20 22.0	346 32.0	S16 22.6	55.2	14.0	-12.0
	18	088 22.9	N20 21.5	001 05.0	S16 34.6	55.2	14.0	-11.9
	19	103 22.9	N20 21.0	015 38.0	S16 46.6	55.2	14.0	-11.9
	20	118 22.9	N20 20.5	030 10.9	S16 58.4	55.2	13.9	-11.8
	21	133 22.9	N20 20.0	044 43.9	S17 10.2	55.1	13.9	-11.7
	22	148 22.8	N20 19.5	059 16.8	S17 21.9	55.1	13.9	-11.6
	23	163 22.8	N20 19.1	073 49.6	S17 33.5	55.1	13.8	-11.5
22	00	178 22.8	N20 18.6	088 22.4	S17 45.0	55.1	13.8	-11.4
	01	193 22.8	N20 18.1	102 55.2	S17 56.5	55.0	13.7	-11.4
	02	208 22.7	N20 17.6	117 27.9	S18 07.8	55.0	13.7	-11.3
	03	223 22.7	N20 17.1	132 00.6	S18 19.1	55.0	13.7	-11.2
	04	238 22.7	N20 16.6	146 33.3	S18 30.3	55.0	13.6	-11.1
	05	253 22.7	N20 16.1	161 05.9	S18 41.4	55.0	13.6	-11.0
	06	268 22.6	N20 15.6	175 38.5	S18 52.4	54.9	13.5	-10.9
	07	283 22.6	N20 15.1	190 11.0	S19 03.3	54.9	13.5	-10.8
	08	298 22.6	N20 14.6	204 43.5	S19 14.1	54.9	13.4	-10.7
	09	313 22.6	N20 14.1	219 15.9	S19 24.9	54.9	13.4	-10.7
	10	328 22.5	N20 13.6	233 48.3	S19 35.5	54.9	13.4	-10.6
	11	343 22.5	N20 13.1	248 20.7	S19 46.1	54.8	13.3	-10.5
	12	358 22.5	N20 12.6	262 53.0	S19 56.6	54.8	13.3	-10.4
	13	013 22.5	N20 12.1	277 25.2	S20 07.0	54.8	13.2	-10.3
	14	028 22.4	N20 11.6	291 57.4	S20 17.2	54.8	13.2	-10.2
	15	043 22.4	N20 11.1	306 29.6	S20 27.4	54.8	13.1	-10.1
	16	058 22.4	N20 10.6	321 01.7	S20 37.5	54.7	13.1	-10.0
	17	073 22.4	N20 10.1	335 33.8	S20 47.5	54.7	13.0	-9.9
	18	088 22.4	N20 09.6	350 05.9	S20 57.4	54.7	13.0	-9.8
	19	103 22.3	N20 09.1	004 37.8	S21 07.3	54.7	12.9	-9.7
	20	118 22.3	N20 08.6	019 09.8	S21 17.0	54.7	12.9	-9.6
	21	133 22.3	N20 08.0	033 41.7	S21 26.6	54.6	12.8	-9.5
	22	148 22.3	N20 07.5	048 13.5	S21 36.1	54.6	12.8	-9.4
	23	163 22.3	N20 07.0	062 45.3	S21 45.5	54.6	12.7	-9.3
23	00	178 22.2	N20 06.5	077 17.0	S21 54.8	54.6	12.7	-9.2
	01	193 22.2	N20 06.0	091 48.7	S22 04.1	54.6	12.6	-9.1
	02	208 22.2	N20 05.5	106 20.4	S22 13.2	54.6	12.6	-9.0
	03	223 22.2	N20 05.0	120 51.9	S22 22.2	54.5	12.5	-8.9
	04	238 22.2	N20 04.5	135 23.5	S22 31.1	54.5	12.5	-8.8
	05	253 22.1	N20 04.0	149 55.0	S22 39.9	54.5	12.4	-8.7
	06	268 22.1	N20 03.5	164 26.4	S22 48.6	54.5	12.4	-8.6
	07	283 22.1	N20 02.9	178 57.8	S22 57.2	54.5	12.3	-8.5
	08	298 22.1	N20 02.4	193 29.2	S23 05.7	54.5	12.3	-8.4
	09	313 22.1	N20 01.9	208 00.4	S23 14.1	54.5	12.2	-8.3
	10	328 22.1	N20 01.4	222 31.7	S23 22.4	54.4	12.2	-8.2
	11	343 22.0	N20 00.9	237 02.9	S23 30.6	54.4	12.1	-8.1
	12	358 22.0	N20 00.4	251 34.0	S23 38.6	54.4	12.1	-8.0
	13	013 22.0	N19 59.9	266 05.1	S23 46.6	54.4	12.0	-7.8
	14	028 22.0	N19 59.3	280 36.1	S23 54.4	54.4	12.0	-7.7
	15	043 22.0	N19 58.8	295 07.1	S24 02.2	54.4	11.9	-7.6
	16	058 22.0	N19 58.3	309 38.1	S24 09.8	54.4	11.9	-7.5
	17	073 21.9	N19 57.8	324 09.0	S24 17.3	54.3	11.8	-7.4
	18	088 21.9	N19 57.3	338 39.8	S24 24.7	54.3	11.8	-7.3
	19	103 21.9	N19 56.8	353 10.6	S24 32.0	54.3	11.7	-7.2
	20	118 21.9	N19 56.2	007 41.3	S24 39.2	54.3	11.7	-7.1
	21	133 21.9	N19 55.7	022 12.0	S24 46.3	54.3	11.6	-7.0
	22	148 21.9	N19 55.2	036 42.6	S24 53.2	54.3	11.6	-6.8
	23	163 21.9	N19 54.7	051 13.2	S25 00.1	54.3	11.5	-6.7

Day 21 noon Sun: v 0.0 d -0.5 SD 15.7 | Moon SD 15.1

Day 22 noon Sun: v 0.0 d -0.5 SD 15.7 | Moon SD 14.9

Day 23 noon Sun: v 0.0 d -0.5 SD 15.7 | Moon SD 14.8

SUN: JULY 22 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	0114	2252	--	--
66N	--	--	0205	2204	--	--
64N	--	--	0237	2134	--	--
62N	--	0131	0300	2111	2238	--
60N	--	0208	0318	2053	2203	--
58N	--	0233	0333	2039	2138	--
56N	0123	0253	0346	2026	2118	2246
54N	0157	0309	0357	2015	2102	2214
52N	0221	0323	0407	2005	2049	2150
50N	0239	0335	0416	1956	2037	2132
45N	0314	0359	0434	1938	2013	2058
40N	0339	0418	0449	1923	1954	2033
35N	0359	0434	0502	1911	1939	2014
30N	0415	0447	0513	1900	1926	1958
25N	0428	0458	0523	1850	1915	1945
20N	0440	0508	0532	1841	1905	1933
15N	0450	0517	0540	1833	1856	1923
10N	0459	0525	0548	1825	1847	1914
05N	0507	0533	0556	1817	1840	1905
00N	0515	0541	0603	1810	1832	1858
05S	0523	0548	0610	1803	1825	1850
10S	0530	0555	0618	1755	1818	1843
15S	0536	0603	0626	1748	1810	1837
20S	0543	0610	0634	1740	1803	1830
25S	0550	0618	0642	1731	1755	1823
30S	0557	0626	0652	1722	1747	1817
35S	0604	0635	0702	1711	1739	1810
40S	0611	0644	0714	1700	1729	1802
45S	0619	0655	0728	1646	1718	1754
50S	0628	0708	0745	1629	1705	1745
55S	0639	0724	0806	1607	1649	1735
60S	0652	0745	0836	1537	1629	1722

MOON: RISE / SET | UTC HHMM

Lat	Day 21		Day 22		Day 23	
72N	1609	1919	--	--	--	--
70N	1522	2009	--	--	--	--
68N	1452	2040	1724	1942	--	--
66N	1429	2104	1631	2036	--	--
64N	1412	2122	1559	2109	1802	2044
62N	1358	2138	1536	2133	1719	2129
60N	1346	2151	1517	2153	1650	2158
58N	1335	2202	1502	2209	1628	2220
56N	1327	2212	1449	2223	1610	2239
54N	1319	2220	1437	2235	1555	2254
52N	1312	2228	1427	2245	1542	2308
50N	1305	2235	1418	2255	1530	2320
45N	1252	2250	1400	2315	1506	2344
40N	1241	2303	1344	2331	1447	--
35N	1231	2313	1332	2345	1432	--
30N	1223	2323	1320	2357	1418	--
25N	1215	2331	1311	--	1406	0007
20N	1209	2339	1301	--	1355	0017
15N	1202	2346	1253	--	1345	0026
10N	1156	2353	1245	--	1335	0035
05N	1151	2400	1237	--	1326	0044
00N	1145	--	1230	0006	1317	0052
05S	1139	--	1222	0013	1307	0100
10S	1134	--	1215	0020	1258	0109
15S	1128	--	1207	0027	1249	0118
20S	1121	--	1159	0034	1239	0127
25S	1115	--	1150	0042	1228	0137
30S	1108	--	1140	0051	1216	0148
35S	1100	--	1129	0100	1203	0201
40S	1051	0007	1117	0111	1148	0215
45S	1041	0016	1103	0124	1130	0232
50S	1028	0027	1046	0140	1108	0253
55S	1013	0041	1024	0201	1039	0321
60S	0952	0059	0954	0229	0957	0401

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JULY 24 - JULY 26

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
24	00	301 44.1	134 44.1	N06 14.0	225 11.0	N22 50.9	174 04.2	N19 25.3	287 11.9	N03 30.8
	01	316 46.6	149 44.2	N06 12.8	240 11.6	N22 51.1	189 06.1	N19 25.2	302 14.3	N03 30.8
	02	331 49.0	164 44.2	N06 11.6	255 12.2	N22 51.3	204 08.0	N19 25.0	317 16.8	N03 30.8
	03	346 51.5	179 44.3	N06 10.4	270 12.8	N22 51.5	219 09.9	N19 24.9	332 19.2	N03 30.8
	04	001 54.0	194 44.3	N06 09.2	285 13.4	N22 51.7	234 11.8	N19 24.8	347 21.7	N03 30.8
	05	016 56.4	209 44.4	N06 07.9	300 14.1	N22 51.9	249 13.7	N19 24.6	002 24.1	N03 30.8
	06	031 58.9	224 44.5	N06 06.7	315 14.7	N22 52.1	264 15.6	N19 24.5	017 26.6	N03 30.8
	07	047 01.4	239 44.5	N06 05.5	330 15.3	N22 52.3	279 17.5	N19 24.4	032 29.0	N03 30.8
	08	062 03.8	254 44.6	N06 04.3	345 15.9	N22 52.5	294 19.4	N19 24.2	047 31.5	N03 30.8
	09	077 06.3	269 44.6	N06 03.1	000 16.5	N22 52.6	309 21.3	N19 24.1	062 33.9	N03 30.8
	10	092 08.8	284 44.7	N06 01.9	015 17.1	N22 52.8	324 23.2	N19 24.0	077 36.4	N03 30.7
	11	107 11.2	299 44.7	N06 00.7	030 17.8	N22 53.0	339 25.0	N19 23.8	092 38.8	N03 30.7
	12	122 13.7	314 44.8	N05 59.5	045 18.4	N22 53.2	354 26.9	N19 23.7	107 41.3	N03 30.7
	13	137 16.1	329 44.9	N05 58.3	060 19.0	N22 53.4	009 28.8	N19 23.6	122 43.7	N03 30.7
	14	152 18.6	344 44.9	N05 57.1	075 19.6	N22 53.6	024 30.7	N19 23.4	137 46.2	N03 30.7
	15	167 21.1	359 45.0	N05 55.9	090 20.2	N22 53.8	039 32.6	N19 23.3	152 48.6	N03 30.7
	16	182 23.5	014 45.0	N05 54.7	105 20.8	N22 53.9	054 34.5	N19 23.2	167 51.1	N03 30.7
	17	197 26.0	029 45.1	N05 53.5	120 21.5	N22 54.1	069 36.4	N19 23.1	182 53.5	N03 30.7
	18	212 28.5	044 45.2	N05 52.3	135 22.1	N22 54.3	084 38.3	N19 22.9	197 56.0	N03 30.7
	19	227 30.9	059 45.2	N05 51.1	150 22.7	N22 54.5	099 40.2	N19 22.8	212 58.4	N03 30.7
	20	242 33.4	074 45.3	N05 49.9	165 23.3	N22 54.7	114 42.1	N19 22.7	228 00.9	N03 30.7
	21	257 35.9	089 45.3	N05 48.7	180 23.9	N22 54.9	129 44.0	N19 22.5	243 03.3	N03 30.7
	22	272 38.3	104 45.4	N05 47.5	195 24.5	N22 55.0	144 45.9	N19 22.4	258 05.8	N03 30.7
	23	287 40.8	119 45.5	N05 46.3	210 25.2	N22 55.2	159 47.8	N19 22.3	273 08.2	N03 30.7
25	00	302 43.3	134 45.5	N05 45.0	225 25.8	N22 55.4	174 49.7	N19 22.1	288 10.7	N03 30.6
	01	317 45.7	149 45.6	N05 43.8	240 26.4	N22 55.6	189 51.6	N19 22.0	303 13.1	N03 30.6
	02	332 48.2	164 45.7	N05 42.6	255 27.0	N22 55.8	204 53.5	N19 21.9	318 15.6	N03 30.6
	03	347 50.6	179 45.7	N05 41.4	270 27.6	N22 56.0	219 55.4	N19 21.7	333 18.0	N03 30.6
	04	002 53.1	194 45.8	N05 40.2	285 28.3	N22 56.1	234 57.3	N19 21.6	348 20.5	N03 30.6
	05	017 55.6	209 45.9	N05 39.0	300 28.9	N22 56.3	249 59.1	N19 21.5	003 22.9	N03 30.6
	06	032 58.0	224 45.9	N05 37.8	315 29.5	N22 56.5	265 01.0	N19 21.3	018 25.4	N03 30.6
	07	048 00.5	239 46.0	N05 36.6	330 30.1	N22 56.7	280 02.9	N19 21.2	033 27.8	N03 30.6
	08	063 03.0	254 46.1	N05 35.4	345 30.7	N22 56.9	295 04.8	N19 21.1	048 30.3	N03 30.6
	09	078 05.4	269 46.2	N05 34.2	000 31.3	N22 57.0	310 06.7	N19 20.9	063 32.8	N03 30.6
	10	093 07.9	284 46.2	N05 33.0	015 32.0	N22 57.2	325 08.6	N19 20.8	078 35.2	N03 30.6
	11	108 10.4	299 46.3	N05 31.8	030 32.6	N22 57.4	340 10.5	N19 20.7	093 37.7	N03 30.6
	12	123 12.8	314 46.4	N05 30.6	045 33.2	N22 57.6	355 12.4	N19 20.5	108 40.1	N03 30.6
	13	138 15.3	329 46.4	N05 29.3	060 33.8	N22 57.8	010 14.3	N19 20.4	123 42.6	N03 30.5
	14	153 17.8	344 46.5	N05 28.1	075 34.4	N22 57.9	025 16.2	N19 20.3	138 45.0	N03 30.5
	15	168 20.2	359 46.6	N05 26.9	090 35.1	N22 58.1	040 18.1	N19 20.1	153 47.5	N03 30.5
	16	183 22.7	014 46.7	N05 25.7	105 35.7	N22 58.3	055 20.0	N19 20.0	168 49.9	N03 30.5
	17	198 25.1	029 46.7	N05 24.5	120 36.3	N22 58.5	070 21.9	N19 19.9	183 52.4	N03 30.5
	18	213 27.6	044 46.8	N05 23.3	135 36.9	N22 58.6	085 23.8	N19 19.7	198 54.8	N03 30.5
	19	228 30.1	059 46.9	N05 22.1	150 37.5	N22 58.8	100 25.7	N19 19.6	213 57.3	N03 30.5
	20	243 32.5	074 47.0	N05 20.9	165 38.2	N22 59.0	115 27.6	N19 19.5	228 59.8	N03 30.5
	21	258 35.0	089 47.1	N05 19.7	180 38.8	N22 59.2	130 29.5	N19 19.3	244 02.2	N03 30.5
	22	273 37.5	104 47.1	N05 18.5	195 39.4	N22 59.3	145 31.4	N19 19.2	259 04.7	N03 30.5
	23	288 39.9	119 47.2	N05 17.2	210 40.0	N22 59.5	160 33.3	N19 19.1	274 07.1	N03 30.5
26	00	303 42.4	134 47.3	N05 16.0	225 40.6	N22 59.7	175 35.1	N19 19.0	289 09.6	N03 30.4
	01	318 44.9	149 47.4	N05 14.8	240 41.2	N22 59.9	190 37.0	N19 18.8	304 12.0	N03 30.4
	02	333 47.3	164 47.5	N05 13.6	255 41.9	N23 00.0	205 38.9	N19 18.7	319 14.5	N03 30.4
	03	348 49.8	179 47.5	N05 12.4	270 42.5	N23 00.2	220 40.8	N19 18.6	334 17.0	N03 30.4
	04	003 52.2	194 47.6	N05 11.2	285 43.1	N23 00.4	235 42.7	N19 18.4	349 19.4	N03 30.4
	05	018 54.7	209 47.7	N05 10.0	300 43.7	N23 00.6	250 44.6	N19 18.3	004 21.9	N03 30.4
	06	033 57.2	224 47.8	N05 08.8	315 44.3	N23 00.7	265 46.5	N19 18.2	019 24.3	N03 30.4
	07	048 59.6	239 47.9	N05 07.6	330 45.0	N23 00.9	280 48.4	N19 18.0	034 26.8	N03 30.4
	08	064 02.1	254 47.9	N05 06.3	345 45.6	N23 01.1	295 50.3	N19 17.9	049 29.2	N03 30.4
	09	079 04.6	269 48.0	N05 05.1	000 46.2	N23 01.2	310 52.2	N19 17.8	064 31.7	N03 30.4
	10	094 07.0	284 48.1	N05 03.9	015 46.8	N23 01.4	325 54.1	N19 17.6	079 34.2	N03 30.3
	11	109 09.5	299 48.2	N05 02.7	030 47.4	N23 01.6	340 56.0	N19 17.5	094 36.6	N03 30.3
	12	124 12.0	314 48.3	N05 01.5	045 48.1	N23 01.7	355 57.9	N19 17.4	109 39.1	N03 30.3
	13	139 14.4	329 48.4	N05 00.3	060 48.7	N23 01.9	010 59.8	N19 17.2	124 41.5	N03 30.3
	14	154 16.9	344 48.5	N04 59.1	075 49.3	N23 02.1	026 01.7	N19 17.1	139 44.0	N03 30.3
	15	169 19.4	359 48.6	N04 57.9	090 49.9	N23 02.3	041 03.6	N19 17.0	154 46.4	N03 30.3
	16	184 21.8	014 48.6	N04 56.6	105 50.5	N23 02.4	056 05.5	N19 16.8	169 48.9	N03 30.3
	17	199 24.3	029 48.7	N04 55.4	120 51.2	N23 02.6	071 07.4	N19 16.7	184 51.4	N03 30.3
	18	214 26.7	044 48.8	N04 54.2	135 51.8	N23 02.8	086 09.2	N19 16.6	199 53.8	N03 30.3
	19	229 29.2	059 48.9	N04 53.0	150 52.4	N23 02.9	101 11.1	N19 16.4	214 56.3	N03 30.3
	20	244 31.7	074 49.0	N04 51.8	165 53.0	N23 03.1	116 13.0	N19 16.3	229 58.7	N03 30.2
	21	259 34.1	089 49.1	N04 50.6	180 53.6	N23 03.3	131 14.9	N19 16.2	245 01.2	N03 30.2
	22	274 36.6	104 49.2	N04 49.4	195 54.3	N23 03.4	146 16.8	N19 16.0	260 03.7	N03 30.2
	23	289 39.1	119 49.3	N04 48.1	210 54.9	N23 03.6	161 18.7	N19 15.9	275 06.1	N03 30.2

Venus	Mars	Jupiter	Saturn
24: v 0.1 d -1.2	24: v 0.6 d 0.2	24: v 1.9 d -0.1	24: v 2.5 d 0.0
25: v 0.1 d -1.2	25: v 0.6 d 0.2	25: v 1.9 d -0.1	25: v 2.5 d 0.0
26: v 0.1 d -1.2	26: v 0.6 d 0.2	26: v 1.9 d -0.1	26: v 2.5 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.9	S40 11.6
Achernar	335 19.2	S57 05.7
Acrux	172 58.9	S63 15.1
Adhara	255 05.2	S29 00.4
Al Na'ir	027 30.9	S46 49.7
Aldebaran	290 38.4	N16 33.8
Alioth	166 12.0	N55 49.2
Alkaid	152 51.0	N49 11.1
Alnilam	275 36.7	S01 11.0
Alphard	217 46.8	S08 46.4
Alphecca	126 02.5	N26 37.7
Alpheratz	357 33.3	N29 14.2
Altair	061 58.4	N08 56.4
Ankaa	353 05.7	S42 09.4
Antares	112 14.0	S26 29.5
Arcturus	145 46.7	N19 02.8
Atria	107 06.7	S69 04.7
Avior	234 14.9	S59 35.7
Bellatrix	278 21.8	N06 22.5
Betelgeuse	270 51.0	N07 24.8
Canopus	263 52.3	S52 42.4
Capella	280 20.3	N46 01.4
Deneb	049 24.5	N45 22.5
Denebola	182 23.8	N14 25.5
Diphda	348 45.9	S17 50.2
Dubhe	193 39.9	N61 36.6
Elnath	278 00.5	N28 37.7
Eltanin	090 41.1	N51 29.3
Enif	033 37.2	N09 59.9
Fomalhaut	015 12.8	S29 28.7
Gacrux	171 50.4	S57 16.0
Gienah	175 42.4	S17 41.4
Hadar	148 34.1	S60 30.4
Hamal	327 49.7	N23 35.3
Kaus Australi	083 30.4	S34 22.3
Kochab	137 19.6	N74 03.0
Markab	013 28.4	N15 21.0
Menkar	314 04.9	N04 11.7
Menkent	147 56.1	S36 30.2
Miaplacidus	221 38.9	S69 49.6
Mirfak	308 26.6	N49 57.2
Nunki	075 45.8	S26 15.8
Peacock	053 03.1	S56 38.8
Polaris	313 30.1	N89 22.2
Pollux	243 16.1	N27 57.7
Procyon	244 49.8	N05 09.5
Rasalhague	095 57.1	N12 32.5
Regulus	207 33.4	N11 50.3
Rigel	281 02.9	S08 10.1
Rigil Kentaur	139 38.4	S60 57.0
Sabik	102 01.0	S15 45.5
Schedar	349 29.4	N56 40.8
Shaula	096 08.3	S37 07.4
Sirius	258 25.4	S16 45.1
Spica	158 21.0	S11 18.0
Suhail	222 45.8	S43 32.4
Vega	080 32.0	N38 48.6
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	191 33.6	1501
Mars	282 20.4	0858
Jupiter	231 59.6	1219
Saturn	345 27.3	0447

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
24	00	178 21.8	N19 54.2	065 43.8	S25 06.8	54.3	11.5	-6.6
	01	193 21.8	N19 53.6	080 14.3	S25 13.4	54.3	11.4	-6.5
	02	208 21.8	N19 53.1	094 44.7	S25 19.9	54.2	11.4	-6.4
	03	223 21.8	N19 52.6	109 15.1	S25 26.2	54.2	11.3	-6.3
	04	238 21.8	N19 52.1	123 45.5	S25 32.5	54.2	11.3	-6.1
	05	253 21.8	N19 51.5	138 15.8	S25 38.6	54.2	11.3	-6.0
	06	268 21.8	N19 51.0	152 46.0	S25 44.6	54.2	11.2	-5.9
	07	283 21.8	N19 50.5	167 16.2	S25 50.5	54.2	11.2	-5.8
	08	298 21.7	N19 50.0	181 46.4	S25 56.3	54.2	11.1	-5.7
	09	313 21.7	N19 49.4	196 16.5	S26 02.0	54.2	11.1	-5.5
	10	328 21.7	N19 48.9	210 46.6	S26 07.5	54.2	11.0	-5.4
	11	343 21.7	N19 48.4	225 16.6	S26 12.9	54.2	11.0	-5.3
	12	358 21.7	N19 47.8	239 46.6	S26 18.2	54.2	10.9	-5.2
	13	013 21.7	N19 47.3	254 16.5	S26 23.4	54.2	10.9	-5.0
	14	028 21.7	N19 46.8	268 46.4	S26 28.4	54.2	10.9	-4.9
	15	043 21.7	N19 46.3	283 16.3	S26 33.3	54.1	10.8	-4.8
	16	058 21.7	N19 45.7	297 46.1	S26 38.1	54.1	10.8	-4.7
	17	073 21.7	N19 45.2	312 15.9	S26 42.8	54.1	10.7	-4.5
	18	088 21.6	N19 44.7	326 45.6	S26 47.3	54.1	10.7	-4.4
	19	103 21.6	N19 44.1	341 15.3	S26 51.8	54.1	10.7	-4.3
	20	118 21.6	N19 43.6	355 45.0	S26 56.0	54.1	10.6	-4.2
	21	133 21.6	N19 43.1	010 14.6	S27 00.2	54.1	10.6	-4.0
	22	148 21.6	N19 42.5	024 44.2	S27 04.2	54.1	10.5	-3.9
	23	163 21.6	N19 42.0	039 13.8	S27 08.1	54.1	10.5	-3.8
25	00	178 21.6	N19 41.5	053 43.3	S27 11.9	54.1	10.5	-3.6
	01	193 21.6	N19 40.9	068 12.7	S27 15.6	54.1	10.4	-3.5
	02	208 21.6	N19 40.4	082 42.2	S27 19.1	54.1	10.4	-3.4
	03	223 21.6	N19 39.8	097 11.6	S27 22.5	54.1	10.4	-3.3
	04	238 21.6	N19 39.3	111 41.0	S27 25.7	54.1	10.3	-3.1
	05	253 21.6	N19 38.8	126 10.3	S27 28.9	54.1	10.3	-3.0
	06	268 21.6	N19 38.2	140 39.7	S27 31.9	54.1	10.3	-2.9
	07	283 21.6	N19 37.7	155 08.9	S27 34.7	54.1	10.3	-2.7
	08	298 21.6	N19 37.1	169 38.2	S27 37.5	54.1	10.2	-2.6
	09	313 21.6	N19 36.6	184 07.4	S27 40.1	54.1	10.2	-2.5
	10	328 21.5	N19 36.1	198 36.6	S27 42.6	54.1	10.2	-2.3
	11	343 21.5	N19 35.5	213 05.8	S27 44.9	54.1	10.2	-2.2
	12	358 21.5	N19 35.0	227 35.0	S27 47.1	54.1	10.1	-2.1
	13	013 21.5	N19 34.4	242 04.1	S27 49.2	54.1	10.1	-1.9
	14	028 21.5	N19 33.9	256 33.2	S27 51.1	54.1	10.1	-1.8
	15	043 21.5	N19 33.4	271 02.3	S27 52.9	54.1	10.1	-1.7
	16	058 21.5	N19 32.8	285 31.4	S27 54.6	54.1	10.1	-1.5
	17	073 21.5	N19 32.3	300 00.4	S27 56.1	54.1	10.0	-1.4
	18	088 21.5	N19 31.7	314 29.5	S27 57.5	54.1	10.0	-1.3
	19	103 21.5	N19 31.2	328 58.5	S27 58.8	54.1	10.0	-1.1
	20	118 21.5	N19 30.6	343 27.5	S27 59.9	54.1	10.0	-1.0
	21	133 21.5	N19 30.1	357 56.5	S28 00.9	54.1	10.0	-0.9
	22	148 21.5	N19 29.5	012 25.5	S28 01.8	54.1	10.0	-0.7
	23	163 21.5	N19 29.0	026 54.4	S28 02.5	54.1	9.9	-0.6
26	00	178 21.5	N19 28.4	041 23.4	S28 03.1	54.1	9.9	-0.5
	01	193 21.5	N19 27.9	055 52.3	S28 03.6	54.1	9.9	-0.3
	02	208 21.5	N19 27.3	070 21.2	S28 03.9	54.1	9.9	-0.2
	03	223 21.5	N19 26.8	084 50.2	S28 04.1	54.1	9.9	0.0
	04	238 21.5	N19 26.2	099 19.1	S28 04.1	54.1	9.9	0.1
	05	253 21.5	N19 25.7	113 48.0	S28 04.0	54.1	9.9	0.2
	06	268 21.5	N19 25.1	128 16.9	S28 03.8	54.1	9.9	0.4
	07	283 21.5	N19 24.6	142 45.8	S28 03.4	54.1	9.9	0.5
	08	298 21.5	N19 24.0	157 14.7	S28 03.0	54.1	9.9	0.6
	09	313 21.5	N19 23.5	171 43.6	S28 02.3	54.1	9.9	0.8
	10	328 21.5	N19 22.9	186 12.5	S28 01.5	54.1	9.9	0.9
	11	343 21.5	N19 22.4	200 41.4	S28 00.6	54.1	9.9	1.0
	12	358 21.5	N19 21.8	215 10.3	S27 59.6	54.1	9.9	1.2
	13	013 21.5	N19 21.2	229 39.2	S27 58.4	54.1	9.9	1.3
	14	028 21.5	N19 20.7	244 08.1	S27 57.1	54.1	9.9	1.5
	15	043 21.5	N19 20.1	258 37.0	S27 55.7	54.1	9.9	1.6
	16	058 21.5	N19 19.6	273 05.9	S27 54.1	54.1	9.9	1.7
	17	073 21.5	N19 19.0	287 34.9	S27 52.4	54.1	9.9	1.9
	18	088 21.5	N19 18.4	302 03.8	S27 50.5	54.1	10.0	2.0
	19	103 21.5	N19 17.9	316 32.8	S27 48.5	54.1	10.0	2.1
	20	118 21.6	N19 17.3	331 01.7	S27 46.4	54.1	10.0	2.3
	21	133 21.6	N19 16.8	345 30.7	S27 44.1	54.2	10.0	2.4
	22	148 21.6	N19 16.2	359 59.7	S27 41.7	54.2	10.0	2.5
	23	163 21.6	N19 15.6	014 28.7	S27 39.2	54.2	10.0	2.7

Day 24 noon Sun: v 0.0 d -0.5 SD 15.7 | Moon SD 14.8

Day 25 noon Sun: v 0.0 d -0.5 SD 15.7 | Moon SD 14.7

Day 26 noon Sun: v 0.0 d -0.6 SD 15.7 | Moon SD 14.7

SUN: JULY 25 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	0135	2232	--	--
66N	--	--	0218	2152	--	--
64N	--	0044	0246	2125	2319	--
62N	--	0145	0307	2104	2224	--
60N	--	0218	0325	2047	2153	--
58N	0040	0241	0339	2033	2130	2323
56N	0136	0300	0351	2021	2112	2234
54N	0206	0315	0402	2010	2057	2205
52N	0228	0328	0411	2001	2044	2143
50N	0245	0340	0420	1953	2033	2126
45N	0318	0403	0438	1935	2010	2054
40N	0343	0421	0452	1921	1952	2030
35N	0401	0436	0504	1908	1937	2011
30N	0417	0448	0515	1858	1924	1956
25N	0430	0459	0524	1849	1913	1943
20N	0441	0509	0533	1840	1904	1932
15N	0451	0518	0541	1832	1855	1922
10N	0500	0526	0549	1824	1847	1913
05N	0508	0534	0556	1817	1839	1905
00N	0516	0541	0603	1810	1832	1858
05S	0523	0548	0610	1803	1825	1850
10S	0529	0555	0617	1756	1818	1844
15S	0536	0602	0625	1748	1811	1837
20S	0542	0609	0633	1741	1804	1831
25S	0549	0617	0641	1732	1757	1824
30S	0555	0624	0650	1723	1749	1818
35S	0602	0633	0700	1713	1741	1811
40S	0609	0642	0711	1702	1731	1804
45S	0617	0653	0725	1649	1721	1757
50S	0625	0705	0741	1632	1709	1748
55S	0635	0720	0802	1612	1653	1739
60S	0647	0740	0830	1544	1634	1727

MOON: RISE / SET | UTC HHMM

Lat	Day 24		Day 25		Day 26	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	--	--	--	--
62N	1908	2122	--	--	2130	2234
60N	1820	2210	1935	2240	2022	2342
58N	1749	2241	1858	2318	1947	--
56N	1726	2304	1832	2344	1921	--
54N	1708	2323	1811	--	1901	0005
52N	1652	2339	1754	--	1844	0022
50N	1638	2353	1739	--	1829	0037
45N	1610	--	1709	0021	1800	0107
40N	1549	0004	1646	0044	1737	0131
35N	1531	0020	1626	0102	1718	0150
30N	1515	0035	1610	0118	1701	0207
25N	1501	0047	1555	0132	1647	0221
20N	1449	0059	1542	0145	1634	0235
15N	1437	0110	1530	0157	1621	0247
10N	1426	0120	1518	0208	1610	0259
05N	1416	0130	1507	0219	1559	0310
00N	1405	0140	1456	0230	1548	0321
05S	1355	0150	1445	0241	1537	0332
10S	1345	0200	1434	0251	1525	0343
15S	1334	0210	1422	0303	1514	0355
20S	1322	0221	1410	0315	1502	0407
25S	1310	0233	1357	0328	1448	0421
30S	1257	0246	1343	0342	1434	0435
35S	1242	0300	1326	0358	1417	0452
40S	1224	0317	1307	0417	1358	0511
45S	1203	0338	1245	0439	1335	0534
50S	1137	0403	1215	0508	1305	0604
55S	1101	0438	1135	0548	1224	0646
60S	1006	0532	1026	0656	1111	0758

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JULY 27 - JULY 29

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
27	00	304 41.5	134 49.4	N04 46.9	225 55.5	N23 03.8	176 20.6	N19 15.8	290 08.6	N03 30.2
	01	319 44.0	149 49.5	N04 45.7	240 56.1	N23 03.9	191 22.5	N19 15.6	305 11.0	N03 30.2
	02	334 46.5	164 49.6	N04 44.5	255 56.7	N23 04.1	206 24.4	N19 15.5	320 13.5	N03 30.2
	03	349 48.9	179 49.7	N04 43.3	270 57.4	N23 04.2	221 26.3	N19 15.4	335 16.0	N03 30.2
	04	004 51.4	194 49.8	N04 42.1	285 58.0	N23 04.4	236 28.2	N19 15.2	350 18.4	N03 30.2
	05	019 53.9	209 49.9	N04 40.9	300 58.6	N23 04.6	251 30.1	N19 15.1	005 20.9	N03 30.1
	06	034 56.3	224 50.0	N04 39.6	315 59.2	N23 04.7	266 32.0	N19 15.0	020 23.3	N03 30.1
	07	049 58.8	239 50.1	N04 38.4	330 59.8	N23 04.9	281 33.9	N19 14.8	035 25.8	N03 30.1
	08	065 01.2	254 50.2	N04 37.2	346 00.5	N23 05.1	296 35.8	N19 14.7	050 28.3	N03 30.1
	09	080 03.7	269 50.3	N04 36.0	001 01.1	N23 05.2	311 37.7	N19 14.6	065 30.7	N03 30.1
	10	095 06.2	284 50.4	N04 34.8	016 01.7	N23 05.4	326 39.6	N19 14.4	080 33.2	N03 30.1
	11	110 08.6	299 50.5	N04 33.6	031 02.3	N23 05.5	341 41.5	N19 14.3	095 35.7	N03 30.1
	12	125 11.1	314 50.6	N04 32.4	046 02.9	N23 05.7	356 43.4	N19 14.2	110 38.1	N03 30.1
	13	140 13.6	329 50.7	N04 31.1	061 03.6	N23 05.9	011 45.3	N19 14.0	125 40.6	N03 30.0
	14	155 16.0	344 50.8	N04 29.9	076 04.2	N23 06.0	026 47.1	N19 13.9	140 43.0	N03 30.0
	15	170 18.5	359 50.9	N04 28.7	091 04.8	N23 06.2	041 49.0	N19 13.8	155 45.5	N03 30.0
	16	185 21.0	014 51.0	N04 27.5	106 05.4	N23 06.3	056 50.9	N19 13.6	170 48.0	N03 30.0
	17	200 23.4	029 51.1	N04 26.3	121 06.1	N23 06.5	071 52.8	N19 13.5	185 50.4	N03 30.0
	18	215 25.9	044 51.2	N04 25.1	136 06.7	N23 06.7	086 54.7	N19 13.4	200 52.9	N03 30.0
	19	230 28.4	059 51.3	N04 23.8	151 07.3	N23 06.8	101 56.6	N19 13.2	215 55.4	N03 30.0
	20	245 30.8	074 51.4	N04 22.6	166 07.9	N23 07.0	116 58.5	N19 13.1	230 57.8	N03 30.0
	21	260 33.3	089 51.5	N04 21.4	181 08.5	N23 07.1	132 00.4	N19 13.0	246 00.3	N03 30.0
	22	275 35.7	104 51.6	N04 20.2	196 09.2	N23 07.3	147 02.3	N19 12.8	261 02.8	N03 29.9
	23	290 38.2	119 51.7	N04 19.0	211 09.8	N23 07.5	162 04.2	N19 12.7	276 05.2	N03 29.9
28	00	305 40.7	134 51.8	N04 17.8	226 10.4	N23 07.6	177 06.1	N19 12.6	291 07.7	N03 29.9
	01	320 43.1	149 51.9	N04 16.5	241 11.0	N23 07.8	192 08.0	N19 12.4	306 10.1	N03 29.9
	02	335 45.6	164 52.0	N04 15.3	256 11.7	N23 07.9	207 09.9	N19 12.3	321 12.6	N03 29.9
	03	350 48.1	179 52.1	N04 14.1	271 12.3	N23 08.1	222 11.8	N19 12.2	336 15.1	N03 29.9
	04	005 50.5	194 52.2	N04 12.9	286 12.9	N23 08.2	237 13.7	N19 12.0	351 17.5	N03 29.9
	05	020 53.0	209 52.4	N04 11.7	301 13.5	N23 08.4	252 15.6	N19 11.9	006 20.0	N03 29.9
	06	035 55.5	224 52.5	N04 10.5	316 14.1	N23 08.5	267 17.5	N19 11.7	021 22.5	N03 29.8
	07	050 57.9	239 52.6	N04 09.2	331 14.8	N23 08.7	282 19.4	N19 11.6	036 24.9	N03 29.8
	08	066 00.4	254 52.7	N04 08.0	346 15.4	N23 08.8	297 21.3	N19 11.5	051 27.4	N03 29.8
	09	081 02.9	269 52.8	N04 06.8	001 16.0	N23 09.0	312 23.2	N19 11.3	066 29.9	N03 29.8
	10	096 05.3	284 52.9	N04 05.6	016 16.6	N23 09.2	327 25.1	N19 11.2	081 32.3	N03 29.8
	11	111 07.8	299 53.0	N04 04.4	031 17.3	N23 09.3	342 26.9	N19 11.1	096 34.8	N03 29.8
	12	126 10.2	314 53.2	N04 03.2	046 17.9	N23 09.5	357 28.8	N19 10.9	111 37.3	N03 29.8
	13	141 12.7	329 53.3	N04 01.9	061 18.5	N23 09.6	012 30.7	N19 10.8	126 39.7	N03 29.7
	14	156 15.2	344 53.4	N04 00.7	076 19.1	N23 09.8	027 32.6	N19 10.7	141 42.2	N03 29.7
	15	171 17.6	359 53.5	N03 59.5	091 19.7	N23 09.9	042 34.5	N19 10.5	156 44.7	N03 29.7
	16	186 20.1	014 53.6	N03 58.3	106 20.4	N23 10.1	057 36.4	N19 10.4	171 47.1	N03 29.7
	17	201 22.6	029 53.7	N03 57.1	121 21.0	N23 10.2	072 38.3	N19 10.3	186 49.6	N03 29.7
	18	216 25.0	044 53.9	N03 55.8	136 21.6	N23 10.4	087 40.2	N19 10.1	201 52.1	N03 29.7
	19	231 27.5	059 54.0	N03 54.6	151 22.2	N23 10.5	102 42.1	N19 10.0	216 54.5	N03 29.7
	20	246 30.0	074 54.1	N03 53.4	166 22.9	N23 10.7	117 44.0	N19 09.9	231 57.0	N03 29.6
	21	261 32.4	089 54.2	N03 52.2	181 23.5	N23 10.8	132 45.9	N19 09.7	246 59.5	N03 29.6
	22	276 34.9	104 54.3	N03 51.0	196 24.1	N23 11.0	147 47.8	N19 09.6	262 01.9	N03 29.6
	23	291 37.3	119 54.5	N03 49.7	211 24.7	N23 11.1	162 49.7	N19 09.5	277 04.4	N03 29.6
29	00	306 39.8	134 54.6	N03 48.5	226 25.4	N23 11.3	177 51.6	N19 09.3	292 06.9	N03 29.6
	01	321 42.3	149 54.7	N03 47.3	241 26.0	N23 11.4	192 53.5	N19 09.2	307 09.3	N03 29.6
	02	336 44.7	164 54.8	N03 46.1	256 26.6	N23 11.6	207 55.4	N19 09.1	322 11.8	N03 29.6
	03	351 47.2	179 54.9	N03 44.9	271 27.2	N23 11.7	222 57.3	N19 08.9	337 14.3	N03 29.6
	04	006 49.7	194 55.1	N03 43.6	286 27.8	N23 11.8	237 59.2	N19 08.8	352 16.7	N03 29.5
	05	021 52.1	209 55.2	N03 42.4	301 28.5	N23 12.0	253 01.1	N19 08.7	007 19.2	N03 29.5
	06	036 54.6	224 55.3	N03 41.2	316 29.1	N23 12.1	268 03.0	N19 08.5	022 21.7	N03 29.5
	07	051 57.1	239 55.4	N03 40.0	331 29.7	N23 12.3	283 04.9	N19 08.4	037 24.2	N03 29.5
	08	066 59.5	254 55.6	N03 38.8	346 30.3	N23 12.4	298 06.8	N19 08.3	052 26.6	N03 29.5
	09	082 02.0	269 55.7	N03 37.5	001 31.0	N23 12.6	313 08.6	N19 08.1	067 29.1	N03 29.5
	10	097 04.5	284 55.8	N03 36.3	016 31.6	N23 12.7	328 10.5	N19 08.0	082 31.6	N03 29.4
	11	112 06.9	299 56.0	N03 35.1	031 32.2	N23 12.9	343 12.4	N19 07.9	097 34.0	N03 29.4
	12	127 09.4	314 56.1	N03 33.9	046 32.8	N23 13.0	358 14.3	N19 07.7	112 36.5	N03 29.4
	13	142 11.8	329 56.2	N03 32.7	061 33.5	N23 13.1	013 16.2	N19 07.6	127 39.0	N03 29.4
	14	157 14.3	344 56.3	N03 31.4	076 34.1	N23 13.3	028 18.1	N19 07.5	142 41.4	N03 29.4
	15	172 16.8	359 56.5	N03 30.2	091 34.7	N23 13.4	043 20.0	N19 07.3	157 43.9	N03 29.4
	16	187 19.2	014 56.6	N03 29.0	106 35.3	N23 13.6	058 21.9	N19 07.2	172 46.4	N03 29.4
	17	202 21.7	029 56.7	N03 27.8	121 36.0	N23 13.7	073 23.8	N19 07.1	187 48.9	N03 29.3
	18	217 24.2	044 56.9	N03 26.6	136 36.6	N23 13.9	088 25.7	N19 06.9	202 51.3	N03 29.3
	19	232 26.6	059 57.0	N03 25.3	151 37.2	N23 14.0	103 27.6	N19 06.8	217 53.8	N03 29.3
	20	247 29.1	074 57.1	N03 24.1	166 37.8	N23 14.1	118 29.5	N19 06.6	232 56.3	N03 29.3
	21	262 31.6	089 57.3	N03 22.9	181 38.5	N23 14.3	133 31.4	N19 06.5	247 58.7	N03 29.3
	22	277 34.0	104 57.4	N03 21.7	196 39.1	N23 14.4	148 33.3	N19 06.4	263 01.2	N03 29.3
	23	292 36.5	119 57.5	N03 20.5	211 39.7	N23 14.6	163 35.2	N19 06.2	278 03.7	N03 29.2

Venus	Mars	Jupiter	Saturn
27: v 0.1 d -1.2	27: v 0.6 d 0.2	27: v 1.9 d -0.1	27: v 2.5 d 0.0
28: v 0.1 d -1.2	28: v 0.6 d 0.2	28: v 1.9 d -0.1	28: v 2.5 d 0.0
29: v 0.1 d -1.2	29: v 0.6 d 0.1	29: v 1.9 d -0.1	29: v 2.5 d 0.0

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.9	S40 11.6
Achernar	335 19.1	S57 05.7
Acrux	172 59.0	S63 15.1
Adhara	255 05.2	S29 00.4
Al Na'ir	027 30.9	S46 49.7
Aldebaran	290 38.3	N16 33.8
Alioth	166 12.0	N55 49.2
Alkaid	152 51.0	N49 11.1
Alnilam	275 36.7	S01 11.0
Alphard	217 46.8	S08 46.4
Alphecca	126 02.5	N26 37.7
Alpheratz	357 33.2	N29 14.2
Altair	061 58.4	N08 56.4
Ankaa	353 05.7	S42 09.4
Antares	112 14.0	S26 29.5
Arcturus	145 46.7	N19 02.8
Atria	107 06.7	S69 04.7
Avior	234 14.9	S59 35.6
Bellatrix	278 21.7	N06 22.5
Betelgeuse	270 51.0	N07 24.8
Canopus	263 52.3	S52 42.4
Capella	280 20.3	N46 01.3
Deneb	049 24.5	N45 22.5
Denebola	182 23.8	N14 25.5
Diphda	348 45.9	S17 50.2
Dubhe	193 39.9	N61 36.6
Elnath	278 00.5	N28 37.7
Eltanin	090 41.1	N51 29.3
Enif	033 37.2	N09 59.9
Fomalhaut	015 12.8	S29 28.7
Gacrux	171 50.4	S57 16.0
Gienah	175 42.4	S17 41.4
Hadar	148 34.2	S60 30.4
Hamal	327 49.7	N23 35.3
Kaus Australi	083 30.4	S34 22.3
Kochab	137 19.6	N74 03.0
Markab	013 28.4	N15 21.0
Menkar	314 04.9	N04 11.7
Menkent	147 56.1	S36 30.2
Miaplacidus	221 38.9	S69 49.6
Mirfak	308 26.5	N49 57.2
Nunki	075 45.8	S26 15.8
Peacock	053 03.1	S56 38.8
Polaris	313 28.4	N89 22.2
Pollux	243 16.1	N27 57.7
Procyon	244 49.8	N05 09.5
Rasalhague	095 57.1	N12 32.5
Regulus	207 33.4	N11 50.3
Rigel	281 02.9	S08 10.1
Rigil Kentaur	139 38.4	S60 57.0
Sabik	102 01.0	S15 45.5
Schedar	349 29.3	N56 40.8
Shaula	096 08.3	S37 07.4
Sirius	258 25.4	S16 45.0
Spica	158 21.0	S11 18.0
Suhail	222 45.8	S43 32.4
Vega	080 32.0	N38 48.6
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	188 42.9	1500
Mars	280 07.6	0855
Jupiter	231 18.6	1210
Saturn	345 27.0	0435

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

2026 | JULY 27 - JULY 29

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
27	00	178 21.6	N19 15.1	028 57.7	S27 36.5	54.2	10.0	2.8
	01	193 21.6	N19 14.5	043 26.8	S27 33.7	54.2	10.1	2.9
	02	208 21.6	N19 14.0	057 55.8	S27 30.8	54.2	10.1	3.1
	03	223 21.6	N19 13.4	072 24.9	S27 27.7	54.2	10.1	3.2
	04	238 21.6	N19 12.8	086 54.0	S27 24.5	54.2	10.1	3.3
	05	253 21.6	N19 12.3	101 23.2	S27 21.1	54.2	10.1	3.5
	06	268 21.6	N19 11.7	115 52.3	S27 17.7	54.2	10.2	3.6
	07	283 21.6	N19 11.1	130 21.5	S27 14.1	54.2	10.2	3.7
	08	298 21.6	N19 10.6	144 50.7	S27 10.3	54.2	10.2	3.9
	09	313 21.6	N19 10.0	159 19.9	S27 06.5	54.2	10.2	4.0
	10	328 21.6	N19 09.4	173 49.1	S27 02.5	54.2	10.3	4.1
	11	343 21.7	N19 08.9	188 18.4	S26 58.3	54.3	10.3	4.3
	12	358 21.7	N19 08.3	202 47.7	S26 54.1	54.3	10.3	4.4
	13	013 21.7	N19 07.7	217 17.1	S26 49.7	54.3	10.4	4.5
	14	028 21.7	N19 07.1	231 46.4	S26 45.1	54.3	10.4	4.7
	15	043 21.7	N19 06.6	246 15.8	S26 40.5	54.3	10.4	4.8
	16	058 21.7	N19 06.0	260 45.3	S26 35.7	54.3	10.5	4.9
	17	073 21.7	N19 05.4	275 14.7	S26 30.8	54.3	10.5	5.0
	18	088 21.7	N19 04.9	289 44.2	S26 25.7	54.3	10.5	5.2
	19	103 21.7	N19 04.3	304 13.8	S26 20.6	54.3	10.6	5.3
	20	118 21.7	N19 03.7	318 43.3	S26 15.3	54.3	10.6	5.4
	21	133 21.8	N19 03.1	333 12.9	S26 09.9	54.3	10.6	5.6
	22	148 21.8	N19 02.6	347 42.6	S26 04.3	54.4	10.7	5.7
	23	163 21.8	N19 02.0	002 12.3	S25 58.6	54.4	10.7	5.8
28	00	178 21.8	N19 01.4	016 42.0	S25 52.8	54.4	10.8	5.9
	01	193 21.8	N19 00.8	031 11.8	S25 46.9	54.4	10.8	6.1
	02	208 21.8	N19 00.3	045 41.6	S25 40.8	54.4	10.8	6.2
	03	223 21.8	N18 59.7	060 11.4	S25 34.7	54.4	10.9	6.3
	04	238 21.8	N18 59.1	074 41.3	S25 28.4	54.4	10.9	6.4
	05	253 21.9	N18 58.5	089 11.2	S25 21.9	54.4	11.0	6.5
	06	268 21.9	N18 58.0	103 41.2	S25 15.4	54.4	11.0	6.7
	07	283 21.9	N18 57.4	118 11.2	S25 08.7	54.4	11.1	6.8
	08	298 21.9	N18 56.8	132 41.3	S25 01.9	54.5	11.1	6.9
	09	313 21.9	N18 56.2	147 11.4	S24 55.0	54.5	11.2	7.0
	10	328 21.9	N18 55.6	161 41.6	S24 48.0	54.5	11.2	7.1
	11	343 21.9	N18 55.1	176 11.8	S24 40.9	54.5	11.2	7.3
	12	358 22.0	N18 54.5	190 42.0	S24 33.6	54.5	11.3	7.4
	13	013 22.0	N18 53.9	205 12.3	S24 26.2	54.5	11.3	7.5
	14	028 22.0	N18 53.3	219 42.7	S24 18.7	54.5	11.4	7.6
	15	043 22.0	N18 52.7	234 13.0	S24 11.1	54.5	11.4	7.7
	16	058 22.0	N18 52.1	248 43.5	S24 03.4	54.6	11.5	7.8
	17	073 22.0	N18 51.6	263 14.0	S23 55.5	54.6	11.5	8.0
	18	088 22.0	N18 51.0	277 44.5	S23 47.6	54.6	11.6	8.1
	19	103 22.1	N18 50.4	292 15.1	S23 39.5	54.6	11.6	8.2
	20	118 22.1	N18 49.8	306 45.7	S23 31.3	54.6	11.7	8.3
	21	133 22.1	N18 49.2	321 16.4	S23 23.0	54.6	11.7	8.4
	22	148 22.1	N18 48.6	335 47.2	S23 14.6	54.6	11.8	8.5
	23	163 22.1	N18 48.0	350 18.0	S23 06.1	54.6	11.8	8.6
29	00	178 22.2	N18 47.4	004 48.8	S22 57.4	54.7	11.9	8.7
	01	193 22.2	N18 46.9	019 19.7	S22 48.7	54.7	11.9	8.8
	02	208 22.2	N18 46.3	033 50.7	S22 39.9	54.7	12.0	9.0
	03	223 22.2	N18 45.7	048 21.7	S22 30.9	54.7	12.0	9.1
	04	238 22.2	N18 45.1	062 52.7	S22 21.9	54.7	12.1	9.2
	05	253 22.2	N18 44.5	077 23.8	S22 12.7	54.7	12.2	9.3
	06	268 22.3	N18 43.9	091 55.0	S22 03.4	54.7	12.2	9.4
	07	283 22.3	N18 43.3	106 26.2	S21 54.0	54.8	12.3	9.5
	08	298 22.3	N18 42.7	120 57.4	S21 44.6	54.8	12.3	9.6
	09	313 22.3	N18 42.1	135 28.7	S21 35.0	54.8	12.4	9.7
	10	328 22.4	N18 41.5	150 00.1	S21 25.3	54.8	12.4	9.8
	11	343 22.4	N18 40.9	164 31.5	S21 15.5	54.8	12.5	9.9
	12	358 22.4	N18 40.3	179 03.0	S21 05.6	54.8	12.5	10.0
	13	013 22.4	N18 39.7	193 34.5	S20 55.6	54.8	12.6	10.1
	14	028 22.4	N18 39.1	208 06.1	S20 45.6	54.9	12.6	10.2
	15	043 22.5	N18 38.6	222 37.7	S20 35.4	54.9	12.7	10.3
	16	058 22.5	N18 38.0	237 09.4	S20 25.1	54.9	12.7	10.4
	17	073 22.5	N18 37.4	251 41.1	S20 14.7	54.9	12.8	10.5
	18	088 22.5	N18 36.8	266 12.9	S20 04.3	54.9	12.8	10.6
	19	103 22.6	N18 36.2	280 44.7	S19 53.7	54.9	12.9	10.7
	20	118 22.6	N18 35.6	295 16.6	S19 43.1	55.0	12.9	10.7
	21	133 22.6	N18 35.0	309 48.5	S19 32.3	55.0	13.0	10.8
	22	148 22.6	N18 34.4	324 20.5	S19 21.5	55.0	13.0	10.9
	23	163 22.6	N18 33.8	338 52.5	S19 10.5	55.0	13.1	11.0

Day 27 noon Sun: v 0.0 d -0.6 SD 15.8 | Moon SD 14.8

Day 28 noon Sun: v 0.0 d -0.6 SD 15.8 | Moon SD 14.9

Day 29 noon Sun: v 0.0 d -0.6 SD 15.8 | Moon SD 14.9

SUN: JULY 28 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	0036	2320	--	--
68N	--	--	0153	2215	--	--
66N	--	--	0230	2140	--	--
64N	--	0113	0255	2115	2254	--
62N	--	0158	0315	2056	2211	--
60N	--	0227	0331	2040	2143	--
58N	0106	0249	0345	2027	2122	2301
56N	0148	0306	0357	2015	2105	2222
54N	0215	0321	0407	2005	2051	2156
52N	0235	0333	0416	1956	2039	2136
50N	0251	0344	0424	1948	2028	2120
45N	0323	0406	0441	1932	2006	2049
40N	0346	0424	0455	1918	1948	2026
35N	0404	0438	0506	1906	1934	2008
30N	0419	0450	0517	1856	1922	1954
25N	0431	0501	0526	1847	1912	1941
20N	0442	0510	0534	1839	1902	1930
15N	0452	0519	0542	1831	1854	1921
10N	0501	0527	0549	1824	1846	1912
05N	0508	0534	0556	1817	1839	1905
00N	0516	0541	0603	1810	1832	1857
05S	0523	0548	0610	1803	1825	1850
10S	0529	0555	0617	1756	1818	1844
15S	0535	0601	0624	1749	1812	1838
20S	0542	0608	0632	1742	1805	1832
25S	0548	0615	0640	1734	1758	1826
30S	0554	0623	0648	1725	1751	1820
35S	0600	0631	0658	1716	1743	1813
40S	0607	0640	0709	1705	1734	1807
45S	0614	0650	0722	1652	1724	1759
50S	0622	0701	0737	1636	1712	1752
55S	0631	0716	0757	1617	1658	1743
60S	0642	0734	0824	1550	1639	1732

MOON: RISE / SET | UTC HHMM

Lat	Day 27		Day 28		Day 29	
72N	--	--	--	--	--	--
70N	--	--	--	--	2318	--
68N	--	--	--	--	2226	--
66N	--	--	2237	--	2153	0056
64N	--	--	2146	--	2129	0146
62N	2119	--	2114	0030	2109	0217
60N	2042	--	2050	0107	2054	0241
58N	2015	0016	2031	0133	2040	0259
56N	1954	0041	2015	0154	2028	0315
54N	1937	0102	2001	0211	2018	0328
52N	1922	0118	1949	0226	2009	0340
50N	1909	0133	1938	0238	2001	0350
45N	1842	0202	1916	0304	1943	0411
40N	1821	0225	1858	0325	1929	0428
35N	1803	0244	1843	0342	1917	0443
30N	1748	0300	1829	0357	1906	0455
25N	1734	0314	1817	0410	1856	0506
20N	1722	0327	1807	0422	1847	0516
15N	1711	0339	1756	0433	1839	0526
10N	1700	0351	1747	0443	1831	0535
05N	1649	0402	1738	0453	1824	0543
00N	1639	0412	1728	0503	1816	0552
05S	1628	0423	1719	0513	1809	0600
10S	1618	0434	1710	0523	1801	0609
15S	1607	0445	1700	0533	1753	0617
20S	1555	0457	1650	0544	1744	0627
25S	1543	0510	1639	0555	1735	0636
30S	1529	0524	1627	0608	1726	0647
35S	1514	0540	1613	0622	1715	0659
40S	1456	0559	1558	0639	1702	0713
45S	1434	0621	1539	0659	1647	0729
50S	1406	0649	1515	0723	1628	0749
55S	1328	0727	1444	0756	1604	0814
60S	1226	0830	1356	0844	1530	0850

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | JULY 30 - AUGUST 1

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
30	00	307 39.0	134 57.7	N03 19.2	226 40.3	N23 14.7	178 37.1	N19 06.1	293 06.2	N03 29.2
	01	322 41.4	149 57.8	N03 18.0	241 41.0	N23 14.8	193 39.0	N19 06.0	308 08.6	N03 29.2
	02	337 43.9	164 58.0	N03 16.8	256 41.6	N23 15.0	208 40.9	N19 05.8	323 11.1	N03 29.2
	03	352 46.3	179 58.1	N03 15.6	271 42.2	N23 15.1	223 42.8	N19 05.7	338 13.6	N03 29.2
	04	007 48.8	194 58.2	N03 14.4	286 42.8	N23 15.3	238 44.7	N19 05.6	353 16.0	N03 29.2
	05	022 51.3	209 58.4	N03 13.1	301 43.5	N23 15.4	253 46.6	N19 05.4	008 18.5	N03 29.2
	06	037 53.7	224 58.5	N03 11.9	316 44.1	N23 15.5	268 48.5	N19 05.3	023 21.0	N03 29.1
	07	052 56.2	239 58.6	N03 10.7	331 44.7	N23 15.7	283 50.4	N19 05.2	038 23.5	N03 29.1
	08	067 58.7	254 58.8	N03 09.5	346 45.3	N23 15.8	298 52.3	N19 05.0	053 25.9	N03 29.1
	09	083 01.1	269 58.9	N03 08.2	001 46.0	N23 15.9	313 54.2	N19 04.9	068 28.4	N03 29.1
	10	098 03.6	284 59.1	N03 07.0	016 46.6	N23 16.1	328 56.1	N19 04.7	083 30.9	N03 29.1
	11	113 06.1	299 59.2	N03 05.8	031 47.2	N23 16.2	343 58.0	N19 04.6	098 33.4	N03 29.1
	12	128 08.5	314 59.4	N03 04.6	046 47.8	N23 16.3	358 59.9	N19 04.5	113 35.8	N03 29.0
	13	143 11.0	329 59.5	N03 03.4	061 48.5	N23 16.5	014 01.7	N19 04.3	128 38.3	N03 29.0
	14	158 13.5	344 59.6	N03 02.1	076 49.1	N23 16.6	029 03.6	N19 04.2	143 40.8	N03 29.0
	15	173 15.9	359 59.8	N03 00.9	091 49.7	N23 16.7	044 05.5	N19 04.1	158 43.3	N03 29.0
	16	188 18.4	014 59.9	N02 59.7	106 50.3	N23 16.9	059 07.4	N19 03.9	173 45.7	N03 29.0
	17	203 20.8	030 00.1	N02 58.5	121 51.0	N23 17.0	074 09.3	N19 03.8	188 48.2	N03 29.0
	18	218 23.3	045 00.2	N02 57.2	136 51.6	N23 17.1	089 11.2	N19 03.7	203 50.7	N03 28.9
	19	233 25.8	060 00.4	N02 56.0	151 52.2	N23 17.3	104 13.1	N19 03.5	218 53.2	N03 28.9
	20	248 28.2	075 00.5	N02 54.8	166 52.9	N23 17.4	119 15.0	N19 03.4	233 55.6	N03 28.9
	21	263 30.7	090 00.7	N02 53.6	181 53.5	N23 17.5	134 16.9	N19 03.2	248 58.1	N03 28.9
	22	278 33.2	105 00.8	N02 52.4	196 54.1	N23 17.7	149 18.8	N19 03.1	264 00.6	N03 28.9
	23	293 35.6	120 01.0	N02 51.1	211 54.7	N23 17.8	164 20.7	N19 03.0	279 03.1	N03 28.9
31	00	308 38.1	135 01.1	N02 49.9	226 55.4	N23 17.9	179 22.6	N19 02.8	294 05.5	N03 28.8
	01	323 40.6	150 01.3	N02 48.7	241 56.0	N23 18.1	194 24.5	N19 02.7	309 08.0	N03 28.8
	02	338 43.0	165 01.4	N02 47.5	256 56.6	N23 18.2	209 26.4	N19 02.6	324 10.5	N03 28.8
	03	353 45.5	180 01.6	N02 46.2	271 57.2	N23 18.3	224 28.3	N19 02.4	339 13.0	N03 28.8
	04	008 47.9	195 01.7	N02 45.0	286 57.9	N23 18.5	239 30.2	N19 02.3	354 15.4	N03 28.8
	05	023 50.4	210 01.9	N02 43.8	301 58.5	N23 18.6	254 32.1	N19 02.2	009 17.9	N03 28.7
	06	038 52.9	225 02.0	N02 42.6	316 59.1	N23 18.7	269 34.0	N19 02.0	024 20.4	N03 28.7
	07	053 55.3	240 02.2	N02 41.3	331 59.7	N23 18.8	284 35.9	N19 01.9	039 22.9	N03 28.7
	08	068 57.8	255 02.3	N02 40.1	347 00.4	N23 19.0	299 37.8	N19 01.8	054 25.4	N03 28.7
	09	084 00.3	270 02.5	N02 38.9	002 01.0	N23 19.1	314 39.7	N19 01.6	069 27.8	N03 28.7
	10	099 02.7	285 02.6	N02 37.7	017 01.6	N23 19.2	329 41.6	N19 01.5	084 30.3	N03 28.7
	11	114 05.2	300 02.8	N02 36.5	032 02.3	N23 19.4	344 43.5	N19 01.3	099 32.8	N03 28.6
	12	129 07.7	315 03.0	N02 35.2	047 02.9	N23 19.5	359 45.4	N19 01.2	114 35.3	N03 28.6
	13	144 10.1	330 03.1	N02 34.0	062 03.5	N23 19.6	014 47.3	N19 01.1	129 37.7	N03 28.6
	14	159 12.6	345 03.3	N02 32.8	077 04.1	N23 19.7	029 49.2	N19 00.9	144 40.2	N03 28.6
	15	174 15.1	000 03.4	N02 31.6	092 04.8	N23 19.9	044 51.1	N19 00.8	159 42.7	N03 28.6
	16	189 17.5	015 03.6	N02 30.3	107 05.4	N23 20.0	059 53.0	N19 00.7	174 45.2	N03 28.5
	17	204 20.0	030 03.8	N02 29.1	122 06.0	N23 20.1	074 54.8	N19 00.5	189 47.7	N03 28.5
	18	219 22.4	045 03.9	N02 27.9	137 06.7	N23 20.2	089 56.7	N19 00.4	204 50.1	N03 28.5
	19	234 24.9	060 04.1	N02 26.7	152 07.3	N23 20.4	104 58.6	N19 00.3	219 52.6	N03 28.5
	20	249 27.4	075 04.2	N02 25.4	167 07.9	N23 20.5	120 00.5	N19 00.1	234 55.1	N03 28.5
	21	264 29.8	090 04.4	N02 24.2	182 08.5	N23 20.6	135 02.4	N19 00.0	249 57.6	N03 28.5
	22	279 32.3	105 04.6	N02 23.0	197 09.2	N23 20.7	150 04.3	N18 59.8	265 00.1	N03 28.4
	23	294 34.8	120 04.7	N02 21.8	212 09.8	N23 20.8	165 06.2	N18 59.7	280 02.5	N03 28.4
1	00	309 37.2	135 04.9	N02 20.5	227 10.4	N23 21.0	180 08.1	N18 59.6	295 05.0	N03 28.4
	01	324 39.7	150 05.0	N02 19.3	242 11.1	N23 21.1	195 10.0	N18 59.4	310 07.5	N03 28.4
	02	339 42.2	165 05.2	N02 18.1	257 11.7	N23 21.2	210 11.9	N18 59.3	325 10.0	N03 28.4
	03	354 44.6	180 05.4	N02 16.9	272 12.3	N23 21.3	225 13.8	N18 59.2	340 12.5	N03 28.3
	04	009 47.1	195 05.5	N02 15.6	287 12.9	N23 21.5	240 15.7	N18 59.0	355 14.9	N03 28.3
	05	024 49.6	210 05.7	N02 14.4	302 13.6	N23 21.6	255 17.6	N18 58.9	010 17.4	N03 28.3
	06	039 52.0	225 05.9	N02 13.2	317 14.2	N23 21.7	270 19.5	N18 58.8	025 19.9	N03 28.3
	07	054 54.5	240 06.0	N02 12.0	332 14.8	N23 21.8	285 21.4	N18 58.6	040 22.4	N03 28.3
	08	069 56.9	255 06.2	N02 10.8	347 15.5	N23 21.9	300 23.3	N18 58.5	055 24.9	N03 28.2
	09	084 59.4	270 06.4	N02 09.5	002 16.1	N23 22.1	315 25.2	N18 58.3	070 27.3	N03 28.2
	10	100 01.9	285 06.6	N02 08.3	017 16.7	N23 22.2	330 27.1	N18 58.2	085 29.8	N03 28.2
	11	115 04.3	300 06.7	N02 07.1	032 17.3	N23 22.3	345 29.0	N18 58.1	100 32.3	N03 28.2
	12	130 06.8	315 06.9	N02 05.9	047 18.0	N23 22.4	000 30.9	N18 57.9	115 34.8	N03 28.2
	13	145 09.3	330 07.1	N02 04.6	062 18.6	N23 22.5	015 32.8	N18 57.8	130 37.3	N03 28.1
	14	160 11.7	345 07.2	N02 03.4	077 19.2	N23 22.6	030 34.7	N18 57.7	145 39.7	N03 28.1
	15	175 14.2	000 07.4	N02 02.2	092 19.9	N23 22.8	045 36.6	N18 57.5	160 42.2	N03 28.1
	16	190 16.7	015 07.6	N02 01.0	107 20.5	N23 22.9	060 38.5	N18 57.4	175 44.7	N03 28.1
	17	205 19.1	030 07.8	N01 59.7	122 21.1	N23 23.0	075 40.4	N18 57.2	190 47.2	N03 28.1
	18	220 21.6	045 07.9	N01 58.5	137 21.8	N23 23.1	090 42.3	N18 57.1	205 49.7	N03 28.0
	19	235 24.0	060 08.1	N01 57.3	152 22.4	N23 23.2	105 44.2	N18 57.0	220 52.2	N03 28.0
	20	250 26.5	075 08.3	N01 56.1	167 23.0	N23 23.3	120 46.1	N18 56.8	235 54.6	N03 28.0
	21	265 29.0	090 08.5	N01 54.8	182 23.6	N23 23.5	135 48.0	N18 56.7	250 57.1	N03 28.0
	22	280 31.4	105 08.6	N01 53.6	197 24.3	N23 23.6	150 49.9	N18 56.6	265 59.6	N03 28.0
	23	295 33.9	120 08.8	N01 52.4	212 24.9	N23 23.7	165 51.8	N18 56.4	281 02.1	N03 27.9

Venus	Mars	Jupiter	Saturn
30: v 0.1 d -1.2	30: v 0.6 d 0.1	30: v 1.9 d -0.1	30: v 2.5 d 0.0
31: v 0.2 d -1.2	31: v 0.6 d 0.1	31: v 1.9 d -0.1	31: v 2.5 d 0.0
1: v 0.2 d -1.2	1: v 0.6 d 0.1	1: v 1.9 d -0.1	1: v 2.5 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.8	S40 11.5
Achernar	335 19.1	S57 05.7
Acrux	172 59.0	S63 15.1
Adhara	255 05.2	S29 00.3
Al Na'ir	027 30.8	S46 49.7
Aldebaran	290 38.3	N16 33.8
Alioth	166 12.0	N55 49.2
Alkaid	152 51.0	N49 11.1
Alnilam	275 36.6	S01 11.0
Alphard	217 46.8	S08 46.4
Alphecca	126 02.5	N26 37.7
Alpheratz	357 33.2	N29 14.2
Altair	061 58.4	N08 56.4
Ankaa	353 05.6	S42 09.4
Antares	112 14.0	S26 29.5
Arcturus	145 46.7	N19 02.8
Atria	107 06.7	S69 04.7
Avior	234 14.9	S59 35.6
Bellatrix	278 21.7	N06 22.5
Betelgeuse	270 50.9	N07 24.8
Canopus	263 52.3	S52 42.4
Capella	280 20.3	N46 01.3
Deneb	049 24.4	N45 22.6
Denebola	182 23.8	N14 25.5
Diphda	348 45.8	S17 50.2
Dubhe	193 39.9	N61 36.6
Elnath	278 00.5	N28 37.7
Eltanin	090 41.1	N51 29.3
Enif	033 37.2	N09 59.9
Fomalhaut	015 12.8	S29 28.6
Gacrux	171 50.5	S57 16.0
Gienah	175 42.4	S17 41.4
Hadar	148 34.2	S60 30.4
Hamal	327 49.7	N23 35.3
Kaus Australi	083 30.4	S34 22.3
Kochab	137 19.7	N74 03.0
Markab	013 28.3	N15 21.0
Menkar	314 04.8	N04 11.7
Menkent	147 56.1	S36 30.2
Miaplacidus	221 38.9	S69 49.6
Mirfak	308 26.5	N49 57.2
Nunki	075 45.8	S26 15.8
Peacock	053 03.1	S56 38.9
Polaris	313 26.9	N89 22.2
Pollux	243 16.1	N27 57.7
Procyon	244 49.8	N05 09.5
Rasalhague	095 57.1	N12 32.5
Regulus	207 33.4	N11 50.3
Rigel	281 02.8	S08 10.1
Rigil Kentaur	139 38.4	S60 57.0
Sabik	102 01.0	S15 45.5
Schedar	349 29.3	N56 40.8
Shaula	096 08.3	S37 07.4
Sirius	258 25.4	S16 45.0
Spica	158 21.0	S11 18.0
Suhail	222 45.8	S43 32.4
Vega	080 32.0	N38 48.6
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	185 55.3	1500
Mars	277 55.2	0852
Jupiter	230 37.7	1201
Saturn	345 27.6	0423

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
30	00	178 22.7	N18 33.2	353 24.6	S18 59.5	55.0	13.1	11.1
	01	193 22.7	N18 32.6	007 56.8	S18 48.4	55.0	13.2	11.2
	02	208 22.7	N18 32.0	022 28.9	S18 37.2	55.1	13.2	11.3
	03	223 22.7	N18 31.4	037 01.2	S18 25.9	55.1	13.3	11.4
	04	238 22.8	N18 30.7	051 33.5	S18 14.6	55.1	13.3	11.5
	05	253 22.8	N18 30.1	066 05.8	S18 03.1	55.1	13.4	11.5
	06	268 22.8	N18 29.5	080 38.2	S17 51.6	55.1	13.4	11.6
	07	283 22.9	N18 28.9	095 10.6	S17 39.9	55.1	13.5	11.7
	08	298 22.9	N18 28.3	109 43.1	S17 28.2	55.1	13.5	11.8
	09	313 22.9	N18 27.7	124 15.6	S17 16.4	55.2	13.6	11.9
	10	328 22.9	N18 27.1	138 48.2	S17 04.6	55.2	13.6	11.9
	11	343 23.0	N18 26.5	153 20.8	S16 52.6	55.2	13.7	12.0
	12	358 23.0	N18 25.9	167 53.4	S16 40.6	55.2	13.7	12.1
	13	013 23.0	N18 25.3	182 26.1	S16 28.5	55.2	13.7	12.2
	14	028 23.0	N18 24.7	196 58.9	S16 16.3	55.3	13.8	12.3
	15	043 23.1	N18 24.1	211 31.7	S16 04.0	55.3	13.8	12.3
	16	058 23.1	N18 23.5	226 04.5	S15 51.7	55.3	13.9	12.4
	17	073 23.1	N18 22.9	240 37.4	S15 39.3	55.3	13.9	12.5
	18	088 23.2	N18 22.2	255 10.3	S15 26.8	55.3	14.0	12.6
	19	103 23.2	N18 21.6	269 43.3	S15 14.3	55.3	14.0	12.6
	20	118 23.2	N18 21.0	284 16.3	S15 01.6	55.4	14.0	12.7
	21	133 23.2	N18 20.4	298 49.3	S14 48.9	55.4	14.1	12.8
	22	148 23.3	N18 19.8	313 22.4	S14 36.2	55.4	14.1	12.8
	23	163 23.3	N18 19.2	327 55.5	S14 23.3	55.4	14.2	12.9
31	00	178 23.3	N18 18.6	342 28.7	S14 10.4	55.4	14.2	13.0
	01	193 23.4	N18 18.0	357 01.9	S13 57.4	55.4	14.2	13.0
	02	208 23.4	N18 17.3	011 35.1	S13 44.4	55.5	14.3	13.1
	03	223 23.4	N18 16.7	026 08.4	S13 31.3	55.5	14.3	13.2
	04	238 23.5	N18 16.1	040 41.7	S13 18.1	55.5	14.3	13.2
	05	253 23.5	N18 15.5	055 15.0	S13 04.9	55.5	14.4	13.3
	06	268 23.5	N18 14.9	069 48.4	S12 51.6	55.5	14.4	13.4
	07	283 23.6	N18 14.3	084 21.8	S12 38.2	55.6	14.4	13.4
	08	298 23.6	N18 13.6	098 55.3	S12 24.8	55.6	14.5	13.5
	09	313 23.6	N18 13.0	113 28.7	S12 11.3	55.6	14.5	13.5
	10	328 23.7	N18 12.4	128 02.2	S11 57.8	55.6	14.5	13.6
	11	343 23.7	N18 11.8	142 35.8	S11 44.2	55.6	14.6	13.7
	12	358 23.7	N18 11.2	157 09.3	S11 30.5	55.7	14.6	13.7
	13	013 23.8	N18 10.5	171 42.9	S11 16.8	55.7	14.6	13.8
	14	028 23.8	N18 09.9	186 16.6	S11 03.0	55.7	14.6	13.8
	15	043 23.8	N18 09.3	200 50.2	S10 49.2	55.7	14.7	13.9
	16	058 23.9	N18 08.7	215 23.9	S10 35.3	55.7	14.7	13.9
	17	073 23.9	N18 08.1	229 57.6	S10 21.4	55.8	14.7	14.0
	18	088 23.9	N18 07.4	244 31.3	S10 07.4	55.8	14.7	14.0
	19	103 24.0	N18 06.8	259 05.0	S09 53.4	55.8	14.8	14.1
	20	118 24.0	N18 06.2	273 38.8	S09 39.3	55.8	14.8	14.1
	21	133 24.1	N18 05.6	288 12.6	S09 25.2	55.8	14.8	14.2
	22	148 24.1	N18 04.9	302 46.4	S09 11.0	55.8	14.8	14.2
	23	163 24.1	N18 04.3	317 20.3	S08 56.8	55.9	14.9	14.3
1	00	178 24.2	N18 03.7	331 54.1	S08 42.5	55.9	14.9	14.3
	01	193 24.2	N18 03.1	346 28.0	S08 28.2	55.9	14.9	14.4
	02	208 24.2	N18 02.4	001 01.9	S08 13.9	55.9	14.9	14.4
	03	223 24.3	N18 01.8	015 35.8	S07 59.5	55.9	14.9	14.4
	04	238 24.3	N18 01.2	030 09.7	S07 45.0	56.0	14.9	14.5
	05	253 24.4	N18 00.5	044 43.6	S07 30.5	56.0	14.9	14.5
	06	268 24.4	N17 59.9	059 17.6	S07 16.0	56.0	15.0	14.6
	07	283 24.4	N17 59.3	073 51.5	S07 01.5	56.0	15.0	14.6
	08	298 24.5	N17 58.7	088 25.5	S06 46.9	56.1	15.0	14.6
	09	313 24.5	N17 58.0	102 59.5	S06 32.2	56.1	15.0	14.7
	10	328 24.5	N17 57.4	117 33.4	S06 17.5	56.1	15.0	14.7
	11	343 24.6	N17 56.8	132 07.4	S06 02.8	56.1	15.0	14.7
	12	358 24.6	N17 56.1	146 41.4	S05 48.1	56.1	15.0	14.8
	13	013 24.7	N17 55.5	161 15.4	S05 33.3	56.2	15.0	14.8
	14	028 24.7	N17 54.9	175 49.5	S05 18.5	56.2	15.0	14.8
	15	043 24.8	N17 54.2	190 23.5	S05 03.6	56.2	15.0	14.9
	16	058 24.8	N17 53.6	204 57.5	S04 48.8	56.2	15.0	14.9
	17	073 24.8	N17 53.0	219 31.5	S04 33.9	56.2	15.0	14.9
	18	088 24.9	N17 52.3	234 05.5	S04 18.9	56.3	15.0	15.0
	19	103 24.9	N17 51.7	248 39.6	S04 04.0	56.3	15.0	15.0
	20	118 25.0	N17 51.1	263 13.6	S03 49.0	56.3	15.0	15.0
	21	133 25.0	N17 50.4	277 47.6	S03 34.0	56.3	15.0	15.0
	22	148 25.0	N17 49.8	292 21.6	S03 18.9	56.3	15.0	15.1
	23	163 25.1	N17 49.1	306 55.6	S03 03.9	56.4	15.0	15.1

Day 30 noon Sun: v 0.0 d -0.6 SD 15.8 | Moon SD 15.0

Day 31 noon Sun: v 0.0 d -0.6 SD 15.8 | Moon SD 15.2

Day 1 noon Sun: v 0.0 d -0.6 SD 15.8 | Moon SD 15.3

SUN: JULY 31 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	0117	2247	--	--
68N	--	--	0210	2159	--	--
66N	--	--	0242	2128	--	--
64N	--	0133	0305	2106	2234	--
62N	--	0211	0323	2048	2159	--
60N	--	0237	0338	2033	2134	--
58N	0125	0257	0351	2020	2114	2243
56N	0159	0313	0402	2010	2058	2211
54N	0223	0327	0412	2000	2045	2147
52N	0242	0339	0420	1952	2033	2129
50N	0257	0349	0428	1944	2023	2114
45N	0327	0410	0444	1928	2002	2044
40N	0349	0427	0457	1915	1945	2023
35N	0407	0441	0509	1904	1932	2005
30N	0421	0452	0518	1854	1920	1951
25N	0433	0503	0527	1845	1910	1939
20N	0444	0512	0535	1837	1901	1929
15N	0453	0520	0543	1830	1853	1920
10N	0501	0527	0550	1823	1845	1911
05N	0509	0534	0556	1816	1838	1904
00N	0516	0541	0603	1810	1832	1857
05S	0522	0548	0610	1803	1825	1850
10S	0529	0554	0616	1757	1819	1844
15S	0535	0601	0623	1750	1812	1838
20S	0540	0607	0630	1743	1806	1833
25S	0546	0614	0638	1735	1759	1827
30S	0552	0621	0646	1727	1752	1821
35S	0558	0629	0655	1718	1745	1815
40S	0604	0637	0706	1707	1736	1809
45S	0611	0646	0718	1655	1727	1802
50S	0618	0658	0733	1640	1716	1755
55S	0627	0711	0752	1622	1702	1747
60S	0637	0728	0817	1556	1645	1737

MOON: RISE / SET | UTC HHMM

Lat	Day 30		Day 31		Day 1	
72N	2240	--	2150	0409	2114	0631
70N	2211	0155	2136	0437	2109	0643
68N	2149	0246	2125	0457	2106	0652
66N	2131	0318	2116	0513	2102	0659
64N	2117	0341	2108	0526	2059	0705
62N	2105	0359	2101	0537	2057	0711
60N	2055	0414	2055	0546	2055	0715
58N	2046	0427	2050	0554	2053	0719
56N	2038	0438	2045	0601	2051	0723
54N	2031	0448	2041	0607	2049	0726
52N	2024	0456	2037	0613	2048	0729
50N	2018	0504	2033	0618	2046	0732
45N	2006	0520	2026	0629	2044	0737
40N	1955	0533	2019	0638	2041	0742
35N	1947	0544	2014	0645	2039	0746
30N	1939	0554	2009	0652	2037	0750
25N	1932	0603	2004	0658	2035	0753
20N	1925	0610	2000	0703	2034	0756
15N	1919	0618	1956	0709	2032	0758
10N	1913	0625	1953	0713	2031	0801
05N	1907	0632	1949	0718	2030	0804
00N	1902	0638	1945	0723	2028	0806
05S	1856	0645	1942	0727	2027	0808
10S	1850	0651	1938	0732	2026	0811
15S	1844	0658	1935	0737	2024	0813
20S	1838	0706	1931	0742	2023	0816
25S	1831	0713	1926	0747	2021	0819
30S	1824	0722	1922	0753	2020	0822
35S	1816	0731	1917	0759	2018	0825
40S	1807	0741	1911	0806	2016	0829
45S	1756	0754	1904	0815	2013	0833
50S	1742	0809	1856	0825	2010	0839
55S	1725	0827	1846	0837	2006	0845
60S	1702	0852	1833	0853	2002	0853

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | AUGUST 2 - AUGUST 4

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
2	00	310 36.4	135 09.0	N01 51.2	227 25.5	N23 23.8	180 53.7	N18 56.3	296 04.6	N03 27.9
	01	325 38.8	150 09.2	N01 49.9	242 26.2	N23 23.9	195 55.6	N18 56.2	311 07.1	N03 27.9
	02	340 41.3	165 09.3	N01 48.7	257 26.8	N23 24.0	210 57.5	N18 56.0	326 09.5	N03 27.9
	03	355 43.8	180 09.5	N01 47.5	272 27.4	N23 24.1	225 59.3	N18 55.9	341 12.0	N03 27.9
	04	010 46.2	195 09.7	N01 46.3	287 28.1	N23 24.2	241 01.2	N18 55.7	356 14.5	N03 27.8
	05	025 48.7	210 09.9	N01 45.0	302 28.7	N23 24.4	256 03.1	N18 55.6	011 17.0	N03 27.8
	06	040 51.2	225 10.1	N01 43.8	317 29.3	N23 24.5	271 05.0	N18 55.5	026 19.5	N03 27.8
	07	055 53.6	240 10.2	N01 42.6	332 30.0	N23 24.6	286 06.9	N18 55.3	041 22.0	N03 27.8
	08	070 56.1	255 10.4	N01 41.4	347 30.6	N23 24.7	301 08.8	N18 55.2	056 24.5	N03 27.8
	09	085 58.5	270 10.6	N01 40.1	002 31.2	N23 24.8	316 10.7	N18 55.1	071 26.9	N03 27.7
	10	101 01.0	285 10.8	N01 38.9	017 31.8	N23 24.9	331 12.6	N18 54.9	086 29.4	N03 27.7
	11	116 03.5	300 11.0	N01 37.7	032 32.5	N23 25.0	346 14.5	N18 54.8	101 31.9	N03 27.7
	12	131 05.9	315 11.2	N01 36.5	047 33.1	N23 25.1	001 16.4	N18 54.6	116 34.4	N03 27.7
	13	146 08.4	330 11.3	N01 35.2	062 33.7	N23 25.2	016 18.3	N18 54.5	131 36.9	N03 27.6
	14	161 10.9	345 11.5	N01 34.0	077 34.4	N23 25.3	031 20.2	N18 54.4	146 39.4	N03 27.6
	15	176 13.3	000 11.7	N01 32.8	092 35.0	N23 25.5	046 22.1	N18 54.2	161 41.9	N03 27.6
	16	191 15.8	015 11.9	N01 31.6	107 35.6	N23 25.6	061 24.0	N18 54.1	176 44.3	N03 27.6
	17	206 18.3	030 12.1	N01 30.3	122 36.3	N23 25.7	076 25.9	N18 54.0	191 46.8	N03 27.6
	18	221 20.7	045 12.3	N01 29.1	137 36.9	N23 25.8	091 27.8	N18 53.8	206 49.3	N03 27.5
	19	236 23.2	060 12.5	N01 27.9	152 37.5	N23 25.9	106 29.7	N18 53.7	221 51.8	N03 27.5
	20	251 25.6	075 12.7	N01 26.7	167 38.2	N23 26.0	121 31.6	N18 53.5	236 54.3	N03 27.5
	21	266 28.1	090 12.8	N01 25.4	182 38.8	N23 26.1	136 33.5	N18 53.4	251 56.8	N03 27.5
	22	281 30.6	105 13.0	N01 24.2	197 39.4	N23 26.2	151 35.4	N18 53.3	266 59.3	N03 27.4
	23	296 33.0	120 13.2	N01 23.0	212 40.1	N23 26.3	166 37.3	N18 53.1	282 01.8	N03 27.4
3	00	311 35.5	135 13.4	N01 21.8	227 40.7	N23 26.4	181 39.2	N18 53.0	297 04.2	N03 27.4
	01	326 38.0	150 13.6	N01 20.5	242 41.3	N23 26.5	196 41.1	N18 52.9	312 06.7	N03 27.4
	02	341 40.4	165 13.8	N01 19.3	257 42.0	N23 26.6	211 43.0	N18 52.7	327 09.2	N03 27.4
	03	356 42.9	180 14.0	N01 18.1	272 42.6	N23 26.7	226 44.9	N18 52.6	342 11.7	N03 27.3
	04	011 45.4	195 14.2	N01 16.9	287 43.2	N23 26.8	241 46.8	N18 52.4	357 14.2	N03 27.3
	05	026 47.8	210 14.4	N01 15.6	302 43.9	N23 26.9	256 48.7	N18 52.3	012 16.7	N03 27.3
	06	041 50.3	225 14.6	N01 14.4	317 44.5	N23 27.0	271 50.6	N18 52.2	027 19.2	N03 27.3
	07	056 52.8	240 14.8	N01 13.2	332 45.1	N23 27.1	286 52.5	N18 52.0	042 21.7	N03 27.2
	08	071 55.2	255 15.0	N01 12.0	347 45.8	N23 27.2	301 54.4	N18 51.9	057 24.2	N03 27.2
	09	086 57.7	270 15.2	N01 10.7	002 46.4	N23 27.3	316 56.3	N18 51.8	072 26.6	N03 27.2
	10	102 00.1	285 15.4	N01 09.5	017 47.0	N23 27.4	331 58.2	N18 51.6	087 29.1	N03 27.2
	11	117 02.6	300 15.5	N01 08.3	032 47.7	N23 27.5	347 00.1	N18 51.5	102 31.6	N03 27.2
	12	132 05.1	315 15.7	N01 07.1	047 48.3	N23 27.6	002 02.0	N18 51.3	117 34.1	N03 27.1
	13	147 07.5	330 15.9	N01 05.8	062 48.9	N23 27.8	017 03.9	N18 51.2	132 36.6	N03 27.1
	14	162 10.0	345 16.1	N01 04.6	077 49.6	N23 27.9	032 05.8	N18 51.1	147 39.1	N03 27.1
	15	177 12.5	000 16.3	N01 03.4	092 50.2	N23 28.0	047 07.7	N18 50.9	162 41.6	N03 27.1
	16	192 14.9	015 16.5	N01 02.2	107 50.8	N23 28.0	062 09.6	N18 50.8	177 44.1	N03 27.0
	17	207 17.4	030 16.7	N01 00.9	122 51.5	N23 28.1	077 11.5	N18 50.6	192 46.6	N03 27.0
	18	222 19.9	045 16.9	N00 59.7	137 52.1	N23 28.2	092 13.4	N18 50.5	207 49.1	N03 27.0
	19	237 22.3	060 17.1	N00 58.5	152 52.7	N23 28.3	107 15.3	N18 50.4	222 51.5	N03 27.0
	20	252 24.8	075 17.4	N00 57.3	167 53.4	N23 28.4	122 17.2	N18 50.2	237 54.0	N03 26.9
	21	267 27.3	090 17.6	N00 56.0	182 54.0	N23 28.5	137 19.1	N18 50.1	252 56.5	N03 26.9
	22	282 29.7	105 17.8	N00 54.8	197 54.6	N23 28.6	152 21.0	N18 50.0	267 59.0	N03 26.9
	23	297 32.2	120 18.0	N00 53.6	212 55.3	N23 28.7	167 22.9	N18 49.8	283 01.5	N03 26.9
4	00	312 34.6	135 18.2	N00 52.4	227 55.9	N23 28.8	182 24.8	N18 49.7	298 04.0	N03 26.9
	01	327 37.1	150 18.4	N00 51.1	242 56.5	N23 28.9	197 26.7	N18 49.5	313 06.5	N03 26.8
	02	342 39.6	165 18.6	N00 49.9	257 57.2	N23 29.0	212 28.6	N18 49.4	328 09.0	N03 26.8
	03	357 42.0	180 18.8	N00 48.7	272 57.8	N23 29.1	227 30.5	N18 49.3	343 11.5	N03 26.8
	04	012 44.5	195 19.0	N00 47.5	287 58.4	N23 29.2	242 32.4	N18 49.1	358 14.0	N03 26.8
	05	027 47.0	210 19.2	N00 46.2	302 59.1	N23 29.3	257 34.3	N18 49.0	013 16.5	N03 26.7
	06	042 49.4	225 19.4	N00 45.0	317 59.7	N23 29.4	272 36.2	N18 48.9	028 19.0	N03 26.7
	07	057 51.9	240 19.6	N00 43.8	333 00.4	N23 29.5	287 38.0	N18 48.7	043 21.4	N03 26.7
	08	072 54.4	255 19.8	N00 42.6	348 01.0	N23 29.6	302 39.9	N18 48.6	058 23.9	N03 26.7
	09	087 56.8	270 20.0	N00 41.3	003 01.6	N23 29.7	317 41.8	N18 48.4	073 26.4	N03 26.6
	10	102 59.3	285 20.2	N00 40.1	018 02.3	N23 29.8	332 43.7	N18 48.3	088 28.9	N03 26.6
	11	118 01.7	300 20.5	N00 38.9	033 02.9	N23 29.9	347 45.6	N18 48.2	103 31.4	N03 26.6
	12	133 04.2	315 20.7	N00 37.7	048 03.5	N23 30.0	002 47.5	N18 48.0	118 33.9	N03 26.6
	13	148 06.7	330 20.9	N00 36.4	063 04.2	N23 30.1	017 49.4	N18 47.9	133 36.4	N03 26.5
	14	163 09.1	345 21.1	N00 35.2	078 04.8	N23 30.1	032 51.3	N18 47.7	148 38.9	N03 26.5
	15	178 11.6	000 21.3	N00 34.0	093 05.4	N23 30.2	047 53.2	N18 47.6	163 41.4	N03 26.5
	16	193 14.1	015 21.5	N00 32.8	108 06.1	N23 30.3	062 55.1	N18 47.5	178 43.9	N03 26.5
	17	208 16.5	030 21.7	N00 31.5	123 06.7	N23 30.4	077 57.0	N18 47.3	193 46.4	N03 26.4
	18	223 19.0	045 21.9	N00 30.3	138 07.3	N23 30.5	092 58.9	N18 47.2	208 48.9	N03 26.4
	19	238 21.5	060 22.2	N00 29.1	153 08.0	N23 30.6	108 00.8	N18 47.0	223 51.4	N03 26.4
	20	253 23.9	075 22.4	N00 27.9	168 08.6	N23 30.7	123 02.7	N18 46.9	238 53.9	N03 26.4
	21	268 26.4	090 22.6	N00 26.6	183 09.3	N23 30.8	138 04.6	N18 46.8	253 56.4	N03 26.3
	22	283 28.9	105 22.8	N00 25.4	198 09.9	N23 30.9	153 06.5	N18 46.6	268 58.9	N03 26.3
	23	298 31.3	120 23.0	N00 24.2	213 10.5	N23 31.0	168 08.4	N18 46.5	284 01.4	N03 26.3

Venus	Mars	Jupiter	Saturn
2: v 0.2 d -1.2	2: v 0.6 d 0.1	2: v 1.9 d -0.1	2: v 2.5 d 0.0
3: v 0.2 d -1.2	3: v 0.6 d 0.1	3: v 1.9 d -0.1	3: v 2.5 d 0.0
4: v 0.2 d -1.2	4: v 0.6 d 0.1	4: v 1.9 d -0.1	4: v 2.5 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.8	S40 11.5
Achernar	335 19.1	S57 05.7
Acrux	172 59.0	S63 15.1
Adhara	255 05.2	S29 00.3
Al Na'ir	027 30.8	S46 49.7
Aldebaran	290 38.3	N16 33.8
Alioth	166 12.1	N55 49.2
Alkaid	152 51.1	N49 11.1
Alnilam	275 36.6	S01 11.0
Alphard	217 46.8	S08 46.4
Alphecca	126 02.5	N26 37.7
Alpheratz	357 33.2	N29 14.2
Altair	061 58.4	N08 56.4
Ankaa	353 05.6	S42 09.4
Antares	112 14.0	S26 29.5
Arcturus	145 46.7	N19 02.8
Atria	107 06.7	S69 04.7
Avior	234 14.9	S59 35.6
Bellatrix	278 21.7	N06 22.5
Betelgeuse	270 50.9	N07 24.8
Canopus	263 52.3	S52 42.3
Capella	280 20.3	N46 01.3
Deneb	049 24.4	N45 22.6
Denebola	182 23.8	N14 25.5
Diphda	348 45.8	S17 50.2
Dubhe	193 40.0	N61 36.6
Elnath	278 00.5	N28 37.7
Eltanin	090 41.2	N51 29.3
Enif	033 37.2	N09 59.9
Fomalhaut	015 12.8	S29 28.7
Gacrux	171 50.5	S57 16.0
Gienah	175 42.4	S17 41.4
Hadar	148 34.2	S60 30.3
Hamal	327 49.7	N23 35.3
Kaus Australi	083 30.4	S34 22.3
Kochab	137 19.7	N74 03.0
Markab	013 28.3	N15 21.0
Menkar	314 04.8	N04 11.7
Menkent	147 56.1	S36 30.2
Miaplacidus	221 39.0	S69 49.6
Mirfak	308 26.5	N49 57.2
Nunki	075 45.8	S26 15.8
Peacock	053 03.1	S56 38.9
Polaris	313 25.4	N89 22.2
Pollux	243 16.1	N27 57.7
Procyon	244 49.8	N05 09.5
Rasalhague	095 57.1	N12 32.6
Regulus	207 33.4	N11 50.3
Rigel	281 02.8	S08 10.1
Rigil Kentaur	139 38.5	S60 57.0
Sabik	102 01.1	S15 45.5
Schedar	349 29.3	N56 40.9
Shaula	096 08.3	S37 07.4
Sirius	258 25.4	S16 45.0
Spica	158 21.0	S11 18.0
Suhail	222 45.8	S43 32.4
Vega	080 32.0	N38 48.6
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	183 10.7	1459
Mars	275 43.2	0849
Jupiter	229 56.9	1152
Saturn	345 29.0	0411

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
2	00	178 25.1	N17 48.5	321 29.6	S02 48.8	56.4	15.0	15.1
	01	193 25.2	N17 47.9	336 03.6	S02 33.7	56.4	15.0	15.1
	02	208 25.2	N17 47.2	350 37.6	S02 18.5	56.4	15.0	15.2
	03	223 25.3	N17 46.6	005 11.6	S02 03.4	56.5	15.0	15.2
	04	238 25.3	N17 45.9	019 45.5	S01 48.2	56.5	15.0	15.2
	05	253 25.4	N17 45.3	034 19.5	S01 33.0	56.5	14.9	15.2
	06	268 25.4	N17 44.7	048 53.4	S01 17.8	56.5	14.9	15.2
	07	283 25.4	N17 44.0	063 27.3	S01 02.6	56.5	14.9	15.2
	08	298 25.5	N17 43.4	078 01.3	S00 47.4	56.6	14.9	15.2
	09	313 25.5	N17 42.7	092 35.1	S00 32.1	56.6	14.9	15.3
	10	328 25.6	N17 42.1	107 09.0	S00 16.8	56.6	14.9	15.3
	11	343 25.6	N17 41.4	121 42.9	S00 01.6	56.6	14.8	15.3
	12	358 25.7	N17 40.8	136 16.7	N00 13.7	56.7	14.8	15.3
	13	013 25.7	N17 40.2	150 50.5	N00 29.0	56.7	14.8	15.3
	14	028 25.8	N17 39.5	165 24.3	N00 44.3	56.7	14.8	15.3
	15	043 25.8	N17 38.9	179 58.1	N00 59.6	56.7	14.7	15.3
	16	058 25.9	N17 38.2	194 31.8	N01 14.9	56.7	14.7	15.3
	17	073 25.9	N17 37.6	209 05.6	N01 30.3	56.8	14.7	15.3
	18	088 26.0	N17 36.9	223 39.3	N01 45.6	56.8	14.7	15.3
	19	103 26.0	N17 36.3	238 12.9	N02 00.9	56.8	14.6	15.3
	20	118 26.1	N17 35.6	252 46.5	N02 16.3	56.8	14.6	15.3
	21	133 26.1	N17 35.0	267 20.1	N02 31.6	56.9	14.6	15.3
	22	148 26.2	N17 34.3	281 53.7	N02 46.9	56.9	14.5	15.3
	23	163 26.2	N17 33.7	296 27.3	N03 02.3	56.9	14.5	15.3
3	00	178 26.3	N17 33.0	311 00.8	N03 17.6	56.9	14.5	15.3
	01	193 26.3	N17 32.4	325 34.2	N03 33.0	56.9	14.4	15.3
	02	208 26.4	N17 31.7	340 07.6	N03 48.3	57.0	14.4	15.3
	03	223 26.4	N17 31.1	354 41.0	N04 03.6	57.0	14.3	15.3
	04	238 26.5	N17 30.4	009 14.4	N04 18.9	57.0	14.3	15.3
	05	253 26.5	N17 29.8	023 47.7	N04 34.2	57.0	14.3	15.3
	06	268 26.6	N17 29.1	038 21.0	N04 49.6	57.1	14.2	15.3
	07	283 26.6	N17 28.5	052 54.2	N05 04.8	57.1	14.2	15.3
	08	298 26.7	N17 27.8	067 27.4	N05 20.1	57.1	14.1	15.3
	09	313 26.7	N17 27.2	082 00.5	N05 35.4	57.1	14.1	15.3
	10	328 26.8	N17 26.5	096 33.6	N05 50.7	57.2	14.0	15.2
	11	343 26.8	N17 25.8	111 06.6	N06 05.9	57.2	14.0	15.2
	12	358 26.9	N17 25.2	125 39.6	N06 21.1	57.2	13.9	15.2
	13	013 26.9	N17 24.5	140 12.5	N06 36.4	57.2	13.9	15.2
	14	028 27.0	N17 23.9	154 45.4	N06 51.6	57.3	13.8	15.2
	15	043 27.0	N17 23.2	169 18.2	N07 06.7	57.3	13.8	15.2
	16	058 27.1	N17 22.6	183 51.0	N07 21.9	57.3	13.7	15.1
	17	073 27.1	N17 21.9	198 23.7	N07 37.0	57.3	13.7	15.1
	18	088 27.2	N17 21.2	212 56.4	N07 52.1	57.3	13.6	15.1
	19	103 27.2	N17 20.6	227 29.0	N08 07.2	57.4	13.5	15.1
	20	118 27.3	N17 19.9	242 01.5	N08 22.3	57.4	13.5	15.0
	21	133 27.4	N17 19.3	256 34.0	N08 37.3	57.4	13.4	15.0
	22	148 27.4	N17 18.6	271 06.4	N08 52.4	57.4	13.3	15.0
	23	163 27.5	N17 17.9	285 38.7	N09 07.3	57.5	13.3	15.0
4	00	178 27.5	N17 17.3	300 11.0	N09 22.3	57.5	13.2	14.9
	01	193 27.6	N17 16.6	314 43.2	N09 37.2	57.5	13.1	14.9
	02	208 27.6	N17 15.9	329 15.4	N09 52.1	57.5	13.1	14.9
	03	223 27.7	N17 15.3	343 47.5	N10 07.0	57.6	13.0	14.8
	04	238 27.7	N17 14.6	358 19.5	N10 21.8	57.6	12.9	14.8
	05	253 27.8	N17 13.9	012 51.4	N10 36.6	57.6	12.9	14.8
	06	268 27.9	N17 13.3	027 23.3	N10 51.3	57.6	12.8	14.7
	07	283 27.9	N17 12.6	041 55.0	N11 06.1	57.7	12.7	14.7
	08	298 28.0	N17 12.0	056 26.8	N11 20.7	57.7	12.6	14.6
	09	313 28.0	N17 11.3	070 58.4	N11 35.4	57.7	12.6	14.6
	10	328 28.1	N17 10.6	085 29.9	N11 50.0	57.7	12.5	14.5
	11	343 28.2	N17 10.0	100 01.4	N12 04.5	57.8	12.4	14.5
	12	358 28.2	N17 09.3	114 32.8	N12 19.0	57.8	12.3	14.5
	13	013 28.3	N17 08.6	129 04.1	N12 33.4	57.8	12.2	14.4
	14	028 28.3	N17 07.9	143 35.4	N12 47.9	57.8	12.1	14.4
	15	043 28.4	N17 07.3	158 06.5	N13 02.2	57.9	12.1	14.3
	16	058 28.4	N17 06.6	172 37.6	N13 16.5	57.9	12.0	14.2
	17	073 28.5	N17 05.9	187 08.5	N13 30.8	57.9	11.9	14.2
	18	088 28.6	N17 05.3	201 39.4	N13 44.9	57.9	11.8	14.1
	19	103 28.6	N17 04.6	216 10.2	N13 59.1	58.0	11.7	14.1
	20	118 28.7	N17 03.9	230 40.9	N14 13.2	58.0	11.6	14.0
	21	133 28.8	N17 03.2	245 11.5	N14 27.2	58.0	11.5	14.0
	22	148 28.8	N17 02.6	259 42.0	N14 41.2	58.0	11.4	13.9
	23	163 28.9	N17 01.9	274 12.5	N14 55.1	58.1	11.3	13.8

Day 2 noon Sun: v 0.0 d -0.6 SD 15.8 | Moon SD 15.4

Day 3 noon Sun: v 0.1 d -0.7 SD 15.8 | Moon SD 15.6

Day 4 noon Sun: v 0.1 d -0.7 SD 15.8 | Moon SD 15.7

SUN: AUGUST 3 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	--	--	--	--
70N	--	--	0143	2223	--	--
68N	--	--	0225	2143	--	--
66N	--	0053	0253	2116	2309	--
64N	--	0151	0314	2056	2217	--
62N	--	0223	0331	2039	2146	--
60N	0048	0246	0345	2025	2124	2315
58N	0140	0305	0357	2014	2106	2228
56N	0210	0320	0408	2003	2051	2200
54N	0232	0333	0417	1955	2038	2139
52N	0249	0344	0425	1947	2027	2122
50N	0304	0354	0432	1939	2018	2107
45N	0332	0414	0448	1924	1958	2039
40N	0353	0430	0500	1912	1942	2019
35N	0410	0443	0511	1901	1929	2002
30N	0423	0454	0520	1852	1918	1948
25N	0435	0504	0529	1844	1908	1937
20N	0445	0513	0536	1836	1859	1927
15N	0454	0521	0543	1829	1852	1918
10N	0502	0528	0550	1822	1844	1910
05N	0509	0535	0556	1816	1838	1903
00N	0516	0541	0603	1810	1831	1857
05S	0522	0547	0609	1803	1825	1850
10S	0528	0553	0615	1757	1819	1844
15S	0534	0600	0622	1751	1813	1839
20S	0539	0606	0629	1744	1807	1833
25S	0545	0612	0636	1737	1800	1828
30S	0550	0619	0644	1729	1754	1823
35S	0556	0626	0653	1720	1747	1817
40S	0602	0634	0703	1710	1739	1811
45S	0608	0643	0714	1658	1730	1805
50S	0615	0653	0729	1644	1720	1758
55S	0622	0706	0746	1627	1707	1751
60S	0631	0722	0810	1603	1651	1742

MOON: RISE / SET | UTC HHMM

Lat	Day 2		Day 3		Day 4	
72N	2041	0840	2006	1050	1917	1316
70N	2045	0841	2018	1041	1944	1252
68N	2047	0842	2028	1034	2004	1234
66N	2049	0843	2036	1028	2020	1219
64N	2051	0843	2043	1023	2033	1207
62N	2053	0844	2049	1018	2045	1157
60N	2054	0844	2054	1014	2054	1149
58N	2055	0844	2059	1011	2103	1141
56N	2057	0845	2103	1008	2111	1135
54N	2058	0845	2107	1006	2117	1129
52N	2058	0845	2110	1003	2123	1124
50N	2059	0846	2113	1001	2129	1119
45N	2101	0846	2120	0956	2141	1109
40N	2103	0847	2126	0952	2151	1101
35N	2104	0847	2131	0949	2200	1053
30N	2105	0847	2135	0946	2207	1047
25N	2107	0848	2139	0944	2214	1041
20N	2108	0848	2143	0941	2220	1036
15N	2109	0848	2146	0939	2226	1031
10N	2110	0848	2150	0937	2232	1027
05N	2111	0849	2153	0935	2238	1022
00N	2111	0849	2156	0932	2243	1018
05S	2112	0849	2159	0930	2249	1014
10S	2113	0849	2203	0928	2254	1009
15S	2114	0849	2206	0926	2300	1005
20S	2115	0850	2210	0924	2306	1000
25S	2117	0850	2213	0921	2313	0955
30S	2118	0850	2218	0919	2320	0949
35S	2119	0850	2222	0916	2328	0943
40S	2121	0851	2228	0913	2337	0936
45S	2123	0851	2234	0909	2348	0928
50S	2125	0851	2241	0904	--	0919
55S	2127	0852	2251	0859	--	0907
60S	2131	0852	2303	0852	--	0852

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | AUGUST 5 - AUGUST 7

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
5	00	313 33.8	135 23.2	N00 23.0	228 11.2	N23 31.0	183 10.3	N18 46.4	299 03.9	N03 26.3
	01	328 36.2	150 23.5	N00 21.8	243 11.8	N23 31.1	198 12.2	N18 46.2	314 06.3	N03 26.2
	02	343 38.7	165 23.7	N00 20.5	258 12.4	N23 31.2	213 14.1	N18 46.1	329 08.8	N03 26.2
	03	358 41.2	180 23.9	N00 19.3	273 13.1	N23 31.3	228 16.0	N18 45.9	344 11.3	N03 26.2
	04	013 43.6	195 24.1	N00 18.1	288 13.7	N23 31.4	243 17.9	N18 45.8	359 13.8	N03 26.2
	05	028 46.1	210 24.3	N00 16.9	303 14.4	N23 31.5	258 19.8	N18 45.7	014 16.3	N03 26.1
	06	043 48.6	225 24.6	N00 15.6	318 15.0	N23 31.6	273 21.7	N18 45.5	029 18.8	N03 26.1
	07	058 51.0	240 24.8	N00 14.4	333 15.6	N23 31.7	288 23.6	N18 45.4	044 21.3	N03 26.1
	08	073 53.5	255 25.0	N00 13.2	348 16.3	N23 31.7	303 25.5	N18 45.2	059 23.8	N03 26.1
	09	088 56.0	270 25.2	N00 12.0	003 16.9	N23 31.8	318 27.4	N18 45.1	074 26.3	N03 26.0
	10	103 58.4	285 25.5	N00 10.7	018 17.5	N23 31.9	333 29.3	N18 45.0	089 28.8	N03 26.0
	11	119 00.9	300 25.7	N00 09.5	033 18.2	N23 32.0	348 31.2	N18 44.8	104 31.3	N03 26.0
	12	134 03.3	315 25.9	N00 08.3	048 18.8	N23 32.1	003 33.1	N18 44.7	119 33.8	N03 26.0
	13	149 05.8	330 26.1	N00 07.1	063 19.5	N23 32.2	018 35.0	N18 44.5	134 36.3	N03 25.9
	14	164 08.3	345 26.4	N00 05.8	078 20.1	N23 32.2	033 36.9	N18 44.4	149 38.8	N03 25.9
	15	179 10.7	000 26.6	N00 04.6	093 20.7	N23 32.3	048 38.8	N18 44.3	164 41.3	N03 25.9
	16	194 13.2	015 26.8	N00 03.4	108 21.4	N23 32.4	063 40.7	N18 44.1	179 43.8	N03 25.8
	17	209 15.7	030 27.0	N00 02.2	123 22.0	N23 32.5	078 42.6	N18 44.0	194 46.3	N03 25.8
	18	224 18.1	045 27.3	N00 00.9	138 22.7	N23 32.6	093 44.5	N18 43.9	209 48.8	N03 25.8
	19	239 20.6	060 27.5	S00 00.3	153 23.3	N23 32.7	108 46.4	N18 43.7	224 51.3	N03 25.8
	20	254 23.1	075 27.7	S00 01.5	168 23.9	N23 32.7	123 48.3	N18 43.6	239 53.8	N03 25.7
	21	269 25.5	090 28.0	S00 02.7	183 24.6	N23 32.8	138 50.2	N18 43.4	254 56.3	N03 25.7
	22	284 28.0	105 28.2	S00 03.9	198 25.2	N23 32.9	153 52.1	N18 43.3	269 58.8	N03 25.7
	23	299 30.5	120 28.4	S00 05.2	213 25.8	N23 33.0	168 54.0	N18 43.2	285 01.3	N03 25.7
6	00	314 32.9	135 28.7	S00 06.4	228 26.5	N23 33.1	183 55.9	N18 43.0	300 03.8	N03 25.6
	01	329 35.4	150 28.9	S00 07.6	243 27.1	N23 33.1	198 57.8	N18 42.9	315 06.3	N03 25.6
	02	344 37.8	165 29.1	S00 08.8	258 27.8	N23 33.2	213 59.7	N18 42.7	330 08.8	N03 25.6
	03	359 40.3	180 29.4	S00 10.1	273 28.4	N23 33.3	229 01.6	N18 42.6	345 11.3	N03 25.6
	04	014 42.8	195 29.6	S00 11.3	288 29.0	N23 33.4	244 03.5	N18 42.5	000 13.8	N03 25.5
	05	029 45.2	210 29.8	S00 12.5	303 29.7	N23 33.4	259 05.4	N18 42.3	015 16.3	N03 25.5
	06	044 47.7	225 30.1	S00 13.7	318 30.3	N23 33.5	274 07.3	N18 42.2	030 18.8	N03 25.5
	07	059 50.2	240 30.3	S00 15.0	333 31.0	N23 33.6	289 09.2	N18 42.0	045 21.3	N03 25.4
	08	074 52.6	255 30.5	S00 16.2	348 31.6	N23 33.7	304 11.1	N18 41.9	060 23.8	N03 25.4
	09	089 55.1	270 30.8	S00 17.4	003 32.2	N23 33.8	319 13.0	N18 41.8	075 26.3	N03 25.4
	10	104 57.6	285 31.0	S00 18.6	018 32.9	N23 33.8	334 14.9	N18 41.6	090 28.8	N03 25.4
	11	120 00.0	300 31.2	S00 19.9	033 33.5	N23 33.9	349 16.8	N18 41.5	105 31.3	N03 25.3
	12	135 02.5	315 31.5	S00 21.1	048 34.2	N23 34.0	004 18.7	N18 41.3	120 33.8	N03 25.3
	13	150 05.0	330 31.7	S00 22.3	063 34.8	N23 34.1	019 20.6	N18 41.2	135 36.3	N03 25.3
	14	165 07.4	345 32.0	S00 23.5	078 35.4	N23 34.1	034 22.5	N18 41.1	150 38.8	N03 25.3
	15	180 09.9	000 32.2	S00 24.7	093 36.1	N23 34.2	049 24.4	N18 40.9	165 41.3	N03 25.2
	16	195 12.3	015 32.4	S00 26.0	108 36.7	N23 34.3	064 26.3	N18 40.8	180 43.8	N03 25.2
	17	210 14.8	030 32.7	S00 27.2	123 37.4	N23 34.4	079 28.2	N18 40.6	195 46.3	N03 25.2
	18	225 17.3	045 32.9	S00 28.4	138 38.0	N23 34.4	094 30.1	N18 40.5	210 48.8	N03 25.1
	19	240 19.7	060 33.2	S00 29.6	153 38.7	N23 34.5	109 32.0	N18 40.4	225 51.3	N03 25.1
	20	255 22.2	075 33.4	S00 30.9	168 39.3	N23 34.6	124 33.9	N18 40.2	240 53.8	N03 25.1
	21	270 24.7	090 33.7	S00 32.1	183 39.9	N23 34.6	139 35.8	N18 40.1	255 56.3	N03 25.1
	22	285 27.1	105 33.9	S00 33.3	198 40.6	N23 34.7	154 37.7	N18 39.9	270 58.8	N03 25.0
	23	300 29.6	120 34.1	S00 34.5	213 41.2	N23 34.8	169 39.6	N18 39.8	286 01.3	N03 25.0
7	00	315 32.1	135 34.4	S00 35.7	228 41.9	N23 34.9	184 41.5	N18 39.7	301 03.8	N03 25.0
	01	330 34.5	150 34.6	S00 37.0	243 42.5	N23 34.9	199 43.4	N18 39.5	316 06.3	N03 24.9
	02	345 37.0	165 34.9	S00 38.2	258 43.1	N23 35.0	214 45.3	N18 39.4	331 08.8	N03 24.9
	03	000 39.5	180 35.1	S00 39.4	273 43.8	N23 35.1	229 47.2	N18 39.2	346 11.3	N03 24.9
	04	015 41.9	195 35.4	S00 40.6	288 44.4	N23 35.1	244 49.1	N18 39.1	001 13.8	N03 24.9
	05	030 44.4	210 35.6	S00 41.9	303 45.1	N23 35.2	259 51.0	N18 39.0	016 16.4	N03 24.8
	06	045 46.8	225 35.9	S00 43.1	318 45.7	N23 35.3	274 52.9	N18 38.8	031 18.9	N03 24.8
	07	060 49.3	240 36.1	S00 44.3	333 46.4	N23 35.3	289 54.8	N18 38.7	046 21.4	N03 24.8
	08	075 51.8	255 36.4	S00 45.5	348 47.0	N23 35.4	304 56.7	N18 38.5	061 23.9	N03 24.7
	09	090 54.2	270 36.6	S00 46.7	003 47.6	N23 35.5	319 58.6	N18 38.4	076 26.4	N03 24.7
	10	105 56.7	285 36.9	S00 48.0	018 48.3	N23 35.6	335 00.5	N18 38.3	091 28.9	N03 24.7
	11	120 59.2	300 37.1	S00 49.2	033 48.9	N23 35.6	350 02.4	N18 38.1	106 31.4	N03 24.7
	12	136 01.6	315 37.4	S00 50.4	048 49.6	N23 35.7	005 04.3	N18 38.0	121 33.9	N03 24.6
	13	151 04.1	330 37.6	S00 51.6	063 50.2	N23 35.8	020 06.2	N18 37.8	136 36.4	N03 24.6
	14	166 06.6	345 37.9	S00 52.8	078 50.9	N23 35.8	035 08.1	N18 37.7	151 38.9	N03 24.6
	15	181 09.0	000 38.1	S00 54.1	093 51.5	N23 35.9	050 10.0	N18 37.6	166 41.4	N03 24.5
	16	196 11.5	015 38.4	S00 55.3	108 52.1	N23 35.9	065 11.9	N18 37.4	181 43.9	N03 24.5
	17	211 13.9	030 38.7	S00 56.5	123 52.8	N23 36.0	080 13.8	N18 37.3	196 46.4	N03 24.5
	18	226 16.4	045 38.9	S00 57.7	138 53.4	N23 36.1	095 15.7	N18 37.1	211 48.9	N03 24.4
	19	241 18.9	060 39.2	S00 58.9	153 54.1	N23 36.1	110 17.6	N18 37.0	226 51.4	N03 24.4
	20	256 21.3	075 39.4	S01 00.2	168 54.7	N23 36.2	125 19.6	N18 36.9	241 53.9	N03 24.4
	21	271 23.8	090 39.7	S01 01.4	183 55.4	N23 36.3	140 21.5	N18 36.7	256 56.4	N03 24.4
	22	286 26.3	105 39.9	S01 02.6	198 56.0	N23 36.3	155 23.4	N18 36.6	271 58.9	N03 24.3
	23	301 28.7	120 40.2	S01 03.8	213 56.7	N23 36.4	170 25.3	N18 36.4	287 01.5	N03 24.3

Venus	Mars	Jupiter	Saturn
5: v 0.2 d -1.2	5: v 0.6 d 0.1	5: v 1.9 d -0.1	5: v 2.5 d 0.0
6: v 0.2 d -1.2	6: v 0.6 d 0.1	6: v 1.9 d -0.1	6: v 2.5 d 0.0
7: v 0.3 d -1.2	7: v 0.6 d 0.1	7: v 1.9 d -0.1	7: v 2.5 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.8	S40 11.5
Achernar	335 19.0	S57 05.7
Acrux	172 59.0	S63 15.0
Adhara	255 05.2	S29 00.3
Al Na'ir	027 30.8	S46 49.7
Aldebaran	290 38.3	N16 33.8
Alioth	166 12.1	N55 49.2
Alkaid	152 51.1	N49 11.1
Alnilam	275 36.6	S01 11.0
Alphard	217 46.8	S08 46.4
Alphecca	126 02.5	N26 37.7
Alpheratz	357 33.2	N29 14.3
Altair	061 58.4	N08 56.4
Ankaa	353 05.6	S42 09.4
Antares	112 14.1	S26 29.5
Arcturus	145 46.8	N19 02.8
Atria	107 06.8	S69 04.7
Avior	234 14.9	S59 35.6
Bellatrix	278 21.7	N06 22.5
Betelgeuse	270 50.9	N07 24.8
Canopus	263 52.3	S52 42.3
Capella	280 20.2	N46 01.3
Deneb	049 24.4	N45 22.6
Denebola	182 23.8	N14 25.5
Diphda	348 45.8	S17 50.2
Dubhe	193 40.0	N61 36.6
Elnath	278 00.4	N28 37.7
Eltanin	090 41.2	N51 29.3
Enif	033 37.2	N09 59.9
Fomalhaut	015 12.8	S29 28.7
Gacrux	171 50.5	S57 16.0
Gienah	175 42.4	S17 41.4
Hadar	148 34.2	S60 30.3
Hamal	327 49.7	N23 35.3
Kaus Australi	083 30.4	S34 22.3
Kochab	137 19.8	N74 03.0
Markab	013 28.3	N15 21.0
Menkar	314 04.8	N04 11.8
Menkent	147 56.1	S36 30.2
Miaplacidus	221 39.0	S69 49.6
Mirfak	308 26.4	N49 57.2
Nunki	075 45.8	S26 15.8
Peacock	053 03.1	S56 38.9
Polaris	313 23.8	N89 22.2
Pollux	243 16.1	N27 57.7
Procyon	244 49.8	N05 09.5
Rasalhague	095 57.1	N12 32.6
Regulus	207 33.4	N11 50.3
Rigel	281 02.8	S08 10.1
Rigil Kentaur	139 38.5	S60 57.0
Sabik	102 01.1	S15 45.5
Schedar	349 29.2	N56 40.9
Shaula	096 08.3	S37 07.4
Sirius	258 25.4	S16 45.0
Spica	158 21.0	S11 18.0
Suhail	222 45.8	S43 32.4
Vega	080 32.0	N38 48.7
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	180 29.0	1458
Mars	273 31.7	0846
Jupiter	229 16.2	1143
Saturn	345 31.3	0359

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
5	00	178 28.9	N17 01.2	288 42.8	N15 08.9	58.1	11.2	13.8
	01	193 29.0	N17 00.6	303 13.0	N15 22.7	58.1	11.1	13.7
	02	208 29.1	N16 59.9	317 43.2	N15 36.4	58.1	11.0	13.6
	03	223 29.1	N16 59.2	332 13.2	N15 50.0	58.2	10.9	13.6
	04	238 29.2	N16 58.5	346 43.1	N16 03.6	58.2	10.8	13.5
	05	253 29.2	N16 57.9	001 13.0	N16 17.1	58.2	10.7	13.4
	06	268 29.3	N16 57.2	015 42.7	N16 30.5	58.2	10.6	13.4
	07	283 29.4	N16 56.5	030 12.3	N16 43.9	58.3	10.5	13.3
	08	298 29.4	N16 55.8	044 41.9	N16 57.2	58.3	10.4	13.2
	09	313 29.5	N16 55.1	059 11.3	N17 10.4	58.3	10.3	13.1
	10	328 29.6	N16 54.5	073 40.6	N17 23.5	58.3	10.2	13.0
	11	343 29.6	N16 53.8	088 09.8	N17 36.5	58.4	10.1	13.0
	12	358 29.7	N16 53.1	102 38.9	N17 49.5	58.4	10.0	12.9
	13	013 29.8	N16 52.4	117 07.9	N18 02.3	58.4	9.9	12.8
	14	028 29.8	N16 51.7	131 36.8	N18 15.1	58.4	9.8	12.7
	15	043 29.9	N16 51.1	146 05.6	N18 27.8	58.5	9.7	12.6
	16	058 30.0	N16 50.4	160 34.2	N18 40.5	58.5	9.6	12.5
	17	073 30.0	N16 49.7	175 02.8	N18 53.0	58.5	9.4	12.4
	18	088 30.1	N16 49.0	189 31.2	N19 05.4	58.5	9.3	12.3
	19	103 30.2	N16 48.3	203 59.6	N19 17.7	58.6	9.2	12.2
	20	118 30.2	N16 47.6	218 27.8	N19 30.0	58.6	9.1	12.1
	21	133 30.3	N16 47.0	232 55.9	N19 42.1	58.6	9.0	12.0
	22	148 30.4	N16 46.3	247 23.8	N19 54.2	58.6	8.9	11.9
	23	163 30.4	N16 45.6	261 51.7	N20 06.1	58.7	8.7	11.8
6	00	178 30.5	N16 44.9	276 19.5	N20 17.9	58.7	8.6	11.7
	01	193 30.6	N16 44.2	290 47.1	N20 29.7	58.7	8.5	11.6
	02	208 30.6	N16 43.5	305 14.6	N20 41.3	58.7	8.4	11.5
	03	223 30.7	N16 42.8	319 42.0	N20 52.8	58.7	8.3	11.4
	04	238 30.8	N16 42.2	334 09.3	N21 04.2	58.8	8.2	11.3
	05	253 30.8	N16 41.5	348 36.4	N21 15.5	58.8	8.0	11.2
	06	268 30.9	N16 40.8	003 03.5	N21 26.7	58.8	7.9	11.1
	07	283 31.0	N16 40.1	017 30.4	N21 37.8	58.8	7.8	11.0
	08	298 31.0	N16 39.4	031 57.2	N21 48.7	58.9	7.7	10.8
	09	313 31.1	N16 38.7	046 23.9	N21 59.6	58.9	7.6	10.7
	10	328 31.2	N16 38.0	060 50.4	N22 10.3	58.9	7.4	10.6
	11	343 31.3	N16 37.3	075 16.9	N22 20.9	58.9	7.3	10.5
	12	358 31.3	N16 36.6	089 43.2	N22 31.3	59.0	7.2	10.3
	13	013 31.4	N16 36.0	104 09.4	N22 41.7	59.0	7.1	10.2
	14	028 31.5	N16 35.3	118 35.5	N22 51.9	59.0	7.0	10.1
	15	043 31.5	N16 34.6	133 01.4	N23 02.0	59.0	6.8	9.9
	16	058 31.6	N16 33.9	147 27.3	N23 11.9	59.1	6.7	9.8
	17	073 31.7	N16 33.2	161 53.0	N23 21.7	59.1	6.6	9.7
	18	088 31.8	N16 32.5	176 18.6	N23 31.4	59.1	6.5	9.5
	19	103 31.8	N16 31.8	190 44.1	N23 40.9	59.1	6.4	9.4
	20	118 31.9	N16 31.1	205 09.4	N23 50.4	59.2	6.2	9.3
	21	133 32.0	N16 30.4	219 34.7	N23 59.6	59.2	6.1	9.1
	22	148 32.1	N16 29.7	233 59.8	N24 08.7	59.2	6.0	9.0
	23	163 32.1	N16 29.0	248 24.8	N24 17.7	59.2	5.9	8.8
7	00	178 32.2	N16 28.3	262 49.7	N24 26.5	59.2	5.8	8.7
	01	193 32.3	N16 27.6	277 14.5	N24 35.2	59.3	5.7	8.5
	02	208 32.3	N16 26.9	291 39.1	N24 43.7	59.3	5.5	8.4
	03	223 32.4	N16 26.2	306 03.6	N24 52.1	59.3	5.4	8.2
	04	238 32.5	N16 25.5	320 28.1	N25 00.3	59.3	5.3	8.1
	05	253 32.6	N16 24.8	334 52.4	N25 08.4	59.4	5.2	7.9
	06	268 32.6	N16 24.1	349 16.6	N25 16.3	59.4	5.1	7.8
	07	283 32.7	N16 23.4	003 40.6	N25 24.1	59.4	5.0	7.6
	08	298 32.8	N16 22.7	018 04.6	N25 31.7	59.4	4.9	7.4
	09	313 32.9	N16 22.0	032 28.5	N25 39.1	59.4	4.8	7.3
	10	328 33.0	N16 21.3	046 52.2	N25 46.3	59.5	4.6	7.1
	11	343 33.0	N16 20.6	061 15.9	N25 53.4	59.5	4.5	6.9
	12	358 33.1	N16 19.9	075 39.4	N26 00.4	59.5	4.4	6.8
	13	013 33.2	N16 19.2	090 02.9	N26 07.1	59.5	4.3	6.6
	14	028 33.3	N16 18.5	104 26.2	N26 13.7	59.5	4.2	6.4
	15	043 33.3	N16 17.8	118 49.4	N26 20.1	59.6	4.1	6.2
	16	058 33.4	N16 17.1	133 12.5	N26 26.4	59.6	4.0	6.1
	17	073 33.5	N16 16.4	147 35.6	N26 32.5	59.6	3.9	5.9
	18	088 33.6	N16 15.7	161 58.5	N26 38.4	59.6	3.8	5.7
	19	103 33.6	N16 15.0	176 21.3	N26 44.1	59.6	3.7	5.5
	20	118 33.7	N16 14.3	190 44.1	N26 49.6	59.7	3.7	5.4
	21	133 33.8	N16 13.6	205 06.7	N26 55.0	59.7	3.6	5.2
	22	148 33.9	N16 12.9	219 29.3	N27 00.1	59.7	3.5	5.0
	23	163 34.0	N16 12.2	233 51.8	N27 05.1	59.7	3.4	4.8

Day 5 noon Sun: v 0.1 d -0.7 SD 15.8 | Moon SD 15.9

Day 6 noon Sun: v 0.1 d -0.7 SD 15.8 | Moon SD 16.1

Day 7 noon Sun: v 0.1 d -0.7 SD 15.8 | Moon SD 16.2

SUN: AUGUST 6 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	0058	2300	--	--
70N	--	--	0204	2202	--	--
68N	--	--	0240	2129	--	--
66N	--	0123	0305	2104	2241	--
64N	--	0206	0324	2046	2201	--
62N	--	0234	0339	2030	2134	--
60N	0115	0256	0353	2018	2114	2250
58N	0154	0313	0404	2007	2057	2214
56N	0220	0327	0413	1957	2043	2149
54N	0240	0339	0422	1949	2031	2130
52N	0256	0349	0430	1941	2021	2114
50N	0310	0359	0436	1934	2012	2101
45N	0336	0418	0451	1920	1953	2034
40N	0357	0433	0503	1908	1938	2014
35N	0412	0446	0513	1858	1926	1959
30N	0426	0456	0522	1849	1915	1946
25N	0437	0506	0530	1842	1906	1935
20N	0446	0514	0537	1834	1858	1925
15N	0455	0521	0544	1828	1850	1917
10N	0503	0528	0550	1821	1843	1909
05N	0509	0535	0556	1815	1837	1902
00N	0516	0541	0602	1809	1831	1856
05S	0522	0547	0608	1803	1825	1850
10S	0527	0553	0615	1757	1819	1845
15S	0533	0558	0621	1751	1814	1839
20S	0538	0604	0627	1745	1808	1834
25S	0543	0610	0634	1738	1802	1829
30S	0548	0617	0642	1730	1755	1824
35S	0553	0623	0650	1722	1749	1819
40S	0559	0631	0659	1713	1741	1814
45S	0604	0639	0711	1702	1733	1808
50S	0610	0649	0724	1649	1723	1802
55S	0617	0701	0741	1632	1712	1755
60S	0625	0716	0803	1610	1657	1747

MOON: RISE / SET | UTC HHMM

Lat	Day 5		Day 6		Day 7	
72N	--	--	--	--	--	--
70N	1836	1544	--	--	--	--
68N	1926	1455	--	--	--	--
66N	1958	1425	1905	1712	--	--
64N	2022	1402	2003	1614	--	--
62N	2041	1344	2037	1541	2034	1749
60N	2056	1329	2102	1517	2116	1707
58N	2110	1317	2122	1458	2145	1638
56N	2121	1306	2139	1442	2208	1616
54N	2132	1257	2153	1428	2226	1558
52N	2141	1248	2205	1416	2242	1543
50N	2149	1241	2216	1405	2256	1530
45N	2207	1225	2240	1344	2323	1502
40N	2221	1212	2258	1326	2346	1441
35N	2233	1201	2314	1311	--	1423
30N	2244	1151	2328	1258	--	1408
25N	2254	1143	2340	1247	--	1354
20N	2303	1135	2351	1237	--	1342
15N	2311	1127	--	1227	0001	1331
10N	2319	1120	--	1218	0011	1320
05N	2327	1114	--	1209	0021	1309
00N	2334	1107	--	1200	0031	1259
05S	2342	1100	--	1152	0040	1249
10S	2350	1054	--	1143	0050	1238
15S	2358	1047	--	1134	0100	1228
20S	--	1040	0007	1125	0111	1216
25S	--	1032	0016	1114	0122	1204
30S	--	1024	0026	1103	0135	1151
35S	--	1014	0037	1051	0149	1136
40S	--	1004	0050	1037	0206	1118
45S	--	0951	0106	1020	0225	1058
50S	0001	0936	0125	0959	0251	1032
55S	0018	0917	0150	0933	0325	0956
60S	0041	0852	0226	0855	0417	0903

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | AUGUST 8 - AUGUST 10

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
8	00	316 31.2	135 40.5	S01 05.1	228 57.3	N23 36.5	185 27.2	N18 36.3	302 04.0	N03 24.3
	01	331 33.7	150 40.7	S01 06.3	243 57.9	N23 36.5	200 29.1	N18 36.2	317 06.5	N03 24.2
	02	346 36.1	165 41.0	S01 07.5	258 58.6	N23 36.6	215 31.0	N18 36.0	332 09.0	N03 24.2
	03	001 38.6	180 41.2	S01 08.7	273 59.2	N23 36.6	230 32.9	N18 35.9	347 11.5	N03 24.2
	04	016 41.1	195 41.5	S01 09.9	288 59.9	N23 36.7	245 34.8	N18 35.7	002 14.0	N03 24.1
	05	031 43.5	210 41.8	S01 11.2	304 00.5	N23 36.8	260 36.7	N18 35.6	017 16.5	N03 24.1
	06	046 46.0	225 42.0	S01 12.4	319 01.2	N23 36.8	275 38.6	N18 35.5	032 19.0	N03 24.1
	07	061 48.4	240 42.3	S01 13.6	334 01.8	N23 36.9	290 40.5	N18 35.3	047 21.5	N03 24.1
	08	076 50.9	255 42.5	S01 14.8	349 02.5	N23 37.0	305 42.4	N18 35.2	062 24.0	N03 24.0
	09	091 53.4	270 42.8	S01 16.0	004 03.1	N23 37.0	320 44.3	N18 35.0	077 26.5	N03 24.0
	10	106 55.8	285 43.1	S01 17.3	019 03.8	N23 37.1	335 46.2	N18 34.9	092 29.0	N03 24.0
	11	121 58.3	300 43.3	S01 18.5	034 04.4	N23 37.1	350 48.1	N18 34.8	107 31.6	N03 23.9
	12	137 00.8	315 43.6	S01 19.7	049 05.0	N23 37.2	005 50.0	N18 34.6	122 34.1	N03 23.9
	13	152 03.2	330 43.9	S01 20.9	064 05.7	N23 37.2	020 51.9	N18 34.5	137 36.6	N03 23.9
	14	167 05.7	345 44.1	S01 22.1	079 06.3	N23 37.3	035 53.8	N18 34.3	152 39.1	N03 23.8
	15	182 08.2	000 44.4	S01 23.3	094 07.0	N23 37.4	050 55.7	N18 34.2	167 41.6	N03 23.8
	16	197 10.6	015 44.7	S01 24.6	109 07.6	N23 37.4	065 57.6	N18 34.1	182 44.1	N03 23.8
	17	212 13.1	030 44.9	S01 25.8	124 08.3	N23 37.5	080 59.5	N18 33.9	197 46.6	N03 23.7
	18	227 15.6	045 45.2	S01 27.0	139 08.9	N23 37.5	096 01.4	N18 33.8	212 49.1	N03 23.7
	19	242 18.0	060 45.5	S01 28.2	154 09.6	N23 37.6	111 03.3	N18 33.6	227 51.6	N03 23.7
	20	257 20.5	075 45.8	S01 29.4	169 10.2	N23 37.6	126 05.2	N18 33.5	242 54.1	N03 23.7
	21	272 22.9	090 46.0	S01 30.7	184 10.9	N23 37.7	141 07.1	N18 33.3	257 56.7	N03 23.6
	22	287 25.4	105 46.3	S01 31.9	199 11.5	N23 37.8	156 09.0	N18 33.2	272 59.2	N03 23.6
	23	302 27.9	120 46.6	S01 33.1	214 12.2	N23 37.8	171 10.9	N18 33.1	288 01.7	N03 23.6
9	00	317 30.3	135 46.8	S01 34.3	229 12.8	N23 37.9	186 12.8	N18 32.9	303 04.2	N03 23.5
	01	332 32.8	150 47.1	S01 35.5	244 13.5	N23 37.9	201 14.7	N18 32.8	318 06.7	N03 23.5
	02	347 35.3	165 47.4	S01 36.7	259 14.1	N23 38.0	216 16.6	N18 32.6	333 09.2	N03 23.5
	03	002 37.7	180 47.7	S01 38.0	274 14.7	N23 38.0	231 18.5	N18 32.5	348 11.7	N03 23.4
	04	017 40.2	195 47.9	S01 39.2	289 15.4	N23 38.1	246 20.4	N18 32.4	003 14.2	N03 23.4
	05	032 42.7	210 48.2	S01 40.4	304 16.0	N23 38.1	261 22.3	N18 32.2	018 16.7	N03 23.4
	06	047 45.1	225 48.5	S01 41.6	319 16.7	N23 38.2	276 24.2	N18 32.1	033 19.3	N03 23.3
	07	062 47.6	240 48.8	S01 42.8	334 17.3	N23 38.2	291 26.1	N18 31.9	048 21.8	N03 23.3
	08	077 50.1	255 49.0	S01 44.1	349 18.0	N23 38.3	306 28.0	N18 31.8	063 24.3	N03 23.3
	09	092 52.5	270 49.3	S01 45.3	004 18.6	N23 38.3	321 29.9	N18 31.7	078 26.8	N03 23.2
	10	107 55.0	285 49.6	S01 46.5	019 19.3	N23 38.4	336 31.8	N18 31.5	093 29.3	N03 23.2
	11	122 57.4	300 49.9	S01 47.7	034 19.9	N23 38.4	351 33.7	N18 31.4	108 31.8	N03 23.2
	12	137 59.9	315 50.2	S01 48.9	049 20.6	N23 38.5	006 35.6	N18 31.2	123 34.3	N03 23.1
	13	153 02.4	330 50.4	S01 50.1	064 21.2	N23 38.5	021 37.5	N18 31.1	138 36.8	N03 23.1
	14	168 04.8	345 50.7	S01 51.4	079 21.9	N23 38.6	036 39.4	N18 31.0	153 39.4	N03 23.1
	15	183 07.3	000 51.0	S01 52.6	094 22.5	N23 38.6	051 41.3	N18 30.8	168 41.9	N03 23.0
	16	198 09.8	015 51.3	S01 53.8	109 23.2	N23 38.7	066 43.2	N18 30.7	183 44.4	N03 23.0
	17	213 12.2	030 51.6	S01 55.0	124 23.8	N23 38.7	081 45.1	N18 30.5	198 46.9	N03 23.0
	18	228 14.7	045 51.9	S01 56.2	139 24.5	N23 38.8	096 47.0	N18 30.4	213 49.4	N03 23.0
	19	243 17.2	060 52.1	S01 57.4	154 25.1	N23 38.8	111 49.0	N18 30.2	228 51.9	N03 22.9
	20	258 19.6	075 52.4	S01 58.7	169 25.8	N23 38.9	126 50.9	N18 30.1	243 54.4	N03 22.9
	21	273 22.1	090 52.7	S01 59.9	184 26.4	N23 38.9	141 52.8	N18 30.0	258 57.0	N03 22.9
	22	288 24.6	105 53.0	S02 01.1	199 27.1	N23 39.0	156 54.7	N18 29.8	273 59.5	N03 22.8
	23	303 27.0	120 53.3	S02 02.3	214 27.7	N23 39.0	171 56.6	N18 29.7	289 02.0	N03 22.8
10	00	318 29.5	135 53.6	S02 03.5	229 28.4	N23 39.1	186 58.5	N18 29.5	304 04.5	N03 22.8
	01	333 31.9	150 53.8	S02 04.7	244 29.0	N23 39.1	202 00.4	N18 29.4	319 07.0	N03 22.7
	02	348 34.4	165 54.1	S02 05.9	259 29.7	N23 39.2	217 02.3	N18 29.3	334 09.5	N03 22.7
	03	003 36.9	180 54.4	S02 07.2	274 30.3	N23 39.2	232 04.2	N18 29.1	349 12.1	N03 22.7
	04	018 39.3	195 54.7	S02 08.4	289 31.0	N23 39.3	247 06.1	N18 29.0	004 14.6	N03 22.6
	05	033 41.8	210 55.0	S02 09.6	304 31.6	N23 39.3	262 08.0	N18 28.8	019 17.1	N03 22.6
	06	048 44.3	225 55.3	S02 10.8	319 32.3	N23 39.3	277 09.9	N18 28.7	034 19.6	N03 22.6
	07	063 46.7	240 55.6	S02 12.0	334 32.9	N23 39.4	292 11.8	N18 28.5	049 22.1	N03 22.5
	08	078 49.2	255 55.9	S02 13.2	349 33.6	N23 39.4	307 13.7	N18 28.4	064 24.6	N03 22.5
	09	093 51.7	270 56.2	S02 14.5	004 34.2	N23 39.5	322 15.6	N18 28.3	079 27.1	N03 22.5
	10	108 54.1	285 56.5	S02 15.7	019 34.9	N23 39.5	337 17.5	N18 28.1	094 29.7	N03 22.4
	11	123 56.6	300 56.8	S02 16.9	034 35.5	N23 39.6	352 19.4	N18 28.0	109 32.2	N03 22.4
	12	138 59.1	315 57.0	S02 18.1	049 36.2	N23 39.6	007 21.3	N18 27.8	124 34.7	N03 22.4
	13	154 01.5	330 57.3	S02 19.3	064 36.8	N23 39.6	022 23.2	N18 27.7	139 37.2	N03 22.3
	14	169 04.0	345 57.6	S02 20.5	079 37.5	N23 39.7	037 25.1	N18 27.6	154 39.7	N03 22.3
	15	184 06.4	000 57.9	S02 21.7	094 38.1	N23 39.7	052 27.0	N18 27.4	169 42.3	N03 22.3
	16	199 08.9	015 58.2	S02 23.0	109 38.8	N23 39.8	067 28.9	N18 27.3	184 44.8	N03 22.2
	17	214 11.4	030 58.5	S02 24.2	124 39.5	N23 39.8	082 30.8	N18 27.1	199 47.3	N03 22.2
	18	229 13.8	045 58.8	S02 25.4	139 40.1	N23 39.8	097 32.7	N18 27.0	214 49.8	N03 22.1
	19	244 16.3	060 59.1	S02 26.6	154 40.8	N23 39.9	112 34.6	N18 26.8	229 52.3	N03 22.1
	20	259 18.8	075 59.4	S02 27.8	169 41.4	N23 39.9	127 36.5	N18 26.7	244 54.8	N03 22.1
	21	274 21.2	090 59.7	S02 29.0	184 42.1	N23 40.0	142 38.4	N18 26.6	259 57.4	N03 22.0
	22	289 23.7	106 00.0	S02 30.2	199 42.7	N23 40.0	157 40.3	N18 26.4	274 59.9	N03 22.0
	23	304 26.2	121 00.3	S02 31.4	214 43.4	N23 40.0	172 42.3	N18 26.3	290 02.4	N03 22.0

Venus	Mars	Jupiter	Saturn
8: v 0.3 d -1.2	8: v 0.6 d 0.1	8: v 1.9 d -0.1	8: v 2.5 d 0.0
9: v 0.3 d -1.2	9: v 0.6 d 0.1	9: v 1.9 d -0.1	9: v 2.5 d 0.0
10: v 0.3 d -1.2	10: v 0.7 d 0.0	10: v 1.9 d -0.1	10: v 2.5 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.8	S40 11.5
Achernar	335 19.0	S57 05.7
Acrux	172 59.1	S63 15.0
Adhara	255 05.1	S29 00.3
Al Na'ir	027 30.8	S46 49.7
Aldebaran	290 38.2	N16 33.8
Alioth	166 12.1	N55 49.1
Alkaid	152 51.1	N49 11.1
Alnilam	275 36.6	S01 11.0
Alphard	217 46.8	S08 46.4
Alphecca	126 02.6	N26 37.7
Alpheratz	357 33.1	N29 14.3
Altair	061 58.3	N08 56.4
Ankaa	353 05.6	S42 09.4
Antares	112 14.1	S26 29.5
Arcturus	145 46.8	N19 02.8
Atria	107 06.8	S69 04.7
Avior	234 14.8	S59 35.6
Bellatrix	278 21.7	N06 22.5
Betelgeuse	270 50.9	N07 24.8
Canopus	263 52.2	S52 42.3
Capella	280 20.2	N46 01.3
Deneb	049 24.4	N45 22.6
Denebola	182 23.8	N14 25.5
Diphda	348 45.8	S17 50.2
Dubhe	193 40.0	N61 36.6
Elnath	278 00.4	N28 37.7
Eltanin	090 41.2	N51 29.3
Enif	033 37.2	N10 00.0
Fomalhaut	015 12.7	S29 28.6
Gacrux	171 50.5	S57 16.0
Gienah	175 42.4	S17 41.4
Hadar	148 34.3	S60 30.3
Hamal	327 49.6	N23 35.3
Kaus Australi	083 30.4	S34 22.3
Kochab	137 19.9	N74 03.0
Markab	013 28.3	N15 21.0
Menkar	314 04.8	N04 11.8
Menkent	147 56.1	S36 30.2
Miaplacidus	221 39.0	S69 49.6
Mirfak	308 26.4	N49 57.2
Nunki	075 45.8	S26 15.8
Peacock	053 03.1	S56 38.9
Polaris	313 21.8	N89 22.2
Pollux	243 16.0	N27 57.7
Procyon	244 49.8	N05 09.5
Rasalhague	095 57.1	N12 32.6
Regulus	207 33.4	N11 50.3
Rigel	281 02.8	S08 10.1
Rigil Kentaur	139 38.5	S60 57.0
Sabik	102 01.1	S15 45.5
Schedar	349 29.2	N56 40.9
Shaula	096 08.3	S37 07.4
Sirius	258 25.4	S16 45.0
Spica	158 21.0	S11 18.0
Suhail	222 45.8	S43 32.4
Vega	080 32.0	N38 48.7
Zubenelgenubi	136 54.6	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	177 50.2	1457
Mars	271 20.7	0843
Jupiter	228 35.7	1134
Saturn	345 34.4	0347

2026 | AUGUST 8 - AUGUST 10

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
8	00	178 34.0	N16 11.5	248 14.2	N27 09.9	59.7	3.3	4.6
	01	193 34.1	N16 10.8	262 36.5	N27 14.5	59.8	3.2	4.4
	02	208 34.2	N16 10.0	276 58.7	N27 18.9	59.8	3.1	4.2
	03	223 34.3	N16 09.3	291 20.8	N27 23.2	59.8	3.1	4.0
	04	238 34.4	N16 08.6	305 42.9	N27 27.2	59.8	3.0	3.9
	05	253 34.4	N16 07.9	320 04.9	N27 31.1	59.8	2.9	3.7
	06	268 34.5	N16 07.2	334 26.8	N27 34.7	59.9	2.8	3.5
	07	283 34.6	N16 06.5	348 48.7	N27 38.2	59.9	2.8	3.3
	08	298 34.7	N16 05.8	003 10.5	N27 41.5	59.9	2.7	3.1
	09	313 34.8	N16 05.1	017 32.2	N27 44.5	59.9	2.7	2.9
	10	328 34.9	N16 04.4	031 53.8	N27 47.4	59.9	2.6	2.7
	11	343 34.9	N16 03.6	046 15.4	N27 50.1	59.9	2.5	2.5
	12	358 35.0	N16 02.9	060 37.0	N27 52.6	60.0	2.5	2.3
	13	013 35.1	N16 02.2	074 58.4	N27 54.8	60.0	2.4	2.1
	14	028 35.2	N16 01.5	089 19.9	N27 56.9	60.0	2.4	1.9
	15	043 35.3	N16 00.8	103 41.3	N27 58.8	60.0	2.3	1.7
	16	058 35.4	N16 00.1	118 02.6	N28 00.5	60.0	2.3	1.5
	17	073 35.4	N15 59.4	132 23.9	N28 01.9	60.0	2.3	1.3
	18	088 35.5	N15 58.6	146 45.1	N28 03.2	60.0	2.2	1.1
	19	103 35.6	N15 57.9	161 06.4	N28 04.3	60.1	2.2	0.9
	20	118 35.7	N15 57.2	175 27.5	N28 05.1	60.1	2.2	0.6
	21	133 35.8	N15 56.5	189 48.7	N28 05.8	60.1	2.1	0.4
	22	148 35.9	N15 55.8	204 09.8	N28 06.2	60.1	2.1	0.2
	23	163 35.9	N15 55.1	218 30.9	N28 06.4	60.1	2.1	0.0
9	00	178 36.0	N15 54.3	232 52.0	N28 06.5	60.1	2.1	-0.2
	01	193 36.1	N15 53.6	247 13.0	N28 06.3	60.1	2.0	-0.4
	02	208 36.2	N15 52.9	261 34.1	N28 05.9	60.2	2.0	-0.6
	03	223 36.3	N15 52.2	275 55.1	N28 05.3	60.2	2.0	-0.8
	04	238 36.4	N15 51.5	290 16.1	N28 04.5	60.2	2.0	-1.0
	05	253 36.5	N15 50.7	304 37.1	N28 03.5	60.2	2.0	-1.2
	06	268 36.6	N15 50.0	318 58.1	N28 02.3	60.2	2.0	-1.4
	07	283 36.6	N15 49.3	333 19.1	N28 00.9	60.2	2.0	-1.6
	08	298 36.7	N15 48.6	347 40.2	N27 59.2	60.2	2.0	-1.8
	09	313 36.8	N15 47.9	002 01.2	N27 57.4	60.2	2.0	-2.0
	10	328 36.9	N15 47.1	016 22.2	N27 55.3	60.2	2.0	-2.3
	11	343 37.0	N15 46.4	030 43.2	N27 53.1	60.2	2.0	-2.5
	12	358 37.1	N15 45.7	045 04.3	N27 50.6	60.3	2.1	-2.7
	13	013 37.2	N15 45.0	059 25.3	N27 47.9	60.3	2.1	-2.9
	14	028 37.3	N15 44.2	073 46.4	N27 45.1	60.3	2.1	-3.1
	15	043 37.4	N15 43.5	088 07.5	N27 42.0	60.3	2.1	-3.3
	16	058 37.4	N15 42.8	102 28.7	N27 38.7	60.3	2.2	-3.5
	17	073 37.5	N15 42.1	116 49.8	N27 35.2	60.3	2.2	-3.7
	18	088 37.6	N15 41.3	131 11.0	N27 31.5	60.3	2.2	-3.9
	19	103 37.7	N15 40.6	145 32.3	N27 27.6	60.3	2.3	-4.1
	20	118 37.8	N15 39.9	159 53.5	N27 23.5	60.3	2.3	-4.3
	21	133 37.9	N15 39.1	174 14.9	N27 19.2	60.3	2.4	-4.5
	22	148 38.0	N15 38.4	188 36.2	N27 14.7	60.3	2.4	-4.7
	23	163 38.1	N15 37.7	202 57.6	N27 09.9	60.3	2.5	-4.9
10	00	178 38.2	N15 37.0	217 19.1	N27 05.0	60.3	2.5	-5.1
	01	193 38.3	N15 36.2	231 40.6	N26 59.9	60.3	2.6	-5.3
	02	208 38.4	N15 35.5	246 02.2	N26 54.6	60.3	2.6	-5.5
	03	223 38.4	N15 34.8	260 23.8	N26 49.1	60.3	2.7	-5.7
	04	238 38.5	N15 34.0	274 45.5	N26 43.4	60.3	2.7	-5.9
	05	253 38.6	N15 33.3	289 07.2	N26 37.5	60.4	2.8	-6.1
	06	268 38.7	N15 32.6	303 29.0	N26 31.4	60.4	2.9	-6.3
	07	283 38.8	N15 31.8	317 50.9	N26 25.1	60.4	2.9	-6.5
	08	298 38.9	N15 31.1	332 12.8	N26 18.6	60.4	3.0	-6.7
	09	313 39.0	N15 30.4	346 34.9	N26 12.0	60.4	3.1	-6.9
	10	328 39.1	N15 29.6	000 56.9	N26 05.1	60.4	3.2	-7.0
	11	343 39.2	N15 28.9	015 19.1	N25 58.1	60.4	3.2	-7.2
	12	358 39.3	N15 28.2	029 41.4	N25 50.8	60.4	3.3	-7.4
	13	013 39.4	N15 27.4	044 03.7	N25 43.4	60.4	3.4	-7.6
	14	028 39.5	N15 26.7	058 26.1	N25 35.8	60.4	3.5	-7.8
	15	043 39.6	N15 26.0	072 48.6	N25 28.1	60.4	3.6	-8.0
	16	058 39.7	N15 25.2	087 11.2	N25 20.1	60.4	3.7	-8.1
	17	073 39.8	N15 24.5	101 33.9	N25 12.0	60.4	3.8	-8.3
	18	088 39.9	N15 23.8	115 56.6	N25 03.6	60.4	3.9	-8.5
	19	103 40.0	N15 23.0	130 19.5	N24 55.1	60.3	3.9	-8.7
	20	118 40.0	N15 22.3	144 42.4	N24 46.5	60.3	4.0	-8.8
	21	133 40.1	N15 21.6	159 05.5	N24 37.7	60.3	4.1	-9.0
	22	148 40.2	N15 20.8	173 28.6	N24 28.6	60.3	4.2	-9.2
	23	163 40.3	N15 20.1	187 51.8	N24 19.5	60.3	4.3	-9.3

Day 8 noon Sun: v 0.1 d -0.7 SD 15.8 | Moon SD 16.3

Day 9 noon Sun: v 0.1 d -0.7 SD 15.8 | Moon SD 16.4

Day 10 noon Sun: v 0.1 d -0.7 SD 15.8 | Moon SD 16.4

SUN: AUGUST 9 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	0135	2227	--	--
70N	--	--	0223	2143	--	--
68N	--	0028	0253	2114	2322	--
66N	--	0146	0316	2053	2220	--
64N	--	0221	0333	2036	2147	--
62N	0025	0246	0348	2021	2123	2327
60N	0135	0305	0400	2010	2104	2231
58N	0207	0320	0410	1959	2049	2201
56N	0230	0334	0419	1951	2036	2138
54N	0248	0345	0427	1943	2025	2121
52N	0303	0355	0434	1936	2015	2106
50N	0316	0404	0441	1929	2006	2054
45N	0341	0422	0455	1916	1948	2029
40N	0400	0436	0506	1905	1934	2010
35N	0415	0448	0515	1855	1922	1955
30N	0428	0458	0524	1847	1912	1943
25N	0438	0507	0531	1839	1904	1932
20N	0448	0515	0538	1833	1856	1923
15N	0456	0522	0545	1826	1849	1915
10N	0503	0529	0551	1820	1842	1908
05N	0510	0535	0556	1815	1836	1901
00N	0516	0541	0602	1809	1830	1855
05S	0521	0546	0608	1803	1825	1850
10S	0527	0552	0614	1758	1819	1845
15S	0532	0557	0619	1752	1814	1840
20S	0536	0603	0626	1746	1809	1835
25S	0541	0608	0632	1739	1803	1830
30S	0546	0614	0639	1732	1757	1826
35S	0551	0621	0647	1724	1751	1821
40S	0555	0628	0656	1716	1744	1816
45S	0601	0635	0706	1705	1736	1811
50S	0606	0644	0719	1653	1727	1806
55S	0612	0655	0734	1637	1717	1800
60S	0619	0709	0755	1617	1703	1753

MOON: RISE / SET | UTC HHMM

Lat	Day 8		Day 9		Day 10	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	--	--	--	2059
62N	2037	2000	2232	2022	--	2019
60N	2156	1841	2322	1932	--	1951
58N	2232	1805	2353	1900	--	1929
56N	2259	1739	--	1837	0017	1911
54N	2319	1718	--	1817	0036	1856
52N	2337	1701	--	1801	0052	1843
50N	2352	1646	--	1747	0105	1831
45N	--	1616	0022	1718	0134	1807
40N	--	1552	0045	1655	0156	1747
35N	0004	1533	0104	1637	0214	1731
30N	0020	1517	0121	1620	0230	1716
25N	0034	1502	0136	1606	0244	1704
20N	0047	1449	0149	1553	0257	1652
15N	0059	1436	0202	1541	0308	1641
10N	0110	1424	0213	1529	0320	1631
05N	0121	1413	0225	1518	0330	1621
00N	0132	1402	0236	1507	0341	1611
05S	0142	1351	0247	1456	0351	1601
10S	0153	1340	0259	1445	0402	1551
15S	0205	1328	0310	1433	0413	1540
20S	0217	1315	0323	1421	0425	1529
25S	0230	1302	0336	1408	0438	1517
30S	0244	1247	0351	1353	0451	1504
35S	0301	1231	0408	1336	0507	1449
40S	0320	1212	0428	1317	0525	1432
45S	0343	1148	0451	1253	0547	1411
50S	0412	1118	0522	1223	0614	1345
55S	0453	1036	0604	1141	0651	1309
60S	0605	0924	0720	1026	0750	1211

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | AUGUST 11 - AUGUST 13

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
11	00	319 28.6	136 00.6	S02 32.7	229 44.0	N23 40.1	187 44.2	N18 26.1	305 04.9	N03 21.9
	01	334 31.1	151 00.9	S02 33.9	244 44.7	N23 40.1	202 46.1	N18 26.0	320 07.4	N03 21.9
	02	349 33.6	166 01.2	S02 35.1	259 45.3	N23 40.2	217 48.0	N18 25.9	335 10.0	N03 21.9
	03	004 36.0	181 01.5	S02 36.3	274 46.0	N23 40.2	232 49.9	N18 25.7	350 12.5	N03 21.8
	04	019 38.5	196 01.8	S02 37.5	289 46.6	N23 40.2	247 51.8	N18 25.6	005 15.0	N03 21.8
	05	034 40.9	211 02.1	S02 38.7	304 47.3	N23 40.3	262 53.7	N18 25.4	020 17.5	N03 21.8
	06	049 43.4	226 02.4	S02 39.9	319 47.9	N23 40.3	277 55.6	N18 25.3	035 20.0	N03 21.7
	07	064 45.9	241 02.7	S02 41.1	334 48.6	N23 40.3	292 57.5	N18 25.1	050 22.6	N03 21.7
	08	079 48.3	256 03.0	S02 42.3	349 49.3	N23 40.4	307 59.4	N18 25.0	065 25.1	N03 21.7
	09	094 50.8	271 03.3	S02 43.6	004 49.9	N23 40.4	323 01.3	N18 24.9	080 27.6	N03 21.6
	10	109 53.3	286 03.7	S02 44.8	019 50.6	N23 40.4	338 03.2	N18 24.7	095 30.1	N03 21.6
	11	124 55.7	301 04.0	S02 46.0	034 51.2	N23 40.5	353 05.1	N18 24.6	110 32.6	N03 21.6
	12	139 58.2	316 04.3	S02 47.2	049 51.9	N23 40.5	008 07.0	N18 24.4	125 35.2	N03 21.5
	13	155 00.7	331 04.6	S02 48.4	064 52.5	N23 40.5	023 08.9	N18 24.3	140 37.7	N03 21.5
	14	170 03.1	346 04.9	S02 49.6	079 53.2	N23 40.6	038 10.8	N18 24.2	155 40.2	N03 21.5
	15	185 05.6	001 05.2	S02 50.8	094 53.8	N23 40.6	053 12.7	N18 24.0	170 42.7	N03 21.4
	16	200 08.0	016 05.5	S02 52.0	109 54.5	N23 40.6	068 14.6	N18 23.9	185 45.2	N03 21.4
	17	215 10.5	031 05.8	S02 53.2	124 55.2	N23 40.7	083 16.5	N18 23.7	200 47.8	N03 21.3
	18	230 13.0	046 06.1	S02 54.5	139 55.8	N23 40.7	098 18.4	N18 23.6	215 50.3	N03 21.3
	19	245 15.4	061 06.4	S02 55.7	154 56.5	N23 40.7	113 20.3	N18 23.4	230 52.8	N03 21.3
	20	260 17.9	076 06.7	S02 56.9	169 57.1	N23 40.8	128 22.2	N18 23.3	245 55.3	N03 21.2
	21	275 20.4	091 07.1	S02 58.1	184 57.8	N23 40.8	143 24.2	N18 23.2	260 57.8	N03 21.2
	22	290 22.8	106 07.4	S02 59.3	199 58.4	N23 40.8	158 26.1	N18 23.0	276 00.4	N03 21.2
	23	305 25.3	121 07.7	S03 00.5	214 59.1	N23 40.9	173 28.0	N18 22.9	291 02.9	N03 21.1
12	00	320 27.8	136 08.0	S03 01.7	229 59.7	N23 40.9	188 29.9	N18 22.7	306 05.4	N03 21.1
	01	335 30.2	151 08.3	S03 02.9	245 00.4	N23 40.9	203 31.8	N18 22.6	321 07.9	N03 21.1
	02	350 32.7	166 08.6	S03 04.1	260 01.1	N23 40.9	218 33.7	N18 22.4	336 10.5	N03 21.0
	03	005 35.2	181 09.0	S03 05.3	275 01.7	N23 41.0	233 35.6	N18 22.3	351 13.0	N03 21.0
	04	020 37.6	196 09.3	S03 06.5	290 02.4	N23 41.0	248 37.5	N18 22.2	006 15.5	N03 21.0
	05	035 40.1	211 09.6	S03 07.8	305 03.0	N23 41.0	263 39.4	N18 22.0	021 18.0	N03 20.9
	06	050 42.5	226 09.9	S03 09.0	320 03.7	N23 41.1	278 41.3	N18 21.9	036 20.6	N03 20.9
	07	065 45.0	241 10.2	S03 10.2	335 04.3	N23 41.1	293 43.2	N18 21.7	051 23.1	N03 20.8
	08	080 47.5	256 10.5	S03 11.4	350 05.0	N23 41.1	308 45.1	N18 21.6	066 25.6	N03 20.8
	09	095 49.9	271 10.9	S03 12.6	005 05.7	N23 41.1	323 47.0	N18 21.5	081 28.1	N03 20.8
	10	110 52.4	286 11.2	S03 13.8	020 06.3	N23 41.2	338 48.9	N18 21.3	096 30.7	N03 20.7
	11	125 54.9	301 11.5	S03 15.0	035 07.0	N23 41.2	353 50.8	N18 21.2	111 33.2	N03 20.7
	12	140 57.3	316 11.8	S03 16.2	050 07.6	N23 41.2	008 52.7	N18 21.0	126 35.7	N03 20.7
	13	155 59.8	331 12.2	S03 17.4	065 08.3	N23 41.2	023 54.6	N18 20.9	141 38.2	N03 20.6
	14	171 02.3	346 12.5	S03 18.6	080 09.0	N23 41.3	038 56.5	N18 20.7	156 40.7	N03 20.6
	15	186 04.7	001 12.8	S03 19.8	095 09.6	N23 41.3	053 58.5	N18 20.6	171 43.3	N03 20.5
	16	201 07.2	016 13.1	S03 21.0	110 10.3	N23 41.3	069 00.4	N18 20.5	186 45.8	N03 20.5
	17	216 09.7	031 13.4	S03 22.2	125 10.9	N23 41.3	084 02.3	N18 20.3	201 48.3	N03 20.5
	18	231 12.1	046 13.8	S03 23.4	140 11.6	N23 41.4	099 04.2	N18 20.2	216 50.9	N03 20.4
	19	246 14.6	061 14.1	S03 24.7	155 12.2	N23 41.4	114 06.1	N18 20.0	231 53.4	N03 20.4
	20	261 17.0	076 14.4	S03 25.9	170 12.9	N23 41.4	129 08.0	N18 19.9	246 55.9	N03 20.4
	21	276 19.5	091 14.8	S03 27.1	185 13.6	N23 41.4	144 09.9	N18 19.7	261 58.4	N03 20.3
	22	291 22.0	106 15.1	S03 28.3	200 14.2	N23 41.5	159 11.8	N18 19.6	277 01.0	N03 20.3
	23	306 24.4	121 15.4	S03 29.5	215 14.9	N23 41.5	174 13.7	N18 19.5	292 03.5	N03 20.2
13	00	321 26.9	136 15.7	S03 30.7	230 15.5	N23 41.5	189 15.6	N18 19.3	307 06.0	N03 20.2
	01	336 29.4	151 16.1	S03 31.9	245 16.2	N23 41.5	204 17.5	N18 19.2	322 08.5	N03 20.2
	02	351 31.8	166 16.4	S03 33.1	260 16.9	N23 41.5	219 19.4	N18 19.0	337 11.1	N03 20.1
	03	006 34.3	181 16.7	S03 34.3	275 17.5	N23 41.6	234 21.3	N18 18.9	352 13.6	N03 20.1
	04	021 36.8	196 17.1	S03 35.5	290 18.2	N23 41.6	249 23.2	N18 18.7	007 16.1	N03 20.1
	05	036 39.2	211 17.4	S03 36.7	305 18.8	N23 41.6	264 25.1	N18 18.6	022 18.6	N03 20.0
	06	051 41.7	226 17.7	S03 37.9	320 19.5	N23 41.6	279 27.0	N18 18.5	037 21.2	N03 20.0
	07	066 44.2	241 18.1	S03 39.1	335 20.2	N23 41.6	294 29.0	N18 18.3	052 23.7	N03 19.9
	08	081 46.6	256 18.4	S03 40.3	350 20.8	N23 41.7	309 30.9	N18 18.2	067 26.2	N03 19.9
	09	096 49.1	271 18.7	S03 41.5	005 21.5	N23 41.7	324 32.8	N18 18.0	082 28.8	N03 19.9
	10	111 51.5	286 19.1	S03 42.7	020 22.2	N23 41.7	339 34.7	N18 17.9	097 31.3	N03 19.8
	11	126 54.0	301 19.4	S03 43.9	035 22.8	N23 41.7	354 36.6	N18 17.7	112 33.8	N03 19.8
	12	141 56.5	316 19.7	S03 45.1	050 23.5	N23 41.7	009 38.5	N18 17.6	127 36.3	N03 19.8
	13	156 58.9	331 20.1	S03 46.3	065 24.1	N23 41.8	024 40.4	N18 17.5	142 38.9	N03 19.7
	14	172 01.4	346 20.4	S03 47.5	080 24.8	N23 41.8	039 42.3	N18 17.3	157 41.4	N03 19.7
	15	187 03.9	001 20.7	S03 48.7	095 25.5	N23 41.8	054 44.2	N18 17.2	172 43.9	N03 19.6
	16	202 06.3	016 21.1	S03 49.9	110 26.1	N23 41.8	069 46.1	N18 17.0	187 46.5	N03 19.6
	17	217 08.8	031 21.4	S03 51.1	125 26.8	N23 41.8	084 48.0	N18 16.9	202 49.0	N03 19.6
	18	232 11.3	046 21.8	S03 52.3	140 27.5	N23 41.8	099 49.9	N18 16.7	217 51.5	N03 19.5
	19	247 13.7	061 22.1	S03 53.5	155 28.1	N23 41.8	114 51.8	N18 16.6	232 54.0	N03 19.5
	20	262 16.2	076 22.4	S03 54.7	170 28.8	N23 41.9	129 53.7	N18 16.5	247 56.6	N03 19.4
	21	277 18.6	091 22.8	S03 55.9	185 29.4	N23 41.9	144 55.6	N18 16.3	262 59.1	N03 19.4
	22	292 21.1	106 23.1	S03 57.1	200 30.1	N23 41.9	159 57.6	N18 16.2	278 01.6	N03 19.4
	23	307 23.6	121 23.5	S03 58.3	215 30.8	N23 41.9	174 59.5	N18 16.0	293 04.2	N03 19.3

Venus	Mars	Jupiter	Saturn
11: v 0.3 d -1.2	11: v 0.7 d 0.0	11: v 1.9 d -0.1	11: v 2.5 d 0.0
12: v 0.3 d -1.2	12: v 0.7 d 0.0	12: v 1.9 d -0.1	12: v 2.5 d 0.0
13: v 0.3 d -1.2	13: v 0.7 d 0.0	13: v 1.9 d -0.1	13: v 2.5 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.7	S40 11.5
Achernar	335 19.0	S57 05.7
Acrux	172 59.1	S63 15.0
Adhara	255 05.1	S29 00.3
Al Na'ir	027 30.8	S46 49.7
Aldebaran	290 38.2	N16 33.8
Alioth	166 12.1	N55 49.1
Alkaid	152 51.1	N49 11.0
Alnilam	275 36.6	S01 11.0
Alphard	217 46.8	S08 46.4
Alphecca	126 02.6	N26 37.7
Alpheratz	357 33.1	N29 14.3
Altair	061 58.3	N08 56.5
Ankaa	353 05.5	S42 09.4
Antares	112 14.1	S26 29.5
Arcturus	145 46.8	N19 02.8
Atria	107 06.8	S69 04.7
Avior	234 14.8	S59 35.6
Bellatrix	278 21.6	N06 22.5
Betelgeuse	270 50.9	N07 24.8
Canopus	263 52.2	S52 42.3
Capella	280 20.2	N46 01.3
Deneb	049 24.4	N45 22.6
Denebola	182 23.8	N14 25.5
Diphda	348 45.8	S17 50.2
Dubhe	193 40.0	N61 36.6
Elnath	278 00.4	N28 37.7
Eltanin	090 41.2	N51 29.3
Enif	033 37.2	N10 00.0
Fomalhaut	015 12.7	S29 28.6
Gacrux	171 50.5	S57 15.9
Gienah	175 42.4	S17 41.4
Hadar	148 34.3	S60 30.3
Hamal	327 49.6	N23 35.3
Kaus Australi	083 30.4	S34 22.3
Kochab	137 19.9	N74 03.0
Markab	013 28.3	N15 21.0
Menkar	314 04.7	N04 11.8
Menkent	147 56.1	S36 30.2
Miaplacidus	221 39.0	S69 49.6
Mirfak	308 26.4	N49 57.2
Nunki	075 45.8	S26 15.8
Peacock	053 03.0	S56 38.9
Polaris	313 20.1	N89 22.2
Pollux	243 16.0	N27 57.7
Procyon	244 49.7	N05 09.5
Rasalhague	095 57.1	N12 32.6
Regulus	207 33.3	N11 50.3
Rigel	281 02.8	S08 10.1
Rigil Kentaur	139 38.5	S60 57.0
Sabik	102 01.1	S15 45.5
Schedar	349 29.2	N56 40.9
Shaula	096 08.3	S37 07.4
Sirius	258 25.3	S16 45.0
Spica	158 21.0	S11 18.0
Suhail	222 45.8	S43 32.3
Vega	080 32.0	N38 48.7
Zubenelgenubi	136 54.6	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	175 14.5	1455
Mars	269 10.3	0840
Jupiter	227 55.4	1125
Saturn	345 38.4	0335

2026 | AUGUST 11 - AUGUST 13

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
11	00	178 40.4	N15 19.3	202 15.2	N24 10.1	60.3	4.4	-9.5
	01	193 40.5	N15 18.6	216 38.6	N24 00.6	60.3	4.5	-9.7
	02	208 40.6	N15 17.9	231 02.2	N23 51.0	60.3	4.6	-9.8
	03	223 40.7	N15 17.1	245 25.8	N23 41.1	60.3	4.7	-10.0
	04	238 40.8	N15 16.4	259 49.6	N23 31.1	60.3	4.9	-10.1
	05	253 40.9	N15 15.6	274 13.4	N23 21.0	60.3	5.0	-10.3
	06	268 41.0	N15 14.9	288 37.4	N23 10.7	60.3	5.1	-10.5
	07	283 41.1	N15 14.1	303 01.4	N23 00.2	60.3	5.2	-10.6
	08	298 41.2	N15 13.4	317 25.6	N22 49.6	60.3	5.3	-10.8
	09	313 41.3	N15 12.7	331 49.9	N22 38.9	60.3	5.4	-10.9
	10	328 41.4	N15 11.9	346 14.3	N22 28.0	60.3	5.5	-11.0
	11	343 41.5	N15 11.2	000 38.8	N22 16.9	60.2	5.6	-11.2
	12	358 41.6	N15 10.4	015 03.4	N22 05.7	60.2	5.7	-11.3
	13	013 41.7	N15 09.7	029 28.2	N21 54.4	60.2	5.8	-11.5
	14	028 41.8	N15 08.9	043 53.0	N21 42.9	60.2	6.0	-11.6
	15	043 41.9	N15 08.2	058 18.0	N21 31.3	60.2	6.1	-11.7
	16	058 42.0	N15 07.4	072 43.0	N21 19.6	60.2	6.2	-11.9
	17	073 42.1	N15 06.7	087 08.2	N21 07.7	60.2	6.3	-12.0
	18	088 42.2	N15 06.0	101 33.5	N20 55.7	60.2	6.4	-12.1
	19	103 42.3	N15 05.2	115 58.9	N20 43.5	60.2	6.5	-12.3
	20	118 42.4	N15 04.5	130 24.4	N20 31.3	60.1	6.6	-12.4
	21	133 42.5	N15 03.7	144 50.1	N20 18.9	60.1	6.8	-12.5
	22	148 42.6	N15 03.0	159 15.8	N20 06.4	60.1	6.9	-12.6
	23	163 42.7	N15 02.2	173 41.7	N19 53.7	60.1	7.0	-12.8
12	00	178 42.9	N15 01.5	188 07.7	N19 41.0	60.1	7.1	-12.9
	01	193 43.0	N15 00.7	202 33.8	N19 28.1	60.1	7.2	-13.0
	02	208 43.1	N15 00.0	217 00.0	N19 15.1	60.1	7.3	-13.1
	03	223 43.2	N14 59.2	231 26.3	N19 02.0	60.0	7.4	-13.2
	04	238 43.3	N14 58.5	245 52.8	N18 48.8	60.0	7.6	-13.3
	05	253 43.4	N14 57.7	260 19.3	N18 35.5	60.0	7.7	-13.4
	06	268 43.5	N14 57.0	274 46.0	N18 22.1	60.0	7.8	-13.5
	07	283 43.6	N14 56.2	289 12.8	N18 08.6	60.0	7.9	-13.6
	08	298 43.7	N14 55.4	303 39.7	N17 54.9	59.9	8.0	-13.7
	09	313 43.8	N14 54.7	318 06.7	N17 41.2	59.9	8.1	-13.8
	10	328 43.9	N14 53.9	332 33.8	N17 27.4	59.9	8.2	-13.9
	11	343 44.0	N14 53.2	347 01.0	N17 13.5	59.9	8.3	-14.0
	12	358 44.1	N14 52.4	001 28.4	N16 59.5	59.9	8.5	-14.1
	13	013 44.2	N14 51.7	015 55.8	N16 45.4	59.9	8.6	-14.2
	14	028 44.3	N14 50.9	030 23.4	N16 31.2	59.8	8.7	-14.3
	15	043 44.4	N14 50.2	044 51.1	N16 16.9	59.8	8.8	-14.4
	16	058 44.5	N14 49.4	059 18.8	N16 02.5	59.8	8.9	-14.4
	17	073 44.6	N14 48.7	073 46.7	N15 48.1	59.8	9.0	-14.5
	18	088 44.8	N14 47.9	088 14.7	N15 33.6	59.7	9.1	-14.6
	19	103 44.9	N14 47.1	102 42.8	N15 19.0	59.7	9.2	-14.7
	20	118 45.0	N14 46.4	117 11.0	N15 04.3	59.7	9.3	-14.8
	21	133 45.1	N14 45.6	131 39.3	N14 49.5	59.7	9.4	-14.8
	22	148 45.2	N14 44.9	146 07.8	N14 34.7	59.7	9.5	-14.9
	23	163 45.3	N14 44.1	160 36.3	N14 19.8	59.6	9.6	-15.0
13	00	178 45.4	N14 43.3	175 04.9	N14 04.9	59.6	9.7	-15.0
	01	193 45.5	N14 42.6	189 33.6	N13 49.8	59.6	9.8	-15.1
	02	208 45.6	N14 41.8	204 02.4	N13 34.7	59.6	9.9	-15.2
	03	223 45.7	N14 41.1	218 31.4	N13 19.6	59.5	10.0	-15.2
	04	238 45.8	N14 40.3	233 00.4	N13 04.4	59.5	10.1	-15.3
	05	253 46.0	N14 39.5	247 29.5	N12 49.1	59.5	10.2	-15.3
	06	268 46.1	N14 38.8	261 58.7	N12 33.8	59.5	10.3	-15.4
	07	283 46.2	N14 38.0	276 28.0	N12 18.4	59.4	10.4	-15.4
	08	298 46.3	N14 37.3	290 57.4	N12 02.9	59.4	10.5	-15.5
	09	313 46.4	N14 36.5	305 26.9	N11 47.4	59.4	10.6	-15.5
	10	328 46.5	N14 35.7	319 56.5	N11 31.9	59.4	10.7	-15.6
	11	343 46.6	N14 35.0	334 26.2	N11 16.3	59.3	10.8	-15.6
	12	358 46.7	N14 34.2	348 56.0	N11 00.7	59.3	10.9	-15.7
	13	013 46.8	N14 33.4	003 25.9	N10 45.0	59.3	11.0	-15.7
	14	028 47.0	N14 32.7	017 55.8	N10 29.3	59.2	11.0	-15.8
	15	043 47.1	N14 31.9	032 25.8	N10 13.5	59.2	11.1	-15.8
	16	058 47.2	N14 31.1	046 56.0	N09 57.8	59.2	11.2	-15.8
	17	073 47.3	N14 30.4	061 26.2	N09 41.9	59.2	11.3	-15.9
	18	088 47.4	N14 29.6	075 56.5	N09 26.1	59.1	11.4	-15.9
	19	103 47.5	N14 28.8	090 26.8	N09 10.2	59.1	11.5	-15.9
	20	118 47.6	N14 28.1	104 57.3	N08 54.2	59.1	11.5	-16.0
	21	133 47.7	N14 27.3	119 27.8	N08 38.3	59.0	11.6	-16.0
	22	148 47.9	N14 26.5	133 58.4	N08 22.3	59.0	11.7	-16.0
	23	163 48.0	N14 25.8	148 29.1	N08 06.3	59.0	11.8	-16.0

Day 11 noon Sun: v 0.1 d -0.7 SD 15.8 | Moon SD 16.4

Day 12 noon Sun: v 0.1 d -0.8 SD 15.8 | Moon SD 16.3

Day 13 noon Sun: v 0.1 d -0.8 SD 15.8 | Moon SD 16.2

SUN: AUGUST 12 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	0202	2202	--	--
70N	--	--	0240	2125	--	--
68N	--	0116	0307	2100	2245	--
66N	--	0204	0327	2041	2201	--
64N	--	0234	0343	2025	2132	--
62N	0108	0256	0356	2012	2111	2254
60N	0151	0314	0407	2001	2054	2214
58N	0219	0328	0417	1952	2040	2148
56N	0239	0340	0425	1944	2028	2128
54N	0256	0351	0432	1936	2018	2112
52N	0310	0400	0439	1930	2008	2058
50N	0322	0409	0445	1924	2000	2047
45N	0346	0426	0458	1911	1943	2023
40N	0404	0439	0509	1901	1930	2006
35N	0418	0451	0518	1852	1919	1951
30N	0430	0500	0526	1844	1909	1939
25N	0440	0509	0533	1837	1901	1929
20N	0449	0516	0539	1831	1854	1921
15N	0457	0523	0545	1825	1847	1913
10N	0503	0529	0551	1819	1841	1906
05N	0510	0535	0556	1814	1835	1900
00N	0515	0540	0602	1808	1830	1855
05S	0521	0546	0607	1803	1825	1849
10S	0526	0551	0612	1758	1820	1845
15S	0530	0556	0618	1752	1814	1840
20S	0535	0601	0624	1747	1809	1836
25S	0539	0606	0630	1741	1804	1831
30S	0543	0612	0637	1734	1759	1827
35S	0548	0618	0644	1727	1753	1823
40S	0552	0624	0652	1718	1747	1819
45S	0557	0631	0702	1709	1739	1814
50S	0601	0640	0714	1657	1731	1810
55S	0606	0649	0728	1643	1721	1804
60S	0612	0702	0747	1624	1709	1759

MOON: RISE / SET | UTC HHMM

Lat	Day 11		Day 12		Day 13	
72N	--	--	--	2145	0324	2052
70N	--	2249	0026	2117	0351	2039
68N	--	2140	0133	2055	0411	2029
66N	--	2103	0209	2038	0426	2021
64N	0008	2036	0234	2023	0439	2014
62N	0048	2015	0254	2011	0449	2007
60N	0115	1958	0310	2001	0458	2002
58N	0136	1944	0323	1952	0506	1957
56N	0153	1931	0335	1944	0513	1953
54N	0208	1921	0345	1937	0519	1949
52N	0221	1911	0354	1930	0525	1945
50N	0232	1902	0402	1925	0530	1942
45N	0255	1844	0419	1912	0540	1935
40N	0314	1828	0433	1901	0549	1929
35N	0329	1815	0444	1852	0557	1924
30N	0342	1804	0454	1844	0603	1919
25N	0354	1754	0504	1837	0609	1915
20N	0405	1745	0512	1830	0615	1911
15N	0415	1736	0520	1824	0620	1908
10N	0425	1727	0527	1818	0625	1904
05N	0434	1719	0534	1812	0629	1901
00N	0443	1711	0541	1807	0634	1858
05S	0452	1703	0548	1801	0638	1854
10S	0501	1655	0555	1755	0643	1851
15S	0511	1646	0602	1749	0648	1847
20S	0521	1637	0610	1742	0653	1843
25S	0531	1628	0618	1735	0658	1839
30S	0543	1617	0627	1728	0704	1835
35S	0556	1605	0636	1719	0710	1830
40S	0611	1551	0648	1710	0717	1825
45S	0629	1535	0701	1658	0726	1818
50S	0651	1514	0716	1644	0736	1810
55S	0719	1447	0736	1626	0748	1800
60S	0800	1409	0803	1602	0804	1747

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | AUGUST 14 - AUGUST 16

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
14	00	322 26.0	136 23.8	S03 59.5	230 31.4	N23 41.9	190 01.4	N18 15.9	308 06.7	N03 19.3
	01	337 28.5	151 24.2	S04 00.7	245 32.1	N23 41.9	205 03.3	N18 15.7	323 09.2	N03 19.3
	02	352 31.0	166 24.5	S04 01.9	260 32.8	N23 41.9	220 05.2	N18 15.6	338 11.8	N03 19.2
	03	007 33.4	181 24.9	S04 03.1	275 33.4	N23 42.0	235 07.1	N18 15.5	353 14.3	N03 19.2
	04	022 35.9	196 25.2	S04 04.3	290 34.1	N23 42.0	250 09.0	N18 15.3	008 16.8	N03 19.1
	05	037 38.4	211 25.5	S04 05.5	305 34.7	N23 42.0	265 10.9	N18 15.2	023 19.3	N03 19.1
	06	052 40.8	226 25.9	S04 06.7	320 35.4	N23 42.0	280 12.8	N18 15.0	038 21.9	N03 19.1
	07	067 43.3	241 26.2	S04 07.9	335 36.1	N23 42.0	295 14.7	N18 14.9	053 24.4	N03 19.0
	08	082 45.8	256 26.6	S04 09.1	350 36.7	N23 42.0	310 16.6	N18 14.7	068 26.9	N03 19.0
	09	097 48.2	271 26.9	S04 10.3	005 37.4	N23 42.0	325 18.5	N18 14.6	083 29.5	N03 18.9
	10	112 50.7	286 27.3	S04 11.5	020 38.1	N23 42.0	340 20.4	N18 14.5	098 32.0	N03 18.9
	11	127 53.1	301 27.6	S04 12.7	035 38.7	N23 42.0	355 22.4	N18 14.3	113 34.5	N03 18.9
	12	142 55.6	316 28.0	S04 13.9	050 39.4	N23 42.1	010 24.3	N18 14.2	128 37.1	N03 18.8
	13	157 58.1	331 28.3	S04 15.1	065 40.1	N23 42.1	025 26.2	N18 14.0	143 39.6	N03 18.8
	14	173 00.5	346 28.7	S04 16.3	080 40.7	N23 42.1	040 28.1	N18 13.9	158 42.1	N03 18.7
	15	188 03.0	001 29.0	S04 17.5	095 41.4	N23 42.1	055 30.0	N18 13.7	173 44.7	N03 18.7
	16	203 05.5	016 29.4	S04 18.7	110 42.1	N23 42.1	070 31.9	N18 13.6	188 47.2	N03 18.7
	17	218 07.9	031 29.8	S04 19.9	125 42.7	N23 42.1	085 33.8	N18 13.5	203 49.7	N03 18.6
	18	233 10.4	046 30.1	S04 21.1	140 43.4	N23 42.1	100 35.7	N18 13.3	218 52.3	N03 18.6
	19	248 12.9	061 30.5	S04 22.3	155 44.1	N23 42.1	115 37.6	N18 13.2	233 54.8	N03 18.5
	20	263 15.3	076 30.8	S04 23.5	170 44.7	N23 42.1	130 39.5	N18 13.0	248 57.3	N03 18.5
	21	278 17.8	091 31.2	S04 24.7	185 45.4	N23 42.1	145 41.4	N18 12.9	263 59.9	N03 18.5
	22	293 20.2	106 31.5	S04 25.9	200 46.1	N23 42.1	160 43.3	N18 12.7	279 02.4	N03 18.4
	23	308 22.7	121 31.9	S04 27.1	215 46.7	N23 42.1	175 45.3	N18 12.6	294 04.9	N03 18.4
15	00	323 25.2	136 32.3	S04 28.3	230 47.4	N23 42.1	190 47.2	N18 12.5	309 07.5	N03 18.3
	01	338 27.6	151 32.6	S04 29.5	245 48.1	N23 42.1	205 49.1	N18 12.3	324 10.0	N03 18.3
	02	353 30.1	166 33.0	S04 30.7	260 48.7	N23 42.2	220 51.0	N18 12.2	339 12.5	N03 18.3
	03	008 32.6	181 33.3	S04 31.9	275 49.4	N23 42.2	235 52.9	N18 12.0	354 15.1	N03 18.2
	04	023 35.0	196 33.7	S04 33.1	290 50.1	N23 42.2	250 54.8	N18 11.9	009 17.6	N03 18.2
	05	038 37.5	211 34.1	S04 34.3	305 50.7	N23 42.2	265 56.7	N18 11.7	024 20.1	N03 18.1
	06	053 40.0	226 34.4	S04 35.5	320 51.4	N23 42.2	280 58.6	N18 11.6	039 22.7	N03 18.1
	07	068 42.4	241 34.8	S04 36.7	335 52.1	N23 42.2	296 00.5	N18 11.5	054 25.2	N03 18.0
	08	083 44.9	256 35.1	S04 37.9	350 52.7	N23 42.2	311 02.4	N18 11.3	069 27.7	N03 18.0
	09	098 47.4	271 35.5	S04 39.0	005 53.4	N23 42.2	326 04.3	N18 11.2	084 30.3	N03 18.0
	10	113 49.8	286 35.9	S04 40.2	020 54.1	N23 42.2	341 06.3	N18 11.0	099 32.8	N03 17.9
	11	128 52.3	301 36.2	S04 41.4	035 54.7	N23 42.2	356 08.2	N18 10.9	114 35.3	N03 17.9
	12	143 54.7	316 36.6	S04 42.6	050 55.4	N23 42.2	011 10.1	N18 10.7	129 37.9	N03 17.8
	13	158 57.2	331 37.0	S04 43.8	065 56.1	N23 42.2	026 12.0	N18 10.6	144 40.4	N03 17.8
	14	173 59.7	346 37.3	S04 45.0	080 56.8	N23 42.2	041 13.9	N18 10.4	159 43.0	N03 17.8
	15	189 02.1	001 37.7	S04 46.2	095 57.4	N23 42.2	056 15.8	N18 10.3	174 45.5	N03 17.7
	16	204 04.6	016 38.1	S04 47.4	110 58.1	N23 42.2	071 17.7	N18 10.2	189 48.0	N03 17.7
	17	219 07.1	031 38.5	S04 48.6	125 58.8	N23 42.2	086 19.6	N18 10.0	204 50.6	N03 17.6
	18	234 09.5	046 38.8	S04 49.8	140 59.4	N23 42.2	101 21.5	N18 09.9	219 53.1	N03 17.6
	19	249 12.0	061 39.2	S04 51.0	156 00.1	N23 42.2	116 23.4	N18 09.7	234 55.6	N03 17.6
	20	264 14.5	076 39.6	S04 52.2	171 00.8	N23 42.2	131 25.3	N18 09.6	249 58.2	N03 17.5
	21	279 16.9	091 39.9	S04 53.4	186 01.4	N23 42.2	146 27.3	N18 09.4	265 00.7	N03 17.5
	22	294 19.4	106 40.3	S04 54.5	201 02.1	N23 42.2	161 29.2	N18 09.3	280 03.2	N03 17.4
	23	309 21.8	121 40.7	S04 55.7	216 02.8	N23 42.2	176 31.1	N18 09.2	295 05.8	N03 17.4
16	00	324 24.3	136 41.1	S04 56.9	231 03.5	N23 42.2	191 33.0	N18 09.0	310 08.3	N03 17.3
	01	339 26.8	151 41.4	S04 58.1	246 04.1	N23 42.2	206 34.9	N18 08.9	325 10.9	N03 17.3
	02	354 29.2	166 41.8	S04 59.3	261 04.8	N23 42.2	221 36.8	N18 08.7	340 13.4	N03 17.3
	03	009 31.7	181 42.2	S05 00.5	276 05.5	N23 42.2	236 38.7	N18 08.6	355 15.9	N03 17.2
	04	024 34.2	196 42.6	S05 01.7	291 06.1	N23 42.2	251 40.6	N18 08.4	010 18.5	N03 17.2
	05	039 36.6	211 42.9	S05 02.9	306 06.8	N23 42.2	266 42.5	N18 08.3	025 21.0	N03 17.1
	06	054 39.1	226 43.3	S05 04.1	321 07.5	N23 42.2	281 44.4	N18 08.1	040 23.6	N03 17.1
	07	069 41.6	241 43.7	S05 05.3	336 08.2	N23 42.1	296 46.4	N18 08.0	055 26.1	N03 17.0
	08	084 44.0	256 44.1	S05 06.4	351 08.8	N23 42.1	311 48.3	N18 07.9	070 28.6	N03 17.0
	09	099 46.5	271 44.5	S05 07.6	006 09.5	N23 42.1	326 50.2	N18 07.7	085 31.2	N03 17.0
	10	114 49.0	286 44.8	S05 08.8	021 10.2	N23 42.1	341 52.1	N18 07.6	100 33.7	N03 16.9
	11	129 51.4	301 45.2	S05 10.0	036 10.8	N23 42.1	356 54.0	N18 07.4	115 36.2	N03 16.9
	12	144 53.9	316 45.6	S05 11.2	051 11.5	N23 42.1	011 55.9	N18 07.3	130 38.8	N03 16.8
	13	159 56.3	331 46.0	S05 12.4	066 12.2	N23 42.1	026 57.8	N18 07.1	145 41.3	N03 16.8
	14	174 58.8	346 46.4	S05 13.6	081 12.9	N23 42.1	041 59.7	N18 07.0	160 43.9	N03 16.8
	15	190 01.3	001 46.7	S05 14.8	096 13.5	N23 42.1	057 01.6	N18 06.9	175 46.4	N03 16.7
	16	205 03.7	016 47.1	S05 15.9	111 14.2	N23 42.1	072 03.5	N18 06.7	190 48.9	N03 16.7
	17	220 06.2	031 47.5	S05 17.1	126 14.9	N23 42.1	087 05.5	N18 06.6	205 51.5	N03 16.6
	18	235 08.7	046 47.9	S05 18.3	141 15.6	N23 42.1	102 07.4	N18 06.4	220 54.0	N03 16.6
	19	250 11.1	061 48.3	S05 19.5	156 16.2	N23 42.1	117 09.3	N18 06.3	235 56.6	N03 16.5
	20	265 13.6	076 48.7	S05 20.7	171 16.9	N23 42.1	132 11.2	N18 06.1	250 59.1	N03 16.5
	21	280 16.1	091 49.1	S05 21.9	186 17.6	N23 42.0	147 13.1	N18 06.0	266 01.6	N03 16.5
	22	295 18.5	106 49.5	S05 23.1	201 18.3	N23 42.0	162 15.0	N18 05.8	281 04.2	N03 16.4
	23	310 21.0	121 49.8	S05 24.2	216 18.9	N23 42.0	177 16.9	N18 05.7	296 06.7	N03 16.4

Venus	Mars	Jupiter	Saturn
14: v 0.4 d -1.2	14: v 0.7 d 0.0	14: v 1.9 d -0.1	14: v 2.5 d 0.0
15: v 0.4 d -1.2	15: v 0.7 d 0.0	15: v 1.9 d -0.1	15: v 2.5 d 0.0
16: v 0.4 d -1.2	16: v 0.7 d 0.0	16: v 1.9 d -0.1	16: v 2.5 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.7	S40 11.5
Achernar	335 18.9	S57 05.7
Acrux	172 59.1	S63 15.0
Adhara	255 05.1	S29 00.3
Al Na'ir	027 30.8	S46 49.7
Aldebaran	290 38.2	N16 33.8
Alioth	166 12.1	N55 49.1
Alkaid	152 51.1	N49 11.0
Alnilam	275 36.5	S01 11.0
Alphard	217 46.8	S08 46.4
Alphecca	126 02.6	N26 37.7
Alpheratz	357 33.1	N29 14.3
Altair	061 58.3	N08 56.5
Ankaa	353 05.5	S42 09.4
Antares	112 14.1	S26 29.5
Arcturus	145 46.8	N19 02.8
Atria	107 06.8	S69 04.7
Avior	234 14.8	S59 35.5
Bellatrix	278 21.6	N06 22.5
Betelgeuse	270 50.8	N07 24.8
Canopus	263 52.2	S52 42.3
Capella	280 20.1	N46 01.3
Deneb	049 24.4	N45 22.6
Denebola	182 23.8	N14 25.5
Diphda	348 45.7	S17 50.2
Dubhe	193 40.0	N61 36.6
Elnath	278 00.4	N28 37.7
Eltanin	090 41.2	N51 29.3
Enif	033 37.2	N10 00.0
Fomalhaut	015 12.7	S29 28.7
Gacrux	171 50.6	S57 15.9
Gienah	175 42.5	S17 41.4
Hadar	148 34.3	S60 30.3
Hamal	327 49.6	N23 35.3
Kaus Australi	083 30.5	S34 22.3
Kochab	137 20.0	N74 03.0
Markab	013 28.3	N15 21.0
Menkar	314 04.7	N04 11.8
Menkent	147 56.2	S36 30.2
Miaplacidus	221 39.0	S69 49.5
Mirfak	308 26.3	N49 57.2
Nunki	075 45.8	S26 15.8
Peacock	053 03.0	S56 38.9
Polaris	313 18.7	N89 22.3
Pollux	243 16.0	N27 57.7
Procyon	244 49.7	N05 09.5
Rasalhague	095 57.1	N12 32.6
Regulus	207 33.3	N11 50.3
Rigel	281 02.7	S08 10.1
Rigil Kentaur	139 38.6	S60 57.0
Sabik	102 01.1	S15 45.5
Schedar	349 29.1	N56 40.9
Shaula	096 08.3	S37 07.4
Sirius	258 25.3	S16 45.0
Spica	158 21.0	S11 18.0
Suhail	222 45.8	S43 32.3
Vega	080 32.0	N38 48.7
Zubenelgenubi	136 54.6	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	172 41.9	1453
Mars	267 00.7	0836
Jupiter	227 15.3	1115
Saturn	345 43.1	0323

2026 | AUGUST 14 - AUGUST 16

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
14	00	178 48.1	N14 25.0	162 59.9	N07 50.3	58.9	11.8	-16.1
	01	193 48.2	N14 24.2	177 30.7	N07 34.2	58.9	11.9	-16.1
	02	208 48.3	N14 23.5	192 01.7	N07 18.2	58.9	12.0	-16.1
	03	223 48.4	N14 22.7	206 32.6	N07 02.1	58.9	12.1	-16.1
	04	238 48.6	N14 21.9	221 03.7	N06 46.0	58.8	12.1	-16.1
	05	253 48.7	N14 21.1	235 34.8	N06 29.8	58.8	12.2	-16.1
	06	268 48.8	N14 20.4	250 06.0	N06 13.7	58.8	12.3	-16.2
	07	283 48.9	N14 19.6	264 37.3	N05 57.5	58.7	12.3	-16.2
	08	298 49.0	N14 18.8	279 08.6	N05 41.4	58.7	12.4	-16.2
	09	313 49.1	N14 18.1	293 40.0	N05 25.2	58.7	12.5	-16.2
	10	328 49.3	N14 17.3	308 11.5	N05 09.0	58.6	12.5	-16.2
	11	343 49.4	N14 16.5	322 43.0	N04 52.8	58.6	12.6	-16.2
	12	358 49.5	N14 15.7	337 14.6	N04 36.7	58.6	12.6	-16.2
	13	013 49.6	N14 15.0	351 46.2	N04 20.5	58.5	12.7	-16.2
	14	028 49.7	N14 14.2	006 17.9	N04 04.3	58.5	12.8	-16.2
	15	043 49.8	N14 13.4	020 49.7	N03 48.1	58.5	12.8	-16.2
	16	058 50.0	N14 12.6	035 21.5	N03 31.9	58.4	12.9	-16.2
	17	073 50.1	N14 11.9	049 53.4	N03 15.7	58.4	12.9	-16.2
	18	088 50.2	N14 11.1	064 25.3	N02 59.5	58.4	13.0	-16.2
	19	103 50.3	N14 10.3	078 57.3	N02 43.3	58.3	13.0	-16.2
	20	118 50.4	N14 09.5	093 29.3	N02 27.1	58.3	13.1	-16.2
	21	133 50.6	N14 08.8	108 01.4	N02 11.0	58.3	13.1	-16.2
	22	148 50.7	N14 08.0	122 33.5	N01 54.8	58.2	13.2	-16.1
	23	163 50.8	N14 07.2	137 05.7	N01 38.7	58.2	13.2	-16.1
15	00	178 50.9	N14 06.4	151 37.9	N01 22.5	58.2	13.3	-16.1
	01	193 51.0	N14 05.6	166 10.1	N01 06.4	58.1	13.3	-16.1
	02	208 51.2	N14 04.9	180 42.4	N00 50.3	58.1	13.3	-16.1
	03	223 51.3	N14 04.1	195 14.8	N00 34.2	58.1	13.4	-16.1
	04	238 51.4	N14 03.3	209 47.2	N00 18.2	58.0	13.4	-16.1
	05	253 51.5	N14 02.5	224 19.6	N00 02.1	58.0	13.5	-16.0
	06	268 51.6	N14 01.7	238 52.1	S00 13.9	58.0	13.5	-16.0
	07	283 51.8	N14 01.0	253 24.6	S00 29.9	57.9	13.5	-16.0
	08	298 51.9	N14 00.2	267 57.1	S00 45.9	57.9	13.6	-16.0
	09	313 52.0	N13 59.4	282 29.7	S01 01.9	57.8	13.6	-15.9
	10	328 52.1	N13 58.6	297 02.3	S01 17.8	57.8	13.6	-15.9
	11	343 52.3	N13 57.8	311 34.9	S01 33.7	57.8	13.7	-15.9
	12	358 52.4	N13 57.1	326 07.6	S01 49.6	57.7	13.7	-15.9
	13	013 52.5	N13 56.3	340 40.3	S02 05.5	57.7	13.7	-15.8
	14	028 52.6	N13 55.5	355 13.0	S02 21.3	57.7	13.8	-15.8
	15	043 52.8	N13 54.7	009 45.8	S02 37.1	57.6	13.8	-15.8
	16	058 52.9	N13 53.9	024 18.5	S02 52.9	57.6	13.8	-15.7
	17	073 53.0	N13 53.1	038 51.3	S03 08.6	57.6	13.8	-15.7
	18	088 53.1	N13 52.3	053 24.2	S03 24.3	57.5	13.8	-15.7
	19	103 53.3	N13 51.6	067 57.0	S03 39.9	57.5	13.9	-15.6
	20	118 53.4	N13 50.8	082 29.9	S03 55.6	57.5	13.9	-15.6
	21	133 53.5	N13 50.0	097 02.8	S04 11.2	57.4	13.9	-15.5
	22	148 53.6	N13 49.2	111 35.7	S04 26.7	57.4	13.9	-15.5
	23	163 53.8	N13 48.4	126 08.6	S04 42.2	57.4	13.9	-15.5
16	00	178 53.9	N13 47.6	140 41.6	S04 57.7	57.3	14.0	-15.4
	01	193 54.0	N13 46.8	155 14.5	S05 13.1	57.3	14.0	-15.4
	02	208 54.1	N13 46.0	169 47.5	S05 28.5	57.3	14.0	-15.3
	03	223 54.3	N13 45.3	184 20.5	S05 43.8	57.2	14.0	-15.3
	04	238 54.4	N13 44.5	198 53.5	S05 59.1	57.2	14.0	-15.2
	05	253 54.5	N13 43.7	213 26.5	S06 14.4	57.1	14.0	-15.2
	06	268 54.6	N13 42.9	227 59.5	S06 29.6	57.1	14.0	-15.2
	07	283 54.8	N13 42.1	242 32.5	S06 44.7	57.1	14.0	-15.1
	08	298 54.9	N13 41.3	257 05.6	S06 59.8	57.0	14.0	-15.1
	09	313 55.0	N13 40.5	271 38.6	S07 14.9	57.0	14.0	-15.0
	10	328 55.2	N13 39.7	286 11.7	S07 29.9	57.0	14.1	-15.0
	11	343 55.3	N13 38.9	300 44.7	S07 44.8	56.9	14.1	-14.9
	12	358 55.4	N13 38.1	315 17.8	S07 59.7	56.9	14.1	-14.8
	13	013 55.5	N13 37.3	329 50.8	S08 14.6	56.9	14.1	-14.8
	14	028 55.7	N13 36.6	344 23.9	S08 29.3	56.8	14.1	-14.7
	15	043 55.8	N13 35.8	358 56.9	S08 44.1	56.8	14.1	-14.7
	16	058 55.9	N13 35.0	013 30.0	S08 58.8	56.8	14.1	-14.6
	17	073 56.1	N13 34.2	028 03.1	S09 13.4	56.7	14.1	-14.6
	18	088 56.2	N13 33.4	042 36.1	S09 27.9	56.7	14.0	-14.5
	19	103 56.3	N13 32.6	057 09.2	S09 42.4	56.7	14.0	-14.4
	20	118 56.5	N13 31.8	071 42.2	S09 56.9	56.6	14.0	-14.4
	21	133 56.6	N13 31.0	086 15.2	S10 11.3	56.6	14.0	-14.3
	22	148 56.7	N13 30.2	100 48.3	S10 25.6	56.6	14.0	-14.3
	23	163 56.9	N13 29.4	115 21.3	S10 39.8	56.5	14.0	-14.2

Day 14 noon Sun: v 0.1 d -0.8 SD 15.8 | Moon SD 16.0

Day 15 noon Sun: v 0.1 d -0.8 SD 15.8 | Moon SD 15.7

Day 16 noon Sun: v 0.1 d -0.8 SD 15.8 | Moon SD 15.5

SUN: AUGUST 15 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	0224	2139	--	--
70N	--	--	0256	2109	2331	--
68N	--	0143	0319	2046	2219	--
66N	--	0221	0337	2029	2144	--
64N	--	0247	0352	2015	2119	2335
62N	0132	0307	0404	2003	2100	2231
60N	0206	0323	0414	1953	2044	2159
58N	0230	0336	0423	1944	2031	2136
56N	0249	0347	0431	1937	2020	2118
54N	0304	0357	0438	1930	2010	2103
52N	0317	0406	0444	1924	2002	2051
50N	0328	0413	0450	1918	1954	2040
45N	0350	0430	0502	1907	1938	2018
40N	0407	0442	0512	1857	1926	2001
35N	0421	0453	0520	1848	1915	1947
30N	0432	0502	0527	1841	1906	1936
25N	0442	0510	0534	1835	1859	1927
20N	0450	0517	0540	1829	1852	1919
15N	0457	0523	0546	1823	1845	1911
10N	0504	0529	0551	1818	1840	1905
05N	0510	0535	0556	1813	1834	1859
00N	0515	0540	0601	1808	1829	1854
05S	0520	0545	0606	1803	1824	1849
10S	0525	0550	0611	1758	1820	1845
15S	0529	0554	0616	1753	1815	1840
20S	0533	0559	0622	1747	1810	1836
25S	0537	0604	0628	1742	1805	1832
30S	0541	0609	0634	1736	1800	1829
35S	0545	0615	0641	1729	1755	1825
40S	0548	0620	0648	1721	1749	1821
45S	0552	0627	0657	1712	1743	1817
50S	0556	0634	0708	1701	1735	1813
55S	0601	0643	0722	1648	1726	1809
60S	0606	0655	0739	1631	1715	1805

MOON: RISE / SET | UTC HHMM

Lat	Day 14		Day 15		Day 16	
72N	0603	2014	0821	1940	1036	1902
70N	0613	2011	0820	1945	1023	1917
68N	0620	2009	0819	1950	1014	1929
66N	0626	2007	0818	1953	1006	1939
64N	0631	2005	0817	1956	0959	1948
62N	0636	2003	0816	1959	0953	1955
60N	0640	2002	0816	2002	0948	2001
58N	0643	2001	0815	2004	0944	2007
56N	0646	2000	0815	2006	0940	2012
54N	0649	1959	0814	2007	0937	2017
52N	0651	1958	0814	2009	0933	2021
50N	0653	1957	0813	2011	0931	2024
45N	0658	1955	0813	2014	0925	2033
40N	0702	1953	0812	2016	0919	2039
35N	0706	1952	0811	2019	0915	2045
30N	0709	1951	0811	2021	0911	2050
25N	0711	1950	0811	2023	0908	2055
20N	0714	1949	0810	2024	0905	2059
15N	0716	1948	0810	2026	0902	2104
10N	0719	1947	0810	2027	0859	2107
05N	0721	1946	0809	2029	0856	2111
00N	0723	1945	0809	2030	0854	2115
05S	0725	1944	0809	2032	0851	2119
10S	0727	1943	0808	2033	0848	2122
15S	0729	1942	0808	2035	0846	2126
20S	0732	1941	0808	2037	0843	2131
25S	0734	1940	0808	2038	0840	2135
30S	0737	1939	0807	2040	0837	2140
35S	0740	1938	0807	2042	0833	2145
40S	0743	1936	0806	2045	0829	2151
45S	0747	1934	0806	2047	0824	2158
50S	0752	1932	0805	2051	0819	2207
55S	0757	1929	0805	2055	0812	2218
60S	0804	1926	0804	2100	0804	2232

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | AUGUST 17 - AUGUST 19

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
17	00	325 23.5	136 50.2	S05 25.4	231 19.6	N23 42.0	192 18.8	N18 05.6	311 09.3	N03 16.3
	01	340 25.9	151 50.6	S05 26.6	246 20.3	N23 42.0	207 20.7	N18 05.4	326 11.8	N03 16.3
	02	355 28.4	166 51.0	S05 27.8	261 20.9	N23 42.0	222 22.7	N18 05.3	341 14.4	N03 16.2
	03	010 30.8	181 51.4	S05 29.0	276 21.6	N23 42.0	237 24.6	N18 05.1	356 16.9	N03 16.2
	04	025 33.3	196 51.8	S05 30.2	291 22.3	N23 42.0	252 26.5	N18 05.0	011 19.4	N03 16.1
	05	040 35.8	211 52.2	S05 31.3	306 23.0	N23 42.0	267 28.4	N18 04.8	026 22.0	N03 16.1
	06	055 38.2	226 52.6	S05 32.5	321 23.7	N23 41.9	282 30.3	N18 04.7	041 24.5	N03 16.1
	07	070 40.7	241 53.0	S05 33.7	336 24.3	N23 41.9	297 32.2	N18 04.5	056 27.1	N03 16.0
	08	085 43.2	256 53.4	S05 34.9	351 25.0	N23 41.9	312 34.1	N18 04.4	071 29.6	N03 16.0
	09	100 45.6	271 53.8	S05 36.1	006 25.7	N23 41.9	327 36.0	N18 04.3	086 32.1	N03 15.9
	10	115 48.1	286 54.2	S05 37.3	021 26.4	N23 41.9	342 37.9	N18 04.1	101 34.7	N03 15.9
	11	130 50.6	301 54.6	S05 38.4	036 27.0	N23 41.9	357 39.9	N18 04.0	116 37.2	N03 15.8
	12	145 53.0	316 55.0	S05 39.6	051 27.7	N23 41.9	012 41.8	N18 03.8	131 39.8	N03 15.8
	13	160 55.5	331 55.4	S05 40.8	066 28.4	N23 41.9	027 43.7	N18 03.7	146 42.3	N03 15.8
	14	175 57.9	346 55.8	S05 42.0	081 29.1	N23 41.8	042 45.6	N18 03.5	161 44.9	N03 15.7
	15	191 00.4	001 56.2	S05 43.2	096 29.7	N23 41.8	057 47.5	N18 03.4	176 47.4	N03 15.7
	16	206 02.9	016 56.6	S05 44.3	111 30.4	N23 41.8	072 49.4	N18 03.3	191 50.0	N03 15.6
	17	221 05.3	031 57.0	S05 45.5	126 31.1	N23 41.8	087 51.3	N18 03.1	206 52.5	N03 15.6
	18	236 07.8	046 57.4	S05 46.7	141 31.8	N23 41.8	102 53.2	N18 03.0	221 55.0	N03 15.5
	19	251 10.3	061 57.8	S05 47.9	156 32.4	N23 41.8	117 55.2	N18 02.8	236 57.6	N03 15.5
	20	266 12.7	076 58.2	S05 49.1	171 33.1	N23 41.7	132 57.1	N18 02.7	252 00.1	N03 15.4
	21	281 15.2	091 58.6	S05 50.2	186 33.8	N23 41.7	147 59.0	N18 02.5	267 02.7	N03 15.4
	22	296 17.7	106 59.0	S05 51.4	201 34.5	N23 41.7	163 00.9	N18 02.4	282 05.2	N03 15.4
	23	311 20.1	121 59.4	S05 52.6	216 35.2	N23 41.7	178 02.8	N18 02.2	297 07.8	N03 15.3
18	00	326 22.6	136 59.8	S05 53.8	231 35.8	N23 41.7	193 04.7	N18 02.1	312 10.3	N03 15.3
	01	341 25.1	152 00.2	S05 55.0	246 36.5	N23 41.6	208 06.6	N18 02.0	327 12.9	N03 15.2
	02	356 27.5	167 00.6	S05 56.1	261 37.2	N23 41.6	223 08.5	N18 01.8	342 15.4	N03 15.2
	03	011 30.0	182 01.0	S05 57.3	276 37.9	N23 41.6	238 10.5	N18 01.7	357 17.9	N03 15.1
	04	026 32.4	197 01.4	S05 58.5	291 38.6	N23 41.6	253 12.4	N18 01.5	012 20.5	N03 15.1
	05	041 34.9	212 01.8	S05 59.7	306 39.2	N23 41.6	268 14.3	N18 01.4	027 23.0	N03 15.0
	06	056 37.4	227 02.2	S06 00.8	321 39.9	N23 41.5	283 16.2	N18 01.2	042 25.6	N03 15.0
	07	071 39.8	242 02.6	S06 02.0	336 40.6	N23 41.5	298 18.1	N18 01.1	057 28.1	N03 14.9
	08	086 42.3	257 03.1	S06 03.2	351 41.3	N23 41.5	313 20.0	N18 00.9	072 30.7	N03 14.9
	09	101 44.8	272 03.5	S06 04.4	006 42.0	N23 41.5	328 21.9	N18 00.8	087 33.2	N03 14.9
	10	116 47.2	287 03.9	S06 05.5	021 42.6	N23 41.5	343 23.8	N18 00.7	102 35.8	N03 14.8
	11	131 49.7	302 04.3	S06 06.7	036 43.3	N23 41.4	358 25.8	N18 00.5	117 38.3	N03 14.8
	12	146 52.2	317 04.7	S06 07.9	051 44.0	N23 41.4	013 27.7	N18 00.4	132 40.9	N03 14.7
	13	161 54.6	332 05.1	S06 09.1	066 44.7	N23 41.4	028 29.6	N18 00.2	147 43.4	N03 14.7
	14	176 57.1	347 05.5	S06 10.2	081 45.4	N23 41.4	043 31.5	N18 00.1	162 45.9	N03 14.6
	15	191 59.6	002 06.0	S06 11.4	096 46.0	N23 41.4	058 33.4	N17 59.9	177 48.5	N03 14.6
	16	207 02.0	017 06.4	S06 12.6	111 46.7	N23 41.3	073 35.3	N17 59.8	192 51.0	N03 14.5
	17	222 04.5	032 06.8	S06 13.8	126 47.4	N23 41.3	088 37.2	N17 59.6	207 53.6	N03 14.5
	18	237 06.9	047 07.2	S06 14.9	141 48.1	N23 41.3	103 39.2	N17 59.5	222 56.1	N03 14.4
	19	252 09.4	062 07.6	S06 16.1	156 48.8	N23 41.3	118 41.1	N17 59.4	237 58.7	N03 14.4
	20	267 11.9	077 08.0	S06 17.3	171 49.4	N23 41.2	133 43.0	N17 59.2	253 01.2	N03 14.4
	21	282 14.3	092 08.5	S06 18.4	186 50.1	N23 41.2	148 44.9	N17 59.1	268 03.8	N03 14.3
	22	297 16.8	107 08.9	S06 19.6	201 50.8	N23 41.2	163 46.8	N17 58.9	283 06.3	N03 14.3
	23	312 19.3	122 09.3	S06 20.8	216 51.5	N23 41.2	178 48.7	N17 58.8	298 08.9	N03 14.2
19	00	327 21.7	137 09.7	S06 22.0	231 52.2	N23 41.1	193 50.6	N17 58.6	313 11.4	N03 14.2
	01	342 24.2	152 10.2	S06 23.1	246 52.9	N23 41.1	208 52.5	N17 58.5	328 14.0	N03 14.1
	02	357 26.7	167 10.6	S06 24.3	261 53.5	N23 41.1	223 54.5	N17 58.3	343 16.5	N03 14.1
	03	012 29.1	182 11.0	S06 25.5	276 54.2	N23 41.0	238 56.4	N17 58.2	358 19.1	N03 14.0
	04	027 31.6	197 11.4	S06 26.6	291 54.9	N23 41.0	253 58.3	N17 58.1	013 21.6	N03 14.0
	05	042 34.0	212 11.9	S06 27.8	306 55.6	N23 41.0	269 00.2	N17 57.9	028 24.2	N03 13.9
	06	057 36.5	227 12.3	S06 29.0	321 56.3	N23 41.0	284 02.1	N17 57.8	043 26.7	N03 13.9
	07	072 39.0	242 12.7	S06 30.2	336 57.0	N23 40.9	299 04.0	N17 57.6	058 29.3	N03 13.8
	08	087 41.4	257 13.1	S06 31.3	351 57.6	N23 40.9	314 05.9	N17 57.5	073 31.8	N03 13.8
	09	102 43.9	272 13.6	S06 32.5	006 58.3	N23 40.9	329 07.9	N17 57.3	088 34.4	N03 13.8
	10	117 46.4	287 14.0	S06 33.7	021 59.0	N23 40.8	344 09.8	N17 57.2	103 36.9	N03 13.7
	11	132 48.8	302 14.4	S06 34.8	036 59.7	N23 40.8	359 11.7	N17 57.0	118 39.5	N03 13.7
	12	147 51.3	317 14.9	S06 36.0	052 00.4	N23 40.8	014 13.6	N17 56.9	133 42.0	N03 13.6
	13	162 53.8	332 15.3	S06 37.2	067 01.1	N23 40.8	029 15.5	N17 56.7	148 44.6	N03 13.6
	14	177 56.2	347 15.7	S06 38.3	082 01.7	N23 40.7	044 17.4	N17 56.6	163 47.1	N03 13.5
	15	192 58.7	002 16.2	S06 39.5	097 02.4	N23 40.7	059 19.4	N17 56.5	178 49.7	N03 13.5
	16	208 01.2	017 16.6	S06 40.7	112 03.1	N23 40.7	074 21.3	N17 56.3	193 52.2	N03 13.4
	17	223 03.6	032 17.0	S06 41.8	127 03.8	N23 40.6	089 23.2	N17 56.2	208 54.8	N03 13.4
	18	238 06.1	047 17.5	S06 43.0	142 04.5	N23 40.6	104 25.1	N17 56.0	223 57.3	N03 13.3
	19	253 08.5	062 17.9	S06 44.2	157 05.2	N23 40.6	119 27.0	N17 55.9	238 59.9	N03 13.3
	20	268 11.0	077 18.3	S06 45.3	172 05.9	N23 40.5	134 28.9	N17 55.7	254 02.4	N03 13.2
	21	283 13.5	092 18.8	S06 46.5	187 06.5	N23 40.5	149 30.8	N17 55.6	269 05.0	N03 13.2
	22	298 15.9	107 19.2	S06 47.7	202 07.2	N23 40.5	164 32.8	N17 55.4	284 07.5	N03 13.1
	23	313 18.4	122 19.6	S06 48.8	217 07.9	N23 40.4	179 34.7	N17 55.3	299 10.1	N03 13.1

Venus	Mars	Jupiter	Saturn
17: v 0.4 d -1.2	17: v 0.7 d 0.0	17: v 1.9 d -0.1	17: v 2.5 d 0.0
18: v 0.4 d -1.2	18: v 0.7 d 0.0	18: v 1.9 d -0.1	18: v 2.5 d 0.0
19: v 0.4 d -1.2	19: v 0.7 d 0.0	19: v 1.9 d -0.1	19: v 2.6 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.7	S40 11.5
Achernar	335 18.9	S57 05.7
Acrux	172 59.1	S63 15.0
Adhara	255 05.1	S29 00.3
Al Na'ir	027 30.8	S46 49.7
Aldebaran	290 38.2	N16 33.8
Alioth	166 12.1	N55 49.1
Alkaid	152 51.2	N49 11.0
Alnilam	275 36.5	S01 11.0
Alphard	217 46.8	S08 46.4
Alphecca	126 02.6	N26 37.7
Alpheratz	357 33.1	N29 14.3
Altair	061 58.4	N08 56.5
Ankaa	353 05.5	S42 09.4
Antares	112 14.1	S26 29.5
Arcturus	145 46.8	N19 02.8
Atria	107 06.9	S69 04.7
Avior	234 14.8	S59 35.5
Bellatrix	278 21.6	N06 22.5
Betelgeuse	270 50.8	N07 24.8
Canopus	263 52.2	S52 42.3
Capella	280 20.1	N46 01.3
Deneb	049 24.4	N45 22.7
Denebola	182 23.9	N14 25.5
Diphda	348 45.7	S17 50.2
Dubhe	193 40.0	N61 36.5
Elnath	278 00.3	N28 37.7
Eltanin	090 41.3	N51 29.3
Enif	033 37.2	N10 00.0
Fomalhaut	015 12.7	S29 28.7
Gacrux	171 50.6	S57 15.9
Gienah	175 42.5	S17 41.4
Hadar	148 34.3	S60 30.3
Hamal	327 49.6	N23 35.3
Kaus Australi	083 30.5	S34 22.3
Kochab	137 20.0	N74 03.0
Markab	013 28.3	N15 21.0
Menkar	314 04.7	N04 11.8
Menkent	147 56.2	S36 30.2
Miaplacidus	221 38.9	S69 49.5
Mirfak	308 26.3	N49 57.2
Nunki	075 45.8	S26 15.8
Peacock	053 03.1	S56 38.9
Polaris	313 17.1	N89 22.3
Pollux	243 16.0	N27 57.7
Procyon	244 49.7	N05 09.5
Rasalhague	095 57.1	N12 32.6
Regulus	207 33.3	N11 50.3
Rigel	281 02.7	S08 10.1
Rigil Kentaur	139 38.6	S60 57.0
Sabik	102 01.1	S15 45.5
Schedar	349 29.1	N56 40.9
Shaula	096 08.3	S37 07.4
Sirius	258 25.3	S16 45.0
Spica	158 21.1	S11 18.0
Suhail	222 45.8	S43 32.3
Vega	080 32.0	N38 48.7
Zubenelgenubi	136 54.6	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	170 12.6	1452
Mars	264 51.8	0833
Jupiter	226 35.5	1106
Saturn	345 48.7	0311

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
17	00	178 57.0	N13 28.6	129 54.3	S10 54.0	56.5	14.0	-14.1
	01	193 57.1	N13 27.8	144 27.3	S11 08.2	56.5	14.0	-14.1
	02	208 57.2	N13 27.0	159 00.3	S11 22.2	56.4	14.0	-14.0
	03	223 57.4	N13 26.2	173 33.3	S11 36.2	56.4	14.0	-13.9
	04	238 57.5	N13 25.4	188 06.2	S11 50.1	56.4	14.0	-13.9
	05	253 57.6	N13 24.6	202 39.2	S12 04.0	56.3	13.9	-13.8
	06	268 57.8	N13 23.8	217 12.1	S12 17.8	56.3	13.9	-13.7
	07	283 57.9	N13 23.0	231 45.1	S12 31.5	56.3	13.9	-13.7
	08	298 58.0	N13 22.2	246 18.0	S12 45.2	56.2	13.9	-13.6
	09	313 58.2	N13 21.4	260 50.9	S12 58.8	56.2	13.9	-13.5
	10	328 58.3	N13 20.6	275 23.7	S13 12.3	56.2	13.9	-13.4
	11	343 58.4	N13 19.8	289 56.6	S13 25.7	56.1	13.8	-13.4
	12	358 58.6	N13 19.0	304 29.4	S13 39.1	56.1	13.8	-13.3
	13	013 58.7	N13 18.2	319 02.2	S13 52.4	56.1	13.8	-13.2
	14	028 58.9	N13 17.4	333 35.0	S14 05.6	56.0	13.8	-13.1
	15	043 59.0	N13 16.6	348 07.8	S14 18.7	56.0	13.7	-13.1
	16	058 59.1	N13 15.8	002 40.5	S14 31.8	56.0	13.7	-13.0
	17	073 59.3	N13 15.0	017 13.2	S14 44.7	56.0	13.7	-12.9
	18	088 59.4	N13 14.2	031 45.9	S14 57.7	55.9	13.7	-12.8
	19	103 59.5	N13 13.4	046 18.6	S15 10.5	55.9	13.6	-12.7
	20	118 59.7	N13 12.6	060 51.3	S15 23.2	55.9	13.6	-12.7
	21	133 59.8	N13 11.8	075 23.9	S15 35.9	55.8	13.6	-12.6
	22	148 59.9	N13 11.0	089 56.5	S15 48.5	55.8	13.6	-12.5
	23	164 00.1	N13 10.2	104 29.0	S16 01.0	55.8	13.5	-12.4
18	00	179 00.2	N13 09.4	119 01.6	S16 13.4	55.8	13.5	-12.3
	01	194 00.4	N13 08.6	133 34.1	S16 25.7	55.7	13.5	-12.3
	02	209 00.5	N13 07.8	148 06.5	S16 38.0	55.7	13.4	-12.2
	03	224 00.6	N13 07.0	162 39.0	S16 50.2	55.7	13.4	-12.1
	04	239 00.8	N13 06.2	177 11.4	S17 02.2	55.6	13.4	-12.0
	05	254 00.9	N13 05.3	191 43.7	S17 14.2	55.6	13.3	-11.9
	06	269 01.0	N13 04.5	206 16.1	S17 26.1	55.6	13.3	-11.8
	07	284 01.2	N13 03.7	220 48.4	S17 38.0	55.6	13.3	-11.7
	08	299 01.3	N13 02.9	235 20.7	S17 49.7	55.5	13.2	-11.6
	09	314 01.5	N13 02.1	249 52.9	S18 01.3	55.5	13.2	-11.6
	10	329 01.6	N13 01.3	264 25.1	S18 12.9	55.5	13.2	-11.5
	11	344 01.7	N13 00.5	278 57.3	S18 24.3	55.4	13.1	-11.4
	12	359 01.9	N12 59.7	293 29.4	S18 35.7	55.4	13.1	-11.3
	13	014 02.0	N12 58.9	308 01.5	S18 47.0	55.4	13.1	-11.2
	14	029 02.2	N12 58.1	322 33.6	S18 58.2	55.4	13.0	-11.1
	15	044 02.3	N12 57.3	337 05.6	S19 09.3	55.3	13.0	-11.0
	16	059 02.4	N12 56.4	351 37.6	S19 20.3	55.3	12.9	-10.9
	17	074 02.6	N12 55.6	006 09.5	S19 31.2	55.3	12.9	-10.8
	18	089 02.7	N12 54.8	020 41.4	S19 42.0	55.3	12.9	-10.7
	19	104 02.9	N12 54.0	035 13.3	S19 52.7	55.2	12.8	-10.6
	20	119 03.0	N12 53.2	049 45.1	S20 03.3	55.2	12.8	-10.5
	21	134 03.1	N12 52.4	064 16.9	S20 13.8	55.2	12.7	-10.4
	22	149 03.3	N12 51.6	078 48.6	S20 24.2	55.2	12.7	-10.3
	23	164 03.4	N12 50.8	093 20.3	S20 34.5	55.1	12.7	-10.2
19	00	179 03.6	N12 49.9	107 51.9	S20 44.7	55.1	12.6	-10.1
	01	194 03.7	N12 49.1	122 23.6	S20 54.9	55.1	12.6	-10.0
	02	209 03.9	N12 48.3	136 55.1	S21 04.9	55.1	12.5	-9.9
	03	224 04.0	N12 47.5	151 26.7	S21 14.8	55.1	12.5	-9.8
	04	239 04.1	N12 46.7	165 58.1	S21 24.6	55.0	12.4	-9.7
	05	254 04.3	N12 45.9	180 29.6	S21 34.3	55.0	12.4	-9.6
	06	269 04.4	N12 45.0	195 01.0	S21 43.9	55.0	12.4	-9.5
	07	284 04.6	N12 44.2	209 32.3	S21 53.4	55.0	12.3	-9.4
	08	299 04.7	N12 43.4	224 03.6	S22 02.8	54.9	12.3	-9.3
	09	314 04.9	N12 42.6	238 34.9	S22 12.1	54.9	12.2	-9.2
	10	329 05.0	N12 41.8	253 06.1	S22 21.3	54.9	12.2	-9.1
	11	344 05.2	N12 41.0	267 37.3	S22 30.4	54.9	12.1	-9.0
	12	359 05.3	N12 40.1	282 08.4	S22 39.3	54.9	12.1	-8.9
	13	014 05.4	N12 39.3	296 39.5	S22 48.2	54.8	12.0	-8.8
	14	029 05.6	N12 38.5	311 10.6	S22 56.9	54.8	12.0	-8.6
	15	044 05.7	N12 37.7	325 41.6	S23 05.6	54.8	12.0	-8.5
	16	059 05.9	N12 36.9	340 12.5	S23 14.1	54.8	11.9	-8.4
	17	074 06.0	N12 36.1	354 43.4	S23 22.5	54.8	11.9	-8.3
	18	089 06.2	N12 35.2	009 14.3	S23 30.8	54.8	11.8	-8.2
	19	104 06.3	N12 34.4	023 45.1	S23 39.0	54.7	11.8	-8.1
	20	119 06.5	N12 33.6	038 15.9	S23 47.1	54.7	11.7	-8.0
	21	134 06.6	N12 32.8	052 46.6	S23 55.1	54.7	11.7	-7.9
	22	149 06.8	N12 31.9	067 17.3	S24 02.9	54.7	11.6	-7.7
	23	164 06.9	N12 31.1	081 48.0	S24 10.7	54.7	11.6	-7.6

Day 17 noon Sun: v 0.1 d -0.8 SD 15.8 | Moon SD 15.3

Day 18 noon Sun: v 0.1 d -0.8 SD 15.8 | Moon SD 15.1

Day 19 noon Sun: v 0.1 d -0.8 SD 15.8 | Moon SD 15.0

SUN: AUGUST 18 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	0244	2119	--	--
70N	--	0113	0312	2052	2244	--
68N	--	0205	0332	2033	2157	--
66N	--	0236	0348	2017	2128	--
64N	0104	0259	0401	2005	2106	2254
62N	0151	0317	0412	1954	2048	2212
60N	0219	0331	0421	1945	2034	2145
58N	0240	0344	0430	1937	2022	2124
56N	0257	0354	0437	1930	2012	2108
54N	0311	0403	0443	1923	2003	2054
52N	0323	0411	0449	1918	1955	2043
50N	0334	0418	0454	1913	1948	2033
45N	0355	0434	0505	1902	1933	2012
40N	0411	0446	0514	1853	1921	1956
35N	0424	0456	0522	1845	1912	1943
30N	0434	0504	0529	1838	1903	1933
25N	0443	0512	0535	1832	1856	1924
20N	0451	0518	0541	1827	1849	1916
15N	0458	0524	0546	1821	1844	1909
10N	0504	0529	0551	1817	1838	1903
05N	0510	0535	0556	1812	1833	1858
00N	0515	0539	0601	1807	1828	1853
05S	0519	0544	0605	1803	1824	1849
10S	0523	0548	0610	1758	1820	1844
15S	0527	0553	0615	1753	1815	1841
20S	0531	0557	0620	1748	1811	1837
25S	0535	0602	0625	1743	1806	1833
30S	0538	0606	0631	1737	1802	1830
35S	0541	0611	0637	1731	1757	1827
40S	0545	0616	0644	1724	1752	1824
45S	0548	0622	0653	1716	1746	1820
50S	0551	0629	0703	1706	1739	1817
55S	0555	0637	0715	1654	1731	1814
60S	0558	0647	0731	1637	1722	1811

MOON: RISE / SET | UTC HHMM

Lat	Day 17		Day 18		Day 19	
72N	1305	1809	--	--	--	--
70N	1234	1841	1532	1719	--	--
68N	1212	1904	1428	1824	--	--
66N	1155	1923	1353	1900	1625	1806
64N	1141	1938	1328	1926	1525	1907
62N	1130	1951	1309	1946	1451	1941
60N	1120	2002	1253	2003	1427	2007
58N	1112	2011	1240	2017	1407	2027
56N	1104	2019	1228	2029	1351	2043
54N	1058	2027	1218	2040	1338	2057
52N	1052	2034	1209	2049	1326	2110
50N	1046	2040	1201	2058	1315	2121
45N	1035	2053	1145	2116	1253	2144
40N	1026	2104	1131	2131	1236	2202
35N	1018	2113	1119	2143	1221	2218
30N	1011	2121	1109	2155	1208	2231
25N	1004	2129	1100	2204	1157	2244
20N	0958	2135	1052	2214	1146	2255
15N	0953	2142	1045	2222	1137	2305
10N	0948	2148	1037	2230	1128	2315
05N	0943	2154	1030	2238	1119	2324
00N	0938	2200	1023	2246	1110	2333
05S	0933	2206	1017	2254	1102	2343
10S	0929	2212	1010	2301	1053	2352
15S	0924	2218	1003	2310	1044	--
20S	0918	2224	0955	2318	1035	--
25S	0913	2231	0947	2328	1024	--
30S	0907	2239	0939	2338	1013	--
35S	0900	2247	0929	2349	1001	--
40S	0853	2257	0918	--	0947	0002
45S	0844	2309	0905	--	0931	0018
50S	0833	2322	0850	--	0910	0037
55S	0820	2340	0830	--	0844	0102
60S	0804	--	0804	0004	0807	0137

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | AUGUST 20 - AUGUST 22

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
20	00	328 20.9	137 20.1	S06 50.0	232 08.6	N23 40.4	194 36.6	N17 55.2	314 12.6	N03 13.0
	01	343 23.3	152 20.5	S06 51.2	247 09.3	N23 40.4	209 38.5	N17 55.0	329 15.2	N03 13.0
	02	358 25.8	167 21.0	S06 52.3	262 10.0	N23 40.3	224 40.4	N17 54.9	344 17.7	N03 13.0
	03	013 28.3	182 21.4	S06 53.5	277 10.7	N23 40.3	239 42.3	N17 54.7	359 20.3	N03 12.9
	04	028 30.7	197 21.8	S06 54.6	292 11.4	N23 40.3	254 44.2	N17 54.6	014 22.8	N03 12.9
	05	043 33.2	212 22.3	S06 55.8	307 12.0	N23 40.2	269 46.2	N17 54.4	029 25.4	N03 12.8
	06	058 35.7	227 22.7	S06 57.0	322 12.7	N23 40.2	284 48.1	N17 54.3	044 27.9	N03 12.8
	07	073 38.1	242 23.2	S06 58.1	337 13.4	N23 40.2	299 50.0	N17 54.1	059 30.5	N03 12.7
	08	088 40.6	257 23.6	S06 59.3	352 14.1	N23 40.1	314 51.9	N17 54.0	074 33.1	N03 12.7
	09	103 43.0	272 24.1	S07 00.5	007 14.8	N23 40.1	329 53.8	N17 53.9	089 35.6	N03 12.6
	10	118 45.5	287 24.5	S07 01.6	022 15.5	N23 40.0	344 55.7	N17 53.7	104 38.2	N03 12.6
	11	133 48.0	302 25.0	S07 02.8	037 16.2	N23 40.0	359 57.7	N17 53.6	119 40.7	N03 12.5
	12	148 50.4	317 25.4	S07 03.9	052 16.9	N23 40.0	014 59.6	N17 53.4	134 43.3	N03 12.5
	13	163 52.9	332 25.9	S07 05.1	067 17.5	N23 39.9	030 01.5	N17 53.3	149 45.8	N03 12.4
	14	178 55.4	347 26.3	S07 06.3	082 18.2	N23 39.9	045 03.4	N17 53.1	164 48.4	N03 12.4
	15	193 57.8	002 26.8	S07 07.4	097 18.9	N23 39.9	060 05.3	N17 53.0	179 50.9	N03 12.3
	16	209 00.3	017 27.2	S07 08.6	112 19.6	N23 39.8	075 07.2	N17 52.8	194 53.5	N03 12.3
	17	224 02.8	032 27.7	S07 09.7	127 20.3	N23 39.8	090 09.2	N17 52.7	209 56.0	N03 12.2
	18	239 05.2	047 28.1	S07 10.9	142 21.0	N23 39.7	105 11.1	N17 52.5	224 58.6	N03 12.2
	19	254 07.7	062 28.6	S07 12.0	157 21.7	N23 39.7	120 13.0	N17 52.4	240 01.1	N03 12.1
	20	269 10.1	077 29.0	S07 13.2	172 22.4	N23 39.7	135 14.9	N17 52.3	255 03.7	N03 12.1
	21	284 12.6	092 29.5	S07 14.4	187 23.1	N23 39.6	150 16.8	N17 52.1	270 06.3	N03 12.0
	22	299 15.1	107 29.9	S07 15.5	202 23.8	N23 39.6	165 18.7	N17 52.0	285 08.8	N03 12.0
	23	314 17.5	122 30.4	S07 16.7	217 24.4	N23 39.5	180 20.7	N17 51.8	300 11.4	N03 11.9
21	00	329 20.0	137 30.8	S07 17.8	232 25.1	N23 39.5	195 22.6	N17 51.7	315 13.9	N03 11.9
	01	344 22.5	152 31.3	S07 19.0	247 25.8	N23 39.5	210 24.5	N17 51.5	330 16.5	N03 11.8
	02	359 24.9	167 31.8	S07 20.1	262 26.5	N23 39.4	225 26.4	N17 51.4	345 19.0	N03 11.8
	03	014 27.4	182 32.2	S07 21.3	277 27.2	N23 39.4	240 28.3	N17 51.2	000 21.6	N03 11.7
	04	029 29.9	197 32.7	S07 22.5	292 27.9	N23 39.3	255 30.2	N17 51.1	015 24.1	N03 11.7
	05	044 32.3	212 33.1	S07 23.6	307 28.6	N23 39.3	270 32.2	N17 51.0	030 26.7	N03 11.7
	06	059 34.8	227 33.6	S07 24.8	322 29.3	N23 39.2	285 34.1	N17 50.8	045 29.3	N03 11.6
	07	074 37.3	242 34.1	S07 25.9	337 30.0	N23 39.2	300 36.0	N17 50.7	060 31.8	N03 11.6
	08	089 39.7	257 34.5	S07 27.1	352 30.7	N23 39.2	315 37.9	N17 50.5	075 34.4	N03 11.5
	09	104 42.2	272 35.0	S07 28.2	007 31.4	N23 39.1	330 39.8	N17 50.4	090 36.9	N03 11.5
	10	119 44.6	287 35.5	S07 29.4	022 32.1	N23 39.1	345 41.7	N17 50.2	105 39.5	N03 11.4
	11	134 47.1	302 35.9	S07 30.5	037 32.7	N23 39.0	000 43.7	N17 50.1	120 42.0	N03 11.4
	12	149 49.6	317 36.4	S07 31.7	052 33.4	N23 39.0	015 45.6	N17 49.9	135 44.6	N03 11.3
	13	164 52.0	332 36.9	S07 32.8	067 34.1	N23 38.9	030 47.5	N17 49.8	150 47.2	N03 11.3
	14	179 54.5	347 37.3	S07 34.0	082 34.8	N23 38.9	045 49.4	N17 49.6	165 49.7	N03 11.2
	15	194 57.0	002 37.8	S07 35.1	097 35.5	N23 38.8	060 51.3	N17 49.5	180 52.3	N03 11.2
	16	209 59.4	017 38.3	S07 36.3	112 36.2	N23 38.8	075 53.2	N17 49.4	195 54.8	N03 11.1
	17	225 01.9	032 38.7	S07 37.4	127 36.9	N23 38.7	090 55.2	N17 49.2	210 57.4	N03 11.1
	18	240 04.4	047 39.2	S07 38.6	142 37.6	N23 38.7	105 57.1	N17 49.1	225 59.9	N03 11.0
	19	255 06.8	062 39.7	S07 39.7	157 38.3	N23 38.6	120 59.0	N17 48.9	241 02.5	N03 11.0
	20	270 09.3	077 40.1	S07 40.9	172 39.0	N23 38.6	136 00.9	N17 48.8	256 05.1	N03 10.9
	21	285 11.8	092 40.6	S07 42.0	187 39.7	N23 38.6	151 02.8	N17 48.6	271 07.6	N03 10.9
	22	300 14.2	107 41.1	S07 43.2	202 40.4	N23 38.5	166 04.8	N17 48.5	286 10.2	N03 10.8
	23	315 16.7	122 41.6	S07 44.3	217 41.1	N23 38.5	181 06.7	N17 48.3	301 12.7	N03 10.8
22	00	330 19.1	137 42.0	S07 45.5	232 41.8	N23 38.4	196 08.6	N17 48.2	316 15.3	N03 10.7
	01	345 21.6	152 42.5	S07 46.6	247 42.5	N23 38.4	211 10.5	N17 48.0	331 17.9	N03 10.7
	02	000 24.1	167 43.0	S07 47.8	262 43.2	N23 38.3	226 12.4	N17 47.9	346 20.4	N03 10.6
	03	015 26.5	182 43.5	S07 48.9	277 43.9	N23 38.3	241 14.3	N17 47.8	001 23.0	N03 10.6
	04	030 29.0	197 44.0	S07 50.1	292 44.6	N23 38.2	256 16.3	N17 47.6	016 25.5	N03 10.5
	05	045 31.5	212 44.4	S07 51.2	307 45.2	N23 38.2	271 18.2	N17 47.5	031 28.1	N03 10.5
	06	060 33.9	227 44.9	S07 52.4	322 45.9	N23 38.1	286 20.1	N17 47.3	046 30.7	N03 10.4
	07	075 36.4	242 45.4	S07 53.5	337 46.6	N23 38.1	301 22.0	N17 47.2	061 33.2	N03 10.4
	08	090 38.9	257 45.9	S07 54.7	352 47.3	N23 38.0	316 23.9	N17 47.0	076 35.8	N03 10.3
	09	105 41.3	272 46.4	S07 55.8	007 48.0	N23 37.9	331 25.9	N17 46.9	091 38.3	N03 10.3
	10	120 43.8	287 46.8	S07 57.0	022 48.7	N23 37.9	346 27.8	N17 46.7	106 40.9	N03 10.2
	11	135 46.3	302 47.3	S07 58.1	037 49.4	N23 37.8	001 29.7	N17 46.6	121 43.5	N03 10.2
	12	150 48.7	317 47.8	S07 59.2	052 50.1	N23 37.8	016 31.6	N17 46.4	136 46.0	N03 10.1
	13	165 51.2	332 48.3	S08 00.4	067 50.8	N23 37.7	031 33.5	N17 46.3	151 48.6	N03 10.1
	14	180 53.6	347 48.8	S08 01.5	082 51.5	N23 37.7	046 35.5	N17 46.2	166 51.1	N03 10.0
	15	195 56.1	002 49.3	S08 02.7	097 52.2	N23 37.6	061 37.4	N17 46.0	181 53.7	N03 10.0
	16	210 58.6	017 49.8	S08 03.8	112 52.9	N23 37.6	076 39.3	N17 45.9	196 56.3	N03 09.9
	17	226 01.0	032 50.2	S08 05.0	127 53.6	N23 37.5	091 41.2	N17 45.7	211 58.8	N03 09.9
	18	241 03.5	047 50.7	S08 06.1	142 54.3	N23 37.5	106 43.1	N17 45.6	227 01.4	N03 09.8
	19	256 06.0	062 51.2	S08 07.2	157 55.0	N23 37.4	121 45.1	N17 45.4	242 03.9	N03 09.7
	20	271 08.4	077 51.7	S08 08.4	172 55.7	N23 37.4	136 47.0	N17 45.3	257 06.5	N03 09.7
	21	286 10.9	092 52.2	S08 09.5	187 56.4	N23 37.3	151 48.9	N17 45.1	272 09.1	N03 09.6
	22	301 13.4	107 52.7	S08 10.7	202 57.1	N23 37.2	166 50.8	N17 45.0	287 11.6	N03 09.6
	23	316 15.8	122 53.2	S08 11.8	217 57.8	N23 37.2	181 52.7	N17 44.8	302 14.2	N03 09.5

Venus	Mars	Jupiter	Saturn
20: v 0.4 d -1.2	20: v 0.7 d 0.0	20: v 1.9 d -0.1	20: v 2.6 d 0.0
21: v 0.5 d -1.2	21: v 0.7 d 0.0	21: v 1.9 d -0.1	21: v 2.6 d 0.0
22: v 0.5 d -1.1	22: v 0.7 d -0.1	22: v 1.9 d -0.1	22: v 2.6 d -0.1

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.7	S40 11.5
Achernar	335 18.9	S57 05.7
Acrux	172 59.1	S63 15.0
Adhara	255 05.1	S29 00.3
Al Na'ir	027 30.8	S46 49.8
Aldebaran	290 38.1	N16 33.8
Alioth	166 12.2	N55 49.1
Alkaid	152 51.2	N49 11.0
Alnilam	275 36.5	S01 11.0
Alphard	217 46.8	S08 46.4
Alphecca	126 02.6	N26 37.7
Alpheratz	357 33.1	N29 14.3
Altair	061 58.4	N08 56.5
Ankaa	353 05.5	S42 09.4
Antares	112 14.1	S26 29.5
Arcturus	145 46.8	N19 02.8
Atria	107 06.9	S69 04.7
Avior	234 14.8	S59 35.5
Bellatrix	278 21.6	N06 22.5
Betelgeuse	270 50.8	N07 24.8
Canopus	263 52.1	S52 42.3
Capella	280 20.1	N46 01.3
Deneb	049 24.4	N45 22.7
Denebola	182 23.9	N14 25.5
Diphda	348 45.7	S17 50.2
Dubhe	193 40.0	N61 36.5
Elnath	278 00.3	N28 37.7
Eltanin	090 41.3	N51 29.3
Enif	033 37.1	N10 00.0
Fomalhaut	015 12.7	S29 28.7
Gacrux	171 50.6	S57 15.9
Gienah	175 42.5	S17 41.4
Hadar	148 34.4	S60 30.3
Hamal	327 49.5	N23 35.3
Kaus Australi	083 30.5	S34 22.3
Kochab	137 20.1	N74 03.0
Markab	013 28.2	N15 21.1
Menkar	314 04.7	N04 11.8
Menkent	147 56.2	S36 30.2
Miaplacidus	221 38.9	S69 49.5
Mirfak	308 26.3	N49 57.2
Nunki	075 45.8	S26 15.8
Peacock	053 03.1	S56 38.9
Polaris	313 15.3	N89 22.3
Pollux	243 16.0	N27 57.7
Procyon	244 49.7	N05 09.5
Rasalhague	095 57.1	N12 32.6
Regulus	207 33.3	N11 50.3
Rigel	281 02.7	S08 10.1
Rigil Kentaur	139 38.6	S60 57.0
Sabik	102 01.1	S15 45.4
Schedar	349 29.1	N56 40.9
Shaula	096 08.3	S37 07.4
Sirius	258 25.3	S16 45.0
Spica	158 21.1	S11 18.0
Suhail	222 45.8	S43 32.3
Vega	080 32.0	N38 48.7
Zubenelgenubi	136 54.6	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	167 46.8	1449
Mars	262 43.9	0830
Jupiter	225 56.0	1057
Saturn	345 55.0	0259

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

2026 | AUGUST 20 - AUGUST 22

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
20	00	179 07.1	N12 30.3	096 18.6	S24 18.3	54.6	11.6	-7.5
	01	194 07.2	N12 29.5	110 49.1	S24 25.8	54.6	11.5	-7.4
	02	209 07.4	N12 28.7	125 19.6	S24 33.2	54.6	11.5	-7.3
	03	224 07.5	N12 27.8	139 50.1	S24 40.5	54.6	11.4	-7.2
	04	239 07.7	N12 27.0	154 20.5	S24 47.7	54.6	11.4	-7.0
	05	254 07.8	N12 26.2	168 50.9	S24 54.7	54.6	11.3	-6.9
	06	269 08.0	N12 25.4	183 21.2	S25 01.6	54.6	11.3	-6.8
	07	284 08.1	N12 24.5	197 51.5	S25 08.4	54.5	11.3	-6.7
	08	299 08.3	N12 23.7	212 21.8	S25 15.1	54.5	11.2	-6.6
	09	314 08.4	N12 22.9	226 52.0	S25 21.7	54.5	11.2	-6.4
	10	329 08.6	N12 22.1	241 22.2	S25 28.1	54.5	11.1	-6.3
	11	344 08.7	N12 21.2	255 52.3	S25 34.5	54.5	11.1	-6.2
	12	359 08.9	N12 20.4	270 22.4	S25 40.7	54.5	11.0	-6.1
	13	014 09.0	N12 19.6	284 52.4	S25 46.8	54.5	11.0	-6.0
	14	029 09.2	N12 18.8	299 22.4	S25 52.7	54.4	11.0	-5.8
	15	044 09.3	N12 17.9	313 52.4	S25 58.6	54.4	10.9	-5.7
	16	059 09.5	N12 17.1	328 22.3	S26 04.3	54.4	10.9	-5.6
	17	074 09.6	N12 16.3	342 52.2	S26 09.9	54.4	10.8	-5.5
	18	089 09.8	N12 15.4	357 22.0	S26 15.3	54.4	10.8	-5.3
	19	104 09.9	N12 14.6	011 51.8	S26 20.7	54.4	10.8	-5.2
	20	119 10.1	N12 13.8	026 21.6	S26 25.9	54.4	10.7	-5.1
	21	134 10.2	N12 13.0	040 51.3	S26 31.0	54.4	10.7	-5.0
	22	149 10.4	N12 12.1	055 21.0	S26 35.9	54.4	10.7	-4.8
	23	164 10.5	N12 11.3	069 50.7	S26 40.8	54.3	10.6	-4.7
21	00	179 10.7	N12 10.5	084 20.3	S26 45.5	54.3	10.6	-4.6
	01	194 10.8	N12 09.6	098 49.9	S26 50.1	54.3	10.6	-4.5
	02	209 11.0	N12 08.8	113 19.5	S26 54.5	54.3	10.5	-4.3
	03	224 11.1	N12 08.0	127 49.0	S26 58.8	54.3	10.5	-4.2
	04	239 11.3	N12 07.1	142 18.5	S27 03.0	54.3	10.5	-4.1
	05	254 11.4	N12 06.3	156 48.0	S27 07.1	54.3	10.4	-3.9
	06	269 11.6	N12 05.5	171 17.4	S27 11.0	54.3	10.4	-3.8
	07	284 11.8	N12 04.6	185 46.8	S27 14.8	54.3	10.4	-3.7
	08	299 11.9	N12 03.8	200 16.2	S27 18.5	54.3	10.3	-3.5
	09	314 12.1	N12 03.0	214 45.5	S27 22.0	54.3	10.3	-3.4
	10	329 12.2	N12 02.1	229 14.8	S27 25.5	54.3	10.3	-3.3
	11	344 12.4	N12 01.3	243 44.1	S27 28.7	54.3	10.3	-3.2
	12	359 12.5	N12 00.5	258 13.4	S27 31.9	54.2	10.2	-3.0
	13	014 12.7	N11 59.6	272 42.6	S27 34.9	54.2	10.2	-2.9
	14	029 12.8	N11 58.8	287 11.8	S27 37.8	54.2	10.2	-2.8
	15	044 13.0	N11 58.0	301 41.0	S27 40.5	54.2	10.2	-2.6
	16	059 13.2	N11 57.1	316 10.2	S27 43.2	54.2	10.1	-2.5
	17	074 13.3	N11 56.3	330 39.3	S27 45.7	54.2	10.1	-2.4
	18	089 13.5	N11 55.5	345 08.4	S27 48.0	54.2	10.1	-2.2
	19	104 13.6	N11 54.6	359 37.5	S27 50.2	54.2	10.1	-2.1
	20	119 13.8	N11 53.8	014 06.6	S27 52.3	54.2	10.1	-2.0
	21	134 13.9	N11 53.0	028 35.7	S27 54.3	54.2	10.0	-1.8
	22	149 14.1	N11 52.1	043 04.7	S27 56.1	54.2	10.0	-1.7
	23	164 14.3	N11 51.3	057 33.8	S27 57.8	54.2	10.0	-1.5
22	00	179 14.4	N11 50.4	072 02.8	S27 59.3	54.2	10.0	-1.4
	01	194 14.6	N11 49.6	086 31.8	S28 00.7	54.2	10.0	-1.3
	02	209 14.7	N11 48.8	101 00.8	S28 02.0	54.2	10.0	-1.1
	03	224 14.9	N11 47.9	115 29.7	S28 03.1	54.2	10.0	-1.0
	04	239 15.0	N11 47.1	129 58.7	S28 04.2	54.2	10.0	-0.9
	05	254 15.2	N11 46.2	144 27.7	S28 05.0	54.2	9.9	-0.7
	06	269 15.4	N11 45.4	158 56.6	S28 05.8	54.2	9.9	-0.6
	07	284 15.5	N11 44.6	173 25.5	S28 06.4	54.2	9.9	-0.5
	08	299 15.7	N11 43.7	187 54.5	S28 06.8	54.2	9.9	-0.3
	09	314 15.8	N11 42.9	202 23.4	S28 07.2	54.2	9.9	-0.2
	10	329 16.0	N11 42.0	216 52.3	S28 07.3	54.2	9.9	-0.1
	11	344 16.2	N11 41.2	231 21.2	S28 07.4	54.2	9.9	0.1
	12	359 16.3	N11 40.4	245 50.1	S28 07.3	54.2	9.9	0.2
	13	014 16.5	N11 39.5	260 19.1	S28 07.1	54.2	9.9	0.4
	14	029 16.6	N11 38.7	274 48.0	S28 06.7	54.2	9.9	0.5
	15	044 16.8	N11 37.8	289 16.9	S28 06.3	54.2	9.9	0.6
	16	059 17.0	N11 37.0	303 45.8	S28 05.6	54.2	9.9	0.8
	17	074 17.1	N11 36.1	318 14.7	S28 04.9	54.2	9.9	0.9
	18	089 17.3	N11 35.3	332 43.6	S28 04.0	54.2	9.9	1.0
	19	104 17.4	N11 34.5	347 12.5	S28 02.9	54.2	9.9	1.2
	20	119 17.6	N11 33.6	001 41.5	S28 01.8	54.2	9.9	1.3
	21	134 17.8	N11 32.8	016 10.4	S28 00.5	54.2	9.9	1.4
	22	149 17.9	N11 31.9	030 39.3	S27 59.0	54.2	9.9	1.6
	23	164 18.1	N11 31.1	045 08.3	S27 57.5	54.2	10.0	1.7

Day 20 noon Sun: v 0.2 d -0.8 SD 15.8 | Moon SD 14.8

Day 21 noon Sun: v 0.2 d -0.8 SD 15.8 | Moon SD 14.8

Day 22 noon Sun: v 0.2 d -0.8 SD 15.8 | Moon SD 14.8

SUN: AUGUST 21 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	--	0303	2059	2333	--
70N	--	0144	0326	2037	2214	--
68N	--	0224	0344	2019	2138	--
66N	--	0250	0358	2006	2112	2337
64N	0132	0310	0410	1954	2053	2228
62N	0207	0327	0420	1944	2037	2155
60N	0232	0340	0429	1936	2024	2131
58N	0250	0351	0436	1929	2013	2113
56N	0306	0401	0443	1922	2004	2058
54N	0319	0409	0448	1917	1956	2046
52N	0330	0417	0454	1911	1948	2035
50N	0340	0423	0459	1907	1942	2025
45N	0359	0437	0509	1857	1928	2006
40N	0414	0449	0517	1848	1917	1951
35N	0426	0458	0525	1841	1908	1939
30N	0437	0506	0531	1835	1900	1929
25N	0445	0513	0537	1829	1853	1921
20N	0452	0519	0542	1824	1847	1914
15N	0459	0525	0547	1820	1842	1907
10N	0504	0530	0551	1815	1837	1902
05N	0510	0534	0556	1811	1832	1857
00N	0514	0539	0600	1806	1828	1852
05S	0518	0543	0604	1802	1823	1848
10S	0522	0547	0608	1758	1819	1844
15S	0526	0551	0613	1754	1815	1841
20S	0529	0555	0617	1749	1812	1837
25S	0532	0559	0622	1744	1808	1834
30S	0535	0603	0628	1739	1803	1831
35S	0538	0608	0634	1733	1759	1829
40S	0541	0612	0640	1727	1754	1826
45S	0543	0618	0648	1719	1749	1824
50S	0546	0624	0657	1710	1743	1821
55S	0548	0631	0708	1659	1737	1819
60S	0551	0639	0723	1644	1728	1817

MOON: RISE / SET | UTC HHMM

Lat	Day 20		Day 21		Day 22	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	--	--	--	--
62N	1639	1935	1842	1919	--	--
60N	1600	2015	1724	2037	1822	2126
58N	1532	2043	1648	2113	1744	2203
56N	1511	2105	1622	2139	1718	2229
54N	1454	2123	1602	2159	1657	2250
52N	1439	2138	1545	2216	1640	2308
50N	1426	2151	1530	2231	1625	2323
45N	1359	2218	1500	2301	1555	2352
40N	1338	2240	1437	2324	1531	--
35N	1321	2258	1418	2343	1512	--
30N	1306	2313	1402	2400	1455	--
25N	1253	2327	1348	--	1440	0014
20N	1241	2339	1335	--	1427	0028
15N	1230	2351	1323	--	1415	0040
10N	1219	--	1311	0002	1403	0052
05N	1209	--	1300	0013	1352	0103
00N	1159	--	1249	0023	1341	0114
05S	1149	--	1238	0033	1329	0125
10S	1139	--	1227	0044	1318	0136
15S	1128	0002	1216	0055	1306	0148
20S	1117	0013	1204	0107	1254	0200
25S	1106	0024	1151	0119	1241	0213
30S	1053	0036	1137	0133	1226	0228
35S	1038	0050	1121	0149	1210	0245
40S	1021	0106	1102	0207	1150	0304
45S	1001	0125	1040	0229	1127	0327
50S	0936	0149	1011	0257	1057	0357
55S	0903	0222	0932	0336	1015	0439
60S	0813	0311	0827	0440	0902	0552

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | AUGUST 23 - AUGUST 25

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
23	00	331 18.3	137 53.7	S08 12.9	232 58.5	N23 37.1	196 54.7	N17 44.7	317 16.8	N03 09.5
	01	346 20.7	152 54.2	S08 14.1	247 59.2	N23 37.1	211 56.6	N17 44.6	332 19.3	N03 09.4
	02	001 23.2	167 54.7	S08 15.2	262 59.9	N23 37.0	226 58.5	N17 44.4	347 21.9	N03 09.4
	03	016 25.7	182 55.2	S08 16.4	278 00.6	N23 37.0	242 00.4	N17 44.3	002 24.4	N03 09.3
	04	031 28.1	197 55.7	S08 17.5	293 01.3	N23 36.9	257 02.3	N17 44.1	017 27.0	N03 09.3
	05	046 30.6	212 56.2	S08 18.6	308 02.0	N23 36.8	272 04.3	N17 44.0	032 29.6	N03 09.2
	06	061 33.1	227 56.7	S08 19.8	323 02.7	N23 36.8	287 06.2	N17 43.8	047 32.1	N03 09.2
	07	076 35.5	242 57.2	S08 20.9	338 03.4	N23 36.7	302 08.1	N17 43.7	062 34.7	N03 09.1
	08	091 38.0	257 57.7	S08 22.0	353 04.1	N23 36.7	317 10.0	N17 43.5	077 37.3	N03 09.1
	09	106 40.5	272 58.2	S08 23.2	008 04.8	N23 36.6	332 11.9	N17 43.4	092 39.8	N03 09.0
	10	121 42.9	287 58.7	S08 24.3	023 05.5	N23 36.5	347 13.9	N17 43.2	107 42.4	N03 09.0
	11	136 45.4	302 59.2	S08 25.4	038 06.2	N23 36.5	002 15.8	N17 43.1	122 44.9	N03 08.9
	12	151 47.9	317 59.7	S08 26.6	053 06.9	N23 36.4	017 17.7	N17 43.0	137 47.5	N03 08.9
	13	166 50.3	333 00.2	S08 27.7	068 07.6	N23 36.4	032 19.6	N17 42.8	152 50.1	N03 08.8
	14	181 52.8	348 00.7	S08 28.9	083 08.3	N23 36.3	047 21.5	N17 42.7	167 52.6	N03 08.8
	15	196 55.2	003 01.2	S08 30.0	098 09.0	N23 36.2	062 23.5	N17 42.5	182 55.2	N03 08.7
	16	211 57.7	018 01.7	S08 31.1	113 09.7	N23 36.2	077 25.4	N17 42.4	197 57.8	N03 08.7
	17	227 00.2	033 02.2	S08 32.3	128 10.4	N23 36.1	092 27.3	N17 42.2	213 00.3	N03 08.6
	18	242 02.6	048 02.7	S08 33.4	143 11.1	N23 36.1	107 29.2	N17 42.1	228 02.9	N03 08.6
	19	257 05.1	063 03.2	S08 34.5	158 11.8	N23 36.0	122 31.1	N17 41.9	243 05.5	N03 08.5
	20	272 07.6	078 03.7	S08 35.7	173 12.5	N23 35.9	137 33.1	N17 41.8	258 08.0	N03 08.5
	21	287 10.0	093 04.2	S08 36.8	188 13.2	N23 35.9	152 35.0	N17 41.6	273 10.6	N03 08.4
	22	302 12.5	108 04.7	S08 37.9	203 13.9	N23 35.8	167 36.9	N17 41.5	288 13.2	N03 08.4
	23	317 15.0	123 05.3	S08 39.0	218 14.6	N23 35.7	182 38.8	N17 41.4	303 15.7	N03 08.3
24	00	332 17.4	138 05.8	S08 40.2	233 15.3	N23 35.7	197 40.8	N17 41.2	318 18.3	N03 08.2
	01	347 19.9	153 06.3	S08 41.3	248 16.0	N23 35.6	212 42.7	N17 41.1	333 20.9	N03 08.2
	02	002 22.4	168 06.8	S08 42.4	263 16.8	N23 35.5	227 44.6	N17 40.9	348 23.4	N03 08.1
	03	017 24.8	183 07.3	S08 43.6	278 17.5	N23 35.5	242 46.5	N17 40.8	003 26.0	N03 08.1
	04	032 27.3	198 07.8	S08 44.7	293 18.2	N23 35.4	257 48.4	N17 40.6	018 28.6	N03 08.0
	05	047 29.7	213 08.4	S08 45.8	308 18.9	N23 35.4	272 50.4	N17 40.5	033 31.1	N03 08.0
	06	062 32.2	228 08.9	S08 47.0	323 19.6	N23 35.3	287 52.3	N17 40.3	048 33.7	N03 07.9
	07	077 34.7	243 09.4	S08 48.1	338 20.3	N23 35.2	302 54.2	N17 40.2	063 36.3	N03 07.9
	08	092 37.1	258 09.9	S08 49.2	353 21.0	N23 35.2	317 56.1	N17 40.0	078 38.8	N03 07.8
	09	107 39.6	273 10.4	S08 50.3	008 21.7	N23 35.1	332 58.0	N17 39.9	093 41.4	N03 07.8
	10	122 42.1	288 11.0	S08 51.5	023 22.4	N23 35.0	348 00.0	N17 39.8	108 44.0	N03 07.7
	11	137 44.5	303 11.5	S08 52.6	038 23.1	N23 35.0	003 01.9	N17 39.6	123 46.5	N03 07.7
	12	152 47.0	318 12.0	S08 53.7	053 23.8	N23 34.9	018 03.8	N17 39.5	138 49.1	N03 07.6
	13	167 49.5	333 12.5	S08 54.8	068 24.5	N23 34.8	033 05.7	N17 39.3	153 51.7	N03 07.6
	14	182 51.9	348 13.0	S08 56.0	083 25.2	N23 34.7	048 07.7	N17 39.2	168 54.2	N03 07.5
	15	197 54.4	003 13.6	S08 57.1	098 25.9	N23 34.7	063 09.6	N17 39.0	183 56.8	N03 07.5
	16	212 56.9	018 14.1	S08 58.2	113 26.6	N23 34.6	078 11.5	N17 38.9	198 59.4	N03 07.4
	17	227 59.3	033 14.6	S08 59.3	128 27.3	N23 34.5	093 13.4	N17 38.7	214 01.9	N03 07.3
	18	243 01.8	048 15.2	S09 00.5	143 28.0	N23 34.5	108 15.3	N17 38.6	229 04.5	N03 07.3
	19	258 04.2	063 15.7	S09 01.6	158 28.8	N23 34.4	123 17.3	N17 38.4	244 07.1	N03 07.2
	20	273 06.7	078 16.2	S09 02.7	173 29.5	N23 34.3	138 19.2	N17 38.3	259 09.6	N03 07.2
	21	288 09.2	093 16.7	S09 03.8	188 30.2	N23 34.3	153 21.1	N17 38.1	274 12.2	N03 07.1
	22	303 11.6	108 17.3	S09 04.9	203 30.9	N23 34.2	168 23.0	N17 38.0	289 14.8	N03 07.1
	23	318 14.1	123 17.8	S09 06.1	218 31.6	N23 34.1	183 25.0	N17 37.9	304 17.3	N03 07.0
25	00	333 16.6	138 18.3	S09 07.2	233 32.3	N23 34.0	198 26.9	N17 37.7	319 19.9	N03 07.0
	01	348 19.0	153 18.9	S09 08.3	248 33.0	N23 34.0	213 28.8	N17 37.6	334 22.5	N03 06.9
	02	003 21.5	168 19.4	S09 09.4	263 33.7	N23 33.9	228 30.7	N17 37.4	349 25.0	N03 06.9
	03	018 24.0	183 19.9	S09 10.5	278 34.4	N23 33.8	243 32.7	N17 37.3	004 27.6	N03 06.8
	04	033 26.4	198 20.5	S09 11.7	293 35.1	N23 33.8	258 34.6	N17 37.1	019 30.2	N03 06.8
	05	048 28.9	213 21.0	S09 12.8	308 35.8	N23 33.7	273 36.5	N17 37.0	034 32.7	N03 06.7
	06	063 31.3	228 21.6	S09 13.9	323 36.5	N23 33.6	288 38.4	N17 36.8	049 35.3	N03 06.6
	07	078 33.8	243 22.1	S09 15.0	338 37.3	N23 33.5	303 40.4	N17 36.7	064 37.9	N03 06.6
	08	093 36.3	258 22.6	S09 16.1	353 38.0	N23 33.5	318 42.3	N17 36.5	079 40.5	N03 06.5
	09	108 38.7	273 23.2	S09 17.3	008 38.7	N23 33.4	333 44.2	N17 36.4	094 43.0	N03 06.5
	10	123 41.2	288 23.7	S09 18.4	023 39.4	N23 33.3	348 46.1	N17 36.3	109 45.6	N03 06.4
	11	138 43.7	303 24.3	S09 19.5	038 40.1	N23 33.2	003 48.0	N17 36.1	124 48.2	N03 06.4
	12	153 46.1	318 24.8	S09 20.6	053 40.8	N23 33.2	018 50.0	N17 36.0	139 50.7	N03 06.3
	13	168 48.6	333 25.4	S09 21.7	068 41.5	N23 33.1	033 51.9	N17 35.8	154 53.3	N03 06.3
	14	183 51.1	348 25.9	S09 22.8	083 42.2	N23 33.0	048 53.8	N17 35.7	169 55.9	N03 06.2
	15	198 53.5	003 26.4	S09 24.0	098 42.9	N23 32.9	063 55.7	N17 35.5	184 58.5	N03 06.2
	16	213 56.0	018 27.0	S09 25.1	113 43.7	N23 32.9	078 57.7	N17 35.4	200 01.0	N03 06.1
	17	228 58.5	033 27.5	S09 26.2	128 44.4	N23 32.8	093 59.6	N17 35.2	215 03.6	N03 06.0
	18	244 00.9	048 28.1	S09 27.3	143 45.1	N23 32.7	109 01.5	N17 35.1	230 06.2	N03 06.0
	19	259 03.4	063 28.6	S09 28.4	158 45.8	N23 32.6	124 03.4	N17 34.9	245 08.7	N03 05.9
	20	274 05.8	078 29.2	S09 29.5	173 46.5	N23 32.5	139 05.4	N17 34.8	260 11.3	N03 05.9
	21	289 08.3	093 29.7	S09 30.6	188 47.2	N23 32.5	154 07.3	N17 34.6	275 13.9	N03 05.8
	22	304 10.8	108 30.3	S09 31.7	203 47.9	N23 32.4	169 09.2	N17 34.5	290 16.5	N03 05.8
	23	319 13.2	123 30.8	S09 32.9	218 48.6	N23 32.3	184 11.1	N17 34.4	305 19.0	N03 05.7

Venus	Mars	Jupiter	Saturn
23: v 0.5 d -1.1	23: v 0.7 d -0.1	23: v 1.9 d -0.1	23: v 2.6 d -0.1
24: v 0.5 d -1.1	24: v 0.7 d -0.1	24: v 1.9 d -0.1	24: v 2.6 d -0.1
25: v 0.5 d -1.1	25: v 0.7 d -0.1	25: v 1.9 d -0.1	25: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.6	S40 11.5
Achernar	335 18.8	S57 05.7
Acrux	172 59.1	S63 15.0
Adhara	255 05.1	S29 00.3
Al Na'ir	027 30.7	S46 49.8
Aldebaran	290 38.1	N16 33.8
Alioth	166 12.2	N55 49.1
Alkaid	152 51.2	N49 11.0
Alnilam	275 36.5	S01 11.0
Alphard	217 46.7	S08 46.4
Alphecca	126 02.6	N26 37.7
Alpheratz	357 33.1	N29 14.3
Altair	061 58.4	N08 56.5
Ankaa	353 05.5	S42 09.4
Antares	112 14.1	S26 29.5
Arcturus	145 46.8	N19 02.8
Atria	107 06.9	S69 04.7
Avior	234 14.8	S59 35.5
Bellatrix	278 21.5	N06 22.5
Betelgeuse	270 50.8	N07 24.8
Canopus	263 52.1	S52 42.3
Capella	280 20.0	N46 01.3
Deneb	049 24.5	N45 22.7
Denebola	182 23.9	N14 25.5
Diphda	348 45.7	S17 50.2
Dubhe	193 40.0	N61 36.5
Elnath	278 00.3	N28 37.7
Eltanin	090 41.3	N51 29.4
Enif	033 37.1	N10 00.0
Fomalhaut	015 12.7	S29 28.7
Gacrux	171 50.6	S57 15.9
Gienah	175 42.5	S17 41.4
Hadar	148 34.4	S60 30.3
Hamal	327 49.5	N23 35.4
Kaus Australi	083 30.5	S34 22.3
Kochab	137 20.2	N74 03.0
Markab	013 28.2	N15 21.1
Menkar	314 04.7	N04 11.8
Menkent	147 56.2	S36 30.2
Miaplacidus	221 38.9	S69 49.5
Mirfak	308 26.2	N49 57.2
Nunki	075 45.8	S26 15.8
Peacock	053 03.1	S56 38.9
Polaris	313 13.6	N89 22.3
Pollux	243 16.0	N27 57.7
Procyon	244 49.7	N05 09.5
Rasalhague	095 57.1	N12 32.6
Regulus	207 33.3	N11 50.3
Rigel	281 02.7	S08 10.1
Rigil Kentaur	139 38.6	S60 57.0
Sabik	102 01.1	S15 45.4
Schedar	349 29.1	N56 41.0
Shaula	096 08.4	S37 07.5
Sirius	258 25.3	S16 45.0
Spica	158 21.1	S11 18.0
Suhail	222 45.8	S43 32.3
Vega	080 32.0	N38 48.7
Zubenelgenubi	136 54.6	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	165 25.0	1447
Mars	260 36.8	0827
Jupiter	225 16.8	1048
Saturn	346 02.1	0246

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
23	00	179 18.3	N11 30.2	059 37.2	S27 55.7	54.2	10.0	1.8
	01	194 18.4	N11 29.4	074 06.2	S27 53.9	54.2	10.0	2.0
	02	209 18.6	N11 28.5	088 35.2	S27 51.9	54.2	10.0	2.1
	03	224 18.7	N11 27.7	103 04.2	S27 49.8	54.2	10.0	2.3
	04	239 18.9	N11 26.8	117 33.2	S27 47.5	54.2	10.0	2.4
	05	254 19.1	N11 26.0	132 02.2	S27 45.1	54.2	10.0	2.5
	06	269 19.2	N11 25.2	146 31.2	S27 42.6	54.3	10.1	2.7
	07	284 19.4	N11 24.3	161 00.3	S27 40.0	54.3	10.1	2.8
	08	299 19.6	N11 23.5	175 29.3	S27 37.2	54.3	10.1	2.9
	09	314 19.7	N11 22.6	189 58.4	S27 34.2	54.3	10.1	3.1
	10	329 19.9	N11 21.8	204 27.5	S27 31.2	54.3	10.1	3.2
	11	344 20.1	N11 20.9	218 56.7	S27 28.0	54.3	10.2	3.3
	12	359 20.2	N11 20.1	233 25.8	S27 24.7	54.3	10.2	3.5
	13	014 20.4	N11 19.2	247 55.0	S27 21.2	54.3	10.2	3.6
	14	029 20.6	N11 18.4	262 24.2	S27 17.6	54.3	10.2	3.7
	15	044 20.7	N11 17.5	276 53.4	S27 13.9	54.3	10.2	3.9
	16	059 20.9	N11 16.7	291 22.7	S27 10.0	54.3	10.3	4.0
	17	074 21.1	N11 15.8	305 51.9	S27 06.0	54.3	10.3	4.1
	18	089 21.2	N11 15.0	320 21.2	S27 01.9	54.3	10.3	4.3
	19	104 21.4	N11 14.1	334 50.6	S26 57.7	54.3	10.4	4.4
	20	119 21.6	N11 13.3	349 19.9	S26 53.3	54.4	10.4	4.5
	21	134 21.7	N11 12.4	003 49.3	S26 48.8	54.4	10.4	4.6
	22	149 21.9	N11 11.6	018 18.7	S26 44.1	54.4	10.4	4.8
	23	164 22.1	N11 10.7	032 48.2	S26 39.4	54.4	10.5	4.9
24	00	179 22.2	N11 09.8	047 17.6	S26 34.5	54.4	10.5	5.0
	01	194 22.4	N11 09.0	061 47.2	S26 29.4	54.4	10.5	5.2
	02	209 22.6	N11 08.1	076 16.7	S26 24.3	54.4	10.6	5.3
	03	224 22.7	N11 07.3	090 46.3	S26 19.0	54.4	10.6	5.4
	04	239 22.9	N11 06.4	105 15.9	S26 13.6	54.4	10.7	5.5
	05	254 23.1	N11 05.6	119 45.6	S26 08.0	54.4	10.7	5.7
	06	269 23.2	N11 04.7	134 15.2	S26 02.4	54.5	10.7	5.8
	07	284 23.4	N11 03.9	148 45.0	S25 56.6	54.5	10.8	5.9
	08	299 23.6	N11 03.0	163 14.7	S25 50.7	54.5	10.8	6.0
	09	314 23.7	N11 02.2	177 44.5	S25 44.6	54.5	10.8	6.2
	10	329 23.9	N11 01.3	192 14.4	S25 38.4	54.5	10.9	6.3
	11	344 24.1	N11 00.4	206 44.2	S25 32.1	54.5	10.9	6.4
	12	359 24.2	N10 59.6	221 14.2	S25 25.7	54.5	11.0	6.5
	13	014 24.4	N10 58.7	235 44.1	S25 19.2	54.5	11.0	6.7
	14	029 24.6	N10 57.9	250 14.1	S25 12.5	54.6	11.0	6.8
	15	044 24.8	N10 57.0	264 44.2	S25 05.8	54.6	11.1	6.9
	16	059 24.9	N10 56.2	279 14.2	S24 58.9	54.6	11.1	7.0
	17	074 25.1	N10 55.3	293 44.4	S24 51.8	54.6	11.2	7.1
	18	089 25.3	N10 54.4	308 14.5	S24 44.7	54.6	11.2	7.3
	19	104 25.4	N10 53.6	322 44.7	S24 37.4	54.6	11.3	7.4
	20	119 25.6	N10 52.7	337 15.0	S24 30.0	54.6	11.3	7.5
	21	134 25.8	N10 51.9	351 45.3	S24 22.5	54.7	11.3	7.6
	22	149 25.9	N10 51.0	006 15.7	S24 14.9	54.7	11.4	7.7
	23	164 26.1	N10 50.1	020 46.0	S24 07.2	54.7	11.4	7.9
25	00	179 26.3	N10 49.3	035 16.5	S23 59.3	54.7	11.5	8.0
	01	194 26.5	N10 48.4	049 47.0	S23 51.4	54.7	11.5	8.1
	02	209 26.6	N10 47.6	064 17.5	S23 43.3	54.7	11.6	8.2
	03	224 26.8	N10 46.7	078 48.1	S23 35.1	54.7	11.6	8.3
	04	239 27.0	N10 45.8	093 18.7	S23 26.8	54.8	11.7	8.4
	05	254 27.2	N10 45.0	107 49.4	S23 18.4	54.8	11.7	8.5
	06	269 27.3	N10 44.1	122 20.1	S23 09.8	54.8	11.8	8.6
	07	284 27.5	N10 43.3	136 50.8	S23 01.2	54.8	11.8	8.8
	08	299 27.7	N10 42.4	151 21.6	S22 52.4	54.8	11.9	8.9
	09	314 27.8	N10 41.5	165 52.5	S22 43.6	54.8	11.9	9.0
	10	329 28.0	N10 40.7	180 23.4	S22 34.6	54.8	12.0	9.1
	11	344 28.2	N10 39.8	194 54.3	S22 25.5	54.9	12.0	9.2
	12	359 28.4	N10 38.9	209 25.3	S22 16.3	54.9	12.0	9.3
	13	014 28.5	N10 38.1	223 56.4	S22 07.0	54.9	12.1	9.4
	14	029 28.7	N10 37.2	238 27.5	S21 57.6	54.9	12.1	9.5
	15	044 28.9	N10 36.3	252 58.6	S21 48.1	54.9	12.2	9.6
	16	059 29.1	N10 35.5	267 29.8	S21 38.5	55.0	12.2	9.7
	17	074 29.2	N10 34.6	282 01.1	S21 28.8	55.0	12.3	9.8
	18	089 29.4	N10 33.7	296 32.3	S21 18.9	55.0	12.3	9.9
	19	104 29.6	N10 32.9	311 03.7	S21 09.0	55.0	12.4	10.0
	20	119 29.8	N10 32.0	325 35.1	S20 59.0	55.0	12.4	10.1
	21	134 29.9	N10 31.1	340 06.5	S20 48.9	55.0	12.5	10.2
	22	149 30.1	N10 30.3	354 38.0	S20 38.6	55.1	12.5	10.3
	23	164 30.3	N10 29.4	009 09.5	S20 28.3	55.1	12.6	10.4

Day 23 noon Sun: v 0.2 d -0.8 SD 15.8 | Moon SD 14.8

Day 24 noon Sun: v 0.2 d -0.9 SD 15.8 | Moon SD 14.9

Day 25 noon Sun: v 0.2 d -0.9 SD 15.8 | Moon SD 15.0

SUN: AUGUST 24 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	0114	0320	2041	2238	--
70N	--	0209	0340	2022	2150	--
68N	--	0241	0356	2006	2120	--
66N	0104	0304	0408	1954	2058	2250
64N	0152	0322	0419	1944	2040	2207
62N	0222	0336	0428	1935	2026	2139
60N	0243	0348	0436	1927	2015	2119
58N	0300	0358	0443	1921	2005	2102
56N	0314	0407	0449	1915	1956	2048
54N	0326	0415	0454	1910	1948	2037
52N	0336	0422	0459	1905	1941	2027
50N	0345	0428	0503	1901	1935	2018
45N	0404	0441	0512	1852	1923	2000
40N	0418	0452	0520	1844	1912	1946
35N	0429	0500	0527	1837	1904	1935
30N	0439	0508	0533	1832	1856	1926
25N	0447	0514	0538	1827	1850	1918
20N	0453	0520	0542	1822	1845	1911
15N	0459	0525	0547	1818	1840	1905
10N	0505	0530	0551	1814	1835	1900
05N	0509	0534	0555	1810	1831	1855
00N	0514	0538	0559	1806	1827	1851
05S	0517	0542	0603	1802	1823	1847
10S	0521	0546	0607	1758	1819	1844
15S	0524	0549	0611	1754	1816	1841
20S	0527	0553	0615	1750	1812	1838
25S	0530	0556	0620	1745	1809	1835
30S	0532	0600	0624	1741	1805	1833
35S	0535	0604	0630	1735	1801	1831
40S	0537	0608	0636	1730	1757	1829
45S	0539	0613	0643	1723	1753	1827
50S	0540	0618	0651	1715	1748	1825
55S	0542	0624	0701	1704	1742	1824
60S	0543	0631	0714	1651	1735	1823

MOON: RISE / SET | UTC HHMM

Lat	Day 23		Day 24		Day 25	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	2104	2357
66N	--	--	--	--	2017	--
64N	--	--	2010	2309	1947	--
62N	1936	2159	1929	2349	1924	--
60N	1849	2245	1901	--	1905	0017
58N	1819	2314	1839	--	1850	0038
56N	1756	2337	1821	--	1836	0056
54N	1737	2356	1806	--	1825	0111
52N	1722	--	1752	0011	1815	0123
50N	1708	--	1741	0025	1806	0135
45N	1640	--	1717	0052	1746	0158
40N	1618	0016	1657	0114	1730	0216
35N	1559	0035	1641	0132	1717	0232
30N	1543	0052	1627	0147	1705	0245
25N	1529	0106	1614	0201	1655	0257
20N	1517	0119	1603	0213	1645	0308
15N	1505	0132	1552	0225	1636	0318
10N	1453	0143	1542	0236	1627	0328
05N	1443	0154	1532	0246	1619	0337
00N	1432	0205	1522	0256	1611	0346
05S	1421	0216	1513	0307	1603	0355
10S	1410	0228	1503	0317	1554	0404
15S	1359	0239	1452	0328	1546	0413
20S	1347	0251	1442	0339	1536	0423
25S	1334	0304	1430	0351	1527	0434
30S	1320	0319	1417	0405	1516	0445
35S	1304	0335	1403	0420	1504	0458
40S	1245	0354	1346	0437	1450	0513
45S	1223	0417	1326	0458	1433	0531
50S	1154	0446	1301	0524	1413	0552
55S	1114	0526	1226	0559	1346	0621
60S	1006	0634	1133	0653	1307	0701

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | AUGUST 26 - AUGUST 28

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
26	00	334 15.7	138 31.4	S09 34.0	233 49.4	N23 32.2	199 13.1	N17 34.2	320 21.6	N03 05.7
	01	349 18.2	153 32.0	S09 35.1	248 50.1	N23 32.2	214 15.0	N17 34.1	335 24.2	N03 05.6
	02	004 20.6	168 32.5	S09 36.2	263 50.8	N23 32.1	229 16.9	N17 33.9	350 26.7	N03 05.6
	03	019 23.1	183 33.1	S09 37.3	278 51.5	N23 32.0	244 18.8	N17 33.8	005 29.3	N03 05.5
	04	034 25.6	198 33.6	S09 38.4	293 52.2	N23 31.9	259 20.8	N17 33.6	020 31.9	N03 05.4
	05	049 28.0	213 34.2	S09 39.5	308 52.9	N23 31.8	274 22.7	N17 33.5	035 34.5	N03 05.4
	06	064 30.5	228 34.7	S09 40.6	323 53.6	N23 31.8	289 24.6	N17 33.3	050 37.0	N03 05.3
	07	079 33.0	243 35.3	S09 41.7	338 54.3	N23 31.7	304 26.5	N17 33.2	065 39.6	N03 05.3
	08	094 35.4	258 35.9	S09 42.8	353 55.1	N23 31.6	319 28.5	N17 33.0	080 42.2	N03 05.2
	09	109 37.9	273 36.4	S09 43.9	008 55.8	N23 31.5	334 30.4	N17 32.9	095 44.8	N03 05.2
	10	124 40.3	288 37.0	S09 45.0	023 56.5	N23 31.4	349 32.3	N17 32.7	110 47.3	N03 05.1
	11	139 42.8	303 37.6	S09 46.2	038 57.2	N23 31.3	004 34.2	N17 32.6	125 49.9	N03 05.1
	12	154 45.3	318 38.1	S09 47.3	053 57.9	N23 31.3	019 36.2	N17 32.5	140 52.5	N03 05.0
	13	169 47.7	333 38.7	S09 48.4	068 58.6	N23 31.2	034 38.1	N17 32.3	155 55.0	N03 04.9
	14	184 50.2	348 39.2	S09 49.5	083 59.4	N23 31.1	049 40.0	N17 32.2	170 57.6	N03 04.9
	15	199 52.7	003 39.8	S09 50.6	099 00.1	N23 31.0	064 41.9	N17 32.0	186 00.2	N03 04.8
	16	214 55.1	018 40.4	S09 51.7	114 00.8	N23 30.9	079 43.9	N17 31.9	201 02.8	N03 04.8
	17	229 57.6	033 41.0	S09 52.8	129 01.5	N23 30.8	094 45.8	N17 31.7	216 05.3	N03 04.7
	18	245 00.1	048 41.5	S09 53.9	144 02.2	N23 30.8	109 47.7	N17 31.6	231 07.9	N03 04.7
	19	260 02.5	063 42.1	S09 55.0	159 02.9	N23 30.7	124 49.7	N17 31.4	246 10.5	N03 04.6
	20	275 05.0	078 42.7	S09 56.1	174 03.7	N23 30.6	139 51.6	N17 31.3	261 13.1	N03 04.5
	21	290 07.5	093 43.2	S09 57.2	189 04.4	N23 30.5	154 53.5	N17 31.1	276 15.6	N03 04.5
	22	305 09.9	108 43.8	S09 58.3	204 05.1	N23 30.4	169 55.4	N17 31.0	291 18.2	N03 04.4
	23	320 12.4	123 44.4	S09 59.4	219 05.8	N23 30.3	184 57.4	N17 30.8	306 20.8	N03 04.4
27	00	335 14.8	138 45.0	S10 00.5	234 06.5	N23 30.3	199 59.3	N17 30.7	321 23.4	N03 04.3
	01	350 17.3	153 45.5	S10 01.6	249 07.2	N23 30.2	215 01.2	N17 30.6	336 25.9	N03 04.3
	02	005 19.8	168 46.1	S10 02.7	264 08.0	N23 30.1	230 03.1	N17 30.4	351 28.5	N03 04.2
	03	020 22.2	183 46.7	S10 03.8	279 08.7	N23 30.0	245 05.1	N17 30.3	006 31.1	N03 04.2
	04	035 24.7	198 47.3	S10 04.9	294 09.4	N23 29.9	260 07.0	N17 30.1	021 33.7	N03 04.1
	05	050 27.2	213 47.9	S10 06.0	309 10.1	N23 29.8	275 08.9	N17 30.0	036 36.2	N03 04.0
	06	065 29.6	228 48.4	S10 07.1	324 10.8	N23 29.7	290 10.8	N17 29.8	051 38.8	N03 04.0
	07	080 32.1	243 49.0	S10 08.2	339 11.6	N23 29.6	305 12.8	N17 29.7	066 41.4	N03 03.9
	08	095 34.6	258 49.6	S10 09.3	354 12.3	N23 29.6	320 14.7	N17 29.5	081 44.0	N03 03.9
	09	110 37.0	273 50.2	S10 10.4	009 13.0	N23 29.5	335 16.6	N17 29.4	096 46.6	N03 03.8
	10	125 39.5	288 50.8	S10 11.5	024 13.7	N23 29.4	350 18.6	N17 29.2	111 49.1	N03 03.8
	11	140 41.9	303 51.4	S10 12.6	039 14.4	N23 29.3	005 20.5	N17 29.1	126 51.7	N03 03.7
	12	155 44.4	318 51.9	S10 13.7	054 15.1	N23 29.2	020 22.4	N17 29.0	141 54.3	N03 03.6
	13	170 46.9	333 52.5	S10 14.7	069 15.9	N23 29.1	035 24.3	N17 28.8	156 56.9	N03 03.6
	14	185 49.3	348 53.1	S10 15.8	084 16.6	N23 29.0	050 26.3	N17 28.7	171 59.4	N03 03.5
	15	200 51.8	003 53.7	S10 16.9	099 17.3	N23 28.9	065 28.2	N17 28.5	187 02.0	N03 03.5
	16	215 54.3	018 54.3	S10 18.0	114 18.0	N23 28.8	080 30.1	N17 28.4	202 04.6	N03 03.4
	17	230 56.7	033 54.9	S10 19.1	129 18.8	N23 28.7	095 32.0	N17 28.2	217 07.2	N03 03.4
	18	245 59.2	048 55.5	S10 20.2	144 19.5	N23 28.6	110 34.0	N17 28.1	232 09.7	N03 03.3
	19	261 01.7	063 56.1	S10 21.3	159 20.2	N23 28.6	125 35.9	N17 27.9	247 12.3	N03 03.2
	20	276 04.1	078 56.7	S10 22.4	174 20.9	N23 28.5	140 37.8	N17 27.8	262 14.9	N03 03.2
	21	291 06.6	093 57.3	S10 23.5	189 21.6	N23 28.4	155 39.8	N17 27.6	277 17.5	N03 03.1
	22	306 09.1	108 57.9	S10 24.6	204 22.4	N23 28.3	170 41.7	N17 27.5	292 20.1	N03 03.1
	23	321 11.5	123 58.5	S10 25.7	219 23.1	N23 28.2	185 43.6	N17 27.3	307 22.6	N03 03.0
28	00	336 14.0	138 59.1	S10 26.8	234 23.8	N23 28.1	200 45.5	N17 27.2	322 25.2	N03 03.0
	01	351 16.4	153 59.7	S10 27.8	249 24.5	N23 28.0	215 47.5	N17 27.1	337 27.8	N03 02.9
	02	006 18.9	169 00.3	S10 28.9	264 25.2	N23 27.9	230 49.4	N17 26.9	352 30.4	N03 02.8
	03	021 21.4	184 00.9	S10 30.0	279 26.0	N23 27.8	245 51.3	N17 26.8	007 33.0	N03 02.8
	04	036 23.8	199 01.5	S10 31.1	294 26.7	N23 27.7	260 53.3	N17 26.6	022 35.5	N03 02.7
	05	051 26.3	214 02.1	S10 32.2	309 27.4	N23 27.6	275 55.2	N17 26.5	037 38.1	N03 02.7
	06	066 28.8	229 02.7	S10 33.3	324 28.1	N23 27.5	290 57.1	N17 26.3	052 40.7	N03 02.6
	07	081 31.2	244 03.3	S10 34.4	339 28.9	N23 27.4	305 59.0	N17 26.2	067 43.3	N03 02.6
	08	096 33.7	259 03.9	S10 35.5	354 29.6	N23 27.3	321 01.0	N17 26.0	082 45.8	N03 02.5
	09	111 36.2	274 04.5	S10 36.5	009 30.3	N23 27.2	336 02.9	N17 25.9	097 48.4	N03 02.4
	10	126 38.6	289 05.1	S10 37.6	024 31.0	N23 27.1	351 04.8	N17 25.7	112 51.0	N03 02.4
	11	141 41.1	304 05.7	S10 38.7	039 31.8	N23 27.0	006 06.8	N17 25.6	127 53.6	N03 02.3
	12	156 43.5	319 06.3	S10 39.8	054 32.5	N23 26.9	021 08.7	N17 25.4	142 56.2	N03 02.3
	13	171 46.0	334 06.9	S10 40.9	069 33.2	N23 26.9	036 10.6	N17 25.3	157 58.7	N03 02.2
	14	186 48.5	349 07.5	S10 42.0	084 33.9	N23 26.8	051 12.6	N17 25.2	173 01.3	N03 02.2
	15	201 50.9	004 08.1	S10 43.0	099 34.7	N23 26.7	066 14.5	N17 25.0	188 03.9	N03 02.1
	16	216 53.4	019 08.7	S10 44.1	114 35.4	N23 26.6	081 16.4	N17 24.9	203 06.5	N03 02.0
	17	231 55.9	034 09.4	S10 45.2	129 36.1	N23 26.5	096 18.3	N17 24.7	218 09.1	N03 02.0
	18	246 58.3	049 10.0	S10 46.3	144 36.8	N23 26.4	111 20.3	N17 24.6	233 11.7	N03 01.9
	19	262 00.8	064 10.6	S10 47.4	159 37.6	N23 26.3	126 22.2	N17 24.4	248 14.2	N03 01.9
	20	277 03.3	079 11.2	S10 48.4	174 38.3	N23 26.2	141 24.1	N17 24.3	263 16.8	N03 01.8
	21	292 05.7	094 11.8	S10 49.5	189 39.0	N23 26.1	156 26.1	N17 24.1	278 19.4	N03 01.7
	22	307 08.2	109 12.4	S10 50.6	204 39.7	N23 26.0	171 28.0	N17 24.0	293 22.0	N03 01.7
	23	322 10.7	124 13.1	S10 51.7	219 40.5	N23 25.9	186 29.9	N17 23.8	308 24.6	N03 01.6

Venus	Mars	Jupiter	Saturn
26: v 0.6 d -1.1	26: v 0.7 d -0.1	26: v 1.9 d -0.1	26: v 2.6 d -0.1
27: v 0.6 d -1.1	27: v 0.7 d -0.1	27: v 1.9 d -0.1	27: v 2.6 d -0.1
28: v 0.6 d -1.1	28: v 0.7 d -0.1	28: v 1.9 d -0.1	28: v 2.6 d -0.1

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.6	S40 11.5
Achernar	335 18.8	S57 05.7
Acrux	172 59.2	S63 15.0
Adhara	255 05.0	S29 00.3
Al Na'ir	027 30.7	S46 49.8
Aldebaran	290 38.1	N16 33.8
Alioth	166 12.2	N55 49.1
Alkaid	152 51.2	N49 11.0
Alnilam	275 36.5	S01 10.9
Alphard	217 46.7	S08 46.4
Alphecca	126 02.6	N26 37.7
Alpheratz	357 33.0	N29 14.3
Altair	061 58.4	N08 56.5
Ankaa	353 05.4	S42 09.4
Antares	112 14.1	S26 29.5
Arcturus	145 46.8	N19 02.8
Atria	107 07.0	S69 04.7
Avior	234 14.8	S59 35.5
Bellatrix	278 21.5	N06 22.5
Betelgeuse	270 50.8	N07 24.8
Canopus	263 52.1	S52 42.3
Capella	280 20.0	N46 01.3
Deneb	049 24.5	N45 22.7
Denebola	182 23.9	N14 25.5
Diphda	348 45.7	S17 50.2
Dubhe	193 40.0	N61 36.5
Elnath	278 00.3	N28 37.8
Eltanin	090 41.3	N51 29.4
Enif	033 37.1	N10 00.0
Fomalhaut	015 12.7	S29 28.7
Gacrux	171 50.6	S57 15.9
Gienah	175 42.5	S17 41.4
Hadar	148 34.4	S60 30.3
Hamal	327 49.5	N23 35.4
Kaus Australi	083 30.5	S34 22.3
Kochab	137 20.2	N74 03.0
Markab	013 28.2	N15 21.1
Menkar	314 04.6	N04 11.8
Menkent	147 56.2	S36 30.2
Miaplacidus	221 38.9	S69 49.5
Mirfak	308 26.2	N49 57.2
Nunki	075 45.8	S26 15.8
Peacock	053 03.1	S56 38.9
Polaris	313 12.1	N89 22.3
Pollux	243 15.9	N27 57.7
Procyon	244 49.7	N05 09.5
Rasalhague	095 57.2	N12 32.6
Regulus	207 33.3	N11 50.3
Rigel	281 02.6	S08 10.1
Rigil Kentaur	139 38.7	S60 57.0
Sabik	102 01.1	S15 45.4
Schedar	349 29.0	N56 41.0
Shaula	096 08.4	S37 07.5
Sirius	258 25.2	S16 45.0
Spica	158 21.1	S11 18.0
Suhail	222 45.7	S43 32.3
Vega	080 32.1	N38 48.7
Zubenelgenubi	136 54.6	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	163 07.5	1444
Mars	258 30.7	0823
Jupiter	224 38.0	1039
Saturn	346 09.9	0234

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

2026 | AUGUST 26 - AUGUST 28

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
26	00	179 30.5	N10 28.5	023 41.1	S20 17.9	55.1	12.6	10.5
	01	194 30.6	N10 27.7	038 12.7	S20 07.3	55.1	12.7	10.6
	02	209 30.8	N10 26.8	052 44.3	S19 56.7	55.1	12.7	10.7
	03	224 31.0	N10 25.9	067 16.1	S19 46.0	55.1	12.8	10.8
	04	239 31.2	N10 25.1	081 47.8	S19 35.2	55.2	12.8	10.9
	05	254 31.4	N10 24.2	096 19.6	S19 24.3	55.2	12.9	11.0
	06	269 31.5	N10 23.3	110 51.5	S19 13.3	55.2	12.9	11.1
	07	284 31.7	N10 22.5	125 23.4	S19 02.2	55.2	12.9	11.2
	08	299 31.9	N10 21.6	139 55.3	S18 51.0	55.2	13.0	11.3
	09	314 32.1	N10 20.7	154 27.3	S18 39.7	55.3	13.0	11.4
	10	329 32.2	N10 19.9	168 59.3	S18 28.4	55.3	13.1	11.5
	11	344 32.4	N10 19.0	183 31.4	S18 16.9	55.3	13.1	11.5
	12	359 32.6	N10 18.1	198 03.5	S18 05.3	55.3	13.2	11.6
	13	014 32.8	N10 17.2	212 35.7	S17 53.7	55.3	13.2	11.7
	14	029 33.0	N10 16.4	227 07.9	S17 42.0	55.4	13.3	11.8
	15	044 33.1	N10 15.5	241 40.2	S17 30.2	55.4	13.3	11.9
	16	059 33.3	N10 14.6	256 12.4	S17 18.3	55.4	13.3	12.0
	17	074 33.5	N10 13.8	270 44.8	S17 06.3	55.4	13.4	12.1
	18	089 33.7	N10 12.9	285 17.2	S16 54.3	55.4	13.4	12.1
	19	104 33.8	N10 12.0	299 49.6	S16 42.1	55.5	13.5	12.2
	20	119 34.0	N10 11.1	314 22.0	S16 29.9	55.5	13.5	12.3
	21	134 34.2	N10 10.3	328 54.5	S16 17.6	55.5	13.5	12.4
	22	149 34.4	N10 09.4	343 27.1	S16 05.2	55.5	13.6	12.5
	23	164 34.6	N10 08.5	357 59.6	S15 52.7	55.5	13.6	12.5
27	00	179 34.7	N10 07.7	012 32.3	S15 40.2	55.6	13.7	12.6
	01	194 34.9	N10 06.8	027 04.9	S15 27.6	55.6	13.7	12.7
	02	209 35.1	N10 05.9	041 37.6	S15 14.9	55.6	13.7	12.8
	03	224 35.3	N10 05.0	056 10.3	S15 02.1	55.6	13.8	12.8
	04	239 35.5	N10 04.2	070 43.1	S14 49.3	55.6	13.8	12.9
	05	254 35.7	N10 03.3	085 15.9	S14 36.4	55.7	13.8	13.0
	06	269 35.8	N10 02.4	099 48.7	S14 23.4	55.7	13.9	13.1
	07	284 36.0	N10 01.5	114 21.6	S14 10.3	55.7	13.9	13.1
	08	299 36.2	N10 00.6	128 54.5	S13 57.2	55.7	13.9	13.2
	09	314 36.4	N09 59.8	143 27.4	S13 44.0	55.8	14.0	13.3
	10	329 36.6	N09 58.9	158 00.4	S13 30.7	55.8	14.0	13.3
	11	344 36.7	N09 58.0	172 33.4	S13 17.4	55.8	14.0	13.4
	12	359 36.9	N09 57.1	187 06.4	S13 04.0	55.8	14.1	13.5
	13	014 37.1	N09 56.3	201 39.5	S12 50.5	55.8	14.1	13.5
	14	029 37.3	N09 55.4	216 12.6	S12 37.0	55.9	14.1	13.6
	15	044 37.5	N09 54.5	230 45.7	S12 23.4	55.9	14.1	13.7
	16	059 37.7	N09 53.6	245 18.8	S12 09.7	55.9	14.2	13.7
	17	074 37.8	N09 52.8	259 52.0	S11 56.0	55.9	14.2	13.8
	18	089 38.0	N09 51.9	274 25.2	S11 42.2	55.9	14.2	13.8
	19	104 38.2	N09 51.0	288 58.4	S11 28.3	56.0	14.3	13.9
	20	119 38.4	N09 50.1	303 31.7	S11 14.4	56.0	14.3	14.0
	21	134 38.6	N09 49.2	318 05.0	S11 00.5	56.0	14.3	14.0
	22	149 38.8	N09 48.4	332 38.3	S10 46.4	56.0	14.3	14.1
	23	164 38.9	N09 47.5	347 11.6	S10 32.4	56.1	14.3	14.1
28	00	179 39.1	N09 46.6	001 44.9	S10 18.2	56.1	14.4	14.2
	01	194 39.3	N09 45.7	016 18.3	S10 04.0	56.1	14.4	14.2
	02	209 39.5	N09 44.8	030 51.7	S09 49.8	56.1	14.4	14.3
	03	224 39.7	N09 43.9	045 25.1	S09 35.5	56.1	14.4	14.3
	04	239 39.9	N09 43.1	059 58.5	S09 21.2	56.2	14.4	14.4
	05	254 40.0	N09 42.2	074 31.9	S09 06.8	56.2	14.5	14.4
	06	269 40.2	N09 41.3	089 05.4	S08 52.3	56.2	14.5	14.5
	07	284 40.4	N09 40.4	103 38.9	S08 37.8	56.2	14.5	14.5
	08	299 40.6	N09 39.5	118 12.4	S08 23.3	56.2	14.5	14.6
	09	314 40.8	N09 38.7	132 45.9	S08 08.7	56.3	14.5	14.6
	10	329 41.0	N09 37.8	147 19.4	S07 54.1	56.3	14.5	14.7
	11	344 41.2	N09 36.9	161 52.9	S07 39.4	56.3	14.5	14.7
	12	359 41.3	N09 36.0	176 26.4	S07 24.7	56.3	14.5	14.8
	13	014 41.5	N09 35.1	191 00.0	S07 09.9	56.4	14.6	14.8
	14	029 41.7	N09 34.2	205 33.5	S06 55.1	56.4	14.6	14.8
	15	044 41.9	N09 33.4	220 07.1	S06 40.2	56.4	14.6	14.9
	16	059 42.1	N09 32.5	234 40.7	S06 25.4	56.4	14.6	14.9
	17	074 42.3	N09 31.6	249 14.2	S06 10.4	56.4	14.6	15.0
	18	089 42.5	N09 30.7	263 47.8	S05 55.5	56.5	14.6	15.0
	19	104 42.7	N09 29.8	278 21.4	S05 40.5	56.5	14.6	15.0
	20	119 42.8	N09 28.9	292 55.0	S05 25.5	56.5	14.6	15.1
	21	134 43.0	N09 28.0	307 28.6	S05 10.4	56.5	14.6	15.1
	22	149 43.2	N09 27.2	322 02.2	S04 55.3	56.6	14.6	15.1
	23	164 43.4	N09 26.3	336 35.8	S04 40.2	56.6	14.6	15.2

Day 26 noon Sun: v 0.2 d -0.9 SD 15.8 | Moon SD 15.1

Day 27 noon Sun: v 0.2 d -0.9 SD 15.8 | Moon SD 15.2

Day 28 noon Sun: v 0.2 d -0.9 SD 15.8 | Moon SD 15.4

SUN: AUGUST 27 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	0149	0336	2023	2206	--
70N	--	0229	0353	2007	2128	--
68N	--	0256	0407	1953	2103	2329
66N	0134	0316	0419	1942	2044	2222
64N	0210	0332	0428	1933	2028	2148
62N	0235	0345	0436	1925	2015	2125
60N	0254	0356	0443	1919	2005	2106
58N	0309	0406	0449	1913	1956	2051
56N	0322	0414	0454	1907	1948	2039
54N	0333	0421	0459	1903	1941	2028
52N	0343	0427	0504	1858	1934	2019
50N	0351	0433	0507	1855	1929	2011
45N	0408	0445	0516	1846	1917	1954
40N	0421	0455	0523	1839	1907	1941
35N	0432	0503	0529	1834	1900	1931
30N	0441	0510	0534	1828	1853	1922
25N	0448	0516	0539	1824	1847	1915
20N	0454	0521	0543	1820	1842	1908
15N	0500	0525	0547	1816	1837	1903
10N	0505	0530	0551	1812	1833	1858
05N	0509	0534	0555	1808	1829	1854
00N	0513	0537	0558	1805	1826	1850
05S	0516	0541	0602	1801	1822	1847
10S	0519	0544	0605	1758	1819	1844
15S	0522	0547	0609	1754	1816	1841
20S	0525	0550	0613	1751	1813	1839
25S	0527	0554	0617	1747	1810	1836
30S	0529	0557	0621	1742	1807	1834
35S	0531	0600	0626	1738	1803	1833
40S	0532	0604	0631	1732	1800	1831
45S	0534	0608	0638	1726	1756	1830
50S	0535	0612	0645	1719	1752	1829
55S	0535	0617	0654	1710	1747	1829
60S	0535	0623	0706	1658	1741	1829

MOON: RISE / SET | UTC HHMM

Lat	Day 26		Day 27		Day 28	
72N	2122	--	2018	0118	1938	0356
70N	2041	--	2000	0157	1931	0412
68N	2013	--	1945	0224	1924	0424
66N	1951	0042	1933	0244	1919	0434
64N	1934	0112	1923	0300	1915	0443
62N	1919	0134	1915	0314	1911	0450
60N	1907	0152	1907	0325	1907	0456
58N	1856	0206	1901	0335	1904	0502
56N	1847	0219	1855	0343	1901	0506
54N	1839	0230	1850	0350	1859	0511
52N	1832	0240	1845	0357	1857	0514
50N	1825	0248	1841	0403	1854	0518
45N	1810	0306	1831	0416	1850	0525
40N	1759	0321	1823	0426	1846	0532
35N	1748	0333	1817	0435	1843	0537
30N	1739	0344	1811	0443	1840	0542
25N	1731	0354	1805	0450	1837	0546
20N	1724	0403	1800	0457	1835	0550
15N	1717	0411	1755	0503	1832	0553
10N	1710	0419	1751	0508	1830	0557
05N	1704	0426	1747	0514	1828	0600
00N	1657	0433	1742	0519	1826	0603
05S	1651	0441	1738	0524	1824	0606
10S	1645	0448	1734	0530	1822	0610
15S	1638	0456	1729	0535	1820	0613
20S	1631	0504	1724	0541	1817	0617
25S	1623	0512	1719	0547	1815	0620
30S	1615	0522	1714	0554	1812	0624
35S	1606	0532	1707	0602	1809	0629
40S	1555	0544	1700	0610	1806	0634
45S	1542	0557	1652	0620	1802	0639
50S	1527	0614	1642	0632	1757	0646
55S	1508	0635	1629	0646	1751	0655
60S	1441	0704	1613	0705	1743	0705

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | AUGUST 29 - AUGUST 31

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
29	00	337 13.1	139 13.7	S10 52.7	234 41.2	N23 25.8	201 31.9	N17 23.7	323 27.1	N03 01.6
	01	352 15.6	154 14.3	S10 53.8	249 41.9	N23 25.7	216 33.8	N17 23.5	338 29.7	N03 01.5
	02	007 18.0	169 14.9	S10 54.9	264 42.7	N23 25.6	231 35.7	N17 23.4	353 32.3	N03 01.5
	03	022 20.5	184 15.6	S10 56.0	279 43.4	N23 25.5	246 37.6	N17 23.2	008 34.9	N03 01.4
	04	037 23.0	199 16.2	S10 57.1	294 44.1	N23 25.4	261 39.6	N17 23.1	023 37.5	N03 01.3
	05	052 25.4	214 16.8	S10 58.1	309 44.8	N23 25.3	276 41.5	N17 23.0	038 40.0	N03 01.3
	06	067 27.9	229 17.4	S10 59.2	324 45.6	N23 25.2	291 43.4	N17 22.8	053 42.6	N03 01.2
	07	082 30.4	244 18.1	S11 00.3	339 46.3	N23 25.1	306 45.4	N17 22.7	068 45.2	N03 01.2
	08	097 32.8	259 18.7	S11 01.4	354 47.0	N23 24.9	321 47.3	N17 22.5	083 47.8	N03 01.1
	09	112 35.3	274 19.3	S11 02.4	009 47.8	N23 24.8	336 49.2	N17 22.4	098 50.4	N03 01.0
	10	127 37.8	289 20.0	S11 03.5	024 48.5	N23 24.7	351 51.2	N17 22.2	113 53.0	N03 01.0
	11	142 40.2	304 20.6	S11 04.6	039 49.2	N23 24.6	006 53.1	N17 22.1	128 55.5	N03 00.9
	12	157 42.7	319 21.2	S11 05.6	054 49.9	N23 24.5	021 55.0	N17 21.9	143 58.1	N03 00.9
	13	172 45.1	334 21.9	S11 06.7	069 50.7	N23 24.4	036 57.0	N17 21.8	159 00.7	N03 00.8
	14	187 47.6	349 22.5	S11 07.8	084 51.4	N23 24.3	051 58.9	N17 21.6	174 03.3	N03 00.7
	15	202 50.1	004 23.1	S11 08.9	099 52.1	N23 24.2	067 00.8	N17 21.5	189 05.9	N03 00.7
	16	217 52.5	019 23.8	S11 09.9	114 52.9	N23 24.1	082 02.7	N17 21.3	204 08.5	N03 00.6
	17	232 55.0	034 24.4	S11 11.0	129 53.6	N23 24.0	097 04.7	N17 21.2	219 11.0	N03 00.6
	18	247 57.5	049 25.0	S11 12.1	144 54.3	N23 23.9	112 06.6	N17 21.1	234 13.6	N03 00.5
	19	262 59.9	064 25.7	S11 13.1	159 55.1	N23 23.8	127 08.5	N17 20.9	249 16.2	N03 00.4
	20	278 02.4	079 26.3	S11 14.2	174 55.8	N23 23.7	142 10.5	N17 20.8	264 18.8	N03 00.4
	21	293 04.9	094 27.0	S11 15.3	189 56.5	N23 23.6	157 12.4	N17 20.6	279 21.4	N03 00.3
	22	308 07.3	109 27.6	S11 16.3	204 57.3	N23 23.5	172 14.3	N17 20.5	294 24.0	N03 00.3
	23	323 09.8	124 28.2	S11 17.4	219 58.0	N23 23.4	187 16.3	N17 20.3	309 26.6	N03 00.2
30	00	338 12.3	139 28.9	S11 18.5	234 58.7	N23 23.3	202 18.2	N17 20.2	324 29.1	N03 00.1
	01	353 14.7	154 29.5	S11 19.5	249 59.4	N23 23.2	217 20.1	N17 20.0	339 31.7	N03 00.1
	02	008 17.2	169 30.2	S11 20.6	265 00.2	N23 23.0	232 22.1	N17 19.9	354 34.3	N03 00.0
	03	023 19.6	184 30.8	S11 21.7	280 00.9	N23 22.9	247 24.0	N17 19.7	009 36.9	N03 00.0
	04	038 22.1	199 31.5	S11 22.7	295 01.6	N23 22.8	262 25.9	N17 19.6	024 39.5	N02 59.9
	05	053 24.6	214 32.1	S11 23.8	310 02.4	N23 22.7	277 27.9	N17 19.4	039 42.1	N02 59.8
	06	068 27.0	229 32.8	S11 24.8	325 03.1	N23 22.6	292 29.8	N17 19.3	054 44.6	N02 59.8
	07	083 29.5	244 33.4	S11 25.9	340 03.8	N23 22.5	307 31.7	N17 19.2	069 47.2	N02 59.7
	08	098 32.0	259 34.1	S11 27.0	355 04.6	N23 22.4	322 33.7	N17 19.0	084 49.8	N02 59.7
	09	113 34.4	274 34.7	S11 28.0	010 05.3	N23 22.3	337 35.6	N17 18.9	099 52.4	N02 59.6
	10	128 36.9	289 35.4	S11 29.1	025 06.0	N23 22.2	352 37.5	N17 18.7	114 55.0	N02 59.5
	11	143 39.4	304 36.1	S11 30.1	040 06.8	N23 22.1	007 39.5	N17 18.6	129 57.6	N02 59.5
	12	158 41.8	319 36.7	S11 31.2	055 07.5	N23 21.9	022 41.4	N17 18.4	145 00.2	N02 59.4
	13	173 44.3	334 37.4	S11 32.3	070 08.3	N23 21.8	037 43.3	N17 18.3	160 02.7	N02 59.4
	14	188 46.8	349 38.0	S11 33.3	085 09.0	N23 21.7	052 45.3	N17 18.1	175 05.3	N02 59.3
	15	203 49.2	004 38.7	S11 34.4	100 09.7	N23 21.6	067 47.2	N17 18.0	190 07.9	N02 59.2
	16	218 51.7	019 39.4	S11 35.4	115 10.5	N23 21.5	082 49.1	N17 17.8	205 10.5	N02 59.2
	17	233 54.1	034 40.0	S11 36.5	130 11.2	N23 21.4	097 51.1	N17 17.7	220 13.1	N02 59.1
	18	248 56.6	049 40.7	S11 37.6	145 11.9	N23 21.3	112 53.0	N17 17.5	235 15.7	N02 59.1
	19	263 59.1	064 41.3	S11 38.6	160 12.7	N23 21.2	127 54.9	N17 17.4	250 18.3	N02 59.0
	20	279 01.5	079 42.0	S11 39.7	175 13.4	N23 21.0	142 56.9	N17 17.3	265 20.9	N02 58.9
	21	294 04.0	094 42.7	S11 40.7	190 14.1	N23 20.9	157 58.8	N17 17.1	280 23.4	N02 58.9
	22	309 06.5	109 43.3	S11 41.8	205 14.9	N23 20.8	173 00.7	N17 17.0	295 26.0	N02 58.8
	23	324 08.9	124 44.0	S11 42.8	220 15.6	N23 20.7	188 02.7	N17 16.8	310 28.6	N02 58.8
31	00	339 11.4	139 44.7	S11 43.9	235 16.3	N23 20.6	203 04.6	N17 16.7	325 31.2	N02 58.7
	01	354 13.9	154 45.4	S11 44.9	250 17.1	N23 20.5	218 06.5	N17 16.5	340 33.8	N02 58.6
	02	009 16.3	169 46.0	S11 46.0	265 17.8	N23 20.4	233 08.5	N17 16.4	355 36.4	N02 58.6
	03	024 18.8	184 46.7	S11 47.0	280 18.6	N23 20.2	248 10.4	N17 16.2	010 39.0	N02 58.5
	04	039 21.2	199 47.4	S11 48.1	295 19.3	N23 20.1	263 12.3	N17 16.1	025 41.6	N02 58.5
	05	054 23.7	214 48.0	S11 49.1	310 20.0	N23 20.0	278 14.3	N17 15.9	040 44.1	N02 58.4
	06	069 26.2	229 48.7	S11 50.2	325 20.8	N23 19.9	293 16.2	N17 15.8	055 46.7	N02 58.3
	07	084 28.6	244 49.4	S11 51.2	340 21.5	N23 19.8	308 18.1	N17 15.6	070 49.3	N02 58.3
	08	099 31.1	259 50.1	S11 52.3	355 22.3	N23 19.7	323 20.1	N17 15.5	085 51.9	N02 58.2
	09	114 33.6	274 50.8	S11 53.3	010 23.0	N23 19.5	338 22.0	N17 15.3	100 54.5	N02 58.2
	10	129 36.0	289 51.4	S11 54.4	025 23.7	N23 19.4	353 23.9	N17 15.2	115 57.1	N02 58.1
	11	144 38.5	304 52.1	S11 55.4	040 24.5	N23 19.3	008 25.9	N17 15.1	130 59.7	N02 58.0
	12	159 41.0	319 52.8	S11 56.5	055 25.2	N23 19.2	023 27.8	N17 14.9	146 02.3	N02 58.0
	13	174 43.4	334 53.5	S11 57.5	070 26.0	N23 19.1	038 29.7	N17 14.8	161 04.9	N02 57.9
	14	189 45.9	349 54.2	S11 58.6	085 26.7	N23 19.0	053 31.7	N17 14.6	176 07.4	N02 57.8
	15	204 48.4	004 54.9	S11 59.6	100 27.4	N23 18.8	068 33.6	N17 14.5	191 10.0	N02 57.8
	16	219 50.8	019 55.5	S12 00.7	115 28.2	N23 18.7	083 35.6	N17 14.3	206 12.6	N02 57.7
	17	234 53.3	034 56.2	S12 01.7	130 28.9	N23 18.6	098 37.5	N17 14.2	221 15.2	N02 57.7
	18	249 55.7	049 56.9	S12 02.7	145 29.7	N23 18.5	113 39.4	N17 14.0	236 17.8	N02 57.6
	19	264 58.2	064 57.6	S12 03.8	160 30.4	N23 18.4	128 41.4	N17 13.9	251 20.4	N02 57.5
	20	280 00.7	079 58.3	S12 04.8	175 31.1	N23 18.2	143 43.3	N17 13.7	266 23.0	N02 57.5
	21	295 03.1	094 59.0	S12 05.9	190 31.9	N23 18.1	158 45.2	N17 13.6	281 25.6	N02 57.4
	22	310 05.6	109 59.7	S12 06.9	205 32.6	N23 18.0	173 47.2	N17 13.4	296 28.2	N02 57.4
	23	325 08.1	125 00.4	S12 07.9	220 33.4	N23 17.9	188 49.1	N17 13.3	311 30.8	N02 57.3

Venus	Mars	Jupiter	Saturn
29: v 0.6 d -1.1	29: v 0.7 d -0.1	29: v 1.9 d -0.1	29: v 2.6 d -0.1
30: v 0.7 d -1.1	30: v 0.7 d -0.1	30: v 1.9 d -0.1	30: v 2.6 d -0.1
31: v 0.7 d -1.0	31: v 0.7 d -0.1	31: v 1.9 d -0.1	31: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.6	S40 11.5
Achernar	335 18.8	S57 05.7
Acrux	172 59.2	S63 15.0
Adhara	255 05.0	S29 00.3
Al Na'ir	027 30.7	S46 49.8
Aldebaran	290 38.1	N16 33.8
Alioth	166 12.2	N55 49.1
Alkaid	152 51.2	N49 11.0
Alnilam	275 36.4	S01 10.9
Alphard	217 46.7	S08 46.4
Alphecca	126 02.6	N26 37.7
Alpheratz	357 33.0	N29 14.4
Altair	061 58.4	N08 56.5
Ankaa	353 05.4	S42 09.4
Antares	112 14.1	S26 29.5
Arcturus	145 46.8	N19 02.8
Atria	107 07.0	S69 04.8
Avior	234 14.7	S59 35.5
Bellatrix	278 21.5	N06 22.5
Betelgeuse	270 50.7	N07 24.8
Canopus	263 52.1	S52 42.2
Capella	280 20.0	N46 01.3
Deneb	049 24.5	N45 22.7
Denebola	182 23.9	N14 25.5
Diphda	348 45.7	S17 50.2
Dubhe	193 40.0	N61 36.5
Elnath	278 00.2	N28 37.8
Eltanin	090 41.3	N51 29.4
Enif	033 37.1	N10 00.0
Fomalhaut	015 12.6	S29 28.7
Gacrux	171 50.6	S57 15.9
Gienah	175 42.5	S17 41.4
Hadar	148 34.4	S60 30.3
Hamal	327 49.5	N23 35.4
Kaus Australi	083 30.5	S34 22.3
Kochab	137 20.3	N74 03.0
Markab	013 28.2	N15 21.1
Menkar	314 04.6	N04 11.8
Menkent	147 56.2	S36 30.2
Miaplacidus	221 38.9	S69 49.5
Mirfak	308 26.2	N49 57.2
Nunki	075 45.8	S26 15.8
Peacock	053 03.1	S56 39.0
Polaris	313 10.7	N89 22.3
Pollux	243 15.9	N27 57.7
Procyon	244 49.6	N05 09.5
Rasalhague	095 57.2	N12 32.6
Regulus	207 33.3	N11 50.3
Rigel	281 02.6	S08 10.1
Rigil Kentaur	139 38.7	S60 57.0
Sabik	102 01.1	S15 45.4
Schedar	349 29.0	N56 41.0
Shaula	096 08.4	S37 07.5
Sirius	258 25.2	S16 45.0
Spica	158 21.1	S11 18.0
Suhail	222 45.7	S43 32.3
Vega	080 32.1	N38 48.7
Zubenelgenubi	136 54.6	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	160 54.9	1441
Mars	256 25.7	0820
Jupiter	223 59.6	1029
Saturn	346 18.3	0222

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
29	00	179 43.6	N09 25.4	351 09.4	S04 25.0	56.6	14.6	15.2
	01	194 43.8	N09 24.5	005 43.0	S04 09.8	56.6	14.6	15.2
	02	209 44.0	N09 23.6	020 16.5	S03 54.6	56.6	14.6	15.2
	03	224 44.2	N09 22.7	034 50.1	S03 39.3	56.7	14.6	15.3
	04	239 44.3	N09 21.8	049 23.7	S03 24.1	56.7	14.6	15.3
	05	254 44.5	N09 20.9	063 57.3	S03 08.8	56.7	14.6	15.3
	06	269 44.7	N09 20.1	078 30.8	S02 53.5	56.7	14.6	15.3
	07	284 44.9	N09 19.2	093 04.4	S02 38.1	56.7	14.5	15.4
	08	299 45.1	N09 18.3	107 38.0	S02 22.7	56.8	14.5	15.4
	09	314 45.3	N09 17.4	122 11.5	S02 07.3	56.8	14.5	15.4
	10	329 45.5	N09 16.5	136 45.0	S01 51.9	56.8	14.5	15.4
	11	344 45.7	N09 15.6	151 18.5	S01 36.5	56.8	14.5	15.4
	12	359 45.9	N09 14.7	165 52.0	S01 21.1	56.9	14.5	15.5
	13	014 46.0	N09 13.8	180 25.5	S01 05.6	56.9	14.5	15.5
	14	029 46.2	N09 12.9	194 59.0	S00 50.1	56.9	14.5	15.5
	15	044 46.4	N09 12.0	209 32.5	S00 34.6	56.9	14.4	15.5
	16	059 46.6	N09 11.2	224 05.9	S00 19.1	56.9	14.4	15.5
	17	074 46.8	N09 10.3	238 39.3	S00 03.6	57.0	14.4	15.5
	18	089 47.0	N09 09.4	253 12.7	N00 11.9	57.0	14.4	15.5
	19	104 47.2	N09 08.5	267 46.1	N00 27.5	57.0	14.4	15.5
	20	119 47.4	N09 07.6	282 19.5	N00 43.0	57.0	14.3	15.6
	21	134 47.6	N09 06.7	296 52.8	N00 58.6	57.0	14.3	15.6
	22	149 47.8	N09 05.8	311 26.1	N01 14.1	57.1	14.3	15.6
	23	164 48.0	N09 04.9	325 59.4	N01 29.7	57.1	14.3	15.6
30	00	179 48.1	N09 04.0	340 32.6	N01 45.3	57.1	14.2	15.6
	01	194 48.3	N09 03.1	355 05.9	N02 00.9	57.1	14.2	15.6
	02	209 48.5	N09 02.2	009 39.1	N02 16.4	57.2	14.2	15.6
	03	224 48.7	N09 01.3	024 12.2	N02 32.0	57.2	14.1	15.6
	04	239 48.9	N09 00.4	038 45.4	N02 47.6	57.2	14.1	15.6
	05	254 49.1	N08 59.5	053 18.5	N03 03.2	57.2	14.1	15.6
	06	269 49.3	N08 58.7	067 51.5	N03 18.7	57.2	14.0	15.6
	07	284 49.5	N08 57.8	082 24.6	N03 34.3	57.3	14.0	15.6
	08	299 49.7	N08 56.9	096 57.6	N03 49.9	57.3	14.0	15.6
	09	314 49.9	N08 56.0	111 30.5	N04 05.4	57.3	13.9	15.5
	10	329 50.1	N08 55.1	126 03.5	N04 21.0	57.3	13.9	15.5
	11	344 50.3	N08 54.2	140 36.3	N04 36.5	57.3	13.8	15.5
	12	359 50.5	N08 53.3	155 09.2	N04 52.0	57.4	13.8	15.5
	13	014 50.6	N08 52.4	169 42.0	N05 07.5	57.4	13.8	15.5
	14	029 50.8	N08 51.5	184 14.8	N05 23.0	57.4	13.7	15.5
	15	044 51.0	N08 50.6	198 47.5	N05 38.5	57.4	13.7	15.5
	16	059 51.2	N08 49.7	213 20.1	N05 54.0	57.4	13.6	15.5
	17	074 51.4	N08 48.8	227 52.8	N06 09.5	57.5	13.6	15.4
	18	089 51.6	N08 47.9	242 25.3	N06 24.9	57.5	13.5	15.4
	19	104 51.8	N08 47.0	256 57.9	N06 40.3	57.5	13.5	15.4
	20	119 52.0	N08 46.1	271 30.3	N06 55.7	57.5	13.4	15.4
	21	134 52.2	N08 45.2	286 02.8	N07 11.1	57.5	13.4	15.4
	22	149 52.4	N08 44.3	300 35.1	N07 26.5	57.6	13.3	15.3
	23	164 52.6	N08 43.4	315 07.5	N07 41.8	57.6	13.3	15.3
31	00	179 52.8	N08 42.5	329 39.7	N07 57.1	57.6	13.2	15.3
	01	194 53.0	N08 41.6	344 11.9	N08 12.4	57.6	13.2	15.2
	02	209 53.2	N08 40.7	358 44.1	N08 27.6	57.6	13.1	15.2
	03	224 53.4	N08 39.8	013 16.2	N08 42.8	57.7	13.0	15.2
	04	239 53.6	N08 38.9	027 48.2	N08 58.0	57.7	13.0	15.2
	05	254 53.8	N08 38.0	042 20.2	N09 13.2	57.7	12.9	15.1
	06	269 54.0	N08 37.1	056 52.1	N09 28.3	57.7	12.8	15.1
	07	284 54.2	N08 36.2	071 23.9	N09 43.4	57.7	12.8	15.0
	08	299 54.3	N08 35.3	085 55.7	N09 58.4	57.7	12.7	15.0
	09	314 54.5	N08 34.4	100 27.5	N10 13.4	57.8	12.7	15.0
	10	329 54.7	N08 33.5	114 59.1	N10 28.4	57.8	12.6	14.9
	11	344 54.9	N08 32.6	129 30.7	N10 43.3	57.8	12.5	14.9
	12	359 55.1	N08 31.7	144 02.2	N10 58.2	57.8	12.4	14.8
	13	014 55.3	N08 30.8	158 33.7	N11 13.1	57.8	12.4	14.8
	14	029 55.5	N08 29.9	173 05.0	N11 27.9	57.9	12.3	14.8
	15	044 55.7	N08 29.0	187 36.3	N11 42.6	57.9	12.2	14.7
	16	059 55.9	N08 28.1	202 07.6	N11 57.3	57.9	12.2	14.7
	17	074 56.1	N08 27.2	216 38.7	N12 12.0	57.9	12.1	14.6
	18	089 56.3	N08 26.3	231 09.8	N12 26.6	57.9	12.0	14.6
	19	104 56.5	N08 25.4	245 40.8	N12 41.1	58.0	11.9	14.5
	20	119 56.7	N08 24.5	260 11.8	N12 55.6	58.0	11.9	14.4
	21	134 56.9	N08 23.6	274 42.6	N13 10.1	58.0	11.8	14.4
	22	149 57.1	N08 22.7	289 13.4	N13 24.4	58.0	11.7	14.3
	23	164 57.3	N08 21.8	303 44.1	N13 38.8	58.0	11.6	14.3

Day 29 noon Sun: v 0.2 d -0.9 SD 15.8 | Moon SD 15.5

Day 30 noon Sun: v 0.2 d -0.9 SD 15.8 | Moon SD 15.6

Day 31 noon Sun: v 0.2 d -0.9 SD 15.8 | Moon SD 15.8

SUN: AUGUST 30 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	0216	0351	2006	2139	--
70N	--	0248	0406	1952	2109	--
68N	0109	0311	0419	1940	2047	2242
66N	0157	0328	0428	1931	2030	2159
64N	0226	0343	0437	1922	2016	2131
62N	0247	0354	0444	1916	2005	2111
60N	0304	0404	0450	1910	1955	2054
58N	0318	0413	0455	1904	1947	2041
56N	0330	0420	0500	1900	1939	2029
54N	0340	0427	0505	1856	1933	2020
52N	0349	0433	0508	1852	1927	2011
50N	0356	0438	0512	1848	1922	2003
45N	0412	0449	0520	1841	1911	1948
40N	0424	0458	0526	1835	1903	1936
35N	0434	0505	0531	1830	1855	1926
30N	0443	0511	0536	1825	1849	1918
25N	0449	0517	0540	1821	1844	1911
20N	0455	0522	0544	1817	1839	1906
15N	0500	0526	0548	1814	1835	1901
10N	0505	0530	0551	1810	1832	1856
05N	0509	0533	0554	1807	1828	1852
00N	0512	0536	0557	1804	1825	1849
05S	0515	0540	0601	1801	1822	1846
10S	0518	0542	0604	1758	1819	1844
15S	0520	0545	0607	1755	1816	1841
20S	0522	0548	0610	1751	1813	1839
25S	0524	0551	0614	1748	1811	1837
30S	0526	0554	0618	1744	1808	1836
35S	0527	0556	0622	1740	1805	1835
40S	0528	0559	0627	1735	1802	1834
45S	0529	0603	0632	1730	1759	1833
50S	0529	0606	0639	1723	1756	1833
55S	0528	0610	0647	1715	1752	1834
60S	0527	0615	0657	1705	1748	1836

MOON: RISE / SET | UTC HHMM

Lat	Day 29		Day 30		Day 31	
72N	1905	0609	1830	0820	1747	1040
70N	1905	0614	1839	0814	1808	1022
68N	1906	0617	1846	0810	1824	1008
66N	1906	0620	1853	0806	1838	0956
64N	1906	0623	1858	0803	1849	0947
62N	1907	0625	1902	0800	1858	0939
60N	1907	0626	1906	0758	1907	0932
58N	1907	0628	1910	0756	1914	0926
56N	1907	0630	1913	0754	1920	0920
54N	1907	0631	1916	0752	1926	0916
52N	1907	0632	1919	0750	1932	0911
50N	1908	0633	1921	0749	1936	0907
45N	1908	0635	1926	0746	1947	0859
40N	1908	0637	1931	0744	1955	0852
35N	1908	0639	1935	0742	2003	0846
30N	1909	0640	1938	0740	2010	0841
25N	1909	0642	1941	0738	2016	0836
20N	1909	0643	1944	0736	2021	0832
15N	1909	0644	1947	0735	2026	0828
10N	1909	0645	1949	0733	2031	0824
05N	1910	0646	1952	0732	2036	0820
00N	1910	0647	1954	0731	2041	0816
05S	1910	0648	1957	0729	2046	0813
10S	1910	0649	1959	0728	2051	0809
15S	1910	0650	2002	0727	2056	0805
20S	1911	0651	2005	0725	2101	0801
25S	1911	0652	2008	0724	2107	0757
30S	1911	0653	2011	0722	2113	0752
35S	1911	0654	2015	0720	2120	0747
40S	1912	0656	2019	0718	2129	0741
45S	1912	0658	2024	0716	2138	0735
50S	1913	0700	2030	0713	2149	0727
55S	1913	0702	2037	0709	2204	0717
60S	1914	0705	2047	0705	2223	0704

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | SEPTEMBER 1 - SEPTEMBER 3

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
1	00	340 10.5	140 01.1	S12 09.0	235 34.1	N23 17.8	203 51.0	N17 13.2	326 33.3	N02 57.2
	01	355 13.0	155 01.8	S12 10.0	250 34.8	N23 17.6	218 53.0	N17 13.0	341 35.9	N02 57.2
	02	010 15.5	170 02.5	S12 11.1	265 35.6	N23 17.5	233 54.9	N17 12.9	356 38.5	N02 57.1
	03	025 17.9	185 03.2	S12 12.1	280 36.3	N23 17.4	248 56.8	N17 12.7	011 41.1	N02 57.0
	04	040 20.4	200 03.9	S12 13.1	295 37.1	N23 17.3	263 58.8	N17 12.6	026 43.7	N02 57.0
	05	055 22.8	215 04.6	S12 14.2	310 37.8	N23 17.1	279 00.7	N17 12.4	041 46.3	N02 56.9
	06	070 25.3	230 05.3	S12 15.2	325 38.6	N23 17.0	294 02.7	N17 12.3	056 48.9	N02 56.9
	07	085 27.8	245 06.0	S12 16.3	340 39.3	N23 16.9	309 04.6	N17 12.1	071 51.5	N02 56.8
	08	100 30.2	260 06.7	S12 17.3	355 40.0	N23 16.8	324 06.5	N17 12.0	086 54.1	N02 56.7
	09	115 32.7	275 07.4	S12 18.3	010 40.8	N23 16.7	339 08.5	N17 11.8	101 56.7	N02 56.7
	10	130 35.2	290 08.1	S12 19.4	025 41.5	N23 16.5	354 10.4	N17 11.7	116 59.3	N02 56.6
	11	145 37.6	305 08.8	S12 20.4	040 42.3	N23 16.4	009 12.3	N17 11.5	132 01.9	N02 56.5
	12	160 40.1	320 09.5	S12 21.4	055 43.0	N23 16.3	024 14.3	N17 11.4	147 04.4	N02 56.5
	13	175 42.6	335 10.2	S12 22.5	070 43.8	N23 16.2	039 16.2	N17 11.2	162 07.0	N02 56.4
	14	190 45.0	350 10.9	S12 23.5	085 44.5	N23 16.0	054 18.2	N17 11.1	177 09.6	N02 56.4
	15	205 47.5	005 11.7	S12 24.5	100 45.3	N23 15.9	069 20.1	N17 11.0	192 12.2	N02 56.3
	16	220 50.0	020 12.4	S12 25.6	115 46.0	N23 15.8	084 22.0	N17 10.8	207 14.8	N02 56.2
	17	235 52.4	035 13.1	S12 26.6	130 46.8	N23 15.6	099 24.0	N17 10.7	222 17.4	N02 56.2
	18	250 54.9	050 13.8	S12 27.6	145 47.5	N23 15.5	114 25.9	N17 10.5	237 20.0	N02 56.1
	19	265 57.3	065 14.5	S12 28.6	160 48.2	N23 15.4	129 27.8	N17 10.4	252 22.6	N02 56.0
	20	280 59.8	080 15.2	S12 29.7	175 49.0	N23 15.3	144 29.8	N17 10.2	267 25.2	N02 56.0
	21	296 02.3	095 16.0	S12 30.7	190 49.7	N23 15.1	159 31.7	N17 10.1	282 27.8	N02 55.9
	22	311 04.7	110 16.7	S12 31.7	205 50.5	N23 15.0	174 33.7	N17 09.9	297 30.4	N02 55.9
	23	326 07.2	125 17.4	S12 32.8	220 51.2	N23 14.9	189 35.6	N17 09.8	312 33.0	N02 55.8
2	00	341 09.7	140 18.1	S12 33.8	235 52.0	N23 14.8	204 37.5	N17 09.6	327 35.6	N02 55.7
	01	356 12.1	155 18.8	S12 34.8	250 52.7	N23 14.6	219 39.5	N17 09.5	342 38.1	N02 55.7
	02	011 14.6	170 19.6	S12 35.8	265 53.5	N23 14.5	234 41.4	N17 09.3	357 40.7	N02 55.6
	03	026 17.1	185 20.3	S12 36.9	280 54.2	N23 14.4	249 43.3	N17 09.2	012 43.3	N02 55.5
	04	041 19.5	200 21.0	S12 37.9	295 55.0	N23 14.2	264 45.3	N17 09.1	027 45.9	N02 55.5
	05	056 22.0	215 21.8	S12 38.9	310 55.7	N23 14.1	279 47.2	N17 08.9	042 48.5	N02 55.4
	06	071 24.5	230 22.5	S12 39.9	325 56.5	N23 14.0	294 49.2	N17 08.8	057 51.1	N02 55.4
	07	086 26.9	245 23.2	S12 41.0	340 57.2	N23 13.8	309 51.1	N17 08.6	072 53.7	N02 55.3
	08	101 29.4	260 23.9	S12 42.0	355 58.0	N23 13.7	324 53.0	N17 08.5	087 56.3	N02 55.2
	09	116 31.8	275 24.7	S12 43.0	010 58.7	N23 13.6	339 55.0	N17 08.3	102 58.9	N02 55.2
	10	131 34.3	290 25.4	S12 44.0	025 59.5	N23 13.5	354 56.9	N17 08.2	118 01.5	N02 55.1
	11	146 36.8	305 26.1	S12 45.0	041 00.2	N23 13.3	009 58.9	N17 08.0	133 04.1	N02 55.0
	12	161 39.2	320 26.9	S12 46.1	056 01.0	N23 13.2	025 00.8	N17 07.9	148 06.7	N02 55.0
	13	176 41.7	335 27.6	S12 47.1	071 01.7	N23 13.1	040 02.7	N17 07.7	163 09.3	N02 54.9
	14	191 44.2	350 28.4	S12 48.1	086 02.5	N23 12.9	055 04.7	N17 07.6	178 11.9	N02 54.8
	15	206 46.6	005 29.1	S12 49.1	101 03.2	N23 12.8	070 06.6	N17 07.4	193 14.5	N02 54.8
	16	221 49.1	020 29.8	S12 50.1	116 04.0	N23 12.7	085 08.6	N17 07.3	208 17.1	N02 54.7
	17	236 51.6	035 30.6	S12 51.1	131 04.7	N23 12.5	100 10.5	N17 07.1	223 19.7	N02 54.7
	18	251 54.0	050 31.3	S12 52.2	146 05.5	N23 12.4	115 12.4	N17 07.0	238 22.3	N02 54.6
	19	266 56.5	065 32.1	S12 53.2	161 06.2	N23 12.3	130 14.4	N17 06.9	253 24.9	N02 54.5
	20	281 58.9	080 32.8	S12 54.2	176 07.0	N23 12.1	145 16.3	N17 06.7	268 27.5	N02 54.5
	21	297 01.4	095 33.6	S12 55.2	191 07.7	N23 12.0	160 18.2	N17 06.6	283 30.0	N02 54.4
	22	312 03.9	110 34.3	S12 56.2	206 08.5	N23 11.9	175 20.2	N17 06.4	298 32.6	N02 54.3
	23	327 06.3	125 35.1	S12 57.2	221 09.2	N23 11.7	190 22.1	N17 06.3	313 35.2	N02 54.3
3	00	342 08.8	140 35.8	S12 58.2	236 10.0	N23 11.6	205 24.1	N17 06.1	328 37.8	N02 54.2
	01	357 11.3	155 36.6	S12 59.3	251 10.7	N23 11.5	220 26.0	N17 06.0	343 40.4	N02 54.1
	02	012 13.7	170 37.3	S13 00.3	266 11.5	N23 11.3	235 28.0	N17 05.8	358 43.0	N02 54.1
	03	027 16.2	185 38.1	S13 01.3	281 12.2	N23 11.2	250 29.9	N17 05.7	013 45.6	N02 54.0
	04	042 18.7	200 38.8	S13 02.3	296 13.0	N23 11.0	265 31.8	N17 05.5	028 48.2	N02 54.0
	05	057 21.1	215 39.6	S13 03.3	311 13.7	N23 10.9	280 33.8	N17 05.4	043 50.8	N02 53.9
	06	072 23.6	230 40.4	S13 04.3	326 14.5	N23 10.8	295 35.7	N17 05.2	058 53.4	N02 53.8
	07	087 26.1	245 41.1	S13 05.3	341 15.3	N23 10.6	310 37.7	N17 05.1	073 56.0	N02 53.8
	08	102 28.5	260 41.9	S13 06.3	356 16.0	N23 10.5	325 39.6	N17 05.0	088 58.6	N02 53.7
	09	117 31.0	275 42.6	S13 07.3	011 16.8	N23 10.4	340 41.5	N17 04.8	104 01.2	N02 53.6
	10	132 33.4	290 43.4	S13 08.3	026 17.5	N23 10.2	355 43.5	N17 04.7	119 03.8	N02 53.6
	11	147 35.9	305 44.2	S13 09.3	041 18.3	N23 10.1	010 45.4	N17 04.5	134 06.4	N02 53.5
	12	162 38.4	320 44.9	S13 10.3	056 19.0	N23 09.9	025 47.4	N17 04.4	149 09.0	N02 53.4
	13	177 40.8	335 45.7	S13 11.4	071 19.8	N23 09.8	040 49.3	N17 04.2	164 11.6	N02 53.4
	14	192 43.3	350 46.5	S13 12.4	086 20.5	N23 09.7	055 51.2	N17 04.1	179 14.2	N02 53.3
	15	207 45.8	005 47.2	S13 13.4	101 21.3	N23 09.5	070 53.2	N17 03.9	194 16.8	N02 53.2
	16	222 48.2	020 48.0	S13 14.4	116 22.1	N23 09.4	085 55.1	N17 03.8	209 19.4	N02 53.2
	17	237 50.7	035 48.8	S13 15.4	131 22.8	N23 09.3	100 57.1	N17 03.6	224 22.0	N02 53.1
	18	252 53.2	050 49.5	S13 16.4	146 23.6	N23 09.1	115 59.0	N17 03.5	239 24.6	N02 53.1
	19	267 55.6	065 50.3	S13 17.4	161 24.3	N23 09.0	131 00.9	N17 03.3	254 27.2	N02 53.0
	20	282 58.1	080 51.1	S13 18.4	176 25.1	N23 08.8	146 02.9	N17 03.2	269 29.8	N02 52.9
	21	298 00.6	095 51.9	S13 19.4	191 25.8	N23 08.7	161 04.8	N17 03.1	284 32.4	N02 52.9
	22	313 03.0	110 52.6	S13 20.4	206 26.6	N23 08.5	176 06.8	N17 02.9	299 35.0	N02 52.8
	23	328 05.5	125 53.4	S13 21.4	221 27.4	N23 08.4	191 08.7	N17 02.8	314 37.6	N02 52.7

Venus	Mars	Jupiter	Saturn
1: v 0.7 d -1.0	1: v 0.7 d -0.1	1: v 1.9 d -0.1	1: v 2.6 d -0.1
2: v 0.7 d -1.0	2: v 0.8 d -0.1	2: v 1.9 d -0.1	2: v 2.6 d -0.1
3: v 0.8 d -1.0	3: v 0.8 d -0.1	3: v 1.9 d -0.1	3: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.6	S40 11.5
Achernar	335 18.8	S57 05.8
Acrux	172 59.2	S63 14.9
Adhara	255 05.0	S29 00.2
Al Na'ir	027 30.7	S46 49.8
Aldebaran	290 38.1	N16 33.8
Alioth	166 12.2	N55 49.1
Alkaid	152 51.2	N49 11.0
Alnilam	275 36.4	S01 10.9
Alphard	217 46.7	S08 46.4
Alphecca	126 02.7	N26 37.7
Alpheratz	357 33.0	N29 14.4
Altair	061 58.4	N08 56.5
Ankaa	353 05.4	S42 09.4
Antares	112 14.2	S26 29.5
Arcturus	145 46.8	N19 02.8
Atria	107 07.1	S69 04.7
Avior	234 14.7	S59 35.5
Bellatrix	278 21.5	N06 22.5
Betelgeuse	270 50.7	N07 24.8
Canopus	263 52.0	S52 42.2
Capella	280 20.0	N46 01.3
Deneb	049 24.5	N45 22.7
Denebola	182 23.9	N14 25.5
Diphda	348 45.6	S17 50.2
Dubhe	193 40.0	N61 36.5
Elnath	278 00.2	N28 37.8
Eltanin	090 41.4	N51 29.4
Enif	033 37.1	N10 00.0
Fomalhaut	015 12.6	S29 28.7
Gacrux	171 50.6	S57 15.9
Gienah	175 42.5	S17 41.4
Hadar	148 34.4	S60 30.3
Hamal	327 49.4	N23 35.4
Kaus Australi	083 30.5	S34 22.3
Kochab	137 20.3	N74 03.0
Markab	013 28.2	N15 21.1
Menkar	314 04.6	N04 11.8
Menkent	147 56.2	S36 30.2
Miaplacidus	221 38.9	S69 49.4
Mirfak	308 26.1	N49 57.2
Nunki	075 45.9	S26 15.8
Peacock	053 03.1	S56 39.0
Polaris	313 09.1	N89 22.3
Pollux	243 15.9	N27 57.7
Procyon	244 49.6	N05 09.5
Rasalhague	095 57.2	N12 32.6
Regulus	207 33.3	N11 50.3
Rigel	281 02.6	S08 10.1
Rigil Kentaur	139 38.7	S60 57.0
Sabik	102 01.2	S15 45.4
Schedar	349 29.0	N56 41.0
Shaula	096 08.4	S37 07.5
Sirius	258 25.2	S16 45.0
Spica	158 21.1	S11 18.0
Suhail	222 45.7	S43 32.3
Vega	080 32.1	N38 48.7
Zubenelgenubi	136 54.6	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	158 47.7	1438
Mars	254 21.7	0816
Jupiter	223 21.6	1020
Saturn	346 27.5	0209

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
1	00	179 57.5	N08 20.9	318 14.7	N13 53.0	58.0	11.5	14.2
	01	194 57.7	N08 20.0	332 45.2	N14 07.2	58.1	11.4	14.1
	02	209 57.9	N08 19.0	347 15.7	N14 21.4	58.1	11.4	14.1
	03	224 58.1	N08 18.1	001 46.0	N14 35.5	58.1	11.3	14.0
	04	239 58.3	N08 17.2	016 16.3	N14 49.5	58.1	11.2	13.9
	05	254 58.5	N08 16.3	030 46.5	N15 03.4	58.1	11.1	13.9
	06	269 58.7	N08 15.4	045 16.6	N15 17.3	58.1	11.0	13.8
	07	284 58.9	N08 14.5	059 46.6	N15 31.1	58.2	10.9	13.7
	08	299 59.1	N08 13.6	074 16.5	N15 44.8	58.2	10.8	13.7
	09	314 59.3	N08 12.7	088 46.4	N15 58.5	58.2	10.7	13.6
	10	329 59.5	N08 11.8	103 16.1	N16 12.1	58.2	10.7	13.5
	11	344 59.7	N08 10.9	117 45.7	N16 25.6	58.2	10.6	13.4
	12	359 59.9	N08 10.0	132 15.3	N16 39.0	58.2	10.5	13.3
	13	015 00.1	N08 09.1	146 44.8	N16 52.3	58.3	10.4	13.3
	14	030 00.3	N08 08.2	161 14.1	N17 05.6	58.3	10.3	13.2
	15	045 00.5	N08 07.3	175 43.4	N17 18.8	58.3	10.2	13.1
	16	060 00.7	N08 06.4	190 12.6	N17 31.9	58.3	10.1	13.0
	17	075 00.9	N08 05.4	204 41.7	N17 44.9	58.3	10.0	12.9
	18	090 01.1	N08 04.5	219 10.7	N17 57.8	58.3	9.9	12.8
	19	105 01.3	N08 03.6	233 39.6	N18 10.7	58.4	9.8	12.7
	20	120 01.5	N08 02.7	248 08.3	N18 23.4	58.4	9.7	12.7
	21	135 01.7	N08 01.8	262 37.0	N18 36.1	58.4	9.6	12.6
	22	150 01.9	N08 00.9	277 05.6	N18 48.6	58.4	9.5	12.5
	23	165 02.1	N08 00.0	291 34.1	N19 01.1	58.4	9.4	12.4
2	00	180 02.3	N07 59.1	306 02.5	N19 13.4	58.4	9.3	12.3
	01	195 02.5	N07 58.2	320 30.8	N19 25.7	58.5	9.2	12.2
	02	210 02.7	N07 57.3	334 59.0	N19 37.9	58.5	9.1	12.1
	03	225 02.9	N07 56.3	349 27.0	N19 49.9	58.5	9.0	12.0
	04	240 03.1	N07 55.4	003 55.0	N20 01.9	58.5	8.9	11.8
	05	255 03.3	N07 54.5	018 22.9	N20 13.7	58.5	8.8	11.7
	06	270 03.5	N07 53.6	032 50.7	N20 25.5	58.5	8.7	11.6
	07	285 03.7	N07 52.7	047 18.3	N20 37.1	58.6	8.6	11.5
	08	300 03.9	N07 51.8	061 45.9	N20 48.6	58.6	8.5	11.4
	09	315 04.1	N07 50.9	076 13.4	N21 00.0	58.6	8.4	11.3
	10	330 04.3	N07 50.0	090 40.7	N21 11.3	58.6	8.2	11.2
	11	345 04.5	N07 49.0	105 08.0	N21 22.5	58.6	8.1	11.1
	12	000 04.7	N07 48.1	119 35.1	N21 33.6	58.6	8.0	10.9
	13	015 04.9	N07 47.2	134 02.1	N21 44.5	58.6	7.9	10.8
	14	030 05.1	N07 46.3	148 29.1	N21 55.3	58.7	7.8	10.7
	15	045 05.3	N07 45.4	162 55.9	N22 06.0	58.7	7.7	10.6
	16	060 05.5	N07 44.5	177 22.6	N22 16.6	58.7	7.6	10.4
	17	075 05.7	N07 43.6	191 49.2	N22 27.0	58.7	7.5	10.3
	18	090 05.9	N07 42.6	206 15.7	N22 37.4	58.7	7.4	10.2
	19	105 06.1	N07 41.7	220 42.1	N22 47.5	58.7	7.3	10.1
	20	120 06.3	N07 40.8	235 08.4	N22 57.6	58.7	7.2	9.9
	21	135 06.5	N07 39.9	249 34.6	N23 07.5	58.8	7.1	9.8
	22	150 06.7	N07 39.0	264 00.7	N23 17.3	58.8	7.0	9.7
	23	165 06.9	N07 38.1	278 26.7	N23 27.0	58.8	6.9	9.5
3	00	180 07.1	N07 37.2	292 52.6	N23 36.5	58.8	6.8	9.4
	01	195 07.3	N07 36.2	307 18.4	N23 45.9	58.8	6.7	9.2
	02	210 07.5	N07 35.3	321 44.0	N23 55.1	58.8	6.6	9.1
	03	225 07.7	N07 34.4	336 09.6	N24 04.2	58.8	6.5	8.9
	04	240 08.0	N07 33.5	350 35.1	N24 13.1	58.9	6.4	8.8
	05	255 08.2	N07 32.6	005 00.4	N24 22.0	58.9	6.3	8.7
	06	270 08.4	N07 31.7	019 25.7	N24 30.6	58.9	6.2	8.5
	07	285 08.6	N07 30.7	033 50.9	N24 39.1	58.9	6.1	8.4
	08	300 08.8	N07 29.8	048 15.9	N24 47.5	58.9	6.0	8.2
	09	315 09.0	N07 28.9	062 40.9	N24 55.7	58.9	5.9	8.1
	10	330 09.2	N07 28.0	077 05.8	N25 03.7	58.9	5.8	7.9
	11	345 09.4	N07 27.1	091 30.5	N25 11.6	59.0	5.7	7.7
	12	000 09.6	N07 26.2	105 55.2	N25 19.4	59.0	5.6	7.6
	13	015 09.8	N07 25.2	120 19.8	N25 27.0	59.0	5.5	7.4
	14	030 10.0	N07 24.3	134 44.3	N25 34.4	59.0	5.4	7.3
	15	045 10.2	N07 23.4	149 08.7	N25 41.6	59.0	5.3	7.1
	16	060 10.4	N07 22.5	163 33.0	N25 48.7	59.0	5.2	6.9
	17	075 10.6	N07 21.6	177 57.2	N25 55.7	59.0	5.1	6.8
	18	090 10.8	N07 20.6	192 21.3	N26 02.5	59.0	5.0	6.6
	19	105 11.0	N07 19.7	206 45.4	N26 09.1	59.0	4.9	6.4
	20	120 11.2	N07 18.8	221 09.3	N26 15.5	59.1	4.9	6.3
	21	135 11.4	N07 17.9	235 33.2	N26 21.8	59.1	4.8	6.1
	22	150 11.6	N07 17.0	249 56.9	N26 27.9	59.1	4.7	5.9
	23	165 11.8	N07 16.0	264 20.6	N26 33.8	59.1	4.6	5.8

Day 1 noon Sun: v 0.2 d -0.9 SD 15.8 | Moon SD 15.9

Day 2 noon Sun: v 0.2 d -0.9 SD 15.9 | Moon SD 16.0

Day 3 noon Sun: v 0.2 d -0.9 SD 15.9 | Moon SD 16.1

SUN: SEPTEMBER 2 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	0238	0406	1950	2116	--
70N	0010	0305	0419	1937	2050	2315
68N	0140	0325	0430	1927	2031	2212
66N	0216	0340	0438	1919	2016	2139
64N	0240	0353	0446	1912	2004	2115
62N	0259	0403	0452	1906	1954	2057
60N	0314	0412	0457	1901	1945	2043
58N	0327	0420	0502	1856	1938	2030
56N	0337	0427	0506	1852	1931	2020
54N	0347	0433	0510	1848	1925	2011
52N	0355	0438	0513	1845	1920	2003
50N	0402	0443	0516	1842	1915	1956
45N	0416	0453	0523	1835	1906	1942
40N	0428	0501	0529	1830	1858	1931
35N	0437	0508	0533	1825	1851	1922
30N	0444	0513	0538	1821	1846	1914
25N	0451	0518	0541	1818	1841	1908
20N	0456	0522	0545	1814	1837	1903
15N	0501	0526	0548	1811	1833	1858
10N	0505	0530	0551	1808	1830	1854
05N	0508	0533	0554	1806	1827	1851
00N	0511	0536	0556	1803	1824	1848
05S	0514	0538	0559	1800	1821	1845
10S	0516	0541	0602	1758	1819	1843
15S	0518	0543	0605	1755	1816	1841
20S	0520	0546	0608	1752	1814	1840
25S	0521	0548	0611	1749	1812	1838
30S	0522	0550	0614	1746	1810	1837
35S	0523	0552	0618	1742	1807	1837
40S	0524	0555	0622	1738	1805	1837
45S	0523	0557	0627	1733	1803	1837
50S	0523	0600	0632	1728	1800	1838
55S	0521	0603	0639	1721	1757	1839
60S	0518	0606	0648	1712	1754	1842

MOON: RISE / SET | UTC HHMM

Lat	Day 1		Day 2		Day 3	
72N	1618	1353	--	--	--	--
70N	1718	1255	--	--	--	--
68N	1753	1222	--	--	--	--
66N	1818	1158	1742	1424	--	--
64N	1838	1139	1823	1345	1736	1631
62N	1854	1124	1851	1318	1847	1521
60N	1908	1111	1912	1257	1923	1446
58N	1920	1100	1930	1240	1949	1420
56N	1930	1051	1945	1225	2009	1400
54N	1939	1043	1958	1213	2026	1343
52N	1948	1035	2009	1202	2041	1329
50N	1955	1029	2020	1153	2054	1317
45N	2011	1014	2041	1132	2121	1251
40N	2024	1003	2059	1116	2142	1230
35N	2035	0953	2113	1102	2159	1214
30N	2045	0944	2126	1051	2215	1159
25N	2054	0936	2138	1040	2228	1146
20N	2102	0929	2148	1030	2241	1134
15N	2110	0923	2158	1021	2252	1123
10N	2117	0916	2207	1013	2303	1113
05N	2124	0910	2217	1005	2314	1103
00N	2131	0904	2226	0957	2324	1053
05S	2138	0859	2235	0948	2335	1043
10S	2145	0853	2244	0940	2345	1033
15S	2153	0846	2253	0932	2357	1023
20S	2201	0840	2303	0923	--	1012
25S	2209	0833	2314	0914	--	1001
30S	2219	0825	2326	0903	--	0948
35S	2229	0817	2340	0852	--	0933
40S	2241	0808	2355	0839	--	0917
45S	2255	0756	--	0823	0014	0857
50S	2312	0743	--	0804	0037	0833
55S	2335	0727	--	0740	0109	0800
60S	--	0705	0006	0707	0156	0712

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | SEPTEMBER 4 - SEPTEMBER 6

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
4	00	343 07.9	140 54.2	S13 22.4	236 28.1	N23 08.3	206 10.7	N17 02.6	329 40.2	N02 52.7
	01	358 10.4	155 55.0	S13 23.4	251 28.9	N23 08.1	221 12.6	N17 02.5	344 42.8	N02 52.6
	02	013 12.9	170 55.8	S13 24.4	266 29.6	N23 08.0	236 14.5	N17 02.3	359 45.4	N02 52.5
	03	028 15.3	185 56.6	S13 25.4	281 30.4	N23 07.8	251 16.5	N17 02.2	014 48.0	N02 52.5
	04	043 17.8	200 57.3	S13 26.4	296 31.1	N23 07.7	266 18.4	N17 02.0	029 50.6	N02 52.4
	05	058 20.3	215 58.1	S13 27.3	311 31.9	N23 07.6	281 20.4	N17 01.9	044 53.2	N02 52.3
	06	073 22.7	230 58.9	S13 28.3	326 32.7	N23 07.4	296 22.3	N17 01.7	059 55.8	N02 52.3
	07	088 25.2	245 59.7	S13 29.3	341 33.4	N23 07.3	311 24.3	N17 01.6	074 58.4	N02 52.2
	08	103 27.7	261 00.5	S13 30.3	356 34.2	N23 07.1	326 26.2	N17 01.4	090 01.0	N02 52.1
	09	118 30.1	276 01.3	S13 31.3	011 34.9	N23 07.0	341 28.1	N17 01.3	105 03.6	N02 52.1
	10	133 32.6	291 02.1	S13 32.3	026 35.7	N23 06.8	356 30.1	N17 01.1	120 06.2	N02 52.0
	11	148 35.1	306 02.9	S13 33.3	041 36.5	N23 06.7	011 32.0	N17 01.0	135 08.8	N02 51.9
	12	163 37.5	321 03.7	S13 34.3	056 37.2	N23 06.5	026 34.0	N17 00.9	150 11.4	N02 51.9
	13	178 40.0	336 04.5	S13 35.3	071 38.0	N23 06.4	041 35.9	N17 00.7	165 14.0	N02 51.8
	14	193 42.4	351 05.3	S13 36.3	086 38.7	N23 06.3	056 37.9	N17 00.6	180 16.6	N02 51.8
	15	208 44.9	006 06.1	S13 37.3	101 39.5	N23 06.1	071 39.8	N17 00.4	195 19.2	N02 51.7
	16	223 47.4	021 06.9	S13 38.2	116 40.3	N23 06.0	086 41.7	N17 00.3	210 21.8	N02 51.6
	17	238 49.8	036 07.7	S13 39.2	131 41.0	N23 05.8	101 43.7	N17 00.1	225 24.4	N02 51.6
	18	253 52.3	051 08.5	S13 40.2	146 41.8	N23 05.7	116 45.6	N17 00.0	240 27.0	N02 51.5
	19	268 54.8	066 09.3	S13 41.2	161 42.6	N23 05.5	131 47.6	N16 59.8	255 29.6	N02 51.4
	20	283 57.2	081 10.1	S13 42.2	176 43.3	N23 05.4	146 49.5	N16 59.7	270 32.2	N02 51.4
	21	298 59.7	096 10.9	S13 43.2	191 44.1	N23 05.2	161 51.5	N16 59.5	285 34.8	N02 51.3
	22	314 02.2	111 11.7	S13 44.2	206 44.8	N23 05.1	176 53.4	N16 59.4	300 37.4	N02 51.2
	23	329 04.6	126 12.5	S13 45.1	221 45.6	N23 04.9	191 55.4	N16 59.2	315 40.0	N02 51.2
5	00	344 07.1	141 13.3	S13 46.1	236 46.4	N23 04.8	206 57.3	N16 59.1	330 42.6	N02 51.1
	01	359 09.5	156 14.1	S13 47.1	251 47.1	N23 04.6	221 59.2	N16 59.0	345 45.2	N02 51.0
	02	014 12.0	171 14.9	S13 48.1	266 47.9	N23 04.5	237 01.2	N16 58.8	000 47.8	N02 51.0
	03	029 14.5	186 15.8	S13 49.1	281 48.7	N23 04.3	252 03.1	N16 58.7	015 50.4	N02 50.9
	04	044 16.9	201 16.6	S13 50.1	296 49.4	N23 04.2	267 05.1	N16 58.5	030 53.0	N02 50.8
	05	059 19.4	216 17.4	S13 51.0	311 50.2	N23 04.0	282 07.0	N16 58.4	045 55.6	N02 50.8
	06	074 21.9	231 18.2	S13 52.0	326 51.0	N23 03.9	297 09.0	N16 58.2	060 58.2	N02 50.7
	07	089 24.3	246 19.0	S13 53.0	341 51.7	N23 03.7	312 10.9	N16 58.1	076 00.8	N02 50.6
	08	104 26.8	261 19.9	S13 54.0	356 52.5	N23 03.6	327 12.9	N16 57.9	091 03.4	N02 50.6
	09	119 29.3	276 20.7	S13 54.9	011 53.3	N23 03.4	342 14.8	N16 57.8	106 06.0	N02 50.5
	10	134 31.7	291 21.5	S13 55.9	026 54.0	N23 03.3	357 16.7	N16 57.6	121 08.6	N02 50.4
	11	149 34.2	306 22.3	S13 56.9	041 54.8	N23 03.1	012 18.7	N16 57.5	136 11.2	N02 50.4
	12	164 36.7	321 23.1	S13 57.9	056 55.5	N23 03.0	027 20.6	N16 57.3	151 13.8	N02 50.3
	13	179 39.1	336 24.0	S13 58.8	071 56.3	N23 02.8	042 22.6	N16 57.2	166 16.4	N02 50.2
	14	194 41.6	351 24.8	S13 59.8	086 57.1	N23 02.7	057 24.5	N16 57.1	181 19.0	N02 50.2
	15	209 44.0	006 25.6	S14 00.8	101 57.8	N23 02.5	072 26.5	N16 56.9	196 21.6	N02 50.1
	16	224 46.5	021 26.5	S14 01.8	116 58.6	N23 02.4	087 28.4	N16 56.8	211 24.2	N02 50.0
	17	239 49.0	036 27.3	S14 02.7	131 59.4	N23 02.2	102 30.4	N16 56.6	226 26.8	N02 50.0
	18	254 51.4	051 28.1	S14 03.7	147 00.2	N23 02.1	117 32.3	N16 56.5	241 29.4	N02 49.9
	19	269 53.9	066 29.0	S14 04.7	162 00.9	N23 01.9	132 34.3	N16 56.3	256 32.0	N02 49.8
	20	284 56.4	081 29.8	S14 05.7	177 01.7	N23 01.8	147 36.2	N16 56.2	271 34.7	N02 49.8
	21	299 58.8	096 30.6	S14 06.6	192 02.5	N23 01.6	162 38.2	N16 56.0	286 37.3	N02 49.7
	22	315 01.3	111 31.5	S14 07.6	207 03.2	N23 01.5	177 40.1	N16 55.9	301 39.9	N02 49.6
	23	330 03.8	126 32.3	S14 08.6	222 04.0	N23 01.3	192 42.0	N16 55.7	316 42.5	N02 49.6
6	00	345 06.2	141 33.2	S14 09.5	237 04.8	N23 01.1	207 44.0	N16 55.6	331 45.1	N02 49.5
	01	000 08.7	156 34.0	S14 10.5	252 05.5	N23 01.0	222 45.9	N16 55.4	346 47.7	N02 49.4
	02	015 11.2	171 34.9	S14 11.5	267 06.3	N23 00.8	237 47.9	N16 55.3	001 50.3	N02 49.4
	03	030 13.6	186 35.7	S14 12.4	282 07.1	N23 00.7	252 49.8	N16 55.2	016 52.9	N02 49.3
	04	045 16.1	201 36.6	S14 13.4	297 07.8	N23 00.5	267 51.8	N16 55.0	031 55.5	N02 49.2
	05	060 18.5	216 37.4	S14 14.4	312 08.6	N23 00.4	282 53.7	N16 54.9	046 58.1	N02 49.2
	06	075 21.0	231 38.3	S14 15.3	327 09.4	N23 00.2	297 55.7	N16 54.7	062 00.7	N02 49.1
	07	090 23.5	246 39.1	S14 16.3	342 10.2	N23 00.1	312 57.6	N16 54.6	077 03.3	N02 49.0
	08	105 25.9	261 40.0	S14 17.2	357 10.9	N22 59.9	327 59.6	N16 54.4	092 05.9	N02 49.0
	09	120 28.4	276 40.8	S14 18.2	012 11.7	N22 59.7	343 01.5	N16 54.3	107 08.5	N02 48.9
	10	135 30.9	291 41.7	S14 19.2	027 12.5	N22 59.6	358 03.5	N16 54.1	122 11.1	N02 48.8
	11	150 33.3	306 42.5	S14 20.1	042 13.2	N22 59.4	013 05.4	N16 54.0	137 13.7	N02 48.8
	12	165 35.8	321 43.4	S14 21.1	057 14.0	N22 59.3	028 07.4	N16 53.8	152 16.3	N02 48.7
	13	180 38.3	336 44.3	S14 22.0	072 14.8	N22 59.1	043 09.3	N16 53.7	167 18.9	N02 48.6
	14	195 40.7	351 45.1	S14 23.0	087 15.6	N22 58.9	058 11.3	N16 53.5	182 21.5	N02 48.6
	15	210 43.2	006 46.0	S14 24.0	102 16.3	N22 58.8	073 13.2	N16 53.4	197 24.2	N02 48.5
	16	225 45.7	021 46.8	S14 24.9	117 17.1	N22 58.6	088 15.2	N16 53.3	212 26.8	N02 48.4
	17	240 48.1	036 47.7	S14 25.9	132 17.9	N22 58.5	103 17.1	N16 53.1	227 29.4	N02 48.4
	18	255 50.6	051 48.6	S14 26.8	147 18.6	N22 58.3	118 19.0	N16 53.0	242 32.0	N02 48.3
	19	270 53.0	066 49.4	S14 27.8	162 19.4	N22 58.2	133 21.0	N16 52.8	257 34.6	N02 48.2
	20	285 55.5	081 50.3	S14 28.7	177 20.2	N22 58.0	148 22.9	N16 52.7	272 37.2	N02 48.2
	21	300 58.0	096 51.2	S14 29.7	192 21.0	N22 57.8	163 24.9	N16 52.5	287 39.8	N02 48.1
	22	316 00.4	111 52.1	S14 30.6	207 21.7	N22 57.7	178 26.8	N16 52.4	302 42.4	N02 48.0
	23	331 02.9	126 52.9	S14 31.6	222 22.5	N22 57.5	193 28.8	N16 52.2	317 45.0	N02 48.0

Venus	Mars	Jupiter	Saturn
4: v 0.8 d -1.0	4: v 0.8 d -0.1	4: v 1.9 d -0.1	4: v 2.6 d -0.1
5: v 0.8 d -1.0	5: v 0.8 d -0.2	5: v 1.9 d -0.1	5: v 2.6 d -0.1
6: v 0.9 d -1.0	6: v 0.8 d -0.2	6: v 1.9 d -0.1	6: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.5	S40 11.5
Achernar	335 18.7	S57 05.8
Acrux	172 59.2	S63 14.9
Adhara	255 05.0	S29 00.2
Al Na'ir	027 30.7	S46 49.8
Aldebaran	290 38.0	N16 33.8
Alioth	166 12.2	N55 49.0
Alkaid	152 51.2	N49 11.0
Alnilam	275 36.4	S01 10.9
Alphard	217 46.7	S08 46.3
Alphecca	126 02.7	N26 37.7
Alpheratz	357 33.0	N29 14.4
Altair	061 58.4	N08 56.5
Ankaa	353 05.4	S42 09.4
Antares	112 14.2	S26 29.5
Arcturus	145 46.9	N19 02.8
Atria	107 07.1	S69 04.7
Avior	234 14.7	S59 35.5
Bellatrix	278 21.5	N06 22.5
Betelgeuse	270 50.7	N07 24.8
Canopus	263 52.0	S52 42.2
Capella	280 19.9	N46 01.3
Deneb	049 24.5	N45 22.7
Denebola	182 23.9	N14 25.5
Diphda	348 45.6	S17 50.2
Dubhe	193 40.0	N61 36.5
Elnath	278 00.2	N28 37.8
Eltanin	090 41.4	N51 29.4
Enif	033 37.1	N10 00.0
Fomalhaut	015 12.6	S29 28.7
Gacrux	171 50.6	S57 15.9
Gienah	175 42.5	S17 41.4
Hadar	148 34.5	S60 30.3
Hamal	327 49.4	N23 35.4
Kaus Australi	083 30.5	S34 22.3
Kochab	137 20.4	N74 02.9
Markab	013 28.2	N15 21.1
Menkar	314 04.6	N04 11.8
Menkent	147 56.2	S36 30.2
Miaplacidus	221 38.9	S69 49.4
Mirfak	308 26.1	N49 57.2
Nunki	075 45.9	S26 15.8
Peacock	053 03.1	S56 39.0
Polaris	313 07.3	N89 22.3
Pollux	243 15.9	N27 57.7
Procyon	244 49.6	N05 09.5
Rasalhague	095 57.2	N12 32.6
Regulus	207 33.3	N11 50.3
Rigel	281 02.6	S08 10.0
Rigil Kentaur	139 38.7	S60 56.9
Sabik	102 01.2	S15 45.4
Schedar	349 29.0	N56 41.0
Shaula	096 08.4	S37 07.5
Sirius	258 25.2	S16 45.0
Spica	158 21.1	S11 18.0
Suhail	222 45.7	S43 32.2
Vega	080 32.1	N38 48.7
Zubenelgenubi	136 54.6	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	156 46.5	1434
Mars	252 18.9	0812
Jupiter	222 44.0	1011
Saturn	346 37.2	0157

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
4	00	180 12.1	N07 15.1	278 44.3	N26 39.5	59.1	4.5	5.6
	01	195 12.3	N07 14.2	293 07.8	N26 45.1	59.1	4.5	5.4
	02	210 12.5	N07 13.3	307 31.3	N26 50.5	59.1	4.4	5.2
	03	225 12.7	N07 12.4	321 54.6	N26 55.8	59.1	4.3	5.0
	04	240 12.9	N07 11.4	336 18.0	N27 00.8	59.2	4.2	4.9
	05	255 13.1	N07 10.5	350 41.2	N27 05.7	59.2	4.2	4.7
	06	270 13.3	N07 09.6	005 04.4	N27 10.4	59.2	4.1	4.5
	07	285 13.5	N07 08.7	019 27.5	N27 14.9	59.2	4.0	4.3
	08	300 13.7	N07 07.7	033 50.5	N27 19.2	59.2	4.0	4.1
	09	315 13.9	N07 06.8	048 13.5	N27 23.3	59.2	3.9	4.0
	10	330 14.1	N07 05.9	062 36.4	N27 27.3	59.2	3.8	3.8
	11	345 14.3	N07 05.0	076 59.2	N27 31.1	59.2	3.8	3.6
	12	000 14.5	N07 04.1	091 22.0	N27 34.7	59.2	3.7	3.4
	13	015 14.7	N07 03.1	105 44.8	N27 38.1	59.2	3.7	3.2
	14	030 14.9	N07 02.2	120 07.4	N27 41.3	59.3	3.6	3.0
	15	045 15.2	N07 01.3	134 30.1	N27 44.3	59.3	3.6	2.8
	16	060 15.4	N07 00.4	148 52.7	N27 47.1	59.3	3.5	2.6
	17	075 15.6	N06 59.4	163 15.2	N27 49.8	59.3	3.5	2.5
	18	090 15.8	N06 58.5	177 37.7	N27 52.2	59.3	3.4	2.3
	19	105 16.0	N06 57.6	192 00.1	N27 54.5	59.3	3.4	2.1
	20	120 16.2	N06 56.7	206 22.5	N27 56.6	59.3	3.4	1.9
	21	135 16.4	N06 55.7	220 44.9	N27 58.4	59.3	3.3	1.7
	22	150 16.6	N06 54.8	235 07.3	N28 00.1	59.3	3.3	1.5
	23	165 16.8	N06 53.9	249 29.6	N28 01.6	59.3	3.3	1.3
5	00	180 17.0	N06 53.0	263 51.8	N28 02.9	59.3	3.2	1.1
	01	195 17.2	N06 52.0	278 14.1	N28 04.0	59.4	3.2	0.9
	02	210 17.4	N06 51.1	292 36.3	N28 04.9	59.4	3.2	0.7
	03	225 17.7	N06 50.2	306 58.5	N28 05.6	59.4	3.2	0.5
	04	240 17.9	N06 49.3	321 20.7	N28 06.2	59.4	3.2	0.3
	05	255 18.1	N06 48.3	335 42.9	N28 06.5	59.4	3.2	0.1
	06	270 18.3	N06 47.4	350 05.0	N28 06.6	59.4	3.1	-0.1
	07	285 18.5	N06 46.5	004 27.2	N28 06.5	59.4	3.1	-0.3
	08	300 18.7	N06 45.5	018 49.3	N28 06.3	59.4	3.1	-0.5
	09	315 18.9	N06 44.6	033 11.4	N28 05.8	59.4	3.1	-0.7
	10	330 19.1	N06 43.7	047 33.5	N28 05.1	59.4	3.1	-0.9
	11	345 19.3	N06 42.8	061 55.7	N28 04.3	59.4	3.1	-1.1
	12	000 19.5	N06 41.8	076 17.8	N28 03.2	59.4	3.1	-1.3
	13	015 19.7	N06 40.9	090 39.9	N28 01.9	59.4	3.1	-1.5
	14	030 20.0	N06 40.0	105 02.0	N28 00.5	59.4	3.1	-1.6
	15	045 20.2	N06 39.0	119 24.2	N27 58.9	59.5	3.2	-1.8
	16	060 20.4	N06 38.1	133 46.3	N27 57.0	59.5	3.2	-2.0
	17	075 20.6	N06 37.2	148 08.5	N27 55.0	59.5	3.2	-2.2
	18	090 20.8	N06 36.3	162 30.7	N27 52.7	59.5	3.2	-2.4
	19	105 21.0	N06 35.3	176 52.9	N27 50.3	59.5	3.2	-2.6
	20	120 21.2	N06 34.4	191 15.1	N27 47.7	59.5	3.3	-2.8
	21	135 21.4	N06 33.5	205 37.4	N27 44.9	59.5	3.3	-3.0
	22	150 21.6	N06 32.5	219 59.7	N27 41.8	59.5	3.3	-3.2
	23	165 21.8	N06 31.6	234 22.0	N27 38.6	59.5	3.3	-3.4
6	00	180 22.1	N06 30.7	248 44.3	N27 35.2	59.5	3.4	-3.6
	01	195 22.3	N06 29.7	263 06.7	N27 31.6	59.5	3.4	-3.8
	02	210 22.5	N06 28.8	277 29.1	N27 27.9	59.5	3.5	-4.0
	03	225 22.7	N06 27.9	291 51.6	N27 23.9	59.5	3.5	-4.2
	04	240 22.9	N06 27.0	306 14.1	N27 19.7	59.5	3.5	-4.4
	05	255 23.1	N06 26.0	320 36.6	N27 15.3	59.5	3.6	-4.5
	06	270 23.3	N06 25.1	334 59.2	N27 10.8	59.5	3.6	-4.7
	07	285 23.5	N06 24.2	349 21.8	N27 06.1	59.5	3.7	-4.9
	08	300 23.7	N06 23.2	003 44.5	N27 01.1	59.5	3.7	-5.1
	09	315 24.0	N06 22.3	018 07.3	N26 56.0	59.5	3.8	-5.3
	10	330 24.2	N06 21.4	032 30.1	N26 50.7	59.5	3.9	-5.5
	11	345 24.4	N06 20.4	046 52.9	N26 45.3	59.5	3.9	-5.7
	12	000 24.6	N06 19.5	061 15.8	N26 39.6	59.5	4.0	-5.8
	13	015 24.8	N06 18.6	075 38.8	N26 33.7	59.5	4.0	-6.0
	14	030 25.0	N06 17.6	090 01.9	N26 27.7	59.5	4.1	-6.2
	15	045 25.2	N06 16.7	104 25.0	N26 21.5	59.5	4.2	-6.4
	16	060 25.4	N06 15.8	118 48.1	N26 15.1	59.5	4.2	-6.6
	17	075 25.6	N06 14.8	133 11.4	N26 08.5	59.5	4.3	-6.7
	18	090 25.9	N06 13.9	147 34.7	N26 01.8	59.5	4.4	-6.9
	19	105 26.1	N06 13.0	161 58.1	N25 54.9	59.5	4.5	-7.1
	20	120 26.3	N06 12.0	176 21.5	N25 47.8	59.5	4.5	-7.3
	21	135 26.5	N06 11.1	190 45.1	N25 40.5	59.5	4.6	-7.4
	22	150 26.7	N06 10.2	205 08.7	N25 33.1	59.5	4.7	-7.6
	23	165 26.9	N06 09.2	219 32.4	N25 25.5	59.5	4.8	-7.8

Day 4 noon Sun: v 0.2 d -0.9 SD 15.9 | Moon SD 16.1

Day 5 noon Sun: v 0.2 d -0.9 SD 15.9 | Moon SD 16.2

Day 6 noon Sun: v 0.2 d -0.9 SD 15.9 | Moon SD 16.2

SUN: SEPTEMBER 5 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	--	0258	0421	1933	2054	--
70N	0117	0321	0432	1923	2033	2230
68N	0203	0338	0441	1914	2016	2148
66N	0232	0351	0448	1907	2003	2121
64N	0253	0403	0454	1901	1952	2101
62N	0310	0412	0500	1856	1943	2044
60N	0324	0420	0504	1852	1935	2031
58N	0335	0427	0508	1848	1929	2020
56N	0345	0433	0512	1844	1923	2011
54N	0353	0438	0515	1841	1918	2002
52N	0401	0443	0518	1838	1913	1955
50N	0407	0448	0521	1836	1909	1949
45N	0421	0457	0527	1830	1900	1936
40N	0431	0504	0531	1825	1853	1925
35N	0439	0510	0536	1821	1847	1917
30N	0446	0515	0539	1818	1842	1910
25N	0452	0519	0542	1815	1838	1905
20N	0457	0523	0545	1812	1834	1900
15N	0501	0526	0548	1809	1831	1856
10N	0505	0529	0551	1807	1828	1852
05N	0508	0532	0553	1804	1825	1849
00N	0510	0535	0555	1802	1823	1847
05S	0513	0537	0558	1800	1821	1845
10S	0515	0539	0600	1757	1818	1843
15S	0516	0541	0603	1755	1816	1841
20S	0517	0543	0605	1753	1815	1840
25S	0518	0545	0608	1750	1813	1839
30S	0519	0547	0611	1747	1811	1839
35S	0519	0548	0614	1744	1809	1839
40S	0519	0550	0617	1741	1808	1839
45S	0518	0552	0621	1737	1806	1840
50S	0516	0554	0626	1732	1805	1842
55S	0514	0556	0632	1726	1803	1845
60S	0510	0558	0640	1719	1801	1849

MOON: RISE / SET | UTC HHMM

Lat	Day 4		Day 5		Day 6	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	--	--	2105	1936
62N	1845	1732	1954	1835	2207	1833
60N	1951	1626	2058	1731	2241	1758
58N	2025	1552	2132	1657	2306	1733
56N	2051	1526	2157	1631	2326	1712
54N	2111	1506	2218	1611	2342	1656
52N	2128	1449	2234	1554	2357	1641
50N	2143	1435	2249	1540	--	1628
45N	2213	1405	2318	1510	--	1602
40N	2236	1342	2341	1447	--	1541
35N	2255	1323	--	1428	0000	1523
30N	2312	1307	--	1411	0016	1508
25N	2326	1252	--	1356	0031	1455
20N	2340	1239	--	1343	0044	1442
15N	2352	1227	--	1331	0056	1431
10N	--	1216	0004	1319	0107	1420
05N	--	1205	0015	1308	0119	1410
00N	--	1154	0026	1256	0129	1359
05S	--	1143	0038	1245	0140	1349
10S	--	1132	0049	1234	0151	1338
15S	--	1120	0101	1222	0203	1327
20S	0008	1108	0113	1210	0215	1315
25S	0021	1055	0127	1156	0228	1303
30S	0035	1040	0141	1141	0242	1249
35S	0051	1024	0158	1125	0259	1233
40S	0109	1005	0218	1105	0317	1215
45S	0131	0943	0242	1041	0340	1153
50S	0200	0914	0312	1011	0409	1125
55S	0239	0834	0355	0928	0449	1046
60S	0345	0727	0512	0811	0554	0941

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | SEPTEMBER 7 - SEPTEMBER 9

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
7	00	346 05.4	141 53.8	S14 32.5	237 23.3	N22 57.3	208 30.7	N16 52.1	332 47.6	N02 47.9
	01	001 07.8	156 54.7	S14 33.5	252 24.1	N22 57.2	223 32.7	N16 51.9	347 50.2	N02 47.8
	02	016 10.3	171 55.6	S14 34.4	267 24.8	N22 57.0	238 34.6	N16 51.8	002 52.8	N02 47.8
	03	031 12.8	186 56.4	S14 35.4	282 25.6	N22 56.9	253 36.6	N16 51.6	017 55.4	N02 47.7
	04	046 15.2	201 57.3	S14 36.3	297 26.4	N22 56.7	268 38.5	N16 51.5	032 58.0	N02 47.6
	05	061 17.7	216 58.2	S14 37.3	312 27.2	N22 56.5	283 40.5	N16 51.4	048 00.6	N02 47.6
	06	076 20.2	231 59.1	S14 38.2	327 27.9	N22 56.4	298 42.4	N16 51.2	063 03.3	N02 47.5
	07	091 22.6	247 00.0	S14 39.2	342 28.7	N22 56.2	313 44.4	N16 51.1	078 05.9	N02 47.4
	08	106 25.1	262 00.9	S14 40.1	357 29.5	N22 56.1	328 46.3	N16 50.9	093 08.5	N02 47.4
	09	121 27.5	277 01.8	S14 41.1	012 30.3	N22 55.9	343 48.3	N16 50.8	108 11.1	N02 47.3
	10	136 30.0	292 02.7	S14 42.0	027 31.1	N22 55.7	358 50.2	N16 50.6	123 13.7	N02 47.2
	11	151 32.5	307 03.5	S14 43.0	042 31.8	N22 55.6	013 52.2	N16 50.5	138 16.3	N02 47.1
	12	166 34.9	322 04.4	S14 43.9	057 32.6	N22 55.4	028 54.1	N16 50.3	153 18.9	N02 47.1
	13	181 37.4	337 05.3	S14 44.8	072 33.4	N22 55.2	043 56.1	N16 50.2	168 21.5	N02 47.0
	14	196 39.9	352 06.2	S14 45.8	087 34.2	N22 55.1	058 58.0	N16 50.0	183 24.1	N02 46.9
	15	211 42.3	007 07.1	S14 46.7	102 34.9	N22 54.9	074 00.0	N16 49.9	198 26.7	N02 46.9
	16	226 44.8	022 08.0	S14 47.7	117 35.7	N22 54.7	089 01.9	N16 49.7	213 29.3	N02 46.8
	17	241 47.3	037 08.9	S14 48.6	132 36.5	N22 54.6	104 03.9	N16 49.6	228 31.9	N02 46.7
	18	256 49.7	052 09.8	S14 49.5	147 37.3	N22 54.4	119 05.8	N16 49.5	243 34.6	N02 46.7
	19	271 52.2	067 10.7	S14 50.5	162 38.1	N22 54.2	134 07.8	N16 49.3	258 37.2	N02 46.6
	20	286 54.6	082 11.6	S14 51.4	177 38.8	N22 54.1	149 09.7	N16 49.2	273 39.8	N02 46.5
	21	301 57.1	097 12.5	S14 52.3	192 39.6	N22 53.9	164 11.7	N16 49.0	288 42.4	N02 46.5
	22	316 59.6	112 13.5	S14 53.3	207 40.4	N22 53.7	179 13.6	N16 48.9	303 45.0	N02 46.4
	23	332 02.0	127 14.4	S14 54.2	222 41.2	N22 53.6	194 15.6	N16 48.7	318 47.6	N02 46.3
8	00	347 04.5	142 15.3	S14 55.2	237 42.0	N22 53.4	209 17.5	N16 48.6	333 50.2	N02 46.3
	01	002 07.0	157 16.2	S14 56.1	252 42.7	N22 53.2	224 19.5	N16 48.4	348 52.8	N02 46.2
	02	017 09.4	172 17.1	S14 57.0	267 43.5	N22 53.1	239 21.4	N16 48.3	003 55.4	N02 46.1
	03	032 11.9	187 18.0	S14 58.0	282 44.3	N22 52.9	254 23.4	N16 48.1	018 58.0	N02 46.1
	04	047 14.4	202 18.9	S14 58.9	297 45.1	N22 52.7	269 25.4	N16 48.0	034 00.6	N02 46.0
	05	062 16.8	217 19.8	S14 59.8	312 45.9	N22 52.6	284 27.3	N16 47.9	049 03.3	N02 45.9
	06	077 19.3	232 20.8	S15 00.7	327 46.6	N22 52.4	299 29.3	N16 47.7	064 05.9	N02 45.8
	07	092 21.8	247 21.7	S15 01.7	342 47.4	N22 52.2	314 31.2	N16 47.6	079 08.5	N02 45.8
	08	107 24.2	262 22.6	S15 02.6	357 48.2	N22 52.1	329 33.2	N16 47.4	094 11.1	N02 45.7
	09	122 26.7	277 23.5	S15 03.5	012 49.0	N22 51.9	344 35.1	N16 47.3	109 13.7	N02 45.6
	10	137 29.1	292 24.5	S15 04.5	027 49.8	N22 51.7	359 37.1	N16 47.1	124 16.3	N02 45.6
	11	152 31.6	307 25.4	S15 05.4	042 50.6	N22 51.5	014 39.0	N16 47.0	139 18.9	N02 45.5
	12	167 34.1	322 26.3	S15 06.3	057 51.3	N22 51.4	029 41.0	N16 46.8	154 21.5	N02 45.4
	13	182 36.5	337 27.2	S15 07.2	072 52.1	N22 51.2	044 42.9	N16 46.7	169 24.1	N02 45.4
	14	197 39.0	352 28.2	S15 08.2	087 52.9	N22 51.0	059 44.9	N16 46.5	184 26.8	N02 45.3
	15	212 41.5	007 29.1	S15 09.1	102 53.7	N22 50.9	074 46.8	N16 46.4	199 29.4	N02 45.2
	16	227 43.9	022 30.0	S15 10.0	117 54.5	N22 50.7	089 48.8	N16 46.2	214 32.0	N02 45.2
	17	242 46.4	037 31.0	S15 10.9	132 55.3	N22 50.5	104 50.7	N16 46.1	229 34.6	N02 45.1
	18	257 48.9	052 31.9	S15 11.8	147 56.0	N22 50.3	119 52.7	N16 46.0	244 37.2	N02 45.0
	19	272 51.3	067 32.9	S15 12.8	162 56.8	N22 50.2	134 54.6	N16 45.8	259 39.8	N02 45.0
	20	287 53.8	082 33.8	S15 13.7	177 57.6	N22 50.0	149 56.6	N16 45.7	274 42.4	N02 44.9
	21	302 56.3	097 34.7	S15 14.6	192 58.4	N22 49.8	164 58.5	N16 45.5	289 45.0	N02 44.8
	22	317 58.7	112 35.7	S15 15.5	207 59.2	N22 49.7	180 00.5	N16 45.4	304 47.6	N02 44.7
	23	333 01.2	127 36.6	S15 16.4	223 00.0	N22 49.5	195 02.5	N16 45.2	319 50.3	N02 44.7
9	00	348 03.6	142 37.6	S15 17.4	238 00.8	N22 49.3	210 04.4	N16 45.1	334 52.9	N02 44.6
	01	003 06.1	157 38.5	S15 18.3	253 01.6	N22 49.1	225 06.4	N16 44.9	349 55.5	N02 44.5
	02	018 08.6	172 39.5	S15 19.2	268 02.3	N22 49.0	240 08.3	N16 44.8	004 58.1	N02 44.5
	03	033 11.0	187 40.4	S15 20.1	283 03.1	N22 48.8	255 10.3	N16 44.6	020 00.7	N02 44.4
	04	048 13.5	202 41.4	S15 21.0	298 03.9	N22 48.6	270 12.2	N16 44.5	035 03.3	N02 44.3
	05	063 16.0	217 42.3	S15 21.9	313 04.7	N22 48.4	285 14.2	N16 44.4	050 05.9	N02 44.3
	06	078 18.4	232 43.3	S15 22.8	328 05.5	N22 48.3	300 16.1	N16 44.2	065 08.5	N02 44.2
	07	093 20.9	247 44.3	S15 23.8	343 06.3	N22 48.1	315 18.1	N16 44.1	080 11.2	N02 44.1
	08	108 23.4	262 45.2	S15 24.7	358 07.1	N22 47.9	330 20.0	N16 43.9	095 13.8	N02 44.0
	09	123 25.8	277 46.2	S15 25.6	013 07.9	N22 47.7	345 22.0	N16 43.8	110 16.4	N02 44.0
	10	138 28.3	292 47.1	S15 26.5	028 08.6	N22 47.6	000 23.9	N16 43.6	125 19.0	N02 43.9
	11	153 30.7	307 48.1	S15 27.4	043 09.4	N22 47.4	015 25.9	N16 43.5	140 21.6	N02 43.8
	12	168 33.2	322 49.1	S15 28.3	058 10.2	N22 47.2	030 27.9	N16 43.3	155 24.2	N02 43.8
	13	183 35.7	337 50.0	S15 29.2	073 11.0	N22 47.0	045 29.8	N16 43.2	170 26.8	N02 43.7
	14	198 38.1	352 51.0	S15 30.1	088 11.8	N22 46.9	060 31.8	N16 43.0	185 29.4	N02 43.6
	15	213 40.6	007 52.0	S15 31.0	103 12.6	N22 46.7	075 33.7	N16 42.9	200 32.1	N02 43.6
	16	228 43.1	022 53.0	S15 31.9	118 13.4	N22 46.5	090 35.7	N16 42.8	215 34.7	N02 43.5
	17	243 45.5	037 53.9	S15 32.8	133 14.2	N22 46.3	105 37.6	N16 42.6	230 37.3	N02 43.4
	18	258 48.0	052 54.9	S15 33.7	148 15.0	N22 46.1	120 39.6	N16 42.5	245 39.9	N02 43.4
	19	273 50.5	067 55.9	S15 34.6	163 15.8	N22 46.0	135 41.5	N16 42.3	260 42.5	N02 43.3
	20	288 52.9	082 56.9	S15 35.5	178 16.5	N22 45.8	150 43.5	N16 42.2	275 45.1	N02 43.2
	21	303 55.4	097 57.8	S15 36.4	193 17.3	N22 45.6	165 45.5	N16 42.0	290 47.7	N02 43.1
	22	318 57.9	112 58.8	S15 37.3	208 18.1	N22 45.4	180 47.4	N16 41.9	305 50.4	N02 43.1
	23	334 00.3	127 59.8	S15 38.2	223 18.9	N22 45.3	195 49.4	N16 41.7	320 53.0	N02 43.0

Venus	Mars	Jupiter	Saturn
7: v 0.9 d -0.9	7: v 0.8 d -0.2	7: v 2.0 d -0.1	7: v 2.6 d -0.1
8: v 0.9 d -0.9	8: v 0.8 d -0.2	8: v 2.0 d -0.1	8: v 2.6 d -0.1
9: v 1.0 d -0.9	9: v 0.8 d -0.2	9: v 2.0 d -0.1	9: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.5	S40 11.5
Achernar	335 18.7	S57 05.8
Acrux	172 59.2	S63 14.9
Adhara	255 05.0	S29 00.2
Al Na'ir	027 30.7	S46 49.8
Aldebaran	290 38.0	N16 33.8
Alioth	166 12.2	N55 49.0
Alkaid	152 51.3	N49 11.0
Alnilam	275 36.4	S01 10.9
Alphard	217 46.7	S08 46.3
Alphecca	126 02.7	N26 37.7
Alpheratz	357 33.0	N29 14.4
Altair	061 58.4	N08 56.5
Ankaa	353 05.4	S42 09.4
Antares	112 14.2	S26 29.5
Arcturus	145 46.9	N19 02.7
Atria	107 07.1	S69 04.7
Avior	234 14.7	S59 35.4
Bellatrix	278 21.4	N06 22.5
Betelgeuse	270 50.7	N07 24.8
Canopus	263 52.0	S52 42.2
Capella	280 19.9	N46 01.3
Deneb	049 24.5	N45 22.8
Denebola	182 23.9	N14 25.5
Diphda	348 45.6	S17 50.2
Dubhe	193 40.0	N61 36.4
Elnath	278 00.2	N28 37.8
Eltanin	090 41.4	N51 29.4
Enif	033 37.1	N10 00.0
Fomalhaut	015 12.6	S29 28.7
Gacrux	171 50.6	S57 15.9
Gienah	175 42.5	S17 41.4
Hadar	148 34.5	S60 30.3
Hamal	327 49.4	N23 35.4
Kaus Australi	083 30.5	S34 22.3
Kochab	137 20.4	N74 02.9
Markab	013 28.2	N15 21.1
Menkar	314 04.5	N04 11.8
Menkent	147 56.2	S36 30.2
Miaplacidus	221 38.8	S69 49.4
Mirfak	308 26.1	N49 57.2
Nunki	075 45.9	S26 15.8
Peacock	053 03.1	S56 39.0
Polaris	313 05.7	N89 22.3
Pollux	243 15.9	N27 57.7
Procyon	244 49.6	N05 09.5
Rasalhague	095 57.2	N12 32.6
Regulus	207 33.3	N11 50.3
Rigel	281 02.6	S08 10.0
Rigil Kentaur	139 38.7	S60 56.9
Sabik	102 01.2	S15 45.4
Schedar	349 28.9	N56 41.0
Shaula	096 08.4	S37 07.5
Sirius	258 25.2	S16 44.9
Spica	158 21.1	S11 18.0
Suhail	222 45.7	S43 32.2
Vega	080 32.1	N38 48.8
Zubenelgenubi	136 54.7	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	154 52.2	1430
Mars	250 17.3	0809
Jupiter	222 06.9	1002
Saturn	346 47.5	0144

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
7	00	180 27.1	N06 08.3	233 56.1	N25 17.7	59.5	4.9	-8.0
	01	195 27.3	N06 07.4	248 20.0	N25 09.7	59.5	4.9	-8.1
	02	210 27.6	N06 06.4	262 43.9	N25 01.6	59.5	5.0	-8.3
	03	225 27.8	N06 05.5	277 08.0	N24 53.3	59.5	5.1	-8.4
	04	240 28.0	N06 04.6	291 32.1	N24 44.9	59.5	5.2	-8.6
	05	255 28.2	N06 03.6	305 56.3	N24 36.3	59.5	5.3	-8.8
	06	270 28.4	N06 02.7	320 20.5	N24 27.5	59.5	5.4	-8.9
	07	285 28.6	N06 01.7	334 44.9	N24 18.6	59.5	5.5	-9.1
	08	300 28.8	N06 00.8	349 09.4	N24 09.5	59.5	5.6	-9.2
	09	315 29.0	N05 59.9	003 33.9	N24 00.2	59.5	5.6	-9.4
	10	330 29.3	N05 58.9	017 58.6	N23 50.9	59.5	5.7	-9.6
	11	345 29.5	N05 58.0	032 23.3	N23 41.3	59.5	5.8	-9.7
	12	000 29.7	N05 57.1	046 48.1	N23 31.6	59.5	5.9	-9.9
	13	015 29.9	N05 56.1	061 13.1	N23 21.7	59.5	6.0	-10.0
	14	030 30.1	N05 55.2	075 38.1	N23 11.7	59.5	6.1	-10.1
	15	045 30.3	N05 54.2	090 03.2	N23 01.6	59.5	6.2	-10.3
	16	060 30.5	N05 53.3	104 28.4	N22 51.3	59.5	6.3	-10.4
	17	075 30.8	N05 52.4	118 53.7	N22 40.9	59.5	6.4	-10.6
	18	090 31.0	N05 51.4	133 19.2	N22 30.3	59.5	6.5	-10.7
	19	105 31.2	N05 50.5	147 44.7	N22 19.6	59.5	6.6	-10.9
	20	120 31.4	N05 49.6	162 10.3	N22 08.7	59.5	6.7	-11.0
	21	135 31.6	N05 48.6	176 36.0	N21 57.7	59.5	6.8	-11.1
	22	150 31.8	N05 47.7	191 01.8	N21 46.6	59.5	6.9	-11.3
	23	165 32.0	N05 46.7	205 27.7	N21 35.4	59.5	7.0	-11.4
8	00	180 32.3	N05 45.8	219 53.7	N21 24.0	59.5	7.1	-11.5
	01	195 32.5	N05 44.9	234 19.8	N21 12.5	59.4	7.2	-11.6
	02	210 32.7	N05 43.9	248 46.0	N21 00.8	59.4	7.3	-11.8
	03	225 32.9	N05 43.0	263 12.4	N20 49.0	59.4	7.4	-11.9
	04	240 33.1	N05 42.0	277 38.8	N20 37.2	59.4	7.5	-12.0
	05	255 33.3	N05 41.1	292 05.3	N20 25.1	59.4	7.6	-12.1
	06	270 33.5	N05 40.2	306 31.9	N20 13.0	59.4	7.7	-12.3
	07	285 33.8	N05 39.2	320 58.6	N20 00.7	59.4	7.8	-12.4
	08	300 34.0	N05 38.3	335 25.4	N19 48.4	59.4	7.9	-12.5
	09	315 34.2	N05 37.3	349 52.4	N19 35.9	59.4	8.0	-12.6
	10	330 34.4	N05 36.4	004 19.4	N19 23.3	59.4	8.1	-12.7
	11	345 34.6	N05 35.5	018 46.5	N19 10.6	59.4	8.2	-12.8
	12	000 34.8	N05 34.5	033 13.7	N18 57.8	59.4	8.3	-12.9
	13	015 35.0	N05 33.6	047 41.0	N18 44.8	59.3	8.4	-13.0
	14	030 35.3	N05 32.6	062 08.4	N18 31.8	59.3	8.5	-13.1
	15	045 35.5	N05 31.7	076 36.0	N18 18.7	59.3	8.6	-13.2
	16	060 35.7	N05 30.8	091 03.6	N18 05.4	59.3	8.7	-13.3
	17	075 35.9	N05 29.8	105 31.3	N17 52.1	59.3	8.8	-13.4
	18	090 36.1	N05 28.9	119 59.1	N17 38.7	59.3	8.9	-13.5
	19	105 36.3	N05 27.9	134 27.0	N17 25.1	59.3	9.0	-13.6
	20	120 36.6	N05 27.0	148 55.0	N17 11.5	59.3	9.1	-13.7
	21	135 36.8	N05 26.0	163 23.1	N16 57.8	59.3	9.2	-13.8
	22	150 37.0	N05 25.1	177 51.3	N16 44.0	59.2	9.3	-13.9
	23	165 37.2	N05 24.2	192 19.6	N16 30.1	59.2	9.4	-14.0
9	00	180 37.4	N05 23.2	206 48.0	N16 16.1	59.2	9.5	-14.1
	01	195 37.6	N05 22.3	221 16.5	N16 02.1	59.2	9.6	-14.2
	02	210 37.8	N05 21.3	235 45.1	N15 47.9	59.2	9.7	-14.2
	03	225 38.1	N05 20.4	250 13.7	N15 33.7	59.2	9.8	-14.3
	04	240 38.3	N05 19.4	264 42.5	N15 19.4	59.2	9.9	-14.4
	05	255 38.5	N05 18.5	279 11.3	N15 05.0	59.1	9.9	-14.5
	06	270 38.7	N05 17.6	293 40.3	N14 50.5	59.1	10.0	-14.5
	07	285 38.9	N05 16.6	308 09.3	N14 36.0	59.1	10.1	-14.6
	08	300 39.1	N05 15.7	322 38.4	N14 21.4	59.1	10.2	-14.7
	09	315 39.4	N05 14.7	337 07.7	N14 06.7	59.1	10.3	-14.8
	10	330 39.6	N05 13.8	351 36.9	N13 51.9	59.1	10.4	-14.8
	11	345 39.8	N05 12.8	006 06.3	N13 37.1	59.1	10.5	-14.9
	12	000 40.0	N05 11.9	020 35.8	N13 22.2	59.0	10.6	-14.9
	13	015 40.2	N05 10.9	035 05.3	N13 07.3	59.0	10.6	-15.0
	14	030 40.4	N05 10.0	049 35.0	N12 52.3	59.0	10.7	-15.1
	15	045 40.7	N05 09.1	064 04.7	N12 37.2	59.0	10.8	-15.1
	16	060 40.9	N05 08.1	078 34.5	N12 22.1	59.0	10.9	-15.2
	17	075 41.1	N05 07.2	093 04.4	N12 06.9	59.0	11.0	-15.2
	18	090 41.3	N05 06.2	107 34.3	N11 51.6	58.9	11.0	-15.3
	19	105 41.5	N05 05.3	122 04.4	N11 36.4	58.9	11.1	-15.3
	20	120 41.7	N05 04.3	136 34.5	N11 21.0	58.9	11.2	-15.4
	21	135 42.0	N05 03.4	151 04.7	N11 05.6	58.9	11.3	-15.4
	22	150 42.2	N05 02.4	165 34.9	N10 50.2	58.9	11.3	-15.5
	23	165 42.4	N05 01.5	180 05.3	N10 34.7	58.8	11.4	-15.5

Day 7 noon Sun: v 0.2 d -0.9 SD 15.9 | Moon SD 16.2

Day 8 noon Sun: v 0.2 d -0.9 SD 15.9 | Moon SD 16.2

Day 9 noon Sun: v 0.2 d -0.9 SD 15.9 | Moon SD 16.1

SUN: SEPTEMBER 8 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0036	0316	0435	1917	2035	2258
70N	0148	0336	0444	1909	2016	2200
68N	0223	0350	0451	1902	2002	2127
66N	0247	0402	0458	1856	1950	2104
64N	0306	0412	0503	1851	1941	2046
62N	0321	0421	0507	1846	1933	2032
60N	0333	0428	0511	1843	1926	2020
58N	0343	0434	0515	1839	1920	2010
56N	0352	0439	0518	1836	1915	2002
54N	0400	0444	0521	1834	1910	1954
52N	0406	0448	0523	1831	1906	1947
50N	0412	0452	0525	1829	1902	1942
45N	0425	0500	0530	1824	1854	1930
40N	0434	0507	0534	1820	1848	1920
35N	0442	0512	0538	1817	1843	1913
30N	0448	0517	0541	1814	1838	1907
25N	0453	0520	0543	1812	1835	1901
20N	0458	0524	0546	1809	1831	1857
15N	0502	0527	0548	1807	1828	1854
10N	0505	0529	0550	1805	1826	1851
05N	0507	0532	0552	1803	1824	1848
00N	0510	0534	0554	1801	1822	1846
05S	0511	0536	0556	1759	1820	1844
10S	0513	0537	0558	1757	1818	1843
15S	0514	0539	0600	1755	1817	1842
20S	0515	0540	0602	1753	1815	1841
25S	0515	0542	0605	1751	1814	1840
30S	0515	0543	0607	1749	1813	1840
35S	0515	0544	0610	1746	1812	1841
40S	0514	0545	0613	1743	1811	1842
45S	0513	0546	0616	1740	1810	1844
50S	0510	0547	0620	1737	1809	1846
55S	0506	0548	0624	1732	1808	1850
60S	0501	0549	0631	1726	1808	1856

MOON: RISE / SET | UTC HHMM

Lat	Day 7		Day 8		Day 9	
72N	--	--	--	2042	0002	1925
70N	--	--	--	1954	0048	1907
68N	2201	2045	--	1923	0118	1852
66N	2312	1933	--	1859	0139	1840
64N	2348	1856	--	1841	0157	1830
62N	--	1829	0014	1825	0211	1821
60N	--	1808	0034	1812	0223	1814
58N	--	1751	0050	1801	0233	1807
56N	--	1736	0104	1751	0242	1801
54N	--	1724	0116	1743	0249	1756
52N	--	1713	0126	1735	0256	1751
50N	0009	1703	0136	1728	0303	1747
45N	0034	1642	0155	1712	0316	1737
40N	0055	1625	0211	1700	0327	1729
35N	0111	1610	0225	1649	0337	1722
30N	0126	1558	0236	1640	0345	1716
25N	0139	1546	0246	1631	0352	1710
20N	0150	1536	0256	1623	0359	1705
15N	0201	1526	0305	1616	0405	1700
10N	0211	1517	0313	1609	0411	1656
05N	0221	1508	0321	1602	0417	1651
00N	0231	1459	0329	1555	0423	1647
05S	0241	1450	0337	1548	0428	1642
10S	0251	1441	0345	1541	0434	1638
15S	0301	1432	0353	1534	0440	1633
20S	0312	1422	0402	1526	0446	1628
25S	0323	1411	0411	1518	0453	1622
30S	0336	1359	0421	1509	0500	1617
35S	0350	1346	0432	1459	0508	1610
40S	0406	1331	0445	1448	0517	1603
45S	0425	1312	0500	1434	0527	1554
50S	0450	1249	0518	1417	0540	1543
55S	0522	1219	0542	1355	0555	1530
60S	0609	1133	0614	1325	0616	1512

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | SEPTEMBER 10 - SEPTEMBER 12

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
10	00	349 02.8	143 00.8	S15 39.1	238 19.7	N22 45.1	210 51.3	N16 41.6	335 55.6	N02 42.9
	01	004 05.2	158 01.8	S15 40.0	253 20.5	N22 44.9	225 53.3	N16 41.4	350 58.2	N02 42.9
	02	019 07.7	173 02.8	S15 40.9	268 21.3	N22 44.7	240 55.2	N16 41.3	006 00.8	N02 42.8
	03	034 10.2	188 03.8	S15 41.8	283 22.1	N22 44.5	255 57.2	N16 41.2	021 03.4	N02 42.7
	04	049 12.6	203 04.8	S15 42.7	298 22.9	N22 44.4	270 59.2	N16 41.0	036 06.0	N02 42.6
	05	064 15.1	218 05.7	S15 43.6	313 23.7	N22 44.2	286 01.1	N16 40.9	051 08.7	N02 42.6
	06	079 17.6	233 06.7	S15 44.5	328 24.5	N22 44.0	301 03.1	N16 40.7	066 11.3	N02 42.5
	07	094 20.0	248 07.7	S15 45.4	343 25.3	N22 43.8	316 05.0	N16 40.6	081 13.9	N02 42.4
	08	109 22.5	263 08.7	S15 46.3	358 26.1	N22 43.6	331 07.0	N16 40.4	096 16.5	N02 42.4
	09	124 25.0	278 09.7	S15 47.2	013 26.9	N22 43.4	346 08.9	N16 40.3	111 19.1	N02 42.3
	10	139 27.4	293 10.7	S15 48.1	028 27.7	N22 43.3	001 10.9	N16 40.1	126 21.7	N02 42.2
	11	154 29.9	308 11.7	S15 49.0	043 28.5	N22 43.1	016 12.9	N16 40.0	141 24.4	N02 42.2
	12	169 32.4	323 12.8	S15 49.8	058 29.2	N22 42.9	031 14.8	N16 39.8	156 27.0	N02 42.1
	13	184 34.8	338 13.8	S15 50.7	073 30.0	N22 42.7	046 16.8	N16 39.7	171 29.6	N02 42.0
	14	199 37.3	353 14.8	S15 51.6	088 30.8	N22 42.5	061 18.7	N16 39.6	186 32.2	N02 41.9
	15	214 39.7	008 15.8	S15 52.5	103 31.6	N22 42.3	076 20.7	N16 39.4	201 34.8	N02 41.9
	16	229 42.2	023 16.8	S15 53.4	118 32.4	N22 42.2	091 22.6	N16 39.3	216 37.4	N02 41.8
	17	244 44.7	038 17.8	S15 54.3	133 33.2	N22 42.0	106 24.6	N16 39.1	231 40.0	N02 41.7
	18	259 47.1	053 18.8	S15 55.2	148 34.0	N22 41.8	121 26.6	N16 39.0	246 42.7	N02 41.7
	19	274 49.6	068 19.8	S15 56.0	163 34.8	N22 41.6	136 28.5	N16 38.8	261 45.3	N02 41.6
	20	289 52.1	083 20.9	S15 56.9	178 35.6	N22 41.4	151 30.5	N16 38.7	276 47.9	N02 41.5
	21	304 54.5	098 21.9	S15 57.8	193 36.4	N22 41.2	166 32.4	N16 38.5	291 50.5	N02 41.5
	22	319 57.0	113 22.9	S15 58.7	208 37.2	N22 41.1	181 34.4	N16 38.4	306 53.1	N02 41.4
	23	334 59.5	128 23.9	S15 59.6	223 38.0	N22 40.9	196 36.3	N16 38.2	321 55.7	N02 41.3
11	00	350 01.9	143 24.9	S16 00.5	238 38.8	N22 40.7	211 38.3	N16 38.1	336 58.4	N02 41.2
	01	005 04.4	158 26.0	S16 01.3	253 39.6	N22 40.5	226 40.3	N16 38.0	352 01.0	N02 41.2
	02	020 06.8	173 27.0	S16 02.2	268 40.4	N22 40.3	241 42.2	N16 37.8	007 03.6	N02 41.1
	03	035 09.3	188 28.0	S16 03.1	283 41.2	N22 40.1	256 44.2	N16 37.7	022 06.2	N02 41.0
	04	050 11.8	203 29.1	S16 04.0	298 42.0	N22 39.9	271 46.1	N16 37.5	037 08.8	N02 41.0
	05	065 14.2	218 30.1	S16 04.8	313 42.8	N22 39.8	286 48.1	N16 37.4	052 11.4	N02 40.9
	06	080 16.7	233 31.1	S16 05.7	328 43.6	N22 39.6	301 50.1	N16 37.2	067 14.1	N02 40.8
	07	095 19.2	248 32.2	S16 06.6	343 44.4	N22 39.4	316 52.0	N16 37.1	082 16.7	N02 40.7
	08	110 21.6	263 33.2	S16 07.5	358 45.2	N22 39.2	331 54.0	N16 36.9	097 19.3	N02 40.7
	09	125 24.1	278 34.3	S16 08.3	013 46.0	N22 39.0	346 55.9	N16 36.8	112 21.9	N02 40.6
	10	140 26.6	293 35.3	S16 09.2	028 46.8	N22 38.8	001 57.9	N16 36.7	127 24.5	N02 40.5
	11	155 29.0	308 36.3	S16 10.1	043 47.6	N22 38.6	016 59.9	N16 36.5	142 27.2	N02 40.5
	12	170 31.5	323 37.4	S16 10.9	058 48.4	N22 38.4	032 01.8	N16 36.4	157 29.8	N02 40.4
	13	185 34.0	338 38.4	S16 11.8	073 49.2	N22 38.3	047 03.8	N16 36.2	172 32.4	N02 40.3
	14	200 36.4	353 39.5	S16 12.7	088 50.0	N22 38.1	062 05.7	N16 36.1	187 35.0	N02 40.2
	15	215 38.9	008 40.5	S16 13.5	103 50.8	N22 37.9	077 07.7	N16 35.9	202 37.6	N02 40.2
	16	230 41.3	023 41.6	S16 14.4	118 51.6	N22 37.7	092 09.7	N16 35.8	217 40.2	N02 40.1
	17	245 43.8	038 42.7	S16 15.3	133 52.4	N22 37.5	107 11.6	N16 35.6	232 42.9	N02 40.0
	18	260 46.3	053 43.7	S16 16.1	148 53.2	N22 37.3	122 13.6	N16 35.5	247 45.5	N02 40.0
	19	275 48.7	068 44.8	S16 17.0	163 54.0	N22 37.1	137 15.5	N16 35.3	262 48.1	N02 39.9
	20	290 51.2	083 45.8	S16 17.9	178 54.8	N22 36.9	152 17.5	N16 35.2	277 50.7	N02 39.8
	21	305 53.7	098 46.9	S16 18.7	193 55.7	N22 36.7	167 19.5	N16 35.1	292 53.3	N02 39.7
	22	320 56.1	113 48.0	S16 19.6	208 56.5	N22 36.5	182 21.4	N16 34.9	307 56.0	N02 39.7
	23	335 58.6	128 49.0	S16 20.5	223 57.3	N22 36.3	197 23.4	N16 34.8	322 58.6	N02 39.6
12	00	351 01.1	143 50.1	S16 21.3	238 58.1	N22 36.2	212 25.3	N16 34.6	338 01.2	N02 39.5
	01	006 03.5	158 51.2	S16 22.2	253 58.9	N22 36.0	227 27.3	N16 34.5	353 03.8	N02 39.5
	02	021 06.0	173 52.2	S16 23.0	268 59.7	N22 35.8	242 29.3	N16 34.3	008 06.4	N02 39.4
	03	036 08.4	188 53.3	S16 23.9	284 00.5	N22 35.6	257 31.2	N16 34.2	023 09.0	N02 39.3
	04	051 10.9	203 54.4	S16 24.7	299 01.3	N22 35.4	272 33.2	N16 34.0	038 11.7	N02 39.2
	05	066 13.4	218 55.5	S16 25.6	314 02.1	N22 35.2	287 35.2	N16 33.9	053 14.3	N02 39.2
	06	081 15.8	233 56.5	S16 26.5	329 02.9	N22 35.0	302 37.1	N16 33.8	068 16.9	N02 39.1
	07	096 18.3	248 57.6	S16 27.3	344 03.7	N22 34.8	317 39.1	N16 33.6	083 19.5	N02 39.0
	08	111 20.8	263 58.7	S16 28.2	359 04.5	N22 34.6	332 41.0	N16 33.5	098 22.1	N02 39.0
	09	126 23.2	278 59.8	S16 29.0	014 05.3	N22 34.4	347 43.0	N16 33.3	113 24.8	N02 38.9
	10	141 25.7	294 00.9	S16 29.9	029 06.1	N22 34.2	002 45.0	N16 33.2	128 27.4	N02 38.8
	11	156 28.2	309 02.0	S16 30.7	044 06.9	N22 34.0	017 46.9	N16 33.0	143 30.0	N02 38.7
	12	171 30.6	324 03.0	S16 31.6	059 07.7	N22 33.8	032 48.9	N16 32.9	158 32.6	N02 38.7
	13	186 33.1	339 04.1	S16 32.4	074 08.6	N22 33.6	047 50.9	N16 32.7	173 35.2	N02 38.6
	14	201 35.6	354 05.2	S16 33.3	089 09.4	N22 33.5	062 52.8	N16 32.6	188 37.9	N02 38.5
	15	216 38.0	009 06.3	S16 34.1	104 10.2	N22 33.3	077 54.8	N16 32.5	203 40.5	N02 38.4
	16	231 40.5	024 07.4	S16 35.0	119 11.0	N22 33.1	092 56.7	N16 32.3	218 43.1	N02 38.4
	17	246 42.9	039 08.5	S16 35.8	134 11.8	N22 32.9	107 58.7	N16 32.2	233 45.7	N02 38.3
	18	261 45.4	054 09.6	S16 36.6	149 12.6	N22 32.7	123 00.7	N16 32.0	248 48.3	N02 38.2
	19	276 47.9	069 10.7	S16 37.5	164 13.4	N22 32.5	138 02.6	N16 31.9	263 51.0	N02 38.2
	20	291 50.3	084 11.8	S16 38.3	179 14.2	N22 32.3	153 04.6	N16 31.7	278 53.6	N02 38.1
	21	306 52.8	099 12.9	S16 39.2	194 15.0	N22 32.1	168 06.6	N16 31.6	293 56.2	N02 38.0
	22	321 55.3	114 14.0	S16 40.0	209 15.8	N22 31.9	183 08.5	N16 31.4	308 58.8	N02 37.9
	23	336 57.7	129 15.1	S16 40.8	224 16.7	N22 31.7	198 10.5	N16 31.3	324 01.4	N02 37.9

Venus	Mars	Jupiter	Saturn
10: v 1.0 d -0.9	10: v 0.8 d -0.2	10: v 2.0 d -0.1	10: v 2.6 d -0.1
11: v 1.0 d -0.9	11: v 0.8 d -0.2	11: v 2.0 d -0.1	11: v 2.6 d -0.1
12: v 1.1 d -0.8	12: v 0.8 d -0.2	12: v 2.0 d -0.1	12: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.5	S40 11.5
Achernar	335 18.7	S57 05.8
Acrux	172 59.2	S63 14.9
Adhara	255 04.9	S29 00.2
Al Na'ir	027 30.7	S46 49.8
Aldebaran	290 38.0	N16 33.8
Alioth	166 12.2	N55 49.0
Alkaid	152 51.3	N49 11.0
Alnilam	275 36.4	S01 10.9
Alphard	217 46.7	S08 46.3
Alphecca	126 02.7	N26 37.7
Alpheratz	357 33.0	N29 14.4
Altair	061 58.4	N08 56.5
Ankaa	353 05.4	S42 09.4
Antares	112 14.2	S26 29.5
Arcturus	145 46.9	N19 02.7
Atria	107 07.2	S69 04.8
Avior	234 14.6	S59 35.4
Bellatrix	278 21.4	N06 22.5
Betelgeuse	270 50.6	N07 24.8
Canopus	263 51.9	S52 42.2
Capella	280 19.8	N46 01.3
Deneb	049 24.5	N45 22.8
Denebola	182 23.8	N14 25.5
Diphda	348 45.6	S17 50.2
Dubhe	193 40.0	N61 36.4
Elnath	278 00.1	N28 37.8
Eltanin	090 41.4	N51 29.4
Enif	033 37.1	N10 00.0
Fomalhaut	015 12.6	S29 28.7
Gacrux	171 50.7	S57 15.8
Gienah	175 42.5	S17 41.4
Hadar	148 34.5	S60 30.3
Hamal	327 49.4	N23 35.4
Kaus Australi	083 30.5	S34 22.4
Kochab	137 20.5	N74 02.9
Markab	013 28.2	N15 21.1
Menkar	314 04.5	N04 11.8
Menkent	147 56.3	S36 30.1
Miaplacidus	221 38.8	S69 49.4
Mirfak	308 26.0	N49 57.3
Nunki	075 45.9	S26 15.8
Peacock	053 03.1	S56 39.0
Polaris	313 04.4	N89 22.3
Pollux	243 15.8	N27 57.7
Procyon	244 49.6	N05 09.5
Rasalhague	095 57.2	N12 32.6
Regulus	207 33.3	N11 50.3
Rigel	281 02.5	S08 10.0
Rigil Kentaur	139 38.8	S60 56.9
Sabik	102 01.2	S15 45.4
Schedar	349 28.9	N56 41.1
Shaula	096 08.4	S37 07.5
Sirius	258 25.1	S16 44.9
Spica	158 21.1	S11 18.0
Suhail	222 45.7	S43 32.2
Vega	080 32.1	N38 48.8
Zubenelgenubi	136 54.7	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	153 05.9	1425
Mars	248 16.9	0805
Jupiter	221 30.3	0952
Saturn	346 58.3	0132

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
10	00	180 42.6	N05 00.5	194 35.7	N10 19.2	58.8	11.5	-15.6
	01	195 42.8	N04 59.6	209 06.2	N10 03.6	58.8	11.6	-15.6
	02	210 43.1	N04 58.6	223 36.7	N09 48.0	58.8	11.6	-15.7
	03	225 43.3	N04 57.7	238 07.4	N09 32.3	58.8	11.7	-15.7
	04	240 43.5	N04 56.8	252 38.1	N09 16.6	58.8	11.8	-15.7
	05	255 43.7	N04 55.8	267 08.8	N09 00.9	58.7	11.8	-15.8
	06	270 43.9	N04 54.9	281 39.7	N08 45.1	58.7	11.9	-15.8
	07	285 44.1	N04 53.9	296 10.6	N08 29.3	58.7	12.0	-15.8
	08	300 44.4	N04 53.0	310 41.5	N08 13.5	58.7	12.0	-15.9
	09	315 44.6	N04 52.0	325 12.6	N07 57.6	58.6	12.1	-15.9
	10	330 44.8	N04 51.1	339 43.7	N07 41.8	58.6	12.2	-15.9
	11	345 45.0	N04 50.1	354 14.8	N07 25.9	58.6	12.2	-15.9
	12	000 45.2	N04 49.2	008 46.0	N07 09.9	58.6	12.3	-16.0
	13	015 45.4	N04 48.2	023 17.3	N06 54.0	58.6	12.3	-16.0
	14	030 45.7	N04 47.3	037 48.6	N06 38.0	58.5	12.4	-16.0
	15	045 45.9	N04 46.3	052 20.0	N06 22.0	58.5	12.4	-16.0
	16	060 46.1	N04 45.4	066 51.5	N06 06.0	58.5	12.5	-16.0
	17	075 46.3	N04 44.4	081 23.0	N05 49.9	58.5	12.6	-16.1
	18	090 46.5	N04 43.5	095 54.5	N05 33.9	58.4	12.6	-16.1
	19	105 46.8	N04 42.5	110 26.1	N05 17.8	58.4	12.7	-16.1
	20	120 47.0	N04 41.6	124 57.8	N05 01.7	58.4	12.7	-16.1
	21	135 47.2	N04 40.6	139 29.5	N04 45.6	58.4	12.8	-16.1
	22	150 47.4	N04 39.7	154 01.2	N04 29.5	58.4	12.8	-16.1
	23	165 47.6	N04 38.7	168 33.0	N04 13.4	58.3	12.8	-16.1
11	00	180 47.9	N04 37.8	183 04.9	N03 57.3	58.3	12.9	-16.1
	01	195 48.1	N04 36.8	197 36.8	N03 41.2	58.3	12.9	-16.1
	02	210 48.3	N04 35.9	212 08.7	N03 25.1	58.3	13.0	-16.1
	03	225 48.5	N04 34.9	226 40.7	N03 08.9	58.2	13.0	-16.1
	04	240 48.7	N04 34.0	241 12.7	N02 52.8	58.2	13.1	-16.1
	05	255 48.9	N04 33.0	255 44.8	N02 36.7	58.2	13.1	-16.1
	06	270 49.2	N04 32.1	270 16.9	N02 20.6	58.2	13.1	-16.1
	07	285 49.4	N04 31.1	284 49.0	N02 04.4	58.1	13.2	-16.1
	08	300 49.6	N04 30.2	299 21.2	N01 48.3	58.1	13.2	-16.1
	09	315 49.8	N04 29.2	313 53.4	N01 32.2	58.1	13.2	-16.1
	10	330 50.0	N04 28.3	328 25.6	N01 16.1	58.0	13.3	-16.1
	11	345 50.3	N04 27.3	342 57.9	N01 00.0	58.0	13.3	-16.1
	12	000 50.5	N04 26.4	357 30.2	N00 43.9	58.0	13.3	-16.1
	13	015 50.7	N04 25.4	012 02.6	N00 27.9	58.0	13.4	-16.1
	14	030 50.9	N04 24.5	026 34.9	N00 11.8	57.9	13.4	-16.0
	15	045 51.1	N04 23.5	041 07.3	S00 04.2	57.9	13.4	-16.0
	16	060 51.4	N04 22.6	055 39.8	S00 20.3	57.9	13.5	-16.0
	17	075 51.6	N04 21.6	070 12.2	S00 36.3	57.9	13.5	-16.0
	18	090 51.8	N04 20.7	084 44.7	S00 52.3	57.8	13.5	-16.0
	19	105 52.0	N04 19.7	099 17.2	S01 08.3	57.8	13.5	-16.0
	20	120 52.2	N04 18.7	113 49.8	S01 24.2	57.8	13.6	-15.9
	21	135 52.5	N04 17.8	128 22.3	S01 40.1	57.8	13.6	-15.9
	22	150 52.7	N04 16.8	142 54.9	S01 56.1	57.7	13.6	-15.9
	23	165 52.9	N04 15.9	157 27.5	S02 11.9	57.7	13.6	-15.9
12	00	180 53.1	N04 14.9	172 00.1	S02 27.8	57.7	13.6	-15.8
	01	195 53.3	N04 14.0	186 32.7	S02 43.6	57.6	13.6	-15.8
	02	210 53.6	N04 13.0	201 05.4	S02 59.4	57.6	13.7	-15.8
	03	225 53.8	N04 12.1	215 38.0	S03 15.2	57.6	13.7	-15.7
	04	240 54.0	N04 11.1	230 10.7	S03 30.9	57.6	13.7	-15.7
	05	255 54.2	N04 10.2	244 43.4	S03 46.7	57.5	13.7	-15.7
	06	270 54.4	N04 09.2	259 16.1	S04 02.3	57.5	13.7	-15.6
	07	285 54.7	N04 08.3	273 48.8	S04 18.0	57.5	13.7	-15.6
	08	300 54.9	N04 07.3	288 21.6	S04 33.6	57.4	13.7	-15.6
	09	315 55.1	N04 06.4	302 54.3	S04 49.2	57.4	13.7	-15.5
	10	330 55.3	N04 05.4	317 27.0	S05 04.7	57.4	13.8	-15.5
	11	345 55.5	N04 04.4	331 59.8	S05 20.2	57.4	13.8	-15.5
	12	000 55.8	N04 03.5	346 32.5	S05 35.6	57.3	13.8	-15.4
	13	015 56.0	N04 02.5	001 05.3	S05 51.0	57.3	13.8	-15.4
	14	030 56.2	N04 01.6	015 38.1	S06 06.4	57.3	13.8	-15.3
	15	045 56.4	N04 00.6	030 10.8	S06 21.7	57.2	13.8	-15.3
	16	060 56.6	N03 59.7	044 43.6	S06 37.0	57.2	13.8	-15.2
	17	075 56.9	N03 58.7	059 16.4	S06 52.3	57.2	13.8	-15.2
	18	090 57.1	N03 57.8	073 49.2	S07 07.4	57.2	13.8	-15.1
	19	105 57.3	N03 56.8	088 21.9	S07 22.6	57.1	13.8	-15.1
	20	120 57.5	N03 55.8	102 54.7	S07 37.7	57.1	13.8	-15.0
	21	135 57.7	N03 54.9	117 27.5	S07 52.7	57.1	13.8	-15.0
	22	150 58.0	N03 53.9	132 00.2	S08 07.7	57.0	13.8	-14.9
	23	165 58.2	N03 53.0	146 33.0	S08 22.7	57.0	13.8	-14.9

Day 10 noon Sun: v 0.2 d -0.9 SD 15.9 | Moon SD 16.0

Day 11 noon Sun: v 0.2 d -1.0 SD 15.9 | Moon SD 15.8

Day 12 noon Sun: v 0.2 d -1.0 SD 15.9 | Moon SD 15.6

SUN: SEPTEMBER 11 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0127	0333	0449	1902	2016	2216
70N	0212	0350	0456	1855	2000	2135
68N	0241	0403	0502	1849	1948	2108
66N	0301	0413	0507	1844	1938	2048
64N	0318	0422	0511	1840	1929	2033
62N	0331	0429	0515	1836	1922	2020
60N	0342	0435	0518	1833	1916	2009
58N	0351	0441	0521	1831	1911	2000
56N	0359	0446	0524	1828	1906	1952
54N	0406	0450	0526	1826	1902	1946
52N	0412	0454	0528	1824	1859	1940
50N	0418	0457	0530	1822	1855	1934
45N	0429	0504	0534	1819	1848	1923
40N	0437	0510	0537	1816	1843	1915
35N	0444	0514	0540	1813	1838	1908
30N	0450	0518	0542	1810	1834	1903
25N	0455	0522	0545	1808	1831	1858
20N	0459	0524	0547	1806	1829	1854
15N	0502	0527	0548	1805	1826	1851
10N	0505	0529	0550	1803	1824	1849
05N	0507	0531	0552	1801	1822	1846
00N	0509	0533	0553	1800	1821	1845
05S	0510	0534	0555	1758	1819	1843
10S	0511	0536	0557	1757	1818	1842
15S	0512	0537	0558	1755	1817	1842
20S	0512	0538	0600	1754	1816	1841
25S	0512	0539	0602	1752	1815	1841
30S	0512	0539	0603	1750	1814	1842
35S	0511	0540	0605	1748	1814	1843
40S	0509	0541	0608	1746	1813	1845
45S	0507	0541	0610	1744	1813	1847
50S	0504	0541	0613	1741	1813	1851
55S	0459	0541	0617	1737	1814	1856
60S	0452	0540	0622	1733	1814	1903

MOON: RISE / SET | UTC HHMM

Lat	Day 10		Day 11		Day 12	
72N	0306	1843	0529	1808	0744	1733
70N	0321	1836	0532	1810	0737	1743
68N	0334	1830	0535	1811	0731	1751
66N	0344	1825	0538	1812	0727	1758
64N	0352	1821	0540	1813	0723	1804
62N	0359	1817	0541	1813	0720	1809
60N	0405	1814	0543	1814	0717	1814
58N	0411	1811	0544	1814	0714	1818
56N	0415	1809	0545	1815	0712	1821
54N	0420	1806	0546	1815	0710	1824
52N	0423	1804	0547	1816	0708	1827
50N	0427	1802	0548	1816	0706	1830
45N	0434	1758	0550	1817	0703	1836
40N	0441	1754	0551	1818	0700	1841
35N	0446	1751	0553	1818	0657	1845
30N	0451	1748	0554	1819	0655	1849
25N	0455	1746	0555	1819	0653	1852
20N	0459	1743	0556	1820	0651	1855
15N	0502	1741	0557	1820	0650	1858
10N	0506	1739	0558	1820	0648	1901
05N	0509	1737	0559	1821	0646	1904
00N	0512	1735	0559	1821	0645	1906
05S	0516	1733	0600	1821	0643	1909
10S	0519	1731	0601	1822	0642	1912
15S	0522	1729	0602	1822	0640	1914
20S	0526	1726	0603	1823	0639	1917
25S	0530	1724	0604	1823	0637	1921
30S	0534	1721	0605	1823	0635	1924
35S	0538	1718	0606	1824	0633	1928
40S	0544	1715	0608	1824	0630	1932
45S	0549	1711	0609	1825	0628	1937
50S	0557	1706	0611	1826	0625	1943
55S	0605	1700	0613	1827	0621	1951
60S	0616	1652	0616	1828	0616	2001

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | SEPTEMBER 13 - SEPTEMBER 15

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
13	00	352 00.2	144 16.3	S16 41.7	239 17.5	N22 31.5	213 12.5	N16 31.1	339 04.1	N02 37.8
	01	007 02.7	159 17.4	S16 42.5	254 18.3	N22 31.3	228 14.4	N16 31.0	354 06.7	N02 37.7
	02	022 05.1	174 18.5	S16 43.4	269 19.1	N22 31.1	243 16.4	N16 30.9	009 09.3	N02 37.7
	03	037 07.6	189 19.6	S16 44.2	284 19.9	N22 30.9	258 18.3	N16 30.7	024 11.9	N02 37.6
	04	052 10.0	204 20.7	S16 45.0	299 20.7	N22 30.7	273 20.3	N16 30.6	039 14.6	N02 37.5
	05	067 12.5	219 21.8	S16 45.9	314 21.5	N22 30.5	288 22.3	N16 30.4	054 17.2	N02 37.4
	06	082 15.0	234 23.0	S16 46.7	329 22.3	N22 30.3	303 24.2	N16 30.3	069 19.8	N02 37.4
	07	097 17.4	249 24.1	S16 47.5	344 23.2	N22 30.1	318 26.2	N16 30.1	084 22.4	N02 37.3
	08	112 19.9	264 25.2	S16 48.4	359 24.0	N22 29.9	333 28.2	N16 30.0	099 25.0	N02 37.2
	09	127 22.4	279 26.4	S16 49.2	014 24.8	N22 29.7	348 30.1	N16 29.8	114 27.7	N02 37.1
	10	142 24.8	294 27.5	S16 50.0	029 25.6	N22 29.5	003 32.1	N16 29.7	129 30.3	N02 37.1
	11	157 27.3	309 28.6	S16 50.9	044 26.4	N22 29.3	018 34.1	N16 29.6	144 32.9	N02 37.0
	12	172 29.8	324 29.7	S16 51.7	059 27.2	N22 29.1	033 36.0	N16 29.4	159 35.5	N02 36.9
	13	187 32.2	339 30.9	S16 52.5	074 28.0	N22 28.9	048 38.0	N16 29.3	174 38.1	N02 36.9
	14	202 34.7	354 32.0	S16 53.3	089 28.9	N22 28.7	063 40.0	N16 29.1	189 40.8	N02 36.8
	15	217 37.2	009 33.2	S16 54.2	104 29.7	N22 28.5	078 41.9	N16 29.0	204 43.4	N02 36.7
	16	232 39.6	024 34.3	S16 55.0	119 30.5	N22 28.3	093 43.9	N16 28.8	219 46.0	N02 36.6
	17	247 42.1	039 35.5	S16 55.8	134 31.3	N22 28.1	108 45.9	N16 28.7	234 48.6	N02 36.6
	18	262 44.5	054 36.6	S16 56.6	149 32.1	N22 27.9	123 47.8	N16 28.5	249 51.3	N02 36.5
	19	277 47.0	069 37.7	S16 57.5	164 32.9	N22 27.7	138 49.8	N16 28.4	264 53.9	N02 36.4
	20	292 49.5	084 38.9	S16 58.3	179 33.7	N22 27.5	153 51.8	N16 28.3	279 56.5	N02 36.3
	21	307 51.9	099 40.0	S16 59.1	194 34.6	N22 27.3	168 53.7	N16 28.1	294 59.1	N02 36.3
	22	322 54.4	114 41.2	S16 59.9	209 35.4	N22 27.1	183 55.7	N16 28.0	310 01.7	N02 36.2
	23	337 56.9	129 42.4	S17 00.7	224 36.2	N22 26.9	198 57.7	N16 27.8	325 04.4	N02 36.1
14	00	352 59.3	144 43.5	S17 01.6	239 37.0	N22 26.7	213 59.6	N16 27.7	340 07.0	N02 36.1
	01	008 01.8	159 44.7	S17 02.4	254 37.8	N22 26.5	229 01.6	N16 27.5	355 09.6	N02 36.0
	02	023 04.3	174 45.8	S17 03.2	269 38.7	N22 26.3	244 03.6	N16 27.4	010 12.2	N02 35.9
	03	038 06.7	189 47.0	S17 04.0	284 39.5	N22 26.1	259 05.5	N16 27.2	025 14.9	N02 35.8
	04	053 09.2	204 48.2	S17 04.8	299 40.3	N22 25.9	274 07.5	N16 27.1	040 17.5	N02 35.8
	05	068 11.7	219 49.3	S17 05.6	314 41.1	N22 25.7	289 09.5	N16 27.0	055 20.1	N02 35.7
	06	083 14.1	234 50.5	S17 06.4	329 41.9	N22 25.5	304 11.4	N16 26.8	070 22.7	N02 35.6
	07	098 16.6	249 51.7	S17 07.3	344 42.7	N22 25.3	319 13.4	N16 26.7	085 25.4	N02 35.5
	08	113 19.0	264 52.9	S17 08.1	359 43.6	N22 25.1	334 15.4	N16 26.5	100 28.0	N02 35.5
	09	128 21.5	279 54.0	S17 08.9	014 44.4	N22 24.8	349 17.3	N16 26.4	115 30.6	N02 35.4
	10	143 24.0	294 55.2	S17 09.7	029 45.2	N22 24.6	004 19.3	N16 26.2	130 33.2	N02 35.3
	11	158 26.4	309 56.4	S17 10.5	044 46.0	N22 24.4	019 21.3	N16 26.1	145 35.9	N02 35.3
	12	173 28.9	324 57.6	S17 11.3	059 46.9	N22 24.2	034 23.2	N16 26.0	160 38.5	N02 35.2
	13	188 31.4	339 58.8	S17 12.1	074 47.7	N22 24.0	049 25.2	N16 25.8	175 41.1	N02 35.1
	14	203 33.8	354 59.9	S17 12.9	089 48.5	N22 23.8	064 27.2	N16 25.7	190 43.7	N02 35.0
	15	218 36.3	010 01.1	S17 13.7	104 49.3	N22 23.6	079 29.1	N16 25.5	205 46.3	N02 35.0
	16	233 38.8	025 02.3	S17 14.5	119 50.1	N22 23.4	094 31.1	N16 25.4	220 49.0	N02 34.9
	17	248 41.2	040 03.5	S17 15.3	134 51.0	N22 23.2	109 33.1	N16 25.2	235 51.6	N02 34.8
	18	263 43.7	055 04.7	S17 16.1	149 51.8	N22 23.0	124 35.0	N16 25.1	250 54.2	N02 34.7
	19	278 46.1	070 05.9	S17 16.9	164 52.6	N22 22.8	139 37.0	N16 24.9	265 56.8	N02 34.7
	20	293 48.6	085 07.1	S17 17.7	179 53.4	N22 22.6	154 39.0	N16 24.8	280 59.5	N02 34.6
	21	308 51.1	100 08.3	S17 18.5	194 54.3	N22 22.4	169 40.9	N16 24.7	296 02.1	N02 34.5
	22	323 53.5	115 09.5	S17 19.3	209 55.1	N22 22.2	184 42.9	N16 24.5	311 04.7	N02 34.4
	23	338 56.0	130 10.7	S17 20.1	224 55.9	N22 22.0	199 44.9	N16 24.4	326 07.3	N02 34.4
15	00	353 58.5	145 11.9	S17 20.9	239 56.7	N22 21.7	214 46.9	N16 24.2	341 10.0	N02 34.3
	01	009 00.9	160 13.1	S17 21.7	254 57.5	N22 21.5	229 48.8	N16 24.1	356 12.6	N02 34.2
	02	024 03.4	175 14.3	S17 22.5	269 58.4	N22 21.3	244 50.8	N16 23.9	011 15.2	N02 34.1
	03	039 05.9	190 15.5	S17 23.3	284 59.2	N22 21.1	259 52.8	N16 23.8	026 17.8	N02 34.1
	04	054 08.3	205 16.8	S17 24.1	300 00.0	N22 20.9	274 54.7	N16 23.6	041 20.5	N02 34.0
	05	069 10.8	220 18.0	S17 24.9	315 00.8	N22 20.7	289 56.7	N16 23.5	056 23.1	N02 33.9
	06	084 13.3	235 19.2	S17 25.7	330 01.7	N22 20.5	304 58.7	N16 23.4	071 25.7	N02 33.9
	07	099 15.7	250 20.4	S17 26.5	345 02.5	N22 20.3	320 00.6	N16 23.2	086 28.3	N02 33.8
	08	114 18.2	265 21.6	S17 27.2	000 03.3	N22 20.1	335 02.6	N16 23.1	101 31.0	N02 33.7
	09	129 20.6	280 22.9	S17 28.0	015 04.2	N22 19.9	350 04.6	N16 22.9	116 33.6	N02 33.6
	10	144 23.1	295 24.1	S17 28.8	030 05.0	N22 19.6	005 06.6	N16 22.8	131 36.2	N02 33.6
	11	159 25.6	310 25.3	S17 29.6	045 05.8	N22 19.4	020 08.5	N16 22.6	146 38.8	N02 33.5
	12	174 28.0	325 26.6	S17 30.4	060 06.6	N22 19.2	035 10.5	N16 22.5	161 41.5	N02 33.4
	13	189 30.5	340 27.8	S17 31.2	075 07.5	N22 19.0	050 12.5	N16 22.4	176 44.1	N02 33.3
	14	204 33.0	355 29.0	S17 31.9	090 08.3	N22 18.8	065 14.4	N16 22.2	191 46.7	N02 33.3
	15	219 35.4	010 30.3	S17 32.7	105 09.1	N22 18.6	080 16.4	N16 22.1	206 49.4	N02 33.2
	16	234 37.9	025 31.5	S17 33.5	120 09.9	N22 18.4	095 18.4	N16 21.9	221 52.0	N02 33.1
	17	249 40.4	040 32.7	S17 34.3	135 10.8	N22 18.2	110 20.4	N16 21.8	236 54.6	N02 33.0
	18	264 42.8	055 34.0	S17 35.1	150 11.6	N22 18.0	125 22.3	N16 21.6	251 57.2	N02 33.0
	19	279 45.3	070 35.2	S17 35.8	165 12.4	N22 17.7	140 24.3	N16 21.5	266 59.9	N02 32.9
	20	294 47.7	085 36.5	S17 36.6	180 13.3	N22 17.5	155 26.3	N16 21.3	282 02.5	N02 32.8
	21	309 50.2	100 37.7	S17 37.4	195 14.1	N22 17.3	170 28.2	N16 21.2	297 05.1	N02 32.7
	22	324 52.7	115 39.0	S17 38.2	210 14.9	N22 17.1	185 30.2	N16 21.1	312 07.7	N02 32.7
	23	339 55.1	130 40.2	S17 38.9	225 15.8	N22 16.9	200 32.2	N16 20.9	327 10.4	N02 32.6

Venus	Mars	Jupiter	Saturn
13: v 1.1 d -0.8	13: v 0.8 d -0.2	13: v 2.0 d -0.1	13: v 2.6 d -0.1
14: v 1.2 d -0.8	14: v 0.8 d -0.2	14: v 2.0 d -0.1	14: v 2.6 d -0.1
15: v 1.2 d -0.8	15: v 0.8 d -0.2	15: v 2.0 d -0.1	15: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.5	S40 11.5
Achernar	335 18.7	S57 05.8
Acrux	172 59.2	S63 14.9
Adhara	255 04.9	S29 00.2
Al Na'ir	027 30.7	S46 49.8
Aldebaran	290 38.0	N16 33.8
Alioth	166 12.3	N55 49.0
Alkaid	152 51.3	N49 11.0
Alnilam	275 36.3	S01 10.9
Alphard	217 46.7	S08 46.3
Alphecca	126 02.7	N26 37.7
Alpheratz	357 33.0	N29 14.4
Altair	061 58.4	N08 56.5
Ankaa	353 05.4	S42 09.4
Antares	112 14.2	S26 29.5
Arcturus	145 46.9	N19 02.7
Atria	107 07.2	S69 04.7
Avior	234 14.6	S59 35.4
Bellatrix	278 21.4	N06 22.5
Betelgeuse	270 50.6	N07 24.8
Canopus	263 51.9	S52 42.2
Capella	280 19.8	N46 01.3
Deneb	049 24.5	N45 22.8
Denebola	182 23.9	N14 25.4
Diphda	348 45.6	S17 50.2
Dubhe	193 40.0	N61 36.4
Elnath	278 00.1	N28 37.8
Eltanin	090 41.5	N51 29.4
Enif	033 37.1	N10 00.0
Fomalhaut	015 12.6	S29 28.7
Gacrux	171 50.7	S57 15.8
Gienah	175 42.5	S17 41.4
Hadar	148 34.5	S60 30.3
Hamal	327 49.4	N23 35.4
Kaus Australi	083 30.6	S34 22.4
Kochab	137 20.5	N74 02.9
Markab	013 28.2	N15 21.1
Menkar	314 04.5	N04 11.8
Menkent	147 56.3	S36 30.1
Miaplacidus	221 38.8	S69 49.4
Mirfak	308 26.0	N49 57.3
Nunki	075 45.9	S26 15.8
Peacock	053 03.1	S56 39.0
Polaris	313 03.1	N89 22.3
Pollux	243 15.8	N27 57.7
Procyon	244 49.6	N05 09.5
Rasalhague	095 57.2	N12 32.6
Regulus	207 33.3	N11 50.3
Rigel	281 02.5	S08 10.0
Rigil Kentaur	139 38.8	S60 56.9
Sabik	102 01.2	S15 45.4
Schedar	349 28.9	N56 41.1
Shaula	096 08.5	S37 07.5
Sirius	258 25.1	S16 44.9
Spica	158 21.1	S11 18.0
Suhail	222 45.7	S43 32.2
Vega	080 32.2	N38 48.8
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	151 28.7	1420
Mars	246 18.0	0801
Jupiter	220 54.3	0943
Saturn	347 09.6	0119

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
13	00	180 58.4	N03 52.0	161 05.7	S08 37.5	57.0	13.7	-14.8
	01	195 58.6	N03 51.1	175 38.5	S08 52.4	56.9	13.7	-14.8
	02	210 58.8	N03 50.1	190 11.2	S09 07.1	56.9	13.7	-14.7
	03	225 59.1	N03 49.2	204 43.9	S09 21.9	56.9	13.7	-14.7
	04	240 59.3	N03 48.2	219 16.7	S09 36.5	56.9	13.7	-14.6
	05	255 59.5	N03 47.2	233 49.4	S09 51.1	56.8	13.7	-14.5
	06	270 59.7	N03 46.3	248 22.1	S10 05.7	56.8	13.7	-14.5
	07	286 00.0	N03 45.3	262 54.8	S10 20.2	56.8	13.7	-14.4
	08	301 00.2	N03 44.4	277 27.4	S10 34.6	56.7	13.7	-14.4
	09	316 00.4	N03 43.4	292 00.1	S10 48.9	56.7	13.6	-14.3
	10	331 00.6	N03 42.5	306 32.7	S11 03.2	56.7	13.6	-14.2
	11	346 00.8	N03 41.5	321 05.4	S11 17.5	56.7	13.6	-14.2
	12	001 01.1	N03 40.5	335 38.0	S11 31.6	56.6	13.6	-14.1
	13	016 01.3	N03 39.6	350 10.6	S11 45.7	56.6	13.6	-14.0
	14	031 01.5	N03 38.6	004 43.1	S11 59.8	56.6	13.6	-14.0
	15	046 01.7	N03 37.7	019 15.7	S12 13.7	56.5	13.5	-13.9
	16	061 01.9	N03 36.7	033 48.2	S12 27.6	56.5	13.5	-13.8
	17	076 02.2	N03 35.7	048 20.7	S12 41.4	56.5	13.5	-13.8
	18	091 02.4	N03 34.8	062 53.2	S12 55.2	56.5	13.5	-13.7
	19	106 02.6	N03 33.8	077 25.7	S13 08.9	56.4	13.5	-13.6
	20	121 02.8	N03 32.9	091 58.2	S13 22.5	56.4	13.4	-13.5
	21	136 03.1	N03 31.9	106 30.6	S13 36.0	56.4	13.4	-13.5
	22	151 03.3	N03 31.0	121 03.0	S13 49.5	56.3	13.4	-13.4
	23	166 03.5	N03 30.0	135 35.4	S14 02.9	56.3	13.4	-13.3
14	00	181 03.7	N03 29.0	150 07.7	S14 16.2	56.3	13.3	-13.2
	01	196 03.9	N03 28.1	164 40.1	S14 29.4	56.3	13.3	-13.1
	02	211 04.2	N03 27.1	179 12.4	S14 42.5	56.2	13.3	-13.1
	03	226 04.4	N03 26.2	193 44.6	S14 55.6	56.2	13.2	-13.0
	04	241 04.6	N03 25.2	208 16.9	S15 08.6	56.2	13.2	-12.9
	05	256 04.8	N03 24.2	222 49.1	S15 21.5	56.1	13.2	-12.8
	06	271 05.1	N03 23.3	237 21.3	S15 34.3	56.1	13.2	-12.7
	07	286 05.3	N03 22.3	251 53.4	S15 47.1	56.1	13.1	-12.7
	08	301 05.5	N03 21.4	266 25.5	S15 59.7	56.1	13.1	-12.6
	09	316 05.7	N03 20.4	280 57.6	S16 12.3	56.0	13.1	-12.5
	10	331 05.9	N03 19.4	295 29.7	S16 24.8	56.0	13.0	-12.4
	11	346 06.2	N03 18.5	310 01.7	S16 37.2	56.0	13.0	-12.3
	12	001 06.4	N03 17.5	324 33.7	S16 49.5	55.9	13.0	-12.2
	13	016 06.6	N03 16.6	339 05.7	S17 01.8	55.9	12.9	-12.1
	14	031 06.8	N03 15.6	353 37.6	S17 13.9	55.9	12.9	-12.0
	15	046 07.0	N03 14.6	008 09.5	S17 25.9	55.9	12.9	-12.0
	16	061 07.3	N03 13.7	022 41.3	S17 37.9	55.8	12.8	-11.9
	17	076 07.5	N03 12.7	037 13.2	S17 49.8	55.8	12.8	-11.8
	18	091 07.7	N03 11.8	051 44.9	S18 01.5	55.8	12.7	-11.7
	19	106 07.9	N03 10.8	066 16.7	S18 13.2	55.8	12.7	-11.6
	20	121 08.2	N03 09.8	080 48.4	S18 24.8	55.7	12.7	-11.5
	21	136 08.4	N03 08.9	095 20.1	S18 36.3	55.7	12.6	-11.4
	22	151 08.6	N03 07.9	109 51.7	S18 47.7	55.7	12.6	-11.3
	23	166 08.8	N03 07.0	124 23.3	S18 59.0	55.7	12.6	-11.2
15	00	181 09.0	N03 06.0	138 54.9	S19 10.2	55.6	12.5	-11.1
	01	196 09.3	N03 05.0	153 26.4	S19 21.3	55.6	12.5	-11.0
	02	211 09.5	N03 04.1	167 57.9	S19 32.3	55.6	12.4	-10.9
	03	226 09.7	N03 03.1	182 29.3	S19 43.3	55.6	12.4	-10.8
	04	241 09.9	N03 02.1	197 00.7	S19 54.1	55.5	12.4	-10.7
	05	256 10.2	N03 01.2	211 32.1	S20 04.8	55.5	12.3	-10.6
	06	271 10.4	N03 00.2	226 03.4	S20 15.4	55.5	12.3	-10.5
	07	286 10.6	N02 59.3	240 34.7	S20 25.9	55.5	12.2	-10.4
	08	301 10.8	N02 58.3	255 05.9	S20 36.3	55.4	12.2	-10.3
	09	316 11.1	N02 57.3	269 37.1	S20 46.6	55.4	12.2	-10.2
	10	331 11.3	N02 56.4	284 08.3	S20 56.8	55.4	12.1	-10.1
	11	346 11.5	N02 55.4	298 39.4	S21 06.9	55.4	12.1	-10.0
	12	001 11.7	N02 54.4	313 10.5	S21 16.9	55.3	12.0	-9.9
	13	016 11.9	N02 53.5	327 41.5	S21 26.8	55.3	12.0	-9.8
	14	031 12.2	N02 52.5	342 12.5	S21 36.5	55.3	11.9	-9.7
	15	046 12.4	N02 51.6	356 43.4	S21 46.2	55.3	11.9	-9.6
	16	061 12.6	N02 50.6	011 14.3	S21 55.8	55.2	11.9	-9.4
	17	076 12.8	N02 49.6	025 45.2	S22 05.2	55.2	11.8	-9.3
	18	091 13.1	N02 48.7	040 16.0	S22 14.5	55.2	11.8	-9.2
	19	106 13.3	N02 47.7	054 46.8	S22 23.8	55.2	11.7	-9.1
	20	121 13.5	N02 46.7	069 17.5	S22 32.9	55.2	11.7	-9.0
	21	136 13.7	N02 45.8	083 48.2	S22 41.9	55.1	11.7	-8.9
	22	151 13.9	N02 44.8	098 18.9	S22 50.8	55.1	11.6	-8.8
	23	166 14.2	N02 43.9	112 49.5	S22 59.6	55.1	11.6	-8.7

Day 13 noon Sun: v 0.2 d -1.0 SD 15.9 | Moon SD 15.4

Day 14 noon Sun: v 0.2 d -1.0 SD 15.9 | Moon SD 15.2

Day 15 noon Sun: v 0.2 d -1.0 SD 15.9 | Moon SD 15.1

SUN: SEPTEMBER 14 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0159	0350	0503	1846	1958	2145
70N	0233	0403	0508	1841	1945	2113
68N	0256	0415	0513	1836	1934	2051
66N	0315	0424	0517	1832	1925	2033
64N	0329	0431	0520	1829	1918	2020
62N	0341	0437	0523	1827	1912	2008
60N	0350	0443	0525	1824	1907	1959
58N	0359	0448	0528	1822	1902	1951
56N	0406	0452	0530	1820	1858	1944
54N	0412	0455	0531	1819	1854	1937
52N	0418	0459	0533	1817	1851	1932
50N	0423	0502	0534	1816	1848	1927
45N	0433	0508	0537	1813	1842	1917
40N	0441	0513	0540	1811	1838	1910
35N	0447	0517	0542	1809	1834	1904
30N	0452	0520	0544	1807	1831	1859
25N	0456	0523	0546	1805	1828	1855
20N	0459	0525	0547	1804	1826	1851
15N	0502	0527	0549	1802	1824	1849
10N	0504	0529	0550	1801	1822	1847
05N	0506	0530	0551	1800	1821	1845
00N	0508	0532	0552	1759	1820	1844
05S	0509	0533	0554	1758	1818	1843
10S	0509	0534	0555	1757	1818	1842
15S	0510	0534	0556	1755	1817	1842
20S	0510	0535	0557	1754	1816	1842
25S	0509	0536	0558	1753	1816	1843
30S	0508	0536	0600	1752	1816	1844
35S	0507	0536	0601	1751	1816	1845
40S	0504	0536	0603	1749	1816	1848
45S	0501	0535	0605	1747	1817	1851
50S	0457	0535	0607	1745	1818	1855
55S	0451	0533	0609	1743	1819	1901
60S	0443	0531	0613	1740	1821	1910

MOON: RISE / SET | UTC HHMM

Lat	Day 13		Day 14		Day 15	
72N	1004	1649	1313	1518	--	--
70N	0944	1712	1210	1622	--	--
68N	0929	1729	1135	1658	1442	1530
66N	0916	1743	1111	1724	1321	1652
64N	0906	1755	1052	1744	1244	1730
62N	0857	1805	1036	1801	1218	1756
60N	0850	1814	1023	1815	1158	1817
58N	0843	1821	1012	1827	1142	1835
56N	0837	1828	1003	1837	1128	1849
54N	0832	1834	0954	1846	1116	1902
52N	0828	1840	0947	1854	1105	1913
50N	0824	1845	0940	1902	1056	1923
45N	0815	1855	0926	1918	1036	1944
40N	0807	1905	0914	1931	1020	2001
35N	0801	1912	0904	1942	1006	2015
30N	0755	1919	0855	1952	0955	2028
25N	0750	1925	0847	2001	0944	2039
20N	0746	1931	0840	2009	0935	2049
15N	0742	1936	0834	2016	0926	2059
10N	0737	1942	0827	2024	0918	2108
05N	0734	1946	0821	2031	0910	2116
00N	0730	1951	0815	2037	0902	2125
05S	0726	1956	0809	2044	0854	2134
10S	0722	2001	0803	2052	0846	2143
15S	0718	2006	0757	2059	0838	2152
20S	0714	2012	0751	2107	0829	2202
25S	0710	2018	0744	2115	0820	2212
30S	0705	2024	0736	2124	0810	2223
35S	0700	2031	0728	2134	0759	2236
40S	0654	2039	0719	2146	0746	2251
45S	0647	2049	0708	2159	0731	2309
50S	0639	2100	0654	2216	0713	2331
55S	0629	2115	0638	2238	0650	--
60S	0616	2134	0616	2308	0618	--

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | SEPTEMBER 16 - SEPTEMBER 18

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
16	00	354 57.6	145 41.5	S17 39.7	240 16.6	N22 16.7	215 34.2	N16 20.8	342 13.0	N02 32.5
	01	010 00.1	160 42.8	S17 40.5	255 17.4	N22 16.5	230 36.1	N16 20.6	357 15.6	N02 32.5
	02	025 02.5	175 44.0	S17 41.3	270 18.3	N22 16.2	245 38.1	N16 20.5	012 18.2	N02 32.4
	03	040 05.0	190 45.3	S17 42.0	285 19.1	N22 16.0	260 40.1	N16 20.3	027 20.9	N02 32.3
	04	055 07.5	205 46.6	S17 42.8	300 19.9	N22 15.8	275 42.0	N16 20.2	042 23.5	N02 32.2
	05	070 09.9	220 47.8	S17 43.6	315 20.7	N22 15.6	290 44.0	N16 20.1	057 26.1	N02 32.2
	06	085 12.4	235 49.1	S17 44.3	330 21.6	N22 15.4	305 46.0	N16 19.9	072 28.8	N02 32.1
	07	100 14.9	250 50.4	S17 45.1	345 22.4	N22 15.2	320 48.0	N16 19.8	087 31.4	N02 32.0
	08	115 17.3	265 51.6	S17 45.9	000 23.2	N22 15.0	335 49.9	N16 19.6	102 34.0	N02 31.9
	09	130 19.8	280 52.9	S17 46.6	015 24.1	N22 14.7	350 51.9	N16 19.5	117 36.6	N02 31.9
	10	145 22.2	295 54.2	S17 47.4	030 24.9	N22 14.5	005 53.9	N16 19.3	132 39.3	N02 31.8
	11	160 24.7	310 55.5	S17 48.1	045 25.7	N22 14.3	020 55.9	N16 19.2	147 41.9	N02 31.7
	12	175 27.2	325 56.8	S17 48.9	060 26.6	N22 14.1	035 57.8	N16 19.1	162 44.5	N02 31.6
	13	190 29.6	340 58.0	S17 49.7	075 27.4	N22 13.9	050 59.8	N16 18.9	177 47.1	N02 31.6
	14	205 32.1	355 59.3	S17 50.4	090 28.2	N22 13.7	066 01.8	N16 18.8	192 49.8	N02 31.5
	15	220 34.6	011 00.6	S17 51.2	105 29.1	N22 13.4	081 03.8	N16 18.6	207 52.4	N02 31.4
	16	235 37.0	026 01.9	S17 51.9	120 29.9	N22 13.2	096 05.7	N16 18.5	222 55.0	N02 31.3
	17	250 39.5	041 03.2	S17 52.7	135 30.8	N22 13.0	111 07.7	N16 18.3	237 57.7	N02 31.3
	18	265 42.0	056 04.5	S17 53.4	150 31.6	N22 12.8	126 09.7	N16 18.2	253 00.3	N02 31.2
	19	280 44.4	071 05.8	S17 54.2	165 32.4	N22 12.6	141 11.7	N16 18.0	268 02.9	N02 31.1
	20	295 46.9	086 07.1	S17 55.0	180 33.3	N22 12.3	156 13.6	N16 17.9	283 05.5	N02 31.0
	21	310 49.4	101 08.4	S17 55.7	195 34.1	N22 12.1	171 15.6	N16 17.8	298 08.2	N02 31.0
	22	325 51.8	116 09.7	S17 56.5	210 34.9	N22 11.9	186 17.6	N16 17.6	313 10.8	N02 30.9
	23	340 54.3	131 11.0	S17 57.2	225 35.8	N22 11.7	201 19.6	N16 17.5	328 13.4	N02 30.8
17	00	355 56.7	146 12.3	S17 58.0	240 36.6	N22 11.5	216 21.5	N16 17.3	343 16.1	N02 30.7
	01	010 59.2	161 13.7	S17 58.7	255 37.4	N22 11.2	231 23.5	N16 17.2	358 18.7	N02 30.7
	02	026 01.7	176 15.0	S17 59.4	270 38.3	N22 11.0	246 25.5	N16 17.0	013 21.3	N02 30.6
	03	041 04.1	191 16.3	S18 00.2	285 39.1	N22 10.8	261 27.5	N16 16.9	028 23.9	N02 30.5
	04	056 06.6	206 17.6	S18 00.9	300 40.0	N22 10.6	276 29.4	N16 16.8	043 26.6	N02 30.4
	05	071 09.1	221 18.9	S18 01.7	315 40.8	N22 10.4	291 31.4	N16 16.6	058 29.2	N02 30.4
	06	086 11.5	236 20.2	S18 02.4	330 41.6	N22 10.1	306 33.4	N16 16.5	073 31.8	N02 30.3
	07	101 14.0	251 21.6	S18 03.2	345 42.5	N22 09.9	321 35.4	N16 16.3	088 34.5	N02 30.2
	08	116 16.5	266 22.9	S18 03.9	000 43.3	N22 09.7	336 37.3	N16 16.2	103 37.1	N02 30.1
	09	131 18.9	281 24.2	S18 04.6	015 44.2	N22 09.5	351 39.3	N16 16.0	118 39.7	N02 30.1
	10	146 21.4	296 25.6	S18 05.4	030 45.0	N22 09.3	006 41.3	N16 15.9	133 42.3	N02 30.0
	11	161 23.9	311 26.9	S18 06.1	045 45.8	N22 09.0	021 43.3	N16 15.8	148 45.0	N02 29.9
	12	176 26.3	326 28.2	S18 06.9	060 46.7	N22 08.8	036 45.2	N16 15.6	163 47.6	N02 29.8
	13	191 28.8	341 29.6	S18 07.6	075 47.5	N22 08.6	051 47.2	N16 15.5	178 50.2	N02 29.8
	14	206 31.2	356 30.9	S18 08.3	090 48.4	N22 08.4	066 49.2	N16 15.3	193 52.9	N02 29.7
	15	221 33.7	011 32.3	S18 09.1	105 49.2	N22 08.2	081 51.2	N16 15.2	208 55.5	N02 29.6
	16	236 36.2	026 33.6	S18 09.8	120 50.0	N22 07.9	096 53.1	N16 15.0	223 58.1	N02 29.5
	17	251 38.6	041 35.0	S18 10.5	135 50.9	N22 07.7	111 55.1	N16 14.9	239 00.7	N02 29.5
	18	266 41.1	056 36.3	S18 11.2	150 51.7	N22 07.5	126 57.1	N16 14.8	254 03.4	N02 29.4
	19	281 43.6	071 37.7	S18 12.0	165 52.6	N22 07.3	141 59.1	N16 14.6	269 06.0	N02 29.3
	20	296 46.0	086 39.0	S18 12.7	180 53.4	N22 07.0	157 01.1	N16 14.5	284 08.6	N02 29.2
	21	311 48.5	101 40.4	S18 13.4	195 54.3	N22 06.8	172 03.0	N16 14.3	299 11.3	N02 29.2
	22	326 51.0	116 41.8	S18 14.2	210 55.1	N22 06.6	187 05.0	N16 14.2	314 13.9	N02 29.1
	23	341 53.4	131 43.1	S18 14.9	225 55.9	N22 06.4	202 07.0	N16 14.0	329 16.5	N02 29.0
18	00	356 55.9	146 44.5	S18 15.6	240 56.8	N22 06.1	217 09.0	N16 13.9	344 19.2	N02 28.9
	01	011 58.3	161 45.9	S18 16.3	255 57.6	N22 05.9	232 10.9	N16 13.8	359 21.8	N02 28.9
	02	027 00.8	176 47.2	S18 17.0	270 58.5	N22 05.7	247 12.9	N16 13.6	014 24.4	N02 28.8
	03	042 03.3	191 48.6	S18 17.8	285 59.3	N22 05.5	262 14.9	N16 13.5	029 27.0	N02 28.7
	04	057 05.7	206 50.0	S18 18.5	301 00.2	N22 05.2	277 16.9	N16 13.3	044 29.7	N02 28.6
	05	072 08.2	221 51.3	S18 19.2	316 01.0	N22 05.0	292 18.9	N16 13.2	059 32.3	N02 28.6
	06	087 10.7	236 52.7	S18 19.9	331 01.9	N22 04.8	307 20.8	N16 13.0	074 34.9	N02 28.5
	07	102 13.1	251 54.1	S18 20.6	346 02.7	N22 04.6	322 22.8	N16 12.9	089 37.6	N02 28.4
	08	117 15.6	266 55.5	S18 21.3	001 03.6	N22 04.3	337 24.8	N16 12.8	104 40.2	N02 28.3
	09	132 18.1	281 56.9	S18 22.1	016 04.4	N22 04.1	352 26.8	N16 12.6	119 42.8	N02 28.3
	10	147 20.5	296 58.3	S18 22.8	031 05.2	N22 03.9	007 28.8	N16 12.5	134 45.5	N02 28.2
	11	162 23.0	311 59.7	S18 23.5	046 06.1	N22 03.7	022 30.7	N16 12.3	149 48.1	N02 28.1
	12	177 25.5	327 01.1	S18 24.2	061 06.9	N22 03.4	037 32.7	N16 12.2	164 50.7	N02 28.0
	13	192 27.9	342 02.5	S18 24.9	076 07.8	N22 03.2	052 34.7	N16 12.0	179 53.4	N02 28.0
	14	207 30.4	357 03.9	S18 25.6	091 08.6	N22 03.0	067 36.7	N16 11.9	194 56.0	N02 27.9
	15	222 32.8	012 05.3	S18 26.3	106 09.5	N22 02.7	082 38.7	N16 11.8	209 58.6	N02 27.8
	16	237 35.3	027 06.7	S18 27.0	121 10.3	N22 02.5	097 40.6	N16 11.6	225 01.3	N02 27.7
	17	252 37.8	042 08.1	S18 27.7	136 11.2	N22 02.3	112 42.6	N16 11.5	240 03.9	N02 27.7
	18	267 40.2	057 09.5	S18 28.4	151 12.0	N22 02.1	127 44.6	N16 11.3	255 06.5	N02 27.6
	19	282 42.7	072 10.9	S18 29.1	166 12.9	N22 01.8	142 46.6	N16 11.2	270 09.1	N02 27.5
	20	297 45.2	087 12.3	S18 29.8	181 13.7	N22 01.6	157 48.6	N16 11.0	285 11.8	N02 27.4
	21	312 47.6	102 13.7	S18 30.5	196 14.6	N22 01.4	172 50.5	N16 10.9	300 14.4	N02 27.4
	22	327 50.1	117 15.1	S18 31.2	211 15.4	N22 01.1	187 52.5	N16 10.8	315 17.0	N02 27.3
	23	342 52.6	132 16.6	S18 31.9	226 16.3	N22 00.9	202 54.5	N16 10.6	330 19.7	N02 27.2

Venus	Mars	Jupiter	Saturn
16: v 1.3 d -0.8	16: v 0.8 d -0.2	16: v 2.0 d -0.1	16: v 2.6 d -0.1
17: v 1.3 d -0.7	17: v 0.8 d -0.2	17: v 2.0 d -0.1	17: v 2.6 d -0.1
18: v 1.4 d -0.7	18: v 0.8 d -0.2	18: v 2.0 d -0.1	18: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.4	S40 11.5
Achernar	335 18.6	S57 05.8
Acrux	172 59.2	S63 14.9
Adhara	255 04.9	S29 00.2
Al Na'ir	027 30.7	S46 49.8
Aldebaran	290 37.9	N16 33.8
Alioth	166 12.3	N55 49.0
Alkaid	152 51.3	N49 10.9
Alnilam	275 36.3	S01 10.9
Alphard	217 46.7	S08 46.3
Alphecca	126 02.7	N26 37.7
Alpheratz	357 33.0	N29 14.4
Altair	061 58.4	N08 56.5
Ankaa	353 05.4	S42 09.4
Antares	112 14.2	S26 29.5
Arcturus	145 46.9	N19 02.7
Atria	107 07.3	S69 04.7
Avior	234 14.6	S59 35.4
Bellatrix	278 21.4	N06 22.5
Betelgeuse	270 50.6	N07 24.8
Canopus	263 51.9	S52 42.2
Capella	280 19.8	N46 01.3
Deneb	049 24.5	N45 22.8
Denebola	182 23.8	N14 25.4
Diphda	348 45.6	S17 50.2
Dubhe	193 40.0	N61 36.4
Elnath	278 00.1	N28 37.8
Eltanin	090 41.5	N51 29.4
Enif	033 37.1	N10 00.0
Fomalhaut	015 12.6	S29 28.7
Gacrux	171 50.7	S57 15.8
Gienah	175 42.5	S17 41.4
Hadar	148 34.5	S60 30.2
Hamal	327 49.3	N23 35.4
Kaus Australi	083 30.6	S34 22.4
Kochab	137 20.6	N74 02.9
Markab	013 28.2	N15 21.1
Menkar	314 04.5	N04 11.8
Menkent	147 56.3	S36 30.1
Miaplacidus	221 38.8	S69 49.4
Mirfak	308 26.0	N49 57.3
Nunki	075 45.9	S26 15.8
Peacock	053 03.1	S56 39.0
Polaris	313 01.5	N89 22.3
Pollux	243 15.8	N27 57.7
Procyon	244 49.5	N05 09.5
Rasalhague	095 57.3	N12 32.6
Regulus	207 33.3	N11 50.3
Rigel	281 02.5	S08 10.0
Rigil Kentaur	139 38.8	S60 56.9
Sabik	102 01.2	S15 45.4
Schedar	349 28.9	N56 41.1
Shaula	096 08.5	S37 07.5
Sirius	258 25.1	S16 44.9
Spica	158 21.1	S11 18.0
Suhail	222 45.6	S43 32.2
Vega	080 32.2	N38 48.8
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	150 01.9	1414
Mars	244 20.4	0757
Jupiter	220 18.9	0933
Saturn	347 21.3	0107

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
16	00	181 14.4	N02 42.9	127 20.1	S23 08.2	55.1	11.5	-8.6
	01	196 14.6	N02 41.9	141 50.6	S23 16.8	55.0	11.5	-8.4
	02	211 14.8	N02 41.0	156 21.1	S23 25.2	55.0	11.4	-8.3
	03	226 15.1	N02 40.0	170 51.6	S23 33.5	55.0	11.4	-8.2
	04	241 15.3	N02 39.0	185 22.0	S23 41.7	55.0	11.4	-8.1
	05	256 15.5	N02 38.1	199 52.3	S23 49.8	55.0	11.3	-8.0
	06	271 15.7	N02 37.1	214 22.7	S23 57.8	54.9	11.3	-7.9
	07	286 16.0	N02 36.1	228 52.9	S24 05.7	54.9	11.2	-7.7
	08	301 16.2	N02 35.2	243 23.2	S24 13.4	54.9	11.2	-7.6
	09	316 16.4	N02 34.2	257 53.4	S24 21.0	54.9	11.2	-7.5
	10	331 16.6	N02 33.2	272 23.6	S24 28.5	54.9	11.1	-7.4
	11	346 16.8	N02 32.3	286 53.7	S24 35.9	54.9	11.1	-7.3
	12	001 17.1	N02 31.3	301 23.8	S24 43.1	54.8	11.0	-7.1
	13	016 17.3	N02 30.4	315 53.8	S24 50.3	54.8	11.0	-7.0
	14	031 17.5	N02 29.4	330 23.8	S24 57.3	54.8	11.0	-6.9
	15	046 17.7	N02 28.4	344 53.8	S25 04.2	54.8	10.9	-6.8
	16	061 18.0	N02 27.5	359 23.7	S25 10.9	54.8	10.9	-6.6
	17	076 18.2	N02 26.5	013 53.6	S25 17.6	54.7	10.9	-6.5
	18	091 18.4	N02 25.5	028 23.5	S25 24.1	54.7	10.8	-6.4
	19	106 18.6	N02 24.6	042 53.3	S25 30.5	54.7	10.8	-6.3
	20	121 18.9	N02 23.6	057 23.1	S25 36.7	54.7	10.7	-6.1
	21	136 19.1	N02 22.6	071 52.8	S25 42.9	54.7	10.7	-6.0
	22	151 19.3	N02 21.7	086 22.5	S25 48.9	54.7	10.7	-5.9
	23	166 19.5	N02 20.7	100 52.2	S25 54.8	54.6	10.6	-5.8
17	00	181 19.7	N02 19.7	115 21.9	S26 00.6	54.6	10.6	-5.6
	01	196 20.0	N02 18.8	129 51.5	S26 06.2	54.6	10.6	-5.5
	02	211 20.2	N02 17.8	144 21.1	S26 11.7	54.6	10.5	-5.4
	03	226 20.4	N02 16.8	158 50.6	S26 17.1	54.6	10.5	-5.3
	04	241 20.6	N02 15.9	173 20.1	S26 22.4	54.6	10.5	-5.1
	05	256 20.9	N02 14.9	187 49.6	S26 27.5	54.6	10.5	-5.0
	06	271 21.1	N02 13.9	202 19.1	S26 32.5	54.5	10.4	-4.9
	07	286 21.3	N02 13.0	216 48.5	S26 37.3	54.5	10.4	-4.7
	08	301 21.5	N02 12.0	231 17.9	S26 42.1	54.5	10.4	-4.6
	09	316 21.8	N02 11.0	245 47.3	S26 46.7	54.5	10.3	-4.5
	10	331 22.0	N02 10.1	260 16.6	S26 51.2	54.5	10.3	-4.3
	11	346 22.2	N02 09.1	274 45.9	S26 55.5	54.5	10.3	-4.2
	12	001 22.4	N02 08.1	289 15.2	S26 59.7	54.5	10.3	-4.1
	13	016 22.6	N02 07.2	303 44.5	S27 03.8	54.5	10.2	-4.0
	14	031 22.9	N02 06.2	318 13.7	S27 07.8	54.5	10.2	-3.8
	15	046 23.1	N02 05.2	332 42.9	S27 11.6	54.4	10.2	-3.7
	16	061 23.3	N02 04.3	347 12.1	S27 15.3	54.4	10.2	-3.6
	17	076 23.5	N02 03.3	001 41.3	S27 18.8	54.4	10.1	-3.4
	18	091 23.8	N02 02.3	016 10.4	S27 22.2	54.4	10.1	-3.3
	19	106 24.0	N02 01.4	030 39.6	S27 25.5	54.4	10.1	-3.2
	20	121 24.2	N02 00.4	045 08.7	S27 28.7	54.4	10.1	-3.0
	21	136 24.4	N01 59.4	059 37.8	S27 31.7	54.4	10.1	-2.9
	22	151 24.7	N01 58.5	074 06.8	S27 34.6	54.4	10.1	-2.8
	23	166 24.9	N01 57.5	088 35.9	S27 37.3	54.4	10.0	-2.6
18	00	181 25.1	N01 56.5	103 04.9	S27 39.9	54.4	10.0	-2.5
	01	196 25.3	N01 55.6	117 34.0	S27 42.4	54.3	10.0	-2.3
	02	211 25.5	N01 54.6	132 03.0	S27 44.8	54.3	10.0	-2.2
	03	226 25.8	N01 53.6	146 32.0	S27 47.0	54.3	10.0	-2.1
	04	241 26.0	N01 52.7	161 01.0	S27 49.1	54.3	10.0	-1.9
	05	256 26.2	N01 51.7	175 29.9	S27 51.0	54.3	10.0	-1.8
	06	271 26.4	N01 50.7	189 58.9	S27 52.8	54.3	10.0	-1.7
	07	286 26.7	N01 49.8	204 27.9	S27 54.5	54.3	9.9	-1.5
	08	301 26.9	N01 48.8	218 56.8	S27 56.0	54.3	9.9	-1.4
	09	316 27.1	N01 47.8	233 25.7	S27 57.4	54.3	9.9	-1.3
	10	331 27.3	N01 46.9	247 54.7	S27 58.7	54.3	9.9	-1.1
	11	346 27.6	N01 45.9	262 23.6	S27 59.8	54.3	9.9	-1.0
	12	001 27.8	N01 44.9	276 52.5	S28 00.8	54.3	9.9	-0.9
	13	016 28.0	N01 44.0	291 21.4	S28 01.7	54.3	9.9	-0.7
	14	031 28.2	N01 43.0	305 50.4	S28 02.4	54.3	9.9	-0.6
	15	046 28.5	N01 42.0	320 19.3	S28 03.0	54.3	9.9	-0.4
	16	061 28.7	N01 41.1	334 48.2	S28 03.4	54.3	9.9	-0.3
	17	076 28.9	N01 40.1	349 17.1	S28 03.7	54.3	9.9	-0.2
	18	091 29.1	N01 39.1	003 46.0	S28 03.9	54.3	9.9	0.0
	19	106 29.3	N01 38.1	018 14.9	S28 04.0	54.3	9.9	0.1
	20	121 29.6	N01 37.2	032 43.9	S28 03.9	54.3	9.9	0.2
	21	136 29.8	N01 36.2	047 12.8	S28 03.6	54.3	9.9	0.4
	22	151 30.0	N01 35.2	061 41.7	S28 03.3	54.2	9.9	0.5
	23	166 30.2	N01 34.3	076 10.6	S28 02.8	54.2	9.9	0.6

Day 16 noon Sun: v 0.2 d -1.0 SD 15.9 | Moon SD 14.9

Day 17 noon Sun: v 0.2 d -1.0 SD 15.9 | Moon SD 14.8

Day 18 noon Sun: v 0.2 d -1.0 SD 15.9 | Moon SD 14.8

SUN: SEPTEMBER 17 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0223	0405	0516	1830	1940	2119
70N	0251	0417	0520	1827	1929	2053
68N	0311	0426	0523	1823	1920	2034
66N	0327	0434	0526	1821	1913	2019
64N	0340	0440	0529	1819	1907	2007
62N	0350	0446	0531	1817	1902	1957
60N	0359	0450	0532	1815	1857	1948
58N	0406	0454	0534	1814	1853	1941
56N	0413	0458	0535	1812	1850	1935
54N	0418	0501	0537	1811	1847	1929
52N	0423	0504	0538	1810	1844	1924
50N	0428	0506	0539	1809	1842	1920
45N	0437	0511	0541	1807	1837	1911
40N	0444	0516	0543	1806	1833	1905
35N	0449	0519	0544	1804	1830	1859
30N	0454	0522	0546	1803	1827	1855
25N	0457	0524	0547	1802	1825	1851
20N	0500	0526	0548	1801	1823	1849
15N	0502	0527	0549	1800	1821	1846
10N	0504	0529	0550	1759	1820	1845
05N	0506	0530	0550	1758	1819	1843
00N	0507	0531	0551	1758	1818	1842
05S	0507	0531	0552	1757	1818	1842
10S	0507	0532	0553	1756	1817	1842
15S	0507	0532	0554	1756	1817	1842
20S	0507	0532	0554	1755	1817	1843
25S	0506	0532	0555	1754	1817	1844
30S	0504	0532	0556	1754	1817	1845
35S	0502	0532	0557	1753	1818	1847
40S	0459	0531	0558	1752	1819	1850
45S	0456	0530	0559	1751	1820	1854
50S	0450	0528	0600	1750	1822	1900
55S	0443	0526	0602	1749	1825	1907
60S	0433	0522	0603	1747	1828	1918

MOON: RISE / SET | UTC HHMM

Lat	Day 16		Day 17		Day 18	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	1458	1658	--	--	--	--
62N	1405	1751	1557	1744	--	--
60N	1333	1824	1503	1839	1613	1916
58N	1309	1848	1430	1912	1536	1953
56N	1250	1907	1406	1936	1509	2020
54N	1234	1924	1347	1955	1448	2041
52N	1221	1938	1331	2012	1431	2058
50N	1209	1950	1317	2026	1416	2113
45N	1144	2016	1248	2055	1346	2143
40N	1124	2036	1226	2118	1322	2207
35N	1108	2053	1207	2136	1303	2226
30N	1054	2108	1152	2153	1246	2243
25N	1042	2121	1138	2207	1232	2257
20N	1030	2133	1125	2220	1218	2310
15N	1020	2144	1113	2232	1206	2323
10N	1010	2154	1102	2243	1154	2335
05N	1000	2205	1051	2255	1143	2346
00N	0951	2215	1041	2305	1132	2357
05S	0941	2225	1030	2316	1121	--
10S	0932	2235	1019	2327	1110	--
15S	0922	2245	1008	2339	1058	--
20S	0911	2257	0957	2351	1046	--
25S	0900	2309	0944	--	1033	0004
30S	0848	2322	0931	--	1018	0018
35S	0834	2337	0915	--	1002	0035
40S	0819	2354	0857	--	0943	0053
45S	0800	--	0836	0015	0919	0116
50S	0737	--	0809	0042	0850	0146
55S	0707	0000	0732	0118	0809	0227
60S	0623	0043	0633	0216	0658	0337

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | SEPTEMBER 19 - SEPTEMBER 21

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
19	00	357 55.0	147 18.0	S18 32.6	241 17.1	N22 00.7	217 56.5	N16 10.5	345 22.3	N02 27.1
	01	012 57.5	162 19.4	S18 33.3	256 18.0	N22 00.5	232 58.5	N16 10.3	000 24.9	N02 27.1
	02	028 00.0	177 20.9	S18 34.0	271 18.8	N22 00.2	248 00.4	N16 10.2	015 27.6	N02 27.0
	03	043 02.4	192 22.3	S18 34.7	286 19.7	N22 00.0	263 02.4	N16 10.1	030 30.2	N02 26.9
	04	058 04.9	207 23.7	S18 35.4	301 20.5	N21 59.8	278 04.4	N16 09.9	045 32.8	N02 26.8
	05	073 07.3	222 25.2	S18 36.1	316 21.4	N21 59.5	293 06.4	N16 09.8	060 35.5	N02 26.8
	06	088 09.8	237 26.6	S18 36.8	331 22.2	N21 59.3	308 08.4	N16 09.6	075 38.1	N02 26.7
	07	103 12.3	252 28.0	S18 37.5	346 23.1	N21 59.1	323 10.3	N16 09.5	090 40.7	N02 26.6
	08	118 14.7	267 29.5	S18 38.2	001 23.9	N21 58.8	338 12.3	N16 09.3	105 43.4	N02 26.5
	09	133 17.2	282 30.9	S18 38.9	016 24.8	N21 58.6	353 14.3	N16 09.2	120 46.0	N02 26.5
	10	148 19.7	297 32.4	S18 39.5	031 25.7	N21 58.4	008 16.3	N16 09.1	135 48.6	N02 26.4
	11	163 22.1	312 33.8	S18 40.2	046 26.5	N21 58.1	023 18.3	N16 08.9	150 51.3	N02 26.3
	12	178 24.6	327 35.3	S18 40.9	061 27.4	N21 57.9	038 20.3	N16 08.8	165 53.9	N02 26.2
	13	193 27.1	342 36.7	S18 41.6	076 28.2	N21 57.7	053 22.2	N16 08.6	180 56.5	N02 26.2
	14	208 29.5	357 38.2	S18 42.3	091 29.1	N21 57.4	068 24.2	N16 08.5	195 59.2	N02 26.1
	15	223 32.0	012 39.7	S18 43.0	106 29.9	N21 57.2	083 26.2	N16 08.3	211 01.8	N02 26.0
	16	238 34.5	027 41.1	S18 43.6	121 30.8	N21 57.0	098 28.2	N16 08.2	226 04.4	N02 25.9
	17	253 36.9	042 42.6	S18 44.3	136 31.6	N21 56.7	113 30.2	N16 08.1	241 07.1	N02 25.9
	18	268 39.4	057 44.1	S18 45.0	151 32.5	N21 56.5	128 32.2	N16 07.9	256 09.7	N02 25.8
	19	283 41.8	072 45.5	S18 45.7	166 33.3	N21 56.3	143 34.1	N16 07.8	271 12.3	N02 25.7
	20	298 44.3	087 47.0	S18 46.3	181 34.2	N21 56.0	158 36.1	N16 07.6	286 15.0	N02 25.6
	21	313 46.8	102 48.5	S18 47.0	196 35.1	N21 55.8	173 38.1	N16 07.5	301 17.6	N02 25.5
	22	328 49.2	117 50.0	S18 47.7	211 35.9	N21 55.6	188 40.1	N16 07.4	316 20.2	N02 25.5
	23	343 51.7	132 51.5	S18 48.4	226 36.8	N21 55.3	203 42.1	N16 07.2	331 22.9	N02 25.4
20	00	358 54.2	147 52.9	S18 49.0	241 37.6	N21 55.1	218 44.1	N16 07.1	346 25.5	N02 25.3
	01	013 56.6	162 54.4	S18 49.7	256 38.5	N21 54.9	233 46.0	N16 06.9	001 28.1	N02 25.2
	02	028 59.1	177 55.9	S18 50.4	271 39.3	N21 54.6	248 48.0	N16 06.8	016 30.8	N02 25.2
	03	044 01.6	192 57.4	S18 51.0	286 40.2	N21 54.4	263 50.0	N16 06.6	031 33.4	N02 25.1
	04	059 04.0	207 58.9	S18 51.7	301 41.1	N21 54.2	278 52.0	N16 06.5	046 36.0	N02 25.0
	05	074 06.5	223 00.4	S18 52.4	316 41.9	N21 53.9	293 54.0	N16 06.4	061 38.7	N02 24.9
	06	089 08.9	238 01.9	S18 53.0	331 42.8	N21 53.7	308 56.0	N16 06.2	076 41.3	N02 24.9
	07	104 11.4	253 03.4	S18 53.7	346 43.6	N21 53.5	323 58.0	N16 06.1	091 43.9	N02 24.8
	08	119 13.9	268 04.9	S18 54.3	001 44.5	N21 53.2	338 59.9	N16 05.9	106 46.6	N02 24.7
	09	134 16.3	283 06.4	S18 55.0	016 45.4	N21 53.0	354 01.9	N16 05.8	121 49.2	N02 24.6
	10	149 18.8	298 07.9	S18 55.7	031 46.2	N21 52.7	009 03.9	N16 05.7	136 51.8	N02 24.6
	11	164 21.3	313 09.4	S18 56.3	046 47.1	N21 52.5	024 05.9	N16 05.5	151 54.5	N02 24.5
	12	179 23.7	328 11.0	S18 57.0	061 47.9	N21 52.3	039 07.9	N16 05.4	166 57.1	N02 24.4
	13	194 26.2	343 12.5	S18 57.6	076 48.8	N21 52.0	054 09.9	N16 05.2	181 59.7	N02 24.3
	14	209 28.7	358 14.0	S18 58.3	091 49.7	N21 51.8	069 11.9	N16 05.1	197 02.4	N02 24.3
	15	224 31.1	013 15.5	S18 58.9	106 50.5	N21 51.6	084 13.8	N16 04.9	212 05.0	N02 24.2
	16	239 33.6	028 17.1	S18 59.6	121 51.4	N21 51.3	099 15.8	N16 04.8	227 07.6	N02 24.1
	17	254 36.1	043 18.6	S19 00.2	136 52.3	N21 51.1	114 17.8	N16 04.7	242 10.3	N02 24.0
	18	269 38.5	058 20.1	S19 00.9	151 53.1	N21 50.8	129 19.8	N16 04.5	257 12.9	N02 24.0
	19	284 41.0	073 21.7	S19 01.5	166 54.0	N21 50.6	144 21.8	N16 04.4	272 15.5	N02 23.9
	20	299 43.4	088 23.2	S19 02.2	181 54.8	N21 50.4	159 23.8	N16 04.2	287 18.2	N02 23.8
	21	314 45.9	103 24.7	S19 02.8	196 55.7	N21 50.1	174 25.8	N16 04.1	302 20.8	N02 23.7
	22	329 48.4	118 26.3	S19 03.5	211 56.6	N21 49.9	189 27.7	N16 04.0	317 23.4	N02 23.6
	23	344 50.8	133 27.8	S19 04.1	226 57.4	N21 49.7	204 29.7	N16 03.8	332 26.1	N02 23.6
21	00	359 53.3	148 29.4	S19 04.8	241 58.3	N21 49.4	219 31.7	N16 03.7	347 28.7	N02 23.5
	01	014 55.8	163 30.9	S19 05.4	256 59.2	N21 49.2	234 33.7	N16 03.5	002 31.3	N02 23.4
	02	029 58.2	178 32.5	S19 06.0	272 00.0	N21 48.9	249 35.7	N16 03.4	017 34.0	N02 23.3
	03	045 00.7	193 34.0	S19 06.7	287 00.9	N21 48.7	264 37.7	N16 03.3	032 36.6	N02 23.3
	04	060 03.2	208 35.6	S19 07.3	302 01.8	N21 48.4	279 39.7	N16 03.1	047 39.2	N02 23.2
	05	075 05.6	223 37.2	S19 07.9	317 02.6	N21 48.2	294 41.7	N16 03.0	062 41.9	N02 23.1
	06	090 08.1	238 38.7	S19 08.6	332 03.5	N21 48.0	309 43.6	N16 02.8	077 44.5	N02 23.0
	07	105 10.6	253 40.3	S19 09.2	347 04.4	N21 47.7	324 45.6	N16 02.7	092 47.1	N02 23.0
	08	120 13.0	268 41.9	S19 09.8	002 05.2	N21 47.5	339 47.6	N16 02.5	107 49.8	N02 22.9
	09	135 15.5	283 43.4	S19 10.5	017 06.1	N21 47.2	354 49.6	N16 02.4	122 52.4	N02 22.8
	10	150 17.9	298 45.0	S19 11.1	032 07.0	N21 47.0	009 51.6	N16 02.3	137 55.0	N02 22.7
	11	165 20.4	313 46.6	S19 11.7	047 07.8	N21 46.8	024 53.6	N16 02.1	152 57.7	N02 22.7
	12	180 22.9	328 48.2	S19 12.4	062 08.7	N21 46.5	039 55.6	N16 02.0	168 00.3	N02 22.6
	13	195 25.3	343 49.8	S19 13.0	077 09.6	N21 46.3	054 57.6	N16 01.8	183 03.0	N02 22.5
	14	210 27.8	358 51.3	S19 13.6	092 10.4	N21 46.0	069 59.6	N16 01.7	198 05.6	N02 22.4
	15	225 30.3	013 52.9	S19 14.2	107 11.3	N21 45.8	085 01.5	N16 01.6	213 08.2	N02 22.3
	16	240 32.7	028 54.5	S19 14.8	122 12.2	N21 45.5	100 03.5	N16 01.4	228 10.9	N02 22.3
	17	255 35.2	043 56.1	S19 15.5	137 13.0	N21 45.3	115 05.5	N16 01.3	243 13.5	N02 22.2
	18	270 37.7	058 57.7	S19 16.1	152 13.9	N21 45.1	130 07.5	N16 01.1	258 16.1	N02 22.1
	19	285 40.1	073 59.3	S19 16.7	167 14.8	N21 44.8	145 09.5	N16 01.0	273 18.8	N02 22.0
	20	300 42.6	089 00.9	S19 17.3	182 15.6	N21 44.6	160 11.5	N16 00.9	288 21.4	N02 22.0
	21	315 45.0	104 02.5	S19 17.9	197 16.5	N21 44.3	175 13.5	N16 00.7	303 24.0	N02 21.9
	22	330 47.5	119 04.1	S19 18.6	212 17.4	N21 44.1	190 15.5	N16 00.6	318 26.7	N02 21.8
	23	345 50.0	134 05.7	S19 19.2	227 18.3	N21 43.8	205 17.5	N16 00.4	333 29.3	N02 21.7

Venus	Mars	Jupiter	Saturn
19: v 1.5 d -0.7	19: v 0.9 d -0.2	19: v 2.0 d -0.1	19: v 2.6 d -0.1
20: v 1.5 d -0.7	20: v 0.9 d -0.2	20: v 2.0 d -0.1	20: v 2.6 d -0.1
21: v 1.6 d -0.6	21: v 0.9 d -0.2	21: v 2.0 d -0.1	21: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.4	S40 11.5
Achernar	335 18.6	S57 05.8
Acrux	172 59.2	S63 14.9
Adhara	255 04.9	S29 00.2
Al Na'ir	027 30.7	S46 49.8
Aldebaran	290 37.9	N16 33.8
Alioth	166 12.3	N55 49.0
Alkaid	152 51.3	N49 10.9
Alnilam	275 36.3	S01 10.9
Alphard	217 46.6	S08 46.3
Alphecca	126 02.7	N26 37.7
Alpheratz	357 33.0	N29 14.4
Altair	061 58.4	N08 56.5
Ankaa	353 05.3	S42 09.4
Antares	112 14.2	S26 29.5
Arcturus	145 46.9	N19 02.7
Atria	107 07.3	S69 04.7
Avior	234 14.6	S59 35.4
Bellatrix	278 21.3	N06 22.5
Betelgeuse	270 50.6	N07 24.8
Canopus	263 51.9	S52 42.2
Capella	280 19.8	N46 01.3
Deneb	049 24.5	N45 22.8
Denebola	182 23.8	N14 25.4
Diphda	348 45.6	S17 50.2
Dubhe	193 39.9	N61 36.4
Elnath	278 00.1	N28 37.8
Eltanin	090 41.5	N51 29.4
Enif	033 37.1	N10 00.1
Fomalhaut	015 12.6	S29 28.7
Gacrux	171 50.7	S57 15.8
Gienah	175 42.5	S17 41.4
Hadar	148 34.5	S60 30.2
Hamal	327 49.3	N23 35.4
Kaus Australi	083 30.6	S34 22.4
Kochab	137 20.6	N74 02.9
Markab	013 28.2	N15 21.1
Menkar	314 04.5	N04 11.8
Menkent	147 56.3	S36 30.1
Miaplacidus	221 38.7	S69 49.4
Mirfak	308 25.9	N49 57.3
Nunki	075 45.9	S26 15.8
Peacock	053 03.2	S56 39.0
Polaris	313 00.0	N89 22.4
Pollux	243 15.8	N27 57.7
Procyon	244 49.5	N05 09.5
Rasalhague	095 57.3	N12 32.6
Regulus	207 33.2	N11 50.3
Rigel	281 02.5	S08 10.0
Rigil Kentaur	139 38.8	S60 56.9
Sabik	102 01.2	S15 45.4
Schedar	349 28.9	N56 41.1
Shaula	096 08.5	S37 07.5
Sirius	258 25.1	S16 44.9
Spica	158 21.1	S11 18.0
Suhail	222 45.6	S43 32.2
Vega	080 32.2	N38 48.8
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	148 47.2	1407
Mars	242 24.2	0753
Jupiter	219 44.1	0924
Saturn	347 33.4	0054

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
19	00	181 30.5	N01 33.3	090 39.6	S28 02.1	54.2	10.0	0.8
	01	196 30.7	N01 32.3	105 08.5	S28 01.4	54.2	10.0	0.9
	02	211 30.9	N01 31.4	119 37.5	S28 00.5	54.2	10.0	1.0
	03	226 31.1	N01 30.4	134 06.5	S27 59.4	54.2	10.0	1.2
	04	241 31.4	N01 29.4	148 35.5	S27 58.2	54.2	10.0	1.3
	05	256 31.6	N01 28.5	163 04.5	S27 56.9	54.2	10.0	1.4
	06	271 31.8	N01 27.5	177 33.5	S27 55.5	54.2	10.0	1.6
	07	286 32.0	N01 26.5	192 02.5	S27 53.9	54.2	10.0	1.7
	08	301 32.2	N01 25.6	206 31.5	S27 52.2	54.2	10.1	1.9
	09	316 32.5	N01 24.6	221 00.6	S27 50.3	54.3	10.1	2.0
	10	331 32.7	N01 23.6	235 29.6	S27 48.3	54.3	10.1	2.1
	11	346 32.9	N01 22.6	249 58.7	S27 46.2	54.3	10.1	2.3
	12	001 33.1	N01 21.7	264 27.8	S27 44.0	54.3	10.1	2.4
	13	016 33.4	N01 20.7	278 57.0	S27 41.6	54.3	10.1	2.5
	14	031 33.6	N01 19.7	293 26.1	S27 39.0	54.3	10.2	2.7
	15	046 33.8	N01 18.8	307 55.3	S27 36.4	54.3	10.2	2.8
	16	061 34.0	N01 17.8	322 24.5	S27 33.6	54.3	10.2	2.9
	17	076 34.3	N01 16.8	336 53.7	S27 30.7	54.3	10.2	3.1
	18	091 34.5	N01 15.9	351 22.9	S27 27.6	54.3	10.3	3.2
	19	106 34.7	N01 14.9	005 52.2	S27 24.5	54.3	10.3	3.3
	20	121 34.9	N01 13.9	020 21.5	S27 21.1	54.3	10.3	3.4
	21	136 35.1	N01 12.9	034 50.8	S27 17.7	54.3	10.3	3.6
	22	151 35.4	N01 12.0	049 20.1	S27 14.1	54.3	10.4	3.7
	23	166 35.6	N01 11.0	063 49.5	S27 10.4	54.3	10.4	3.8
20	00	181 35.8	N01 10.0	078 18.9	S27 06.6	54.3	10.4	4.0
	01	196 36.0	N01 09.1	092 48.3	S27 02.6	54.3	10.5	4.1
	02	211 36.3	N01 08.1	107 17.8	S26 58.5	54.3	10.5	4.2
	03	226 36.5	N01 07.1	121 47.3	S26 54.3	54.3	10.5	4.4
	04	241 36.7	N01 06.2	136 16.8	S26 49.9	54.3	10.6	4.5
	05	256 36.9	N01 05.2	150 46.4	S26 45.4	54.3	10.6	4.6
	06	271 37.1	N01 04.2	165 15.9	S26 40.8	54.4	10.6	4.7
	07	286 37.4	N01 03.2	179 45.6	S26 36.1	54.4	10.7	4.9
	08	301 37.6	N01 02.3	194 15.2	S26 31.2	54.4	10.7	5.0
	09	316 37.8	N01 01.3	208 44.9	S26 26.2	54.4	10.7	5.1
	10	331 38.0	N01 00.3	223 14.6	S26 21.1	54.4	10.8	5.2
	11	346 38.3	N00 59.4	237 44.4	S26 15.9	54.4	10.8	5.4
	12	001 38.5	N00 58.4	252 14.2	S26 10.5	54.4	10.8	5.5
	13	016 38.7	N00 57.4	266 44.0	S26 05.0	54.4	10.9	5.6
	14	031 38.9	N00 56.4	281 13.9	S25 59.4	54.4	10.9	5.7
	15	046 39.1	N00 55.5	295 43.8	S25 53.6	54.4	11.0	5.9
	16	061 39.4	N00 54.5	310 13.8	S25 47.8	54.4	11.0	6.0
	17	076 39.6	N00 53.5	324 43.8	S25 41.8	54.5	11.0	6.1
	18	091 39.8	N00 52.6	339 13.8	S25 35.7	54.5	11.1	6.2
	19	106 40.0	N00 51.6	353 43.9	S25 29.4	54.5	11.1	6.4
	20	121 40.3	N00 50.6	008 14.0	S25 23.1	54.5	11.2	6.5
	21	136 40.5	N00 49.7	022 44.1	S25 16.6	54.5	11.2	6.6
	22	151 40.7	N00 48.7	037 14.3	S25 10.0	54.5	11.2	6.7
	23	166 40.9	N00 47.7	051 44.6	S25 03.3	54.5	11.3	6.8
21	00	181 41.1	N00 46.7	066 14.8	S24 56.5	54.5	11.3	7.0
	01	196 41.4	N00 45.8	080 45.2	S24 49.5	54.6	11.4	7.1
	02	211 41.6	N00 44.8	095 15.5	S24 42.4	54.6	11.4	7.2
	03	226 41.8	N00 43.8	109 45.9	S24 35.2	54.6	11.5	7.3
	04	241 42.0	N00 42.9	124 16.4	S24 27.9	54.6	11.5	7.4
	05	256 42.3	N00 41.9	138 46.9	S24 20.5	54.6	11.5	7.5
	06	271 42.5	N00 40.9	153 17.4	S24 13.0	54.6	11.6	7.7
	07	286 42.7	N00 39.9	167 48.0	S24 05.3	54.6	11.6	7.8
	08	301 42.9	N00 39.0	182 18.6	S23 57.6	54.7	11.7	7.9
	09	316 43.1	N00 38.0	196 49.3	S23 49.7	54.7	11.7	8.0
	10	331 43.4	N00 37.0	211 20.0	S23 41.7	54.7	11.8	8.1
	11	346 43.6	N00 36.1	225 50.8	S23 33.6	54.7	11.8	8.2
	12	001 43.8	N00 35.1	240 21.6	S23 25.3	54.7	11.8	8.3
	13	016 44.0	N00 34.1	254 52.4	S23 17.0	54.7	11.9	8.4
	14	031 44.3	N00 33.1	269 23.3	S23 08.6	54.8	11.9	8.6
	15	046 44.5	N00 32.2	283 54.2	S23 00.0	54.8	12.0	8.7
	16	061 44.7	N00 31.2	298 25.2	S22 51.3	54.8	12.0	8.8
	17	076 44.9	N00 30.2	312 56.3	S22 42.6	54.8	12.1	8.9
	18	091 45.1	N00 29.3	327 27.3	S22 33.7	54.8	12.1	9.0
	19	106 45.4	N00 28.3	341 58.5	S22 24.7	54.8	12.2	9.1
	20	121 45.6	N00 27.3	356 29.6	S22 15.6	54.9	12.2	9.2
	21	136 45.8	N00 26.3	011 00.8	S22 06.4	54.9	12.3	9.3
	22	151 46.0	N00 25.4	025 32.1	S21 57.1	54.9	12.3	9.4
	23	166 46.3	N00 24.4	040 03.4	S21 47.7	54.9	12.3	9.5

Day 19 noon Sun: v 0.2 d -1.0 SD 15.9 | Moon SD 14.8

Day 20 noon Sun: v 0.2 d -1.0 SD 15.9 | Moon SD 14.8

Day 21 noon Sun: v 0.2 d -1.0 SD 15.9 | Moon SD 14.9

SUN: SEPTEMBER 20 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0245	0420	0529	1815	1924	2057
70N	0308	0430	0532	1813	1914	2035
68N	0325	0437	0534	1811	1907	2018
66N	0339	0444	0536	1809	1901	2005
64N	0350	0449	0537	1808	1856	1955
62N	0359	0454	0538	1807	1851	1946
60N	0407	0458	0539	1806	1848	1938
58N	0413	0501	0540	1805	1845	1932
56N	0419	0504	0541	1804	1842	1926
54N	0424	0506	0542	1804	1839	1921
52N	0429	0509	0543	1803	1837	1917
50N	0433	0511	0543	1803	1835	1913
45N	0441	0515	0545	1802	1831	1905
40N	0447	0518	0546	1801	1828	1859
35N	0452	0521	0546	1800	1825	1855
30N	0455	0523	0547	1759	1823	1851
25N	0458	0525	0548	1759	1821	1848
20N	0501	0526	0548	1758	1820	1846
15N	0503	0528	0549	1758	1819	1844
10N	0504	0528	0549	1757	1818	1843
05N	0505	0529	0550	1757	1818	1842
00N	0506	0530	0550	1757	1817	1841
05S	0506	0530	0551	1756	1817	1841
10S	0506	0530	0551	1756	1817	1841
15S	0505	0530	0551	1756	1817	1842
20S	0504	0530	0552	1756	1818	1843
25S	0503	0529	0552	1755	1818	1845
30S	0501	0528	0552	1755	1819	1847
35S	0458	0527	0552	1755	1820	1850
40S	0454	0526	0553	1755	1822	1853
45S	0450	0524	0553	1755	1824	1858
50S	0444	0521	0553	1754	1827	1905
55S	0435	0518	0554	1754	1830	1913
60S	0424	0513	0554	1754	1835	1925

MOON: RISE / SET | UTC HHMM

Lat	Day 19		Day 20		Day 21	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	1847	2155
64N	--	--	1842	2018	1806	2236
62N	1750	1925	1742	2118	1737	2304
60N	1652	2023	1708	2151	1715	2325
58N	1619	2056	1644	2216	1658	2342
56N	1554	2121	1624	2235	1642	2356
54N	1534	2140	1607	2251	1629	--
52N	1518	2157	1553	2305	1618	--
50N	1503	2211	1540	2318	1608	--
45N	1434	2240	1514	2343	1546	--
40N	1412	2302	1454	--	1529	0003
35N	1353	2321	1436	--	1514	0019
30N	1336	2337	1422	--	1502	0034
25N	1322	2351	1408	--	1450	0046
20N	1309	--	1356	0003	1440	0058
15N	1257	--	1345	0015	1430	0108
10N	1245	--	1334	0027	1421	0118
05N	1234	--	1324	0037	1412	0128
00N	1223	--	1314	0048	1403	0138
05S	1212	0008	1304	0059	1354	0147
10S	1201	0019	1253	0109	1345	0157
15S	1150	0031	1243	0120	1336	0207
20S	1138	0043	1231	0132	1326	0218
25S	1125	0056	1219	0145	1315	0229
30S	1110	0111	1206	0159	1304	0241
35S	1054	0127	1151	0214	1251	0255
40S	1035	0146	1133	0232	1235	0311
45S	1012	0210	1112	0254	1217	0330
50S	0942	0239	1045	0321	1155	0353
55S	0901	0321	1008	0359	1125	0424
60S	0750	0432	0909	0459	1041	0510

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | SEPTEMBER 22 - SEPTEMBER 24

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
22	00	000 52.4	149 07.4	S19 19.8	242 19.1	N21 43.6	220 19.4	N16 00.3	348 31.9	N02 21.7
	01	015 54.9	164 09.0	S19 20.4	257 20.0	N21 43.4	235 21.4	N16 00.2	003 34.6	N02 21.6
	02	030 57.4	179 10.6	S19 21.0	272 20.9	N21 43.1	250 23.4	N16 00.0	018 37.2	N02 21.5
	03	045 59.8	194 12.2	S19 21.6	287 21.7	N21 42.9	265 25.4	N15 59.9	033 39.9	N02 21.4
	04	061 02.3	209 13.8	S19 22.2	302 22.6	N21 42.6	280 27.4	N15 59.7	048 42.5	N02 21.4
	05	076 04.8	224 15.5	S19 22.8	317 23.5	N21 42.4	295 29.4	N15 59.6	063 45.1	N02 21.3
	06	091 07.2	239 17.1	S19 23.4	332 24.4	N21 42.1	310 31.4	N15 59.5	078 47.8	N02 21.2
	07	106 09.7	254 18.7	S19 24.0	347 25.2	N21 41.9	325 33.4	N15 59.3	093 50.4	N02 21.1
	08	121 12.2	269 20.4	S19 24.6	002 26.1	N21 41.6	340 35.4	N15 59.2	108 53.0	N02 21.0
	09	136 14.6	284 22.0	S19 25.2	017 27.0	N21 41.4	355 37.4	N15 59.0	123 55.7	N02 21.0
	10	151 17.1	299 23.7	S19 25.8	032 27.9	N21 41.1	010 39.4	N15 58.9	138 58.3	N02 20.9
	11	166 19.5	314 25.3	S19 26.4	047 28.7	N21 40.9	025 41.4	N15 58.7	154 00.9	N02 20.8
	12	181 22.0	329 27.0	S19 27.0	062 29.6	N21 40.6	040 43.3	N15 58.6	169 03.6	N02 20.7
	13	196 24.5	344 28.6	S19 27.6	077 30.5	N21 40.4	055 45.3	N15 58.5	184 06.2	N02 20.7
	14	211 26.9	359 30.3	S19 28.2	092 31.4	N21 40.2	070 47.3	N15 58.3	199 08.9	N02 20.6
	15	226 29.4	014 31.9	S19 28.8	107 32.2	N21 39.9	085 49.3	N15 58.2	214 11.5	N02 20.5
	16	241 31.9	029 33.6	S19 29.4	122 33.1	N21 39.7	100 51.3	N15 58.0	229 14.1	N02 20.4
	17	256 34.3	044 35.2	S19 30.0	137 34.0	N21 39.4	115 53.3	N15 57.9	244 16.8	N02 20.4
	18	271 36.8	059 36.9	S19 30.6	152 34.9	N21 39.2	130 55.3	N15 57.8	259 19.4	N02 20.3
	19	286 39.3	074 38.6	S19 31.2	167 35.7	N21 38.9	145 57.3	N15 57.6	274 22.0	N02 20.2
	20	301 41.7	089 40.2	S19 31.7	182 36.6	N21 38.7	160 59.3	N15 57.5	289 24.7	N02 20.1
	21	316 44.2	104 41.9	S19 32.3	197 37.5	N21 38.4	176 01.3	N15 57.3	304 27.3	N02 20.0
	22	331 46.7	119 43.6	S19 32.9	212 38.4	N21 38.2	191 03.3	N15 57.2	319 30.0	N02 20.0
	23	346 49.1	134 45.3	S19 33.5	227 39.2	N21 37.9	206 05.3	N15 57.1	334 32.6	N02 19.9
23	00	001 51.6	149 47.0	S19 34.1	242 40.1	N21 37.7	221 07.3	N15 56.9	349 35.2	N02 19.8
	01	016 54.0	164 48.7	S19 34.7	257 41.0	N21 37.4	236 09.3	N15 56.8	004 37.9	N02 19.7
	02	031 56.5	179 50.3	S19 35.2	272 41.9	N21 37.2	251 11.2	N15 56.6	019 40.5	N02 19.7
	03	046 59.0	194 52.0	S19 35.8	287 42.8	N21 36.9	266 13.2	N15 56.5	034 43.1	N02 19.6
	04	062 01.4	209 53.7	S19 36.4	302 43.6	N21 36.7	281 15.2	N15 56.4	049 45.8	N02 19.5
	05	077 03.9	224 55.4	S19 37.0	317 44.5	N21 36.4	296 17.2	N15 56.2	064 48.4	N02 19.4
	06	092 06.4	239 57.1	S19 37.5	332 45.4	N21 36.2	311 19.2	N15 56.1	079 51.1	N02 19.4
	07	107 08.8	254 58.8	S19 38.1	347 46.3	N21 35.9	326 21.2	N15 55.9	094 53.7	N02 19.3
	08	122 11.3	270 00.5	S19 38.7	002 47.2	N21 35.7	341 23.2	N15 55.8	109 56.3	N02 19.2
	09	137 13.8	285 02.2	S19 39.2	017 48.0	N21 35.4	356 25.2	N15 55.7	124 59.0	N02 19.1
	10	152 16.2	300 04.0	S19 39.8	032 48.9	N21 35.2	011 27.2	N15 55.5	140 01.6	N02 19.0
	11	167 18.7	315 05.7	S19 40.4	047 49.8	N21 34.9	026 29.2	N15 55.4	155 04.2	N02 19.0
	12	182 21.1	330 07.4	S19 40.9	062 50.7	N21 34.7	041 31.2	N15 55.2	170 06.9	N02 18.9
	13	197 23.6	345 09.1	S19 41.5	077 51.6	N21 34.4	056 33.2	N15 55.1	185 09.5	N02 18.8
	14	212 26.1	000 10.8	S19 42.1	092 52.4	N21 34.2	071 35.2	N15 55.0	200 12.2	N02 18.7
	15	227 28.5	015 12.6	S19 42.6	107 53.3	N21 33.9	086 37.2	N15 54.8	215 14.8	N02 18.7
	16	242 31.0	030 14.3	S19 43.2	122 54.2	N21 33.7	101 39.2	N15 54.7	230 17.4	N02 18.6
	17	257 33.5	045 16.0	S19 43.8	137 55.1	N21 33.4	116 41.2	N15 54.5	245 20.1	N02 18.5
	18	272 35.9	060 17.8	S19 44.3	152 56.0	N21 33.1	131 43.2	N15 54.4	260 22.7	N02 18.4
	19	287 38.4	075 19.5	S19 44.9	167 56.9	N21 32.9	146 45.2	N15 54.3	275 25.3	N02 18.4
	20	302 40.9	090 21.3	S19 45.4	182 57.7	N21 32.6	161 47.2	N15 54.1	290 28.0	N02 18.3
	21	317 43.3	105 23.0	S19 46.0	197 58.6	N21 32.4	176 49.2	N15 54.0	305 30.6	N02 18.2
	22	332 45.8	120 24.7	S19 46.5	212 59.5	N21 32.1	191 51.1	N15 53.9	320 33.3	N02 18.1
	23	347 48.3	135 26.5	S19 47.1	228 00.4	N21 31.9	206 53.1	N15 53.7	335 35.9	N02 18.0
24	00	002 50.7	150 28.3	S19 47.6	243 01.3	N21 31.6	221 55.1	N15 53.6	350 38.5	N02 18.0
	01	017 53.2	165 30.0	S19 48.2	258 02.2	N21 31.4	236 57.1	N15 53.4	005 41.2	N02 17.9
	02	032 55.6	180 31.8	S19 48.7	273 03.1	N21 31.1	251 59.1	N15 53.3	020 43.8	N02 17.8
	03	047 58.1	195 33.5	S19 49.3	288 03.9	N21 30.9	267 01.1	N15 53.2	035 46.4	N02 17.7
	04	063 00.6	210 35.3	S19 49.8	303 04.8	N21 30.6	282 03.1	N15 53.0	050 49.1	N02 17.7
	05	078 03.0	225 37.1	S19 50.3	318 05.7	N21 30.4	297 05.1	N15 52.9	065 51.7	N02 17.6
	06	093 05.5	240 38.8	S19 50.9	333 06.6	N21 30.1	312 07.1	N15 52.7	080 54.4	N02 17.5
	07	108 08.0	255 40.6	S19 51.4	348 07.5	N21 29.8	327 09.1	N15 52.6	095 57.0	N02 17.4
	08	123 10.4	270 42.4	S19 52.0	003 08.4	N21 29.6	342 11.1	N15 52.5	110 59.6	N02 17.4
	09	138 12.9	285 44.2	S19 52.5	018 09.3	N21 29.3	357 13.1	N15 52.3	126 02.3	N02 17.3
	10	153 15.4	300 46.0	S19 53.0	033 10.1	N21 29.1	012 15.1	N15 52.2	141 04.9	N02 17.2
	11	168 17.8	315 47.8	S19 53.6	048 11.0	N21 28.8	027 17.1	N15 52.0	156 07.6	N02 17.1
	12	183 20.3	330 49.5	S19 54.1	063 11.9	N21 28.6	042 19.1	N15 51.9	171 10.2	N02 17.0
	13	198 22.8	345 51.3	S19 54.6	078 12.8	N21 28.3	057 21.1	N15 51.8	186 12.8	N02 17.0
	14	213 25.2	000 53.1	S19 55.2	093 13.7	N21 28.0	072 23.1	N15 51.6	201 15.5	N02 16.9
	15	228 27.7	015 54.9	S19 55.7	108 14.6	N21 27.8	087 25.1	N15 51.5	216 18.1	N02 16.8
	16	243 30.1	030 56.7	S19 56.2	123 15.5	N21 27.5	102 27.1	N15 51.3	231 20.8	N02 16.7
	17	258 32.6	045 58.6	S19 56.7	138 16.4	N21 27.3	117 29.1	N15 51.2	246 23.4	N02 16.7
	18	273 35.1	061 00.4	S19 57.3	153 17.3	N21 27.0	132 31.1	N15 51.1	261 26.0	N02 16.6
	19	288 37.5	076 02.2	S19 57.8	168 18.2	N21 26.8	147 33.1	N15 50.9	276 28.7	N02 16.5
	20	303 40.0	091 04.0	S19 58.3	183 19.0	N21 26.5	162 35.1	N15 50.8	291 31.3	N02 16.4
	21	318 42.5	106 05.8	S19 58.8	198 19.9	N21 26.2	177 37.1	N15 50.6	306 33.9	N02 16.3
	22	333 44.9	121 07.6	S19 59.3	213 20.8	N21 26.0	192 39.1	N15 50.5	321 36.6	N02 16.3
	23	348 47.4	136 09.5	S19 59.9	228 21.7	N21 25.7	207 41.1	N15 50.4	336 39.2	N02 16.2

Venus	Mars	Jupiter	Saturn
22: v 1.7 d -0.6	22: v 0.9 d -0.2	22: v 2.0 d -0.1	22: v 2.6 d -0.1
23: v 1.7 d -0.6	23: v 0.9 d -0.3	23: v 2.0 d -0.1	23: v 2.6 d -0.1
24: v 1.8 d -0.5	24: v 0.9 d -0.3	24: v 2.0 d -0.1	24: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.4	S40 11.5
Achernar	335 18.6	S57 05.8
Acrux	172 59.2	S63 14.9
Adhara	255 04.8	S29 00.2
Al Na'ir	027 30.7	S46 49.9
Aldebaran	290 37.9	N16 33.8
Alioth	166 12.3	N55 49.0
Alkaid	152 51.3	N49 10.9
Alnilam	275 36.3	S01 10.9
Alphard	217 46.6	S08 46.3
Alphecca	126 02.8	N26 37.7
Alpheratz	357 33.0	N29 14.5
Altair	061 58.4	N08 56.5
Ankaa	353 05.3	S42 09.5
Antares	112 14.2	S26 29.5
Arcturus	145 46.9	N19 02.7
Atria	107 07.3	S69 04.7
Avior	234 14.5	S59 35.4
Bellatrix	278 21.3	N06 22.5
Betelgeuse	270 50.5	N07 24.8
Canopus	263 51.8	S52 42.2
Capella	280 19.7	N46 01.3
Deneb	049 24.6	N45 22.8
Denebola	182 23.8	N14 25.4
Diphda	348 45.6	S17 50.2
Dubhe	193 39.9	N61 36.4
Elnath	278 00.0	N28 37.8
Eltanin	090 41.5	N51 29.4
Enif	033 37.1	N10 00.1
Fomalhaut	015 12.6	S29 28.7
Gacrux	171 50.7	S57 15.8
Gienah	175 42.5	S17 41.4
Hadar	148 34.5	S60 30.2
Hamal	327 49.3	N23 35.4
Kaus Australi	083 30.6	S34 22.4
Kochab	137 20.7	N74 02.9
Markab	013 28.2	N15 21.1
Menkar	314 04.4	N04 11.8
Menkent	147 56.3	S36 30.1
Miaplacidus	221 38.7	S69 49.4
Mirfak	308 25.9	N49 57.3
Nunki	075 45.9	S26 15.8
Peacock	053 03.2	S56 39.0
Polaris	312 58.7	N89 22.4
Pollux	243 15.7	N27 57.6
Procyon	244 49.5	N05 09.5
Rasalhague	095 57.3	N12 32.6
Regulus	207 33.2	N11 50.2
Rigel	281 02.4	S08 10.0
Rigil Kentaur	139 38.9	S60 56.9
Sabik	102 01.2	S15 45.4
Schedar	349 28.9	N56 41.1
Shaula	096 08.5	S37 07.5
Sirius	258 25.1	S16 44.9
Spica	158 21.1	S11 18.0
Suhail	222 45.6	S43 32.2
Vega	080 32.2	N38 48.8
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	147 46.2	1359
Mars	240 29.5	0749
Jupiter	219 10.0	0914
Saturn	347 45.7	0042

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
22	00	181 46.5	N00 23.4	054 34.7	S21 38.2	54.9	12.4	9.6
	01	196 46.7	N00 22.4	069 06.1	S21 28.5	55.0	12.4	9.7
	02	211 46.9	N00 21.5	083 37.6	S21 18.8	55.0	12.5	9.8
	03	226 47.1	N00 20.5	098 09.0	S21 09.0	55.0	12.5	9.9
	04	241 47.4	N00 19.5	112 40.6	S20 59.1	55.0	12.6	10.0
	05	256 47.6	N00 18.6	127 12.1	S20 49.0	55.0	12.6	10.1
	06	271 47.8	N00 17.6	141 43.8	S20 38.9	55.0	12.7	10.2
	07	286 48.0	N00 16.6	156 15.4	S20 28.7	55.1	12.7	10.3
	08	301 48.2	N00 15.6	170 47.1	S20 18.3	55.1	12.7	10.4
	09	316 48.5	N00 14.7	185 18.8	S20 07.9	55.1	12.8	10.5
	10	331 48.7	N00 13.7	199 50.6	S19 57.4	55.1	12.8	10.6
	11	346 48.9	N00 12.7	214 22.5	S19 46.8	55.2	12.9	10.7
	12	001 49.1	N00 11.8	228 54.3	S19 36.1	55.2	12.9	10.8
	13	016 49.3	N00 10.8	243 26.2	S19 25.3	55.2	13.0	10.9
	14	031 49.6	N00 09.8	257 58.2	S19 14.4	55.2	13.0	11.0
	15	046 49.8	N00 08.8	272 30.2	S19 03.4	55.2	13.0	11.1
	16	061 50.0	N00 07.9	287 02.2	S18 52.3	55.3	13.1	11.2
	17	076 50.2	N00 06.9	301 34.3	S18 41.1	55.3	13.1	11.3
	18	091 50.5	N00 05.9	316 06.4	S18 29.8	55.3	13.2	11.4
	19	106 50.7	N00 04.9	330 38.6	S18 18.4	55.3	13.2	11.5
	20	121 50.9	N00 04.0	345 10.8	S18 07.0	55.4	13.2	11.5
	21	136 51.1	N00 03.0	359 43.0	S17 55.4	55.4	13.3	11.6
	22	151 51.3	N00 02.0	014 15.3	S17 43.8	55.4	13.3	11.7
	23	166 51.6	N00 01.1	028 47.6	S17 32.1	55.4	13.3	11.8
23	00	181 51.8	N00 00.1	043 19.9	S17 20.3	55.4	13.4	11.9
	01	196 52.0	S00 00.9	057 52.3	S17 08.4	55.5	13.4	12.0
	02	211 52.2	S00 01.9	072 24.7	S16 56.4	55.5	13.5	12.1
	03	226 52.4	S00 02.8	086 57.2	S16 44.4	55.5	13.5	12.1
	04	241 52.7	S00 03.8	101 29.7	S16 32.2	55.5	13.5	12.2
	05	256 52.9	S00 04.8	116 02.2	S16 20.0	55.6	13.6	12.3
	06	271 53.1	S00 05.8	130 34.7	S16 07.7	55.6	13.6	12.4
	07	286 53.3	S00 06.7	145 07.3	S15 55.3	55.6	13.6	12.5
	08	301 53.5	S00 07.7	159 39.9	S15 42.8	55.6	13.7	12.5
	09	316 53.8	S00 08.7	174 12.6	S15 30.3	55.7	13.7	12.6
	10	331 54.0	S00 09.6	188 45.3	S15 17.6	55.7	13.7	12.7
	11	346 54.2	S00 10.6	203 18.0	S15 04.9	55.7	13.7	12.8
	12	001 54.4	S00 11.6	217 50.7	S14 52.2	55.7	13.8	12.9
	13	016 54.6	S00 12.6	232 23.5	S14 39.3	55.8	13.8	12.9
	14	031 54.9	S00 13.5	246 56.3	S14 26.4	55.8	13.8	13.0
	15	046 55.1	S00 14.5	261 29.2	S14 13.4	55.8	13.9	13.1
	16	061 55.3	S00 15.5	276 02.0	S14 00.3	55.8	13.9	13.2
	17	076 55.5	S00 16.5	290 34.9	S13 47.1	55.9	13.9	13.2
	18	091 55.7	S00 17.4	305 07.8	S13 33.9	55.9	13.9	13.3
	19	106 56.0	S00 18.4	319 40.8	S13 20.6	55.9	14.0	13.4
	20	121 56.2	S00 19.4	334 13.7	S13 07.2	55.9	14.0	13.4
	21	136 56.4	S00 20.3	348 46.7	S12 53.8	56.0	14.0	13.5
	22	151 56.6	S00 21.3	003 19.7	S12 40.3	56.0	14.0	13.6
	23	166 56.8	S00 22.3	017 52.7	S12 26.7	56.0	14.1	13.6
24	00	181 57.1	S00 23.3	032 25.8	S12 13.1	56.0	14.1	13.7
	01	196 57.3	S00 24.2	046 58.9	S11 59.4	56.1	14.1	13.8
	02	211 57.5	S00 25.2	061 32.0	S11 45.6	56.1	14.1	13.8
	03	226 57.7	S00 26.2	076 05.1	S11 31.8	56.1	14.1	13.9
	04	241 57.9	S00 27.2	090 38.2	S11 17.9	56.2	14.1	14.0
	05	256 58.1	S00 28.1	105 11.3	S11 03.9	56.2	14.2	14.0
	06	271 58.4	S00 29.1	119 44.5	S10 49.9	56.2	14.2	14.1
	07	286 58.6	S00 30.1	134 17.7	S10 35.8	56.2	14.2	14.1
	08	301 58.8	S00 31.0	148 50.9	S10 21.7	56.3	14.2	14.2
	09	316 59.0	S00 32.0	163 24.1	S10 07.5	56.3	14.2	14.3
	10	331 59.2	S00 33.0	177 57.3	S09 53.2	56.3	14.2	14.3
	11	346 59.5	S00 34.0	192 30.5	S09 38.9	56.3	14.2	14.4
	12	001 59.7	S00 34.9	207 03.8	S09 24.5	56.4	14.3	14.4
	13	016 59.9	S00 35.9	221 37.0	S09 10.1	56.4	14.3	14.5
	14	032 00.1	S00 36.9	236 10.3	S08 55.6	56.4	14.3	14.5
	15	047 00.3	S00 37.9	250 43.6	S08 41.1	56.5	14.3	14.6
	16	062 00.6	S00 38.8	265 16.9	S08 26.5	56.5	14.3	14.6
	17	077 00.8	S00 39.8	279 50.1	S08 11.9	56.5	14.3	14.7
	18	092 01.0	S00 40.8	294 23.4	S07 57.2	56.5	14.3	14.7
	19	107 01.2	S00 41.8	308 56.7	S07 42.5	56.6	14.3	14.8
	20	122 01.4	S00 42.7	323 30.0	S07 27.7	56.6	14.3	14.8
	21	137 01.6	S00 43.7	338 03.3	S07 12.8	56.6	14.3	14.9
	22	152 01.9	S00 44.7	352 36.6	S06 58.0	56.6	14.3	14.9
	23	167 02.1	S00 45.6	007 09.9	S06 43.1	56.7	14.3	15.0

Day 22 noon Sun: v 0.2 d -1.0 SD 15.9 | Moon SD 15.0

Day 23 noon Sun: v 0.2 d -1.0 SD 15.9 | Moon SD 15.2

Day 24 noon Sun: v 0.2 d -1.0 SD 15.9 | Moon SD 15.4

SUN: SEPTEMBER 23 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0304	0434	0543	1759	1907	2036
70N	0323	0442	0544	1759	1900	2018
68N	0338	0448	0545	1758	1854	2003
66N	0350	0454	0545	1758	1849	1952
64N	0400	0458	0546	1757	1845	1943
62N	0408	0502	0546	1757	1841	1935
60N	0415	0505	0546	1757	1838	1928
58N	0421	0508	0547	1757	1836	1922
56N	0426	0510	0547	1757	1834	1918
54N	0430	0512	0547	1756	1832	1913
52N	0434	0514	0548	1756	1830	1910
50N	0437	0515	0548	1756	1828	1906
45N	0444	0519	0548	1756	1825	1859
40N	0450	0521	0548	1756	1823	1854
35N	0454	0523	0549	1756	1821	1850
30N	0457	0525	0549	1755	1819	1847
25N	0500	0526	0549	1755	1818	1845
20N	0501	0527	0549	1755	1817	1843
15N	0503	0528	0549	1755	1817	1842
10N	0504	0528	0549	1755	1816	1841
05N	0504	0528	0549	1756	1816	1840
00N	0504	0528	0549	1756	1816	1840
05S	0504	0528	0549	1756	1816	1841
10S	0504	0528	0549	1756	1817	1841
15S	0503	0528	0549	1756	1817	1842
20S	0501	0527	0549	1756	1818	1844
25S	0459	0526	0549	1756	1819	1846
30S	0457	0525	0548	1757	1821	1849
35S	0453	0523	0548	1757	1822	1852
40S	0449	0521	0548	1758	1825	1856
45S	0444	0518	0547	1758	1827	1902
50S	0437	0515	0547	1759	1831	1909
55S	0427	0510	0546	1800	1836	1919
60S	0414	0504	0545	1801	1843	1933

MOON: RISE / SET | UTC HHMM

Lat	Day 22		Day 23		Day 24	
72N	--	--	1851	--	1806	0108
70N	1921	2301	1827	--	1754	0130
68N	1840	2341	1808	--	1745	0147
66N	1812	--	1752	0008	1737	0201
64N	1750	--	1739	0028	1730	0212
62N	1733	--	1729	0045	1725	0222
60N	1718	--	1719	0058	1719	0230
58N	1706	--	1711	0110	1715	0237
56N	1655	--	1704	0120	1711	0243
54N	1645	0009	1657	0129	1707	0249
52N	1637	0020	1652	0137	1704	0254
50N	1629	0030	1646	0144	1701	0259
45N	1613	0050	1635	0159	1654	0308
40N	1559	0106	1625	0211	1649	0316
35N	1548	0120	1617	0221	1644	0323
30N	1537	0132	1610	0231	1640	0329
25N	1528	0142	1603	0239	1636	0335
20N	1520	0152	1557	0246	1633	0340
15N	1512	0201	1551	0253	1629	0344
10N	1505	0210	1546	0300	1626	0349
05N	1457	0218	1541	0306	1623	0353
00N	1450	0226	1536	0312	1620	0357
05S	1443	0234	1530	0318	1617	0401
10S	1436	0242	1525	0325	1614	0405
15S	1428	0250	1520	0331	1611	0409
20S	1420	0259	1514	0338	1607	0414
25S	1412	0309	1508	0345	1604	0419
30S	1402	0319	1501	0353	1600	0424
35S	1352	0330	1453	0401	1555	0430
40S	1340	0343	1445	0411	1550	0436
45S	1325	0359	1435	0423	1545	0443
50S	1308	0418	1423	0437	1538	0452
55S	1245	0442	1407	0454	1529	0503
60S	1214	0515	1347	0517	1518	0517

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | SEPTEMBER 25 - SEPTEMBER 27

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
25	00	003 49.9	151 11.3	S20 00.4	243 22.6	N21 25.5	222 43.1	N15 50.2	351 41.9	N02 16.1
	01	018 52.3	166 13.1	S20 00.9	258 23.5	N21 25.2	237 45.1	N15 50.1	006 44.5	N02 16.0
	02	033 54.8	181 15.0	S20 01.4	273 24.4	N21 25.0	252 47.1	N15 50.0	021 47.1	N02 16.0
	03	048 57.2	196 16.8	S20 01.9	288 25.3	N21 24.7	267 49.1	N15 49.8	036 49.8	N02 15.9
	04	063 59.7	211 18.6	S20 02.4	303 26.2	N21 24.4	282 51.1	N15 49.7	051 52.4	N02 15.8
	05	079 02.2	226 20.5	S20 02.9	318 27.1	N21 24.2	297 53.1	N15 49.5	066 55.1	N02 15.7
	06	094 04.6	241 22.3	S20 03.4	333 28.0	N21 23.9	312 55.1	N15 49.4	081 57.7	N02 15.6
	07	109 07.1	256 24.2	S20 03.9	348 28.9	N21 23.7	327 57.1	N15 49.3	097 00.3	N02 15.6
	08	124 09.6	271 26.0	S20 04.4	003 29.8	N21 23.4	342 59.1	N15 49.1	112 03.0	N02 15.5
	09	139 12.0	286 27.9	S20 04.9	018 30.6	N21 23.1	358 01.1	N15 49.0	127 05.6	N02 15.4
	10	154 14.5	301 29.7	S20 05.4	033 31.5	N21 22.9	013 03.1	N15 48.8	142 08.3	N02 15.3
	11	169 17.0	316 31.6	S20 05.9	048 32.4	N21 22.6	028 05.1	N15 48.7	157 10.9	N02 15.3
	12	184 19.4	331 33.5	S20 06.4	063 33.3	N21 22.4	043 07.1	N15 48.6	172 13.5	N02 15.2
	13	199 21.9	346 35.3	S20 06.9	078 34.2	N21 22.1	058 09.1	N15 48.4	187 16.2	N02 15.1
	14	214 24.4	001 37.2	S20 07.4	093 35.1	N21 21.8	073 11.1	N15 48.3	202 18.8	N02 15.0
	15	229 26.8	016 39.1	S20 07.9	108 36.0	N21 21.6	088 13.1	N15 48.2	217 21.5	N02 15.0
	16	244 29.3	031 41.0	S20 08.4	123 36.9	N21 21.3	103 15.1	N15 48.0	232 24.1	N02 14.9
	17	259 31.7	046 42.9	S20 08.9	138 37.8	N21 21.0	118 17.1	N15 47.9	247 26.7	N02 14.8
	18	274 34.2	061 44.7	S20 09.4	153 38.7	N21 20.8	133 19.1	N15 47.7	262 29.4	N02 14.7
	19	289 36.7	076 46.6	S20 09.9	168 39.6	N21 20.5	148 21.1	N15 47.6	277 32.0	N02 14.6
	20	304 39.1	091 48.5	S20 10.4	183 40.5	N21 20.3	163 23.1	N15 47.5	292 34.7	N02 14.6
	21	319 41.6	106 50.4	S20 10.9	198 41.4	N21 20.0	178 25.1	N15 47.3	307 37.3	N02 14.5
	22	334 44.1	121 52.3	S20 11.3	213 42.3	N21 19.7	193 27.1	N15 47.2	322 39.9	N02 14.4
	23	349 46.5	136 54.2	S20 11.8	228 43.2	N21 19.5	208 29.1	N15 47.0	337 42.6	N02 14.3
26	00	004 49.0	151 56.1	S20 12.3	243 44.1	N21 19.2	223 31.1	N15 46.9	352 45.2	N02 14.3
	01	019 51.5	166 58.0	S20 12.8	258 45.0	N21 18.9	238 33.2	N15 46.8	007 47.9	N02 14.2
	02	034 53.9	182 00.0	S20 13.3	273 45.9	N21 18.7	253 35.2	N15 46.6	022 50.5	N02 14.1
	03	049 56.4	197 01.9	S20 13.7	288 46.8	N21 18.4	268 37.2	N15 46.5	037 53.1	N02 14.0
	04	064 58.8	212 03.8	S20 14.2	303 47.7	N21 18.2	283 39.2	N15 46.4	052 55.8	N02 13.9
	05	080 01.3	227 05.7	S20 14.7	318 48.6	N21 17.9	298 41.2	N15 46.2	067 58.4	N02 13.9
	06	095 03.8	242 07.6	S20 15.2	333 49.5	N21 17.6	313 43.2	N15 46.1	083 01.1	N02 13.8
	07	110 06.2	257 09.6	S20 15.6	348 50.4	N21 17.4	328 45.2	N15 45.9	098 03.7	N02 13.7
	08	125 08.7	272 11.5	S20 16.1	003 51.3	N21 17.1	343 47.2	N15 45.8	113 06.3	N02 13.6
	09	140 11.2	287 13.4	S20 16.6	018 52.2	N21 16.8	358 49.2	N15 45.7	128 09.0	N02 13.6
	10	155 13.6	302 15.4	S20 17.0	033 53.1	N21 16.6	013 51.2	N15 45.5	143 11.6	N02 13.5
	11	170 16.1	317 17.3	S20 17.5	048 54.0	N21 16.3	028 53.2	N15 45.4	158 14.3	N02 13.4
	12	185 18.6	332 19.2	S20 17.9	063 54.9	N21 16.0	043 55.2	N15 45.3	173 16.9	N02 13.3
	13	200 21.0	347 21.2	S20 18.4	078 55.8	N21 15.8	058 57.2	N15 45.1	188 19.6	N02 13.2
	14	215 23.5	002 23.1	S20 18.9	093 56.7	N21 15.5	073 59.2	N15 45.0	203 22.2	N02 13.2
	15	230 26.0	017 25.1	S20 19.3	108 57.6	N21 15.2	089 01.2	N15 44.8	218 24.8	N02 13.1
	16	245 28.4	032 27.1	S20 19.8	123 58.5	N21 15.0	104 03.2	N15 44.7	233 27.5	N02 13.0
	17	260 30.9	047 29.0	S20 20.2	138 59.4	N21 14.7	119 05.2	N15 44.6	248 30.1	N02 12.9
	18	275 33.3	062 31.0	S20 20.7	154 00.3	N21 14.4	134 07.2	N15 44.4	263 32.8	N02 12.9
	19	290 35.8	077 33.0	S20 21.1	169 01.2	N21 14.2	149 09.2	N15 44.3	278 35.4	N02 12.8
	20	305 38.3	092 34.9	S20 21.6	184 02.1	N21 13.9	164 11.2	N15 44.2	293 38.0	N02 12.7
	21	320 40.7	107 36.9	S20 22.0	199 03.1	N21 13.6	179 13.3	N15 44.0	308 40.7	N02 12.6
	22	335 43.2	122 38.9	S20 22.5	214 04.0	N21 13.4	194 15.3	N15 43.9	323 43.3	N02 12.5
	23	350 45.7	137 40.9	S20 22.9	229 04.9	N21 13.1	209 17.3	N15 43.7	338 46.0	N02 12.5
27	00	005 48.1	152 42.8	S20 23.4	244 05.8	N21 12.8	224 19.3	N15 43.6	353 48.6	N02 12.4
	01	020 50.6	167 44.8	S20 23.8	259 06.7	N21 12.6	239 21.3	N15 43.5	008 51.2	N02 12.3
	02	035 53.1	182 46.8	S20 24.3	274 07.6	N21 12.3	254 23.3	N15 43.3	023 53.9	N02 12.2
	03	050 55.5	197 48.8	S20 24.7	289 08.5	N21 12.0	269 25.3	N15 43.2	038 56.5	N02 12.2
	04	065 58.0	212 50.8	S20 25.1	304 09.4	N21 11.8	284 27.3	N15 43.1	053 59.2	N02 12.1
	05	081 00.4	227 52.8	S20 25.6	319 10.3	N21 11.5	299 29.3	N15 42.9	069 01.8	N02 12.0
	06	096 02.9	242 54.8	S20 26.0	334 11.2	N21 11.2	314 31.3	N15 42.8	084 04.5	N02 11.9
	07	111 05.4	257 56.8	S20 26.4	349 12.1	N21 11.0	329 33.3	N15 42.6	099 07.1	N02 11.8
	08	126 07.8	272 58.8	S20 26.9	004 13.0	N21 10.7	344 35.3	N15 42.5	114 09.7	N02 11.8
	09	141 10.3	288 00.8	S20 27.3	019 13.9	N21 10.4	359 37.3	N15 42.4	129 12.4	N02 11.7
	10	156 12.8	303 02.9	S20 27.7	034 14.8	N21 10.2	014 39.3	N15 42.2	144 15.0	N02 11.6
	11	171 15.2	318 04.9	S20 28.2	049 15.8	N21 09.9	029 41.4	N15 42.1	159 17.7	N02 11.5
	12	186 17.7	333 06.9	S20 28.6	064 16.7	N21 09.6	044 43.4	N15 42.0	174 20.3	N02 11.5
	13	201 20.2	348 08.9	S20 29.0	079 17.6	N21 09.4	059 45.4	N15 41.8	189 22.9	N02 11.4
	14	216 22.6	003 11.0	S20 29.4	094 18.5	N21 09.1	074 47.4	N15 41.7	204 25.6	N02 11.3
	15	231 25.1	018 13.0	S20 29.8	109 19.4	N21 08.8	089 49.4	N15 41.5	219 28.2	N02 11.2
	16	246 27.6	033 15.0	S20 30.3	124 20.3	N21 08.5	104 51.4	N15 41.4	234 30.9	N02 11.1
	17	261 30.0	048 17.1	S20 30.7	139 21.2	N21 08.3	119 53.4	N15 41.3	249 33.5	N02 11.1
	18	276 32.5	063 19.1	S20 31.1	154 22.1	N21 08.0	134 55.4	N15 41.1	264 36.2	N02 11.0
	19	291 34.9	078 21.2	S20 31.5	169 23.0	N21 07.7	149 57.4	N15 41.0	279 38.8	N02 10.9
	20	306 37.4	093 23.2	S20 31.9	184 24.0	N21 07.5	164 59.4	N15 40.9	294 41.4	N02 10.8
	21	321 39.9	108 25.3	S20 32.3	199 24.9	N21 07.2	180 01.4	N15 40.7	309 44.1	N02 10.8
	22	336 42.3	123 27.3	S20 32.7	214 25.8	N21 06.9	195 03.5	N15 40.6	324 46.7	N02 10.7
	23	351 44.8	138 29.4	S20 33.1	229 26.7	N21 06.6	210 05.5	N15 40.4	339 49.4	N02 10.6

Venus	Mars	Jupiter	Saturn
25: v 1.9 d -0.5	25: v 0.9 d -0.3	25: v 2.0 d -0.1	25: v 2.6 d -0.1
26: v 1.9 d -0.5	26: v 0.9 d -0.3	26: v 2.0 d -0.1	26: v 2.6 d -0.1
27: v 2.0 d -0.4	27: v 0.9 d -0.3	27: v 2.0 d -0.1	27: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.4	S40 11.5
Achernar	335 18.6	S57 05.8
Acrux	172 59.2	S63 14.8
Adhara	255 04.8	S29 00.2
Al Na'ir	027 30.7	S46 49.9
Aldebaran	290 37.9	N16 33.8
Alioth	166 12.3	N55 48.9
Alkaid	152 51.3	N49 10.9
Alnilam	275 36.2	S01 10.9
Alphard	217 46.6	S08 46.3
Alphecca	126 02.8	N26 37.7
Alpheratz	357 33.0	N29 14.5
Altair	061 58.5	N08 56.5
Ankaa	353 05.3	S42 09.5
Antares	112 14.3	S26 29.5
Arcturus	145 46.9	N19 02.7
Atria	107 07.4	S69 04.7
Avior	234 14.5	S59 35.4
Bellatrix	278 21.3	N06 22.5
Betelgeuse	270 50.5	N07 24.8
Canopus	263 51.8	S52 42.2
Capella	280 19.7	N46 01.4
Deneb	049 24.6	N45 22.8
Denebola	182 23.8	N14 25.4
Diphda	348 45.6	S17 50.2
Dubhe	193 39.9	N61 36.3
Elnath	278 00.0	N28 37.8
Eltanin	090 41.6	N51 29.4
Enif	033 37.2	N10 00.1
Fomalhaut	015 12.6	S29 28.7
Gacrux	171 50.7	S57 15.8
Gienah	175 42.5	S17 41.4
Hadar	148 34.6	S60 30.2
Hamal	327 49.3	N23 35.4
Kaus Australi	083 30.6	S34 22.4
Kochab	137 20.7	N74 02.9
Markab	013 28.2	N15 21.2
Menkar	314 04.4	N04 11.8
Menkent	147 56.3	S36 30.1
Miaplacidus	221 38.7	S69 49.3
Mirfak	308 25.9	N49 57.3
Nunki	075 45.9	S26 15.8
Peacock	053 03.2	S56 39.0
Polaris	312 57.6	N89 22.4
Pollux	243 15.7	N27 57.6
Procyon	244 49.5	N05 09.5
Rasalhague	095 57.3	N12 32.6
Regulus	207 33.2	N11 50.2
Rigel	281 02.4	S08 10.0
Rigil Kentaur	139 38.9	S60 56.9
Sabik	102 01.2	S15 45.4
Schedar	349 28.9	N56 41.1
Shaula	096 08.5	S37 07.5
Sirius	258 25.0	S16 44.9
Spica	158 21.1	S11 18.0
Suhail	222 45.6	S43 32.2
Vega	080 32.2	N38 48.8
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	147 00.7	1350
Mars	238 36.4	0745
Jupiter	218 36.6	0905
Saturn	347 58.4	0029

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
25	00	182 02.3	S00 46.6	021 43.2	S06 28.1	56.7	14.3	15.0
	01	197 02.5	S00 47.6	036 16.5	S06 13.1	56.7	14.3	15.0
	02	212 02.7	S00 48.6	050 49.8	S05 58.0	56.8	14.3	15.1
	03	227 02.9	S00 49.5	065 23.1	S05 43.0	56.8	14.3	15.1
	04	242 03.2	S00 50.5	079 56.4	S05 27.8	56.8	14.3	15.2
	05	257 03.4	S00 51.5	094 29.7	S05 12.7	56.8	14.3	15.2
	06	272 03.6	S00 52.5	109 03.0	S04 57.5	56.9	14.3	15.2
	07	287 03.8	S00 53.4	123 36.3	S04 42.2	56.9	14.3	15.3
	08	302 04.0	S00 54.4	138 09.6	S04 26.9	56.9	14.3	15.3
	09	317 04.3	S00 55.4	152 42.8	S04 11.6	56.9	14.2	15.3
	10	332 04.5	S00 56.3	167 16.1	S03 56.3	57.0	14.2	15.4
	11	347 04.7	S00 57.3	181 49.3	S03 40.9	57.0	14.2	15.4
	12	002 04.9	S00 58.3	196 22.5	S03 25.5	57.0	14.2	15.4
	13	017 05.1	S00 59.3	210 55.7	S03 10.1	57.1	14.2	15.5
	14	032 05.3	S01 00.2	225 28.9	S02 54.6	57.1	14.2	15.5
	15	047 05.6	S01 01.2	240 02.1	S02 39.1	57.1	14.2	15.5
	16	062 05.8	S01 02.2	254 35.3	S02 23.6	57.1	14.1	15.5
	17	077 06.0	S01 03.2	269 08.4	S02 08.1	57.2	14.1	15.6
	18	092 06.2	S01 04.1	283 41.5	S01 52.5	57.2	14.1	15.6
	19	107 06.4	S01 05.1	298 14.6	S01 36.9	57.2	14.1	15.6
	20	122 06.6	S01 06.1	312 47.7	S01 21.3	57.2	14.1	15.6
	21	137 06.9	S01 07.1	327 20.8	S01 05.6	57.3	14.0	15.7
	22	152 07.1	S01 08.0	341 53.8	S00 50.0	57.3	14.0	15.7
	23	167 07.3	S01 09.0	356 26.8	S00 34.3	57.3	14.0	15.7
26	00	182 07.5	S01 10.0	010 59.8	S00 18.6	57.4	14.0	15.7
	01	197 07.7	S01 10.9	025 32.8	S00 02.9	57.4	13.9	15.7
	02	212 07.9	S01 11.9	040 05.7	N00 12.8	57.4	13.9	15.7
	03	227 08.1	S01 12.9	054 38.6	N00 28.5	57.4	13.9	15.7
	04	242 08.4	S01 13.9	069 11.5	N00 44.3	57.5	13.8	15.8
	05	257 08.6	S01 14.8	083 44.3	N01 00.0	57.5	13.8	15.8
	06	272 08.8	S01 15.8	098 17.1	N01 15.8	57.5	13.8	15.8
	07	287 09.0	S01 16.8	112 49.9	N01 31.6	57.5	13.7	15.8
	08	302 09.2	S01 17.8	127 22.7	N01 47.4	57.6	13.7	15.8
	09	317 09.4	S01 18.7	141 55.4	N02 03.2	57.6	13.7	15.8
	10	332 09.7	S01 19.7	156 28.0	N02 19.0	57.6	13.6	15.8
	11	347 09.9	S01 20.7	171 00.7	N02 34.8	57.6	13.6	15.8
	12	002 10.1	S01 21.6	185 33.3	N02 50.6	57.7	13.6	15.8
	13	017 10.3	S01 22.6	200 05.8	N03 06.4	57.7	13.5	15.8
	14	032 10.5	S01 23.6	214 38.3	N03 22.2	57.7	13.5	15.8
	15	047 10.7	S01 24.6	229 10.8	N03 38.0	57.7	13.4	15.8
	16	062 10.9	S01 25.5	243 43.2	N03 53.8	57.8	13.4	15.8
	17	077 11.2	S01 26.5	258 15.6	N04 09.6	57.8	13.3	15.8
	18	092 11.4	S01 27.5	272 47.9	N04 25.3	57.8	13.3	15.8
	19	107 11.6	S01 28.5	287 20.2	N04 41.1	57.8	13.2	15.8
	20	122 11.8	S01 29.4	301 52.5	N04 56.9	57.9	13.2	15.8
	21	137 12.0	S01 30.4	316 24.7	N05 12.7	57.9	13.1	15.8
	22	152 12.2	S01 31.4	330 56.8	N05 28.4	57.9	13.1	15.7
	23	167 12.4	S01 32.3	345 28.9	N05 44.1	57.9	13.0	15.7
27	00	182 12.7	S01 33.3	000 00.9	N05 59.9	58.0	13.0	15.7
	01	197 12.9	S01 34.3	014 32.9	N06 15.6	58.0	12.9	15.7
	02	212 13.1	S01 35.3	029 04.8	N06 31.3	58.0	12.9	15.7
	03	227 13.3	S01 36.2	043 36.7	N06 46.9	58.0	12.8	15.7
	04	242 13.5	S01 37.2	058 08.5	N07 02.6	58.1	12.8	15.6
	05	257 13.7	S01 38.2	072 40.2	N07 18.2	58.1	12.7	15.6
	06	272 13.9	S01 39.2	087 11.9	N07 33.8	58.1	12.6	15.6
	07	287 14.2	S01 40.1	101 43.6	N07 49.4	58.1	12.6	15.6
	08	302 14.4	S01 41.1	116 15.1	N08 05.0	58.2	12.5	15.5
	09	317 14.6	S01 42.1	130 46.6	N08 20.5	58.2	12.4	15.5
	10	332 14.8	S01 43.0	145 18.1	N08 36.0	58.2	12.4	15.5
	11	347 15.0	S01 44.0	159 49.5	N08 51.5	58.2	12.3	15.4
	12	002 15.2	S01 45.0	174 20.8	N09 06.9	58.2	12.2	15.4
	13	017 15.4	S01 46.0	188 52.0	N09 22.3	58.3	12.2	15.4
	14	032 15.6	S01 46.9	203 23.2	N09 37.7	58.3	12.1	15.3
	15	047 15.9	S01 47.9	217 54.3	N09 53.0	58.3	12.0	15.3
	16	062 16.1	S01 48.9	232 25.3	N10 08.3	58.3	12.0	15.3
	17	077 16.3	S01 49.9	246 56.3	N10 23.6	58.3	11.9	15.2
	18	092 16.5	S01 50.8	261 27.2	N10 38.8	58.4	11.8	15.2
	19	107 16.7	S01 51.8	275 58.0	N10 54.0	58.4	11.7	15.1
	20	122 16.9	S01 52.8	290 28.7	N11 09.1	58.4	11.7	15.1
	21	137 17.1	S01 53.7	304 59.4	N11 24.2	58.4	11.6	15.0
	22	152 17.3	S01 54.7	319 30.0	N11 39.2	58.4	11.5	15.0
	23	167 17.6	S01 55.7	334 00.5	N11 54.2	58.5	11.4	14.9

Day 25 noon Sun: v 0.2 d -1.0 SD 15.9 | Moon SD 15.5

Day 26 noon Sun: v 0.2 d -1.0 SD 16.0 | Moon SD 15.7

Day 27 noon Sun: v 0.2 d -1.0 SD 16.0 | Moon SD 15.9

SUN: SEPTEMBER 26 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0322	0448	0556	1744	1851	2017
70N	0338	0454	0556	1745	1846	2001
68N	0351	0459	0555	1746	1841	1949
66N	0401	0503	0555	1746	1837	1939
64N	0410	0507	0554	1747	1834	1931
62N	0417	0510	0554	1747	1831	1924
60N	0422	0512	0554	1748	1829	1918
58N	0428	0514	0553	1748	1827	1913
56N	0432	0516	0553	1749	1826	1909
54N	0436	0517	0553	1749	1824	1905
52N	0439	0519	0552	1749	1823	1902
50N	0442	0520	0552	1749	1822	1859
45N	0448	0522	0552	1750	1819	1854
40N	0453	0524	0551	1751	1818	1849
35N	0456	0526	0551	1751	1816	1846
30N	0459	0527	0550	1752	1816	1843
25N	0501	0527	0550	1752	1815	1841
20N	0502	0528	0550	1753	1815	1840
15N	0503	0528	0549	1753	1815	1839
10N	0504	0528	0549	1754	1815	1839
05N	0504	0528	0549	1754	1815	1839
00N	0503	0527	0548	1755	1815	1839
05S	0503	0527	0548	1755	1816	1840
10S	0502	0526	0547	1756	1817	1841
15S	0500	0525	0547	1756	1818	1843
20S	0458	0524	0546	1757	1819	1845
25S	0456	0523	0545	1758	1820	1847
30S	0453	0521	0545	1758	1822	1850
35S	0449	0519	0544	1759	1825	1854
40S	0444	0516	0543	1800	1828	1859
45S	0438	0512	0542	1802	1831	1906
50S	0430	0508	0540	1803	1836	1914
55S	0419	0502	0538	1805	1842	1925
60S	0404	0454	0536	1808	1850	1941

MOON: RISE / SET | UTC HHMM

Lat	Day 25		Day 26		Day 27	
72N	1731	0327	1657	0539	1618	0756
70N	1728	0336	1702	0537	1634	0744
68N	1726	0343	1707	0536	1646	0734
66N	1724	0349	1711	0535	1657	0725
64N	1722	0353	1714	0534	1705	0719
62N	1721	0358	1717	0534	1713	0713
60N	1719	0401	1719	0533	1719	0707
58N	1718	0404	1721	0532	1725	0703
56N	1717	0407	1723	0532	1730	0659
54N	1716	0410	1725	0531	1735	0655
52N	1715	0412	1727	0531	1739	0652
50N	1715	0414	1728	0531	1743	0649
45N	1713	0418	1731	0530	1752	0643
40N	1711	0422	1734	0529	1759	0638
35N	1710	0425	1737	0528	1805	0633
30N	1709	0428	1739	0528	1810	0629
25N	1708	0431	1741	0527	1815	0626
20N	1707	0433	1742	0527	1820	0623
15N	1706	0435	1744	0527	1824	0619
10N	1706	0437	1746	0526	1828	0617
05N	1705	0439	1747	0526	1832	0614
00N	1704	0441	1749	0525	1836	0611
05S	1703	0443	1751	0525	1840	0608
10S	1703	0445	1752	0524	1844	0605
15S	1702	0447	1754	0524	1848	0603
20S	1701	0449	1756	0524	1853	0600
25S	1700	0451	1758	0523	1857	0556
30S	1659	0453	1800	0523	1902	0553
35S	1658	0456	1802	0522	1908	0549
40S	1657	0459	1805	0521	1915	0545
45S	1655	0502	1808	0521	1923	0540
50S	1654	0506	1811	0520	1932	0534
55S	1652	0511	1816	0519	1944	0526
60S	1649	0517	1822	0517	1959	0517

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | SEPTEMBER 28 - SEPTEMBER 30

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
28	00	006 47.3	153 31.5	S20 33.5	244 27.6	N21 06.4	225 07.5	N15 40.3	354 52.0	N02 10.5
	01	021 49.7	168 33.5	S20 34.0	259 28.5	N21 06.1	240 09.5	N15 40.2	009 54.6	N02 10.4
	02	036 52.2	183 35.6	S20 34.4	274 29.4	N21 05.8	255 11.5	N15 40.0	024 57.3	N02 10.4
	03	051 54.7	198 37.7	S20 34.8	289 30.3	N21 05.6	270 13.5	N15 39.9	039 59.9	N02 10.3
	04	066 57.1	213 39.8	S20 35.2	304 31.3	N21 05.3	285 15.5	N15 39.8	055 02.6	N02 10.2
	05	081 59.6	228 41.9	S20 35.6	319 32.2	N21 05.0	300 17.5	N15 39.6	070 05.2	N02 10.1
	06	097 02.0	243 43.9	S20 35.9	334 33.1	N21 04.7	315 19.5	N15 39.5	085 07.9	N02 10.1
	07	112 04.5	258 46.0	S20 36.3	349 34.0	N21 04.5	330 21.6	N15 39.4	100 10.5	N02 10.0
	08	127 07.0	273 48.1	S20 36.7	004 34.9	N21 04.2	345 23.6	N15 39.2	115 13.1	N02 09.9
	09	142 09.4	288 50.2	S20 37.1	019 35.8	N21 03.9	000 25.6	N15 39.1	130 15.8	N02 09.8
	10	157 11.9	303 52.3	S20 37.5	034 36.8	N21 03.7	015 27.6	N15 38.9	145 18.4	N02 09.7
	11	172 14.4	318 54.4	S20 37.9	049 37.7	N21 03.4	030 29.6	N15 38.8	160 21.1	N02 09.7
	12	187 16.8	333 56.5	S20 38.3	064 38.6	N21 03.1	045 31.6	N15 38.7	175 23.7	N02 09.6
	13	202 19.3	348 58.6	S20 38.7	079 39.5	N21 02.8	060 33.6	N15 38.5	190 26.4	N02 09.5
	14	217 21.8	004 00.8	S20 39.1	094 40.4	N21 02.6	075 35.6	N15 38.4	205 29.0	N02 09.4
	15	232 24.2	019 02.9	S20 39.4	109 41.3	N21 02.3	090 37.6	N15 38.3	220 31.6	N02 09.4
	16	247 26.7	034 05.0	S20 39.8	124 42.3	N21 02.0	105 39.7	N15 38.1	235 34.3	N02 09.3
	17	262 29.2	049 07.1	S20 40.2	139 43.2	N21 01.7	120 41.7	N15 38.0	250 36.9	N02 09.2
	18	277 31.6	064 09.2	S20 40.6	154 44.1	N21 01.5	135 43.7	N15 37.9	265 39.6	N02 09.1
	19	292 34.1	079 11.4	S20 40.9	169 45.0	N21 01.2	150 45.7	N15 37.7	280 42.2	N02 09.0
	20	307 36.5	094 13.5	S20 41.3	184 45.9	N21 00.9	165 47.7	N15 37.6	295 44.8	N02 09.0
	21	322 39.0	109 15.7	S20 41.7	199 46.9	N21 00.6	180 49.7	N15 37.4	310 47.5	N02 08.9
	22	337 41.5	124 17.8	S20 42.1	214 47.8	N21 00.4	195 51.7	N15 37.3	325 50.1	N02 08.8
	23	352 43.9	139 19.9	S20 42.4	229 48.7	N21 00.1	210 53.8	N15 37.2	340 52.8	N02 08.7
29	00	007 46.4	154 22.1	S20 42.8	244 49.6	N20 59.8	225 55.8	N15 37.0	355 55.4	N02 08.7
	01	022 48.9	169 24.2	S20 43.2	259 50.5	N20 59.5	240 57.8	N15 36.9	010 58.1	N02 08.6
	02	037 51.3	184 26.4	S20 43.5	274 51.5	N20 59.3	255 59.8	N15 36.8	026 00.7	N02 08.5
	03	052 53.8	199 28.6	S20 43.9	289 52.4	N20 59.0	271 01.8	N15 36.6	041 03.3	N02 08.4
	04	067 56.3	214 30.7	S20 44.2	304 53.3	N20 58.7	286 03.8	N15 36.5	056 06.0	N02 08.3
	05	082 58.7	229 32.9	S20 44.6	319 54.2	N20 58.4	301 05.8	N15 36.4	071 08.6	N02 08.3
	06	098 01.2	244 35.1	S20 45.0	334 55.1	N20 58.1	316 07.9	N15 36.2	086 11.3	N02 08.2
	07	113 03.7	259 37.2	S20 45.3	349 56.1	N20 57.9	331 09.9	N15 36.1	101 13.9	N02 08.1
	08	128 06.1	274 39.4	S20 45.7	004 57.0	N20 57.6	346 11.9	N15 35.9	116 16.6	N02 08.0
	09	143 08.6	289 41.6	S20 46.0	019 57.9	N20 57.3	001 13.9	N15 35.8	131 19.2	N02 08.0
	10	158 11.0	304 43.8	S20 46.4	034 58.8	N20 57.0	016 15.9	N15 35.7	146 21.8	N02 07.9
	11	173 13.5	319 46.0	S20 46.7	049 59.8	N20 56.8	031 17.9	N15 35.5	161 24.5	N02 07.8
	12	188 16.0	334 48.2	S20 47.1	065 00.7	N20 56.5	046 19.9	N15 35.4	176 27.1	N02 07.7
	13	203 18.4	349 50.4	S20 47.4	080 01.6	N20 56.2	061 22.0	N15 35.3	191 29.8	N02 07.6
	14	218 20.9	004 52.6	S20 47.7	095 02.5	N20 55.9	076 24.0	N15 35.1	206 32.4	N02 07.6
	15	233 23.4	019 54.8	S20 48.1	110 03.5	N20 55.6	091 26.0	N15 35.0	221 35.1	N02 07.5
	16	248 25.8	034 57.0	S20 48.4	125 04.4	N20 55.4	106 28.0	N15 34.9	236 37.7	N02 07.4
	17	263 28.3	049 59.2	S20 48.8	140 05.3	N20 55.1	121 30.0	N15 34.7	251 40.3	N02 07.3
	18	278 30.8	065 01.4	S20 49.1	155 06.2	N20 54.8	136 32.0	N15 34.6	266 43.0	N02 07.3
	19	293 33.2	080 03.6	S20 49.4	170 07.2	N20 54.5	151 34.1	N15 34.5	281 45.6	N02 07.2
	20	308 35.7	095 05.8	S20 49.8	185 08.1	N20 54.3	166 36.1	N15 34.3	296 48.3	N02 07.1
	21	323 38.1	110 08.0	S20 50.1	200 09.0	N20 54.0	181 38.1	N15 34.2	311 50.9	N02 07.0
	22	338 40.6	125 10.3	S20 50.4	215 09.9	N20 53.7	196 40.1	N15 34.0	326 53.6	N02 06.9
	23	353 43.1	140 12.5	S20 50.7	230 10.9	N20 53.4	211 42.1	N15 33.9	341 56.2	N02 06.9
30	00	008 45.5	155 14.7	S20 51.1	245 11.8	N20 53.1	226 44.1	N15 33.8	356 58.9	N02 06.8
	01	023 48.0	170 17.0	S20 51.4	260 12.7	N20 52.9	241 46.2	N15 33.6	012 01.5	N02 06.7
	02	038 50.5	185 19.2	S20 51.7	275 13.6	N20 52.6	256 48.2	N15 33.5	027 04.1	N02 06.6
	03	053 52.9	200 21.5	S20 52.0	290 14.6	N20 52.3	271 50.2	N15 33.4	042 06.8	N02 06.6
	04	068 55.4	215 23.7	S20 52.3	305 15.5	N20 52.0	286 52.2	N15 33.2	057 09.4	N02 06.5
	05	083 57.9	230 26.0	S20 52.7	320 16.4	N20 51.7	301 54.2	N15 33.1	072 12.1	N02 06.4
	06	099 00.3	245 28.2	S20 53.0	335 17.4	N20 51.5	316 56.2	N15 33.0	087 14.7	N02 06.3
	07	114 02.8	260 30.5	S20 53.3	350 18.3	N20 51.2	331 58.3	N15 32.8	102 17.4	N02 06.2
	08	129 05.3	275 32.7	S20 53.6	005 19.2	N20 50.9	347 00.3	N15 32.7	117 20.0	N02 06.2
	09	144 07.7	290 35.0	S20 53.9	020 20.2	N20 50.6	002 02.3	N15 32.6	132 22.6	N02 06.1
	10	159 10.2	305 37.3	S20 54.2	035 21.1	N20 50.3	017 04.3	N15 32.4	147 25.3	N02 06.0
	11	174 12.6	320 39.6	S20 54.5	050 22.0	N20 50.0	032 06.3	N15 32.3	162 27.9	N02 05.9
	12	189 15.1	335 41.8	S20 54.8	065 22.9	N20 49.8	047 08.4	N15 32.2	177 30.6	N02 05.9
	13	204 17.6	350 44.1	S20 55.1	080 23.9	N20 49.5	062 10.4	N15 32.0	192 33.2	N02 05.8
	14	219 20.0	005 46.4	S20 55.4	095 24.8	N20 49.2	077 12.4	N15 31.9	207 35.9	N02 05.7
	15	234 22.5	020 48.7	S20 55.7	110 25.7	N20 48.9	092 14.4	N15 31.7	222 38.5	N02 05.6
	16	249 25.0	035 51.0	S20 56.0	125 26.7	N20 48.6	107 16.4	N15 31.6	237 41.1	N02 05.5
	17	264 27.4	050 53.3	S20 56.3	140 27.6	N20 48.4	122 18.5	N15 31.5	252 43.8	N02 05.5
	18	279 29.9	065 55.6	S20 56.6	155 28.5	N20 48.1	137 20.5	N15 31.3	267 46.4	N02 05.4
	19	294 32.4	080 57.9	S20 56.9	170 29.5	N20 47.8	152 22.5	N15 31.2	282 49.1	N02 05.3
	20	309 34.8	096 00.2	S20 57.2	185 30.4	N20 47.5	167 24.5	N15 31.1	297 51.7	N02 05.2
	21	324 37.3	111 02.5	S20 57.5	200 31.3	N20 47.2	182 26.5	N15 30.9	312 54.4	N02 05.2
	22	339 39.8	126 04.8	S20 57.8	215 32.3	N20 46.9	197 28.6	N15 30.8	327 57.0	N02 05.1
	23	354 42.2	141 07.1	S20 58.0	230 33.2	N20 46.7	212 30.6	N15 30.7	342 59.7	N02 05.0

Venus	Mars	Jupiter	Saturn
28: v 2.1 d -0.4	28: v 0.9 d -0.3	28: v 2.0 d -0.1	28: v 2.6 d -0.1
29: v 2.2 d -0.3	29: v 0.9 d -0.3	29: v 2.0 d -0.1	29: v 2.6 d -0.1
30: v 2.3 d -0.3	30: v 0.9 d -0.3	30: v 2.0 d -0.1	30: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.4	S40 11.6
Achernar	335 18.6	S57 05.8
Acrux	172 59.2	S63 14.8
Adhara	255 04.8	S29 00.2
Al Na'ir	027 30.8	S46 49.9
Aldebaran	290 37.8	N16 33.8
Alioth	166 12.3	N55 48.9
Alkaid	152 51.3	N49 10.9
Alnilam	275 36.2	S01 10.9
Alphard	217 46.6	S08 46.3
Alphecca	126 02.8	N26 37.6
Alpheratz	357 33.0	N29 14.5
Altair	061 58.5	N08 56.5
Ankaa	353 05.3	S42 09.5
Antares	112 14.3	S26 29.5
Arcturus	145 46.9	N19 02.7
Atria	107 07.4	S69 04.7
Avior	234 14.5	S59 35.4
Bellatrix	278 21.3	N06 22.5
Betelgeuse	270 50.5	N07 24.8
Canopus	263 51.8	S52 42.2
Capella	280 19.7	N46 01.4
Deneb	049 24.6	N45 22.8
Denebola	182 23.8	N14 25.4
Diphda	348 45.5	S17 50.2
Dubhe	193 39.9	N61 36.3
Elnath	278 00.0	N28 37.8
Eltanin	090 41.6	N51 29.4
Enif	033 37.2	N10 00.1
Fomalhaut	015 12.6	S29 28.7
Gacrux	171 50.7	S57 15.8
Gienah	175 42.5	S17 41.3
Hadar	148 34.6	S60 30.2
Hamal	327 49.3	N23 35.4
Kaus Australi	083 30.6	S34 22.4
Kochab	137 20.7	N74 02.8
Markab	013 28.2	N15 21.2
Menkar	314 04.4	N04 11.8
Menkent	147 56.3	S36 30.1
Miaplacidus	221 38.6	S69 49.3
Mirfak	308 25.9	N49 57.3
Nunki	075 46.0	S26 15.8
Peacock	053 03.2	S56 39.0
Polaris	312 56.4	N89 22.4
Pollux	243 15.7	N27 57.6
Procyon	244 49.5	N05 09.5
Rasalhague	095 57.3	N12 32.6
Regulus	207 33.2	N11 50.2
Rigel	281 02.4	S08 10.0
Rigil Kentaur	139 38.9	S60 56.9
Sabik	102 01.3	S15 45.4
Schedar	349 28.9	N56 41.2
Shaula	096 08.5	S37 07.5
Sirius	258 25.0	S16 44.9
Spica	158 21.1	S11 18.0
Suhail	222 45.6	S43 32.2
Vega	080 32.2	N38 48.8
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	146 32.2	1341
Mars	236 44.7	0740
Jupiter	218 04.0	0855
Saturn	348 11.2	0016

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
28	00	182 17.8	S01 56.7	348 30.9	N12 09.2	58.5	11.3	14.9
	01	197 18.0	S01 57.6	003 01.3	N12 24.0	58.5	11.3	14.8
	02	212 18.2	S01 58.6	017 31.5	N12 38.9	58.5	11.2	14.8
	03	227 18.4	S01 59.6	032 01.7	N12 53.7	58.5	11.1	14.7
	04	242 18.6	S02 00.5	046 31.8	N13 08.4	58.6	11.0	14.7
	05	257 18.8	S02 01.5	061 01.8	N13 23.0	58.6	10.9	14.6
	06	272 19.0	S02 02.5	075 31.8	N13 37.6	58.6	10.8	14.5
	07	287 19.2	S02 03.5	090 01.6	N13 52.2	58.6	10.8	14.5
	08	302 19.5	S02 04.4	104 31.4	N14 06.6	58.6	10.7	14.4
	09	317 19.7	S02 05.4	119 01.0	N14 21.0	58.7	10.6	14.3
	10	332 19.9	S02 06.4	133 30.6	N14 35.4	58.7	10.5	14.3
	11	347 20.1	S02 07.4	148 00.1	N14 49.6	58.7	10.4	14.2
	12	002 20.3	S02 08.3	162 29.5	N15 03.8	58.7	10.3	14.1
	13	017 20.5	S02 09.3	176 58.8	N15 18.0	58.7	10.2	14.0
	14	032 20.7	S02 10.3	191 28.1	N15 32.0	58.7	10.1	14.0
	15	047 20.9	S02 11.2	205 57.2	N15 46.0	58.8	10.0	13.9
	16	062 21.1	S02 12.2	220 26.2	N15 59.9	58.8	9.9	13.8
	17	077 21.4	S02 13.2	234 55.2	N16 13.7	58.8	9.8	13.7
	18	092 21.6	S02 14.2	249 24.0	N16 27.4	58.8	9.8	13.6
	19	107 21.8	S02 15.1	263 52.8	N16 41.1	58.8	9.7	13.6
	20	122 22.0	S02 16.1	278 21.4	N16 54.6	58.8	9.6	13.5
	21	137 22.2	S02 17.1	292 50.0	N17 08.1	58.9	9.5	13.4
	22	152 22.4	S02 18.0	307 18.5	N17 21.5	58.9	9.4	13.3
	23	167 22.6	S02 19.0	321 46.8	N17 34.8	58.9	9.3	13.2
29	00	182 22.8	S02 20.0	336 15.1	N17 48.0	58.9	9.2	13.1
	01	197 23.0	S02 21.0	350 43.3	N18 01.1	58.9	9.1	13.0
	02	212 23.2	S02 21.9	005 11.3	N18 14.1	58.9	9.0	12.9
	03	227 23.4	S02 22.9	019 39.3	N18 27.1	58.9	8.9	12.8
	04	242 23.7	S02 23.9	034 07.2	N18 39.9	59.0	8.8	12.7
	05	257 23.9	S02 24.8	048 34.9	N18 52.6	59.0	8.7	12.6
	06	272 24.1	S02 25.8	063 02.6	N19 05.2	59.0	8.6	12.5
	07	287 24.3	S02 26.8	077 30.2	N19 17.7	59.0	8.5	12.4
	08	302 24.5	S02 27.8	091 57.6	N19 30.1	59.0	8.4	12.3
	09	317 24.7	S02 28.7	106 25.0	N19 42.4	59.0	8.3	12.2
	10	332 24.9	S02 29.7	120 52.2	N19 54.6	59.0	8.2	12.1
	11	347 25.1	S02 30.7	135 19.4	N20 06.7	59.0	8.1	12.0
	12	002 25.3	S02 31.6	149 46.5	N20 18.6	59.1	8.0	11.8
	13	017 25.5	S02 32.6	164 13.4	N20 30.5	59.1	7.9	11.7
	14	032 25.7	S02 33.6	178 40.3	N20 42.2	59.1	7.7	11.6
	15	047 25.9	S02 34.6	193 07.0	N20 53.8	59.1	7.6	11.5
	16	062 26.2	S02 35.5	207 33.7	N21 05.3	59.1	7.5	11.4
	17	077 26.4	S02 36.5	222 00.2	N21 16.7	59.1	7.4	11.2
	18	092 26.6	S02 37.5	236 26.6	N21 27.9	59.1	7.3	11.1
	19	107 26.8	S02 38.4	250 53.0	N21 39.0	59.1	7.2	11.0
	20	122 27.0	S02 39.4	265 19.2	N21 50.0	59.1	7.1	10.9
	21	137 27.2	S02 40.4	279 45.4	N22 00.9	59.1	7.0	10.7
	22	152 27.4	S02 41.4	294 11.4	N22 11.6	59.2	6.9	10.6
	23	167 27.6	S02 42.3	308 37.3	N22 22.2	59.2	6.8	10.5
30	00	182 27.8	S02 43.3	323 03.1	N22 32.7	59.2	6.7	10.3
	01	197 28.0	S02 44.3	337 28.9	N22 43.0	59.2	6.6	10.2
	02	212 28.2	S02 45.2	351 54.5	N22 53.2	59.2	6.5	10.0
	03	227 28.4	S02 46.2	006 20.0	N23 03.2	59.2	6.4	9.9
	04	242 28.6	S02 47.2	020 45.5	N23 13.1	59.2	6.3	9.8
	05	257 28.8	S02 48.1	035 10.8	N23 22.9	59.2	6.2	9.6
	06	272 29.0	S02 49.1	049 36.0	N23 32.5	59.2	6.1	9.5
	07	287 29.3	S02 50.1	064 01.2	N23 42.0	59.2	6.0	9.3
	08	302 29.5	S02 51.1	078 26.2	N23 51.3	59.2	5.9	9.2
	09	317 29.7	S02 52.0	092 51.2	N24 00.5	59.2	5.9	9.0
	10	332 29.9	S02 53.0	107 16.0	N24 09.5	59.3	5.8	8.9
	11	347 30.1	S02 54.0	121 40.8	N24 18.4	59.3	5.7	8.7
	12	002 30.3	S02 54.9	136 05.4	N24 27.1	59.3	5.6	8.6
	13	017 30.5	S02 55.9	150 30.0	N24 35.6	59.3	5.5	8.4
	14	032 30.7	S02 56.9	164 54.5	N24 44.0	59.3	5.4	8.2
	15	047 30.9	S02 57.8	179 18.9	N24 52.3	59.3	5.3	8.1
	16	062 31.1	S02 58.8	193 43.2	N25 00.4	59.3	5.2	7.9
	17	077 31.3	S02 59.8	208 07.4	N25 08.3	59.3	5.1	7.8
	18	092 31.5	S03 00.8	222 31.5	N25 16.0	59.3	5.0	7.6
	19	107 31.7	S03 01.7	236 55.6	N25 23.6	59.3	5.0	7.4
	20	122 31.9	S03 02.7	251 19.5	N25 31.1	59.3	4.9	7.3
	21	137 32.1	S03 03.7	265 43.4	N25 38.3	59.3	4.8	7.1
	22	152 32.3	S03 04.6	280 07.2	N25 45.4	59.3	4.7	6.9
	23	167 32.5	S03 05.6	294 30.9	N25 52.3	59.3	4.6	6.7

Day 28 noon Sun: v 0.2 d -1.0 SD 16.0 | Moon SD 16.0

Day 29 noon Sun: v 0.2 d -1.0 SD 16.0 | Moon SD 16.1

Day 30 noon Sun: v 0.2 d -1.0 SD 16.0 | Moon SD 16.2

SUN: SEPTEMBER 29 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0338	0502	0610	1729	1836	1958
70N	0352	0507	0607	1731	1832	1945
68N	0403	0510	0606	1733	1828	1935
66N	0412	0513	0604	1735	1826	1926
64N	0419	0515	0603	1736	1823	1920
62N	0425	0517	0602	1738	1822	1914
60N	0430	0519	0601	1739	1820	1909
58N	0434	0521	0600	1740	1819	1905
56N	0438	0522	0559	1741	1818	1901
54N	0442	0523	0558	1741	1817	1858
52N	0444	0524	0557	1742	1816	1855
50N	0447	0525	0557	1743	1815	1853
45N	0452	0526	0555	1744	1814	1848
40N	0456	0527	0554	1746	1813	1844
35N	0459	0528	0553	1747	1812	1841
30N	0501	0528	0552	1748	1812	1840
25N	0502	0528	0551	1749	1812	1838
20N	0503	0528	0550	1750	1812	1837
15N	0503	0528	0550	1751	1812	1837
10N	0503	0528	0549	1752	1813	1837
05N	0503	0527	0548	1753	1813	1838
00N	0502	0526	0547	1754	1814	1838
05S	0501	0525	0546	1754	1815	1839
10S	0500	0524	0545	1755	1816	1841
15S	0458	0523	0544	1756	1818	1843
20S	0456	0521	0543	1758	1820	1845
25S	0453	0519	0542	1759	1822	1848
30S	0449	0517	0541	1800	1824	1852
35S	0445	0514	0540	1802	1827	1857
40S	0439	0511	0538	1803	1831	1903
45S	0432	0507	0536	1805	1835	1910
50S	0423	0501	0534	1808	1841	1919
55S	0410	0454	0531	1811	1848	1932
60S	0353	0445	0527	1815	1857	1949

MOON: RISE / SET | UTC HHMM

Lat	Day 28		Day 29		Day 30	
72N	1518	1041	--	--	--	--
70N	1553	1007	--	--	--	--
68N	1619	0943	1527	1225	--	--
66N	1639	0924	1612	1141	--	--
64N	1656	0910	1643	1112	1618	1337
62N	1709	0857	1706	1050	1703	1252
60N	1721	0847	1724	1033	1733	1223
58N	1731	0838	1740	1018	1756	1201
56N	1740	0830	1753	1005	1814	1142
54N	1747	0823	1805	0955	1830	1127
52N	1755	0817	1815	0945	1844	1114
50N	1801	0811	1824	0936	1856	1102
45N	1815	0759	1844	0918	1921	1038
40N	1826	0749	1900	0904	1941	1019
35N	1836	0741	1913	0851	1957	1003
30N	1845	0733	1925	0840	2012	0950
25N	1853	0727	1936	0831	2025	0937
20N	1900	0721	1945	0822	2037	0926
15N	1907	0715	1955	0814	2048	0916
10N	1913	0710	2003	0806	2058	0906
05N	1920	0704	2012	0759	2108	0857
00N	1926	0659	2020	0751	2119	0847
05S	1932	0654	2029	0744	2129	0838
10S	1939	0649	2037	0736	2139	0829
15S	1945	0644	2046	0729	2149	0819
20S	1952	0638	2055	0721	2201	0809
25S	2000	0632	2105	0712	2213	0758
30S	2008	0626	2117	0703	2226	0746
35S	2017	0618	2129	0652	2241	0732
40S	2028	0610	2143	0640	2259	0717
45S	2040	0601	2201	0626	2320	0659
50S	2056	0550	2222	0609	2347	0636
55S	2115	0536	2250	0548	--	0606
60S	2142	0517	2332	0519	--	0523

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | OCTOBER 1 - OCTOBER 3

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
1	00	009 44.7	156 09.5	S20 58.3	245 34.1	N20 46.4	227 32.6	N15 30.5	358 02.3	N02 04.9
	01	024 47.1	171 11.8	S20 58.6	260 35.1	N20 46.1	242 34.6	N15 30.4	013 04.9	N02 04.8
	02	039 49.6	186 14.1	S20 58.9	275 36.0	N20 45.8	257 36.6	N15 30.3	028 07.6	N02 04.8
	03	054 52.1	201 16.4	S20 59.2	290 37.0	N20 45.5	272 38.7	N15 30.1	043 10.2	N02 04.7
	04	069 54.5	216 18.8	S20 59.4	305 37.9	N20 45.2	287 40.7	N15 30.0	058 12.9	N02 04.6
	05	084 57.0	231 21.1	S20 59.7	320 38.8	N20 45.0	302 42.7	N15 29.9	073 15.5	N02 04.5
	06	099 59.5	246 23.5	S21 00.0	335 39.8	N20 44.7	317 44.7	N15 29.7	088 18.2	N02 04.5
	07	115 01.9	261 25.8	S21 00.2	350 40.7	N20 44.4	332 46.7	N15 29.6	103 20.8	N02 04.4
	08	130 04.4	276 28.2	S21 00.5	005 41.6	N20 44.1	347 48.8	N15 29.5	118 23.4	N02 04.3
	09	145 06.9	291 30.5	S21 00.8	020 42.6	N20 43.8	002 50.8	N15 29.3	133 26.1	N02 04.2
	10	160 09.3	306 32.9	S21 01.0	035 43.5	N20 43.5	017 52.8	N15 29.2	148 28.7	N02 04.1
	11	175 11.8	321 35.2	S21 01.3	050 44.4	N20 43.2	032 54.8	N15 29.1	163 31.4	N02 04.1
	12	190 14.3	336 37.6	S21 01.6	065 45.4	N20 43.0	047 56.9	N15 28.9	178 34.0	N02 04.0
	13	205 16.7	351 40.0	S21 01.8	080 46.3	N20 42.7	062 58.9	N15 28.8	193 36.7	N02 03.9
	14	220 19.2	006 42.4	S21 02.1	095 47.3	N20 42.4	078 00.9	N15 28.7	208 39.3	N02 03.8
	15	235 21.6	021 44.7	S21 02.3	110 48.2	N20 42.1	093 02.9	N15 28.5	223 42.0	N02 03.8
	16	250 24.1	036 47.1	S21 02.6	125 49.1	N20 41.8	108 05.0	N15 28.4	238 44.6	N02 03.7
	17	265 26.6	051 49.5	S21 02.8	140 50.1	N20 41.5	123 07.0	N15 28.3	253 47.2	N02 03.6
	18	280 29.0	066 51.9	S21 03.1	155 51.0	N20 41.2	138 09.0	N15 28.1	268 49.9	N02 03.5
	19	295 31.5	081 54.3	S21 03.3	170 52.0	N20 41.0	153 11.0	N15 28.0	283 52.5	N02 03.5
	20	310 34.0	096 56.7	S21 03.6	185 52.9	N20 40.7	168 13.0	N15 27.9	298 55.2	N02 03.4
	21	325 36.4	111 59.1	S21 03.8	200 53.8	N20 40.4	183 15.1	N15 27.7	313 57.8	N02 03.3
	22	340 38.9	127 01.5	S21 04.0	215 54.8	N20 40.1	198 17.1	N15 27.6	329 00.5	N02 03.2
	23	355 41.4	142 03.9	S21 04.3	230 55.7	N20 39.8	213 19.1	N15 27.5	344 03.1	N02 03.1
2	00	010 43.8	157 06.3	S21 04.5	245 56.7	N20 39.5	228 21.1	N15 27.3	359 05.8	N02 03.1
	01	025 46.3	172 08.7	S21 04.8	260 57.6	N20 39.2	243 23.2	N15 27.2	014 08.4	N02 03.0
	02	040 48.7	187 11.1	S21 05.0	275 58.6	N20 38.9	258 25.2	N15 27.0	029 11.0	N02 02.9
	03	055 51.2	202 13.6	S21 05.2	290 59.5	N20 38.7	273 27.2	N15 26.9	044 13.7	N02 02.8
	04	070 53.7	217 16.0	S21 05.5	306 00.4	N20 38.4	288 29.2	N15 26.8	059 16.3	N02 02.8
	05	085 56.1	232 18.4	S21 05.7	321 01.4	N20 38.1	303 31.3	N15 26.6	074 19.0	N02 02.7
	06	100 58.6	247 20.8	S21 05.9	336 02.3	N20 37.8	318 33.3	N15 26.5	089 21.6	N02 02.6
	07	116 01.1	262 23.3	S21 06.1	351 03.3	N20 37.5	333 35.3	N15 26.4	104 24.3	N02 02.5
	08	131 03.5	277 25.7	S21 06.4	006 04.2	N20 37.2	348 37.3	N15 26.2	119 26.9	N02 02.4
	09	146 06.0	292 28.2	S21 06.6	021 05.2	N20 36.9	003 39.4	N15 26.1	134 29.5	N02 02.4
	10	161 08.5	307 30.6	S21 06.8	036 06.1	N20 36.6	018 41.4	N15 26.0	149 32.2	N02 02.3
	11	176 10.9	322 33.1	S21 07.0	051 07.1	N20 36.3	033 43.4	N15 25.8	164 34.8	N02 02.2
	12	191 13.4	337 35.5	S21 07.2	066 08.0	N20 36.1	048 45.5	N15 25.7	179 37.5	N02 02.1
	13	206 15.9	352 38.0	S21 07.4	081 09.0	N20 35.8	063 47.5	N15 25.6	194 40.1	N02 02.1
	14	221 18.3	007 40.4	S21 07.6	096 09.9	N20 35.5	078 49.5	N15 25.4	209 42.8	N02 02.0
	15	236 20.8	022 42.9	S21 07.9	111 10.8	N20 35.2	093 51.5	N15 25.3	224 45.4	N02 01.9
	16	251 23.2	037 45.4	S21 08.1	126 11.8	N20 34.9	108 53.6	N15 25.2	239 48.1	N02 01.8
	17	266 25.7	052 47.9	S21 08.3	141 12.7	N20 34.6	123 55.6	N15 25.0	254 50.7	N02 01.7
	18	281 28.2	067 50.3	S21 08.5	156 13.7	N20 34.3	138 57.6	N15 24.9	269 53.3	N02 01.7
	19	296 30.6	082 52.8	S21 08.7	171 14.6	N20 34.0	153 59.6	N15 24.8	284 56.0	N02 01.6
	20	311 33.1	097 55.3	S21 08.9	186 15.6	N20 33.7	169 01.7	N15 24.6	299 58.6	N02 01.5
	21	326 35.6	112 57.8	S21 09.1	201 16.5	N20 33.4	184 03.7	N15 24.5	315 01.3	N02 01.4
	22	341 38.0	128 00.3	S21 09.3	216 17.5	N20 33.2	199 05.7	N15 24.4	330 03.9	N02 01.4
	23	356 40.5	143 02.8	S21 09.4	231 18.4	N20 32.9	214 07.8	N15 24.3	345 06.6	N02 01.3
3	00	011 43.0	158 05.3	S21 09.6	246 19.4	N20 32.6	229 09.8	N15 24.1	000 09.2	N02 01.2
	01	026 45.4	173 07.8	S21 09.8	261 20.3	N20 32.3	244 11.8	N15 24.0	015 11.9	N02 01.1
	02	041 47.9	188 10.3	S21 10.0	276 21.3	N20 32.0	259 13.8	N15 23.9	030 14.5	N02 01.0
	03	056 50.4	203 12.8	S21 10.2	291 22.2	N20 31.7	274 15.9	N15 23.7	045 17.1	N02 01.0
	04	071 52.8	218 15.3	S21 10.4	306 23.2	N20 31.4	289 17.9	N15 23.6	060 19.8	N02 00.9
	05	086 55.3	233 17.9	S21 10.6	321 24.1	N20 31.1	304 19.9	N15 23.5	075 22.4	N02 00.8
	06	101 57.7	248 20.4	S21 10.7	336 25.1	N20 30.8	319 22.0	N15 23.3	090 25.1	N02 00.7
	07	117 00.2	263 22.9	S21 10.9	351 26.0	N20 30.5	334 24.0	N15 23.2	105 27.7	N02 00.7
	08	132 02.7	278 25.4	S21 11.1	006 27.0	N20 30.2	349 26.0	N15 23.1	120 30.4	N02 00.6
	09	147 05.1	293 28.0	S21 11.3	021 27.9	N20 29.9	004 28.0	N15 22.9	135 33.0	N02 00.5
	10	162 07.6	308 30.5	S21 11.4	036 28.9	N20 29.7	019 30.1	N15 22.8	150 35.7	N02 00.4
	11	177 10.1	323 33.1	S21 11.6	051 29.8	N20 29.4	034 32.1	N15 22.7	165 38.3	N02 00.3
	12	192 12.5	338 35.6	S21 11.8	066 30.8	N20 29.1	049 34.1	N15 22.5	180 40.9	N02 00.3
	13	207 15.0	353 38.1	S21 11.9	081 31.8	N20 28.8	064 36.2	N15 22.4	195 43.6	N02 00.2
	14	222 17.5	008 40.7	S21 12.1	096 32.7	N20 28.5	079 38.2	N15 22.3	210 46.2	N02 00.1
	15	237 19.9	023 43.3	S21 12.3	111 33.7	N20 28.2	094 40.2	N15 22.1	225 48.9	N02 00.0
	16	252 22.4	038 45.8	S21 12.4	126 34.6	N20 27.9	109 42.3	N15 22.0	240 51.5	N02 00.0
	17	267 24.9	053 48.4	S21 12.6	141 35.6	N20 27.6	124 44.3	N15 21.9	255 54.2	N01 59.9
	18	282 27.3	068 51.0	S21 12.7	156 36.5	N20 27.3	139 46.3	N15 21.7	270 56.8	N01 59.8
	19	297 29.8	083 53.5	S21 12.9	171 37.5	N20 27.0	154 48.3	N15 21.6	285 59.5	N01 59.7
	20	312 32.2	098 56.1	S21 13.0	186 38.4	N20 26.7	169 50.4	N15 21.5	301 02.1	N01 59.6
	21	327 34.7	113 58.7	S21 13.2	201 39.4	N20 26.4	184 52.4	N15 21.3	316 04.8	N01 59.6
	22	342 37.2	129 01.3	S21 13.3	216 40.4	N20 26.1	199 54.4	N15 21.2	331 07.4	N01 59.5
	23	357 39.6	144 03.9	S21 13.5	231 41.3	N20 25.8	214 56.5	N15 21.1	346 10.0	N01 59.4

Venus	Mars	Jupiter	Saturn
1: v 2.4 d -0.3	1: v 0.9 d -0.3	1: v 2.0 d -0.1	1: v 2.6 d -0.1
2: v 2.5 d -0.2	2: v 0.9 d -0.3	2: v 2.0 d -0.1	2: v 2.6 d -0.1
3: v 2.6 d -0.2	3: v 1.0 d -0.3	3: v 2.0 d -0.1	3: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.4	S40 11.6
Achernar	335 18.6	S57 05.9
Acrux	172 59.2	S63 14.8
Adhara	255 04.8	S29 00.2
Al Na'ir	027 30.8	S46 49.9
Aldebaran	290 37.8	N16 33.8
Alioth	166 12.3	N55 48.9
Alkaid	152 51.3	N49 10.9
Alnilam	275 36.2	S01 10.9
Alphard	217 46.6	S08 46.3
Alphecca	126 02.8	N26 37.6
Alpheratz	357 32.9	N29 14.5
Altair	061 58.5	N08 56.5
Ankaa	353 05.3	S42 09.5
Antares	112 14.3	S26 29.5
Arcturus	145 46.9	N19 02.7
Atria	107 07.4	S69 04.7
Avior	234 14.4	S59 35.4
Bellatrix	278 21.3	N06 22.5
Betelgeuse	270 50.5	N07 24.8
Canopus	263 51.7	S52 42.2
Capella	280 19.6	N46 01.4
Deneb	049 24.6	N45 22.8
Denebola	182 23.8	N14 25.4
Diphda	348 45.5	S17 50.2
Dubhe	193 39.9	N61 36.3
Elnath	278 00.0	N28 37.8
Eltanin	090 41.6	N51 29.4
Enif	033 37.2	N10 00.1
Fomalhaut	015 12.6	S29 28.7
Gacrux	171 50.6	S57 15.7
Gienah	175 42.5	S17 41.3
Hadar	148 34.6	S60 30.2
Hamal	327 49.3	N23 35.5
Kaus Australi	083 30.7	S34 22.4
Kochab	137 20.8	N74 02.8
Markab	013 28.2	N15 21.2
Menkar	314 04.4	N04 11.8
Menkent	147 56.3	S36 30.1
Miaplacidus	221 38.6	S69 49.3
Mirfak	308 25.8	N49 57.3
Nunki	075 46.0	S26 15.8
Peacock	053 03.2	S56 39.0
Polaris	312 54.9	N89 22.4
Pollux	243 15.7	N27 57.6
Procyon	244 49.4	N05 09.5
Rasalhague	095 57.3	N12 32.6
Regulus	207 33.2	N11 50.2
Rigel	281 02.4	S08 10.0
Rigil Kentaur	139 38.9	S60 56.9
Sabik	102 01.3	S15 45.4
Schedar	349 28.8	N56 41.2
Shaula	096 08.5	S37 07.4
Sirius	258 25.0	S16 44.9
Spica	158 21.1	S11 18.0
Suhail	222 45.5	S43 32.2
Vega	080 32.3	N38 48.8
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	146 22.1	1329
Mars	234 54.6	0736
Jupiter	217 32.1	0845
Saturn	348 24.1	0004

2026 | OCTOBER 1 - OCTOBER 3

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
1	00	182 32.7	S03 06.6	308 54.6	N25 59.1	59.3	4.6	6.6
	01	197 32.9	S03 07.5	323 18.1	N26 05.6	59.3	4.5	6.4
	02	212 33.1	S03 08.5	337 41.6	N26 12.0	59.3	4.4	6.2
	03	227 33.3	S03 09.5	352 05.0	N26 18.3	59.3	4.3	6.0
	04	242 33.5	S03 10.5	006 28.4	N26 24.3	59.3	4.3	5.9
	05	257 33.7	S03 11.4	020 51.7	N26 30.2	59.3	4.2	5.7
	06	272 34.0	S03 12.4	035 14.9	N26 35.9	59.4	4.1	5.5
	07	287 34.2	S03 13.4	049 38.0	N26 41.4	59.4	4.1	5.3
	08	302 34.4	S03 14.3	064 01.1	N26 46.7	59.4	4.0	5.1
	09	317 34.6	S03 15.3	078 24.1	N26 51.9	59.4	4.0	5.0
	10	332 34.8	S03 16.3	092 47.1	N26 56.8	59.4	3.9	4.8
	11	347 35.0	S03 17.2	107 10.0	N27 01.6	59.4	3.9	4.6
	12	002 35.2	S03 18.2	121 32.9	N27 06.2	59.4	3.8	4.4
	13	017 35.4	S03 19.2	135 55.7	N27 10.6	59.4	3.7	4.2
	14	032 35.6	S03 20.1	150 18.4	N27 14.9	59.4	3.7	4.0
	15	047 35.8	S03 21.1	164 41.1	N27 18.9	59.4	3.7	3.9
	16	062 36.0	S03 22.1	179 03.8	N27 22.7	59.4	3.6	3.7
	17	077 36.2	S03 23.0	193 26.4	N27 26.4	59.4	3.6	3.5
	18	092 36.4	S03 24.0	207 48.9	N27 29.9	59.4	3.5	3.3
	19	107 36.6	S03 25.0	222 11.5	N27 33.2	59.4	3.5	3.1
	20	122 36.8	S03 26.0	236 33.9	N27 36.3	59.4	3.5	2.9
	21	137 37.0	S03 26.9	250 56.4	N27 39.2	59.4	3.4	2.7
	22	152 37.2	S03 27.9	265 18.8	N27 41.9	59.4	3.4	2.5
	23	167 37.4	S03 28.9	279 41.2	N27 44.4	59.4	3.4	2.3
2	00	182 37.6	S03 29.8	294 03.6	N27 46.7	59.4	3.3	2.1
	01	197 37.8	S03 30.8	308 25.9	N27 48.8	59.4	3.3	1.9
	02	212 38.0	S03 31.8	322 48.3	N27 50.8	59.4	3.3	1.7
	03	227 38.2	S03 32.7	337 10.6	N27 52.5	59.4	3.3	1.5
	04	242 38.4	S03 33.7	351 32.8	N27 54.1	59.4	3.3	1.4
	05	257 38.6	S03 34.7	005 55.1	N27 55.4	59.4	3.3	1.2
	06	272 38.8	S03 35.6	020 17.4	N27 56.6	59.4	3.2	1.0
	07	287 39.0	S03 36.6	034 39.6	N27 57.6	59.4	3.2	0.8
	08	302 39.2	S03 37.6	049 01.8	N27 58.3	59.4	3.2	0.6
	09	317 39.4	S03 38.5	063 24.1	N27 58.9	59.4	3.2	0.4
	10	332 39.6	S03 39.5	077 46.3	N27 59.3	59.4	3.2	0.2
	11	347 39.8	S03 40.5	092 08.6	N27 59.5	59.4	3.2	0.0
	12	002 40.0	S03 41.4	106 30.8	N27 59.5	59.4	3.2	-0.2
	13	017 40.2	S03 42.4	120 53.0	N27 59.2	59.3	3.3	-0.4
	14	032 40.4	S03 43.4	135 15.3	N27 58.8	59.3	3.3	-0.6
	15	047 40.6	S03 44.3	149 37.6	N27 58.2	59.3	3.3	-0.8
	16	062 40.8	S03 45.3	163 59.8	N27 57.5	59.3	3.3	-1.0
	17	077 41.0	S03 46.3	178 22.1	N27 56.5	59.3	3.3	-1.2
	18	092 41.2	S03 47.2	192 44.4	N27 55.3	59.3	3.3	-1.4
	19	107 41.4	S03 48.2	207 06.8	N27 53.9	59.3	3.4	-1.6
	20	122 41.6	S03 49.2	221 29.1	N27 52.4	59.3	3.4	-1.8
	21	137 41.8	S03 50.1	235 51.5	N27 50.6	59.3	3.4	-2.0
	22	152 42.0	S03 51.1	250 13.9	N27 48.6	59.3	3.4	-2.1
	23	167 42.1	S03 52.1	264 36.4	N27 46.5	59.3	3.5	-2.3
3	00	182 42.3	S03 53.0	278 58.9	N27 44.2	59.3	3.5	-2.5
	01	197 42.5	S03 54.0	293 21.4	N27 41.6	59.3	3.6	-2.7
	02	212 42.7	S03 55.0	307 43.9	N27 38.9	59.3	3.6	-2.9
	03	227 42.9	S03 55.9	322 06.5	N27 36.0	59.3	3.6	-3.1
	04	242 43.1	S03 56.9	336 29.2	N27 32.9	59.3	3.7	-3.3
	05	257 43.3	S03 57.9	350 51.9	N27 29.6	59.3	3.7	-3.5
	06	272 43.5	S03 58.8	005 14.6	N27 26.2	59.3	3.8	-3.7
	07	287 43.7	S03 59.8	019 37.4	N27 22.5	59.3	3.8	-3.8
	08	302 43.9	S04 00.8	034 00.2	N27 18.7	59.3	3.9	-4.0
	09	317 44.1	S04 01.7	048 23.1	N27 14.6	59.3	3.9	-4.2
	10	332 44.3	S04 02.7	062 46.1	N27 10.4	59.3	4.0	-4.4
	11	347 44.5	S04 03.7	077 09.1	N27 06.0	59.3	4.1	-4.6
	12	002 44.7	S04 04.6	091 32.1	N27 01.4	59.2	4.1	-4.8
	13	017 44.9	S04 05.6	105 55.3	N26 56.7	59.2	4.2	-4.9
	14	032 45.1	S04 06.6	120 18.4	N26 51.7	59.2	4.3	-5.1
	15	047 45.3	S04 07.5	134 41.7	N26 46.6	59.2	4.3	-5.3
	16	062 45.5	S04 08.5	149 05.0	N26 41.3	59.2	4.4	-5.5
	17	077 45.7	S04 09.5	163 28.4	N26 35.8	59.2	4.5	-5.7
	18	092 45.9	S04 10.4	177 51.9	N26 30.2	59.2	4.5	-5.8
	19	107 46.1	S04 11.4	192 15.4	N26 24.4	59.2	4.6	-6.0
	20	122 46.3	S04 12.4	206 39.1	N26 18.4	59.2	4.7	-6.2
	21	137 46.4	S04 13.3	221 02.7	N26 12.2	59.2	4.8	-6.3
	22	152 46.6	S04 14.3	235 26.5	N26 05.8	59.2	4.9	-6.5
	23	167 46.8	S04 15.2	249 50.4	N25 59.3	59.2	4.9	-6.7

Day 1 noon Sun: v 0.2 d -1.0 SD 16.0 | Moon SD 16.2

Day 2 noon Sun: v 0.2 d -1.0 SD 16.0 | Moon SD 16.2

Day 3 noon Sun: v 0.2 d -1.0 SD 16.0 | Moon SD 16.1

SUN: OCTOBER 2 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0354	0516	0623	1713	1820	1941
70N	0406	0519	0619	1717	1818	1930
68N	0415	0521	0616	1721	1816	1921
66N	0422	0523	0614	1723	1814	1914
64N	0428	0524	0611	1726	1813	1908
62N	0433	0525	0609	1728	1812	1904
60N	0438	0526	0608	1730	1811	1859
58N	0441	0527	0606	1731	1810	1856
56N	0444	0528	0605	1733	1810	1853
54N	0447	0528	0604	1734	1809	1850
52N	0450	0529	0602	1735	1809	1848
50N	0452	0529	0601	1736	1809	1846
45N	0456	0530	0559	1739	1808	1842
40N	0459	0530	0557	1741	1808	1839
35N	0501	0530	0555	1743	1808	1837
30N	0502	0530	0554	1744	1808	1836
25N	0503	0530	0552	1746	1809	1835
20N	0504	0529	0551	1747	1809	1835
15N	0504	0528	0550	1749	1810	1835
10N	0503	0528	0549	1750	1811	1835
05N	0502	0527	0547	1751	1812	1836
00N	0501	0525	0546	1753	1813	1837
05S	0500	0524	0545	1754	1815	1839
10S	0458	0522	0544	1755	1816	1841
15S	0456	0521	0542	1757	1818	1843
20S	0453	0519	0541	1758	1820	1846
25S	0449	0516	0539	1800	1823	1850
30S	0445	0513	0537	1802	1826	1854
35S	0440	0510	0535	1804	1829	1859
40S	0434	0506	0533	1806	1834	1906
45S	0426	0501	0530	1809	1839	1914
50S	0416	0454	0527	1813	1845	1924
55S	0402	0446	0523	1817	1854	1938
60S	0343	0435	0518	1822	1905	1958

MOON: RISE / SET | UTC HHMM

Lat	Day 1		Day 2		Day 3	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	--	--	--	--
62N	1702	1500	1740	1635	1942	1643
60N	1754	1409	1848	1527	2022	1603
58N	1826	1337	1923	1451	2049	1535
56N	1850	1313	1949	1426	2111	1513
54N	1910	1254	2009	1405	2128	1455
52N	1926	1238	2026	1348	2143	1440
50N	1940	1224	2041	1334	2156	1427
45N	2009	1156	2111	1304	2223	1359
40N	2032	1133	2134	1241	2244	1338
35N	2051	1115	2153	1221	2302	1320
30N	2107	1059	2209	1205	2317	1304
25N	2121	1045	2224	1150	2330	1250
20N	2134	1032	2237	1137	2342	1237
15N	2147	1020	2249	1124	2354	1226
10N	2158	1009	2301	1113	--	1214
05N	2209	0958	2312	1101	--	1204
00N	2220	0948	2323	1050	--	1153
05S	2231	0937	2334	1039	--	1142
10S	2242	0926	2345	1028	--	1131
15S	2254	0915	2357	1016	--	1120
20S	2306	0903	--	1004	0009	1108
25S	2320	0851	--	0950	0023	1055
30S	2334	0837	--	0936	0037	1041
35S	2351	0821	--	0919	0053	1025
40S	--	0803	0010	0859	0113	1006
45S	--	0741	0034	0836	0136	0943
50S	--	0713	0104	0806	0205	0914
55S	0024	0636	0146	0723	0246	0834
60S	0123	0535	0300	0609	0356	0725

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | OCTOBER 4 - OCTOBER 6

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
4	00	012 42.1	159 06.5	S21 13.6	246 42.3	N20 25.5	229 58.5	N15 20.9	001 12.7	N01 59.3
	01	027 44.6	174 09.1	S21 13.8	261 43.2	N20 25.2	245 00.5	N15 20.8	016 15.3	N01 59.3
	02	042 47.0	189 11.7	S21 13.9	276 44.2	N20 25.0	260 02.6	N15 20.7	031 18.0	N01 59.2
	03	057 49.5	204 14.3	S21 14.0	291 45.1	N20 24.7	275 04.6	N15 20.5	046 20.6	N01 59.1
	04	072 52.0	219 16.9	S21 14.2	306 46.1	N20 24.4	290 06.6	N15 20.4	061 23.3	N01 59.0
	05	087 54.4	234 19.5	S21 14.3	321 47.1	N20 24.1	305 08.7	N15 20.3	076 25.9	N01 59.0
	06	102 56.9	249 22.1	S21 14.4	336 48.0	N20 23.8	320 10.7	N15 20.1	091 28.6	N01 58.9
	07	117 59.4	264 24.7	S21 14.6	351 49.0	N20 23.5	335 12.7	N15 20.0	106 31.2	N01 58.8
	08	133 01.8	279 27.3	S21 14.7	006 49.9	N20 23.2	350 14.8	N15 19.9	121 33.8	N01 58.7
	09	148 04.3	294 30.0	S21 14.8	021 50.9	N20 22.9	005 16.8	N15 19.8	136 36.5	N01 58.6
	10	163 06.7	309 32.6	S21 14.9	036 51.9	N20 22.6	020 18.8	N15 19.6	151 39.1	N01 58.6
	11	178 09.2	324 35.2	S21 15.0	051 52.8	N20 22.3	035 20.9	N15 19.5	166 41.8	N01 58.5
	12	193 11.7	339 37.9	S21 15.2	066 53.8	N20 22.0	050 22.9	N15 19.4	181 44.4	N01 58.4
	13	208 14.1	354 40.5	S21 15.3	081 54.7	N20 21.7	065 24.9	N15 19.2	196 47.1	N01 58.3
	14	223 16.6	009 43.2	S21 15.4	096 55.7	N20 21.4	080 27.0	N15 19.1	211 49.7	N01 58.3
	15	238 19.1	024 45.8	S21 15.5	111 56.7	N20 21.1	095 29.0	N15 19.0	226 52.4	N01 58.2
	16	253 21.5	039 48.5	S21 15.6	126 57.6	N20 20.8	110 31.0	N15 18.8	241 55.0	N01 58.1
	17	268 24.0	054 51.1	S21 15.7	141 58.6	N20 20.5	125 33.1	N15 18.7	256 57.6	N01 58.0
	18	283 26.5	069 53.8	S21 15.8	156 59.6	N20 20.2	140 35.1	N15 18.6	272 00.3	N01 57.9
	19	298 28.9	084 56.4	S21 15.9	172 00.5	N20 19.9	155 37.1	N15 18.4	287 02.9	N01 57.9
	20	313 31.4	099 59.1	S21 16.0	187 01.5	N20 19.6	170 39.2	N15 18.3	302 05.6	N01 57.8
	21	328 33.8	115 01.8	S21 16.1	202 02.4	N20 19.3	185 41.2	N15 18.2	317 08.2	N01 57.7
	22	343 36.3	130 04.5	S21 16.2	217 03.4	N20 19.0	200 43.3	N15 18.0	332 10.9	N01 57.6
	23	358 38.8	145 07.1	S21 16.3	232 04.4	N20 18.7	215 45.3	N15 17.9	347 13.5	N01 57.6
5	00	013 41.2	160 09.8	S21 16.4	247 05.3	N20 18.4	230 47.3	N15 17.8	002 16.2	N01 57.5
	01	028 43.7	175 12.5	S21 16.5	262 06.3	N20 18.1	245 49.4	N15 17.7	017 18.8	N01 57.4
	02	043 46.2	190 15.2	S21 16.6	277 07.3	N20 17.8	260 51.4	N15 17.5	032 21.5	N01 57.3
	03	058 48.6	205 17.9	S21 16.7	292 08.2	N20 17.5	275 53.4	N15 17.4	047 24.1	N01 57.3
	04	073 51.1	220 20.6	S21 16.8	307 09.2	N20 17.2	290 55.5	N15 17.3	062 26.7	N01 57.2
	05	088 53.6	235 23.3	S21 16.8	322 10.2	N20 16.9	305 57.5	N15 17.1	077 29.4	N01 57.1
	06	103 56.0	250 26.0	S21 16.9	337 11.1	N20 16.6	320 59.5	N15 17.0	092 32.0	N01 57.0
	07	118 58.5	265 28.7	S21 17.0	352 12.1	N20 16.3	336 01.6	N15 16.9	107 34.7	N01 56.9
	08	134 01.0	280 31.4	S21 17.1	007 13.1	N20 16.0	351 03.6	N15 16.7	122 37.3	N01 56.9
	09	149 03.4	295 34.2	S21 17.1	022 14.0	N20 15.7	006 05.7	N15 16.6	137 40.0	N01 56.8
	10	164 05.9	310 36.9	S21 17.2	037 15.0	N20 15.4	021 07.7	N15 16.5	152 42.6	N01 56.7
	11	179 08.3	325 39.6	S21 17.3	052 16.0	N20 15.1	036 09.7	N15 16.3	167 45.3	N01 56.6
	12	194 10.8	340 42.3	S21 17.3	067 16.9	N20 14.8	051 11.8	N15 16.2	182 47.9	N01 56.6
	13	209 13.3	355 45.1	S21 17.4	082 17.9	N20 14.5	066 13.8	N15 16.1	197 50.5	N01 56.5
	14	224 15.7	010 47.8	S21 17.5	097 18.9	N20 14.2	081 15.8	N15 16.0	212 53.2	N01 56.4
	15	239 18.2	025 50.6	S21 17.5	112 19.9	N20 13.9	096 17.9	N15 15.8	227 55.8	N01 56.3
	16	254 20.7	040 53.3	S21 17.6	127 20.8	N20 13.6	111 19.9	N15 15.7	242 58.5	N01 56.3
	17	269 23.1	055 56.1	S21 17.6	142 21.8	N20 13.3	126 22.0	N15 15.6	258 01.1	N01 56.2
	18	284 25.6	070 58.8	S21 17.7	157 22.8	N20 13.0	141 24.0	N15 15.4	273 03.8	N01 56.1
	19	299 28.1	086 01.6	S21 17.8	172 23.7	N20 12.7	156 26.0	N15 15.3	288 06.4	N01 56.0
	20	314 30.5	101 04.3	S21 17.8	187 24.7	N20 12.4	171 28.1	N15 15.2	303 09.1	N01 55.9
	21	329 33.0	116 07.1	S21 17.9	202 25.7	N20 12.1	186 30.1	N15 15.0	318 11.7	N01 55.9
	22	344 35.5	131 09.9	S21 17.9	217 26.7	N20 11.8	201 32.2	N15 14.9	333 14.3	N01 55.8
	23	359 37.9	146 12.6	S21 17.9	232 27.6	N20 11.5	216 34.2	N15 14.8	348 17.0	N01 55.7
6	00	014 40.4	161 15.4	S21 18.0	247 28.6	N20 11.2	231 36.2	N15 14.7	003 19.6	N01 55.6
	01	029 42.8	176 18.2	S21 18.0	262 29.6	N20 10.9	246 38.3	N15 14.5	018 22.3	N01 55.6
	02	044 45.3	191 21.0	S21 18.1	277 30.5	N20 10.6	261 40.3	N15 14.4	033 24.9	N01 55.5
	03	059 47.8	206 23.8	S21 18.1	292 31.5	N20 10.3	276 42.4	N15 14.3	048 27.6	N01 55.4
	04	074 50.2	221 26.6	S21 18.1	307 32.5	N20 10.0	291 44.4	N15 14.1	063 30.2	N01 55.3
	05	089 52.7	236 29.3	S21 18.1	322 33.5	N20 09.7	306 46.4	N15 14.0	078 32.9	N01 55.2
	06	104 55.2	251 32.1	S21 18.2	337 34.4	N20 09.4	321 48.5	N15 13.9	093 35.5	N01 55.2
	07	119 57.6	266 35.0	S21 18.2	352 35.4	N20 09.1	336 50.5	N15 13.7	108 38.2	N01 55.1
	08	135 00.1	281 37.8	S21 18.2	007 36.4	N20 08.8	351 52.6	N15 13.6	123 40.8	N01 55.0
	09	150 02.6	296 40.6	S21 18.2	022 37.4	N20 08.5	006 54.6	N15 13.5	138 43.4	N01 54.9
	10	165 05.0	311 43.4	S21 18.3	037 38.3	N20 08.2	021 56.6	N15 13.4	153 46.1	N01 54.9
	11	180 07.5	326 46.2	S21 18.3	052 39.3	N20 07.9	036 58.7	N15 13.2	168 48.7	N01 54.8
	12	195 10.0	341 49.0	S21 18.3	067 40.3	N20 07.6	052 00.7	N15 13.1	183 51.4	N01 54.7
	13	210 12.4	356 51.9	S21 18.3	082 41.3	N20 07.3	067 02.8	N15 13.0	198 54.0	N01 54.6
	14	225 14.9	011 54.7	S21 18.3	097 42.2	N20 07.0	082 04.8	N15 12.8	213 56.7	N01 54.6
	15	240 17.3	026 57.5	S21 18.3	112 43.2	N20 06.7	097 06.9	N15 12.7	228 59.3	N01 54.5
	16	255 19.8	042 00.4	S21 18.3	127 44.2	N20 06.4	112 08.9	N15 12.6	244 02.0	N01 54.4
	17	270 22.3	057 03.2	S21 18.3	142 45.2	N20 06.1	127 10.9	N15 12.4	259 04.6	N01 54.3
	18	285 24.7	072 06.0	S21 18.3	157 46.2	N20 05.8	142 13.0	N15 12.3	274 07.2	N01 54.2
	19	300 27.2	087 08.9	S21 18.3	172 47.1	N20 05.5	157 15.0	N15 12.2	289 09.9	N01 54.2
	20	315 29.7	102 11.7	S21 18.3	187 48.1	N20 05.2	172 17.1	N15 12.1	304 12.5	N01 54.1
	21	330 32.1	117 14.6	S21 18.3	202 49.1	N20 04.9	187 19.1	N15 11.9	319 15.2	N01 54.0
	22	345 34.6	132 17.5	S21 18.3	217 50.1	N20 04.6	202 21.2	N15 11.8	334 17.8	N01 53.9
	23	000 37.1	147 20.3	S21 18.3	232 51.1	N20 04.3	217 23.2	N15 11.7	349 20.5	N01 53.9

Venus	Mars	Jupiter	Saturn
4: v 2.6 d -0.1	4: v 1.0 d -0.3	4: v 2.0 d -0.1	4: v 2.6 d -0.1
5: v 2.7 d -0.1	5: v 1.0 d -0.3	5: v 2.0 d -0.1	5: v 2.6 d -0.1
6: v 2.8 d 0.0	6: v 1.0 d -0.3	6: v 2.0 d -0.1	6: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.3	S40 11.6
Achernar	335 18.5	S57 05.9
Acrux	172 59.2	S63 14.8
Adhara	255 04.8	S29 00.2
Al Na'ir	027 30.8	S46 49.9
Aldebaran	290 37.8	N16 33.9
Alioth	166 12.3	N55 48.9
Alkaid	152 51.3	N49 10.9
Alnilam	275 36.2	S01 10.9
Alphard	217 46.6	S08 46.3
Alphecca	126 02.8	N26 37.6
Alpheratz	357 32.9	N29 14.5
Altair	061 58.5	N08 56.5
Ankaa	353 05.3	S42 09.5
Antares	112 14.3	S26 29.5
Arcturus	145 46.9	N19 02.7
Atria	107 07.4	S69 04.7
Avior	234 14.4	S59 35.4
Bellatrix	278 21.2	N06 22.5
Betelgeuse	270 50.5	N07 24.8
Canopus	263 51.7	S52 42.2
Capella	280 19.6	N46 01.4
Deneb	049 24.6	N45 22.8
Denebola	182 23.8	N14 25.4
Diphda	348 45.5	S17 50.2
Dubhe	193 39.9	N61 36.3
Elnath	277 59.9	N28 37.8
Eltanin	090 41.6	N51 29.4
Enif	033 37.2	N10 00.1
Fomalhaut	015 12.6	S29 28.7
Gacrux	171 50.6	S57 15.7
Gienah	175 42.4	S17 41.3
Hadar	148 34.6	S60 30.2
Hamal	327 49.3	N23 35.5
Kaus Australi	083 30.7	S34 22.4
Kochab	137 20.8	N74 02.8
Markab	013 28.2	N15 21.2
Menkar	314 04.4	N04 11.8
Menkent	147 56.3	S36 30.1
Miaplacidus	221 38.5	S69 49.3
Mirfak	308 25.8	N49 57.3
Nunki	075 46.0	S26 15.8
Peacock	053 03.2	S56 39.0
Polaris	312 53.6	N89 22.4
Pollux	243 15.6	N27 57.6
Procyon	244 49.4	N05 09.5
Rasalhague	095 57.3	N12 32.6
Regulus	207 33.2	N11 50.2
Rigel	281 02.4	S08 10.0
Rigil Kentaur	139 38.9	S60 56.8
Sabik	102 01.3	S15 45.4
Schedar	349 28.8	N56 41.2
Shaula	096 08.6	S37 07.4
Sirius	258 25.0	S16 44.9
Spica	158 21.1	S11 18.0
Suhail	222 45.5	S43 32.2
Vega	080 32.3	N38 48.8
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	146 31.5	1317
Mars	233 06.1	0731
Jupiter	217 01.0	0836
Saturn	348 37.1	2347

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
4	00	182 47.0	S04 16.2	264 14.3	N25 52.6	59.2	5.0	-6.9
	01	197 47.2	S04 17.2	278 38.3	N25 45.8	59.2	5.1	-7.0
	02	212 47.4	S04 18.1	293 02.4	N25 38.8	59.2	5.2	-7.2
	03	227 47.6	S04 19.1	307 26.6	N25 31.6	59.1	5.3	-7.3
	04	242 47.8	S04 20.1	321 50.9	N25 24.2	59.1	5.4	-7.5
	05	257 48.0	S04 21.0	336 15.2	N25 16.7	59.1	5.4	-7.7
	06	272 48.2	S04 22.0	350 39.7	N25 09.0	59.1	5.5	-7.8
	07	287 48.4	S04 23.0	005 04.2	N25 01.2	59.1	5.6	-8.0
	08	302 48.6	S04 23.9	019 28.8	N24 53.2	59.1	5.7	-8.1
	09	317 48.8	S04 24.9	033 53.6	N24 45.1	59.1	5.8	-8.3
	10	332 49.0	S04 25.9	048 18.4	N24 36.8	59.1	5.9	-8.5
	11	347 49.1	S04 26.8	062 43.3	N24 28.3	59.1	6.0	-8.6
	12	002 49.3	S04 27.8	077 08.3	N24 19.7	59.1	6.1	-8.8
	13	017 49.5	S04 28.7	091 33.4	N24 11.0	59.1	6.2	-8.9
	14	032 49.7	S04 29.7	105 58.6	N24 02.1	59.1	6.3	-9.1
	15	047 49.9	S04 30.7	120 23.9	N23 53.0	59.0	6.4	-9.2
	16	062 50.1	S04 31.6	134 49.3	N23 43.8	59.0	6.5	-9.3
	17	077 50.3	S04 32.6	149 14.8	N23 34.5	59.0	6.6	-9.5
	18	092 50.5	S04 33.6	163 40.3	N23 25.0	59.0	6.7	-9.6
	19	107 50.7	S04 34.5	178 06.0	N23 15.4	59.0	6.8	-9.8
	20	122 50.9	S04 35.5	192 31.8	N23 05.6	59.0	6.9	-9.9
	21	137 51.0	S04 36.4	206 57.7	N22 55.7	59.0	7.0	-10.0
	22	152 51.2	S04 37.4	221 23.7	N22 45.7	59.0	7.1	-10.2
	23	167 51.4	S04 38.4	235 49.8	N22 35.5	59.0	7.2	-10.3
5	00	182 51.6	S04 39.3	250 15.9	N22 25.2	59.0	7.3	-10.4
	01	197 51.8	S04 40.3	264 42.2	N22 14.7	58.9	7.4	-10.6
	02	212 52.0	S04 41.3	279 08.6	N22 04.2	58.9	7.5	-10.7
	03	227 52.2	S04 42.2	293 35.1	N21 53.5	58.9	7.6	-10.8
	04	242 52.4	S04 43.2	308 01.7	N21 42.7	58.9	7.7	-10.9
	05	257 52.6	S04 44.1	322 28.4	N21 31.7	58.9	7.8	-11.1
	06	272 52.8	S04 45.1	336 55.2	N21 20.6	58.9	7.9	-11.2
	07	287 52.9	S04 46.1	351 22.1	N21 09.4	58.9	8.0	-11.3
	08	302 53.1	S04 47.0	005 49.1	N20 58.1	58.9	8.1	-11.4
	09	317 53.3	S04 48.0	020 16.2	N20 46.7	58.9	8.2	-11.5
	10	332 53.5	S04 49.0	034 43.4	N20 35.2	58.8	8.3	-11.7
	11	347 53.7	S04 49.9	049 10.7	N20 23.5	58.8	8.4	-11.8
	12	002 53.9	S04 50.9	063 38.1	N20 11.7	58.8	8.5	-11.9
	13	017 54.1	S04 51.8	078 05.6	N19 59.8	58.8	8.6	-12.0
	14	032 54.3	S04 52.8	092 33.2	N19 47.8	58.8	8.7	-12.1
	15	047 54.4	S04 53.8	107 00.9	N19 35.7	58.8	8.8	-12.2
	16	062 54.6	S04 54.7	121 28.7	N19 23.5	58.8	8.9	-12.3
	17	077 54.8	S04 55.7	135 56.6	N19 11.2	58.8	9.0	-12.4
	18	092 55.0	S04 56.6	150 24.6	N18 58.8	58.8	9.1	-12.5
	19	107 55.2	S04 57.6	164 52.7	N18 46.3	58.7	9.2	-12.6
	20	122 55.4	S04 58.6	179 20.9	N18 33.7	58.7	9.3	-12.7
	21	137 55.6	S04 59.5	193 49.2	N18 20.9	58.7	9.4	-12.8
	22	152 55.7	S05 00.5	208 17.6	N18 08.1	58.7	9.5	-12.9
	23	167 55.9	S05 01.4	222 46.0	N17 55.2	58.7	9.6	-13.0
6	00	182 56.1	S05 02.4	237 14.6	N17 42.2	58.7	9.7	-13.1
	01	197 56.3	S05 03.4	251 43.3	N17 29.1	58.7	9.8	-13.2
	02	212 56.5	S05 04.3	266 12.1	N17 16.0	58.7	9.9	-13.3
	03	227 56.7	S05 05.3	280 40.9	N17 02.7	58.6	10.0	-13.4
	04	242 56.9	S05 06.2	295 09.9	N16 49.3	58.6	10.0	-13.4
	05	257 57.0	S05 07.2	309 38.9	N16 35.9	58.6	10.1	-13.5
	06	272 57.2	S05 08.2	324 08.1	N16 22.4	58.6	10.2	-13.6
	07	287 57.4	S05 09.1	338 37.3	N16 08.8	58.6	10.3	-13.7
	08	302 57.6	S05 10.1	353 06.6	N15 55.1	58.6	10.4	-13.8
	09	317 57.8	S05 11.0	007 36.0	N15 41.3	58.6	10.5	-13.8
	10	332 58.0	S05 12.0	022 05.5	N15 27.5	58.5	10.6	-13.9
	11	347 58.1	S05 13.0	036 35.1	N15 13.5	58.5	10.7	-14.0
	12	002 58.3	S05 13.9	051 04.7	N14 59.6	58.5	10.8	-14.1
	13	017 58.5	S05 14.9	065 34.5	N14 45.5	58.5	10.8	-14.1
	14	032 58.7	S05 15.8	080 04.3	N14 31.4	58.5	10.9	-14.2
	15	047 58.9	S05 16.8	094 34.2	N14 17.2	58.5	11.0	-14.3
	16	062 59.1	S05 17.7	109 04.2	N14 02.9	58.5	11.1	-14.3
	17	077 59.2	S05 18.7	123 34.3	N13 48.6	58.4	11.2	-14.4
	18	092 59.4	S05 19.7	138 04.5	N13 34.2	58.4	11.2	-14.5
	19	107 59.6	S05 20.6	152 34.7	N13 19.7	58.4	11.3	-14.5
	20	122 59.8	S05 21.6	167 05.0	N13 05.2	58.4	11.4	-14.6
	21	138 00.0	S05 22.5	181 35.4	N12 50.6	58.4	11.5	-14.6
	22	153 00.1	S05 23.5	196 05.9	N12 36.0	58.4	11.5	-14.7
	23	168 00.3	S05 24.5	210 36.5	N12 21.3	58.3	11.6	-14.7

Day 4 noon Sun: v 0.2 d -1.0 SD 16.0 | Moon SD 16.1

Day 5 noon Sun: v 0.2 d -1.0 SD 16.0 | Moon SD 16.0

Day 6 noon Sun: v 0.2 d -1.0 SD 16.0 | Moon SD 15.9

SUN: OCTOBER 5 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0409	0529	0637	1658	1805	1925
70N	0418	0530	0631	1704	1804	1916
68N	0426	0531	0627	1708	1803	1908
66N	0432	0532	0623	1712	1803	1903
64N	0437	0533	0620	1715	1803	1858
62N	0441	0533	0617	1718	1802	1854
60N	0445	0533	0615	1721	1802	1850
58N	0448	0534	0613	1723	1802	1847
56N	0451	0534	0611	1725	1802	1845
54N	0453	0534	0609	1727	1802	1843
52N	0455	0534	0607	1728	1802	1841
50N	0456	0534	0606	1730	1802	1839
45N	0459	0534	0603	1733	1803	1836
40N	0502	0533	0600	1736	1803	1834
35N	0503	0532	0558	1739	1804	1833
30N	0504	0532	0556	1741	1805	1832
25N	0504	0531	0554	1743	1806	1832
20N	0504	0530	0552	1745	1807	1832
15N	0504	0529	0550	1746	1808	1833
10N	0503	0527	0548	1748	1809	1834
05N	0502	0526	0547	1750	1811	1835
00N	0500	0524	0545	1752	1812	1837
05S	0458	0523	0543	1753	1814	1838
10S	0456	0521	0542	1755	1816	1841
15S	0453	0518	0540	1757	1819	1844
20S	0450	0516	0538	1759	1821	1847
25S	0446	0513	0536	1801	1824	1851
30S	0441	0510	0534	1804	1828	1856
35S	0436	0506	0531	1806	1832	1902
40S	0429	0501	0528	1809	1837	1909
45S	0420	0455	0525	1813	1843	1918
50S	0408	0448	0521	1817	1850	1930
55S	0353	0438	0515	1823	1900	1945
60S	0332	0426	0509	1830	1913	2007

MOON: RISE / SET | UTC HHMM

Lat	Day 4		Day 5		Day 6	
72N	--	--	--	--	--	1757
70N	--	--	2153	1834	--	1732
68N	--	--	2237	1749	--	1713
66N	2025	1805	2305	1719	--	1658
64N	2116	1713	2327	1656	--	1645
62N	2147	1641	2344	1638	--	1635
60N	2211	1617	2358	1623	--	1625
58N	2229	1558	--	1610	0010	1617
56N	2245	1542	--	1559	0021	1610
54N	2258	1528	--	1549	0030	1603
52N	2310	1516	--	1540	0038	1557
50N	2320	1505	--	1532	0045	1552
45N	2341	1442	--	1515	0101	1541
40N	2359	1424	--	1501	0113	1531
35N	--	1408	0013	1449	0124	1523
30N	--	1355	0026	1438	0133	1515
25N	--	1343	0037	1429	0142	1509
20N	--	1332	0047	1420	0149	1502
15N	--	1321	0057	1412	0157	1457
10N	0004	1312	0106	1404	0203	1451
05N	0015	1302	0114	1356	0210	1446
00N	0025	1253	0123	1349	0216	1440
05S	0035	1243	0131	1341	0223	1435
10S	0045	1234	0140	1334	0229	1430
15S	0056	1224	0149	1326	0236	1424
20S	0107	1213	0158	1317	0243	1418
25S	0119	1202	0208	1308	0251	1412
30S	0132	1150	0219	1258	0259	1405
35S	0147	1136	0231	1247	0308	1357
40S	0204	1119	0245	1234	0318	1348
45S	0224	1100	0301	1219	0330	1338
50S	0250	1035	0322	1200	0345	1325
55S	0324	1002	0348	1136	0403	1309
60S	0416	0911	0424	1101	0427	1247

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | OCTOBER 7 - OCTOBER 9

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
7	00	015 39.5	162 23.2	S21 18.3	247 52.0	N20 04.0	232 25.2	N15 11.5	004 23.1	N01 53.8
	01	030 42.0	177 26.1	S21 18.3	262 53.0	N20 03.7	247 27.3	N15 11.4	019 25.8	N01 53.7
	02	045 44.4	192 28.9	S21 18.3	277 54.0	N20 03.4	262 29.3	N15 11.3	034 28.4	N01 53.6
	03	060 46.9	207 31.8	S21 18.2	292 55.0	N20 03.0	277 31.4	N15 11.2	049 31.0	N01 53.6
	04	075 49.4	222 34.7	S21 18.2	307 56.0	N20 02.7	292 33.4	N15 11.0	064 33.7	N01 53.5
	05	090 51.8	237 37.6	S21 18.2	322 56.9	N20 02.4	307 35.5	N15 10.9	079 36.3	N01 53.4
	06	105 54.3	252 40.5	S21 18.2	337 57.9	N20 02.1	322 37.5	N15 10.8	094 39.0	N01 53.3
	07	120 56.8	267 43.4	S21 18.1	352 58.9	N20 01.8	337 39.6	N15 10.6	109 41.6	N01 53.3
	08	135 59.2	282 46.3	S21 18.1	007 59.9	N20 01.5	352 41.6	N15 10.5	124 44.3	N01 53.2
	09	151 01.7	297 49.2	S21 18.1	023 00.9	N20 01.2	007 43.6	N15 10.4	139 46.9	N01 53.1
	10	166 04.2	312 52.1	S21 18.0	038 01.9	N20 00.9	022 45.7	N15 10.3	154 49.6	N01 53.0
	11	181 06.6	327 55.0	S21 18.0	053 02.8	N20 00.6	037 47.7	N15 10.1	169 52.2	N01 52.9
	12	196 09.1	342 57.9	S21 18.0	068 03.8	N20 00.3	052 49.8	N15 10.0	184 54.8	N01 52.9
	13	211 11.6	358 00.8	S21 17.9	083 04.8	N20 00.0	067 51.8	N15 09.9	199 57.5	N01 52.8
	14	226 14.0	013 03.8	S21 17.9	098 05.8	N19 59.7	082 53.9	N15 09.7	215 00.1	N01 52.7
	15	241 16.5	028 06.7	S21 17.8	113 06.8	N19 59.4	097 55.9	N15 09.6	230 02.8	N01 52.6
	16	256 18.9	043 09.6	S21 17.8	128 07.8	N19 59.1	112 58.0	N15 09.5	245 05.4	N01 52.6
	17	271 21.4	058 12.6	S21 17.7	143 08.8	N19 58.8	128 00.0	N15 09.4	260 08.1	N01 52.5
	18	286 23.9	073 15.5	S21 17.7	158 09.7	N19 58.5	143 02.1	N15 09.2	275 10.7	N01 52.4
	19	301 26.3	088 18.4	S21 17.6	173 10.7	N19 58.2	158 04.1	N15 09.1	290 13.4	N01 52.3
	20	316 28.8	103 21.4	S21 17.6	188 11.7	N19 57.8	173 06.2	N15 09.0	305 16.0	N01 52.3
	21	331 31.3	118 24.3	S21 17.5	203 12.7	N19 57.5	188 08.2	N15 08.8	320 18.7	N01 52.2
	22	346 33.7	133 27.3	S21 17.4	218 13.7	N19 57.2	203 10.3	N15 08.7	335 21.3	N01 52.1
	23	001 36.2	148 30.2	S21 17.4	233 14.7	N19 56.9	218 12.3	N15 08.6	350 23.9	N01 52.0
8	00	016 38.7	163 33.2	S21 17.3	248 15.7	N19 56.6	233 14.3	N15 08.5	005 26.6	N01 52.0
	01	031 41.1	178 36.2	S21 17.2	263 16.7	N19 56.3	248 16.4	N15 08.3	020 29.2	N01 51.9
	02	046 43.6	193 39.1	S21 17.1	278 17.6	N19 56.0	263 18.4	N15 08.2	035 31.9	N01 51.8
	03	061 46.0	208 42.1	S21 17.1	293 18.6	N19 55.7	278 20.5	N15 08.1	050 34.5	N01 51.7
	04	076 48.5	223 45.1	S21 17.0	308 19.6	N19 55.4	293 22.5	N15 07.9	065 37.2	N01 51.6
	05	091 51.0	238 48.1	S21 16.9	323 20.6	N19 55.1	308 24.6	N15 07.8	080 39.8	N01 51.6
	06	106 53.4	253 51.0	S21 16.8	338 21.6	N19 54.8	323 26.6	N15 07.7	095 42.5	N01 51.5
	07	121 55.9	268 54.0	S21 16.8	353 22.6	N19 54.5	338 28.7	N15 07.6	110 45.1	N01 51.4
	08	136 58.4	283 57.0	S21 16.7	008 23.6	N19 54.2	353 30.7	N15 07.4	125 47.7	N01 51.3
	09	152 00.8	299 00.0	S21 16.6	023 24.6	N19 53.8	008 32.8	N15 07.3	140 50.4	N01 51.3
	10	167 03.3	314 03.0	S21 16.5	038 25.6	N19 53.5	023 34.8	N15 07.2	155 53.0	N01 51.2
	11	182 05.8	329 06.0	S21 16.4	053 26.6	N19 53.2	038 36.9	N15 07.1	170 55.7	N01 51.1
	12	197 08.2	344 09.0	S21 16.3	068 27.6	N19 52.9	053 38.9	N15 06.9	185 58.3	N01 51.0
	13	212 10.7	359 12.0	S21 16.2	083 28.6	N19 52.6	068 41.0	N15 06.8	201 01.0	N01 51.0
	14	227 13.2	014 15.0	S21 16.1	098 29.5	N19 52.3	083 43.0	N15 06.7	216 03.6	N01 50.9
	15	242 15.6	029 18.0	S21 16.0	113 30.5	N19 52.0	098 45.1	N15 06.5	231 06.3	N01 50.8
	16	257 18.1	044 21.1	S21 15.9	128 31.5	N19 51.7	113 47.1	N15 06.4	246 08.9	N01 50.7
	17	272 20.5	059 24.1	S21 15.8	143 32.5	N19 51.4	128 49.2	N15 06.3	261 11.5	N01 50.7
	18	287 23.0	074 27.1	S21 15.7	158 33.5	N19 51.1	143 51.2	N15 06.2	276 14.2	N01 50.6
	19	302 25.5	089 30.2	S21 15.6	173 34.5	N19 50.8	158 53.3	N15 06.0	291 16.8	N01 50.5
	20	317 27.9	104 33.2	S21 15.4	188 35.5	N19 50.4	173 55.3	N15 05.9	306 19.5	N01 50.4
	21	332 30.4	119 36.2	S21 15.3	203 36.5	N19 50.1	188 57.4	N15 05.8	321 22.1	N01 50.4
	22	347 32.9	134 39.3	S21 15.2	218 37.5	N19 49.8	203 59.5	N15 05.7	336 24.8	N01 50.3
	23	002 35.3	149 42.3	S21 15.1	233 38.5	N19 49.5	219 01.5	N15 05.5	351 27.4	N01 50.2
9	00	017 37.8	164 45.4	S21 15.0	248 39.5	N19 49.2	234 03.6	N15 05.4	006 30.1	N01 50.1
	01	032 40.3	179 48.4	S21 14.8	263 40.5	N19 48.9	249 05.6	N15 05.3	021 32.7	N01 50.0
	02	047 42.7	194 51.5	S21 14.7	278 41.5	N19 48.6	264 07.7	N15 05.1	036 35.3	N01 50.0
	03	062 45.2	209 54.5	S21 14.6	293 42.5	N19 48.3	279 09.7	N15 05.0	051 38.0	N01 49.9
	04	077 47.6	224 57.6	S21 14.4	308 43.5	N19 48.0	294 11.8	N15 04.9	066 40.6	N01 49.8
	05	092 50.1	240 00.7	S21 14.3	323 44.5	N19 47.6	309 13.8	N15 04.8	081 43.3	N01 49.7
	06	107 52.6	255 03.7	S21 14.2	338 45.5	N19 47.3	324 15.9	N15 04.6	096 45.9	N01 49.7
	07	122 55.0	270 06.8	S21 14.0	353 46.5	N19 47.0	339 17.9	N15 04.5	111 48.6	N01 49.6
	08	137 57.5	285 09.9	S21 13.9	008 47.5	N19 46.7	354 20.0	N15 04.4	126 51.2	N01 49.5
	09	153 00.0	300 13.0	S21 13.7	023 48.5	N19 46.4	009 22.0	N15 04.3	141 53.8	N01 49.4
	10	168 02.4	315 16.1	S21 13.6	038 49.5	N19 46.1	024 24.1	N15 04.1	156 56.5	N01 49.4
	11	183 04.9	330 19.2	S21 13.4	053 50.5	N19 45.8	039 26.1	N15 04.0	171 59.1	N01 49.3
	12	198 07.4	345 22.3	S21 13.3	068 51.5	N19 45.5	054 28.2	N15 03.9	187 01.8	N01 49.2
	13	213 09.8	000 25.4	S21 13.1	083 52.5	N19 45.2	069 30.2	N15 03.8	202 04.4	N01 49.1
	14	228 12.3	015 28.5	S21 13.0	098 53.5	N19 44.8	084 32.3	N15 03.6	217 07.1	N01 49.1
	15	243 14.8	030 31.6	S21 12.8	113 54.5	N19 44.5	099 34.4	N15 03.5	232 09.7	N01 49.0
	16	258 17.2	045 34.7	S21 12.6	128 55.5	N19 44.2	114 36.4	N15 03.4	247 12.4	N01 48.9
	17	273 19.7	060 37.8	S21 12.5	143 56.5	N19 43.9	129 38.5	N15 03.2	262 15.0	N01 48.8
	18	288 22.1	075 40.9	S21 12.3	158 57.5	N19 43.6	144 40.5	N15 03.1	277 17.6	N01 48.8
	19	303 24.6	090 44.0	S21 12.1	173 58.5	N19 43.3	159 42.6	N15 03.0	292 20.3	N01 48.7
	20	318 27.1	105 47.1	S21 12.0	188 59.5	N19 43.0	174 44.6	N15 02.9	307 22.9	N01 48.6
	21	333 29.5	120 50.3	S21 11.8	204 00.5	N19 42.7	189 46.7	N15 02.7	322 25.6	N01 48.5
	22	348 32.0	135 53.4	S21 11.6	219 01.5	N19 42.3	204 48.7	N15 02.6	337 28.2	N01 48.5
	23	003 34.5	150 56.5	S21 11.4	234 02.5	N19 42.0	219 50.8	N15 02.5	352 30.9	N01 48.4

Venus	Mars	Jupiter	Saturn
7: v 2.9 d 0.0	7: v 1.0 d -0.3	7: v 2.0 d -0.1	7: v 2.6 d -0.1
8: v 3.0 d 0.1	8: v 1.0 d -0.3	8: v 2.1 d -0.1	8: v 2.6 d -0.1
9: v 3.1 d 0.2	9: v 1.0 d -0.3	9: v 2.1 d -0.1	9: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.3	S40 11.6
Achernar	335 18.5	S57 05.9
Acrux	172 59.2	S63 14.8
Adhara	255 04.7	S29 00.2
Al Na'ir	027 30.8	S46 49.9
Aldebaran	290 37.8	N16 33.9
Alioth	166 12.3	N55 48.9
Alkaid	152 51.3	N49 10.8
Alnilam	275 36.2	S01 10.9
Alphard	217 46.5	S08 46.3
Alphecca	126 02.8	N26 37.6
Alpheratz	357 32.9	N29 14.5
Altair	061 58.5	N08 56.5
Ankaa	353 05.3	S42 09.5
Antares	112 14.3	S26 29.5
Arcturus	145 46.9	N19 02.7
Atria	107 07.5	S69 04.7
Avior	234 14.4	S59 35.4
Bellatrix	278 21.2	N06 22.5
Betelgeuse	270 50.4	N07 24.8
Canopus	263 51.7	S52 42.2
Capella	280 19.6	N46 01.4
Deneb	049 24.6	N45 22.9
Denebola	182 23.8	N14 25.4
Diphda	348 45.5	S17 50.2
Dubhe	193 39.8	N61 36.3
Elnath	277 59.9	N28 37.8
Eltanin	090 41.7	N51 29.4
Enif	033 37.2	N10 00.1
Fomalhaut	015 12.6	S29 28.7
Gacrux	171 50.6	S57 15.7
Gienah	175 42.4	S17 41.3
Hadar	148 34.6	S60 30.2
Hamal	327 49.2	N23 35.5
Kaus Australi	083 30.7	S34 22.4
Kochab	137 20.8	N74 02.8
Markab	013 28.2	N15 21.2
Menkar	314 04.4	N04 11.8
Menkent	147 56.3	S36 30.1
Miaplacidus	221 38.5	S69 49.3
Mirfak	308 25.8	N49 57.3
Nunki	075 46.0	S26 15.8
Peacock	053 03.3	S56 39.1
Polaris	312 52.7	N89 22.4
Pollux	243 15.6	N27 57.6
Procyon	244 49.4	N05 09.5
Rasalhague	095 57.3	N12 32.6
Regulus	207 33.2	N11 50.2
Rigel	281 02.3	S08 10.0
Rigil Kentaur	139 38.9	S60 56.8
Sabik	102 01.3	S15 45.4
Schedar	349 28.8	N56 41.2
Shaula	096 08.6	S37 07.4
Sirius	258 24.9	S16 44.9
Spica	158 21.1	S11 18.0
Suhail	222 45.5	S43 32.2
Vega	080 32.3	N38 48.8
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	147 00.8	1303
Mars	231 19.3	0726
Jupiter	216 30.7	0826
Saturn	348 50.1	2334

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
7	00	183 00.5	S05 25.4	225 07.1	N12 06.5	58.3	11.7	-14.8
	01	198 00.7	S05 26.4	239 37.8	N11 51.7	58.3	11.8	-14.9
	02	213 00.9	S05 27.3	254 08.6	N11 36.9	58.3	11.8	-14.9
	03	228 01.0	S05 28.3	268 39.4	N11 22.0	58.3	11.9	-15.0
	04	243 01.2	S05 29.2	283 10.3	N11 07.0	58.3	12.0	-15.0
	05	258 01.4	S05 30.2	297 41.3	N10 52.0	58.3	12.0	-15.0
	06	273 01.6	S05 31.1	312 12.3	N10 36.9	58.2	12.1	-15.1
	07	288 01.8	S05 32.1	326 43.4	N10 21.9	58.2	12.2	-15.1
	08	303 01.9	S05 33.1	341 14.6	N10 06.7	58.2	12.2	-15.2
	09	318 02.1	S05 34.0	355 45.9	N09 51.5	58.2	12.3	-15.2
	10	333 02.3	S05 35.0	010 17.2	N09 36.3	58.2	12.4	-15.3
	11	348 02.5	S05 35.9	024 48.5	N09 21.1	58.2	12.4	-15.3
	12	003 02.7	S05 36.9	039 20.0	N09 05.8	58.1	12.5	-15.3
	13	018 02.8	S05 37.8	053 51.5	N08 50.5	58.1	12.5	-15.4
	14	033 03.0	S05 38.8	068 23.0	N08 35.1	58.1	12.6	-15.4
	15	048 03.2	S05 39.8	082 54.6	N08 19.7	58.1	12.7	-15.4
	16	063 03.4	S05 40.7	097 26.3	N08 04.3	58.1	12.7	-15.5
	17	078 03.6	S05 41.7	111 58.0	N07 48.8	58.0	12.8	-15.5
	18	093 03.7	S05 42.6	126 29.8	N07 33.3	58.0	12.8	-15.5
	19	108 03.9	S05 43.6	141 01.6	N07 17.8	58.0	12.9	-15.5
	20	123 04.1	S05 44.5	155 33.5	N07 02.3	58.0	12.9	-15.6
	21	138 04.3	S05 45.5	170 05.4	N06 46.7	58.0	13.0	-15.6
	22	153 04.4	S05 46.4	184 37.4	N06 31.2	58.0	13.0	-15.6
	23	168 04.6	S05 47.4	199 09.4	N06 15.6	57.9	13.1	-15.6
8	00	183 04.8	S05 48.3	213 41.5	N05 59.9	57.9	13.1	-15.6
	01	198 05.0	S05 49.3	228 13.6	N05 44.3	57.9	13.2	-15.7
	02	213 05.2	S05 50.3	242 45.8	N05 28.6	57.9	13.2	-15.7
	03	228 05.3	S05 51.2	257 18.0	N05 12.9	57.9	13.3	-15.7
	04	243 05.5	S05 52.2	271 50.2	N04 57.3	57.8	13.3	-15.7
	05	258 05.7	S05 53.1	286 22.5	N04 41.6	57.8	13.3	-15.7
	06	273 05.9	S05 54.1	300 54.9	N04 25.8	57.8	13.4	-15.7
	07	288 06.0	S05 55.0	315 27.2	N04 10.1	57.8	13.4	-15.7
	08	303 06.2	S05 56.0	329 59.6	N03 54.4	57.8	13.4	-15.7
	09	318 06.4	S05 56.9	344 32.1	N03 38.6	57.8	13.5	-15.8
	10	333 06.6	S05 57.9	359 04.6	N03 22.9	57.7	13.5	-15.8
	11	348 06.7	S05 58.8	013 37.1	N03 07.1	57.7	13.5	-15.8
	12	003 06.9	S05 59.8	028 09.6	N02 51.4	57.7	13.6	-15.8
	13	018 07.1	S06 00.7	042 42.2	N02 35.6	57.7	13.6	-15.8
	14	033 07.3	S06 01.7	057 14.8	N02 19.8	57.7	13.6	-15.8
	15	048 07.4	S06 02.6	071 47.5	N02 04.1	57.6	13.7	-15.8
	16	063 07.6	S06 03.6	086 20.1	N01 48.3	57.6	13.7	-15.8
	17	078 07.8	S06 04.6	100 52.8	N01 32.5	57.6	13.7	-15.8
	18	093 07.9	S06 05.5	115 25.6	N01 16.8	57.6	13.7	-15.8
	19	108 08.1	S06 06.5	129 58.3	N01 01.0	57.6	13.8	-15.7
	20	123 08.3	S06 07.4	144 31.1	N00 45.3	57.5	13.8	-15.7
	21	138 08.5	S06 08.4	159 03.9	N00 29.5	57.5	13.8	-15.7
	22	153 08.6	S06 09.3	173 36.7	N00 13.8	57.5	13.8	-15.7
	23	168 08.8	S06 10.3	188 09.5	S00 01.9	57.5	13.9	-15.7
9	00	183 09.0	S06 11.2	202 42.4	S00 17.7	57.4	13.9	-15.7
	01	198 09.2	S06 12.2	217 15.3	S00 33.4	57.4	13.9	-15.7
	02	213 09.3	S06 13.1	231 48.2	S00 49.0	57.4	13.9	-15.7
	03	228 09.5	S06 14.1	246 21.1	S01 04.7	57.4	13.9	-15.7
	04	243 09.7	S06 15.0	260 54.0	S01 20.4	57.4	13.9	-15.6
	05	258 09.8	S06 16.0	275 26.9	S01 36.0	57.3	14.0	-15.6
	06	273 10.0	S06 16.9	289 59.9	S01 51.6	57.3	14.0	-15.6
	07	288 10.2	S06 17.9	304 32.9	S02 07.2	57.3	14.0	-15.6
	08	303 10.3	S06 18.8	319 05.8	S02 22.8	57.3	14.0	-15.6
	09	318 10.5	S06 19.8	333 38.8	S02 38.4	57.3	14.0	-15.5
	10	333 10.7	S06 20.7	348 11.8	S02 53.9	57.2	14.0	-15.5
	11	348 10.9	S06 21.7	002 44.8	S03 09.4	57.2	14.0	-15.5
	12	003 11.0	S06 22.6	017 17.8	S03 24.9	57.2	14.0	-15.5
	13	018 11.2	S06 23.6	031 50.8	S03 40.4	57.2	14.0	-15.4
	14	033 11.4	S06 24.5	046 23.8	S03 55.8	57.2	14.0	-15.4
	15	048 11.5	S06 25.5	060 56.9	S04 11.2	57.1	14.0	-15.4
	16	063 11.7	S06 26.4	075 29.9	S04 26.6	57.1	14.0	-15.3
	17	078 11.9	S06 27.4	090 02.9	S04 41.9	57.1	14.0	-15.3
	18	093 12.0	S06 28.3	104 35.9	S04 57.2	57.1	14.0	-15.3
	19	108 12.2	S06 29.3	119 08.9	S05 12.5	57.0	14.0	-15.2
	20	123 12.4	S06 30.2	133 42.0	S05 27.8	57.0	14.0	-15.2
	21	138 12.5	S06 31.2	148 15.0	S05 43.0	57.0	14.0	-15.2
	22	153 12.7	S06 32.1	162 48.0	S05 58.1	57.0	14.0	-15.1
	23	168 12.9	S06 33.0	177 21.0	S06 13.3	57.0	14.0	-15.1

Day 7 noon Sun: v 0.2 d -1.0 SD 16.0 | Moon SD 15.8

Day 8 noon Sun: v 0.2 d -1.0 SD 16.0 | Moon SD 15.7

Day 9 noon Sun: v 0.2 d -0.9 SD 16.0 | Moon SD 15.6

SUN: OCTOBER 8 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0423	0543	0651	1642	1750	1909
70N	0431	0542	0644	1650	1751	1901
68N	0437	0542	0638	1656	1751	1856
66N	0442	0542	0633	1701	1752	1851
64N	0446	0541	0629	1705	1752	1847
62N	0449	0541	0625	1709	1753	1844
60N	0452	0540	0622	1712	1753	1841
58N	0455	0540	0619	1715	1754	1839
56N	0457	0540	0617	1717	1754	1837
54N	0458	0539	0615	1719	1755	1836
52N	0500	0539	0613	1722	1755	1834
50N	0501	0538	0611	1724	1756	1833
45N	0503	0537	0607	1728	1757	1831
40N	0505	0536	0603	1731	1758	1830
35N	0505	0535	0600	1734	1800	1829
30N	0506	0533	0557	1737	1801	1829
25N	0506	0532	0555	1740	1803	1829
20N	0505	0531	0553	1742	1804	1830
15N	0504	0529	0550	1744	1806	1831
10N	0503	0527	0548	1747	1808	1832
05N	0501	0525	0546	1749	1810	1834
00N	0459	0523	0544	1751	1812	1836
05S	0457	0521	0542	1753	1814	1838
10S	0454	0519	0540	1755	1816	1841
15S	0451	0516	0538	1757	1819	1844
20S	0447	0513	0535	1800	1822	1848
25S	0443	0510	0533	1803	1826	1853
30S	0438	0506	0530	1805	1830	1858
35S	0431	0501	0527	1809	1834	1905
40S	0423	0456	0523	1812	1840	1913
45S	0414	0449	0519	1817	1847	1922
50S	0401	0441	0514	1822	1855	1935
55S	0345	0430	0508	1828	1906	1952
60S	0321	0416	0500	1837	1921	2016

MOON: RISE / SET | UTC HHMM

Lat	Day 7		Day 8		Day 9	
72N	0019	1710	0246	1634	0500	1601
70N	0041	1659	0254	1632	0457	1607
68N	0058	1650	0300	1631	0455	1612
66N	0111	1643	0305	1629	0453	1616
64N	0123	1636	0310	1628	0452	1620
62N	0132	1631	0313	1627	0451	1623
60N	0140	1626	0317	1626	0450	1626
58N	0147	1622	0319	1625	0449	1629
56N	0153	1618	0322	1625	0448	1631
54N	0159	1614	0324	1624	0447	1633
52N	0204	1611	0326	1623	0447	1635
50N	0208	1608	0328	1623	0446	1636
45N	0218	1602	0332	1621	0445	1640
40N	0226	1557	0336	1620	0444	1643
35N	0232	1552	0338	1619	0443	1646
30N	0238	1548	0341	1619	0442	1648
25N	0244	1544	0343	1618	0441	1650
20N	0249	1541	0345	1617	0440	1652
15N	0253	1538	0347	1616	0440	1654
10N	0258	1535	0349	1616	0439	1656
05N	0302	1532	0351	1615	0439	1658
00N	0306	1529	0353	1615	0438	1659
05S	0310	1526	0355	1614	0438	1701
10S	0315	1523	0357	1613	0437	1703
15S	0319	1519	0358	1613	0436	1704
20S	0323	1516	0400	1612	0436	1706
25S	0328	1513	0403	1611	0435	1708
30S	0333	1509	0405	1610	0435	1711
35S	0339	1504	0407	1609	0434	1713
40S	0346	1459	0410	1608	0433	1716
45S	0353	1454	0413	1607	0432	1719
50S	0402	1447	0417	1606	0431	1723
55S	0414	1438	0422	1604	0430	1727
60S	0428	1426	0428	1601	0428	1734

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | OCTOBER 10 - OCTOBER 12

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
10	00	018 36.9	165 59.7	S21 11.2	249 03.5	N19 41.7	234 52.9	N15 02.4	007 33.5	N01 48.3
	01	033 39.4	181 02.8	S21 11.1	264 04.5	N19 41.4	249 54.9	N15 02.2	022 36.2	N01 48.2
	02	048 41.9	196 06.0	S21 10.9	279 05.5	N19 41.1	264 57.0	N15 02.1	037 38.8	N01 48.2
	03	063 44.3	211 09.1	S21 10.7	294 06.5	N19 40.8	279 59.0	N15 02.0	052 41.4	N01 48.1
	04	078 46.8	226 12.3	S21 10.5	309 07.5	N19 40.5	295 01.1	N15 01.9	067 44.1	N01 48.0
	05	093 49.2	241 15.4	S21 10.3	324 08.5	N19 40.2	310 03.1	N15 01.7	082 46.7	N01 47.9
	06	108 51.7	256 18.6	S21 10.1	339 09.5	N19 39.8	325 05.2	N15 01.6	097 49.4	N01 47.8
	07	123 54.2	271 21.8	S21 09.9	354 10.6	N19 39.5	340 07.3	N15 01.5	112 52.0	N01 47.8
	08	138 56.6	286 24.9	S21 09.7	009 11.6	N19 39.2	355 09.3	N15 01.4	127 54.7	N01 47.7
	09	153 59.1	301 28.1	S21 09.5	024 12.6	N19 38.9	010 11.4	N15 01.2	142 57.3	N01 47.6
	10	169 01.6	316 31.3	S21 09.3	039 13.6	N19 38.6	025 13.4	N15 01.1	157 59.9	N01 47.5
	11	184 04.0	331 34.4	S21 09.1	054 14.6	N19 38.3	040 15.5	N15 01.0	173 02.6	N01 47.5
	12	199 06.5	346 37.6	S21 08.9	069 15.6	N19 38.0	055 17.6	N15 00.9	188 05.2	N01 47.4
	13	214 09.0	001 40.8	S21 08.6	084 16.6	N19 37.6	070 19.6	N15 00.7	203 07.9	N01 47.3
	14	229 11.4	016 44.0	S21 08.4	099 17.6	N19 37.3	085 21.7	N15 00.6	218 10.5	N01 47.2
	15	244 13.9	031 47.2	S21 08.2	114 18.6	N19 37.0	100 23.7	N15 00.5	233 13.2	N01 47.2
	16	259 16.4	046 50.4	S21 08.0	129 19.6	N19 36.7	115 25.8	N15 00.4	248 15.8	N01 47.1
	17	274 18.8	061 53.6	S21 07.8	144 20.6	N19 36.4	130 27.8	N15 00.2	263 18.5	N01 47.0
	18	289 21.3	076 56.8	S21 07.5	159 21.7	N19 36.1	145 29.9	N15 00.1	278 21.1	N01 46.9
	19	304 23.7	092 00.0	S21 07.3	174 22.7	N19 35.7	160 32.0	N15 00.0	293 23.7	N01 46.9
	20	319 26.2	107 03.2	S21 07.1	189 23.7	N19 35.4	175 34.0	N14 59.9	308 26.4	N01 46.8
	21	334 28.7	122 06.4	S21 06.8	204 24.7	N19 35.1	190 36.1	N14 59.7	323 29.0	N01 46.7
	22	349 31.1	137 09.6	S21 06.6	219 25.7	N19 34.8	205 38.1	N14 59.6	338 31.7	N01 46.6
	23	004 33.6	152 12.9	S21 06.4	234 26.7	N19 34.5	220 40.2	N14 59.5	353 34.3	N01 46.6
11	00	019 36.1	167 16.1	S21 06.1	249 27.7	N19 34.2	235 42.3	N14 59.4	008 37.0	N01 46.5
	01	034 38.5	182 19.3	S21 05.9	264 28.7	N19 33.9	250 44.3	N14 59.2	023 39.6	N01 46.4
	02	049 41.0	197 22.5	S21 05.6	279 29.8	N19 33.5	265 46.4	N14 59.1	038 42.2	N01 46.3
	03	064 43.5	212 25.8	S21 05.4	294 30.8	N19 33.2	280 48.5	N14 59.0	053 44.9	N01 46.3
	04	079 45.9	227 29.0	S21 05.1	309 31.8	N19 32.9	295 50.5	N14 58.9	068 47.5	N01 46.2
	05	094 48.4	242 32.3	S21 04.9	324 32.8	N19 32.6	310 52.6	N14 58.7	083 50.2	N01 46.1
	06	109 50.9	257 35.5	S21 04.6	339 33.8	N19 32.3	325 54.6	N14 58.6	098 52.8	N01 46.0
	07	124 53.3	272 38.8	S21 04.4	354 34.8	N19 32.0	340 56.7	N14 58.5	113 55.5	N01 46.0
	08	139 55.8	287 42.0	S21 04.1	009 35.8	N19 31.6	355 58.8	N14 58.4	128 58.1	N01 45.9
	09	154 58.2	302 45.3	S21 03.8	024 36.9	N19 31.3	011 00.8	N14 58.2	144 00.7	N01 45.8
	10	170 00.7	317 48.5	S21 03.6	039 37.9	N19 31.0	026 02.9	N14 58.1	159 03.4	N01 45.7
	11	185 03.2	332 51.8	S21 03.3	054 38.9	N19 30.7	041 04.9	N14 58.0	174 06.0	N01 45.7
	12	200 05.6	347 55.1	S21 03.0	069 39.9	N19 30.4	056 07.0	N14 57.9	189 08.7	N01 45.6
	13	215 08.1	002 58.3	S21 02.8	084 40.9	N19 30.1	071 09.1	N14 57.7	204 11.3	N01 45.5
	14	230 10.6	018 01.6	S21 02.5	099 41.9	N19 29.7	086 11.1	N14 57.6	219 14.0	N01 45.4
	15	245 13.0	033 04.9	S21 02.2	114 43.0	N19 29.4	101 13.2	N14 57.5	234 16.6	N01 45.4
	16	260 15.5	048 08.2	S21 01.9	129 44.0	N19 29.1	116 15.3	N14 57.4	249 19.2	N01 45.3
	17	275 18.0	063 11.4	S21 01.6	144 45.0	N19 28.8	131 17.3	N14 57.2	264 21.9	N01 45.2
	18	290 20.4	078 14.7	S21 01.3	159 46.0	N19 28.5	146 19.4	N14 57.1	279 24.5	N01 45.1
	19	305 22.9	093 18.0	S21 01.1	174 47.0	N19 28.1	161 21.5	N14 57.0	294 27.2	N01 45.1
	20	320 25.3	108 21.3	S21 00.8	189 48.1	N19 27.8	176 23.5	N14 56.9	309 29.8	N01 45.0
	21	335 27.8	123 24.6	S21 00.5	204 49.1	N19 27.5	191 25.6	N14 56.8	324 32.5	N01 44.9
	22	350 30.3	138 27.9	S21 00.2	219 50.1	N19 27.2	206 27.7	N14 56.6	339 35.1	N01 44.8
	23	005 32.7	153 31.2	S20 59.9	234 51.1	N19 26.9	221 29.7	N14 56.5	354 37.7	N01 44.8
12	00	020 35.2	168 34.5	S20 59.6	249 52.1	N19 26.6	236 31.8	N14 56.4	009 40.4	N01 44.7
	01	035 37.7	183 37.8	S20 59.3	264 53.2	N19 26.2	251 33.8	N14 56.3	024 43.0	N01 44.6
	02	050 40.1	198 41.1	S20 59.0	279 54.2	N19 25.9	266 35.9	N14 56.1	039 45.7	N01 44.5
	03	065 42.6	213 44.5	S20 58.7	294 55.2	N19 25.6	281 38.0	N14 56.0	054 48.3	N01 44.5
	04	080 45.1	228 47.8	S20 58.3	309 56.2	N19 25.3	296 40.0	N14 55.9	069 51.0	N01 44.4
	05	095 47.5	243 51.1	S20 58.0	324 57.2	N19 25.0	311 42.1	N14 55.8	084 53.6	N01 44.3
	06	110 50.0	258 54.4	S20 57.7	339 58.3	N19 24.6	326 44.2	N14 55.6	099 56.2	N01 44.2
	07	125 52.5	273 57.8	S20 57.4	354 59.3	N19 24.3	341 46.2	N14 55.5	114 58.9	N01 44.2
	08	140 54.9	289 01.1	S20 57.1	010 00.3	N19 24.0	356 48.3	N14 55.4	130 01.5	N01 44.1
	09	155 57.4	304 04.4	S20 56.7	025 01.3	N19 23.7	011 50.4	N14 55.3	145 04.2	N01 44.0
	10	170 59.8	319 07.8	S20 56.4	040 02.4	N19 23.4	026 52.4	N14 55.1	160 06.8	N01 43.9
	11	186 02.3	334 11.1	S20 56.1	055 03.4	N19 23.0	041 54.5	N14 55.0	175 09.5	N01 43.9
	12	201 04.8	349 14.5	S20 55.8	070 04.4	N19 22.7	056 56.6	N14 54.9	190 12.1	N01 43.8
	13	216 07.2	004 17.8	S20 55.4	085 05.4	N19 22.4	071 58.6	N14 54.8	205 14.7	N01 43.7
	14	231 09.7	019 21.2	S20 55.1	100 06.5	N19 22.1	087 00.7	N14 54.7	220 17.4	N01 43.7
	15	246 12.2	034 24.5	S20 54.7	115 07.5	N19 21.8	102 02.8	N14 54.5	235 20.0	N01 43.6
	16	261 14.6	049 27.9	S20 54.4	130 08.5	N19 21.5	117 04.8	N14 54.4	250 22.7	N01 43.5
	17	276 17.1	064 31.2	S20 54.1	145 09.5	N19 21.1	132 06.9	N14 54.3	265 25.3	N01 43.4
	18	291 19.6	079 34.6	S20 53.7	160 10.6	N19 20.8	147 09.0	N14 54.2	280 28.0	N01 43.4
	19	306 22.0	094 38.0	S20 53.4	175 11.6	N19 20.5	162 11.1	N14 54.0	295 30.6	N01 43.3
	20	321 24.5	109 41.4	S20 53.0	190 12.6	N19 20.2	177 13.1	N14 53.9	310 33.2	N01 43.2
	21	336 27.0	124 44.7	S20 52.7	205 13.7	N19 19.8	192 15.2	N14 53.8	325 35.9	N01 43.1
	22	351 29.4	139 48.1	S20 52.3	220 14.7	N19 19.5	207 17.3	N14 53.7	340 38.5	N01 43.1
	23	006 31.9	154 51.5	S20 51.9	235 15.7	N19 19.2	222 19.3	N14 53.6	355 41.2	N01 43.0

Venus	Mars	Jupiter	Saturn
10: v 3.2 d 0.2	10: v 1.0 d -0.3	10: v 2.1 d -0.1	10: v 2.6 d -0.1
11: v 3.3 d 0.3	11: v 1.0 d -0.3	11: v 2.1 d -0.1	11: v 2.6 d -0.1
12: v 3.4 d 0.3	12: v 1.0 d -0.3	12: v 2.1 d -0.1	12: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.3	S40 11.6
Achernar	335 18.5	S57 05.9
Acrux	172 59.2	S63 14.8
Adhara	255 04.7	S29 00.2
Al Na'ir	027 30.8	S46 49.9
Aldebaran	290 37.8	N16 33.9
Alioth	166 12.3	N55 48.9
Alkaid	152 51.3	N49 10.8
Alnilam	275 36.1	S01 10.9
Alphard	217 46.5	S08 46.3
Alphecca	126 02.8	N26 37.6
Alpheratz	357 32.9	N29 14.5
Altair	061 58.5	N08 56.5
Ankaa	353 05.3	S42 09.5
Antares	112 14.3	S26 29.5
Arcturus	145 46.9	N19 02.7
Atria	107 07.5	S69 04.7
Avior	234 14.3	S59 35.4
Bellatrix	278 21.2	N06 22.5
Betelgeuse	270 50.4	N07 24.8
Canopus	263 51.6	S52 42.2
Capella	280 19.5	N46 01.4
Deneb	049 24.7	N45 22.9
Denebola	182 23.8	N14 25.4
Diphda	348 45.5	S17 50.2
Dubhe	193 39.8	N61 36.3
Elnath	277 59.9	N28 37.8
Eltanin	090 41.7	N51 29.4
Enif	033 37.2	N10 00.1
Fomalhaut	015 12.6	S29 28.7
Gacrux	171 50.6	S57 15.7
Gienah	175 42.4	S17 41.3
Hadar	148 34.6	S60 30.2
Hamal	327 49.2	N23 35.5
Kaus Australi	083 30.7	S34 22.4
Kochab	137 20.9	N74 02.8
Markab	013 28.2	N15 21.2
Menkar	314 04.4	N04 11.8
Menkent	147 56.3	S36 30.1
Miaplacidus	221 38.4	S69 49.3
Mirfak	308 25.8	N49 57.3
Nunki	075 46.0	S26 15.8
Peacock	053 03.3	S56 39.1
Polaris	312 51.8	N89 22.5
Pollux	243 15.6	N27 57.6
Procyon	244 49.4	N05 09.5
Rasalhague	095 57.4	N12 32.6
Regulus	207 33.1	N11 50.2
Rigel	281 02.3	S08 10.1
Rigil Kentaur	139 38.9	S60 56.8
Sabik	102 01.3	S15 45.4
Schedar	349 28.8	N56 41.2
Shaula	096 08.6	S37 07.4
Sirius	258 24.9	S16 44.9
Spica	158 21.1	S11 18.0
Suhail	222 45.5	S43 32.2
Vega	080 32.3	N38 48.8
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	147 49.4	1248
Mars	229 34.3	0722
Jupiter	216 01.4	0816
Saturn	349 03.0	2321

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
10	00	183 13.1	S06 34.0	191 54.0	S06 28.4	56.9	14.0	-15.1
	01	198 13.2	S06 34.9	206 27.0	S06 43.4	56.9	14.0	-15.0
	02	213 13.4	S06 35.9	221 00.0	S06 58.4	56.9	14.0	-15.0
	03	228 13.6	S06 36.8	235 33.0	S07 13.4	56.9	14.0	-14.9
	04	243 13.7	S06 37.8	250 05.9	S07 28.3	56.8	14.0	-14.9
	05	258 13.9	S06 38.7	264 38.9	S07 43.2	56.8	13.9	-14.8
	06	273 14.0	S06 39.7	279 11.8	S07 58.0	56.8	13.9	-14.8
	07	288 14.2	S06 40.6	293 44.8	S08 12.8	56.8	13.9	-14.7
	08	303 14.4	S06 41.6	308 17.7	S08 27.6	56.7	13.9	-14.7
	09	318 14.5	S06 42.5	322 50.6	S08 42.3	56.7	13.9	-14.6
	10	333 14.7	S06 43.5	337 23.5	S08 56.9	56.7	13.9	-14.6
	11	348 14.9	S06 44.4	351 56.4	S09 11.5	56.7	13.9	-14.5
	12	003 15.0	S06 45.4	006 29.2	S09 26.0	56.7	13.8	-14.5
	13	018 15.2	S06 46.3	021 02.1	S09 40.5	56.6	13.8	-14.4
	14	033 15.4	S06 47.2	035 34.9	S09 55.0	56.6	13.8	-14.4
	15	048 15.5	S06 48.2	050 07.7	S10 09.3	56.6	13.8	-14.3
	16	063 15.7	S06 49.1	064 40.5	S10 23.7	56.6	13.8	-14.3
	17	078 15.9	S06 50.1	079 13.2	S10 37.9	56.5	13.7	-14.2
	18	093 16.0	S06 51.0	093 46.0	S10 52.1	56.5	13.7	-14.1
	19	108 16.2	S06 52.0	108 18.7	S11 06.3	56.5	13.7	-14.1
	20	123 16.4	S06 52.9	122 51.4	S11 20.3	56.5	13.7	-14.0
	21	138 16.5	S06 53.9	137 24.1	S11 34.4	56.4	13.6	-14.0
	22	153 16.7	S06 54.8	151 56.7	S11 48.3	56.4	13.6	-13.9
	23	168 16.8	S06 55.7	166 29.3	S12 02.2	56.4	13.6	-13.8
11	00	183 17.0	S06 56.7	181 01.9	S12 16.0	56.4	13.6	-13.8
	01	198 17.2	S06 57.6	195 34.5	S12 29.8	56.4	13.5	-13.7
	02	213 17.3	S06 58.6	210 07.0	S12 43.5	56.3	13.5	-13.6
	03	228 17.5	S06 59.5	224 39.5	S12 57.1	56.3	13.5	-13.6
	04	243 17.7	S07 00.5	239 12.0	S13 10.7	56.3	13.4	-13.5
	05	258 17.8	S07 01.4	253 44.5	S13 24.2	56.3	13.4	-13.4
	06	273 18.0	S07 02.3	268 16.9	S13 37.6	56.2	13.4	-13.3
	07	288 18.1	S07 03.3	282 49.3	S13 51.0	56.2	13.4	-13.3
	08	303 18.3	S07 04.2	297 21.6	S14 04.2	56.2	13.3	-13.2
	09	318 18.5	S07 05.2	311 53.9	S14 17.4	56.2	13.3	-13.1
	10	333 18.6	S07 06.1	326 26.2	S14 30.6	56.1	13.3	-13.1
	11	348 18.8	S07 07.1	340 58.5	S14 43.6	56.1	13.2	-13.0
	12	003 18.9	S07 08.0	355 30.7	S14 56.6	56.1	13.2	-12.9
	13	018 19.1	S07 08.9	010 02.9	S15 09.5	56.1	13.1	-12.8
	14	033 19.3	S07 09.9	024 35.0	S15 22.3	56.1	13.1	-12.7
	15	048 19.4	S07 10.8	039 07.1	S15 35.0	56.0	13.1	-12.7
	16	063 19.6	S07 11.8	053 39.2	S15 47.7	56.0	13.0	-12.6
	17	078 19.7	S07 12.7	068 11.2	S16 00.3	56.0	13.0	-12.5
	18	093 19.9	S07 13.7	082 43.2	S16 12.8	56.0	13.0	-12.4
	19	108 20.0	S07 14.6	097 15.2	S16 25.2	55.9	12.9	-12.3
	20	123 20.2	S07 15.5	111 47.1	S16 37.5	55.9	12.9	-12.2
	21	138 20.4	S07 16.5	126 19.0	S16 49.7	55.9	12.8	-12.2
	22	153 20.5	S07 17.4	140 50.9	S17 01.9	55.9	12.8	-12.1
	23	168 20.7	S07 18.4	155 22.7	S17 14.0	55.8	12.8	-12.0
12	00	183 20.8	S07 19.3	169 54.4	S17 25.9	55.8	12.7	-11.9
	01	198 21.0	S07 20.2	184 26.1	S17 37.8	55.8	12.7	-11.8
	02	213 21.2	S07 21.2	198 57.8	S17 49.6	55.8	12.6	-11.7
	03	228 21.3	S07 22.1	213 29.5	S18 01.3	55.8	12.6	-11.6
	04	243 21.5	S07 23.0	228 01.1	S18 13.0	55.7	12.6	-11.5
	05	258 21.6	S07 24.0	242 32.6	S18 24.5	55.7	12.5	-11.4
	06	273 21.8	S07 24.9	257 04.1	S18 35.9	55.7	12.5	-11.3
	07	288 21.9	S07 25.9	271 35.6	S18 47.2	55.7	12.4	-11.2
	08	303 22.1	S07 26.8	286 07.0	S18 58.5	55.6	12.4	-11.1
	09	318 22.2	S07 27.7	300 38.4	S19 09.6	55.6	12.3	-11.0
	10	333 22.4	S07 28.7	315 09.8	S19 20.7	55.6	12.3	-11.0
	11	348 22.6	S07 29.6	329 41.1	S19 31.6	55.6	12.3	-10.9
	12	003 22.7	S07 30.6	344 12.3	S19 42.5	55.6	12.2	-10.8
	13	018 22.9	S07 31.5	358 43.5	S19 53.2	55.5	12.2	-10.7
	14	033 23.0	S07 32.4	013 14.7	S20 03.9	55.5	12.1	-10.6
	15	048 23.2	S07 33.4	027 45.8	S20 14.4	55.5	12.1	-10.4
	16	063 23.3	S07 34.3	042 16.9	S20 24.9	55.5	12.0	-10.3
	17	078 23.5	S07 35.2	056 47.9	S20 35.2	55.4	12.0	-10.2
	18	093 23.6	S07 36.2	071 18.9	S20 45.5	55.4	11.9	-10.1
	19	108 23.8	S07 37.1	085 49.8	S20 55.6	55.4	11.9	-10.0
	20	123 23.9	S07 38.1	100 20.7	S21 05.6	55.4	11.9	-9.9
	21	138 24.1	S07 39.0	114 51.6	S21 15.6	55.4	11.8	-9.8
	22	153 24.2	S07 39.9	129 22.4	S21 25.4	55.3	11.8	-9.7
	23	168 24.4	S07 40.9	143 53.2	S21 35.1	55.3	11.7	-9.6

Day 10 noon Sun: v 0.2 d -0.9 SD 16.0 | Moon SD 15.4

Day 11 noon Sun: v 0.2 d -0.9 SD 16.0 | Moon SD 15.3

Day 12 noon Sun: v 0.2 d -0.9 SD 16.0 | Moon SD 15.1

SUN: OCTOBER 11 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0437	0556	0705	1627	1735	1853
70N	0443	0554	0656	1636	1737	1848
68N	0448	0552	0649	1643	1739	1843
66N	0452	0551	0643	1649	1741	1840
64N	0455	0550	0638	1654	1742	1837
62N	0457	0549	0633	1659	1743	1835
60N	0459	0548	0629	1703	1745	1833
58N	0501	0547	0626	1706	1746	1831
56N	0503	0546	0623	1710	1747	1830
54N	0504	0545	0620	1712	1748	1829
52N	0505	0544	0618	1715	1749	1828
50N	0506	0543	0615	1717	1750	1827
45N	0507	0541	0610	1722	1752	1826
40N	0508	0539	0606	1727	1754	1825
35N	0508	0537	0603	1730	1756	1825
30N	0507	0535	0559	1734	1758	1826
25N	0507	0533	0556	1737	1800	1826
20N	0506	0531	0554	1740	1802	1827
15N	0504	0529	0551	1742	1804	1829
10N	0503	0527	0548	1745	1806	1831
05N	0501	0525	0546	1747	1808	1833
00N	0458	0523	0543	1750	1811	1835
05S	0456	0520	0541	1753	1814	1838
10S	0453	0517	0538	1755	1816	1841
15S	0449	0514	0536	1758	1820	1845
20S	0445	0511	0533	1801	1823	1849
25S	0440	0507	0530	1804	1827	1854
30S	0434	0502	0527	1807	1832	1900
35S	0427	0457	0523	1811	1837	1907
40S	0418	0451	0519	1816	1843	1916
45S	0408	0444	0514	1821	1851	1927
50S	0354	0434	0508	1827	1900	1941
55S	0336	0423	0500	1834	1912	1959
60S	0310	0407	0451	1844	1929	2026

MOON: RISE / SET | UTC HHMM

Lat	Day 10		Day 11		Day 12	
72N	0713	1523	0946	1426	--	--
70N	0700	1539	0913	1501	1251	1301
68N	0649	1552	0850	1527	1110	1443
66N	0641	1603	0831	1546	1032	1523
64N	0633	1612	0817	1602	1005	1550
62N	0627	1619	0804	1616	0945	1612
60N	0622	1626	0754	1627	0928	1629
58N	0617	1632	0745	1637	0914	1644
56N	0613	1637	0737	1646	0903	1656
54N	0609	1642	0731	1653	0852	1707
52N	0606	1647	0724	1700	0843	1717
50N	0603	1651	0719	1707	0835	1726
45N	0556	1659	0707	1720	0817	1745
40N	0550	1706	0657	1731	0803	1800
35N	0546	1713	0649	1741	0751	1813
30N	0542	1718	0641	1750	0741	1824
25N	0538	1723	0635	1757	0732	1834
20N	0534	1728	0629	1804	0723	1844
15N	0531	1732	0623	1811	0716	1852
10N	0528	1736	0618	1817	0708	1901
05N	0525	1740	0613	1824	0701	1909
00N	0523	1744	0608	1830	0654	1917
05S	0520	1748	0603	1836	0647	1925
10S	0517	1752	0557	1842	0640	1933
15S	0514	1756	0552	1848	0632	1941
20S	0511	1800	0547	1855	0625	1950
25S	0508	1805	0541	1902	0617	2000
30S	0504	1810	0535	1910	0608	2010
35S	0500	1816	0528	1919	0558	2022
40S	0456	1822	0520	1929	0546	2035
45S	0451	1830	0511	1941	0533	2051
50S	0445	1839	0500	1955	0517	2111
55S	0438	1850	0446	2014	0457	2137
60S	0428	1906	0429	2039	0430	2213

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | OCTOBER 13 - OCTOBER 15

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
13	00	021 34.3	169 54.9	S20 51.6	250 16.7	N19 18.9	237 21.4	N14 53.4	010 43.8	N01 42.9
	01	036 36.8	184 58.3	S20 51.2	265 17.8	N19 18.6	252 23.5	N14 53.3	025 46.5	N01 42.8
	02	051 39.3	200 01.7	S20 50.8	280 18.8	N19 18.2	267 25.5	N14 53.2	040 49.1	N01 42.8
	03	066 41.7	215 05.1	S20 50.5	295 19.8	N19 17.9	282 27.6	N14 53.1	055 51.7	N01 42.7
	04	081 44.2	230 08.5	S20 50.1	310 20.9	N19 17.6	297 29.7	N14 52.9	070 54.4	N01 42.6
	05	096 46.7	245 11.9	S20 49.7	325 21.9	N19 17.3	312 31.7	N14 52.8	085 57.0	N01 42.5
	06	111 49.1	260 15.3	S20 49.4	340 22.9	N19 17.0	327 33.8	N14 52.7	100 59.7	N01 42.5
	07	126 51.6	275 18.7	S20 49.0	355 24.0	N19 16.6	342 35.9	N14 52.6	116 02.3	N01 42.4
	08	141 54.1	290 22.1	S20 48.6	010 25.0	N19 16.3	357 38.0	N14 52.5	131 04.9	N01 42.3
	09	156 56.5	305 25.5	S20 48.2	025 26.0	N19 16.0	012 40.0	N14 52.3	146 07.6	N01 42.2
	10	171 59.0	320 28.9	S20 47.8	040 27.1	N19 15.7	027 42.1	N14 52.2	161 10.2	N01 42.2
	11	187 01.4	335 32.3	S20 47.4	055 28.1	N19 15.4	042 44.2	N14 52.1	176 12.9	N01 42.1
	12	202 03.9	350 35.8	S20 47.0	070 29.1	N19 15.0	057 46.2	N14 52.0	191 15.5	N01 42.0
	13	217 06.4	005 39.2	S20 46.6	085 30.2	N19 14.7	072 48.3	N14 51.8	206 18.2	N01 41.9
	14	232 08.8	020 42.6	S20 46.2	100 31.2	N19 14.4	087 50.4	N14 51.7	221 20.8	N01 41.9
	15	247 11.3	035 46.1	S20 45.8	115 32.2	N19 14.1	102 52.5	N14 51.6	236 23.4	N01 41.8
	16	262 13.8	050 49.5	S20 45.4	130 33.3	N19 13.7	117 54.5	N14 51.5	251 26.1	N01 41.7
	17	277 16.2	065 52.9	S20 45.0	145 34.3	N19 13.4	132 56.6	N14 51.4	266 28.7	N01 41.7
	18	292 18.7	080 56.4	S20 44.6	160 35.3	N19 13.1	147 58.7	N14 51.2	281 31.4	N01 41.6
	19	307 21.2	095 59.8	S20 44.2	175 36.4	N19 12.8	163 00.8	N14 51.1	296 34.0	N01 41.5
	20	322 23.6	111 03.3	S20 43.8	190 37.4	N19 12.5	178 02.8	N14 51.0	311 36.6	N01 41.4
	21	337 26.1	126 06.7	S20 43.4	205 38.4	N19 12.1	193 04.9	N14 50.9	326 39.3	N01 41.4
	22	352 28.6	141 10.2	S20 43.0	220 39.5	N19 11.8	208 07.0	N14 50.8	341 41.9	N01 41.3
	23	007 31.0	156 13.6	S20 42.5	235 40.5	N19 11.5	223 09.0	N14 50.6	356 44.6	N01 41.2
14	00	022 33.5	171 17.1	S20 42.1	250 41.6	N19 11.2	238 11.1	N14 50.5	011 47.2	N01 41.1
	01	037 35.9	186 20.6	S20 41.7	265 42.6	N19 10.8	253 13.2	N14 50.4	026 49.9	N01 41.1
	02	052 38.4	201 24.0	S20 41.3	280 43.6	N19 10.5	268 15.3	N14 50.3	041 52.5	N01 41.0
	03	067 40.9	216 27.5	S20 40.8	295 44.7	N19 10.2	283 17.3	N14 50.1	056 55.1	N01 40.9
	04	082 43.3	231 31.0	S20 40.4	310 45.7	N19 09.9	298 19.4	N14 50.0	071 57.8	N01 40.8
	05	097 45.8	246 34.4	S20 40.0	325 46.7	N19 09.5	313 21.5	N14 49.9	087 00.4	N01 40.8
	06	112 48.3	261 37.9	S20 39.5	340 47.8	N19 09.2	328 23.6	N14 49.8	102 03.1	N01 40.7
	07	127 50.7	276 41.4	S20 39.1	355 48.8	N19 08.9	343 25.6	N14 49.7	117 05.7	N01 40.6
	08	142 53.2	291 44.9	S20 38.7	010 49.9	N19 08.6	358 27.7	N14 49.5	132 08.3	N01 40.6
	09	157 55.7	306 48.4	S20 38.2	025 50.9	N19 08.3	013 29.8	N14 49.4	147 11.0	N01 40.5
	10	172 58.1	321 51.9	S20 37.8	040 52.0	N19 07.9	028 31.9	N14 49.3	162 13.6	N01 40.4
	11	188 00.6	336 55.3	S20 37.3	055 53.0	N19 07.6	043 34.0	N14 49.2	177 16.3	N01 40.3
	12	203 03.1	351 58.8	S20 36.9	070 54.0	N19 07.3	058 36.0	N14 49.1	192 18.9	N01 40.3
	13	218 05.5	007 02.3	S20 36.4	085 55.1	N19 07.0	073 38.1	N14 48.9	207 21.5	N01 40.2
	14	233 08.0	022 05.8	S20 35.9	100 56.1	N19 06.6	088 40.2	N14 48.8	222 24.2	N01 40.1
	15	248 10.4	037 09.3	S20 35.5	115 57.2	N19 06.3	103 42.3	N14 48.7	237 26.8	N01 40.0
	16	263 12.9	052 12.9	S20 35.0	130 58.2	N19 06.0	118 44.3	N14 48.6	252 29.5	N01 40.0
	17	278 15.4	067 16.4	S20 34.5	145 59.2	N19 05.7	133 46.4	N14 48.5	267 32.1	N01 39.9
	18	293 17.8	082 19.9	S20 34.1	161 00.3	N19 05.3	148 48.5	N14 48.3	282 34.7	N01 39.8
	19	308 20.3	097 23.4	S20 33.6	176 01.3	N19 05.0	163 50.6	N14 48.2	297 37.4	N01 39.7
	20	323 22.8	112 26.9	S20 33.1	191 02.4	N19 04.7	178 52.6	N14 48.1	312 40.0	N01 39.7
	21	338 25.2	127 30.4	S20 32.7	206 03.4	N19 04.4	193 54.7	N14 48.0	327 42.7	N01 39.6
	22	353 27.7	142 34.0	S20 32.2	221 04.5	N19 04.0	208 56.8	N14 47.9	342 45.3	N01 39.5
	23	008 30.2	157 37.5	S20 31.7	236 05.5	N19 03.7	223 58.9	N14 47.7	357 48.0	N01 39.5
15	00	023 32.6	172 41.0	S20 31.2	251 06.6	N19 03.4	239 01.0	N14 47.6	012 50.6	N01 39.4
	01	038 35.1	187 44.5	S20 30.7	266 07.6	N19 03.1	254 03.0	N14 47.5	027 53.2	N01 39.3
	02	053 37.5	202 48.1	S20 30.2	281 08.7	N19 02.7	269 05.1	N14 47.4	042 55.9	N01 39.2
	03	068 40.0	217 51.6	S20 29.7	296 09.7	N19 02.4	284 07.2	N14 47.3	057 58.5	N01 39.2
	04	083 42.5	232 55.1	S20 29.3	311 10.8	N19 02.1	299 09.3	N14 47.1	073 01.2	N01 39.1
	05	098 44.9	247 58.7	S20 28.8	326 11.8	N19 01.8	314 11.4	N14 47.0	088 03.8	N01 39.0
	06	113 47.4	263 02.2	S20 28.3	341 12.8	N19 01.4	329 13.4	N14 46.9	103 06.4	N01 38.9
	07	128 49.9	278 05.8	S20 27.8	356 13.9	N19 01.1	344 15.5	N14 46.8	118 09.1	N01 38.9
	08	143 52.3	293 09.3	S20 27.3	011 14.9	N19 00.8	359 17.6	N14 46.7	133 11.7	N01 38.8
	09	158 54.8	308 12.9	S20 26.7	026 16.0	N19 00.5	014 19.7	N14 46.5	148 14.4	N01 38.7
	10	173 57.3	323 16.4	S20 26.2	041 17.0	N19 00.1	029 21.8	N14 46.4	163 17.0	N01 38.7
	11	188 59.7	338 20.0	S20 25.7	056 18.1	N18 59.8	044 23.8	N14 46.3	178 19.6	N01 38.6
	12	204 02.2	353 23.6	S20 25.2	071 19.1	N18 59.5	059 25.9	N14 46.2	193 22.3	N01 38.5
	13	219 04.7	008 27.1	S20 24.7	086 20.2	N18 59.1	074 28.0	N14 46.1	208 24.9	N01 38.4
	14	234 07.1	023 30.7	S20 24.2	101 21.2	N18 58.8	089 30.1	N14 45.9	223 27.6	N01 38.4
	15	249 09.6	038 34.3	S20 23.7	116 22.3	N18 58.5	104 32.2	N14 45.8	238 30.2	N01 38.3
	16	264 12.0	053 37.8	S20 23.1	131 23.4	N18 58.2	119 34.2	N14 45.7	253 32.8	N01 38.2
	17	279 14.5	068 41.4	S20 22.6	146 24.4	N18 57.8	134 36.3	N14 45.6	268 35.5	N01 38.1
	18	294 17.0	083 45.0	S20 22.1	161 25.5	N18 57.5	149 38.4	N14 45.5	283 38.1	N01 38.1
	19	309 19.4	098 48.6	S20 21.5	176 26.5	N18 57.2	164 40.5	N14 45.4	298 40.8	N01 38.0
	20	324 21.9	113 52.1	S20 21.0	191 27.6	N18 56.9	179 42.6	N14 45.2	313 43.4	N01 37.9
	21	339 24.4	128 55.7	S20 20.5	206 28.6	N18 56.5	194 44.7	N14 45.1	328 46.0	N01 37.9
	22	354 26.8	143 59.3	S20 19.9	221 29.7	N18 56.2	209 46.7	N14 45.0	343 48.7	N01 37.8
	23	009 29.3	159 02.9	S20 19.4	236 30.7	N18 55.9	224 48.8	N14 44.9	358 51.3	N01 37.7

Venus	Mars	Jupiter	Saturn
13: v 3.4 d 0.4	13: v 1.0 d -0.3	13: v 2.1 d -0.1	13: v 2.6 d -0.1
14: v 3.5 d 0.5	14: v 1.0 d -0.3	14: v 2.1 d -0.1	14: v 2.6 d -0.1
15: v 3.6 d 0.5	15: v 1.1 d -0.3	15: v 2.1 d -0.1	15: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.3	S40 11.6
Achernar	335 18.5	S57 05.9
Acrux	172 59.2	S63 14.8
Adhara	255 04.7	S29 00.2
Al Na'ir	027 30.8	S46 49.9
Aldebaran	290 37.7	N16 33.9
Alioth	166 12.3	N55 48.8
Alkaid	152 51.4	N49 10.8
Alnilam	275 36.1	S01 10.9
Alphard	217 46.5	S08 46.3
Alphecca	126 02.8	N26 37.6
Alpheratz	357 32.9	N29 14.5
Altair	061 58.5	N08 56.5
Ankaa	353 05.3	S42 09.5
Antares	112 14.3	S26 29.5
Arcturus	145 46.9	N19 02.7
Atria	107 07.6	S69 04.7
Avior	234 14.3	S59 35.4
Bellatrix	278 21.2	N06 22.5
Betelgeuse	270 50.4	N07 24.8
Canopus	263 51.6	S52 42.2
Capella	280 19.5	N46 01.4
Deneb	049 24.7	N45 22.9
Denebola	182 23.8	N14 25.4
Diphda	348 45.5	S17 50.2
Dubhe	193 39.8	N61 36.2
Elnath	277 59.9	N28 37.8
Eltanin	090 41.7	N51 29.4
Enif	033 37.2	N10 00.1
Fomalhaut	015 12.6	S29 28.8
Gacrux	171 50.6	S57 15.7
Gienah	175 42.4	S17 41.3
Hadar	148 34.6	S60 30.1
Hamal	327 49.2	N23 35.5
Kaus Australi	083 30.7	S34 22.4
Kochab	137 20.9	N74 02.8
Markab	013 28.2	N15 21.2
Menkar	314 04.3	N04 11.8
Menkent	147 56.3	S36 30.1
Miaplacidus	221 38.4	S69 49.3
Mirfak	308 25.7	N49 57.4
Nunki	075 46.0	S26 15.8
Peacock	053 03.3	S56 39.1
Polaris	312 50.6	N89 22.5
Pollux	243 15.6	N27 57.6
Procyon	244 49.3	N05 09.5
Rasalhague	095 57.4	N12 32.6
Regulus	207 33.1	N11 50.2
Rigel	281 02.3	S08 10.1
Rigil Kentaur	139 38.9	S60 56.8
Sabik	102 01.3	S15 45.4
Schedar	349 28.8	N56 41.2
Shaula	096 08.6	S37 07.4
Sirius	258 24.9	S16 45.0
Spica	158 21.1	S11 18.0
Suhail	222 45.4	S43 32.2
Vega	080 32.3	N38 48.8
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	148 55.8	1232
Mars	227 51.0	0717
Jupiter	215 33.0	0806
Saturn	349 15.9	2309

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
13	00	183 24.5	S07 41.8	158 23.9	S21 44.7	55.3	11.7	-9.5
	01	198 24.7	S07 42.7	172 54.6	S21 54.2	55.3	11.6	-9.4
	02	213 24.9	S07 43.7	187 25.2	S22 03.6	55.3	11.6	-9.3
	03	228 25.0	S07 44.6	201 55.8	S22 12.9	55.2	11.5	-9.2
	04	243 25.2	S07 45.5	216 26.3	S22 22.0	55.2	11.5	-9.1
	05	258 25.3	S07 46.5	230 56.8	S22 31.1	55.2	11.5	-8.9
	06	273 25.5	S07 47.4	245 27.3	S22 40.0	55.2	11.4	-8.8
	07	288 25.6	S07 48.3	259 57.7	S22 48.8	55.2	11.4	-8.7
	08	303 25.8	S07 49.3	274 28.0	S22 57.5	55.1	11.3	-8.6
	09	318 25.9	S07 50.2	288 58.4	S23 06.1	55.1	11.3	-8.5
	10	333 26.1	S07 51.1	303 28.6	S23 14.6	55.1	11.2	-8.4
	11	348 26.2	S07 52.1	317 58.9	S23 23.0	55.1	11.2	-8.2
	12	003 26.4	S07 53.0	332 29.1	S23 31.2	55.1	11.2	-8.1
	13	018 26.5	S07 53.9	346 59.2	S23 39.4	55.0	11.1	-8.0
	14	033 26.7	S07 54.9	001 29.3	S23 47.4	55.0	11.1	-7.9
	15	048 26.8	S07 55.8	015 59.4	S23 55.3	55.0	11.0	-7.8
	16	063 26.9	S07 56.7	030 29.4	S24 03.0	55.0	11.0	-7.7
	17	078 27.1	S07 57.7	044 59.4	S24 10.7	55.0	10.9	-7.5
	18	093 27.2	S07 58.6	059 29.4	S24 18.2	55.0	10.9	-7.4
	19	108 27.4	S07 59.5	073 59.3	S24 25.6	54.9	10.9	-7.3
	20	123 27.5	S08 00.5	088 29.1	S24 32.9	54.9	10.8	-7.2
	21	138 27.7	S08 01.4	102 59.0	S24 40.1	54.9	10.8	-7.0
	22	153 27.8	S08 02.3	117 28.8	S24 47.1	54.9	10.8	-6.9
	23	168 28.0	S08 03.3	131 58.5	S24 54.0	54.9	10.7	-6.8
14	00	183 28.1	S08 04.2	146 28.2	S25 00.8	54.8	10.7	-6.7
	01	198 28.3	S08 05.1	160 57.9	S25 07.5	54.8	10.6	-6.5
	02	213 28.4	S08 06.0	175 27.6	S25 14.1	54.8	10.6	-6.4
	03	228 28.6	S08 07.0	189 57.2	S25 20.5	54.8	10.6	-6.3
	04	243 28.7	S08 07.9	204 26.7	S25 26.8	54.8	10.5	-6.2
	05	258 28.9	S08 08.8	218 56.3	S25 32.9	54.8	10.5	-6.0
	06	273 29.0	S08 09.8	233 25.8	S25 39.0	54.7	10.5	-5.9
	07	288 29.1	S08 10.7	247 55.2	S25 44.9	54.7	10.4	-5.8
	08	303 29.3	S08 11.6	262 24.7	S25 50.7	54.7	10.4	-5.7
	09	318 29.4	S08 12.6	276 54.1	S25 56.3	54.7	10.4	-5.5
	10	333 29.6	S08 13.5	291 23.5	S26 01.8	54.7	10.3	-5.4
	11	348 29.7	S08 14.4	305 52.8	S26 07.2	54.7	10.3	-5.3
	12	003 29.9	S08 15.3	320 22.1	S26 12.5	54.7	10.3	-5.1
	13	018 30.0	S08 16.3	334 51.4	S26 17.6	54.6	10.3	-5.0
	14	033 30.2	S08 17.2	349 20.7	S26 22.6	54.6	10.2	-4.9
	15	048 30.3	S08 18.1	003 49.9	S26 27.5	54.6	10.2	-4.7
	16	063 30.4	S08 19.1	018 19.1	S26 32.3	54.6	10.2	-4.6
	17	078 30.6	S08 20.0	032 48.3	S26 36.9	54.6	10.2	-4.5
	18	093 30.7	S08 20.9	047 17.5	S26 41.3	54.6	10.1	-4.3
	19	108 30.9	S08 21.8	061 46.6	S26 45.7	54.6	10.1	-4.2
	20	123 31.0	S08 22.8	076 15.7	S26 49.9	54.5	10.1	-4.1
	21	138 31.2	S08 23.7	090 44.8	S26 54.0	54.5	10.1	-3.9
	22	153 31.3	S08 24.6	105 13.9	S26 57.9	54.5	10.1	-3.8
	23	168 31.4	S08 25.5	119 42.9	S27 01.7	54.5	10.0	-3.7
15	00	183 31.6	S08 26.5	134 12.0	S27 05.4	54.5	10.0	-3.5
	01	198 31.7	S08 27.4	148 41.0	S27 09.0	54.5	10.0	-3.4
	02	213 31.9	S08 28.3	163 10.0	S27 12.4	54.5	10.0	-3.3
	03	228 32.0	S08 29.2	177 39.0	S27 15.7	54.5	10.0	-3.1
	04	243 32.1	S08 30.2	192 07.9	S27 18.8	54.4	10.0	-3.0
	05	258 32.3	S08 31.1	206 36.9	S27 21.8	54.4	9.9	-2.9
	06	273 32.4	S08 32.0	221 05.8	S27 24.7	54.4	9.9	-2.7
	07	288 32.6	S08 32.9	235 34.8	S27 27.4	54.4	9.9	-2.6
	08	303 32.7	S08 33.9	250 03.7	S27 30.0	54.4	9.9	-2.5
	09	318 32.8	S08 34.8	264 32.6	S27 32.5	54.4	9.9	-2.3
	10	333 33.0	S08 35.7	279 01.5	S27 34.8	54.4	9.9	-2.2
	11	348 33.1	S08 36.6	293 30.4	S27 37.0	54.4	9.9	-2.1
	12	003 33.3	S08 37.6	307 59.2	S27 39.1	54.4	9.9	-1.9
	13	018 33.4	S08 38.5	322 28.1	S27 41.0	54.4	9.9	-1.8
	14	033 33.5	S08 39.4	336 57.0	S27 42.8	54.3	9.9	-1.7
	15	048 33.7	S08 40.3	351 25.9	S27 44.4	54.3	9.9	-1.5
	16	063 33.8	S08 41.3	005 54.7	S27 45.9	54.3	9.9	-1.4
	17	078 33.9	S08 42.2	020 23.6	S27 47.3	54.3	9.9	-1.2
	18	093 34.1	S08 43.1	034 52.5	S27 48.6	54.3	9.9	-1.1
	19	108 34.2	S08 44.0	049 21.3	S27 49.7	54.3	9.9	-1.0
	20	123 34.3	S08 44.9	063 50.2	S27 50.6	54.3	9.9	-0.8
	21	138 34.5	S08 45.9	078 19.1	S27 51.5	54.3	9.9	-0.7
	22	153 34.6	S08 46.8	092 47.9	S27 52.2	54.3	9.9	-0.6
	23	168 34.8	S08 47.7	107 16.8	S27 52.7	54.3	9.9	-0.4

Day 13 noon Sun: v 0.1 d -0.9 SD 16.0 | Moon SD 15.0

Day 14 noon Sun: v 0.1 d -0.9 SD 16.0 | Moon SD 14.9

Day 15 noon Sun: v 0.1 d -0.9 SD 16.0 | Moon SD 14.8

SUN: OCTOBER 14 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0451	0609	0719	1611	1721	1839
70N	0455	0606	0709	1622	1724	1835
68N	0458	0603	0700	1631	1727	1831
66N	0501	0600	0653	1638	1730	1829
64N	0503	0558	0647	1644	1732	1827
62N	0505	0556	0641	1649	1734	1825
60N	0506	0555	0637	1654	1736	1824
58N	0508	0553	0633	1658	1738	1823
56N	0508	0552	0629	1702	1739	1822
54N	0509	0550	0626	1705	1741	1822
52N	0510	0549	0623	1708	1742	1821
50N	0510	0548	0620	1711	1744	1821
45N	0511	0545	0614	1717	1747	1821
40N	0511	0542	0609	1722	1749	1821
35N	0510	0540	0605	1727	1752	1821
30N	0509	0537	0601	1730	1754	1822
25N	0508	0535	0558	1734	1757	1824
20N	0507	0532	0554	1737	1759	1825
15N	0505	0530	0551	1740	1802	1827
10N	0503	0527	0548	1743	1805	1829
05N	0500	0525	0546	1746	1807	1832
00N	0458	0522	0543	1749	1810	1834
05S	0454	0519	0540	1752	1813	1838
10S	0451	0516	0537	1755	1817	1841
15S	0447	0512	0534	1758	1820	1845
20S	0442	0508	0531	1802	1824	1850
25S	0437	0504	0527	1805	1829	1856
30S	0430	0459	0523	1809	1834	1902
35S	0423	0453	0519	1814	1840	1910
40S	0413	0446	0514	1819	1847	1920
45S	0402	0438	0508	1825	1855	1931
50S	0347	0428	0501	1832	1905	1947
55S	0327	0415	0453	1840	1919	2007
60S	0259	0357	0442	1852	1937	2036

MOON: RISE / SET | UTC HHMM

Lat	Day 13		Day 14		Day 15	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	1322	1414	--	--	--	--
64N	1205	1531	--	--	--	--
62N	1129	1608	1318	1604	1508	1601
60N	1104	1634	1236	1646	1356	1713
58N	1043	1655	1208	1714	1321	1748
56N	1027	1712	1146	1736	1255	1814
54N	1013	1727	1129	1755	1235	1834
52N	1000	1740	1113	1810	1218	1851
50N	0950	1751	1100	1823	1204	1906
45N	0927	1814	1033	1851	1134	1936
40N	0909	1833	1012	1913	1111	1959
35N	0854	1849	0955	1931	1052	2018
30N	0841	1903	0940	1946	1036	2034
25N	0829	1915	0926	2000	1022	2049
20N	0819	1926	0914	2012	1008	2102
15N	0809	1937	0903	2024	0956	2114
10N	0800	1947	0852	2035	0945	2126
05N	0751	1956	0842	2046	0934	2137
00N	0742	2006	0832	2056	0923	2148
05S	0733	2015	0822	2107	0912	2159
10S	0724	2025	0812	2118	0901	2210
15S	0715	2035	0801	2129	0850	2222
20S	0706	2046	0750	2141	0838	2234
25S	0655	2057	0738	2153	0825	2247
30S	0644	2109	0725	2207	0811	2302
35S	0632	2123	0710	2223	0755	2318
40S	0617	2140	0653	2241	0736	2337
45S	0600	2159	0633	2303	0714	--
50S	0539	2224	0608	2331	0645	--
55S	0512	2257	0534	--	0606	0010
60S	0434	2348	0442	--	0501	0115

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | OCTOBER 16 - OCTOBER 18

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
16	00	024 31.8	174 06.5	S20 18.9	251 31.8	N18 55.6	239 50.9	N14 44.8	013 53.9	N01 37.6
	01	039 34.2	189 10.1	S20 18.3	266 32.8	N18 55.2	254 53.0	N14 44.6	028 56.6	N01 37.6
	02	054 36.7	204 13.7	S20 17.8	281 33.9	N18 54.9	269 55.1	N14 44.5	043 59.2	N01 37.5
	03	069 39.2	219 17.3	S20 17.2	296 34.9	N18 54.6	284 57.2	N14 44.4	059 01.9	N01 37.4
	04	084 41.6	234 20.9	S20 16.7	311 36.0	N18 54.2	299 59.2	N14 44.3	074 04.5	N01 37.4
	05	099 44.1	249 24.5	S20 16.1	326 37.1	N18 53.9	315 01.3	N14 44.2	089 07.1	N01 37.3
	06	114 46.5	264 28.1	S20 15.5	341 38.1	N18 53.6	330 03.4	N14 44.1	104 09.8	N01 37.2
	07	129 49.0	279 31.7	S20 15.0	356 39.2	N18 53.3	345 05.5	N14 43.9	119 12.4	N01 37.1
	08	144 51.5	294 35.3	S20 14.4	011 40.2	N18 52.9	000 07.6	N14 43.8	134 15.1	N01 37.1
	09	159 53.9	309 38.9	S20 13.9	026 41.3	N18 52.6	015 09.7	N14 43.7	149 17.7	N01 37.0
	10	174 56.4	324 42.6	S20 13.3	041 42.3	N18 52.3	030 11.7	N14 43.6	164 20.3	N01 36.9
	11	189 58.9	339 46.2	S20 12.7	056 43.4	N18 52.0	045 13.8	N14 43.5	179 23.0	N01 36.9
	12	205 01.3	354 49.8	S20 12.1	071 44.5	N18 51.6	060 15.9	N14 43.3	194 25.6	N01 36.8
	13	220 03.8	009 53.4	S20 11.6	086 45.5	N18 51.3	075 18.0	N14 43.2	209 28.3	N01 36.7
	14	235 06.3	024 57.0	S20 11.0	101 46.6	N18 51.0	090 20.1	N14 43.1	224 30.9	N01 36.6
	15	250 08.7	040 00.7	S20 10.4	116 47.6	N18 50.6	105 22.2	N14 43.0	239 33.5	N01 36.6
	16	265 11.2	055 04.3	S20 09.8	131 48.7	N18 50.3	120 24.3	N14 42.9	254 36.2	N01 36.5
	17	280 13.7	070 07.9	S20 09.2	146 49.8	N18 50.0	135 26.3	N14 42.8	269 38.8	N01 36.4
	18	295 16.1	085 11.6	S20 08.6	161 50.8	N18 49.7	150 28.4	N14 42.6	284 41.4	N01 36.4
	19	310 18.6	100 15.2	S20 08.1	176 51.9	N18 49.3	165 30.5	N14 42.5	299 44.1	N01 36.3
	20	325 21.0	115 18.8	S20 07.5	191 52.9	N18 49.0	180 32.6	N14 42.4	314 46.7	N01 36.2
	21	340 23.5	130 22.5	S20 06.9	206 54.0	N18 48.7	195 34.7	N14 42.3	329 49.4	N01 36.1
	22	355 26.0	145 26.1	S20 06.3	221 55.1	N18 48.3	210 36.8	N14 42.2	344 52.0	N01 36.1
	23	010 28.4	160 29.8	S20 05.7	236 56.1	N18 48.0	225 38.9	N14 42.0	359 54.6	N01 36.0
17	00	025 30.9	175 33.4	S20 05.1	251 57.2	N18 47.7	240 41.0	N14 41.9	014 57.3	N01 35.9
	01	040 33.4	190 37.1	S20 04.5	266 58.3	N18 47.4	255 43.0	N14 41.8	029 59.9	N01 35.8
	02	055 35.8	205 40.7	S20 03.9	281 59.3	N18 47.0	270 45.1	N14 41.7	045 02.6	N01 35.8
	03	070 38.3	220 44.4	S20 03.2	297 00.4	N18 46.7	285 47.2	N14 41.6	060 05.2	N01 35.7
	04	085 40.8	235 48.0	S20 02.6	312 01.5	N18 46.4	300 49.3	N14 41.5	075 07.8	N01 35.6
	05	100 43.2	250 51.7	S20 02.0	327 02.5	N18 46.0	315 51.4	N14 41.3	090 10.5	N01 35.6
	06	115 45.7	265 55.3	S20 01.4	342 03.6	N18 45.7	330 53.5	N14 41.2	105 13.1	N01 35.5
	07	130 48.1	280 59.0	S20 00.8	357 04.6	N18 45.4	345 55.6	N14 41.1	120 15.7	N01 35.4
	08	145 50.6	296 02.7	S20 00.2	012 05.7	N18 45.0	000 57.7	N14 41.0	135 18.4	N01 35.4
	09	160 53.1	311 06.3	S19 59.5	027 06.8	N18 44.7	015 59.8	N14 40.9	150 21.0	N01 35.3
	10	175 55.5	326 10.0	S19 58.9	042 07.8	N18 44.4	031 01.8	N14 40.8	165 23.7	N01 35.2
	11	190 58.0	341 13.7	S19 58.3	057 08.9	N18 44.1	046 03.9	N14 40.6	180 26.3	N01 35.1
	12	206 00.5	356 17.3	S19 57.7	072 10.0	N18 43.7	061 06.0	N14 40.5	195 28.9	N01 35.1
	13	221 02.9	011 21.0	S19 57.0	087 11.0	N18 43.4	076 08.1	N14 40.4	210 31.6	N01 35.0
	14	236 05.4	026 24.7	S19 56.4	102 12.1	N18 43.1	091 10.2	N14 40.3	225 34.2	N01 34.9
	15	251 07.9	041 28.4	S19 55.7	117 13.2	N18 42.7	106 12.3	N14 40.2	240 36.8	N01 34.9
	16	266 10.3	056 32.1	S19 55.1	132 14.3	N18 42.4	121 14.4	N14 40.1	255 39.5	N01 34.8
	17	281 12.8	071 35.7	S19 54.5	147 15.3	N18 42.1	136 16.5	N14 39.9	270 42.1	N01 34.7
	18	296 15.3	086 39.4	S19 53.8	162 16.4	N18 41.7	151 18.6	N14 39.8	285 44.8	N01 34.6
	19	311 17.7	101 43.1	S19 53.2	177 17.5	N18 41.4	166 20.7	N14 39.7	300 47.4	N01 34.6
	20	326 20.2	116 46.8	S19 52.5	192 18.5	N18 41.1	181 22.8	N14 39.6	315 50.0	N01 34.5
	21	341 22.6	131 50.5	S19 51.9	207 19.6	N18 40.8	196 24.8	N14 39.5	330 52.7	N01 34.4
	22	356 25.1	146 54.2	S19 51.2	222 20.7	N18 40.4	211 26.9	N14 39.4	345 55.3	N01 34.4
	23	011 27.6	161 57.9	S19 50.6	237 21.7	N18 40.1	226 29.0	N14 39.3	000 57.9	N01 34.3
18	00	026 30.0	177 01.6	S19 49.9	252 22.8	N18 39.8	241 31.1	N14 39.1	016 00.6	N01 34.2
	01	041 32.5	192 05.3	S19 49.2	267 23.9	N18 39.4	256 33.2	N14 39.0	031 03.2	N01 34.1
	02	056 35.0	207 09.0	S19 48.6	282 25.0	N18 39.1	271 35.3	N14 38.9	046 05.9	N01 34.1
	03	071 37.4	222 12.7	S19 47.9	297 26.0	N18 38.8	286 37.4	N14 38.8	061 08.5	N01 34.0
	04	086 39.9	237 16.4	S19 47.2	312 27.1	N18 38.4	301 39.5	N14 38.7	076 11.1	N01 33.9
	05	101 42.4	252 20.1	S19 46.6	327 28.2	N18 38.1	316 41.6	N14 38.6	091 13.8	N01 33.9
	06	116 44.8	267 23.8	S19 45.9	342 29.3	N18 37.8	331 43.7	N14 38.4	106 16.4	N01 33.8
	07	131 47.3	282 27.5	S19 45.2	357 30.3	N18 37.4	346 45.8	N14 38.3	121 19.0	N01 33.7
	08	146 49.8	297 31.2	S19 44.5	012 31.4	N18 37.1	001 47.9	N14 38.2	136 21.7	N01 33.7
	09	161 52.2	312 34.9	S19 43.8	027 32.5	N18 36.8	016 50.0	N14 38.1	151 24.3	N01 33.6
	10	176 54.7	327 38.6	S19 43.2	042 33.6	N18 36.4	031 52.1	N14 38.0	166 26.9	N01 33.5
	11	191 57.1	342 42.3	S19 42.5	057 34.6	N18 36.1	046 54.2	N14 37.9	181 29.6	N01 33.4
	12	206 59.6	357 46.1	S19 41.8	072 35.7	N18 35.8	061 56.3	N14 37.8	196 32.2	N01 33.4
	13	222 02.1	012 49.8	S19 41.1	087 36.8	N18 35.5	076 58.4	N14 37.6	211 34.9	N01 33.3
	14	237 04.5	027 53.5	S19 40.4	102 37.9	N18 35.1	092 00.4	N14 37.5	226 37.5	N01 33.2
	15	252 07.0	042 57.2	S19 39.7	117 38.9	N18 34.8	107 02.5	N14 37.4	241 40.1	N01 33.2
	16	267 09.5	058 00.9	S19 39.0	132 40.0	N18 34.5	122 04.6	N14 37.3	256 42.8	N01 33.1
	17	282 11.9	073 04.7	S19 38.3	147 41.1	N18 34.1	137 06.7	N14 37.2	271 45.4	N01 33.0
	18	297 14.4	088 08.4	S19 37.6	162 42.2	N18 33.8	152 08.8	N14 37.1	286 48.0	N01 32.9
	19	312 16.9	103 12.1	S19 36.9	177 43.2	N18 33.5	167 10.9	N14 36.9	301 50.7	N01 32.9
	20	327 19.3	118 15.9	S19 36.2	192 44.3	N18 33.1	182 13.0	N14 36.8	316 53.3	N01 32.8
	21	342 21.8	133 19.6	S19 35.5	207 45.4	N18 32.8	197 15.1	N14 36.7	331 55.9	N01 32.7
	22	357 24.3	148 23.3	S19 34.8	222 46.5	N18 32.5	212 17.2	N14 36.6	346 58.6	N01 32.7
	23	012 26.7	163 27.0	S19 34.1	237 47.6	N18 32.1	227 19.3	N14 36.5	002 01.2	N01 32.6

Venus	Mars	Jupiter	Saturn
16: v 3.6 d 0.6	16: v 1.1 d -0.3	16: v 2.1 d -0.1	16: v 2.6 d -0.1
17: v 3.7 d 0.6	17: v 1.1 d -0.3	17: v 2.1 d -0.1	17: v 2.6 d -0.1
18: v 3.7 d 0.7	18: v 1.1 d -0.3	18: v 2.1 d -0.1	18: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.3	S40 11.6
Achernar	335 18.5	S57 05.9
Acrux	172 59.1	S63 14.8
Adhara	255 04.7	S29 00.2
Al Na'ir	027 30.8	S46 49.9
Aldebaran	290 37.7	N16 33.9
Alioth	166 12.3	N55 48.8
Alkaid	152 51.3	N49 10.8
Alnilam	275 36.1	S01 10.9
Alphard	217 46.5	S08 46.4
Alphecca	126 02.8	N26 37.6
Alpheratz	357 32.9	N29 14.5
Altair	061 58.5	N08 56.5
Ankaa	353 05.3	S42 09.5
Antares	112 14.3	S26 29.5
Arcturus	145 46.9	N19 02.7
Atria	107 07.6	S69 04.7
Avior	234 14.3	S59 35.4
Bellatrix	278 21.1	N06 22.5
Betelgeuse	270 50.4	N07 24.8
Canopus	263 51.6	S52 42.2
Capella	280 19.5	N46 01.4
Deneb	049 24.7	N45 22.9
Denebola	182 23.8	N14 25.4
Diphda	348 45.5	S17 50.2
Dubhe	193 39.8	N61 36.2
Elnath	277 59.8	N28 37.8
Eltanin	090 41.7	N51 29.4
Enif	033 37.2	N10 00.1
Fomalhaut	015 12.6	S29 28.8
Gacrux	171 50.6	S57 15.7
Gienah	175 42.4	S17 41.3
Hadar	148 34.6	S60 30.1
Hamal	327 49.2	N23 35.5
Kaus Australi	083 30.7	S34 22.3
Kochab	137 20.9	N74 02.7
Markab	013 28.2	N15 21.2
Menkar	314 04.3	N04 11.8
Menkent	147 56.3	S36 30.1
Miaplacidus	221 38.3	S69 49.3
Mirfak	308 25.7	N49 57.4
Nunki	075 46.0	S26 15.8
Peacock	053 03.3	S56 39.1
Polaris	312 49.6	N89 22.5
Pollux	243 15.5	N27 57.6
Procyon	244 49.3	N05 09.4
Rasalhague	095 57.4	N12 32.6
Regulus	207 33.1	N11 50.2
Rigel	281 02.3	S08 10.1
Rigil Kentaur	139 38.9	S60 56.8
Sabik	102 01.3	S15 45.4
Schedar	349 28.8	N56 41.2
Shaula	096 08.6	S37 07.4
Sirius	258 24.9	S16 45.0
Spica	158 21.1	S11 18.0
Suhail	222 45.4	S43 32.2
Vega	080 32.4	N38 48.8
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	150 16.9	1215
Mars	226 09.5	0712
Jupiter	215 05.6	0756
Saturn	349 28.5	2256

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
16	00	183 34.9	S08 48.6	121 45.7	S27 53.1	54.3	9.9	-0.3
	01	198 35.0	S08 49.5	136 14.6	S27 53.4	54.3	9.9	-0.2
	02	213 35.2	S08 50.5	150 43.5	S27 53.6	54.3	9.9	0.0
	03	228 35.3	S08 51.4	165 12.4	S27 53.6	54.2	9.9	0.1
	04	243 35.4	S08 52.3	179 41.3	S27 53.5	54.2	9.9	0.3
	05	258 35.6	S08 53.2	194 10.2	S27 53.2	54.2	9.9	0.4
	06	273 35.7	S08 54.1	208 39.1	S27 52.8	54.2	10.0	0.5
	07	288 35.8	S08 55.1	223 08.1	S27 52.3	54.2	10.0	0.7
	08	303 36.0	S08 56.0	237 37.1	S27 51.7	54.2	10.0	0.8
	09	318 36.1	S08 56.9	252 06.0	S27 50.9	54.2	10.0	0.9
	10	333 36.2	S08 57.8	266 35.0	S27 49.9	54.2	10.0	1.1
	11	348 36.4	S08 58.7	281 04.1	S27 48.9	54.2	10.0	1.2
	12	003 36.5	S08 59.7	295 33.1	S27 47.7	54.2	10.1	1.3
	13	018 36.6	S09 00.6	310 02.1	S27 46.4	54.2	10.1	1.5
	14	033 36.8	S09 01.5	324 31.2	S27 44.9	54.2	10.1	1.6
	15	048 36.9	S09 02.4	339 00.3	S27 43.3	54.2	10.1	1.7
	16	063 37.0	S09 03.3	353 29.4	S27 41.6	54.2	10.1	1.9
	17	078 37.2	S09 04.2	007 58.5	S27 39.7	54.2	10.2	2.0
	18	093 37.3	S09 05.2	022 27.7	S27 37.7	54.2	10.2	2.1
	19	108 37.4	S09 06.1	036 56.9	S27 35.6	54.2	10.2	2.3
	20	123 37.5	S09 07.0	051 26.1	S27 33.3	54.2	10.2	2.4
	21	138 37.7	S09 07.9	065 55.3	S27 30.9	54.2	10.3	2.5
	22	153 37.8	S09 08.8	080 24.6	S27 28.4	54.2	10.3	2.7
	23	168 37.9	S09 09.7	094 53.9	S27 25.7	54.2	10.3	2.8
17	00	183 38.1	S09 10.7	109 23.2	S27 22.9	54.2	10.4	2.9
	01	198 38.2	S09 11.6	123 52.6	S27 20.0	54.2	10.4	3.0
	02	213 38.3	S09 12.5	138 21.9	S27 17.0	54.2	10.4	3.2
	03	228 38.5	S09 13.4	152 51.4	S27 13.8	54.2	10.4	3.3
	04	243 38.6	S09 14.3	167 20.8	S27 10.5	54.2	10.5	3.4
	05	258 38.7	S09 15.2	181 50.3	S27 07.1	54.2	10.5	3.6
	06	273 38.8	S09 16.2	196 19.8	S27 03.5	54.2	10.5	3.7
	07	288 39.0	S09 17.1	210 49.3	S26 59.8	54.2	10.6	3.8
	08	303 39.1	S09 18.0	225 18.9	S26 56.0	54.2	10.6	3.9
	09	318 39.2	S09 18.9	239 48.5	S26 52.1	54.2	10.7	4.1
	10	333 39.3	S09 19.8	254 18.2	S26 48.0	54.2	10.7	4.2
	11	348 39.5	S09 20.7	268 47.9	S26 43.8	54.2	10.7	4.3
	12	003 39.6	S09 21.6	283 17.6	S26 39.5	54.2	10.8	4.4
	13	018 39.7	S09 22.5	297 47.4	S26 35.0	54.2	10.8	4.6
	14	033 39.9	S09 23.5	312 17.2	S26 30.4	54.2	10.8	4.7
	15	048 40.0	S09 24.4	326 47.0	S26 25.7	54.2	10.9	4.8
	16	063 40.1	S09 25.3	341 16.9	S26 20.9	54.2	10.9	4.9
	17	078 40.2	S09 26.2	355 46.9	S26 16.0	54.2	11.0	5.1
	18	093 40.4	S09 27.1	010 16.8	S26 10.9	54.2	11.0	5.2
	19	108 40.5	S09 28.0	024 46.8	S26 05.7	54.2	11.1	5.3
	20	123 40.6	S09 28.9	039 16.9	S26 00.4	54.3	11.1	5.4
	21	138 40.7	S09 29.8	053 47.0	S25 55.0	54.3	11.1	5.6
	22	153 40.9	S09 30.7	068 17.1	S25 49.4	54.3	11.2	5.7
	23	168 41.0	S09 31.7	082 47.3	S25 43.7	54.3	11.2	5.8
18	00	183 41.1	S09 32.6	097 17.5	S25 37.9	54.3	11.3	5.9
	01	198 41.2	S09 33.5	111 47.8	S25 32.0	54.3	11.3	6.0
	02	213 41.3	S09 34.4	126 18.1	S25 26.0	54.3	11.4	6.2
	03	228 41.5	S09 35.3	140 48.5	S25 19.8	54.3	11.4	6.3
	04	243 41.6	S09 36.2	155 18.9	S25 13.6	54.3	11.5	6.4
	05	258 41.7	S09 37.1	169 49.3	S25 07.2	54.3	11.5	6.5
	06	273 41.8	S09 38.0	184 19.8	S25 00.7	54.3	11.5	6.6
	07	288 42.0	S09 38.9	198 50.4	S24 54.0	54.3	11.6	6.7
	08	303 42.1	S09 39.8	213 21.0	S24 47.3	54.4	11.6	6.8
	09	318 42.2	S09 40.7	227 51.6	S24 40.5	54.4	11.7	7.0
	10	333 42.3	S09 41.6	242 22.3	S24 33.5	54.4	11.7	7.1
	11	348 42.4	S09 42.6	256 53.0	S24 26.4	54.4	11.8	7.2
	12	003 42.6	S09 43.5	271 23.8	S24 19.2	54.4	11.8	7.3
	13	018 42.7	S09 44.4	285 54.7	S24 11.9	54.4	11.9	7.4
	14	033 42.8	S09 45.3	300 25.5	S24 04.5	54.4	11.9	7.5
	15	048 42.9	S09 46.2	314 56.5	S23 57.0	54.4	12.0	7.6
	16	063 43.0	S09 47.1	329 27.4	S23 49.3	54.4	12.0	7.7
	17	078 43.2	S09 48.0	343 58.4	S23 41.6	54.5	12.1	7.9
	18	093 43.3	S09 48.9	358 29.5	S23 33.7	54.5	12.1	8.0
	19	108 43.4	S09 49.8	013 00.6	S23 25.8	54.5	12.2	8.1
	20	123 43.5	S09 50.7	027 31.8	S23 17.7	54.5	12.2	8.2
	21	138 43.6	S09 51.6	042 03.0	S23 09.5	54.5	12.3	8.3
	22	153 43.7	S09 52.5	056 34.3	S23 01.2	54.5	12.3	8.4
	23	168 43.9	S09 53.4	071 05.6	S22 52.9	54.5	12.4	8.5

Day 16 noon Sun: v 0.1 d -0.9 SD 16.0 | Moon SD 14.8

Day 17 noon Sun: v 0.1 d -0.9 SD 16.0 | Moon SD 14.8

Day 18 noon Sun: v 0.1 d -0.9 SD 16.1 | Moon SD 14.8

SUN: OCTOBER 17 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0504	0622	0734	1555	1706	1824
70N	0507	0617	0721	1608	1712	1822
68N	0509	0613	0711	1618	1716	1820
66N	0510	0610	0703	1627	1719	1818
64N	0512	0607	0656	1634	1723	1817
62N	0513	0604	0649	1640	1725	1817
60N	0513	0602	0644	1645	1728	1816
58N	0514	0559	0639	1650	1730	1815
56N	0514	0557	0635	1654	1732	1815
54N	0515	0556	0632	1658	1734	1815
52N	0515	0554	0628	1702	1736	1815
50N	0515	0552	0625	1705	1738	1815
45N	0514	0548	0618	1712	1742	1816
40N	0514	0545	0612	1718	1745	1816
35N	0513	0542	0608	1723	1748	1818
30N	0511	0539	0603	1727	1751	1819
25N	0509	0536	0559	1731	1754	1821
20N	0507	0533	0555	1735	1757	1823
15N	0505	0530	0552	1739	1800	1825
10N	0503	0527	0549	1742	1803	1828
05N	0500	0524	0545	1745	1806	1831
00N	0457	0521	0542	1749	1810	1834
05S	0453	0518	0539	1752	1813	1838
10S	0449	0514	0535	1755	1817	1842
15S	0445	0510	0532	1759	1821	1846
20S	0440	0506	0528	1803	1825	1852
25S	0434	0501	0524	1807	1830	1858
30S	0427	0455	0520	1811	1836	1905
35S	0418	0449	0515	1816	1842	1913
40S	0408	0442	0510	1822	1850	1923
45S	0356	0433	0503	1829	1859	1936
50S	0340	0421	0455	1836	1911	1952
55S	0318	0407	0446	1846	1925	2015
60S	0247	0347	0433	1900	1946	2047

MOON: RISE / SET | UTC HHMM

Lat	Day 16		Day 17		Day 18	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	1728	1856
64N	--	--	--	--	1623	2000
62N	1555	1701	1552	1850	1548	2034
60N	1448	1808	1512	1929	1523	2059
58N	1413	1843	1445	1956	1503	2119
56N	1348	1908	1423	2017	1446	2135
54N	1328	1928	1405	2035	1431	2149
52N	1311	1945	1350	2050	1419	2201
50N	1256	2000	1337	2103	1408	2212
45N	1227	2029	1310	2129	1345	2234
40N	1204	2052	1248	2150	1326	2252
35N	1144	2111	1231	2207	1311	2307
30N	1128	2127	1215	2222	1257	2319
25N	1114	2141	1201	2236	1245	2331
20N	1100	2154	1149	2248	1234	2341
15N	1048	2206	1137	2259	1223	2351
10N	1037	2218	1126	2309	1214	--
05N	1026	2229	1116	2319	1204	--
00N	1015	2239	1105	2329	1155	--
05S	1004	2250	1055	2339	1145	--
10S	0952	2301	1044	2349	1136	--
15S	0941	2312	1033	2400	1126	--
20S	0929	2324	1022	--	1115	0011
25S	0916	2337	1009	--	1104	0023
30S	0901	2351	0955	--	1052	0036
35S	0845	--	0940	0007	1038	0050
40S	0826	--	0922	0026	1022	0107
45S	0803	0000	0900	0048	1003	0127
50S	0733	0030	0832	0116	0938	0152
55S	0652	0111	0753	0155	0906	0225
60S	0541	0222	0650	0259	0816	0316

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | OCTOBER 19 - OCTOBER 21

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
19	00	027 29.2	178 30.8	S19 33.4	252 48.6	N18 31.8	242 21.4	N14 36.4	017 03.9	N01 32.5
	01	042 31.6	193 34.5	S19 32.6	267 49.7	N18 31.5	257 23.5	N14 36.3	032 06.5	N01 32.5
	02	057 34.1	208 38.3	S19 31.9	282 50.8	N18 31.1	272 25.6	N14 36.1	047 09.1	N01 32.4
	03	072 36.6	223 42.0	S19 31.2	297 51.9	N18 30.8	287 27.7	N14 36.0	062 11.8	N01 32.3
	04	087 39.0	238 45.7	S19 30.5	312 53.0	N18 30.5	302 29.8	N14 35.9	077 14.4	N01 32.2
	05	102 41.5	253 49.5	S19 29.8	327 54.1	N18 30.1	317 31.9	N14 35.8	092 17.0	N01 32.2
	06	117 44.0	268 53.2	S19 29.0	342 55.1	N18 29.8	332 34.0	N14 35.7	107 19.7	N01 32.1
	07	132 46.4	283 57.0	S19 28.3	357 56.2	N18 29.5	347 36.1	N14 35.6	122 22.3	N01 32.0
	08	147 48.9	299 00.7	S19 27.6	012 57.3	N18 29.1	002 38.2	N14 35.5	137 24.9	N01 32.0
	09	162 51.4	314 04.5	S19 26.8	027 58.4	N18 28.8	017 40.3	N14 35.3	152 27.6	N01 31.9
	10	177 53.8	329 08.2	S19 26.1	042 59.5	N18 28.5	032 42.4	N14 35.2	167 30.2	N01 31.8
	11	192 56.3	344 12.0	S19 25.4	058 00.6	N18 28.1	047 44.5	N14 35.1	182 32.8	N01 31.8
	12	207 58.7	359 15.7	S19 24.6	073 01.6	N18 27.8	062 46.6	N14 35.0	197 35.5	N01 31.7
	13	223 01.2	014 19.5	S19 23.9	088 02.7	N18 27.5	077 48.7	N14 34.9	212 38.1	N01 31.6
	14	238 03.7	029 23.2	S19 23.1	103 03.8	N18 27.1	092 50.8	N14 34.8	227 40.8	N01 31.6
	15	253 06.1	044 27.0	S19 22.4	118 04.9	N18 26.8	107 52.9	N14 34.7	242 43.4	N01 31.5
	16	268 08.6	059 30.7	S19 21.6	133 06.0	N18 26.5	122 55.0	N14 34.6	257 46.0	N01 31.4
	17	283 11.1	074 34.5	S19 20.9	148 07.1	N18 26.1	137 57.1	N14 34.4	272 48.7	N01 31.3
	18	298 13.5	089 38.3	S19 20.1	163 08.2	N18 25.8	152 59.2	N14 34.3	287 51.3	N01 31.3
	19	313 16.0	104 42.0	S19 19.4	178 09.2	N18 25.5	168 01.3	N14 34.2	302 53.9	N01 31.2
	20	328 18.5	119 45.8	S19 18.6	193 10.3	N18 25.1	183 03.4	N14 34.1	317 56.6	N01 31.1
	21	343 20.9	134 49.6	S19 17.9	208 11.4	N18 24.8	198 05.5	N14 34.0	332 59.2	N01 31.1
	22	358 23.4	149 53.3	S19 17.1	223 12.5	N18 24.5	213 07.6	N14 33.9	348 01.8	N01 31.0
	23	013 25.9	164 57.1	S19 16.3	238 13.6	N18 24.1	228 09.7	N14 33.8	003 04.5	N01 30.9
20	00	028 28.3	180 00.9	S19 15.6	253 14.7	N18 23.8	243 11.8	N14 33.6	018 07.1	N01 30.9
	01	043 30.8	195 04.6	S19 14.8	268 15.8	N18 23.5	258 13.9	N14 33.5	033 09.7	N01 30.8
	02	058 33.2	210 08.4	S19 14.0	283 16.9	N18 23.1	273 16.0	N14 33.4	048 12.4	N01 30.7
	03	073 35.7	225 12.2	S19 13.2	298 18.0	N18 22.8	288 18.1	N14 33.3	063 15.0	N01 30.7
	04	088 38.2	240 15.9	S19 12.5	313 19.0	N18 22.5	303 20.2	N14 33.2	078 17.6	N01 30.6
	05	103 40.6	255 19.7	S19 11.7	328 20.1	N18 22.1	318 22.3	N14 33.1	093 20.3	N01 30.5
	06	118 43.1	270 23.5	S19 10.9	343 21.2	N18 21.8	333 24.4	N14 33.0	108 22.9	N01 30.4
	07	133 45.6	285 27.3	S19 10.1	358 22.3	N18 21.5	348 26.5	N14 32.9	123 25.5	N01 30.4
	08	148 48.0	300 31.0	S19 09.3	013 23.4	N18 21.1	003 28.6	N14 32.7	138 28.2	N01 30.3
	09	163 50.5	315 34.8	S19 08.6	028 24.5	N18 20.8	018 30.7	N14 32.6	153 30.8	N01 30.2
	10	178 53.0	330 38.6	S19 07.8	043 25.6	N18 20.5	033 32.8	N14 32.5	168 33.4	N01 30.2
	11	193 55.4	345 42.4	S19 07.0	058 26.7	N18 20.1	048 35.0	N14 32.4	183 36.1	N01 30.1
	12	208 57.9	000 46.1	S19 06.2	073 27.8	N18 19.8	063 37.1	N14 32.3	198 38.7	N01 30.0
	13	224 00.4	015 49.9	S19 05.4	088 28.9	N18 19.5	078 39.2	N14 32.2	213 41.3	N01 30.0
	14	239 02.8	030 53.7	S19 04.6	103 30.0	N18 19.1	093 41.3	N14 32.1	228 44.0	N01 29.9
	15	254 05.3	045 57.5	S19 03.8	118 31.1	N18 18.8	108 43.4	N14 32.0	243 46.6	N01 29.8
	16	269 07.7	061 01.3	S19 03.0	133 32.2	N18 18.5	123 45.5	N14 31.9	258 49.2	N01 29.8
	17	284 10.2	076 05.0	S19 02.2	148 33.3	N18 18.1	138 47.6	N14 31.7	273 51.9	N01 29.7
	18	299 12.7	091 08.8	S19 01.4	163 34.3	N18 17.8	153 49.7	N14 31.6	288 54.5	N01 29.6
	19	314 15.1	106 12.6	S19 00.6	178 35.4	N18 17.4	168 51.8	N14 31.5	303 57.1	N01 29.6
	20	329 17.6	121 16.4	S18 59.8	193 36.5	N18 17.1	183 53.9	N14 31.4	318 59.8	N01 29.5
	21	344 20.1	136 20.2	S18 59.0	208 37.6	N18 16.8	198 56.0	N14 31.3	334 02.4	N01 29.4
	22	359 22.5	151 24.0	S18 58.2	223 38.7	N18 16.4	213 58.1	N14 31.2	349 05.0	N01 29.4
	23	014 25.0	166 27.8	S18 57.4	238 39.8	N18 16.1	229 00.2	N14 31.1	004 07.7	N01 29.3
21	00	029 27.5	181 31.6	S18 56.5	253 40.9	N18 15.8	244 02.3	N14 31.0	019 10.3	N01 29.2
	01	044 29.9	196 35.3	S18 55.7	268 42.0	N18 15.4	259 04.4	N14 30.8	034 12.9	N01 29.1
	02	059 32.4	211 39.1	S18 54.9	283 43.1	N18 15.1	274 06.5	N14 30.7	049 15.6	N01 29.1
	03	074 34.8	226 42.9	S18 54.1	298 44.2	N18 14.8	289 08.7	N14 30.6	064 18.2	N01 29.0
	04	089 37.3	241 46.7	S18 53.3	313 45.3	N18 14.4	304 10.8	N14 30.5	079 20.8	N01 28.9
	05	104 39.8	256 50.5	S18 52.4	328 46.4	N18 14.1	319 12.9	N14 30.4	094 23.5	N01 28.9
	06	119 42.2	271 54.3	S18 51.6	343 47.5	N18 13.8	334 15.0	N14 30.3	109 26.1	N01 28.8
	07	134 44.7	286 58.1	S18 50.8	358 48.6	N18 13.4	349 17.1	N14 30.2	124 28.7	N01 28.7
	08	149 47.2	302 01.9	S18 49.9	013 49.7	N18 13.1	004 19.2	N14 30.1	139 31.4	N01 28.7
	09	164 49.6	317 05.7	S18 49.1	028 50.8	N18 12.8	019 21.3	N14 30.0	154 34.0	N01 28.6
	10	179 52.1	332 09.5	S18 48.3	043 51.9	N18 12.4	034 23.4	N14 29.8	169 36.6	N01 28.5
	11	194 54.6	347 13.3	S18 47.4	058 53.0	N18 12.1	049 25.5	N14 29.7	184 39.3	N01 28.5
	12	209 57.0	002 17.1	S18 46.6	073 54.1	N18 11.7	064 27.6	N14 29.6	199 41.9	N01 28.4
	13	224 59.5	017 20.9	S18 45.8	088 55.2	N18 11.4	079 29.7	N14 29.5	214 44.5	N01 28.3
	14	240 02.0	032 24.7	S18 44.9	103 56.3	N18 11.1	094 31.9	N14 29.4	229 47.2	N01 28.3
	15	255 04.4	047 28.5	S18 44.1	118 57.4	N18 10.7	109 34.0	N14 29.3	244 49.8	N01 28.2
	16	270 06.9	062 32.3	S18 43.2	133 58.5	N18 10.4	124 36.1	N14 29.2	259 52.4	N01 28.1
	17	285 09.3	077 36.1	S18 42.4	148 59.6	N18 10.1	139 38.2	N14 29.1	274 55.1	N01 28.1
	18	300 11.8	092 39.9	S18 41.5	164 00.8	N18 09.7	154 40.3	N14 29.0	289 57.7	N01 28.0
	19	315 14.3	107 43.7	S18 40.7	179 01.9	N18 09.4	169 42.4	N14 28.9	305 00.3	N01 27.9
	20	330 16.7	122 47.5	S18 39.8	194 03.0	N18 09.1	184 44.5	N14 28.7	320 02.9	N01 27.9
	21	345 19.2	137 51.3	S18 39.0	209 04.1	N18 08.7	199 46.6	N14 28.6	335 05.6	N01 27.8
	22	000 21.7	152 55.1	S18 38.1	224 05.2	N18 08.4	214 48.7	N14 28.5	350 08.2	N01 27.7
	23	015 24.1	167 58.9	S18 37.3	239 06.3	N18 08.0	229 50.9	N14 28.4	005 10.8	N01 27.7

Venus	Mars	Jupiter	Saturn
19: v 3.8 d 0.7	19: v 1.1 d -0.3	19: v 2.1 d -0.1	19: v 2.6 d -0.1
20: v 3.8 d 0.8	20: v 1.1 d -0.3	20: v 2.1 d -0.1	20: v 2.6 d -0.1
21: v 3.8 d 0.8	21: v 1.1 d -0.3	21: v 2.1 d -0.1	21: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.3	S40 11.6
Achernar	335 18.5	S57 05.9
Acrux	172 59.1	S63 14.7
Adhara	255 04.6	S29 00.2
Al Na'ir	027 30.8	S46 49.9
Aldebaran	290 37.7	N16 33.9
Alioth	166 12.2	N55 48.8
Alkaid	152 51.3	N49 10.8
Alnilam	275 36.1	S01 11.0
Alphard	217 46.5	S08 46.4
Alphecca	126 02.8	N26 37.6
Alpheratz	357 32.9	N29 14.5
Altair	061 58.5	N08 56.5
Ankaa	353 05.3	S42 09.6
Antares	112 14.3	S26 29.5
Arcturus	145 46.9	N19 02.6
Atria	107 07.6	S69 04.7
Avior	234 14.2	S59 35.4
Bellatrix	278 21.1	N06 22.5
Betelgeuse	270 50.3	N07 24.8
Canopus	263 51.5	S52 42.2
Capella	280 19.4	N46 01.4
Deneb	049 24.7	N45 22.9
Denebola	182 23.7	N14 25.4
Diphda	348 45.5	S17 50.2
Dubhe	193 39.7	N61 36.2
Elnath	277 59.8	N28 37.8
Eltanin	090 41.8	N51 29.4
Enif	033 37.2	N10 00.1
Fomalhaut	015 12.6	S29 28.8
Gacrux	171 50.6	S57 15.7
Gienah	175 42.4	S17 41.3
Hadar	148 34.6	S60 30.1
Hamal	327 49.2	N23 35.5
Kaus Australi	083 30.7	S34 22.3
Kochab	137 21.0	N74 02.7
Markab	013 28.2	N15 21.2
Menkar	314 04.3	N04 11.8
Menkent	147 56.3	S36 30.1
Miaplacidus	221 38.3	S69 49.3
Mirfak	308 25.7	N49 57.4
Nunki	075 46.0	S26 15.8
Peacock	053 03.4	S56 39.1
Polaris	312 48.7	N89 22.5
Pollux	243 15.5	N27 57.6
Procyon	244 49.3	N05 09.4
Rasalhague	095 57.4	N12 32.6
Regulus	207 33.1	N11 50.2
Rigel	281 02.3	S08 10.1
Rigil Kentaur	139 38.9	S60 56.8
Sabik	102 01.3	S15 45.4
Schedar	349 28.8	N56 41.3
Shaula	096 08.6	S37 07.4
Sirius	258 24.9	S16 45.0
Spica	158 21.1	S11 18.0
Suhail	222 45.4	S43 32.2
Vega	080 32.4	N38 48.8
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	151 48.3	1157
Mars	224 29.9	0707
Jupiter	214 39.2	0746
Saturn	349 40.8	2244

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
19	00	183 44.0	S09 54.3	085 36.9	S22 44.4	54.5	12.4	8.6
	01	198 44.1	S09 55.2	100 08.3	S22 35.8	54.6	12.5	8.7
	02	213 44.2	S09 56.1	114 39.8	S22 27.0	54.6	12.5	8.8
	03	228 44.3	S09 57.0	129 11.3	S22 18.2	54.6	12.5	8.9
	04	243 44.4	S09 57.9	143 42.8	S22 09.3	54.6	12.6	9.0
	05	258 44.6	S09 58.8	158 14.4	S22 00.3	54.6	12.6	9.1
	06	273 44.7	S09 59.7	172 46.1	S21 51.2	54.6	12.7	9.2
	07	288 44.8	S10 00.6	187 17.7	S21 42.0	54.7	12.7	9.3
	08	303 44.9	S10 01.5	201 49.5	S21 32.6	54.7	12.8	9.4
	09	318 45.0	S10 02.4	216 21.3	S21 23.2	54.7	12.8	9.5
	10	333 45.1	S10 03.3	230 53.1	S21 13.7	54.7	12.9	9.6
	11	348 45.3	S10 04.2	245 25.0	S21 04.1	54.7	12.9	9.7
	12	003 45.4	S10 05.1	259 56.9	S20 54.4	54.7	13.0	9.8
	13	018 45.5	S10 06.1	274 28.8	S20 44.6	54.8	13.0	9.9
	14	033 45.6	S10 07.0	289 00.8	S20 34.7	54.8	13.0	10.0
	15	048 45.7	S10 07.9	303 32.9	S20 24.7	54.8	13.1	10.1
	16	063 45.8	S10 08.8	318 05.0	S20 14.6	54.8	13.1	10.2
	17	078 45.9	S10 09.6	332 37.1	S20 04.4	54.8	13.2	10.3
	18	093 46.0	S10 10.5	347 09.3	S19 54.1	54.9	13.2	10.4
	19	108 46.2	S10 11.4	001 41.5	S19 43.7	54.9	13.3	10.5
	20	123 46.3	S10 12.3	016 13.8	S19 33.2	54.9	13.3	10.6
	21	138 46.4	S10 13.2	030 46.1	S19 22.7	54.9	13.3	10.7
	22	153 46.5	S10 14.1	045 18.4	S19 12.0	54.9	13.4	10.7
	23	168 46.6	S10 15.0	059 50.8	S19 01.3	55.0	13.4	10.8
20	00	183 46.7	S10 15.9	074 23.3	S18 50.4	55.0	13.5	10.9
	01	198 46.8	S10 16.8	088 55.7	S18 39.5	55.0	13.5	11.0
	02	213 46.9	S10 17.7	103 28.2	S18 28.5	55.0	13.5	11.1
	03	228 47.0	S10 18.6	118 00.8	S18 17.4	55.1	13.6	11.2
	04	243 47.2	S10 19.5	132 33.4	S18 06.2	55.1	13.6	11.3
	05	258 47.3	S10 20.4	147 06.0	S17 54.9	55.1	13.7	11.4
	06	273 47.4	S10 21.3	161 38.7	S17 43.6	55.1	13.7	11.4
	07	288 47.5	S10 22.2	176 11.4	S17 32.1	55.1	13.7	11.5
	08	303 47.6	S10 23.1	190 44.1	S17 20.6	55.2	13.8	11.6
	09	318 47.7	S10 24.0	205 16.9	S17 09.0	55.2	13.8	11.7
	10	333 47.8	S10 24.9	219 49.7	S16 57.3	55.2	13.8	11.8
	11	348 47.9	S10 25.8	234 22.5	S16 45.5	55.2	13.9	11.9
	12	003 48.0	S10 26.7	248 55.4	S16 33.7	55.3	13.9	11.9
	13	018 48.1	S10 27.6	263 28.3	S16 21.7	55.3	13.9	12.0
	14	033 48.2	S10 28.5	278 01.2	S16 09.7	55.3	14.0	12.1
	15	048 48.3	S10 29.4	292 34.2	S15 57.6	55.3	14.0	12.2
	16	063 48.4	S10 30.3	307 07.2	S15 45.4	55.4	14.0	12.3
	17	078 48.6	S10 31.2	321 40.2	S15 33.2	55.4	14.1	12.3
	18	093 48.7	S10 32.0	336 13.3	S15 20.9	55.4	14.1	12.4
	19	108 48.8	S10 32.9	350 46.3	S15 08.5	55.4	14.1	12.5
	20	123 48.9	S10 33.8	005 19.5	S14 56.0	55.5	14.1	12.6
	21	138 49.0	S10 34.7	019 52.6	S14 43.4	55.5	14.2	12.6
	22	153 49.1	S10 35.6	034 25.8	S14 30.8	55.5	14.2	12.7
	23	168 49.2	S10 36.5	048 59.0	S14 18.1	55.6	14.2	12.8
21	00	183 49.3	S10 37.4	063 32.2	S14 05.3	55.6	14.2	12.9
	01	198 49.4	S10 38.3	078 05.4	S13 52.5	55.6	14.3	12.9
	02	213 49.5	S10 39.2	092 38.7	S13 39.5	55.6	14.3	13.0
	03	228 49.6	S10 40.1	107 12.0	S13 26.5	55.7	14.3	13.1
	04	243 49.7	S10 41.0	121 45.3	S13 13.5	55.7	14.3	13.1
	05	258 49.8	S10 41.9	136 18.6	S13 00.3	55.7	14.3	13.2
	06	273 49.9	S10 42.7	150 51.9	S12 47.1	55.7	14.4	13.3
	07	288 50.0	S10 43.6	165 25.3	S12 33.9	55.8	14.4	13.3
	08	303 50.1	S10 44.5	179 58.7	S12 20.5	55.8	14.4	13.4
	09	318 50.2	S10 45.4	194 32.1	S12 07.1	55.8	14.4	13.5
	10	333 50.3	S10 46.3	209 05.5	S11 53.7	55.9	14.4	13.5
	11	348 50.4	S10 47.2	223 38.9	S11 40.1	55.9	14.4	13.6
	12	003 50.5	S10 48.1	238 12.4	S11 26.6	55.9	14.5	13.7
	13	018 50.6	S10 49.0	252 45.8	S11 12.9	56.0	14.5	13.7
	14	033 50.7	S10 49.8	267 19.3	S10 59.2	56.0	14.5	13.8
	15	048 50.8	S10 50.7	281 52.8	S10 45.4	56.0	14.5	13.8
	16	063 50.9	S10 51.6	296 26.3	S10 31.6	56.0	14.5	13.9
	17	078 51.0	S10 52.5	310 59.8	S10 17.7	56.1	14.5	14.0
	18	093 51.1	S10 53.4	325 33.3	S10 03.7	56.1	14.5	14.0
	19	108 51.2	S10 54.3	340 06.8	S09 49.7	56.1	14.5	14.1
	20	123 51.3	S10 55.2	354 40.3	S09 35.6	56.2	14.5	14.1
	21	138 51.4	S10 56.0	009 13.9	S09 21.5	56.2	14.5	14.2
	22	153 51.5	S10 56.9	023 47.4	S09 07.3	56.2	14.5	14.2
	23	168 51.6	S10 57.8	038 20.9	S08 53.0	56.3	14.5	14.3

Day 19 noon Sun: v 0.1 d -0.9 SD 16.1 | Moon SD 14.9

Day 20 noon Sun: v 0.1 d -0.9 SD 16.1 | Moon SD 15.1

Day 21 noon Sun: v 0.1 d -0.9 SD 16.1 | Moon SD 15.2

SUN: OCTOBER 20 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0517	0635	0749	1539	1652	1810
70N	0518	0629	0734	1554	1659	1809
68N	0519	0624	0723	1606	1704	1809
66N	0520	0619	0713	1615	1709	1808
64N	0520	0615	0705	1624	1713	1808
62N	0520	0612	0658	1631	1717	1808
60N	0520	0609	0652	1637	1720	1808
58N	0520	0606	0646	1642	1723	1808
56N	0520	0603	0642	1647	1725	1808
54N	0520	0601	0637	1651	1728	1809
52N	0520	0559	0633	1655	1730	1809
50N	0519	0557	0630	1659	1732	1809
45N	0518	0552	0622	1707	1737	1811
40N	0517	0548	0616	1713	1741	1812
35N	0515	0544	0610	1719	1745	1814
30N	0513	0541	0605	1724	1748	1816
25N	0511	0537	0601	1729	1752	1818
20N	0508	0534	0556	1733	1755	1821
15N	0506	0531	0553	1737	1759	1824
10N	0503	0527	0549	1741	1802	1827
05N	0500	0524	0545	1744	1806	1830
00N	0456	0520	0541	1748	1809	1834
05S	0452	0517	0538	1752	1813	1838
10S	0448	0513	0534	1756	1817	1842
15S	0443	0508	0530	1800	1822	1847
20S	0437	0503	0526	1804	1826	1853
25S	0431	0458	0522	1808	1832	1859
30S	0423	0452	0517	1813	1838	1907
35S	0414	0445	0511	1819	1845	1916
40S	0403	0437	0505	1825	1853	1927
45S	0350	0427	0458	1833	1903	1941
50S	0333	0415	0449	1841	1916	1959
55S	0309	0359	0438	1853	1932	2022
60S	0235	0337	0424	1907	1954	2058

MOON: RISE / SET | UTC HHMM

Lat	Day 19		Day 20		Day 21	
72N	--	--	1730	2210	1635	--
70N	1830	1934	1655	2243	1618	--
68N	1711	2052	1630	2307	1605	--
66N	1633	2129	1610	2325	1554	--
64N	1606	2155	1554	2339	1545	--
62N	1545	2215	1541	2352	1537	--
60N	1527	2231	1530	--	1530	0002
58N	1513	2245	1520	--	1524	0011
56N	1501	2257	1511	--	1519	0019
54N	1450	2307	1503	--	1514	0026
52N	1440	2316	1456	--	1510	0032
50N	1431	2324	1450	--	1506	0037
45N	1413	2341	1436	--	1457	0049
40N	1358	2355	1425	--	1450	0059
35N	1345	--	1416	0007	1443	0108
30N	1334	--	1407	0017	1438	0115
25N	1324	--	1359	0026	1433	0121
20N	1315	--	1352	0035	1428	0128
15N	1306	--	1346	0042	1424	0133
10N	1258	0000	1340	0050	1420	0138
05N	1250	0009	1333	0057	1415	0144
00N	1242	0018	1327	0104	1412	0149
05S	1234	0026	1321	0111	1408	0154
10S	1226	0035	1315	0118	1403	0159
15S	1218	0044	1309	0125	1359	0204
20S	1209	0054	1302	0133	1355	0209
25S	1200	0104	1255	0141	1350	0215
30S	1149	0115	1247	0150	1345	0222
35S	1138	0127	1238	0200	1339	0229
40S	1125	0142	1228	0211	1333	0236
45S	1109	0158	1216	0224	1325	0246
50S	1049	0219	1202	0240	1316	0257
55S	1024	0246	1144	0300	1304	0310
60S	0948	0323	1119	0327	1249	0328

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | OCTOBER 22 - OCTOBER 24

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
22	00	030 26.6	183 02.7	S18 36.4	254 07.4	N18 07.7	244 53.0	N14 28.3	020 13.5	N01 27.6
	01	045 29.1	198 06.5	S18 35.5	269 08.5	N18 07.4	259 55.1	N14 28.2	035 16.1	N01 27.5
	02	060 31.5	213 10.3	S18 34.7	284 09.6	N18 07.0	274 57.2	N14 28.1	050 18.7	N01 27.5
	03	075 34.0	228 14.1	S18 33.8	299 10.7	N18 06.7	289 59.3	N14 28.0	065 21.4	N01 27.4
	04	090 36.5	243 17.9	S18 32.9	314 11.8	N18 06.4	305 01.4	N14 27.9	080 24.0	N01 27.3
	05	105 38.9	258 21.7	S18 32.1	329 12.9	N18 06.0	320 03.5	N14 27.8	095 26.6	N01 27.3
	06	120 41.4	273 25.5	S18 31.2	344 14.0	N18 05.7	335 05.6	N14 27.6	110 29.3	N01 27.2
	07	135 43.8	288 29.3	S18 30.3	359 15.1	N18 05.3	350 07.8	N14 27.5	125 31.9	N01 27.1
	08	150 46.3	303 33.1	S18 29.4	014 16.3	N18 05.0	005 09.9	N14 27.4	140 34.5	N01 27.1
	09	165 48.8	318 36.9	S18 28.6	029 17.4	N18 04.7	020 12.0	N14 27.3	155 37.2	N01 27.0
	10	180 51.2	333 40.7	S18 27.7	044 18.5	N18 04.3	035 14.1	N14 27.2	170 39.8	N01 26.9
	11	195 53.7	348 44.5	S18 26.8	059 19.6	N18 04.0	050 16.2	N14 27.1	185 42.4	N01 26.8
	12	210 56.2	003 48.3	S18 25.9	074 20.7	N18 03.7	065 18.3	N14 27.0	200 45.0	N01 26.8
	13	225 58.6	018 52.1	S18 25.0	089 21.8	N18 03.3	080 20.4	N14 26.9	215 47.7	N01 26.7
	14	241 01.1	033 55.9	S18 24.2	104 22.9	N18 03.0	095 22.6	N14 26.8	230 50.3	N01 26.6
	15	256 03.6	048 59.7	S18 23.3	119 24.0	N18 02.7	110 24.7	N14 26.7	245 52.9	N01 26.6
	16	271 06.0	064 03.5	S18 22.4	134 25.1	N18 02.3	125 26.8	N14 26.6	260 55.6	N01 26.5
	17	286 08.5	079 07.3	S18 21.5	149 26.3	N18 02.0	140 28.9	N14 26.4	275 58.2	N01 26.4
	18	301 10.9	094 11.2	S18 20.6	164 27.4	N18 01.6	155 31.0	N14 26.3	291 00.8	N01 26.4
	19	316 13.4	109 15.0	S18 19.7	179 28.5	N18 01.3	170 33.1	N14 26.2	306 03.5	N01 26.3
	20	331 15.9	124 18.8	S18 18.8	194 29.6	N18 01.0	185 35.3	N14 26.1	321 06.1	N01 26.2
	21	346 18.3	139 22.6	S18 17.9	209 30.7	N18 00.6	200 37.4	N14 26.0	336 08.7	N01 26.2
	22	001 20.8	154 26.4	S18 17.0	224 31.8	N18 00.3	215 39.5	N14 25.9	351 11.3	N01 26.1
	23	016 23.3	169 30.2	S18 16.1	239 32.9	N17 59.9	230 41.6	N14 25.8	006 14.0	N01 26.0
23	00	031 25.7	184 34.0	S18 15.2	254 34.1	N17 59.6	245 43.7	N14 25.7	021 16.6	N01 26.0
	01	046 28.2	199 37.8	S18 14.3	269 35.2	N17 59.3	260 45.8	N14 25.6	036 19.2	N01 25.9
	02	061 30.7	214 41.6	S18 13.4	284 36.3	N17 58.9	275 48.0	N14 25.5	051 21.9	N01 25.9
	03	076 33.1	229 45.4	S18 12.5	299 37.4	N17 58.6	290 50.1	N14 25.4	066 24.5	N01 25.8
	04	091 35.6	244 49.2	S18 11.6	314 38.5	N17 58.3	305 52.2	N14 25.2	081 27.1	N01 25.7
	05	106 38.1	259 53.0	S18 10.7	329 39.6	N17 57.9	320 54.3	N14 25.1	096 29.8	N01 25.7
	06	121 40.5	274 56.8	S18 09.8	344 40.8	N17 57.6	335 56.4	N14 25.0	111 32.4	N01 25.6
	07	136 43.0	290 00.6	S18 08.9	359 41.9	N17 57.2	350 58.6	N14 24.9	126 35.0	N01 25.5
	08	151 45.4	305 04.4	S18 08.0	014 43.0	N17 56.9	006 00.7	N14 24.8	141 37.6	N01 25.5
	09	166 47.9	320 08.2	S18 07.0	029 44.1	N17 56.6	021 02.8	N14 24.7	156 40.3	N01 25.4
	10	181 50.4	335 12.0	S18 06.1	044 45.2	N17 56.2	036 04.9	N14 24.6	171 42.9	N01 25.3
	11	196 52.8	350 15.8	S18 05.2	059 46.3	N17 55.9	051 07.0	N14 24.5	186 45.5	N01 25.3
	12	211 55.3	005 19.6	S18 04.3	074 47.5	N17 55.6	066 09.2	N14 24.4	201 48.2	N01 25.2
	13	226 57.8	020 23.4	S18 03.4	089 48.6	N17 55.2	081 11.3	N14 24.3	216 50.8	N01 25.1
	14	242 00.2	035 27.2	S18 02.4	104 49.7	N17 54.9	096 13.4	N14 24.2	231 53.4	N01 25.1
	15	257 02.7	050 31.0	S18 01.5	119 50.8	N17 54.5	111 15.5	N14 24.1	246 56.0	N01 25.0
	16	272 05.2	065 34.8	S18 00.6	134 51.9	N17 54.2	126 17.6	N14 24.0	261 58.7	N01 24.9
	17	287 07.6	080 38.6	S17 59.7	149 53.1	N17 53.9	141 19.8	N14 23.8	277 01.3	N01 24.9
	18	302 10.1	095 42.4	S17 58.7	164 54.2	N17 53.5	156 21.9	N14 23.7	292 03.9	N01 24.8
	19	317 12.5	110 46.2	S17 57.8	179 55.3	N17 53.2	171 24.0	N14 23.6	307 06.6	N01 24.7
	20	332 15.0	125 50.0	S17 56.9	194 56.4	N17 52.8	186 26.1	N14 23.5	322 09.2	N01 24.7
	21	347 17.5	140 53.8	S17 55.9	209 57.6	N17 52.5	201 28.2	N14 23.4	337 11.8	N01 24.6
	22	002 19.9	155 57.6	S17 55.0	224 58.7	N17 52.2	216 30.4	N14 23.3	352 14.4	N01 24.5
	23	017 22.4	171 01.4	S17 54.1	239 59.8	N17 51.8	231 32.5	N14 23.2	007 17.1	N01 24.5
24	00	032 24.9	186 05.2	S17 53.1	255 00.9	N17 51.5	246 34.6	N14 23.1	022 19.7	N01 24.4
	01	047 27.3	201 09.0	S17 52.2	270 02.1	N17 51.2	261 36.7	N14 23.0	037 22.3	N01 24.3
	02	062 29.8	216 12.8	S17 51.3	285 03.2	N17 50.8	276 38.9	N14 22.9	052 24.9	N01 24.3
	03	077 32.3	231 16.6	S17 50.3	300 04.3	N17 50.5	291 41.0	N14 22.8	067 27.6	N01 24.2
	04	092 34.7	246 20.4	S17 49.4	315 05.4	N17 50.1	306 43.1	N14 22.7	082 30.2	N01 24.1
	05	107 37.2	261 24.2	S17 48.4	330 06.6	N17 49.8	321 45.2	N14 22.6	097 32.8	N01 24.1
	06	122 39.7	276 28.0	S17 47.5	345 07.7	N17 49.5	336 47.3	N14 22.5	112 35.5	N01 24.0
	07	137 42.1	291 31.8	S17 46.5	000 08.8	N17 49.1	351 49.5	N14 22.4	127 38.1	N01 23.9
	08	152 44.6	306 35.6	S17 45.6	015 09.9	N17 48.8	006 51.6	N14 22.2	142 40.7	N01 23.9
	09	167 47.0	321 39.4	S17 44.6	030 11.1	N17 48.4	021 53.7	N14 22.1	157 43.3	N01 23.8
	10	182 49.5	336 43.2	S17 43.7	045 12.2	N17 48.1	036 55.8	N14 22.0	172 46.0	N01 23.7
	11	197 52.0	351 47.0	S17 42.7	060 13.3	N17 47.8	051 58.0	N14 21.9	187 48.6	N01 23.7
	12	212 54.4	006 50.8	S17 41.8	075 14.5	N17 47.4	067 00.1	N14 21.8	202 51.2	N01 23.6
	13	227 56.9	021 54.6	S17 40.8	090 15.6	N17 47.1	082 02.2	N14 21.7	217 53.8	N01 23.6
	14	242 59.4	036 58.4	S17 39.9	105 16.7	N17 46.7	097 04.3	N14 21.6	232 56.5	N01 23.5
	15	258 01.8	052 02.1	S17 38.9	120 17.8	N17 46.4	112 06.5	N14 21.5	247 59.1	N01 23.4
	16	273 04.3	067 05.9	S17 38.0	135 19.0	N17 46.1	127 08.6	N14 21.4	263 01.7	N01 23.4
	17	288 06.8	082 09.7	S17 37.0	150 20.1	N17 45.7	142 10.7	N14 21.3	278 04.4	N01 23.3
	18	303 09.2	097 13.5	S17 36.0	165 21.2	N17 45.4	157 12.9	N14 21.2	293 07.0	N01 23.2
	19	318 11.7	112 17.3	S17 35.1	180 22.4	N17 45.0	172 15.0	N14 21.1	308 09.6	N01 23.2
	20	333 14.1	127 21.1	S17 34.1	195 23.5	N17 44.7	187 17.1	N14 21.0	323 12.2	N01 23.1
	21	348 16.6	142 24.9	S17 33.2	210 24.6	N17 44.4	202 19.2	N14 20.9	338 14.9	N01 23.0
	22	003 19.1	157 28.6	S17 32.2	225 25.8	N17 44.0	217 21.4	N14 20.8	353 17.5	N01 23.0
	23	018 21.5	172 32.4	S17 31.2	240 26.9	N17 43.7	232 23.5	N14 20.7	008 20.1	N01 22.9

Venus	Mars	Jupiter	Saturn
22: v 3.8 d 0.9	22: v 1.1 d -0.3	22: v 2.1 d -0.1	22: v 2.6 d -0.1
23: v 3.8 d 0.9	23: v 1.1 d -0.3	23: v 2.1 d -0.1	23: v 2.6 d -0.1
24: v 3.8 d 1.0	24: v 1.1 d -0.3	24: v 2.1 d -0.1	24: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.3	S40 11.6
Achernar	335 18.5	S57 05.9
Acrux	172 59.1	S63 14.7
Adhara	255 04.6	S29 00.2
Al Na'ir	027 30.8	S46 49.9
Aldebaran	290 37.7	N16 33.9
Alioth	166 12.2	N55 48.8
Alkaid	152 51.3	N49 10.8
Alnilam	275 36.1	S01 11.0
Alphard	217 46.4	S08 46.4
Alphecca	126 02.8	N26 37.6
Alpheratz	357 32.9	N29 14.5
Altair	061 58.6	N08 56.5
Ankaa	353 05.3	S42 09.6
Antares	112 14.3	S26 29.5
Arcturus	145 46.9	N19 02.6
Atria	107 07.6	S69 04.7
Avior	234 14.2	S59 35.4
Bellatrix	278 21.1	N06 22.5
Betelgeuse	270 50.3	N07 24.8
Canopus	263 51.5	S52 42.2
Capella	280 19.4	N46 01.4
Deneb	049 24.7	N45 22.9
Denebola	182 23.7	N14 25.3
Diphda	348 45.5	S17 50.2
Dubhe	193 39.7	N61 36.2
Elnath	277 59.8	N28 37.8
Eltanin	090 41.8	N51 29.4
Enif	033 37.2	N10 00.1
Fomalhaut	015 12.7	S29 28.8
Gacrux	171 50.6	S57 15.7
Gienah	175 42.4	S17 41.3
Hadar	148 34.6	S60 30.1
Hamal	327 49.2	N23 35.5
Kaus Australi	083 30.7	S34 22.3
Kochab	137 21.0	N74 02.7
Markab	013 28.2	N15 21.2
Menkar	314 04.3	N04 11.8
Menkent	147 56.3	S36 30.1
Miaplacidus	221 38.3	S69 49.3
Mirfak	308 25.7	N49 57.4
Nunki	075 46.1	S26 15.8
Peacock	053 03.4	S56 39.1
Polaris	312 48.1	N89 22.5
Pollux	243 15.5	N27 57.6
Procyon	244 49.3	N05 09.4
Rasalhague	095 57.4	N12 32.6
Regulus	207 33.1	N11 50.2
Rigel	281 02.2	S08 10.1
Rigil Kentaur	139 38.9	S60 56.8
Sabik	102 01.3	S15 45.4
Schedar	349 28.8	N56 41.3
Shaula	096 08.6	S37 07.4
Sirius	258 24.8	S16 45.0
Spica	158 21.1	S11 18.0
Suhail	222 45.4	S43 32.2
Vega	080 32.4	N38 48.8
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	153 24.3	1139
Mars	222 52.2	0701
Jupiter	214 13.9	0736
Saturn	349 52.9	2231

2026 | OCTOBER 22 - OCTOBER 24

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
22	00	183 51.7	S10 58.7	052 54.5	S08 38.7	56.3	14.5	14.4
	01	198 51.8	S10 59.6	067 28.0	S08 24.4	56.3	14.5	14.4
	02	213 51.9	S11 00.5	082 01.6	S08 10.0	56.4	14.5	14.5
	03	228 52.0	S11 01.4	096 35.1	S07 55.5	56.4	14.5	14.5
	04	243 52.1	S11 02.2	111 08.7	S07 41.0	56.4	14.5	14.6
	05	258 52.2	S11 03.1	125 42.2	S07 26.5	56.5	14.5	14.6
	06	273 52.3	S11 04.0	140 15.7	S07 11.9	56.5	14.5	14.7
	07	288 52.4	S11 04.9	154 49.3	S06 57.2	56.5	14.5	14.7
	08	303 52.5	S11 05.8	169 22.8	S06 42.5	56.6	14.5	14.7
	09	318 52.6	S11 06.6	183 56.3	S06 27.8	56.6	14.5	14.8
	10	333 52.7	S11 07.5	198 29.8	S06 13.0	56.6	14.5	14.8
	11	348 52.8	S11 08.4	213 03.3	S05 58.1	56.7	14.5	14.9
	12	003 52.9	S11 09.3	227 36.8	S05 43.3	56.7	14.5	14.9
	13	018 52.9	S11 10.2	242 10.3	S05 28.3	56.7	14.5	15.0
	14	033 53.0	S11 11.1	256 43.7	S05 13.4	56.8	14.5	15.0
	15	048 53.1	S11 11.9	271 17.2	S04 58.4	56.8	14.4	15.0
	16	063 53.2	S11 12.8	285 50.6	S04 43.3	56.8	14.4	15.1
	17	078 53.3	S11 13.7	300 24.0	S04 28.2	56.9	14.4	15.1
	18	093 53.4	S11 14.6	314 57.4	S04 13.1	56.9	14.4	15.2
	19	108 53.5	S11 15.5	329 30.8	S03 58.0	56.9	14.4	15.2
	20	123 53.6	S11 16.3	344 04.2	S03 42.8	57.0	14.3	15.2
	21	138 53.7	S11 17.2	358 37.5	S03 27.5	57.0	14.3	15.3
	22	153 53.8	S11 18.1	013 10.9	S03 12.3	57.0	14.3	15.3
	23	168 53.9	S11 19.0	027 44.2	S02 57.0	57.1	14.3	15.3
23	00	183 54.0	S11 19.8	042 17.4	S02 41.6	57.1	14.3	15.4
	01	198 54.1	S11 20.7	056 50.7	S02 26.3	57.1	14.2	15.4
	02	213 54.1	S11 21.6	071 23.9	S02 10.9	57.2	14.2	15.4
	03	228 54.2	S11 22.5	085 57.1	S01 55.5	57.2	14.2	15.4
	04	243 54.3	S11 23.3	100 30.3	S01 40.0	57.2	14.1	15.5
	05	258 54.4	S11 24.2	115 03.4	S01 24.6	57.3	14.1	15.5
	06	273 54.5	S11 25.1	129 36.5	S01 09.1	57.3	14.1	15.5
	07	288 54.6	S11 26.0	144 09.6	S00 53.5	57.3	14.0	15.5
	08	303 54.7	S11 26.8	158 42.6	S00 38.0	57.4	14.0	15.6
	09	318 54.8	S11 27.7	173 15.7	S00 22.4	57.4	14.0	15.6
	10	333 54.8	S11 28.6	187 48.6	S00 06.8	57.4	13.9	15.6
	11	348 54.9	S11 29.5	202 21.6	N00 08.8	57.5	13.9	15.6
	12	003 55.0	S11 30.3	216 54.5	N00 24.4	57.5	13.9	15.6
	13	018 55.1	S11 31.2	231 27.3	N00 40.0	57.5	13.8	15.7
	14	033 55.2	S11 32.1	246 00.1	N00 55.7	57.6	13.8	15.7
	15	048 55.3	S11 33.0	260 32.9	N01 11.4	57.6	13.7	15.7
	16	063 55.4	S11 33.8	275 05.6	N01 27.1	57.6	13.7	15.7
	17	078 55.5	S11 34.7	289 38.3	N01 42.8	57.7	13.6	15.7
	18	093 55.5	S11 35.6	304 11.0	N01 58.5	57.7	13.6	15.7
	19	108 55.6	S11 36.5	318 43.6	N02 14.2	57.7	13.5	15.7
	20	123 55.7	S11 37.3	333 16.1	N02 30.0	57.8	13.5	15.7
	21	138 55.8	S11 38.2	347 48.6	N02 45.7	57.8	13.4	15.8
	22	153 55.9	S11 39.1	002 21.1	N03 01.5	57.8	13.4	15.8
	23	168 56.0	S11 39.9	016 53.5	N03 17.2	57.9	13.3	15.8
24	00	183 56.0	S11 40.8	031 25.8	N03 33.0	57.9	13.3	15.8
	01	198 56.1	S11 41.7	045 58.1	N03 48.7	57.9	13.2	15.8
	02	213 56.2	S11 42.5	060 30.3	N04 04.5	58.0	13.2	15.8
	03	228 56.3	S11 43.4	075 02.5	N04 20.3	58.0	13.1	15.8
	04	243 56.4	S11 44.3	089 34.6	N04 36.0	58.0	13.1	15.8
	05	258 56.5	S11 45.2	104 06.7	N04 51.8	58.1	13.0	15.8
	06	273 56.5	S11 46.0	118 38.7	N05 07.5	58.1	12.9	15.8
	07	288 56.6	S11 46.9	133 10.6	N05 23.3	58.1	12.9	15.7
	08	303 56.7	S11 47.8	147 42.5	N05 39.0	58.2	12.8	15.7
	09	318 56.8	S11 48.6	162 14.3	N05 54.8	58.2	12.7	15.7
	10	333 56.9	S11 49.5	176 46.0	N06 10.5	58.2	12.7	15.7
	11	348 56.9	S11 50.4	191 17.7	N06 26.2	58.3	12.6	15.7
	12	003 57.0	S11 51.2	205 49.3	N06 41.9	58.3	12.5	15.7
	13	018 57.1	S11 52.1	220 20.8	N06 57.6	58.3	12.5	15.7
	14	033 57.2	S11 53.0	234 52.3	N07 13.3	58.4	12.4	15.7
	15	048 57.3	S11 53.8	249 23.7	N07 28.9	58.4	12.3	15.6
	16	063 57.3	S11 54.7	263 55.0	N07 44.6	58.4	12.2	15.6
	17	078 57.4	S11 55.6	278 26.3	N08 00.2	58.5	12.2	15.6
	18	093 57.5	S11 56.4	292 57.4	N08 15.8	58.5	12.1	15.6
	19	108 57.6	S11 57.3	307 28.5	N08 31.3	58.5	12.0	15.5
	20	123 57.6	S11 58.1	321 59.6	N08 46.9	58.6	11.9	15.5
	21	138 57.7	S11 59.0	336 30.5	N09 02.4	58.6	11.9	15.5
	22	153 57.8	S11 59.9	351 01.4	N09 17.9	58.6	11.8	15.5
	23	168 57.9	S12 00.7	005 32.1	N09 33.3	58.7	11.7	15.4

Day 22 noon Sun: v 0.1 d -0.9 SD 16.1 | Moon SD 15.4

Day 23 noon Sun: v 0.1 d -0.9 SD 16.1 | Moon SD 15.7

Day 24 noon Sun: v 0.1 d -0.9 SD 16.1 | Moon SD 15.9

SUN: OCTOBER 23 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0529	0649	0805	1522	1638	1757
70N	0529	0641	0748	1539	1646	1757
68N	0529	0634	0734	1553	1653	1758
66N	0529	0629	0723	1604	1659	1758
64N	0528	0624	0714	1614	1704	1759
62N	0528	0620	0706	1622	1708	1759
60N	0527	0616	0659	1628	1712	1800
58N	0527	0612	0653	1635	1715	1801
56N	0526	0609	0648	1640	1718	1802
54N	0525	0607	0643	1645	1721	1802
52N	0525	0604	0639	1649	1724	1803
50N	0524	0602	0635	1653	1726	1804
45N	0522	0556	0626	1702	1732	1806
40N	0520	0551	0619	1709	1737	1808
35N	0517	0547	0613	1715	1741	1811
30N	0515	0543	0607	1721	1745	1813
25N	0512	0539	0602	1726	1749	1816
20N	0509	0535	0558	1731	1753	1819
15N	0506	0531	0553	1735	1757	1822
10N	0503	0528	0549	1739	1801	1826
05N	0459	0524	0545	1744	1805	1829
00N	0455	0520	0541	1748	1809	1833
05S	0451	0516	0537	1752	1813	1838
10S	0446	0511	0533	1756	1818	1843
15S	0441	0507	0528	1800	1822	1848
20S	0435	0501	0524	1805	1828	1854
25S	0428	0455	0519	1810	1834	1901
30S	0420	0449	0514	1815	1840	1910
35S	0410	0441	0508	1822	1848	1919
40S	0358	0433	0501	1828	1857	1931
45S	0344	0422	0453	1837	1908	1946
50S	0325	0409	0443	1846	1921	2005
55S	0300	0351	0431	1859	1939	2031
60S	0222	0328	0415	1915	2003	2110

MOON: RISE / SET | UTC HHMM

Lat	Day 22		Day 23		Day 24	
72N	1557	0038	1524	0250	1449	0503
70N	1551	0052	1526	0253	1500	0456
68N	1545	0103	1527	0255	1508	0450
66N	1541	0112	1528	0257	1515	0445
64N	1537	0120	1529	0259	1521	0441
62N	1534	0126	1530	0301	1526	0438
60N	1531	0132	1531	0302	1531	0435
58N	1528	0137	1531	0303	1535	0432
56N	1525	0141	1532	0304	1539	0430
54N	1523	0145	1532	0305	1542	0428
52N	1521	0148	1533	0306	1545	0426
50N	1520	0151	1533	0307	1548	0424
45N	1516	0158	1534	0308	1554	0420
40N	1512	0204	1535	0309	1559	0417
35N	1510	0209	1536	0311	1603	0415
30N	1507	0213	1536	0312	1607	0412
25N	1505	0217	1537	0313	1611	0410
20N	1503	0220	1538	0313	1614	0408
15N	1501	0223	1538	0314	1617	0406
10N	1459	0226	1539	0315	1620	0405
05N	1457	0229	1539	0315	1623	0403
00N	1455	0232	1540	0316	1626	0401
05S	1453	0235	1540	0317	1629	0400
10S	1452	0238	1541	0318	1632	0358
15S	1450	0241	1541	0318	1635	0356
20S	1448	0244	1542	0319	1638	0354
25S	1446	0248	1542	0320	1641	0352
30S	1443	0251	1543	0320	1645	0350
35S	1441	0255	1544	0321	1649	0348
40S	1438	0300	1544	0322	1654	0345
45S	1434	0305	1545	0323	1659	0342
50S	1430	0311	1547	0325	1706	0339
55S	1425	0319	1548	0326	1714	0334
60S	1419	0329	1550	0329	1725	0329

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | OCTOBER 25 - OCTOBER 27

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
25	00	033 24.0	187 36.2	S17 30.3	255 28.0	N17 43.3	247 25.6	N14 20.6	023 22.7	N01 22.8
	01	048 26.5	202 40.0	S17 29.3	270 29.2	N17 43.0	262 27.7	N14 20.4	038 25.4	N01 22.8
	02	063 28.9	217 43.8	S17 28.3	285 30.3	N17 42.7	277 29.9	N14 20.3	053 28.0	N01 22.7
	03	078 31.4	232 47.6	S17 27.4	300 31.4	N17 42.3	292 32.0	N14 20.2	068 30.6	N01 22.7
	04	093 33.9	247 51.3	S17 26.4	315 32.6	N17 42.0	307 34.1	N14 20.1	083 33.2	N01 22.6
	05	108 36.3	262 55.1	S17 25.4	330 33.7	N17 41.6	322 36.3	N14 20.0	098 35.9	N01 22.5
	06	123 38.8	277 58.9	S17 24.4	345 34.8	N17 41.3	337 38.4	N14 19.9	113 38.5	N01 22.5
	07	138 41.3	293 02.7	S17 23.5	000 36.0	N17 41.0	352 40.5	N14 19.8	128 41.1	N01 22.4
	08	153 43.7	308 06.4	S17 22.5	015 37.1	N17 40.6	007 42.6	N14 19.7	143 43.7	N01 22.3
	09	168 46.2	323 10.2	S17 21.5	030 38.2	N17 40.3	022 44.8	N14 19.6	158 46.4	N01 22.3
	10	183 48.6	338 14.0	S17 20.5	045 39.4	N17 39.9	037 46.9	N14 19.5	173 49.0	N01 22.2
	11	198 51.1	353 17.7	S17 19.6	060 40.5	N17 39.6	052 49.0	N14 19.4	188 51.6	N01 22.1
	12	213 53.6	008 21.5	S17 18.6	075 41.7	N17 39.3	067 51.2	N14 19.3	203 54.2	N01 22.1
	13	228 56.0	023 25.3	S17 17.6	090 42.8	N17 38.9	082 53.3	N14 19.2	218 56.9	N01 22.0
	14	243 58.5	038 29.1	S17 16.6	105 43.9	N17 38.6	097 55.4	N14 19.1	233 59.5	N01 21.9
	15	259 01.0	053 32.8	S17 15.6	120 45.1	N17 38.2	112 57.6	N14 19.0	249 02.1	N01 21.9
	16	274 03.4	068 36.6	S17 14.6	135 46.2	N17 37.9	127 59.7	N14 18.9	264 04.7	N01 21.8
	17	289 05.9	083 40.4	S17 13.7	150 47.3	N17 37.6	143 01.8	N14 18.8	279 07.4	N01 21.8
	18	304 08.4	098 44.1	S17 12.7	165 48.5	N17 37.2	158 03.9	N14 18.7	294 10.0	N01 21.7
	19	319 10.8	113 47.9	S17 11.7	180 49.6	N17 36.9	173 06.1	N14 18.6	309 12.6	N01 21.6
	20	334 13.3	128 51.6	S17 10.7	195 50.8	N17 36.5	188 08.2	N14 18.5	324 15.2	N01 21.6
	21	349 15.8	143 55.4	S17 09.7	210 51.9	N17 36.2	203 10.3	N14 18.4	339 17.9	N01 21.5
	22	004 18.2	158 59.2	S17 08.7	225 53.1	N17 35.9	218 12.5	N14 18.3	354 20.5	N01 21.4
	23	019 20.7	174 02.9	S17 07.7	240 54.2	N17 35.5	233 14.6	N14 18.2	009 23.1	N01 21.4
26	00	034 23.1	189 06.7	S17 06.7	255 55.3	N17 35.2	248 16.7	N14 18.0	024 25.7	N01 21.3
	01	049 25.6	204 10.4	S17 05.7	270 56.5	N17 34.8	263 18.9	N14 17.9	039 28.4	N01 21.2
	02	064 28.1	219 14.2	S17 04.7	285 57.6	N17 34.5	278 21.0	N14 17.8	054 31.0	N01 21.2
	03	079 30.5	234 17.9	S17 03.8	300 58.8	N17 34.2	293 23.1	N14 17.7	069 33.6	N01 21.1
	04	094 33.0	249 21.7	S17 02.8	315 59.9	N17 33.8	308 25.3	N14 17.6	084 36.2	N01 21.1
	05	109 35.5	264 25.4	S17 01.8	331 01.1	N17 33.5	323 27.4	N14 17.5	099 38.9	N01 21.0
	06	124 37.9	279 29.2	S17 00.8	346 02.2	N17 33.1	338 29.5	N14 17.4	114 41.5	N01 20.9
	07	139 40.4	294 32.9	S16 59.8	001 03.3	N17 32.8	353 31.7	N14 17.3	129 44.1	N01 20.9
	08	154 42.9	309 36.7	S16 58.8	016 04.5	N17 32.5	008 33.8	N14 17.2	144 46.7	N01 20.8
	09	169 45.3	324 40.4	S16 57.8	031 05.6	N17 32.1	023 35.9	N14 17.1	159 49.4	N01 20.7
	10	184 47.8	339 44.2	S16 56.8	046 06.8	N17 31.8	038 38.1	N14 17.0	174 52.0	N01 20.7
	11	199 50.2	354 47.9	S16 55.8	061 07.9	N17 31.4	053 40.2	N14 16.9	189 54.6	N01 20.6
	12	214 52.7	009 51.6	S16 54.8	076 09.1	N17 31.1	068 42.4	N14 16.8	204 57.2	N01 20.6
	13	229 55.2	024 55.4	S16 53.8	091 10.2	N17 30.7	083 44.5	N14 16.7	219 59.9	N01 20.5
	14	244 57.6	039 59.1	S16 52.8	106 11.4	N17 30.4	098 46.6	N14 16.6	235 02.5	N01 20.4
	15	260 00.1	055 02.8	S16 51.8	121 12.5	N17 30.1	113 48.8	N14 16.5	250 05.1	N01 20.4
	16	275 02.6	070 06.6	S16 50.7	136 13.7	N17 29.7	128 50.9	N14 16.4	265 07.7	N01 20.3
	17	290 05.0	085 10.3	S16 49.7	151 14.8	N17 29.4	143 53.0	N14 16.3	280 10.3	N01 20.2
	18	305 07.5	100 14.0	S16 48.7	166 16.0	N17 29.0	158 55.2	N14 16.2	295 13.0	N01 20.2
	19	320 10.0	115 17.8	S16 47.7	181 17.1	N17 28.7	173 57.3	N14 16.1	310 15.6	N01 20.1
	20	335 12.4	130 21.5	S16 46.7	196 18.3	N17 28.4	188 59.4	N14 16.0	325 18.2	N01 20.1
	21	350 14.9	145 25.2	S16 45.7	211 19.4	N17 28.0	204 01.6	N14 15.9	340 20.8	N01 20.0
	22	005 17.4	160 28.9	S16 44.7	226 20.6	N17 27.7	219 03.7	N14 15.8	355 23.5	N01 19.9
	23	020 19.8	175 32.7	S16 43.7	241 21.7	N17 27.3	234 05.9	N14 15.7	010 26.1	N01 19.9
27	00	035 22.3	190 36.4	S16 42.7	256 22.9	N17 27.0	249 08.0	N14 15.6	025 28.7	N01 19.8
	01	050 24.7	205 40.1	S16 41.7	271 24.0	N17 26.7	264 10.1	N14 15.5	040 31.3	N01 19.7
	02	065 27.2	220 43.8	S16 40.7	286 25.2	N17 26.3	279 12.3	N14 15.4	055 33.9	N01 19.7
	03	080 29.7	235 47.5	S16 39.6	301 26.3	N17 26.0	294 14.4	N14 15.3	070 36.6	N01 19.6
	04	095 32.1	250 51.3	S16 38.6	316 27.5	N17 25.6	309 16.6	N14 15.2	085 39.2	N01 19.6
	05	110 34.6	265 55.0	S16 37.6	331 28.6	N17 25.3	324 18.7	N14 15.1	100 41.8	N01 19.5
	06	125 37.1	280 58.7	S16 36.6	346 29.8	N17 24.9	339 20.8	N14 15.0	115 44.4	N01 19.4
	07	140 39.5	296 02.4	S16 35.6	001 30.9	N17 24.6	354 23.0	N14 14.9	130 47.1	N01 19.4
	08	155 42.0	311 06.1	S16 34.6	016 32.1	N17 24.3	009 25.1	N14 14.8	145 49.7	N01 19.3
	09	170 44.5	326 09.8	S16 33.6	031 33.2	N17 23.9	024 27.3	N14 14.7	160 52.3	N01 19.2
	10	185 46.9	341 13.5	S16 32.5	046 34.4	N17 23.6	039 29.4	N14 14.6	175 54.9	N01 19.2
	11	200 49.4	356 17.2	S16 31.5	061 35.5	N17 23.2	054 31.5	N14 14.5	190 57.5	N01 19.1
	12	215 51.9	011 20.9	S16 30.5	076 36.7	N17 22.9	069 33.7	N14 14.4	206 00.2	N01 19.1
	13	230 54.3	026 24.6	S16 29.5	091 37.9	N17 22.6	084 35.8	N14 14.3	221 02.8	N01 19.0
	14	245 56.8	041 28.3	S16 28.5	106 39.0	N17 22.2	099 38.0	N14 14.2	236 05.4	N01 18.9
	15	260 59.2	056 32.0	S16 27.5	121 40.2	N17 21.9	114 40.1	N14 14.1	251 08.0	N01 18.9
	16	276 01.7	071 35.7	S16 26.4	136 41.3	N17 21.5	129 42.2	N14 14.0	266 10.6	N01 18.8
	17	291 04.2	086 39.4	S16 25.4	151 42.5	N17 21.2	144 44.4	N14 13.9	281 13.3	N01 18.8
	18	306 06.6	101 43.1	S16 24.4	166 43.6	N17 20.8	159 46.5	N14 13.8	296 15.9	N01 18.7
	19	321 09.1	116 46.7	S16 23.4	181 44.8	N17 20.5	174 48.7	N14 13.7	311 18.5	N01 18.6
	20	336 11.6	131 50.4	S16 22.3	196 46.0	N17 20.2	189 50.8	N14 13.6	326 21.1	N01 18.6
	21	351 14.0	146 54.1	S16 21.3	211 47.1	N17 19.8	204 53.0	N14 13.5	341 23.7	N01 18.5
	22	006 16.5	161 57.8	S16 20.3	226 48.3	N17 19.5	219 55.1	N14 13.4	356 26.4	N01 18.4
	23	021 19.0	177 01.5	S16 19.3	241 49.4	N17 19.1	234 57.2	N14 13.3	011 29.0	N01 18.4

Venus	Mars	Jupiter	Saturn
25: v 3.8 d 1.0	25: v 1.1 d -0.3	25: v 2.1 d -0.1	25: v 2.6 d -0.1
26: v 3.7 d 1.0	26: v 1.1 d -0.3	26: v 2.1 d -0.1	26: v 2.6 d -0.1
27: v 3.7 d 1.0	27: v 1.2 d -0.3	27: v 2.1 d -0.1	27: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.2	S40 11.7
Achernar	335 18.5	S57 06.0
Acrux	172 59.1	S63 14.7
Adhara	255 04.6	S29 00.2
Al Na'ir	027 30.9	S46 49.9
Aldebaran	290 37.7	N16 33.9
Alioth	166 12.2	N55 48.8
Alkaid	152 51.3	N49 10.7
Alnilam	275 36.0	S01 11.0
Alphard	217 46.4	S08 46.4
Alphecca	126 02.8	N26 37.6
Alpheratz	357 32.9	N29 14.5
Altair	061 58.6	N08 56.5
Ankaa	353 05.3	S42 09.6
Antares	112 14.3	S26 29.5
Arcturus	145 46.9	N19 02.6
Atria	107 07.7	S69 04.7
Avior	234 14.2	S59 35.4
Bellatrix	278 21.1	N06 22.5
Betelgeuse	270 50.3	N07 24.8
Canopus	263 51.5	S52 42.3
Capella	280 19.4	N46 01.4
Deneb	049 24.8	N45 22.9
Denebola	182 23.7	N14 25.3
Diphda	348 45.5	S17 50.2
Dubhe	193 39.7	N61 36.2
Elnath	277 59.8	N28 37.8
Eltanin	090 41.8	N51 29.3
Enif	033 37.2	N10 00.1
Fomalhaut	015 12.7	S29 28.8
Gacrux	171 50.5	S57 15.7
Gienah	175 42.4	S17 41.3
Hadar	148 34.6	S60 30.1
Hamal	327 49.2	N23 35.5
Kaus Australi	083 30.8	S34 22.3
Kochab	137 21.0	N74 02.7
Markab	013 28.2	N15 21.2
Menkar	314 04.3	N04 11.8
Menkent	147 56.3	S36 30.0
Miaplacidus	221 38.2	S69 49.3
Mirfak	308 25.7	N49 57.4
Nunki	075 46.1	S26 15.8
Peacock	053 03.4	S56 39.1
Polaris	312 47.5	N89 22.5
Pollux	243 15.5	N27 57.6
Procyon	244 49.3	N05 09.4
Rasalhague	095 57.4	N12 32.6
Regulus	207 33.0	N11 50.2
Rigel	281 02.2	S08 10.1
Rigil Kentaur	139 38.9	S60 56.8
Sabik	102 01.4	S15 45.4
Schedar	349 28.8	N56 41.3
Shaula	096 08.7	S37 07.4
Sirius	258 24.8	S16 45.0
Spica	158 21.1	S11 18.0
Suhail	222 45.3	S43 32.2
Vega	080 32.4	N38 48.8
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	154 58.9	1121
Mars	221 16.4	0656
Jupiter	213 49.6	0726
Saturn	350 04.5	2218

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
25	00	183 58.0	S12 01.6	020 02.8	N09 48.8	58.7	11.6	15.4
	01	198 58.0	S12 02.5	034 33.4	N10 04.2	58.7	11.5	15.4
	02	213 58.1	S12 03.3	049 04.0	N10 19.5	58.7	11.4	15.3
	03	228 58.2	S12 04.2	063 34.4	N10 34.9	58.8	11.4	15.3
	04	243 58.3	S12 05.0	078 04.8	N10 50.1	58.8	11.3	15.2
	05	258 58.3	S12 05.9	092 35.0	N11 05.4	58.8	11.2	15.2
	06	273 58.4	S12 06.8	107 05.2	N11 20.6	58.9	11.1	15.2
	07	288 58.5	S12 07.6	121 35.3	N11 35.7	58.9	11.0	15.1
	08	303 58.6	S12 08.5	136 05.3	N11 50.9	58.9	10.9	15.1
	09	318 58.6	S12 09.3	150 35.2	N12 05.9	58.9	10.8	15.0
	10	333 58.7	S12 10.2	165 05.0	N12 20.9	59.0	10.7	15.0
	11	348 58.8	S12 11.1	179 34.7	N12 35.9	59.0	10.6	14.9
	12	003 58.8	S12 11.9	194 04.3	N12 50.8	59.0	10.5	14.9
	13	018 58.9	S12 12.8	208 33.9	N13 05.7	59.1	10.4	14.8
	14	033 59.0	S12 13.6	223 03.3	N13 20.5	59.1	10.3	14.7
	15	048 59.1	S12 14.5	237 32.6	N13 35.2	59.1	10.2	14.7
	16	063 59.1	S12 15.4	252 01.8	N13 49.9	59.1	10.1	14.6
	17	078 59.2	S12 16.2	266 31.0	N14 04.6	59.2	10.0	14.6
	18	093 59.3	S12 17.1	281 00.0	N14 19.1	59.2	9.9	14.5
	19	108 59.3	S12 17.9	295 28.9	N14 33.6	59.2	9.8	14.4
	20	123 59.4	S12 18.8	309 57.7	N14 48.0	59.2	9.7	14.4
	21	138 59.5	S12 19.6	324 26.4	N15 02.4	59.3	9.6	14.3
	22	153 59.6	S12 20.5	338 55.0	N15 16.7	59.3	9.5	14.2
	23	168 59.6	S12 21.3	353 23.5	N15 30.9	59.3	9.4	14.1
26	00	183 59.7	S12 22.2	007 51.9	N15 45.0	59.3	9.3	14.1
	01	198 59.8	S12 23.1	022 20.2	N15 59.1	59.4	9.2	14.0
	02	213 59.8	S12 23.9	036 48.4	N16 13.1	59.4	9.1	13.9
	03	228 59.9	S12 24.8	051 16.5	N16 27.0	59.4	9.0	13.8
	04	244 00.0	S12 25.6	065 44.4	N16 40.8	59.4	8.9	13.7
	05	259 00.0	S12 26.5	080 12.3	N16 54.5	59.5	8.7	13.6
	06	274 00.1	S12 27.3	094 40.0	N17 08.2	59.5	8.6	13.6
	07	289 00.2	S12 28.2	109 07.7	N17 21.7	59.5	8.5	13.5
	08	304 00.2	S12 29.0	123 35.2	N17 35.2	59.5	8.4	13.4
	09	319 00.3	S12 29.9	138 02.6	N17 48.6	59.6	8.3	13.3
	10	334 00.4	S12 30.7	152 29.9	N18 01.8	59.6	8.2	13.2
	11	349 00.4	S12 31.6	166 57.1	N18 15.0	59.6	8.1	13.1
	12	004 00.5	S12 32.4	181 24.1	N18 28.1	59.6	8.0	13.0
	13	019 00.6	S12 33.3	195 51.1	N18 41.1	59.6	7.8	12.9
	14	034 00.6	S12 34.1	210 17.9	N18 54.0	59.7	7.7	12.8
	15	049 00.7	S12 35.0	224 44.7	N19 06.7	59.7	7.6	12.7
	16	064 00.7	S12 35.8	239 11.3	N19 19.4	59.7	7.5	12.6
	17	079 00.8	S12 36.7	253 37.8	N19 31.9	59.7	7.4	12.4
	18	094 00.9	S12 37.5	268 04.1	N19 44.4	59.7	7.3	12.3
	19	109 00.9	S12 38.4	282 30.4	N19 56.7	59.7	7.2	12.2
	20	124 01.0	S12 39.2	296 56.6	N20 08.9	59.8	7.0	12.1
	21	139 01.1	S12 40.1	311 22.6	N20 21.0	59.8	6.9	12.0
	22	154 01.1	S12 40.9	325 48.5	N20 33.0	59.8	6.8	11.9
	23	169 01.2	S12 41.8	340 14.3	N20 44.8	59.8	6.7	11.7
27	00	184 01.2	S12 42.6	354 40.0	N20 56.6	59.8	6.6	11.6
	01	199 01.3	S12 43.5	009 05.6	N21 08.2	59.8	6.5	11.5
	02	214 01.4	S12 44.3	023 31.1	N21 19.6	59.9	6.3	11.3
	03	229 01.4	S12 45.2	037 56.4	N21 31.0	59.9	6.2	11.2
	04	244 01.5	S12 46.0	052 21.6	N21 42.2	59.9	6.1	11.1
	05	259 01.5	S12 46.8	066 46.8	N21 53.3	59.9	6.0	10.9
	06	274 01.6	S12 47.7	081 11.8	N22 04.2	59.9	5.9	10.8
	07	289 01.7	S12 48.5	095 36.7	N22 15.0	59.9	5.8	10.7
	08	304 01.7	S12 49.4	110 01.4	N22 25.7	60.0	5.7	10.5
	09	319 01.8	S12 50.2	124 26.1	N22 36.2	60.0	5.6	10.4
	10	334 01.8	S12 51.1	138 50.7	N22 46.5	60.0	5.5	10.2
	11	349 01.9	S12 51.9	153 15.1	N22 56.8	60.0	5.3	10.1
	12	004 02.0	S12 52.8	167 39.5	N23 06.9	60.0	5.2	9.9
	13	019 02.0	S12 53.6	182 03.7	N23 16.8	60.0	5.1	9.8
	14	034 02.1	S12 54.4	196 27.8	N23 26.6	60.0	5.0	9.6
	15	049 02.1	S12 55.3	210 51.9	N23 36.2	60.0	4.9	9.5
	16	064 02.2	S12 56.1	225 15.8	N23 45.7	60.0	4.8	9.3
	17	079 02.2	S12 57.0	239 39.6	N23 55.0	60.1	4.7	9.2
	18	094 02.3	S12 57.8	254 03.3	N24 04.1	60.1	4.6	9.0
	19	109 02.3	S12 58.6	268 26.9	N24 13.1	60.1	4.5	8.8
	20	124 02.4	S12 59.5	282 50.4	N24 21.9	60.1	4.4	8.7
	21	139 02.5	S13 00.3	297 13.8	N24 30.6	60.1	4.3	8.5
	22	154 02.5	S13 01.2	311 37.2	N24 39.1	60.1	4.2	8.3
	23	169 02.6	S13 02.0	326 00.4	N24 47.4	60.1	4.1	8.2

Day 25 noon Sun: v 0.1 d -0.9 SD 16.1 | Moon SD 16.1

Day 26 noon Sun: v 0.1 d -0.9 SD 16.1 | Moon SD 16.2

Day 27 noon Sun: v 0.1 d -0.8 SD 16.1 | Moon SD 16.3

SUN: OCTOBER 26 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0542	0702	0821	1505	1624	1744
70N	0540	0652	0802	1525	1634	1746
68N	0539	0645	0746	1540	1642	1747
66N	0538	0638	0734	1553	1649	1749
64N	0536	0632	0723	1604	1654	1750
62N	0535	0627	0714	1612	1700	1751
60N	0534	0623	0707	1620	1704	1753
58N	0533	0619	0700	1627	1708	1754
56N	0532	0615	0654	1633	1712	1755
54N	0531	0612	0649	1638	1715	1756
52N	0529	0609	0644	1643	1718	1758
50N	0528	0606	0640	1648	1721	1759
45N	0526	0600	0630	1657	1727	1802
40N	0523	0554	0622	1705	1733	1805
35N	0520	0549	0615	1712	1738	1808
30N	0517	0545	0609	1718	1743	1811
25N	0514	0541	0604	1724	1747	1814
20N	0510	0536	0559	1729	1751	1817
15N	0507	0532	0554	1734	1756	1821
10N	0503	0528	0549	1738	1800	1825
05N	0459	0524	0545	1743	1804	1829
00N	0455	0519	0541	1747	1809	1833
05S	0450	0515	0536	1752	1813	1838
10S	0445	0510	0532	1756	1818	1843
15S	0439	0505	0527	1801	1823	1849
20S	0433	0459	0522	1806	1829	1856
25S	0425	0453	0517	1812	1835	1903
30S	0416	0446	0511	1818	1843	1912
35S	0406	0438	0504	1824	1851	1923
40S	0354	0428	0457	1832	1901	1935
45S	0338	0417	0448	1841	1912	1951
50S	0318	0402	0438	1851	1927	2011
55S	0251	0344	0424	1905	1946	2039
60S	0209	0318	0407	1923	2012	2123

MOON: RISE / SET | UTC HHMM

Lat	Day 25		Day 26		Day 27	
72N	1403	0731	--	--	--	--
70N	1427	0710	1326	0959	--	--
68N	1445	0653	1410	0917	--	--
66N	1500	0640	1440	0849	1354	1134
64N	1513	0629	1502	0828	1446	1043
62N	1523	0620	1520	0811	1518	1012
60N	1532	0613	1535	0757	1542	0948
58N	1540	0606	1548	0745	1602	0930
56N	1547	0600	1559	0735	1618	0914
54N	1554	0554	1609	0726	1632	0901
52N	1559	0550	1618	0718	1644	0849
50N	1605	0545	1626	0711	1655	0839
45N	1616	0536	1643	0655	1718	0817
40N	1626	0528	1657	0643	1736	0800
35N	1634	0521	1709	0632	1752	0745
30N	1641	0516	1720	0623	1805	0733
25N	1647	0510	1729	0614	1817	0722
20N	1653	0506	1738	0607	1828	0712
15N	1659	0501	1746	0600	1838	0702
10N	1705	0457	1754	0553	1848	0653
05N	1710	0453	1801	0546	1858	0644
00N	1715	0449	1809	0540	1907	0636
05S	1720	0445	1816	0534	1917	0627
10S	1726	0441	1824	0527	1926	0619
15S	1731	0436	1832	0520	1936	0610
20S	1737	0432	1840	0513	1947	0601
25S	1743	0427	1849	0506	1958	0551
30S	1750	0422	1859	0458	2011	0540
35S	1758	0416	1910	0449	2025	0527
40S	1807	0410	1923	0439	2041	0513
45S	1817	0403	1938	0427	2101	0457
50S	1830	0354	1957	0412	2126	0437
55S	1845	0343	2021	0354	2159	0411
60S	1907	0329	2056	0330	2250	0334

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | OCTOBER 28 - OCTOBER 30

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
28	00	036 21.4	192 05.1	S16 18.3	256 50.6	N17 18.8	249 59.4	N14 13.1	026 31.6	N01 18.3
	01	051 23.9	207 08.8	S16 17.2	271 51.8	N17 18.5	265 01.5	N14 13.0	041 34.2	N01 18.3
	02	066 26.3	222 12.5	S16 16.2	286 52.9	N17 18.1	280 03.7	N14 12.9	056 36.8	N01 18.2
	03	081 28.8	237 16.2	S16 15.2	301 54.1	N17 17.8	295 05.8	N14 12.8	071 39.5	N01 18.1
	04	096 31.3	252 19.8	S16 14.2	316 55.2	N17 17.4	310 08.0	N14 12.7	086 42.1	N01 18.1
	05	111 33.7	267 23.5	S16 13.1	331 56.4	N17 17.1	325 10.1	N14 12.6	101 44.7	N01 18.0
	06	126 36.2	282 27.2	S16 12.1	346 57.6	N17 16.7	340 12.2	N14 12.5	116 47.3	N01 18.0
	07	141 38.7	297 30.8	S16 11.1	001 58.7	N17 16.4	355 14.4	N14 12.4	131 49.9	N01 17.9
	08	156 41.1	312 34.5	S16 10.1	016 59.9	N17 16.1	010 16.5	N14 12.3	146 52.6	N01 17.8
	09	171 43.6	327 38.1	S16 09.0	032 01.1	N17 15.7	025 18.7	N14 12.2	161 55.2	N01 17.8
	10	186 46.1	342 41.8	S16 08.0	047 02.2	N17 15.4	040 20.8	N14 12.1	176 57.8	N01 17.7
	11	201 48.5	357 45.4	S16 07.0	062 03.4	N17 15.0	055 23.0	N14 12.1	192 00.4	N01 17.7
	12	216 51.0	012 49.1	S16 06.0	077 04.6	N17 14.7	070 25.1	N14 12.0	207 03.0	N01 17.6
	13	231 53.5	027 52.7	S16 04.9	092 05.7	N17 14.3	085 27.3	N14 11.9	222 05.7	N01 17.5
	14	246 55.9	042 56.4	S16 03.9	107 06.9	N17 14.0	100 29.4	N14 11.8	237 08.3	N01 17.5
	15	261 58.4	058 00.0	S16 02.9	122 08.1	N17 13.7	115 31.6	N14 11.7	252 10.9	N01 17.4
	16	277 00.8	073 03.7	S16 01.8	137 09.2	N17 13.3	130 33.7	N14 11.6	267 13.5	N01 17.3
	17	292 03.3	088 07.3	S16 00.8	152 10.4	N17 13.0	145 35.9	N14 11.5	282 16.1	N01 17.3
	18	307 05.8	103 11.0	S15 59.8	167 11.6	N17 12.6	160 38.0	N14 11.4	297 18.8	N01 17.2
	19	322 08.2	118 14.6	S15 58.8	182 12.7	N17 12.3	175 40.2	N14 11.3	312 21.4	N01 17.2
	20	337 10.7	133 18.2	S15 57.7	197 13.9	N17 11.9	190 42.3	N14 11.2	327 24.0	N01 17.1
	21	352 13.2	148 21.9	S15 56.7	212 15.1	N17 11.6	205 44.5	N14 11.1	342 26.6	N01 17.0
	22	007 15.6	163 25.5	S15 55.7	227 16.2	N17 11.3	220 46.6	N14 11.0	357 29.2	N01 17.0
	23	022 18.1	178 29.1	S15 54.6	242 17.4	N17 10.9	235 48.7	N14 10.9	012 31.8	N01 16.9
29	00	037 20.6	193 32.7	S15 53.6	257 18.6	N17 10.6	250 50.9	N14 10.8	027 34.5	N01 16.9
	01	052 23.0	208 36.4	S15 52.6	272 19.7	N17 10.2	265 53.0	N14 10.7	042 37.1	N01 16.8
	02	067 25.5	223 40.0	S15 51.5	287 20.9	N17 09.9	280 55.2	N14 10.6	057 39.7	N01 16.7
	03	082 28.0	238 43.6	S15 50.5	302 22.1	N17 09.6	295 57.3	N14 10.5	072 42.3	N01 16.7
	04	097 30.4	253 47.2	S15 49.5	317 23.2	N17 09.2	310 59.5	N14 10.4	087 44.9	N01 16.6
	05	112 32.9	268 50.8	S15 48.5	332 24.4	N17 08.9	326 01.6	N14 10.3	102 47.5	N01 16.6
	06	127 35.3	283 54.4	S15 47.4	347 25.6	N17 08.5	341 03.8	N14 10.2	117 50.2	N01 16.5
	07	142 37.8	298 58.0	S15 46.4	002 26.8	N17 08.2	356 05.9	N14 10.1	132 52.8	N01 16.4
	08	157 40.3	314 01.6	S15 45.4	017 27.9	N17 07.8	011 08.1	N14 10.0	147 55.4	N01 16.4
	09	172 42.7	329 05.2	S15 44.3	032 29.1	N17 07.5	026 10.2	N14 09.9	162 58.0	N01 16.3
	10	187 45.2	344 08.8	S15 43.3	047 30.3	N17 07.2	041 12.4	N14 09.8	178 00.6	N01 16.3
	11	202 47.7	359 12.4	S15 42.3	062 31.5	N17 06.8	056 14.6	N14 09.7	193 03.3	N01 16.2
	12	217 50.1	014 16.0	S15 41.2	077 32.6	N17 06.5	071 16.7	N14 09.6	208 05.9	N01 16.2
	13	232 52.6	029 19.6	S15 40.2	092 33.8	N17 06.1	086 18.9	N14 09.5	223 08.5	N01 16.1
	14	247 55.1	044 23.2	S15 39.2	107 35.0	N17 05.8	101 21.0	N14 09.4	238 11.1	N01 16.0
	15	262 57.5	059 26.8	S15 38.1	122 36.2	N17 05.4	116 23.2	N14 09.3	253 13.7	N01 16.0
	16	278 00.0	074 30.4	S15 37.1	137 37.3	N17 05.1	131 25.3	N14 09.2	268 16.3	N01 15.9
	17	293 02.5	089 34.0	S15 36.1	152 38.5	N17 04.8	146 27.5	N14 09.1	283 19.0	N01 15.9
	18	308 04.9	104 37.6	S15 35.0	167 39.7	N17 04.4	161 29.6	N14 09.0	298 21.6	N01 15.8
	19	323 07.4	119 41.1	S15 34.0	182 40.9	N17 04.1	176 31.8	N14 08.9	313 24.2	N01 15.7
	20	338 09.8	134 44.7	S15 33.0	197 42.0	N17 03.7	191 33.9	N14 08.8	328 26.8	N01 15.7
	21	353 12.3	149 48.3	S15 32.0	212 43.2	N17 03.4	206 36.1	N14 08.7	343 29.4	N01 15.6
	22	008 14.8	164 51.9	S15 30.9	227 44.4	N17 03.0	221 38.2	N14 08.6	358 32.0	N01 15.6
	23	023 17.2	179 55.4	S15 29.9	242 45.6	N17 02.7	236 40.4	N14 08.5	013 34.6	N01 15.5
30	00	038 19.7	194 59.0	S15 28.9	257 46.7	N17 02.4	251 42.5	N14 08.4	028 37.3	N01 15.4
	01	053 22.2	210 02.5	S15 27.8	272 47.9	N17 02.0	266 44.7	N14 08.3	043 39.9	N01 15.4
	02	068 24.6	225 06.1	S15 26.8	287 49.1	N17 01.7	281 46.9	N14 08.2	058 42.5	N01 15.3
	03	083 27.1	240 09.7	S15 25.8	302 50.3	N17 01.3	296 49.0	N14 08.1	073 45.1	N01 15.3
	04	098 29.6	255 13.2	S15 24.7	317 51.5	N17 01.0	311 51.2	N14 08.0	088 47.7	N01 15.2
	05	113 32.0	270 16.8	S15 23.7	332 52.6	N17 00.6	326 53.3	N14 07.9	103 50.3	N01 15.1
	06	128 34.5	285 20.3	S15 22.7	347 53.8	N17 00.3	341 55.5	N14 07.8	118 53.0	N01 15.1
	07	143 37.0	300 23.9	S15 21.7	002 55.0	N17 00.0	356 57.6	N14 07.7	133 55.6	N01 15.0
	08	158 39.4	315 27.4	S15 20.6	017 56.2	N16 59.6	011 59.8	N14 07.6	148 58.2	N01 15.0
	09	173 41.9	330 30.9	S15 19.6	032 57.4	N16 59.3	027 01.9	N14 07.5	164 00.8	N01 14.9
	10	188 44.3	345 34.5	S15 18.6	047 58.6	N16 58.9	042 04.1	N14 07.5	179 03.4	N01 14.9
	11	203 46.8	000 38.0	S15 17.5	062 59.7	N16 58.6	057 06.3	N14 07.4	194 06.0	N01 14.8
	12	218 49.3	015 41.5	S15 16.5	078 00.9	N16 58.2	072 08.4	N14 07.3	209 08.6	N01 14.7
	13	233 51.7	030 45.1	S15 15.5	093 02.1	N16 57.9	087 10.6	N14 07.2	224 11.3	N01 14.7
	14	248 54.2	045 48.6	S15 14.4	108 03.3	N16 57.6	102 12.7	N14 07.1	239 13.9	N01 14.6
	15	263 56.7	060 52.1	S15 13.4	123 04.5	N16 57.2	117 14.9	N14 07.0	254 16.5	N01 14.6
	16	278 59.1	075 55.6	S15 12.4	138 05.7	N16 56.9	132 17.0	N14 06.9	269 19.1	N01 14.5
	17	294 01.6	090 59.2	S15 11.4	153 06.9	N16 56.5	147 19.2	N14 06.8	284 21.7	N01 14.4
	18	309 04.1	106 02.7	S15 10.3	168 08.0	N16 56.2	162 21.4	N14 06.7	299 24.3	N01 14.4
	19	324 06.5	121 06.2	S15 09.3	183 09.2	N16 55.8	177 23.5	N14 06.6	314 26.9	N01 14.3
	20	339 09.0	136 09.7	S15 08.3	198 10.4	N16 55.5	192 25.7	N14 06.5	329 29.6	N01 14.3
	21	354 11.5	151 13.2	S15 07.3	213 11.6	N16 55.2	207 27.8	N14 06.4	344 32.2	N01 14.2
	22	009 13.9	166 16.7	S15 06.2	228 12.8	N16 54.8	222 30.0	N14 06.3	359 34.8	N01 14.2
	23	024 16.4	181 20.2	S15 05.2	243 14.0	N16 54.5	237 32.2	N14 06.2	014 37.4	N01 14.1

Venus	Mars	Jupiter	Saturn
28: v 3.6 d 1.0	28: v 1.2 d -0.3	28: v 2.1 d -0.1	28: v 2.6 d -0.1
29: v 3.6 d 1.0	29: v 1.2 d -0.3	29: v 2.2 d -0.1	29: v 2.6 d -0.1
30: v 3.5 d 1.0	30: v 1.2 d -0.3	30: v 2.2 d -0.1	30: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.2	S40 11.7
Achernar	335 18.5	S57 06.0
Acrux	172 59.1	S63 14.7
Adhara	255 04.6	S29 00.3
Al Na'ir	027 30.9	S46 49.9
Aldebaran	290 37.6	N16 33.9
Alioth	166 12.2	N55 48.7
Alkaid	152 51.3	N49 10.7
Alnilam	275 36.0	S01 11.0
Alphard	217 46.4	S08 46.4
Alphecca	126 02.8	N26 37.6
Alpheratz	357 32.9	N29 14.6
Altair	061 58.6	N08 56.5
Ankaa	353 05.3	S42 09.6
Antares	112 14.3	S26 29.5
Arcturus	145 46.9	N19 02.6
Atria	107 07.7	S69 04.6
Avior	234 14.1	S59 35.4
Bellatrix	278 21.1	N06 22.5
Betelgeuse	270 50.3	N07 24.8
Canopus	263 51.5	S52 42.3
Capella	280 19.4	N46 01.4
Deneb	049 24.8	N45 22.9
Denebola	182 23.7	N14 25.3
Diphda	348 45.5	S17 50.3
Dubhe	193 39.7	N61 36.2
Elnath	277 59.7	N28 37.8
Eltanin	090 41.8	N51 29.3
Enif	033 37.3	N10 00.1
Fomalhaut	015 12.7	S29 28.8
Gacrux	171 50.5	S57 15.7
Gienah	175 42.4	S17 41.3
Hadar	148 34.6	S60 30.1
Hamal	327 49.2	N23 35.5
Kaus Australi	083 30.8	S34 22.3
Kochab	137 21.0	N74 02.7
Markab	013 28.2	N15 21.2
Menkar	314 04.3	N04 11.8
Menkent	147 56.3	S36 30.0
Miaplacidus	221 38.1	S69 49.3
Mirfak	308 25.6	N49 57.4
Nunki	075 46.1	S26 15.8
Peacock	053 03.4	S56 39.1
Polaris	312 46.5	N89 22.6
Pollux	243 15.4	N27 57.6
Procyon	244 49.2	N05 09.4
Rasalhague	095 57.4	N12 32.6
Regulus	207 33.0	N11 50.2
Rigel	281 02.2	S08 10.1
Rigil Kentaur	139 38.9	S60 56.8
Sabik	102 01.4	S15 45.4
Schedar	349 28.8	N56 41.3
Shaula	096 08.7	S37 07.4
Sirius	258 24.8	S16 45.0
Spica	158 21.1	S11 18.0
Suhail	222 45.3	S43 32.2
Vega	080 32.4	N38 48.8
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	156 25.9	1103
Mars	219 42.5	0650
Jupiter	213 26.6	0716
Saturn	350 15.7	2206

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
28	00	184 02.6	S13 02.8	340 23.5	N24 55.6	60.1	4.0	8.0
	01	199 02.7	S13 03.7	354 46.5	N25 03.6	60.1	3.9	7.8
	02	214 02.7	S13 04.5	009 09.5	N25 11.4	60.1	3.8	7.6
	03	229 02.8	S13 05.4	023 32.3	N25 19.0	60.1	3.8	7.5
	04	244 02.8	S13 06.2	037 55.1	N25 26.5	60.1	3.7	7.3
	05	259 02.9	S13 07.0	052 17.7	N25 33.8	60.1	3.6	7.1
	06	274 02.9	S13 07.9	066 40.3	N25 40.9	60.1	3.5	6.9
	07	289 03.0	S13 08.7	081 02.8	N25 47.8	60.2	3.4	6.7
	08	304 03.0	S13 09.5	095 25.3	N25 54.5	60.2	3.4	6.6
	09	319 03.1	S13 10.4	109 47.6	N26 01.1	60.2	3.3	6.4
	10	334 03.1	S13 11.2	124 09.9	N26 07.5	60.2	3.2	6.2
	11	349 03.2	S13 12.0	138 32.1	N26 13.7	60.2	3.1	6.0
	12	004 03.2	S13 12.9	152 54.2	N26 19.7	60.2	3.1	5.8
	13	019 03.3	S13 13.7	167 16.3	N26 25.5	60.2	3.0	5.6
	14	034 03.3	S13 14.5	181 38.3	N26 31.1	60.2	2.9	5.4
	15	049 03.4	S13 15.4	196 00.2	N26 36.5	60.2	2.9	5.2
	16	064 03.4	S13 16.2	210 22.1	N26 41.8	60.2	2.8	5.0
	17	079 03.5	S13 17.0	224 43.9	N26 46.8	60.2	2.8	4.9
	18	094 03.5	S13 17.9	239 05.6	N26 51.6	60.2	2.7	4.7
	19	109 03.6	S13 18.7	253 27.3	N26 56.3	60.2	2.6	4.5
	20	124 03.6	S13 19.5	267 49.0	N27 00.8	60.2	2.6	4.3
	21	139 03.7	S13 20.4	282 10.6	N27 05.0	60.2	2.5	4.1
	22	154 03.7	S13 21.2	296 32.1	N27 09.1	60.2	2.5	3.9
	23	169 03.7	S13 22.0	310 53.6	N27 13.0	60.2	2.5	3.7
29	00	184 03.8	S13 22.9	325 15.1	N27 16.6	60.2	2.4	3.5
	01	199 03.8	S13 23.7	339 36.5	N27 20.1	60.2	2.4	3.3
	02	214 03.9	S13 24.5	353 57.9	N27 23.4	60.2	2.4	3.1
	03	229 03.9	S13 25.3	008 19.3	N27 26.4	60.2	2.3	2.9
	04	244 04.0	S13 26.2	022 40.6	N27 29.3	60.2	2.3	2.7
	05	259 04.0	S13 27.0	037 01.9	N27 31.9	60.2	2.3	2.5
	06	274 04.1	S13 27.8	051 23.2	N27 34.4	60.1	2.3	2.3
	07	289 04.1	S13 28.7	065 44.4	N27 36.6	60.1	2.2	2.0
	08	304 04.1	S13 29.5	080 05.7	N27 38.7	60.1	2.2	1.8
	09	319 04.2	S13 30.3	094 26.9	N27 40.5	60.1	2.2	1.6
	10	334 04.2	S13 31.1	108 48.1	N27 42.2	60.1	2.2	1.4
	11	349 04.3	S13 32.0	123 09.3	N27 43.6	60.1	2.2	1.2
	12	004 04.3	S13 32.8	137 30.5	N27 44.8	60.1	2.2	1.0
	13	019 04.3	S13 33.6	151 51.7	N27 45.9	60.1	2.2	0.8
	14	034 04.4	S13 34.4	166 12.9	N27 46.7	60.1	2.2	0.6
	15	049 04.4	S13 35.3	180 34.1	N27 47.3	60.1	2.2	0.4
	16	064 04.5	S13 36.1	194 55.3	N27 47.7	60.1	2.2	0.2
	17	079 04.5	S13 36.9	209 16.6	N27 47.9	60.1	2.2	0.0
	18	094 04.5	S13 37.7	223 37.8	N27 47.9	60.1	2.2	-0.2
	19	109 04.6	S13 38.6	237 59.0	N27 47.7	60.1	2.3	-0.4
	20	124 04.6	S13 39.4	252 20.3	N27 47.3	60.1	2.3	-0.6
	21	139 04.7	S13 40.2	266 41.6	N27 46.7	60.0	2.3	-0.8
	22	154 04.7	S13 41.0	281 02.9	N27 45.9	60.0	2.3	-1.0
	23	169 04.7	S13 41.8	295 24.2	N27 44.9	60.0	2.4	-1.2
30	00	184 04.8	S13 42.7	309 45.6	N27 43.7	60.0	2.4	-1.4
	01	199 04.8	S13 43.5	324 07.0	N27 42.3	60.0	2.4	-1.6
	02	214 04.8	S13 44.3	338 28.4	N27 40.6	60.0	2.5	-1.8
	03	229 04.9	S13 45.1	352 49.9	N27 38.8	60.0	2.5	-2.0
	04	244 04.9	S13 45.9	007 11.4	N27 36.8	60.0	2.6	-2.2
	05	259 05.0	S13 46.8	021 33.0	N27 34.6	60.0	2.6	-2.4
	06	274 05.0	S13 47.6	035 54.6	N27 32.2	60.0	2.7	-2.6
	07	289 05.0	S13 48.4	050 16.3	N27 29.5	59.9	2.7	-2.8
	08	304 05.1	S13 49.2	064 38.0	N27 26.7	59.9	2.8	-3.0
	09	319 05.1	S13 50.0	078 59.7	N27 23.7	59.9	2.8	-3.2
	10	334 05.1	S13 50.9	093 21.6	N27 20.5	59.9	2.9	-3.4
	11	349 05.2	S13 51.7	107 43.4	N27 17.1	59.9	2.9	-3.6
	12	004 05.2	S13 52.5	122 05.4	N27 13.5	59.9	3.0	-3.8
	13	019 05.2	S13 53.3	136 27.4	N27 09.7	59.9	3.1	-4.0
	14	034 05.3	S13 54.1	150 49.5	N27 05.8	59.9	3.1	-4.2
	15	049 05.3	S13 54.9	165 11.6	N27 01.6	59.8	3.2	-4.4
	16	064 05.3	S13 55.8	179 33.8	N26 57.2	59.8	3.3	-4.5
	17	079 05.3	S13 56.6	193 56.1	N26 52.7	59.8	3.4	-4.7
	18	094 05.4	S13 57.4	208 18.5	N26 48.0	59.8	3.5	-4.9
	19	109 05.4	S13 58.2	222 41.0	N26 43.0	59.8	3.5	-5.1
	20	124 05.4	S13 59.0	237 03.5	N26 37.9	59.8	3.6	-5.3
	21	139 05.5	S13 59.8	251 26.1	N26 32.7	59.8	3.7	-5.5
	22	154 05.5	S14 00.6	265 48.8	N26 27.2	59.7	3.8	-5.6
	23	169 05.5	S14 01.5	280 11.6	N26 21.6	59.7	3.9	-5.8

Day 28 noon Sun: v 0.0 d -0.8 SD 16.1 | Moon SD 16.4

Day 29 noon Sun: v 0.0 d -0.8 SD 16.1 | Moon SD 16.4

Day 30 noon Sun: v 0.0 d -0.8 SD 16.1 | Moon SD 16.3

SUN: OCTOBER 29 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0554	0716	0838	1447	1610	1731
70N	0551	0704	0816	1510	1622	1734
68N	0549	0655	0758	1528	1631	1737
66N	0546	0647	0744	1542	1639	1739
64N	0544	0641	0733	1554	1646	1742
62N	0543	0635	0723	1604	1651	1744
60N	0541	0630	0714	1612	1657	1746
58N	0539	0625	0707	1620	1701	1747
56N	0537	0621	0700	1626	1705	1749
54N	0536	0617	0655	1632	1709	1751
52N	0534	0614	0649	1637	1713	1752
50N	0533	0611	0645	1642	1716	1754
45N	0529	0604	0634	1653	1723	1757
40N	0526	0558	0626	1701	1729	1801
35N	0522	0552	0618	1709	1735	1805
30N	0519	0547	0612	1716	1740	1808
25N	0515	0542	0606	1722	1745	1812
20N	0511	0537	0600	1727	1750	1816
15N	0508	0533	0555	1732	1754	1820
10N	0503	0528	0550	1737	1759	1824
05N	0459	0524	0545	1742	1804	1828
00N	0454	0519	0540	1747	1808	1833
05S	0449	0514	0535	1752	1813	1838
10S	0444	0509	0531	1757	1819	1844
15S	0437	0503	0525	1802	1824	1850
20S	0430	0457	0520	1808	1830	1857
25S	0422	0451	0514	1813	1837	1905
30S	0413	0443	0508	1820	1845	1915
35S	0402	0434	0501	1827	1854	1926
40S	0349	0424	0453	1835	1904	1939
45S	0333	0412	0443	1845	1917	1956
50S	0311	0356	0432	1857	1932	2018
55S	0242	0336	0418	1911	1953	2048
60S	0155	0308	0358	1931	2022	2136

MOON: RISE / SET | UTC HHMM

Lat	Day 28		Day 29		Day 30	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	--	--	--	--
62N	1519	1220	1540	1415	1721	1448
60N	1559	1140	1642	1313	1806	1403
58N	1627	1113	1716	1239	1835	1334
56N	1649	1051	1741	1214	1858	1311
54N	1707	1033	1801	1153	1916	1252
52N	1722	1018	1818	1137	1932	1236
50N	1736	1005	1833	1122	1946	1222
45N	1803	0939	1902	1053	2013	1154
40N	1825	0917	1925	1030	2035	1132
35N	1843	0900	1944	1011	2053	1113
30N	1859	0845	2001	0954	2108	1057
25N	1913	0831	2015	0940	2122	1043
20N	1925	0819	2028	0927	2135	1030
15N	1937	0808	2041	0914	2146	1018
10N	1948	0757	2052	0903	2157	1007
05N	1959	0747	2104	0852	2208	0956
00N	2010	0737	2115	0841	2218	0945
05S	2021	0726	2126	0830	2229	0934
10S	2031	0716	2137	0818	2239	0923
15S	2043	0706	2149	0807	2250	0912
20S	2055	0654	2201	0755	2302	0900
25S	2108	0642	2214	0741	2314	0847
30S	2122	0629	2229	0727	2328	0832
35S	2138	0614	2245	0711	2343	0816
40S	2157	0557	2304	0652	--	0757
45S	2219	0536	2328	0628	--	0734
50S	2248	0511	2357	0559	--	0704
55S	2329	0436	--	0518	0039	0623
60S	--	0344	0038	0409	0151	0512

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | OCTOBER 31 - NOVEMBER 2

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
31	00	039 18.8	196 23.7	S15 04.2	258 15.2	N16 54.1	252 34.3	N14 06.1	029 40.0	N01 14.0
	01	054 21.3	211 27.2	S15 03.2	273 16.3	N16 53.8	267 36.5	N14 06.0	044 42.6	N01 14.0
	02	069 23.8	226 30.7	S15 02.1	288 17.5	N16 53.4	282 38.6	N14 05.9	059 45.2	N01 13.9
	03	084 26.2	241 34.2	S15 01.1	303 18.7	N16 53.1	297 40.8	N14 05.8	074 47.9	N01 13.9
	04	099 28.7	256 37.7	S15 00.1	318 19.9	N16 52.8	312 43.0	N14 05.7	089 50.5	N01 13.8
	05	114 31.2	271 41.1	S14 59.1	333 21.1	N16 52.4	327 45.1	N14 05.6	104 53.1	N01 13.8
	06	129 33.6	286 44.6	S14 58.0	348 22.3	N16 52.1	342 47.3	N14 05.5	119 55.7	N01 13.7
	07	144 36.1	301 48.1	S14 57.0	003 23.5	N16 51.7	357 49.4	N14 05.4	134 58.3	N01 13.6
	08	159 38.6	316 51.6	S14 56.0	018 24.7	N16 51.4	012 51.6	N14 05.4	150 00.9	N01 13.6
	09	174 41.0	331 55.0	S14 55.0	033 25.9	N16 51.1	027 53.8	N14 05.3	165 03.5	N01 13.5
	10	189 43.5	346 58.5	S14 53.9	048 27.1	N16 50.7	042 55.9	N14 05.2	180 06.1	N01 13.5
	11	204 46.0	002 02.0	S14 52.9	063 28.3	N16 50.4	057 58.1	N14 05.1	195 08.8	N01 13.4
	12	219 48.4	017 05.4	S14 51.9	078 29.5	N16 50.0	073 00.3	N14 05.0	210 11.4	N01 13.4
	13	234 50.9	032 08.9	S14 50.9	093 30.6	N16 49.7	088 02.4	N14 04.9	225 14.0	N01 13.3
	14	249 53.3	047 12.4	S14 49.9	108 31.8	N16 49.3	103 04.6	N14 04.8	240 16.6	N01 13.2
	15	264 55.8	062 15.8	S14 48.8	123 33.0	N16 49.0	118 06.7	N14 04.7	255 19.2	N01 13.2
	16	279 58.3	077 19.3	S14 47.8	138 34.2	N16 48.7	133 08.9	N14 04.6	270 21.8	N01 13.1
	17	295 00.7	092 22.7	S14 46.8	153 35.4	N16 48.3	148 11.1	N14 04.5	285 24.4	N01 13.1
	18	310 03.2	107 26.1	S14 45.8	168 36.6	N16 48.0	163 13.2	N14 04.4	300 27.0	N01 13.0
	19	325 05.7	122 29.6	S14 44.8	183 37.8	N16 47.6	178 15.4	N14 04.3	315 29.6	N01 13.0
	20	340 08.1	137 33.0	S14 43.8	198 39.0	N16 47.3	193 17.6	N14 04.2	330 32.3	N01 12.9
	21	355 10.6	152 36.5	S14 42.7	213 40.2	N16 46.9	208 19.7	N14 04.1	345 34.9	N01 12.8
	22	010 13.1	167 39.9	S14 41.7	228 41.4	N16 46.6	223 21.9	N14 04.0	000 37.5	N01 12.8
	23	025 15.5	182 43.3	S14 40.7	243 42.6	N16 46.3	238 24.1	N14 03.9	015 40.1	N01 12.7
1	00	040 18.0	197 46.7	S14 39.7	258 43.8	N16 45.9	253 26.2	N14 03.9	030 42.7	N01 12.7
	01	055 20.4	212 50.2	S14 38.7	273 45.0	N16 45.6	268 28.4	N14 03.8	045 45.3	N01 12.6
	02	070 22.9	227 53.6	S14 37.7	288 46.2	N16 45.2	283 30.6	N14 03.7	060 47.9	N01 12.6
	03	085 25.4	242 57.0	S14 36.7	303 47.4	N16 44.9	298 32.7	N14 03.6	075 50.5	N01 12.5
	04	100 27.8	258 00.4	S14 35.6	318 48.6	N16 44.5	313 34.9	N14 03.5	090 53.1	N01 12.4
	05	115 30.3	273 03.8	S14 34.6	333 49.8	N16 44.2	328 37.1	N14 03.4	105 55.8	N01 12.4
	06	130 32.8	288 07.2	S14 33.6	348 51.0	N16 43.9	343 39.2	N14 03.3	120 58.4	N01 12.3
	07	145 35.2	303 10.6	S14 32.6	003 52.2	N16 43.5	358 41.4	N14 03.2	136 01.0	N01 12.3
	08	160 37.7	318 14.0	S14 31.6	018 53.4	N16 43.2	013 43.6	N14 03.1	151 03.6	N01 12.2
	09	175 40.2	333 17.4	S14 30.6	033 54.6	N16 42.8	028 45.7	N14 03.0	166 06.2	N01 12.2
	10	190 42.6	348 20.8	S14 29.6	048 55.8	N16 42.5	043 47.9	N14 02.9	181 08.8	N01 12.1
	11	205 45.1	003 24.2	S14 28.6	063 57.0	N16 42.1	058 50.1	N14 02.8	196 11.4	N01 12.1
	12	220 47.6	018 27.6	S14 27.6	078 58.2	N16 41.8	073 52.2	N14 02.7	211 14.0	N01 12.0
	13	235 50.0	033 31.0	S14 26.6	093 59.4	N16 41.5	088 54.4	N14 02.6	226 16.6	N01 11.9
	14	250 52.5	048 34.3	S14 25.5	109 00.6	N16 41.1	103 56.6	N14 02.6	241 19.2	N01 11.9
	15	265 54.9	063 37.7	S14 24.5	124 01.8	N16 40.8	118 58.7	N14 02.5	256 21.9	N01 11.8
	16	280 57.4	078 41.1	S14 23.5	139 03.0	N16 40.4	134 00.9	N14 02.4	271 24.5	N01 11.8
	17	295 59.9	093 44.5	S14 22.5	154 04.2	N16 40.1	149 03.1	N14 02.3	286 27.1	N01 11.7
	18	311 02.3	108 47.8	S14 21.5	169 05.4	N16 39.7	164 05.3	N14 02.2	301 29.7	N01 11.7
	19	326 04.8	123 51.2	S14 20.5	184 06.6	N16 39.4	179 07.4	N14 02.1	316 32.3	N01 11.6
	20	341 07.3	138 54.6	S14 19.5	199 07.8	N16 39.1	194 09.6	N14 02.0	331 34.9	N01 11.6
	21	356 09.7	153 57.9	S14 18.5	214 09.0	N16 38.7	209 11.8	N14 01.9	346 37.5	N01 11.5
	22	011 12.2	169 01.3	S14 17.5	229 10.3	N16 38.4	224 13.9	N14 01.8	001 40.1	N01 11.4
	23	026 14.7	184 04.6	S14 16.5	244 11.5	N16 38.0	239 16.1	N14 01.7	016 42.7	N01 11.4
2	00	041 17.1	199 08.0	S14 15.5	259 12.7	N16 37.7	254 18.3	N14 01.6	031 45.3	N01 11.3
	01	056 19.6	214 11.3	S14 14.5	274 13.9	N16 37.3	269 20.5	N14 01.5	046 47.9	N01 11.3
	02	071 22.1	229 14.6	S14 13.5	289 15.1	N16 37.0	284 22.6	N14 01.5	061 50.6	N01 11.2
	03	086 24.5	244 18.0	S14 12.5	304 16.3	N16 36.7	299 24.8	N14 01.4	076 53.2	N01 11.2
	04	101 27.0	259 21.3	S14 11.5	319 17.5	N16 36.3	314 27.0	N14 01.3	091 55.8	N01 11.1
	05	116 29.4	274 24.6	S14 10.5	334 18.7	N16 36.0	329 29.1	N14 01.2	106 58.4	N01 11.1
	06	131 31.9	289 28.0	S14 09.6	349 19.9	N16 35.6	344 31.3	N14 01.1	122 01.0	N01 11.0
	07	146 34.4	304 31.3	S14 08.6	004 21.1	N16 35.3	359 33.5	N14 01.0	137 03.6	N01 10.9
	08	161 36.8	319 34.6	S14 07.6	019 22.3	N16 34.9	014 35.7	N14 00.9	152 06.2	N01 10.9
	09	176 39.3	334 37.9	S14 06.6	034 23.6	N16 34.6	029 37.8	N14 00.8	167 08.8	N01 10.8
	10	191 41.8	349 41.2	S14 05.6	049 24.8	N16 34.3	044 40.0	N14 00.7	182 11.4	N01 10.8
	11	206 44.2	004 44.5	S14 04.6	064 26.0	N16 33.9	059 42.2	N14 00.6	197 14.0	N01 10.7
	12	221 46.7	019 47.8	S14 03.6	079 27.2	N16 33.6	074 44.4	N14 00.5	212 16.6	N01 10.7
	13	236 49.2	034 51.2	S14 02.6	094 28.4	N16 33.2	089 46.5	N14 00.5	227 19.2	N01 10.6
	14	251 51.6	049 54.4	S14 01.6	109 29.6	N16 32.9	104 48.7	N14 00.4	242 21.8	N01 10.6
	15	266 54.1	064 57.7	S14 00.6	124 30.8	N16 32.6	119 50.9	N14 00.3	257 24.5	N01 10.5
	16	281 56.6	080 01.0	S13 59.7	139 32.0	N16 32.2	134 53.1	N14 00.2	272 27.1	N01 10.5
	17	296 59.0	095 04.3	S13 58.7	154 33.3	N16 31.9	149 55.2	N14 00.1	287 29.7	N01 10.4
	18	312 01.5	110 07.6	S13 57.7	169 34.5	N16 31.5	164 57.4	N14 00.0	302 32.3	N01 10.3
	19	327 03.9	125 10.9	S13 56.7	184 35.7	N16 31.2	179 59.6	N13 59.9	317 34.9	N01 10.3
	20	342 06.4	140 14.2	S13 55.7	199 36.9	N16 30.8	195 01.8	N13 59.8	332 37.5	N01 10.2
	21	357 08.9	155 17.4	S13 54.8	214 38.1	N16 30.5	210 03.9	N13 59.7	347 40.1	N01 10.2
	22	012 11.3	170 20.7	S13 53.8	229 39.3	N16 30.2	225 06.1	N13 59.6	002 42.7	N01 10.1
	23	027 13.8	185 24.0	S13 52.8	244 40.6	N16 29.8	240 08.3	N13 59.6	017 45.3	N01 10.1

Venus	Mars	Jupiter	Saturn
31: v 3.5 d 1.0	31: v 1.2 d -0.3	31: v 2.2 d -0.1	31: v 2.6 d -0.1
1: v 3.4 d 1.0	1: v 1.2 d -0.3	1: v 2.2 d -0.1	1: v 2.6 d -0.1
2: v 3.3 d 1.0	2: v 1.2 d -0.3	2: v 2.2 d -0.1	2: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.2	S40 11.7
Achernar	335 18.5	S57 06.0
Acrux	172 59.0	S63 14.7
Adhara	255 04.5	S29 00.3
Al Na'ir	027 30.9	S46 50.0
Aldebaran	290 37.6	N16 33.9
Alioth	166 12.2	N55 48.7
Alkaid	152 51.3	N49 10.7
Alnilam	275 36.0	S01 11.0
Alphard	217 46.4	S08 46.4
Alphecca	126 02.8	N26 37.5
Alpheratz	357 32.9	N29 14.6
Altair	061 58.6	N08 56.5
Ankaa	353 05.3	S42 09.6
Antares	112 14.3	S26 29.5
Arcturus	145 46.9	N19 02.6
Atria	107 07.7	S69 04.6
Avior	234 14.1	S59 35.4
Bellatrix	278 21.0	N06 22.5
Betelgeuse	270 50.3	N07 24.8
Canopus	263 51.4	S52 42.3
Capella	280 19.3	N46 01.4
Deneb	049 24.8	N45 22.9
Denebola	182 23.7	N14 25.3
Diphda	348 45.5	S17 50.3
Dubhe	193 39.6	N61 36.1
Elnath	277 59.7	N28 37.8
Eltanin	090 41.8	N51 29.3
Enif	033 37.3	N10 00.1
Fomalhaut	015 12.7	S29 28.8
Gacrux	171 50.5	S57 15.6
Gienah	175 42.3	S17 41.3
Hadar	148 34.5	S60 30.1
Hamal	327 49.2	N23 35.5
Kaus Australi	083 30.8	S34 22.3
Kochab	137 21.0	N74 02.7
Markab	013 28.2	N15 21.2
Menkar	314 04.3	N04 11.8
Menkent	147 56.3	S36 30.0
Miaplacidus	221 38.1	S69 49.3
Mirfak	308 25.6	N49 57.4
Nunki	075 46.1	S26 15.8
Peacock	053 03.5	S56 39.1
Polaris	312 45.8	N89 22.6
Pollux	243 15.4	N27 57.6
Procyon	244 49.2	N05 09.4
Rasalhague	095 57.4	N12 32.6
Regulus	207 33.0	N11 50.2
Rigel	281 02.2	S08 10.1
Rigil Kentaur	139 38.9	S60 56.7
Sabik	102 01.4	S15 45.4
Schedar	349 28.8	N56 41.3
Shaula	096 08.7	S37 07.4
Sirius	258 24.8	S16 45.0
Spica	158 21.1	S11 18.0
Suhail	222 45.3	S43 32.2
Vega	080 32.4	N38 48.7
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	157 40.0	1046
Mars	218 10.7	0645
Jupiter	213 04.7	0705
Saturn	350 26.5	2153

2026 | OCTOBER 31 - NOVEMBER 2

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
31	00	184 05.6	S14 02.3	294 34.5	N26 15.7	59.7	4.0	-6.0
	01	199 05.6	S14 03.1	308 57.4	N26 09.7	59.7	4.1	-6.2
	02	214 05.6	S14 03.9	323 20.5	N26 03.6	59.7	4.2	-6.3
	03	229 05.6	S14 04.7	337 43.7	N25 57.2	59.7	4.2	-6.5
	04	244 05.7	S14 05.5	352 06.9	N25 50.7	59.6	4.3	-6.7
	05	259 05.7	S14 06.3	006 30.2	N25 44.0	59.6	4.4	-6.9
	06	274 05.7	S14 07.1	020 53.7	N25 37.1	59.6	4.5	-7.0
	07	289 05.7	S14 07.9	035 17.2	N25 30.1	59.6	4.6	-7.2
	08	304 05.8	S14 08.7	049 40.9	N25 22.9	59.6	4.7	-7.4
	09	319 05.8	S14 09.6	064 04.6	N25 15.5	59.6	4.8	-7.5
	10	334 05.8	S14 10.4	078 28.5	N25 08.0	59.5	5.0	-7.7
	11	349 05.9	S14 11.2	092 52.4	N25 00.3	59.5	5.1	-7.8
	12	004 05.9	S14 12.0	107 16.5	N24 52.5	59.5	5.2	-8.0
	13	019 05.9	S14 12.8	121 40.6	N24 44.5	59.5	5.3	-8.2
	14	034 05.9	S14 13.6	136 04.9	N24 36.3	59.5	5.4	-8.3
	15	049 05.9	S14 14.4	150 29.3	N24 28.0	59.4	5.5	-8.5
	16	064 06.0	S14 15.2	164 53.8	N24 19.5	59.4	5.6	-8.6
	17	079 06.0	S14 16.0	179 18.4	N24 10.9	59.4	5.7	-8.8
	18	094 06.0	S14 16.8	193 43.1	N24 02.1	59.4	5.8	-8.9
	19	109 06.0	S14 17.6	208 07.9	N23 53.2	59.4	5.9	-9.1
	20	124 06.1	S14 18.4	222 32.9	N23 44.1	59.4	6.1	-9.2
	21	139 06.1	S14 19.2	236 57.9	N23 34.9	59.3	6.2	-9.4
	22	154 06.1	S14 20.0	251 23.1	N23 25.6	59.3	6.3	-9.5
	23	169 06.1	S14 20.8	265 48.4	N23 16.1	59.3	6.4	-9.6
1	00	184 06.1	S14 21.6	280 13.8	N23 06.4	59.3	6.5	-9.8
	01	199 06.2	S14 22.4	294 39.3	N22 56.7	59.3	6.6	-9.9
	02	214 06.2	S14 23.2	309 04.9	N22 46.8	59.2	6.7	-10.0
	03	229 06.2	S14 24.0	323 30.7	N22 36.7	59.2	6.9	-10.2
	04	244 06.2	S14 24.8	337 56.5	N22 26.6	59.2	7.0	-10.3
	05	259 06.2	S14 25.6	352 22.5	N22 16.3	59.2	7.1	-10.4
	06	274 06.3	S14 26.4	006 48.6	N22 05.8	59.2	7.2	-10.6
	07	289 06.3	S14 27.2	021 14.8	N21 55.3	59.1	7.3	-10.7
	08	304 06.3	S14 28.0	035 41.1	N21 44.6	59.1	7.4	-10.8
	09	319 06.3	S14 28.8	050 07.5	N21 33.8	59.1	7.6	-10.9
	10	334 06.3	S14 29.6	064 34.1	N21 22.9	59.1	7.7	-11.0
	11	349 06.3	S14 30.4	079 00.8	N21 11.8	59.0	7.8	-11.2
	12	004 06.4	S14 31.2	093 27.5	N21 00.7	59.0	7.9	-11.3
	13	019 06.4	S14 32.0	107 54.4	N20 49.4	59.0	8.0	-11.4
	14	034 06.4	S14 32.8	122 21.5	N20 38.0	59.0	8.1	-11.5
	15	049 06.4	S14 33.6	136 48.6	N20 26.5	59.0	8.2	-11.6
	16	064 06.4	S14 34.4	151 15.8	N20 14.9	58.9	8.4	-11.7
	17	079 06.4	S14 35.2	165 43.2	N20 03.2	58.9	8.5	-11.8
	18	094 06.4	S14 36.0	180 10.6	N19 51.4	58.9	8.6	-11.9
	19	109 06.5	S14 36.8	194 38.2	N19 39.4	58.9	8.7	-12.0
	20	124 06.5	S14 37.6	209 05.9	N19 27.4	58.9	8.8	-12.1
	21	139 06.5	S14 38.4	223 33.7	N19 15.3	58.8	8.9	-12.2
	22	154 06.5	S14 39.2	238 01.6	N19 03.0	58.8	9.0	-12.3
	23	169 06.5	S14 40.0	252 29.7	N18 50.7	58.8	9.1	-12.4
2	00	184 06.5	S14 40.8	266 57.8	N18 38.3	58.8	9.2	-12.5
	01	199 06.5	S14 41.6	281 26.0	N18 25.8	58.7	9.4	-12.6
	02	214 06.5	S14 42.4	295 54.4	N18 13.1	58.7	9.5	-12.7
	03	229 06.6	S14 43.2	310 22.9	N18 00.4	58.7	9.6	-12.8
	04	244 06.6	S14 44.0	324 51.4	N17 47.6	58.7	9.7	-12.9
	05	259 06.6	S14 44.7	339 20.1	N17 34.8	58.7	9.8	-13.0
	06	274 06.6	S14 45.5	353 48.9	N17 21.8	58.6	9.9	-13.1
	07	289 06.6	S14 46.3	008 17.8	N17 08.7	58.6	10.0	-13.1
	08	304 06.6	S14 47.1	022 46.7	N16 55.6	58.6	10.1	-13.2
	09	319 06.6	S14 47.9	037 15.8	N16 42.4	58.6	10.2	-13.3
	10	334 06.6	S14 48.7	051 45.0	N16 29.1	58.6	10.3	-13.4
	11	349 06.6	S14 49.5	066 14.3	N16 15.7	58.5	10.4	-13.4
	12	004 06.6	S14 50.3	080 43.7	N16 02.3	58.5	10.5	-13.5
	13	019 06.6	S14 51.1	095 13.2	N15 48.8	58.5	10.6	-13.6
	14	034 06.6	S14 51.8	109 42.8	N15 35.2	58.5	10.7	-13.7
	15	049 06.7	S14 52.6	124 12.5	N15 21.5	58.4	10.8	-13.7
	16	064 06.7	S14 53.4	138 42.3	N15 07.8	58.4	10.9	-13.8
	17	079 06.7	S14 54.2	153 12.1	N14 54.0	58.4	11.0	-13.9
	18	094 06.7	S14 55.0	167 42.1	N14 40.1	58.4	11.1	-13.9
	19	109 06.7	S14 55.8	182 12.2	N14 26.2	58.3	11.2	-14.0
	20	124 06.7	S14 56.6	196 42.3	N14 12.2	58.3	11.2	-14.1
	21	139 06.7	S14 57.3	211 12.6	N13 58.1	58.3	11.3	-14.1
	22	154 06.7	S14 58.1	225 42.9	N13 44.0	58.3	11.4	-14.2
	23	169 06.7	S14 58.9	240 13.3	N13 29.8	58.3	11.5	-14.2

Day 31 noon Sun: v 0.0 d -0.8 SD 16.1 | Moon SD 16.2

Day 1 noon Sun: v 0.0 d -0.8 SD 16.1 | Moon SD 16.1

Day 2 noon Sun: v 0.0 d -0.8 SD 16.1 | Moon SD 15.9

SUN: NOVEMBER 1 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0606	0729	0857	1429	1556	1719
70N	0602	0716	0830	1455	1610	1724
68N	0558	0706	0811	1515	1620	1727
66N	0555	0657	0755	1531	1629	1731
64N	0552	0649	0742	1544	1637	1734
62N	0550	0643	0731	1555	1643	1736
60N	0547	0637	0722	1604	1649	1739
58N	0545	0632	0714	1612	1654	1741
56N	0543	0627	0707	1619	1659	1743
54N	0541	0623	0700	1626	1703	1745
52N	0539	0619	0655	1632	1707	1747
50N	0537	0616	0650	1637	1711	1749
45N	0533	0608	0638	1648	1719	1754
40N	0529	0601	0629	1658	1726	1758
35N	0525	0555	0621	1706	1732	1802
30N	0521	0549	0614	1713	1738	1806
25N	0517	0544	0607	1720	1743	1810
20N	0513	0539	0601	1725	1748	1814
15N	0508	0534	0556	1731	1753	1819
10N	0504	0529	0550	1737	1758	1823
05N	0459	0524	0545	1742	1803	1828
00N	0454	0519	0540	1747	1808	1833
05S	0449	0514	0535	1752	1814	1839
10S	0443	0508	0530	1758	1819	1845
15S	0436	0502	0524	1803	1825	1852
20S	0428	0455	0518	1809	1832	1859
25S	0420	0448	0512	1815	1839	1908
30S	0410	0440	0505	1822	1847	1918
35S	0359	0431	0458	1830	1857	1929
40S	0345	0420	0449	1839	1908	1943
45S	0327	0407	0439	1849	1921	2001
50S	0304	0350	0427	1902	1938	2024
55S	0232	0329	0411	1918	2000	2057
60S	0140	0258	0350	1939	2031	2151

MOON: RISE / SET | UTC HHMM

Lat	Day 31		Day 1		Day 2	
72N	--	--	--	--	2143	1626
70N	--	--	1853	1726	2212	1555
68N	--	--	2003	1614	2233	1532
66N	--	--	2040	1536	2249	1514
64N	1849	1529	2105	1510	2303	1459
62N	1927	1451	2125	1449	2314	1446
60N	1953	1424	2141	1432	2324	1435
58N	2014	1402	2155	1417	2332	1426
56N	2031	1345	2206	1405	2339	1418
54N	2045	1330	2217	1354	2346	1410
52N	2057	1317	2226	1344	2351	1404
50N	2108	1305	2234	1336	2357	1358
45N	2131	1241	2251	1317	--	1345
40N	2150	1222	2305	1302	--	1334
35N	2205	1206	2316	1249	--	1325
30N	2218	1152	2326	1238	--	1316
25N	2230	1139	2336	1228	--	1309
20N	2241	1128	2344	1218	--	1302
15N	2251	1117	2352	1209	--	1256
10N	2300	1107	2359	1201	--	1250
05N	2309	1057	--	1153	0006	1244
00N	2318	1047	--	1145	0013	1238
05S	2327	1038	--	1137	0020	1232
10S	2336	1028	--	1129	0027	1226
15S	2346	1017	--	1120	0035	1220
20S	2355	1006	--	1111	0042	1213
25S	--	0955	0006	1102	0050	1206
30S	--	0942	0017	1051	0059	1158
35S	--	0927	0030	1039	0109	1149
40S	0001	0910	0045	1025	0120	1139
45S	0022	0849	0103	1009	0134	1128
50S	0049	0824	0124	0949	0150	1113
55S	0125	0748	0152	0922	0210	1055
60S	0221	0653	0232	0844	0237	1030

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | NOVEMBER 3 - NOVEMBER 5

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
3	00	042 16.3	200 27.2	S13 51.8	259 41.8	N16 29.5	255 10.5	N13 59.5	032 47.9	N01 10.0
	01	057 18.7	215 30.5	S13 50.8	274 43.0	N16 29.1	270 12.6	N13 59.4	047 50.5	N01 10.0
	02	072 21.2	230 33.8	S13 49.9	289 44.2	N16 28.8	285 14.8	N13 59.3	062 53.1	N01 09.9
	03	087 23.7	245 37.0	S13 48.9	304 45.4	N16 28.4	300 17.0	N13 59.2	077 55.7	N01 09.9
	04	102 26.1	260 40.3	S13 47.9	319 46.6	N16 28.1	315 19.2	N13 59.1	092 58.3	N01 09.8
	05	117 28.6	275 43.5	S13 46.9	334 47.9	N16 27.8	330 21.4	N13 59.0	108 00.9	N01 09.8
	06	132 31.0	290 46.8	S13 46.0	349 49.1	N16 27.4	345 23.5	N13 58.9	123 03.5	N01 09.7
	07	147 33.5	305 50.0	S13 45.0	004 50.3	N16 27.1	000 25.7	N13 58.8	138 06.2	N01 09.6
	08	162 36.0	320 53.2	S13 44.0	019 51.5	N16 26.7	015 27.9	N13 58.8	153 08.8	N01 09.6
	09	177 38.4	335 56.5	S13 43.1	034 52.8	N16 26.4	030 30.1	N13 58.7	168 11.4	N01 09.5
	10	192 40.9	350 59.7	S13 42.1	049 54.0	N16 26.0	045 32.3	N13 58.6	183 14.0	N01 09.5
	11	207 43.4	006 02.9	S13 41.1	064 55.2	N16 25.7	060 34.4	N13 58.5	198 16.6	N01 09.4
	12	222 45.8	021 06.1	S13 40.2	079 56.4	N16 25.4	075 36.6	N13 58.4	213 19.2	N01 09.4
	13	237 48.3	036 09.3	S13 39.2	094 57.6	N16 25.0	090 38.8	N13 58.3	228 21.8	N01 09.3
	14	252 50.8	051 12.6	S13 38.2	109 58.9	N16 24.7	105 41.0	N13 58.2	243 24.4	N01 09.3
	15	267 53.2	066 15.8	S13 37.3	125 00.1	N16 24.3	120 43.2	N13 58.1	258 27.0	N01 09.2
	16	282 55.7	081 19.0	S13 36.3	140 01.3	N16 24.0	135 45.3	N13 58.0	273 29.6	N01 09.2
	17	297 58.2	096 22.2	S13 35.4	155 02.5	N16 23.7	150 47.5	N13 58.0	288 32.2	N01 09.1
	18	313 00.6	111 25.4	S13 34.4	170 03.8	N16 23.3	165 49.7	N13 57.9	303 34.8	N01 09.1
	19	328 03.1	126 28.6	S13 33.4	185 05.0	N16 23.0	180 51.9	N13 57.8	318 37.4	N01 09.0
	20	343 05.5	141 31.8	S13 32.5	200 06.2	N16 22.6	195 54.1	N13 57.7	333 40.0	N01 09.0
	21	358 08.0	156 35.0	S13 31.5	215 07.4	N16 22.3	210 56.2	N13 57.6	348 42.6	N01 08.9
	22	013 10.5	171 38.1	S13 30.6	230 08.7	N16 21.9	225 58.4	N13 57.5	003 45.2	N01 08.9
	23	028 12.9	186 41.3	S13 29.6	245 09.9	N16 21.6	241 00.6	N13 57.4	018 47.8	N01 08.8
4	00	043 15.4	201 44.5	S13 28.7	260 11.1	N16 21.3	256 02.8	N13 57.3	033 50.4	N01 08.7
	01	058 17.9	216 47.7	S13 27.7	275 12.3	N16 20.9	271 05.0	N13 57.3	048 53.0	N01 08.7
	02	073 20.3	231 50.8	S13 26.8	290 13.6	N16 20.6	286 07.2	N13 57.2	063 55.6	N01 08.6
	03	088 22.8	246 54.0	S13 25.8	305 14.8	N16 20.2	301 09.3	N13 57.1	078 58.2	N01 08.6
	04	103 25.3	261 57.2	S13 24.9	320 16.0	N16 19.9	316 11.5	N13 57.0	094 00.8	N01 08.5
	05	118 27.7	277 00.3	S13 23.9	335 17.3	N16 19.6	331 13.7	N13 56.9	109 03.4	N01 08.5
	06	133 30.2	292 03.5	S13 23.0	350 18.5	N16 19.2	346 15.9	N13 56.8	124 06.0	N01 08.4
	07	148 32.6	307 06.6	S13 22.0	005 19.7	N16 18.9	001 18.1	N13 56.7	139 08.6	N01 08.4
	08	163 35.1	322 09.8	S13 21.1	020 21.0	N16 18.5	016 20.3	N13 56.6	154 11.2	N01 08.3
	09	178 37.6	337 12.9	S13 20.2	035 22.2	N16 18.2	031 22.5	N13 56.6	169 13.9	N01 08.3
	10	193 40.0	352 16.1	S13 19.2	050 23.4	N16 17.8	046 24.6	N13 56.5	184 16.5	N01 08.2
	11	208 42.5	007 19.2	S13 18.3	065 24.6	N16 17.5	061 26.8	N13 56.4	199 19.1	N01 08.2
	12	223 45.0	022 22.3	S13 17.3	080 25.9	N16 17.2	076 29.0	N13 56.3	214 21.7	N01 08.1
	13	238 47.4	037 25.5	S13 16.4	095 27.1	N16 16.8	091 31.2	N13 56.2	229 24.3	N01 08.1
	14	253 49.9	052 28.6	S13 15.5	110 28.3	N16 16.5	106 33.4	N13 56.1	244 26.9	N01 08.0
	15	268 52.4	067 31.7	S13 14.5	125 29.6	N16 16.1	121 35.6	N13 56.0	259 29.5	N01 08.0
	16	283 54.8	082 34.8	S13 13.6	140 30.8	N16 15.8	136 37.8	N13 56.0	274 32.1	N01 07.9
	17	298 57.3	097 37.9	S13 12.7	155 32.0	N16 15.5	151 40.0	N13 55.9	289 34.7	N01 07.9
	18	313 59.8	112 41.1	S13 11.7	170 33.3	N16 15.1	166 42.1	N13 55.8	304 37.3	N01 07.8
	19	329 02.2	127 44.2	S13 10.8	185 34.5	N16 14.8	181 44.3	N13 55.7	319 39.9	N01 07.8
	20	344 04.7	142 47.3	S13 09.9	200 35.8	N16 14.4	196 46.5	N13 55.6	334 42.5	N01 07.7
	21	359 07.1	157 50.4	S13 09.0	215 37.0	N16 14.1	211 48.7	N13 55.5	349 45.1	N01 07.7
	22	014 09.6	172 53.5	S13 08.0	230 38.2	N16 13.8	226 50.9	N13 55.4	004 47.7	N01 07.6
	23	029 12.1	187 56.6	S13 07.1	245 39.5	N16 13.4	241 53.1	N13 55.4	019 50.3	N01 07.6
5	00	044 14.5	202 59.6	S13 06.2	260 40.7	N16 13.1	256 55.3	N13 55.3	034 52.9	N01 07.5
	01	059 17.0	218 02.7	S13 05.3	275 41.9	N16 12.7	271 57.5	N13 55.2	049 55.5	N01 07.4
	02	074 19.5	233 05.8	S13 04.3	290 43.2	N16 12.4	286 59.6	N13 55.1	064 58.1	N01 07.4
	03	089 21.9	248 08.9	S13 03.4	305 44.4	N16 12.0	302 01.8	N13 55.0	080 00.7	N01 07.3
	04	104 24.4	263 12.0	S13 02.5	320 45.7	N16 11.7	317 04.0	N13 54.9	095 03.3	N01 07.3
	05	119 26.9	278 15.0	S13 01.6	335 46.9	N16 11.4	332 06.2	N13 54.8	110 05.9	N01 07.2
	06	134 29.3	293 18.1	S13 00.7	350 48.1	N16 11.0	347 08.4	N13 54.8	125 08.5	N01 07.2
	07	149 31.8	308 21.1	S12 59.8	005 49.4	N16 10.7	002 10.6	N13 54.7	140 11.1	N01 07.1
	08	164 34.3	323 24.2	S12 58.9	020 50.6	N16 10.3	017 12.8	N13 54.6	155 13.7	N01 07.1
	09	179 36.7	338 27.3	S12 58.0	035 51.9	N16 10.0	032 15.0	N13 54.5	170 16.3	N01 07.0
	10	194 39.2	353 30.3	S12 57.0	050 53.1	N16 09.7	047 17.2	N13 54.4	185 18.9	N01 07.0
	11	209 41.6	008 33.4	S12 56.1	065 54.3	N16 09.3	062 19.4	N13 54.3	200 21.5	N01 06.9
	12	224 44.1	023 36.4	S12 55.2	080 55.6	N16 09.0	077 21.6	N13 54.3	215 24.1	N01 06.9
	13	239 46.6	038 39.4	S12 54.3	095 56.8	N16 08.6	092 23.8	N13 54.2	230 26.7	N01 06.8
	14	254 49.0	053 42.5	S12 53.4	110 58.1	N16 08.3	107 25.9	N13 54.1	245 29.3	N01 06.8
	15	269 51.5	068 45.5	S12 52.5	125 59.3	N16 08.0	122 28.1	N13 54.0	260 31.9	N01 06.7
	16	284 54.0	083 48.5	S12 51.6	141 00.6	N16 07.6	137 30.3	N13 53.9	275 34.5	N01 06.7
	17	299 56.4	098 51.6	S12 50.7	156 01.8	N16 07.3	152 32.5	N13 53.8	290 37.1	N01 06.6
	18	314 58.9	113 54.6	S12 49.8	171 03.1	N16 06.9	167 34.7	N13 53.7	305 39.7	N01 06.6
	19	330 01.4	128 57.6	S12 48.9	186 04.3	N16 06.6	182 36.9	N13 53.7	320 42.3	N01 06.5
	20	345 03.8	144 00.6	S12 48.0	201 05.5	N16 06.3	197 39.1	N13 53.6	335 44.9	N01 06.5
	21	000 06.3	159 03.6	S12 47.1	216 06.8	N16 05.9	212 41.3	N13 53.5	350 47.5	N01 06.4
	22	015 08.7	174 06.6	S12 46.2	231 08.0	N16 05.6	227 43.5	N13 53.4	005 50.1	N01 06.4
	23	030 11.2	189 09.6	S12 45.4	246 09.3	N16 05.2	242 45.7	N13 53.3	020 52.7	N01 06.3

Venus	Mars	Jupiter	Saturn
3: v 3.2 d 1.0	3: v 1.2 d -0.3	3: v 2.2 d -0.1	3: v 2.6 d -0.1
4: v 3.1 d 0.9	4: v 1.2 d -0.3	4: v 2.2 d -0.1	4: v 2.6 d -0.1
5: v 3.0 d 0.9	5: v 1.2 d -0.3	5: v 2.2 d -0.1	5: v 2.6 d -0.1

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.2	S40 11.7
Achernar	335 18.5	S57 06.0
Acrux	172 59.0	S63 14.7
Adhara	255 04.5	S29 00.3
Al Na'ir	027 30.9	S46 50.0
Aldebaran	290 37.6	N16 33.9
Alioth	166 12.2	N55 48.7
Alkaid	152 51.3	N49 10.7
Alnilam	275 36.0	S01 11.0
Alphard	217 46.3	S08 46.4
Alphecca	126 02.8	N26 37.5
Alpheratz	357 32.9	N29 14.6
Altair	061 58.6	N08 56.5
Ankaa	353 05.3	S42 09.6
Antares	112 14.3	S26 29.5
Arcturus	145 46.9	N19 02.6
Atria	107 07.7	S69 04.6
Avior	234 14.0	S59 35.4
Bellatrix	278 21.0	N06 22.5
Betelgeuse	270 50.2	N07 24.8
Canopus	263 51.4	S52 42.3
Capella	280 19.3	N46 01.4
Deneb	049 24.8	N45 22.9
Denebola	182 23.7	N14 25.3
Diphda	348 45.5	S17 50.3
Dubhe	193 39.6	N61 36.1
Elnath	277 59.7	N28 37.8
Eltanin	090 41.9	N51 29.3
Enif	033 37.3	N10 00.1
Fomalhaut	015 12.7	S29 28.8
Gacrux	171 50.5	S57 15.6
Gienah	175 42.3	S17 41.4
Hadar	148 34.5	S60 30.1
Hamal	327 49.2	N23 35.5
Kaus Australi	083 30.8	S34 22.3
Kochab	137 21.0	N74 02.6
Markab	013 28.2	N15 21.2
Menkar	314 04.3	N04 11.8
Menkent	147 56.3	S36 30.0
Miaplacidus	221 38.0	S69 49.3
Mirfak	308 25.6	N49 57.4
Nunki	075 46.1	S26 15.8
Peacock	053 03.5	S56 39.1
Polaris	312 45.4	N89 22.6
Pollux	243 15.4	N27 57.6
Procyon	244 49.2	N05 09.4
Rasalhague	095 57.4	N12 32.6
Regulus	207 33.0	N11 50.1
Rigel	281 02.2	S08 10.1
Rigil Kentaur	139 38.9	S60 56.7
Sabik	102 01.4	S15 45.4
Schedar	349 28.8	N56 41.3
Shaula	096 08.7	S37 07.4
Sirius	258 24.7	S16 45.0
Spica	158 21.0	S11 18.0
Suhail	222 45.2	S43 32.2
Vega	080 32.5	N38 48.7
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	158 37.4	1031
Mars	216 40.9	0639
Jupiter	212 44.0	0655
Saturn	350 36.7	2141

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
3	00	184 06.7	S14 59.7	254 43.8	N13 15.6	58.2	11.6	-14.3
	01	199 06.7	S15 00.5	269 14.4	N13 01.3	58.2	11.7	-14.3
	02	214 06.7	S15 01.3	283 45.1	N12 47.0	58.2	11.8	-14.4
	03	229 06.7	S15 02.0	298 15.9	N12 32.6	58.2	11.8	-14.4
	04	244 06.7	S15 02.8	312 46.7	N12 18.1	58.1	11.9	-14.5
	05	259 06.7	S15 03.6	327 17.6	N12 03.6	58.1	12.0	-14.5
	06	274 06.7	S15 04.4	341 48.6	N11 49.1	58.1	12.1	-14.6
	07	289 06.7	S15 05.2	356 19.7	N11 34.5	58.1	12.2	-14.6
	08	304 06.7	S15 05.9	010 50.9	N11 19.9	58.1	12.2	-14.7
	09	319 06.7	S15 06.7	025 22.1	N11 05.2	58.0	12.3	-14.7
	10	334 06.7	S15 07.5	039 53.4	N10 50.4	58.0	12.4	-14.8
	11	349 06.7	S15 08.3	054 24.8	N10 35.7	58.0	12.5	-14.8
	12	004 06.7	S15 09.1	068 56.3	N10 20.9	58.0	12.5	-14.8
	13	019 06.7	S15 09.8	083 27.8	N10 06.0	57.9	12.6	-14.9
	14	034 06.7	S15 10.6	097 59.4	N09 51.2	57.9	12.7	-14.9
	15	049 06.7	S15 11.4	112 31.1	N09 36.2	57.9	12.7	-14.9
	16	064 06.7	S15 12.2	127 02.8	N09 21.3	57.9	12.8	-15.0
	17	079 06.7	S15 12.9	141 34.6	N09 06.3	57.9	12.9	-15.0
	18	094 06.7	S15 13.7	156 06.5	N08 51.3	57.8	12.9	-15.0
	19	109 06.7	S15 14.5	170 38.4	N08 36.3	57.8	13.0	-15.1
	20	124 06.7	S15 15.3	185 10.4	N08 21.2	57.8	13.1	-15.1
	21	139 06.7	S15 16.0	199 42.5	N08 06.1	57.8	13.1	-15.1
	22	154 06.7	S15 16.8	214 14.6	N07 51.0	57.7	13.2	-15.2
	23	169 06.7	S15 17.6	228 46.8	N07 35.8	57.7	13.2	-15.2
4	00	184 06.7	S15 18.4	243 19.0	N07 20.6	57.7	13.3	-15.2
	01	199 06.7	S15 19.1	257 51.3	N07 05.4	57.7	13.3	-15.2
	02	214 06.7	S15 19.9	272 23.6	N06 50.2	57.7	13.4	-15.2
	03	229 06.6	S15 20.7	286 56.0	N06 35.0	57.6	13.4	-15.3
	04	244 06.6	S15 21.4	301 28.4	N06 19.7	57.6	13.5	-15.3
	05	259 06.6	S15 22.2	316 00.9	N06 04.4	57.6	13.5	-15.3
	06	274 06.6	S15 23.0	330 33.5	N05 49.1	57.6	13.6	-15.3
	07	289 06.6	S15 23.8	345 06.1	N05 33.8	57.5	13.6	-15.3
	08	304 06.6	S15 24.5	359 38.7	N05 18.5	57.5	13.7	-15.3
	09	319 06.6	S15 25.3	014 11.4	N05 03.2	57.5	13.7	-15.3
	10	334 06.6	S15 26.1	028 44.1	N04 47.8	57.5	13.8	-15.4
	11	349 06.6	S15 26.8	043 16.9	N04 32.5	57.5	13.8	-15.4
	12	004 06.6	S15 27.6	057 49.7	N04 17.1	57.4	13.9	-15.4
	13	019 06.6	S15 28.4	072 22.6	N04 01.7	57.4	13.9	-15.4
	14	034 06.5	S15 29.1	086 55.5	N03 46.3	57.4	13.9	-15.4
	15	049 06.5	S15 29.9	101 28.4	N03 30.9	57.4	14.0	-15.4
	16	064 06.5	S15 30.7	116 01.4	N03 15.5	57.3	14.0	-15.4
	17	079 06.5	S15 31.4	130 34.4	N03 00.2	57.3	14.0	-15.4
	18	094 06.5	S15 32.2	145 07.4	N02 44.8	57.3	14.1	-15.4
	19	109 06.5	S15 33.0	159 40.5	N02 29.4	57.3	14.1	-15.4
	20	124 06.5	S15 33.7	174 13.6	N02 14.0	57.3	14.1	-15.4
	21	139 06.5	S15 34.5	188 46.7	N01 58.6	57.2	14.2	-15.4
	22	154 06.4	S15 35.3	203 19.9	N01 43.2	57.2	14.2	-15.4
	23	169 06.4	S15 36.0	217 53.0	N01 27.8	57.2	14.2	-15.4
5	00	184 06.4	S15 36.8	232 26.3	N01 12.4	57.2	14.2	-15.4
	01	199 06.4	S15 37.5	246 59.5	N00 57.0	57.1	14.3	-15.4
	02	214 06.4	S15 38.3	261 32.8	N00 41.6	57.1	14.3	-15.4
	03	229 06.4	S15 39.1	276 06.0	N00 26.2	57.1	14.3	-15.4
	04	244 06.4	S15 39.8	290 39.3	N00 10.9	57.1	14.3	-15.4
	05	259 06.3	S15 40.6	305 12.7	S00 04.5	57.1	14.3	-15.3
	06	274 06.3	S15 41.3	319 46.0	S00 19.8	57.0	14.4	-15.3
	07	289 06.3	S15 42.1	334 19.4	S00 35.1	57.0	14.4	-15.3
	08	304 06.3	S15 42.9	348 52.8	S00 50.4	57.0	14.4	-15.3
	09	319 06.3	S15 43.6	003 26.2	S01 05.7	57.0	14.4	-15.3
	10	334 06.3	S15 44.4	017 59.6	S01 21.0	56.9	14.4	-15.3
	11	349 06.2	S15 45.1	032 33.0	S01 36.3	56.9	14.4	-15.3
	12	004 06.2	S15 45.9	047 06.4	S01 51.6	56.9	14.4	-15.2
	13	019 06.2	S15 46.6	061 39.9	S02 06.8	56.9	14.5	-15.2
	14	034 06.2	S15 47.4	076 13.4	S02 22.0	56.9	14.5	-15.2
	15	049 06.2	S15 48.2	090 46.8	S02 37.2	56.8	14.5	-15.2
	16	064 06.1	S15 48.9	105 20.3	S02 52.4	56.8	14.5	-15.1
	17	079 06.1	S15 49.7	119 53.8	S03 07.5	56.8	14.5	-15.1
	18	094 06.1	S15 50.4	134 27.3	S03 22.6	56.8	14.5	-15.1
	19	109 06.1	S15 51.2	149 00.8	S03 37.7	56.8	14.5	-15.1
	20	124 06.1	S15 51.9	163 34.3	S03 52.8	56.7	14.5	-15.0
	21	139 06.0	S15 52.7	178 07.7	S04 07.9	56.7	14.5	-15.0
	22	154 06.0	S15 53.4	192 41.2	S04 22.9	56.7	14.5	-15.0
	23	169 06.0	S15 54.2	207 14.7	S04 37.9	56.7	14.5	-15.0

Day 3 noon Sun: v 0.0 d -0.8 SD 16.1 | Moon SD 15.8

Day 4 noon Sun: v 0.0 d -0.8 SD 16.1 | Moon SD 15.6

Day 5 noon Sun: v 0.0 d -0.8 SD 16.1 | Moon SD 15.5

SUN: NOVEMBER 4 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0618	0743	0916	1410	1543	1708
70N	0612	0728	0846	1440	1558	1713
68N	0608	0716	0823	1503	1610	1718
66N	0604	0706	0806	1520	1620	1722
64N	0600	0658	0752	1534	1628	1726
62N	0557	0650	0740	1546	1636	1729
60N	0554	0644	0730	1556	1642	1732
58N	0551	0638	0721	1605	1648	1735
56N	0549	0633	0713	1613	1653	1738
54N	0546	0628	0706	1620	1658	1740
52N	0544	0624	0700	1626	1702	1742
50N	0542	0620	0655	1632	1706	1745
45N	0537	0612	0642	1644	1715	1750
40N	0532	0604	0632	1654	1723	1755
35N	0527	0557	0624	1703	1729	1759
30N	0523	0551	0616	1711	1736	1804
25N	0518	0546	0609	1718	1741	1808
20N	0514	0540	0603	1724	1747	1813
15N	0509	0535	0557	1730	1752	1818
10N	0504	0529	0551	1736	1758	1823
05N	0459	0524	0546	1741	1803	1828
00N	0454	0519	0540	1747	1808	1833
05S	0448	0513	0535	1753	1814	1839
10S	0442	0507	0529	1758	1820	1846
15S	0434	0501	0523	1804	1827	1853
20S	0427	0454	0517	1811	1834	1901
25S	0418	0446	0510	1817	1841	1910
30S	0407	0438	0503	1825	1850	1920
35S	0355	0428	0455	1833	1900	1933
40S	0340	0416	0446	1842	1912	1948
45S	0322	0402	0435	1853	1926	2006
50S	0258	0345	0421	1907	1944	2031
55S	0223	0321	0405	1924	2007	2107
60S	0124	0248	0342	1947	2041	2208

MOON: RISE / SET | UTC HHMM

Lat	Day 3		Day 4		Day 5	
72N	--	1532	0017	1456	0229	1424
70N	--	1519	0028	1452	0230	1427
68N	--	1507	0037	1448	0230	1430
66N	--	1458	0044	1445	0231	1432
64N	--	1450	0050	1442	0231	1434
62N	--	1443	0055	1440	0232	1436
60N	--	1437	0100	1437	0232	1438
58N	--	1432	0104	1436	0232	1439
56N	--	1427	0107	1434	0232	1440
54N	--	1423	0111	1432	0233	1441
52N	--	1419	0114	1431	0233	1443
50N	--	1415	0116	1430	0233	1443
45N	0008	1407	0122	1427	0233	1446
40N	0017	1401	0127	1425	0234	1447
35N	0025	1355	0131	1423	0234	1449
30N	0032	1350	0134	1421	0234	1450
25N	0038	1346	0137	1419	0234	1451
20N	0044	1341	0140	1418	0235	1452
15N	0049	1338	0143	1416	0235	1453
10N	0054	1334	0146	1415	0235	1454
05N	0059	1330	0148	1413	0235	1455
00N	0104	1326	0151	1412	0235	1456
05S	0109	1323	0153	1411	0236	1457
10S	0113	1319	0156	1409	0236	1458
15S	0118	1315	0158	1408	0236	1459
20S	0124	1311	0201	1406	0236	1500
25S	0129	1307	0204	1405	0236	1501
30S	0135	1302	0207	1403	0237	1502
35S	0142	1257	0211	1401	0237	1504
40S	0149	1251	0214	1359	0237	1505
45S	0158	1243	0219	1356	0238	1507
50S	0209	1235	0224	1353	0238	1509
55S	0222	1224	0231	1349	0239	1512
60S	0239	1210	0239	1344	0240	1515

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
6	00	045 13.7	204 12.6	S12 44.5	261 10.5	N16 04.9	257 47.9	N13 53.2	035 55.3	N01 06.3
	01	060 16.1	219 15.6	S12 43.6	276 11.8	N16 04.6	272 50.1	N13 53.2	050 57.9	N01 06.2
	02	075 18.6	234 18.6	S12 42.7	291 13.0	N16 04.2	287 52.3	N13 53.1	066 00.4	N01 06.2
	03	090 21.1	249 21.6	S12 41.8	306 14.3	N16 03.9	302 54.5	N13 53.0	081 03.0	N01 06.1
	04	105 23.5	264 24.6	S12 40.9	321 15.5	N16 03.5	317 56.7	N13 52.9	096 05.6	N01 06.1
	05	120 26.0	279 27.5	S12 40.1	336 16.8	N16 03.2	332 58.9	N13 52.8	111 08.2	N01 06.0
	06	135 28.5	294 30.5	S12 39.2	351 18.0	N16 02.9	348 01.1	N13 52.7	126 10.8	N01 06.0
	07	150 30.9	309 33.5	S12 38.3	006 19.3	N16 02.5	003 03.3	N13 52.7	141 13.4	N01 05.9
	08	165 33.4	324 36.4	S12 37.4	021 20.5	N16 02.2	018 05.5	N13 52.6	156 16.0	N01 05.9
	09	180 35.9	339 39.4	S12 36.5	036 21.8	N16 01.8	033 07.7	N13 52.5	171 18.6	N01 05.8
	10	195 38.3	354 42.4	S12 35.7	051 23.0	N16 01.5	048 09.9	N13 52.4	186 21.2	N01 05.8
	11	210 40.8	009 45.3	S12 34.8	066 24.3	N16 01.2	063 12.0	N13 52.3	201 23.8	N01 05.7
	12	225 43.2	024 48.3	S12 33.9	081 25.5	N16 00.8	078 14.2	N13 52.2	216 26.4	N01 05.7
	13	240 45.7	039 51.2	S12 33.1	096 26.8	N16 00.5	093 16.4	N13 52.2	231 29.0	N01 05.6
	14	255 48.2	054 54.1	S12 32.2	111 28.0	N16 00.1	108 18.6	N13 52.1	246 31.6	N01 05.6
	15	270 50.6	069 57.1	S12 31.3	126 29.3	N15 59.8	123 20.8	N13 52.0	261 34.2	N01 05.5
	16	285 53.1	085 00.0	S12 30.5	141 30.6	N15 59.5	138 23.0	N13 51.9	276 36.8	N01 05.5
	17	300 55.6	100 03.0	S12 29.6	156 31.8	N15 59.1	153 25.2	N13 51.8	291 39.4	N01 05.4
	18	315 58.0	115 05.9	S12 28.7	171 33.1	N15 58.8	168 27.4	N13 51.8	306 42.0	N01 05.4
	19	331 00.5	130 08.8	S12 27.9	186 34.3	N15 58.4	183 29.6	N13 51.7	321 44.6	N01 05.4
	20	346 03.0	145 11.7	S12 27.0	201 35.6	N15 58.1	198 31.8	N13 51.6	336 47.2	N01 05.3
	21	001 05.4	160 14.6	S12 26.2	216 36.8	N15 57.8	213 34.0	N13 51.5	351 49.8	N01 05.3
	22	016 07.9	175 17.5	S12 25.3	231 38.1	N15 57.4	228 36.2	N13 51.4	006 52.4	N01 05.2
	23	031 10.3	190 20.5	S12 24.5	246 39.4	N15 57.1	243 38.4	N13 51.3	021 55.0	N01 05.2
7	00	046 12.8	205 23.4	S12 23.6	261 40.6	N15 56.7	258 40.6	N13 51.3	036 57.6	N01 05.1
	01	061 15.3	220 26.3	S12 22.7	276 41.9	N15 56.4	273 42.8	N13 51.2	052 00.2	N01 05.1
	02	076 17.7	235 29.2	S12 21.9	291 43.1	N15 56.1	288 45.1	N13 51.1	067 02.8	N01 05.0
	03	091 20.2	250 32.0	S12 21.1	306 44.4	N15 55.7	303 47.3	N13 51.0	082 05.4	N01 05.0
	04	106 22.7	265 34.9	S12 20.2	321 45.6	N15 55.4	318 49.5	N13 50.9	097 07.9	N01 04.9
	05	121 25.1	280 37.8	S12 19.4	336 46.9	N15 55.0	333 51.7	N13 50.9	112 10.5	N01 04.9
	06	136 27.6	295 40.7	S12 18.5	351 48.2	N15 54.7	348 53.9	N13 50.8	127 13.1	N01 04.8
	07	151 30.1	310 43.6	S12 17.7	006 49.4	N15 54.4	003 56.1	N13 50.7	142 15.7	N01 04.8
	08	166 32.5	325 46.4	S12 16.8	021 50.7	N15 54.0	018 58.3	N13 50.6	157 18.3	N01 04.7
	09	181 35.0	340 49.3	S12 16.0	036 52.0	N15 53.7	034 00.5	N13 50.5	172 20.9	N01 04.7
	10	196 37.5	355 52.2	S12 15.2	051 53.2	N15 53.4	049 02.7	N13 50.5	187 23.5	N01 04.6
	11	211 39.9	010 55.0	S12 14.3	066 54.5	N15 53.0	064 04.9	N13 50.4	202 26.1	N01 04.6
	12	226 42.4	025 57.9	S12 13.5	081 55.7	N15 52.7	079 07.1	N13 50.3	217 28.7	N01 04.5
	13	241 44.8	041 00.7	S12 12.7	096 57.0	N15 52.3	094 09.3	N13 50.2	232 31.3	N01 04.5
	14	256 47.3	056 03.6	S12 11.8	111 58.3	N15 52.0	109 11.5	N13 50.1	247 33.9	N01 04.4
	15	271 49.8	071 06.4	S12 11.0	126 59.5	N15 51.7	124 13.7	N13 50.1	262 36.5	N01 04.4
	16	286 52.2	086 09.3	S12 10.2	142 00.8	N15 51.3	139 15.9	N13 50.0	277 39.1	N01 04.3
	17	301 54.7	101 12.1	S12 09.4	157 02.1	N15 51.0	154 18.1	N13 49.9	292 41.7	N01 04.3
	18	316 57.2	116 14.9	S12 08.5	172 03.3	N15 50.6	169 20.3	N13 49.8	307 44.3	N01 04.2
	19	331 59.6	131 17.8	S12 07.7	187 04.6	N15 50.3	184 22.5	N13 49.7	322 46.8	N01 04.2
	20	347 02.1	146 20.6	S12 06.9	202 05.9	N15 50.0	199 24.7	N13 49.7	337 49.4	N01 04.2
	21	002 04.6	161 23.4	S12 06.1	217 07.1	N15 49.6	214 26.9	N13 49.6	352 52.0	N01 04.1
	22	017 07.0	176 26.2	S12 05.3	232 08.4	N15 49.3	229 29.1	N13 49.5	007 54.6	N01 04.1
	23	032 09.5	191 29.0	S12 04.5	247 09.7	N15 49.0	244 31.3	N13 49.4	022 57.2	N01 04.0
8	00	047 12.0	206 31.9	S12 03.6	262 10.9	N15 48.6	259 33.6	N13 49.3	037 59.8	N01 04.0
	01	062 14.4	221 34.7	S12 02.8	277 12.2	N15 48.3	274 35.8	N13 49.3	053 02.4	N01 03.9
	02	077 16.9	236 37.5	S12 02.0	292 13.5	N15 47.9	289 38.0	N13 49.2	068 05.0	N01 03.9
	03	092 19.3	251 40.3	S12 01.2	307 14.7	N15 47.6	304 40.2	N13 49.1	083 07.6	N01 03.8
	04	107 21.8	266 43.0	S12 00.4	322 16.0	N15 47.3	319 42.4	N13 49.0	098 10.2	N01 03.8
	05	122 24.3	281 45.8	S11 59.6	337 17.3	N15 46.9	334 44.6	N13 48.9	113 12.8	N01 03.7
	06	137 26.7	296 48.6	S11 58.8	352 18.6	N15 46.6	349 46.8	N13 48.9	128 15.4	N01 03.7
	07	152 29.2	311 51.4	S11 58.0	007 19.8	N15 46.2	004 49.0	N13 48.8	143 18.0	N01 03.6
	08	167 31.7	326 54.2	S11 57.2	022 21.1	N15 45.9	019 51.2	N13 48.7	158 20.5	N01 03.6
	09	182 34.1	341 57.0	S11 56.4	037 22.4	N15 45.6	034 53.4	N13 48.6	173 23.1	N01 03.5
	10	197 36.6	356 59.7	S11 55.6	052 23.7	N15 45.2	049 55.6	N13 48.5	188 25.7	N01 03.5
	11	212 39.1	012 02.5	S11 54.8	067 24.9	N15 44.9	064 57.9	N13 48.5	203 28.3	N01 03.4
	12	227 41.5	027 05.3	S11 54.0	082 26.2	N15 44.6	080 00.1	N13 48.4	218 30.9	N01 03.4
	13	242 44.0	042 08.0	S11 53.2	097 27.5	N15 44.2	095 02.3	N13 48.3	233 33.5	N01 03.4
	14	257 46.4	057 10.8	S11 52.5	112 28.7	N15 43.9	110 04.5	N13 48.2	248 36.1	N01 03.3
	15	272 48.9	072 13.5	S11 51.7	127 30.0	N15 43.5	125 06.7	N13 48.2	263 38.7	N01 03.3
	16	287 51.4	087 16.3	S11 50.9	142 31.3	N15 43.2	140 08.9	N13 48.1	278 41.3	N01 03.2
	17	302 53.8	102 19.0	S11 50.1	157 32.6	N15 42.9	155 11.1	N13 48.0	293 43.9	N01 03.2
	18	317 56.3	117 21.7	S11 49.3	172 33.9	N15 42.5	170 13.3	N13 47.9	308 46.4	N01 03.1
	19	332 58.8	132 24.5	S11 48.5	187 35.1	N15 42.2	185 15.6	N13 47.8	323 49.0	N01 03.1
	20	348 01.2	147 27.2	S11 47.8	202 36.4	N15 41.9	200 17.8	N13 47.8	338 51.6	N01 03.0
	21	003 03.7	162 29.9	S11 47.0	217 37.7	N15 41.5	215 20.0	N13 47.7	353 54.2	N01 03.0
	22	018 06.2	177 32.7	S11 46.2	232 39.0	N15 41.2	230 22.2	N13 47.6	008 56.8	N01 02.9
	23	033 08.6	192 35.4	S11 45.4	247 40.2	N15 40.8	245 24.4	N13 47.5	023 59.4	N01 02.9

Venus	Mars	Jupiter	Saturn
6: v 2.9 d 0.9	6: v 1.3 d -0.3	6: v 2.2 d -0.1	6: v 2.6 d 0.0
7: v 2.9 d 0.8	7: v 1.3 d -0.3	7: v 2.2 d -0.1	7: v 2.6 d 0.0
8: v 2.8 d 0.8	8: v 1.3 d -0.3	8: v 2.2 d -0.1	8: v 2.6 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.2	S40 11.7
Achernar	335 18.5	S57 06.0
Acrux	172 59.0	S63 14.7
Adhara	255 04.5	S29 00.3
Al Na'ir	027 30.9	S46 50.0
Aldebaran	290 37.6	N16 33.9
Alioth	166 12.2	N55 48.7
Alkaid	152 51.3	N49 10.7
Alnilam	275 36.0	S01 11.0
Alphard	217 46.3	S08 46.4
Alphecca	126 02.8	N26 37.5
Alpheratz	357 33.0	N29 14.6
Altair	061 58.6	N08 56.5
Ankaa	353 05.3	S42 09.6
Antares	112 14.3	S26 29.5
Arcturus	145 46.9	N19 02.6
Atria	107 07.7	S69 04.6
Avior	234 14.0	S59 35.4
Bellatrix	278 21.0	N06 22.5
Betelgeuse	270 50.2	N07 24.8
Canopus	263 51.4	S52 42.3
Capella	280 19.3	N46 01.4
Deneb	049 24.8	N45 22.9
Denebola	182 23.7	N14 25.3
Diphda	348 45.5	S17 50.3
Dubhe	193 39.5	N61 36.1
Elnath	277 59.7	N28 37.8
Eltanin	090 41.9	N51 29.3
Enif	033 37.3	N10 00.1
Fomalhaut	015 12.7	S29 28.8
Gacrux	171 50.5	S57 15.6
Gienah	175 42.3	S17 41.4
Hadar	148 34.5	S60 30.0
Hamal	327 49.2	N23 35.5
Kaus Australi	083 30.8	S34 22.3
Kochab	137 21.0	N74 02.6
Markab	013 28.2	N15 21.2
Menkar	314 04.3	N04 11.8
Menkent	147 56.2	S36 30.0
Miaplacidus	221 38.0	S69 49.3
Mirfak	308 25.6	N49 57.4
Nunki	075 46.1	S26 15.8
Peacock	053 03.5	S56 39.1
Polaris	312 45.1	N89 22.6
Pollux	243 15.4	N27 57.6
Procyon	244 49.2	N05 09.4
Rasalhague	095 57.4	N12 32.6
Regulus	207 33.0	N11 50.1
Rigel	281 02.2	S08 10.1
Rigil Kentaur	139 38.9	S60 56.7
Sabik	102 01.4	S15 45.4
Schedar	349 28.8	N56 41.3
Shaula	096 08.7	S37 07.4
Sirius	258 24.7	S16 45.0
Spica	158 21.0	S11 18.0
Suhail	222 45.2	S43 32.2
Vega	080 32.5	N38 48.7
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	159 15.5	1016
Mars	215 13.4	0633
Jupiter	212 24.7	0644
Saturn	350 46.3	2128

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
6	00	184 06.0	S15 54.9	221 48.2	S04 52.8	56.7	14.5	-14.9
	01	199 05.9	S15 55.7	236 21.7	S05 07.8	56.6	14.5	-14.9
	02	214 05.9	S15 56.4	250 55.2	S05 22.7	56.6	14.5	-14.9
	03	229 05.9	S15 57.2	265 28.7	S05 37.5	56.6	14.5	-14.8
	04	244 05.9	S15 57.9	280 02.2	S05 52.3	56.6	14.5	-14.8
	05	259 05.8	S15 58.7	294 35.6	S06 07.1	56.5	14.5	-14.8
	06	274 05.8	S15 59.4	309 09.1	S06 21.9	56.5	14.5	-14.7
	07	289 05.8	S16 00.2	323 42.6	S06 36.6	56.5	14.4	-14.7
	08	304 05.8	S16 00.9	338 16.0	S06 51.3	56.5	14.4	-14.6
	09	319 05.7	S16 01.7	352 49.4	S07 06.0	56.5	14.4	-14.6
	10	334 05.7	S16 02.4	007 22.9	S07 20.6	56.4	14.4	-14.6
	11	349 05.7	S16 03.2	021 56.3	S07 35.1	56.4	14.4	-14.5
	12	004 05.7	S16 03.9	036 29.7	S07 49.7	56.4	14.4	-14.5
	13	019 05.6	S16 04.7	051 03.1	S08 04.1	56.4	14.4	-14.4
	14	034 05.6	S16 05.4	065 36.4	S08 18.6	56.4	14.3	-14.4
	15	049 05.6	S16 06.2	080 09.8	S08 33.0	56.3	14.3	-14.3
	16	064 05.5	S16 06.9	094 43.1	S08 47.3	56.3	14.3	-14.3
	17	079 05.5	S16 07.6	109 16.4	S09 01.6	56.3	14.3	-14.2
	18	094 05.5	S16 08.4	123 49.7	S09 15.8	56.3	14.3	-14.2
	19	109 05.5	S16 09.1	138 23.0	S09 30.1	56.3	14.2	-14.2
	20	124 05.4	S16 09.9	152 56.2	S09 44.2	56.2	14.2	-14.1
	21	139 05.4	S16 10.6	167 29.4	S09 58.3	56.2	14.2	-14.0
	22	154 05.4	S16 11.4	182 02.7	S10 12.3	56.2	14.2	-14.0
	23	169 05.3	S16 12.1	196 35.8	S10 26.3	56.2	14.2	-13.9
7	00	184 05.3	S16 12.8	211 09.0	S10 40.3	56.2	14.1	-13.9
	01	199 05.3	S16 13.6	225 42.1	S10 54.2	56.1	14.1	-13.8
	02	214 05.2	S16 14.3	240 15.2	S11 08.0	56.1	14.1	-13.8
	03	229 05.2	S16 15.1	254 48.3	S11 21.8	56.1	14.0	-13.7
	04	244 05.2	S16 15.8	269 21.3	S11 35.5	56.1	14.0	-13.7
	05	259 05.1	S16 16.5	283 54.4	S11 49.1	56.1	14.0	-13.6
	06	274 05.1	S16 17.3	298 27.3	S12 02.7	56.0	14.0	-13.5
	07	289 05.1	S16 18.0	313 00.3	S12 16.3	56.0	13.9	-13.5
	08	304 05.0	S16 18.7	327 33.2	S12 29.8	56.0	13.9	-13.4
	09	319 05.0	S16 19.5	342 06.1	S12 43.2	56.0	13.9	-13.3
	10	334 05.0	S16 20.2	356 39.0	S12 56.5	56.0	13.8	-13.3
	11	349 04.9	S16 20.9	011 11.8	S13 09.8	55.9	13.8	-13.2
	12	004 04.9	S16 21.7	025 44.6	S13 23.0	55.9	13.8	-13.2
	13	019 04.8	S16 22.4	040 17.3	S13 36.2	55.9	13.7	-13.1
	14	034 04.8	S16 23.1	054 50.1	S13 49.2	55.9	13.7	-13.0
	15	049 04.8	S16 23.9	069 22.7	S14 02.3	55.9	13.6	-12.9
	16	064 04.7	S16 24.6	083 55.4	S14 15.2	55.8	13.6	-12.9
	17	079 04.7	S16 25.3	098 28.0	S14 28.1	55.8	13.6	-12.8
	18	094 04.7	S16 26.1	113 00.6	S14 40.9	55.8	13.5	-12.7
	19	109 04.6	S16 26.8	127 33.1	S14 53.6	55.8	13.5	-12.7
	20	124 04.6	S16 27.5	142 05.6	S15 06.3	55.8	13.5	-12.6
	21	139 04.5	S16 28.3	156 38.0	S15 18.9	55.7	13.4	-12.5
	22	154 04.5	S16 29.0	171 10.5	S15 31.4	55.7	13.4	-12.4
	23	169 04.5	S16 29.7	185 42.8	S15 43.8	55.7	13.3	-12.4
8	00	184 04.4	S16 30.5	200 15.1	S15 56.1	55.7	13.3	-12.3
	01	199 04.4	S16 31.2	214 47.4	S16 08.4	55.7	13.2	-12.2
	02	214 04.3	S16 31.9	229 19.7	S16 20.6	55.6	13.2	-12.1
	03	229 04.3	S16 32.6	243 51.9	S16 32.7	55.6	13.2	-12.0
	04	244 04.3	S16 33.4	258 24.0	S16 44.8	55.6	13.1	-12.0
	05	259 04.2	S16 34.1	272 56.1	S16 56.7	55.6	13.1	-11.9
	06	274 04.2	S16 34.8	287 28.2	S17 08.6	55.6	13.0	-11.8
	07	289 04.1	S16 35.5	302 00.2	S17 20.4	55.6	13.0	-11.7
	08	304 04.1	S16 36.3	316 32.2	S17 32.1	55.5	12.9	-11.6
	09	319 04.0	S16 37.0	331 04.1	S17 43.7	55.5	12.9	-11.5
	10	334 04.0	S16 37.7	345 36.0	S17 55.2	55.5	12.8	-11.4
	11	349 03.9	S16 38.4	000 07.8	S18 06.7	55.5	12.8	-11.4
	12	004 03.9	S16 39.2	014 39.6	S18 18.0	55.5	12.7	-11.3
	13	019 03.9	S16 39.9	029 11.3	S18 29.3	55.4	12.7	-11.2
	14	034 03.8	S16 40.6	043 43.0	S18 40.5	55.4	12.6	-11.1
	15	049 03.8	S16 41.3	058 14.7	S18 51.6	55.4	12.6	-11.0
	16	064 03.7	S16 42.1	072 46.3	S19 02.5	55.4	12.5	-10.9
	17	079 03.7	S16 42.8	087 17.8	S19 13.4	55.4	12.5	-10.8
	18	094 03.6	S16 43.5	101 49.3	S19 24.2	55.4	12.4	-10.7
	19	109 03.6	S16 44.2	116 20.8	S19 35.0	55.3	12.4	-10.6
	20	124 03.5	S16 44.9	130 52.2	S19 45.6	55.3	12.3	-10.5
	21	139 03.5	S16 45.7	145 23.5	S19 56.1	55.3	12.3	-10.4
	22	154 03.4	S16 46.4	159 54.8	S20 06.5	55.3	12.3	-10.3
	23	169 03.4	S16 47.1	174 26.1	S20 16.8	55.3	12.2	-10.2

Day 6 noon Sun: v 0.0 d -0.7 SD 16.1 | Moon SD 15.4

Day 7 noon Sun: v 0.0 d -0.7 SD 16.1 | Moon SD 15.2

Day 8 noon Sun: v 0.0 d -0.7 SD 16.1 | Moon SD 15.1

SUN: NOVEMBER 7 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0629	0757	0938	1348	1529	1656
70N	0623	0740	0902	1424	1546	1703
68N	0617	0726	0836	1450	1600	1709
66N	0612	0715	0817	1509	1611	1714
64N	0608	0706	0801	1525	1620	1718
62N	0604	0658	0748	1538	1629	1722
60N	0600	0651	0737	1549	1636	1726
58N	0557	0645	0728	1559	1642	1729
56N	0554	0639	0720	1607	1648	1732
54N	0551	0634	0712	1614	1653	1735
52N	0549	0629	0706	1621	1657	1738
50N	0546	0625	0700	1627	1702	1740
45N	0540	0615	0647	1640	1711	1746
40N	0535	0607	0636	1651	1720	1752
35N	0530	0600	0627	1700	1727	1757
30N	0525	0554	0618	1709	1734	1802
25N	0520	0547	0611	1716	1740	1807
20N	0515	0541	0604	1723	1746	1812
15N	0510	0536	0558	1729	1751	1817
10N	0505	0530	0552	1735	1757	1822
05N	0459	0524	0546	1741	1803	1828
00N	0454	0519	0540	1747	1809	1834
05S	0447	0513	0534	1753	1815	1840
10S	0441	0506	0528	1759	1821	1847
15S	0433	0500	0522	1805	1828	1854
20S	0425	0452	0516	1812	1835	1903
25S	0416	0444	0508	1819	1843	1912
30S	0405	0435	0501	1827	1853	1923
35S	0352	0425	0452	1836	1903	1936
40S	0336	0413	0442	1846	1916	1952
45S	0317	0358	0431	1858	1931	2012
50S	0251	0339	0416	1912	1949	2038
55S	0214	0314	0358	1930	2015	2116
60S	0105	0239	0334	1955	2051	2228

MOON: RISE / SET | UTC HHMM

Lat	Day 6		Day 7		Day 8	
72N	0439	1349	0658	1304	--	--
70N	0429	1401	0634	1330	0905	1235
68N	0422	1411	0616	1349	0824	1317
66N	0416	1420	0602	1405	0756	1346
64N	0410	1427	0551	1418	0735	1408
62N	0406	1433	0541	1429	0718	1426
60N	0402	1438	0532	1439	0704	1441
58N	0359	1443	0525	1447	0652	1453
56N	0356	1447	0519	1455	0642	1504
54N	0353	1451	0513	1501	0633	1514
52N	0350	1454	0508	1507	0625	1523
50N	0348	1457	0503	1513	0618	1531
45N	0343	1504	0453	1524	0603	1547
40N	0339	1510	0445	1534	0550	1601
35N	0336	1515	0438	1542	0540	1613
30N	0333	1519	0432	1550	0531	1623
25N	0330	1523	0426	1557	0522	1632
20N	0328	1527	0421	1603	0515	1641
15N	0325	1530	0416	1608	0508	1649
10N	0323	1534	0412	1614	0501	1656
05N	0321	1537	0407	1619	0455	1703
00N	0319	1540	0403	1625	0448	1711
05S	0317	1543	0359	1630	0442	1718
10S	0315	1546	0355	1635	0436	1725
15S	0313	1550	0350	1641	0429	1733
20S	0311	1553	0346	1647	0422	1741
25S	0308	1557	0341	1653	0415	1750
30S	0306	1601	0335	1700	0407	1759
35S	0303	1606	0330	1708	0358	1810
40S	0300	1611	0323	1716	0348	1822
45S	0256	1617	0315	1727	0337	1836
50S	0252	1624	0306	1739	0323	1854
55S	0247	1633	0255	1755	0305	1917
60S	0240	1645	0240	1816	0242	1949

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | NOVEMBER 9 - NOVEMBER 11

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
9	00	048 11.1	207 38.1	S11 44.7	262 41.5	N15 40.5	260 26.6	N13 47.5	039 02.0	N01 02.9
	01	063 13.6	222 40.8	S11 43.9	277 42.8	N15 40.2	275 28.8	N13 47.4	054 04.6	N01 02.8
	02	078 16.0	237 43.5	S11 43.1	292 44.1	N15 39.8	290 31.0	N13 47.3	069 07.2	N01 02.8
	03	093 18.5	252 46.2	S11 42.4	307 45.4	N15 39.5	305 33.3	N13 47.2	084 09.7	N01 02.7
	04	108 20.9	267 48.9	S11 41.6	322 46.6	N15 39.2	320 35.5	N13 47.1	099 12.3	N01 02.7
	05	123 23.4	282 51.6	S11 40.9	337 47.9	N15 38.8	335 37.7	N13 47.1	114 14.9	N01 02.6
	06	138 25.9	297 54.3	S11 40.1	352 49.2	N15 38.5	350 39.9	N13 47.0	129 17.5	N01 02.6
	07	153 28.3	312 57.0	S11 39.3	007 50.5	N15 38.2	005 42.1	N13 46.9	144 20.1	N01 02.5
	08	168 30.8	327 59.7	S11 38.6	022 51.8	N15 37.8	020 44.3	N13 46.8	159 22.7	N01 02.5
	09	183 33.3	343 02.3	S11 37.8	037 53.1	N15 37.5	035 46.6	N13 46.8	174 25.3	N01 02.4
	10	198 35.7	358 05.0	S11 37.1	052 54.3	N15 37.1	050 48.8	N13 46.7	189 27.9	N01 02.4
	11	213 38.2	013 07.7	S11 36.3	067 55.6	N15 36.8	065 51.0	N13 46.6	204 30.5	N01 02.4
	12	228 40.7	028 10.3	S11 35.6	082 56.9	N15 36.5	080 53.2	N13 46.5	219 33.0	N01 02.3
	13	243 43.1	043 13.0	S11 34.8	097 58.2	N15 36.1	095 55.4	N13 46.5	234 35.6	N01 02.3
	14	258 45.6	058 15.7	S11 34.1	112 59.5	N15 35.8	110 57.6	N13 46.4	249 38.2	N01 02.2
	15	273 48.1	073 18.3	S11 33.3	128 00.8	N15 35.5	125 59.9	N13 46.3	264 40.8	N01 02.2
	16	288 50.5	088 21.0	S11 32.6	143 02.1	N15 35.1	141 02.1	N13 46.2	279 43.4	N01 02.1
	17	303 53.0	103 23.6	S11 31.9	158 03.3	N15 34.8	156 04.3	N13 46.2	294 46.0	N01 02.1
	18	318 55.4	118 26.3	S11 31.1	173 04.6	N15 34.5	171 06.5	N13 46.1	309 48.6	N01 02.0
	19	333 57.9	133 28.9	S11 30.4	188 05.9	N15 34.1	186 08.7	N13 46.0	324 51.2	N01 02.0
	20	349 00.4	148 31.5	S11 29.7	203 07.2	N15 33.8	201 10.9	N13 45.9	339 53.7	N01 02.0
	21	004 02.8	163 34.2	S11 28.9	218 08.5	N15 33.4	216 13.2	N13 45.9	354 56.3	N01 01.9
	22	019 05.3	178 36.8	S11 28.2	233 09.8	N15 33.1	231 15.4	N13 45.8	009 58.9	N01 01.9
	23	034 07.8	193 39.4	S11 27.5	248 11.1	N15 32.8	246 17.6	N13 45.7	025 01.5	N01 01.8
10	00	049 10.2	208 42.0	S11 26.7	263 12.4	N15 32.4	261 19.8	N13 45.6	040 04.1	N01 01.8
	01	064 12.7	223 44.7	S11 26.0	278 13.7	N15 32.1	276 22.0	N13 45.6	055 06.7	N01 01.7
	02	079 15.2	238 47.3	S11 25.3	293 14.9	N15 31.8	291 24.3	N13 45.5	070 09.3	N01 01.7
	03	094 17.6	253 49.9	S11 24.6	308 16.2	N15 31.4	306 26.5	N13 45.4	085 11.8	N01 01.6
	04	109 20.1	268 52.5	S11 23.9	323 17.5	N15 31.1	321 28.7	N13 45.3	100 14.4	N01 01.6
	05	124 22.5	283 55.1	S11 23.1	338 18.8	N15 30.8	336 30.9	N13 45.3	115 17.0	N01 01.6
	06	139 25.0	298 57.7	S11 22.4	353 20.1	N15 30.4	351 33.2	N13 45.2	130 19.6	N01 01.5
	07	154 27.5	314 00.3	S11 21.7	008 21.4	N15 30.1	006 35.4	N13 45.1	145 22.2	N01 01.5
	08	169 29.9	329 02.9	S11 21.0	023 22.7	N15 29.8	021 37.6	N13 45.0	160 24.8	N01 01.4
	09	184 32.4	344 05.4	S11 20.3	038 24.0	N15 29.4	036 39.8	N13 45.0	175 27.3	N01 01.4
	10	199 34.9	359 08.0	S11 19.6	053 25.3	N15 29.1	051 42.0	N13 44.9	190 29.9	N01 01.3
	11	214 37.3	014 10.6	S11 18.9	068 26.6	N15 28.8	066 44.3	N13 44.8	205 32.5	N01 01.3
	12	229 39.8	029 13.2	S11 18.2	083 27.9	N15 28.4	081 46.5	N13 44.7	220 35.1	N01 01.3
	13	244 42.3	044 15.7	S11 17.5	098 29.2	N15 28.1	096 48.7	N13 44.7	235 37.7	N01 01.2
	14	259 44.7	059 18.3	S11 16.8	113 30.5	N15 27.7	111 50.9	N13 44.6	250 40.3	N01 01.2
	15	274 47.2	074 20.9	S11 16.1	128 31.8	N15 27.4	126 53.2	N13 44.5	265 42.9	N01 01.1
	16	289 49.7	089 23.4	S11 15.4	143 33.1	N15 27.1	141 55.4	N13 44.4	280 45.4	N01 01.1
	17	304 52.1	104 26.0	S11 14.7	158 34.4	N15 26.7	156 57.6	N13 44.4	295 48.0	N01 01.0
	18	319 54.6	119 28.5	S11 14.0	173 35.7	N15 26.4	171 59.8	N13 44.3	310 50.6	N01 01.0
	19	334 57.0	134 31.1	S11 13.3	188 37.0	N15 26.1	187 02.1	N13 44.2	325 53.2	N01 01.0
	20	349 59.5	149 33.6	S11 12.6	203 38.3	N15 25.7	202 04.3	N13 44.1	340 55.8	N01 00.9
	21	005 02.0	164 36.1	S11 11.9	218 39.6	N15 25.4	217 06.5	N13 44.1	355 58.4	N01 00.9
	22	020 04.4	179 38.7	S11 11.2	233 40.9	N15 25.1	232 08.7	N13 44.0	011 00.9	N01 00.8
	23	035 06.9	194 41.2	S11 10.6	248 42.2	N15 24.7	247 11.0	N13 43.9	026 03.5	N01 00.8
11	00	050 09.4	209 43.7	S11 09.9	263 43.5	N15 24.4	262 13.2	N13 43.8	041 06.1	N01 00.7
	01	065 11.8	224 46.3	S11 09.2	278 44.8	N15 24.1	277 15.4	N13 43.8	056 08.7	N01 00.7
	02	080 14.3	239 48.8	S11 08.5	293 46.1	N15 23.7	292 17.6	N13 43.7	071 11.3	N01 00.7
	03	095 16.8	254 51.3	S11 07.8	308 47.4	N15 23.4	307 19.9	N13 43.6	086 13.9	N01 00.6
	04	110 19.2	269 53.8	S11 07.2	323 48.7	N15 23.1	322 22.1	N13 43.6	101 16.4	N01 00.6
	05	125 21.7	284 56.3	S11 06.5	338 50.0	N15 22.7	337 24.3	N13 43.5	116 19.0	N01 00.5
	06	140 24.2	299 58.8	S11 05.8	353 51.3	N15 22.4	352 26.6	N13 43.4	131 21.6	N01 00.5
	07	155 26.6	315 01.3	S11 05.2	008 52.6	N15 22.1	007 28.8	N13 43.3	146 24.2	N01 00.4
	08	170 29.1	330 03.8	S11 04.5	023 53.9	N15 21.7	022 31.0	N13 43.3	161 26.8	N01 00.4
	09	185 31.5	345 06.3	S11 03.8	038 55.2	N15 21.4	037 33.2	N13 43.2	176 29.3	N01 00.4
	10	200 34.0	000 08.8	S11 03.2	053 56.5	N15 21.1	052 35.5	N13 43.1	191 31.9	N01 00.3
	11	215 36.5	015 11.3	S11 02.5	068 57.8	N15 20.7	067 37.7	N13 43.1	206 34.5	N01 00.3
	12	230 38.9	030 13.7	S11 01.9	083 59.1	N15 20.4	082 39.9	N13 43.0	221 37.1	N01 00.2
	13	245 41.4	045 16.2	S11 01.2	099 00.4	N15 20.1	097 42.2	N13 42.9	236 39.7	N01 00.2
	14	260 43.9	060 18.7	S11 00.5	114 01.7	N15 19.7	112 44.4	N13 42.8	251 42.3	N01 00.2
	15	275 46.3	075 21.1	S10 59.9	129 03.0	N15 19.4	127 46.6	N13 42.8	266 44.8	N01 00.1
	16	290 48.8	090 23.6	S10 59.2	144 04.3	N15 19.1	142 48.9	N13 42.7	281 47.4	N01 00.1
	17	305 51.3	105 26.1	S10 58.6	159 05.7	N15 18.7	157 51.1	N13 42.6	296 50.0	N01 00.0
	18	320 53.7	120 28.5	S10 58.0	174 07.0	N15 18.4	172 53.3	N13 42.6	311 52.6	N01 00.0
	19	335 56.2	135 31.0	S10 57.3	189 08.3	N15 18.1	187 55.5	N13 42.5	326 55.2	N00 59.9
	20	350 58.7	150 33.4	S10 56.7	204 09.6	N15 17.7	202 57.8	N13 42.4	341 57.7	N00 59.9
	21	006 01.1	165 35.9	S10 56.0	219 10.9	N15 17.4	218 00.0	N13 42.3	357 00.3	N00 59.9
	22	021 03.6	180 38.3	S10 55.4	234 12.2	N15 17.1	233 02.2	N13 42.3	012 02.9	N00 59.8
	23	036 06.0	195 40.7	S10 54.8	249 13.5	N15 16.7	248 04.5	N13 42.2	027 05.5	N00 59.8

Venus	Mars	Jupiter	Saturn
9: v 2.7 d 0.7	9: v 1.3 d -0.3	9: v 2.2 d -0.1	9: v 2.6 d 0.0
10: v 2.6 d 0.7	10: v 1.3 d -0.3	10: v 2.2 d -0.1	10: v 2.6 d 0.0
11: v 2.5 d 0.7	11: v 1.3 d -0.3	11: v 2.2 d -0.1	11: v 2.6 d 0.0

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.2	S40 11.7
Achernar	335 18.5	S57 06.0
Acrux	172 58.9	S63 14.7
Adhara	255 04.5	S29 00.3
Al Na'ir	027 30.9	S46 50.0
Aldebaran	290 37.6	N16 33.9
Alioth	166 12.1	N55 48.7
Alkaid	152 51.3	N49 10.7
Alnilam	275 35.9	S01 11.0
Alphard	217 46.3	S08 46.4
Alphecca	126 02.8	N26 37.5
Alpheratz	357 33.0	N29 14.6
Altair	061 58.6	N08 56.5
Ankaa	353 05.4	S42 09.6
Antares	112 14.4	S26 29.5
Arcturus	145 46.9	N19 02.6
Atria	107 07.7	S69 04.6
Avior	234 14.0	S59 35.4
Bellatrix	278 21.0	N06 22.5
Betelgeuse	270 50.2	N07 24.8
Canopus	263 51.4	S52 42.3
Capella	280 19.3	N46 01.4
Deneb	049 24.9	N45 22.9
Denebola	182 23.6	N14 25.3
Diphda	348 45.5	S17 50.3
Dubhe	193 39.5	N61 36.1
Elnath	277 59.7	N28 37.8
Eltanin	090 41.9	N51 29.3
Enif	033 37.3	N10 00.1
Fomalhaut	015 12.7	S29 28.8
Gacrux	171 50.4	S57 15.6
Gienah	175 42.3	S17 41.4
Hadar	148 34.5	S60 30.0
Hamal	327 49.2	N23 35.5
Kaus Australi	083 30.8	S34 22.3
Kochab	137 21.0	N74 02.6
Markab	013 28.3	N15 21.2
Menkar	314 04.3	N04 11.8
Menkent	147 56.2	S36 30.0
Miaplacidus	221 37.9	S69 49.3
Mirfak	308 25.6	N49 57.5
Nunki	075 46.1	S26 15.8
Peacock	053 03.5	S56 39.1
Polaris	312 44.6	N89 22.6
Pollux	243 15.3	N27 57.6
Procyon	244 49.1	N05 09.4
Rasalhague	095 57.4	N12 32.5
Regulus	207 32.9	N11 50.1
Rigel	281 02.1	S08 10.1
Rigil Kentaur	139 38.9	S60 56.7
Sabik	102 01.4	S15 45.4
Schedar	349 28.9	N56 41.4
Shaula	096 08.7	S37 07.4
Sirius	258 24.7	S16 45.0
Spica	158 21.0	S11 18.0
Suhail	222 45.2	S43 32.2
Vega	080 32.5	N38 48.7
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	159 33.4	1003
Mars	213 48.1	0627
Jupiter	212 06.7	0634
Saturn	350 55.3	2116

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
9	00	184 03.3	S16 47.8	188 57.3	S20 27.1	55.2	12.2	-10.1
	01	199 03.3	S16 48.5	203 28.4	S20 37.2	55.2	12.1	-10.0
	02	214 03.2	S16 49.2	217 59.5	S20 47.2	55.2	12.1	-9.9
	03	229 03.2	S16 50.0	232 30.6	S20 57.1	55.2	12.0	-9.8
	04	244 03.1	S16 50.7	247 01.6	S21 06.9	55.2	12.0	-9.7
	05	259 03.1	S16 51.4	261 32.5	S21 16.6	55.2	11.9	-9.6
	06	274 03.0	S16 52.1	276 03.4	S21 26.3	55.1	11.9	-9.5
	07	289 03.0	S16 52.8	290 34.3	S21 35.8	55.1	11.8	-9.4
	08	304 02.9	S16 53.5	305 05.1	S21 45.2	55.1	11.8	-9.3
	09	319 02.9	S16 54.2	319 35.8	S21 54.5	55.1	11.7	-9.2
	10	334 02.8	S16 55.0	334 06.5	S22 03.6	55.1	11.7	-9.1
	11	349 02.8	S16 55.7	348 37.2	S22 12.7	55.1	11.6	-9.0
	12	004 02.7	S16 56.4	003 07.8	S22 21.7	55.0	11.6	-8.9
	13	019 02.7	S16 57.1	017 38.3	S22 30.5	55.0	11.5	-8.7
	14	034 02.6	S16 57.8	032 08.9	S22 39.3	55.0	11.5	-8.6
	15	049 02.5	S16 58.5	046 39.3	S22 47.9	55.0	11.4	-8.5
	16	064 02.5	S16 59.2	061 09.7	S22 56.4	55.0	11.4	-8.4
	17	079 02.4	S16 59.9	075 40.1	S23 04.9	55.0	11.3	-8.3
	18	094 02.4	S17 00.6	090 10.4	S23 13.1	54.9	11.3	-8.2
	19	109 02.3	S17 01.3	104 40.7	S23 21.3	54.9	11.2	-8.1
	20	124 02.3	S17 02.0	119 10.9	S23 29.4	54.9	11.2	-8.0
	21	139 02.2	S17 02.8	133 41.1	S23 37.3	54.9	11.1	-7.8
	22	154 02.1	S17 03.5	148 11.2	S23 45.2	54.9	11.1	-7.7
	23	169 02.1	S17 04.2	162 41.3	S23 52.9	54.9	11.0	-7.6
10	00	184 02.0	S17 04.9	177 11.4	S24 00.5	54.8	11.0	-7.5
	01	199 02.0	S17 05.6	191 41.4	S24 08.0	54.8	11.0	-7.4
	02	214 01.9	S17 06.3	206 11.3	S24 15.3	54.8	10.9	-7.2
	03	229 01.8	S17 07.0	220 41.2	S24 22.6	54.8	10.9	-7.1
	04	244 01.8	S17 07.7	235 11.1	S24 29.7	54.8	10.8	-7.0
	05	259 01.7	S17 08.4	249 40.9	S24 36.7	54.8	10.8	-6.9
	06	274 01.7	S17 09.1	264 10.7	S24 43.6	54.8	10.7	-6.8
	07	289 01.6	S17 09.8	278 40.4	S24 50.3	54.7	10.7	-6.6
	08	304 01.5	S17 10.5	293 10.1	S24 57.0	54.7	10.7	-6.5
	09	319 01.5	S17 11.2	307 39.8	S25 03.5	54.7	10.6	-6.4
	10	334 01.4	S17 11.9	322 09.4	S25 09.8	54.7	10.6	-6.3
	11	349 01.4	S17 12.6	336 39.0	S25 16.1	54.7	10.5	-6.1
	12	004 01.3	S17 13.3	351 08.6	S25 22.2	54.7	10.5	-6.0
	13	019 01.2	S17 14.0	005 38.1	S25 28.2	54.7	10.5	-5.9
	14	034 01.2	S17 14.7	020 07.5	S25 34.1	54.6	10.4	-5.8
	15	049 01.1	S17 15.4	034 37.0	S25 39.9	54.6	10.4	-5.6
	16	064 01.0	S17 16.1	049 06.4	S25 45.5	54.6	10.4	-5.5
	17	079 01.0	S17 16.8	063 35.8	S25 51.0	54.6	10.3	-5.4
	18	094 00.9	S17 17.5	078 05.1	S25 56.4	54.6	10.3	-5.2
	19	109 00.8	S17 18.2	092 34.4	S26 01.6	54.6	10.3	-5.1
	20	124 00.8	S17 18.9	107 03.7	S26 06.7	54.6	10.2	-5.0
	21	139 00.7	S17 19.6	121 32.9	S26 11.7	54.6	10.2	-4.9
	22	154 00.6	S17 20.3	136 02.1	S26 16.5	54.5	10.2	-4.7
	23	169 00.6	S17 20.9	150 31.3	S26 21.3	54.5	10.2	-4.6
11	00	184 00.5	S17 21.6	165 00.5	S26 25.9	54.5	10.1	-4.5
	01	199 00.4	S17 22.3	179 29.6	S26 30.3	54.5	10.1	-4.3
	02	214 00.4	S17 23.0	193 58.7	S26 34.6	54.5	10.1	-4.2
	03	229 00.3	S17 23.7	208 27.8	S26 38.8	54.5	10.1	-4.1
	04	244 00.2	S17 24.4	222 56.9	S26 42.9	54.5	10.0	-3.9
	05	259 00.2	S17 25.1	237 25.9	S26 46.8	54.5	10.0	-3.8
	06	274 00.1	S17 25.8	251 54.9	S26 50.6	54.4	10.0	-3.7
	07	289 00.0	S17 26.5	266 23.9	S26 54.3	54.4	10.0	-3.5
	08	304 00.0	S17 27.2	280 52.9	S26 57.8	54.4	10.0	-3.4
	09	318 59.9	S17 27.9	295 21.9	S27 01.2	54.4	9.9	-3.3
	10	333 59.8	S17 28.5	309 50.8	S27 04.4	54.4	9.9	-3.1
	11	348 59.7	S17 29.2	324 19.7	S27 07.6	54.4	9.9	-3.0
	12	003 59.7	S17 29.9	338 48.6	S27 10.6	54.4	9.9	-2.9
	13	018 59.6	S17 30.6	353 17.5	S27 13.4	54.4	9.9	-2.7
	14	033 59.5	S17 31.3	007 46.4	S27 16.1	54.3	9.9	-2.6
	15	048 59.5	S17 32.0	022 15.3	S27 18.7	54.3	9.9	-2.4
	16	063 59.4	S17 32.7	036 44.2	S27 21.2	54.3	9.9	-2.3
	17	078 59.3	S17 33.3	051 13.0	S27 23.5	54.3	9.8	-2.2
	18	093 59.2	S17 34.0	065 41.9	S27 25.7	54.3	9.8	-2.0
	19	108 59.2	S17 34.7	080 10.7	S27 27.7	54.3	9.8	-1.9
	20	123 59.1	S17 35.4	094 39.5	S27 29.6	54.3	9.8	-1.8
	21	138 59.0	S17 36.1	109 08.4	S27 31.4	54.3	9.8	-1.6
	22	153 58.9	S17 36.8	123 37.2	S27 33.0	54.3	9.8	-1.5
	23	168 58.9	S17 37.4	138 06.0	S27 34.5	54.3	9.8	-1.4

Day 9 noon Sun: v -0.1 d -0.7 SD 16.1 | Moon SD 15.0

Day 10 noon Sun: v -0.1 d -0.7 SD 16.1 | Moon SD 14.9

Day 11 noon Sun: v -0.1 d -0.7 SD 16.2 | Moon SD 14.8

SUN: NOVEMBER 10 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0641	0811	1002	1324	1516	1645
70N	0633	0752	0919	1408	1535	1654
68N	0626	0737	0850	1437	1550	1700
66N	0620	0724	0828	1459	1602	1706
64N	0615	0714	0811	1516	1613	1711
62N	0611	0705	0757	1530	1622	1716
60N	0607	0658	0745	1542	1629	1720
58N	0603	0651	0735	1552	1636	1724
56N	0600	0645	0726	1601	1642	1727
54N	0556	0639	0718	1609	1648	1731
52N	0553	0634	0711	1616	1653	1734
50N	0551	0630	0704	1623	1658	1737
45N	0544	0619	0651	1637	1708	1743
40N	0538	0611	0639	1648	1717	1749
35N	0533	0603	0629	1658	1725	1755
30N	0527	0556	0621	1707	1732	1800
25N	0522	0549	0613	1714	1738	1806
20N	0516	0543	0606	1722	1745	1811
15N	0511	0537	0559	1728	1751	1817
10N	0506	0531	0553	1735	1757	1822
05N	0500	0525	0547	1741	1803	1828
00N	0454	0519	0540	1747	1809	1834
05S	0447	0512	0534	1754	1815	1841
10S	0440	0506	0528	1800	1822	1848
15S	0432	0459	0521	1807	1829	1856
20S	0423	0451	0514	1814	1837	1905
25S	0414	0443	0507	1821	1846	1915
30S	0402	0433	0459	1829	1855	1926
35S	0349	0422	0450	1839	1906	1940
40S	0332	0409	0439	1849	1919	1956
45S	0312	0354	0427	1902	1935	2017
50S	0244	0334	0412	1917	1955	2045
55S	0204	0308	0353	1937	2022	2126
60S	0042	0229	0327	2003	2102	2254

MOON: RISE / SET | UTC HHMM

Lat	Day 9		Day 10		Day 11	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	1009	1312	--	--	--	--
64N	0928	1354	1144	1321	--	--
62N	0900	1423	1045	1421	1230	1422
60N	0838	1445	1011	1455	1137	1516
58N	0821	1503	0947	1520	1105	1548
56N	0806	1518	0927	1539	1041	1612
54N	0753	1532	0911	1556	1021	1631
52N	0742	1543	0857	1610	1005	1648
50N	0733	1553	0845	1623	0951	1702
45N	0712	1615	0820	1649	0923	1731
40N	0656	1632	0800	1709	0901	1753
35N	0642	1647	0743	1726	0842	1812
30N	0630	1700	0729	1741	0826	1828
25N	0619	1711	0716	1755	0812	1842
20N	0609	1722	0705	1807	0800	1855
15N	0600	1732	0654	1818	0748	1907
10N	0552	1741	0644	1828	0737	1918
05N	0544	1750	0634	1839	0726	1929
00N	0535	1759	0625	1849	0715	1940
05S	0527	1808	0615	1859	0705	1951
10S	0519	1817	0605	1909	0654	2002
15S	0511	1826	0555	1920	0643	2013
20S	0502	1836	0545	1931	0631	2025
25S	0452	1847	0533	1944	0619	2038
30S	0442	1858	0521	1957	0605	2053
35S	0430	1912	0507	2012	0550	2109
40S	0417	1927	0451	2029	0532	2128
45S	0402	1945	0432	2051	0510	2150
50S	0343	2008	0409	2117	0443	2219
55S	0318	2038	0338	2154	0406	2259
60S	0245	2122	0252	2252	0306	--

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | NOVEMBER 12 - NOVEMBER 14

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
12	00	051 08.5	210 43.2	S10 54.1	264 14.8	N15 16.4	263 06.7	N13 42.1	042 08.1	N00 59.7
	01	066 11.0	225 45.6	S10 53.5	279 16.1	N15 16.1	278 08.9	N13 42.1	057 10.6	N00 59.7
	02	081 13.4	240 48.0	S10 52.9	294 17.5	N15 15.7	293 11.2	N13 42.0	072 13.2	N00 59.7
	03	096 15.9	255 50.4	S10 52.2	309 18.8	N15 15.4	308 13.4	N13 41.9	087 15.8	N00 59.6
	04	111 18.4	270 52.9	S10 51.6	324 20.1	N15 15.1	323 15.6	N13 41.8	102 18.4	N00 59.6
	05	126 20.8	285 55.3	S10 51.0	339 21.4	N15 14.8	338 17.9	N13 41.8	117 20.9	N00 59.5
	06	141 23.3	300 57.7	S10 50.4	354 22.7	N15 14.4	353 20.1	N13 41.7	132 23.5	N00 59.5
	07	156 25.8	316 00.1	S10 49.7	009 24.0	N15 14.1	008 22.3	N13 41.6	147 26.1	N00 59.5
	08	171 28.2	331 02.5	S10 49.1	024 25.3	N15 13.8	023 24.6	N13 41.6	162 28.7	N00 59.4
	09	186 30.7	346 04.9	S10 48.5	039 26.7	N15 13.4	038 26.8	N13 41.5	177 31.3	N00 59.4
	10	201 33.2	001 07.3	S10 47.9	054 28.0	N15 13.1	053 29.1	N13 41.4	192 33.8	N00 59.3
	11	216 35.6	016 09.7	S10 47.3	069 29.3	N15 12.8	068 31.3	N13 41.4	207 36.4	N00 59.3
	12	231 38.1	031 12.1	S10 46.7	084 30.6	N15 12.4	083 33.5	N13 41.3	222 39.0	N00 59.3
	13	246 40.5	046 14.4	S10 46.1	099 31.9	N15 12.1	098 35.8	N13 41.2	237 41.6	N00 59.2
	14	261 43.0	061 16.8	S10 45.5	114 33.3	N15 11.8	113 38.0	N13 41.1	252 44.2	N00 59.2
	15	276 45.5	076 19.2	S10 44.8	129 34.6	N15 11.4	128 40.2	N13 41.1	267 46.7	N00 59.1
	16	291 47.9	091 21.6	S10 44.2	144 35.9	N15 11.1	143 42.5	N13 41.0	282 49.3	N00 59.1
	17	306 50.4	106 23.9	S10 43.6	159 37.2	N15 10.8	158 44.7	N13 40.9	297 51.9	N00 59.1
	18	321 52.9	121 26.3	S10 43.0	174 38.5	N15 10.4	173 46.9	N13 40.9	312 54.5	N00 59.0
	19	336 55.3	136 28.6	S10 42.5	189 39.9	N15 10.1	188 49.2	N13 40.8	327 57.0	N00 59.0
	20	351 57.8	151 31.0	S10 41.9	204 41.2	N15 09.8	203 51.4	N13 40.7	342 59.6	N00 58.9
	21	007 00.3	166 33.3	S10 41.3	219 42.5	N15 09.5	218 53.7	N13 40.7	358 02.2	N00 58.9
	22	022 02.7	181 35.7	S10 40.7	234 43.8	N15 09.1	233 55.9	N13 40.6	013 04.8	N00 58.9
	23	037 05.2	196 38.0	S10 40.1	249 45.1	N15 08.8	248 58.1	N13 40.5	028 07.3	N00 58.8
13	00	052 07.6	211 40.4	S10 39.5	264 46.5	N15 08.5	264 00.4	N13 40.5	043 09.9	N00 58.8
	01	067 10.1	226 42.7	S10 38.9	279 47.8	N15 08.1	279 02.6	N13 40.4	058 12.5	N00 58.7
	02	082 12.6	241 45.0	S10 38.3	294 49.1	N15 07.8	294 04.9	N13 40.3	073 15.1	N00 58.7
	03	097 15.0	256 47.4	S10 37.8	309 50.4	N15 07.5	309 07.1	N13 40.2	088 17.7	N00 58.7
	04	112 17.5	271 49.7	S10 37.2	324 51.8	N15 07.1	324 09.3	N13 40.2	103 20.2	N00 58.6
	05	127 20.0	286 52.0	S10 36.6	339 53.1	N15 06.8	339 11.6	N13 40.1	118 22.8	N00 58.6
	06	142 22.4	301 54.3	S10 36.0	354 54.4	N15 06.5	354 13.8	N13 40.0	133 25.4	N00 58.5
	07	157 24.9	316 56.7	S10 35.5	009 55.7	N15 06.1	009 16.1	N13 40.0	148 28.0	N00 58.5
	08	172 27.4	331 59.0	S10 34.9	024 57.1	N15 05.8	024 18.3	N13 39.9	163 30.5	N00 58.5
	09	187 29.8	347 01.3	S10 34.3	039 58.4	N15 05.5	039 20.6	N13 39.8	178 33.1	N00 58.4
	10	202 32.3	002 03.6	S10 33.7	054 59.7	N15 05.2	054 22.8	N13 39.8	193 35.7	N00 58.4
	11	217 34.8	017 05.9	S10 33.2	070 01.1	N15 04.8	069 25.0	N13 39.7	208 38.3	N00 58.3
	12	232 37.2	032 08.2	S10 32.6	085 02.4	N15 04.5	084 27.3	N13 39.6	223 40.8	N00 58.3
	13	247 39.7	047 10.4	S10 32.1	100 03.7	N15 04.2	099 29.5	N13 39.6	238 43.4	N00 58.3
	14	262 42.1	062 12.7	S10 31.5	115 05.0	N15 03.8	114 31.8	N13 39.5	253 46.0	N00 58.2
	15	277 44.6	077 15.0	S10 30.9	130 06.4	N15 03.5	129 34.0	N13 39.4	268 48.6	N00 58.2
	16	292 47.1	092 17.3	S10 30.4	145 07.7	N15 03.2	144 36.3	N13 39.4	283 51.1	N00 58.2
	17	307 49.5	107 19.6	S10 29.8	160 09.0	N15 02.9	159 38.5	N13 39.3	298 53.7	N00 58.1
	18	322 52.0	122 21.8	S10 29.3	175 10.4	N15 02.5	174 40.7	N13 39.2	313 56.3	N00 58.1
	19	337 54.5	137 24.1	S10 28.7	190 11.7	N15 02.2	189 43.0	N13 39.2	328 58.8	N00 58.0
	20	352 56.9	152 26.4	S10 28.2	205 13.0	N15 01.9	204 45.2	N13 39.1	344 01.4	N00 58.0
	21	007 59.4	167 28.6	S10 27.7	220 14.4	N15 01.5	219 47.5	N13 39.0	359 04.0	N00 58.0
	22	023 01.9	182 30.9	S10 27.1	235 15.7	N15 01.2	234 49.7	N13 39.0	014 06.6	N00 57.9
	23	038 04.3	197 33.1	S10 26.6	250 17.0	N15 00.9	249 52.0	N13 38.9	029 09.1	N00 57.9
14	00	053 06.8	212 35.4	S10 26.0	265 18.4	N15 00.6	264 54.2	N13 38.8	044 11.7	N00 57.9
	01	068 09.3	227 37.6	S10 25.5	280 19.7	N15 00.2	279 56.5	N13 38.8	059 14.3	N00 57.8
	02	083 11.7	242 39.9	S10 25.0	295 21.0	N14 59.9	294 58.7	N13 38.7	074 16.9	N00 57.8
	03	098 14.2	257 42.1	S10 24.4	310 22.4	N14 59.6	310 01.0	N13 38.6	089 19.4	N00 57.7
	04	113 16.6	272 44.4	S10 23.9	325 23.7	N14 59.2	325 03.2	N13 38.6	104 22.0	N00 57.7
	05	128 19.1	287 46.6	S10 23.4	340 25.1	N14 58.9	340 05.4	N13 38.5	119 24.6	N00 57.7
	06	143 21.6	302 48.8	S10 22.8	355 26.4	N14 58.6	355 07.7	N13 38.4	134 27.1	N00 57.6
	07	158 24.0	317 51.0	S10 22.3	010 27.7	N14 58.3	010 09.9	N13 38.4	149 29.7	N00 57.6
	08	173 26.5	332 53.2	S10 21.8	025 29.1	N14 57.9	025 12.2	N13 38.3	164 32.3	N00 57.6
	09	188 29.0	347 55.5	S10 21.3	040 30.4	N14 57.6	040 14.4	N13 38.2	179 34.9	N00 57.5
	10	203 31.4	002 57.7	S10 20.8	055 31.7	N14 57.3	055 16.7	N13 38.2	194 37.4	N00 57.5
	11	218 33.9	017 59.9	S10 20.2	070 33.1	N14 56.9	070 18.9	N13 38.1	209 40.0	N00 57.4
	12	233 36.4	033 02.1	S10 19.7	085 34.4	N14 56.6	085 21.2	N13 38.1	224 42.6	N00 57.4
	13	248 38.8	048 04.3	S10 19.2	100 35.8	N14 56.3	100 23.4	N13 38.0	239 45.1	N00 57.4
	14	263 41.3	063 06.5	S10 18.7	115 37.1	N14 56.0	115 25.7	N13 37.9	254 47.7	N00 57.3
	15	278 43.8	078 08.7	S10 18.2	130 38.4	N14 55.6	130 27.9	N13 37.9	269 50.3	N00 57.3
	16	293 46.2	093 10.9	S10 17.7	145 39.8	N14 55.3	145 30.2	N13 37.8	284 52.9	N00 57.3
	17	308 48.7	108 13.1	S10 17.2	160 41.1	N14 55.0	160 32.4	N13 37.7	299 55.4	N00 57.2
	18	323 51.1	123 15.2	S10 16.7	175 42.5	N14 54.7	175 34.7	N13 37.7	314 58.0	N00 57.2
	19	338 53.6	138 17.4	S10 16.2	190 43.8	N14 54.3	190 36.9	N13 37.6	330 00.6	N00 57.1
	20	353 56.1	153 19.6	S10 15.7	205 45.2	N14 54.0	205 39.2	N13 37.5	345 03.1	N00 57.1
	21	008 58.5	168 21.8	S10 15.2	220 46.5	N14 53.7	220 41.4	N13 37.5	000 05.7	N00 57.1
	22	024 01.0	183 23.9	S10 14.7	235 47.9	N14 53.4	235 43.7	N13 37.4	015 08.3	N00 57.0
	23	039 03.5	198 26.1	S10 14.2	250 49.2	N14 53.0	250 46.0	N13 37.3	030 10.9	N00 57.0

Venus	Mars	Jupiter	Saturn
12: v 2.4 d 0.6	12: v 1.3 d -0.3	12: v 2.2 d -0.1	12: v 2.6 d 0.0
13: v 2.3 d 0.6	13: v 1.3 d -0.3	13: v 2.2 d -0.1	13: v 2.6 d 0.0
14: v 2.2 d 0.5	14: v 1.3 d -0.3	14: v 2.2 d -0.1	14: v 2.6 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.2	S40 11.7
Achernar	335 18.5	S57 06.1
Acrux	172 58.9	S63 14.7
Adhara	255 04.4	S29 00.3
Al Na'ir	027 31.0	S46 50.0
Aldebaran	290 37.6	N16 33.9
Alioth	166 12.1	N55 48.7
Alkaid	152 51.3	N49 10.6
Alnilam	275 35.9	S01 11.0
Alphard	217 46.3	S08 46.4
Alphecca	126 02.8	N26 37.5
Alpheratz	357 33.0	N29 14.6
Altair	061 58.6	N08 56.5
Ankaa	353 05.4	S42 09.6
Antares	112 14.3	S26 29.4
Arcturus	145 46.9	N19 02.5
Atria	107 07.7	S69 04.6
Avior	234 13.9	S59 35.4
Bellatrix	278 21.0	N06 22.5
Betelgeuse	270 50.2	N07 24.8
Canopus	263 51.3	S52 42.3
Capella	280 19.2	N46 01.4
Deneb	049 24.9	N45 22.9
Denebola	182 23.6	N14 25.3
Diphda	348 45.5	S17 50.3
Dubhe	193 39.5	N61 36.1
Elnath	277 59.6	N28 37.8
Eltanin	090 41.9	N51 29.3
Enif	033 37.3	N10 00.1
Fomalhaut	015 12.7	S29 28.8
Gacrux	171 50.4	S57 15.6
Gienah	175 42.3	S17 41.4
Hadar	148 34.5	S60 30.0
Hamal	327 49.2	N23 35.5
Kaus Australi	083 30.8	S34 22.3
Kochab	137 21.1	N74 02.6
Markab	013 28.3	N15 21.2
Menkar	314 04.2	N04 11.8
Menkent	147 56.2	S36 30.0
Miaplacidus	221 37.9	S69 49.3
Mirfak	308 25.6	N49 57.5
Nunki	075 46.1	S26 15.8
Peacock	053 03.5	S56 39.1
Polaris	312 44.1	N89 22.7
Pollux	243 15.3	N27 57.6
Procyon	244 49.1	N05 09.4
Rasalhague	095 57.4	N12 32.5
Regulus	207 32.9	N11 50.1
Rigel	281 02.1	S08 10.1
Rigil Kentaur	139 38.9	S60 56.7
Sabik	102 01.4	S15 45.4
Schedar	349 28.9	N56 41.4
Shaula	096 08.7	S37 07.4
Sirius	258 24.7	S16 45.0
Spica	158 21.0	S11 18.0
Suhail	222 45.2	S43 32.2
Vega	080 32.5	N38 48.7
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	159 30.9	0952
Mars	212 25.2	0620
Jupiter	211 50.1	0623
Saturn	351 03.6	2104

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
12	00	183 58.8	S17 38.1	152 34.8	S27 35.9	54.3	9.8	-1.2
	01	198 58.7	S17 38.8	167 03.7	S27 37.1	54.2	9.8	-1.1
	02	213 58.6	S17 39.5	181 32.5	S27 38.2	54.2	9.8	-1.0
	03	228 58.6	S17 40.2	196 01.3	S27 39.1	54.2	9.8	-0.8
	04	243 58.5	S17 40.8	210 30.1	S27 40.0	54.2	9.8	-0.7
	05	258 58.4	S17 41.5	224 59.0	S27 40.6	54.2	9.8	-0.5
	06	273 58.3	S17 42.2	239 27.8	S27 41.2	54.2	9.9	-0.4
	07	288 58.2	S17 42.9	253 56.7	S27 41.6	54.2	9.9	-0.3
	08	303 58.2	S17 43.5	268 25.5	S27 41.9	54.2	9.9	-0.1
	09	318 58.1	S17 44.2	282 54.4	S27 42.0	54.2	9.9	0.0
	10	333 58.0	S17 44.9	297 23.3	S27 42.0	54.2	9.9	0.1
	11	348 57.9	S17 45.6	311 52.2	S27 41.9	54.2	9.9	0.3
	12	003 57.8	S17 46.2	326 21.1	S27 41.6	54.2	9.9	0.4
	13	018 57.8	S17 46.9	340 50.0	S27 41.2	54.2	9.9	0.5
	14	033 57.7	S17 47.6	355 18.9	S27 40.7	54.1	10.0	0.7
	15	048 57.6	S17 48.3	009 47.9	S27 40.0	54.1	10.0	0.8
	16	063 57.5	S17 48.9	024 16.9	S27 39.2	54.1	10.0	0.9
	17	078 57.4	S17 49.6	038 45.9	S27 38.3	54.1	10.0	1.1
	18	093 57.4	S17 50.3	053 14.9	S27 37.2	54.1	10.0	1.2
	19	108 57.3	S17 50.9	067 43.9	S27 36.0	54.1	10.1	1.3
	20	123 57.2	S17 51.6	082 13.0	S27 34.6	54.1	10.1	1.5
	21	138 57.1	S17 52.3	096 42.0	S27 33.2	54.1	10.1	1.6
	22	153 57.0	S17 52.9	111 11.1	S27 31.6	54.1	10.1	1.7
	23	168 56.9	S17 53.6	125 40.3	S27 29.8	54.1	10.2	1.9
13	00	183 56.9	S17 54.3	140 09.4	S27 27.9	54.1	10.2	2.0
	01	198 56.8	S17 54.9	154 38.6	S27 25.9	54.1	10.2	2.1
	02	213 56.7	S17 55.6	169 07.8	S27 23.8	54.1	10.2	2.3
	03	228 56.6	S17 56.3	183 37.0	S27 21.5	54.1	10.3	2.4
	04	243 56.5	S17 56.9	198 06.3	S27 19.1	54.1	10.3	2.5
	05	258 56.4	S17 57.6	212 35.6	S27 16.6	54.1	10.3	2.7
	06	273 56.3	S17 58.3	227 04.9	S27 13.9	54.1	10.4	2.8
	07	288 56.2	S17 58.9	241 34.3	S27 11.2	54.1	10.4	2.9
	08	303 56.2	S17 59.6	256 03.7	S27 08.2	54.1	10.4	3.0
	09	318 56.1	S18 00.3	270 33.2	S27 05.2	54.1	10.5	3.2
	10	333 56.0	S18 00.9	285 02.6	S27 02.0	54.1	10.5	3.3
	11	348 55.9	S18 01.6	299 32.1	S26 58.7	54.1	10.5	3.4
	12	003 55.8	S18 02.2	314 01.7	S26 55.3	54.1	10.6	3.6
	13	018 55.7	S18 02.9	328 31.3	S26 51.7	54.1	10.6	3.7
	14	033 55.6	S18 03.6	343 00.9	S26 48.1	54.1	10.7	3.8
	15	048 55.5	S18 04.2	357 30.6	S26 44.2	54.1	10.7	3.9
	16	063 55.4	S18 04.9	012 00.3	S26 40.3	54.1	10.7	4.1
	17	078 55.4	S18 05.5	026 30.0	S26 36.3	54.1	10.8	4.2
	18	093 55.3	S18 06.2	040 59.8	S26 32.1	54.1	10.8	4.3
	19	108 55.2	S18 06.9	055 29.7	S26 27.8	54.1	10.9	4.4
	20	123 55.1	S18 07.5	069 59.5	S26 23.3	54.1	10.9	4.6
	21	138 55.0	S18 08.2	084 29.5	S26 18.8	54.1	11.0	4.7
	22	153 54.9	S18 08.8	098 59.4	S26 14.1	54.1	11.0	4.8
	23	168 54.8	S18 09.5	113 29.4	S26 09.3	54.1	11.1	4.9
14	00	183 54.7	S18 10.1	127 59.5	S26 04.4	54.1	11.1	5.0
	01	198 54.6	S18 10.8	142 29.6	S25 59.4	54.1	11.2	5.2
	02	213 54.5	S18 11.4	156 59.8	S25 54.2	54.1	11.2	5.3
	03	228 54.4	S18 12.1	171 30.0	S25 48.9	54.1	11.3	5.4
	04	243 54.3	S18 12.7	186 00.2	S25 43.5	54.1	11.3	5.5
	05	258 54.2	S18 13.4	200 30.5	S25 38.0	54.1	11.4	5.6
	06	273 54.1	S18 14.0	215 00.9	S25 32.4	54.1	11.4	5.7
	07	288 54.0	S18 14.7	229 31.3	S25 26.6	54.1	11.5	5.9
	08	303 53.9	S18 15.4	244 01.7	S25 20.8	54.1	11.5	6.0
	09	318 53.8	S18 16.0	258 32.2	S25 14.8	54.1	11.6	6.1
	10	333 53.8	S18 16.6	273 02.8	S25 08.7	54.1	11.6	6.2
	11	348 53.7	S18 17.3	287 33.4	S25 02.5	54.1	11.7	6.3
	12	003 53.6	S18 17.9	302 04.1	S24 56.2	54.1	11.7	6.4
	13	018 53.5	S18 18.6	316 34.8	S24 49.7	54.1	11.8	6.5
	14	033 53.4	S18 19.2	331 05.5	S24 43.2	54.1	11.8	6.7
	15	048 53.3	S18 19.9	345 36.3	S24 36.5	54.1	11.9	6.8
	16	063 53.2	S18 20.5	000 07.2	S24 29.7	54.1	11.9	6.9
	17	078 53.1	S18 21.2	014 38.1	S24 22.8	54.1	12.0	7.0
	18	093 53.0	S18 21.8	029 09.1	S24 15.9	54.1	12.0	7.1
	19	108 52.9	S18 22.5	043 40.1	S24 08.8	54.1	12.1	7.2
	20	123 52.8	S18 23.1	058 11.2	S24 01.5	54.1	12.1	7.3
	21	138 52.7	S18 23.7	072 42.3	S23 54.2	54.2	12.2	7.4
	22	153 52.6	S18 24.4	087 13.5	S23 46.8	54.2	12.2	7.5
	23	168 52.5	S18 25.0	101 44.8	S23 39.3	54.2	12.3	7.6

Day 12 noon Sun: v -0.1 d -0.7 SD 16.2 | Moon SD 14.8

Day 13 noon Sun: v -0.1 d -0.7 SD 16.2 | Moon SD 14.7

Day 14 noon Sun: v -0.1 d -0.6 SD 16.2 | Moon SD 14.7

SUN: NOVEMBER 13 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0652	0825	1033	1255	1503	1635
70N	0643	0804	0936	1351	1524	1645
68N	0635	0747	0903	1424	1540	1652
66N	0628	0734	0839	1448	1554	1659
64N	0623	0722	0821	1507	1605	1705
62N	0617	0713	0806	1522	1615	1710
60N	0613	0704	0753	1535	1623	1715
58N	0609	0657	0742	1546	1631	1719
56N	0605	0650	0732	1556	1637	1723
54N	0601	0644	0724	1604	1643	1726
52N	0558	0639	0716	1612	1649	1730
50N	0555	0634	0709	1619	1654	1733
45N	0548	0623	0655	1633	1705	1740
40N	0541	0614	0643	1645	1714	1747
35N	0535	0606	0632	1656	1723	1753
30N	0529	0558	0623	1705	1730	1759
25N	0524	0551	0615	1713	1737	1805
20N	0518	0544	0608	1721	1744	1810
15N	0512	0538	0601	1728	1750	1816
10N	0506	0532	0554	1735	1757	1822
05N	0500	0525	0547	1741	1803	1828
00N	0454	0519	0541	1748	1810	1835
05S	0447	0512	0534	1754	1816	1842
10S	0439	0505	0528	1801	1823	1849
15S	0431	0458	0521	1808	1831	1858
20S	0422	0450	0513	1815	1839	1907
25S	0412	0441	0506	1823	1848	1917
30S	0400	0431	0457	1832	1858	1929
35S	0346	0420	0447	1842	1910	1943
40S	0329	0406	0436	1853	1923	2001
45S	0307	0350	0423	1906	1940	2023
50S	0238	0329	0407	1922	2001	2052
55S	0154	0301	0347	1943	2029	2137
60S	0003	0219	0319	2011	2112	--

MOON: RISE / SET | UTC HHMM

Lat	Day 12		Day 13		Day 14	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	--	--	1440	1728
62N	1346	1453	1358	1628	1357	1811
60N	1239	1600	1313	1712	1328	1839
58N	1205	1635	1243	1742	1306	1901
56N	1139	1700	1221	1804	1248	1919
54N	1119	1720	1202	1822	1232	1934
52N	1102	1737	1147	1838	1219	1947
50N	1048	1752	1133	1851	1207	1958
45N	1018	1821	1105	1919	1143	2022
40N	0955	1844	1043	1940	1123	2040
35N	0936	1903	1025	1958	1107	2056
30N	0920	1919	1009	2013	1053	2110
25N	0906	1933	0955	2027	1040	2122
20N	0853	1946	0943	2039	1028	2133
15N	0840	1958	0931	2051	1018	2143
10N	0829	2010	0920	2102	1007	2153
05N	0818	2021	0909	2112	0958	2202
00N	0807	2032	0858	2122	0948	2211
05S	0756	2043	0848	2133	0938	2220
10S	0745	2054	0837	2143	0928	2229
15S	0733	2105	0825	2154	0918	2239
20S	0721	2117	0814	2205	0907	2249
25S	0708	2130	0801	2217	0855	2300
30S	0654	2144	0747	2231	0842	2311
35S	0638	2200	0731	2246	0828	2325
40S	0619	2219	0713	2303	0811	2340
45S	0556	2242	0650	2324	0751	2357
50S	0527	2310	0622	2350	0726	--
55S	0447	2350	0543	--	0651	0025
60S	0338	0008	0437	0056	0558	0119

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
15	00	054 05.9	213 28.2	S10 13.7	265 50.5	N14 52.7	265 48.2	N13 37.3	045 13.4	N00 57.0
	01	069 08.4	228 30.4	S10 13.2	280 51.9	N14 52.4	280 50.5	N13 37.2	060 16.0	N00 56.9
	02	084 10.9	243 32.6	S10 12.7	295 53.2	N14 52.0	295 52.7	N13 37.2	075 18.6	N00 56.9
	03	099 13.3	258 34.7	S10 12.3	310 54.6	N14 51.7	310 55.0	N13 37.1	090 21.1	N00 56.9
	04	114 15.8	273 36.8	S10 11.8	325 55.9	N14 51.4	325 57.2	N13 37.0	105 23.7	N00 56.8
	05	129 18.3	288 39.0	S10 11.3	340 57.3	N14 51.1	340 59.5	N13 37.0	120 26.3	N00 56.8
	06	144 20.7	303 41.1	S10 10.8	355 58.6	N14 50.7	356 01.7	N13 36.9	135 28.8	N00 56.8
	07	159 23.2	318 43.3	S10 10.3	011 00.0	N14 50.4	011 04.0	N13 36.8	150 31.4	N00 56.7
	08	174 25.6	333 45.4	S10 09.9	026 01.3	N14 50.1	026 06.2	N13 36.8	165 34.0	N00 56.7
	09	189 28.1	348 47.5	S10 09.4	041 02.7	N14 49.8	041 08.5	N13 36.7	180 36.5	N00 56.6
	10	204 30.6	003 49.6	S10 08.9	056 04.0	N14 49.4	056 10.7	N13 36.6	195 39.1	N00 56.6
	11	219 33.0	018 51.8	S10 08.5	071 05.4	N14 49.1	071 13.0	N13 36.6	210 41.7	N00 56.6
	12	234 35.5	033 53.9	S10 08.0	086 06.7	N14 48.8	086 15.3	N13 36.5	225 44.2	N00 56.5
	13	249 38.0	048 56.0	S10 07.5	101 08.1	N14 48.5	101 17.5	N13 36.5	240 46.8	N00 56.5
	14	264 40.4	063 58.1	S10 07.1	116 09.4	N14 48.1	116 19.8	N13 36.4	255 49.4	N00 56.5
	15	279 42.9	079 00.2	S10 06.6	131 10.8	N14 47.8	131 22.0	N13 36.3	270 51.9	N00 56.4
	16	294 45.4	094 02.3	S10 06.2	146 12.2	N14 47.5	146 24.3	N13 36.3	285 54.5	N00 56.4
	17	309 47.8	109 04.4	S10 05.7	161 13.5	N14 47.2	161 26.5	N13 36.2	300 57.1	N00 56.4
	18	324 50.3	124 06.5	S10 05.3	176 14.9	N14 46.8	176 28.8	N13 36.1	315 59.7	N00 56.3
	19	339 52.7	139 08.6	S10 04.8	191 16.2	N14 46.5	191 31.1	N13 36.1	331 02.2	N00 56.3
	20	354 55.2	154 10.7	S10 04.3	206 17.6	N14 46.2	206 33.3	N13 36.0	346 04.8	N00 56.3
	21	009 57.7	169 12.8	S10 03.9	221 18.9	N14 45.9	221 35.6	N13 36.0	001 07.4	N00 56.2
	22	025 00.1	184 14.8	S10 03.5	236 20.3	N14 45.5	236 37.8	N13 35.9	016 09.9	N00 56.2
	23	040 02.6	199 16.9	S10 03.0	251 21.6	N14 45.2	251 40.1	N13 35.8	031 12.5	N00 56.2
16	00	055 05.1	214 19.0	S10 02.6	266 23.0	N14 44.9	266 42.4	N13 35.8	046 15.0	N00 56.1
	01	070 07.5	229 21.0	S10 02.1	281 24.4	N14 44.6	281 44.6	N13 35.7	061 17.6	N00 56.1
	02	085 10.0	244 23.1	S10 01.7	296 25.7	N14 44.2	296 46.9	N13 35.7	076 20.2	N00 56.1
	03	100 12.5	259 25.2	S10 01.3	311 27.1	N14 43.9	311 49.1	N13 35.6	091 22.7	N00 56.0
	04	115 14.9	274 27.2	S10 00.8	326 28.4	N14 43.6	326 51.4	N13 35.5	106 25.3	N00 56.0
	05	130 17.4	289 29.3	S10 00.4	341 29.8	N14 43.3	341 53.7	N13 35.5	121 27.9	N00 55.9
	06	145 19.9	304 31.3	S10 00.0	356 31.2	N14 43.0	356 55.9	N13 35.4	136 30.4	N00 55.9
	07	160 22.3	319 33.4	S09 59.5	011 32.5	N14 42.6	011 58.2	N13 35.3	151 33.0	N00 55.9
	08	175 24.8	334 35.4	S09 59.1	026 33.9	N14 42.3	027 00.4	N13 35.3	166 35.6	N00 55.8
	09	190 27.2	349 37.5	S09 58.7	041 35.2	N14 42.0	042 02.7	N13 35.2	181 38.1	N00 55.8
	10	205 29.7	004 39.5	S09 58.3	056 36.6	N14 41.7	057 05.0	N13 35.2	196 40.7	N00 55.8
	11	220 32.2	019 41.5	S09 57.9	071 38.0	N14 41.3	072 07.2	N13 35.1	211 43.3	N00 55.7
	12	235 34.6	034 43.6	S09 57.4	086 39.3	N14 41.0	087 09.5	N13 35.0	226 45.8	N00 55.7
	13	250 37.1	049 45.6	S09 57.0	101 40.7	N14 40.7	102 11.8	N13 35.0	241 48.4	N00 55.7
	14	265 39.6	064 47.6	S09 56.6	116 42.1	N14 40.4	117 14.0	N13 34.9	256 51.0	N00 55.6
	15	280 42.0	079 49.6	S09 56.2	131 43.4	N14 40.0	132 16.3	N13 34.9	271 53.5	N00 55.6
	16	295 44.5	094 51.6	S09 55.8	146 44.8	N14 39.7	147 18.5	N13 34.8	286 56.1	N00 55.6
	17	310 47.0	109 53.7	S09 55.4	161 46.2	N14 39.4	162 20.8	N13 34.7	301 58.7	N00 55.5
	18	325 49.4	124 55.7	S09 55.0	176 47.5	N14 39.1	177 23.1	N13 34.7	317 01.2	N00 55.5
	19	340 51.9	139 57.7	S09 54.6	191 48.9	N14 38.8	192 25.3	N13 34.6	332 03.8	N00 55.5
	20	355 54.4	154 59.7	S09 54.2	206 50.3	N14 38.4	207 27.6	N13 34.6	347 06.3	N00 55.4
	21	010 56.8	170 01.7	S09 53.8	221 51.6	N14 38.1	222 29.9	N13 34.5	002 08.9	N00 55.4
	22	025 59.3	185 03.7	S09 53.4	236 53.0	N14 37.8	237 32.1	N13 34.4	017 11.5	N00 55.4
	23	041 01.7	200 05.7	S09 53.0	251 54.4	N14 37.5	252 34.4	N13 34.4	032 14.0	N00 55.3
17	00	056 04.2	215 07.6	S09 52.6	266 55.7	N14 37.2	267 36.7	N13 34.3	047 16.6	N00 55.3
	01	071 06.7	230 09.6	S09 52.2	281 57.1	N14 36.8	282 38.9	N13 34.3	062 19.2	N00 55.3
	02	086 09.1	245 11.6	S09 51.8	296 58.5	N14 36.5	297 41.2	N13 34.2	077 21.7	N00 55.2
	03	101 11.6	260 13.6	S09 51.4	311 59.8	N14 36.2	312 43.5	N13 34.1	092 24.3	N00 55.2
	04	116 14.1	275 15.6	S09 51.0	327 01.2	N14 35.9	327 45.7	N13 34.1	107 26.8	N00 55.2
	05	131 16.5	290 17.5	S09 50.6	342 02.6	N14 35.5	342 48.0	N13 34.0	122 29.4	N00 55.1
	06	146 19.0	305 19.5	S09 50.3	357 04.0	N14 35.2	357 50.3	N13 34.0	137 32.0	N00 55.1
	07	161 21.5	320 21.4	S09 49.9	012 05.3	N14 34.9	012 52.5	N13 33.9	152 34.5	N00 55.1
	08	176 23.9	335 23.4	S09 49.5	027 06.7	N14 34.6	027 54.8	N13 33.9	167 37.1	N00 55.0
	09	191 26.4	350 25.4	S09 49.1	042 08.1	N14 34.3	042 57.1	N13 33.8	182 39.7	N00 55.0
	10	206 28.8	005 27.3	S09 48.8	057 09.5	N14 33.9	057 59.3	N13 33.7	197 42.2	N00 55.0
	11	221 31.3	020 29.3	S09 48.4	072 10.8	N14 33.6	073 01.6	N13 33.7	212 44.8	N00 55.0
	12	236 33.8	035 31.2	S09 48.0	087 12.2	N14 33.3	088 03.9	N13 33.6	227 47.3	N00 54.9
	13	251 36.2	050 33.2	S09 47.7	102 13.6	N14 33.0	103 06.2	N13 33.6	242 49.9	N00 54.9
	14	266 38.7	065 35.1	S09 47.3	117 15.0	N14 32.7	118 08.4	N13 33.5	257 52.5	N00 54.9
	15	281 41.2	080 37.0	S09 46.9	132 16.3	N14 32.3	133 10.7	N13 33.4	272 55.0	N00 54.8
	16	296 43.6	095 39.0	S09 46.6	147 17.7	N14 32.0	148 13.0	N13 33.4	287 57.6	N00 54.8
	17	311 46.1	110 40.9	S09 46.2	162 19.1	N14 31.7	163 15.2	N13 33.3	303 00.1	N00 54.8
	18	326 48.6	125 42.8	S09 45.9	177 20.5	N14 31.4	178 17.5	N13 33.3	318 02.7	N00 54.7
	19	341 51.0	140 44.7	S09 45.5	192 21.8	N14 31.1	193 19.8	N13 33.2	333 05.3	N00 54.7
	20	356 53.5	155 46.6	S09 45.1	207 23.2	N14 30.7	208 22.1	N13 33.2	348 07.8	N00 54.7
	21	011 56.0	170 48.6	S09 44.8	222 24.6	N14 30.4	223 24.3	N13 33.1	003 10.4	N00 54.6
	22	026 58.4	185 50.5	S09 44.4	237 26.0	N14 30.1	238 26.6	N13 33.0	018 12.9	N00 54.6
	23	042 00.9	200 52.4	S09 44.1	252 27.4	N14 29.8	253 28.9	N13 33.0	033 15.5	N00 54.6

Venus	Mars	Jupiter	Saturn
15: v 2.1 d 0.5	15: v 1.4 d -0.3	15: v 2.3 d -0.1	15: v 2.6 d 0.0
16: v 2.0 d 0.4	16: v 1.4 d -0.3	16: v 2.3 d -0.1	16: v 2.6 d 0.0
17: v 1.9 d 0.4	17: v 1.4 d -0.3	17: v 2.3 d -0.1	17: v 2.6 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.2	S40 11.7
Achernar	335 18.5	S57 06.1
Acrux	172 58.9	S63 14.7
Adhara	255 04.4	S29 00.3
Al Na'ir	027 31.0	S46 50.0
Aldebaran	290 37.5	N16 33.9
Alioth	166 12.1	N55 48.6
Alkaid	152 51.3	N49 10.6
Alnilam	275 35.9	S01 11.0
Alphard	217 46.2	S08 46.4
Alphecca	126 02.8	N26 37.5
Alpheratz	357 33.0	N29 14.6
Altair	061 58.6	N08 56.5
Ankaa	353 05.4	S42 09.6
Antares	112 14.3	S26 29.4
Arcturus	145 46.9	N19 02.5
Atria	107 07.7	S69 04.6
Avior	234 13.9	S59 35.4
Bellatrix	278 21.0	N06 22.5
Betelgeuse	270 50.2	N07 24.8
Canopus	263 51.3	S52 42.3
Capella	280 19.2	N46 01.4
Deneb	049 24.9	N45 22.9
Denebola	182 23.6	N14 25.3
Diphda	348 45.5	S17 50.3
Dubhe	193 39.4	N61 36.1
Elnath	277 59.6	N28 37.8
Eltanin	090 41.9	N51 29.3
Enif	033 37.3	N10 00.1
Fomalhaut	015 12.7	S29 28.8
Gacrux	171 50.4	S57 15.6
Gienah	175 42.2	S17 41.4
Hadar	148 34.4	S60 30.0
Hamal	327 49.1	N23 35.5
Kaus Australi	083 30.8	S34 22.3
Kochab	137 21.0	N74 02.6
Markab	013 28.3	N15 21.2
Menkar	314 04.2	N04 11.8
Menkent	147 56.2	S36 30.0
Miaplacidus	221 37.8	S69 49.3
Mirfak	308 25.5	N49 57.5
Nunki	075 46.1	S26 15.8
Peacock	053 03.6	S56 39.1
Polaris	312 43.9	N89 22.7
Pollux	243 15.3	N27 57.6
Procyon	244 49.1	N05 09.4
Rasalhague	095 57.4	N12 32.5
Regulus	207 32.9	N11 50.1
Rigel	281 02.1	S08 10.1
Rigil Kentaur	139 38.9	S60 56.7
Sabik	102 01.4	S15 45.4
Schedar	349 28.9	N56 41.4
Shaula	096 08.7	S37 07.4
Sirius	258 24.7	S16 45.0
Spica	158 21.0	S11 18.0
Suhail	222 45.1	S43 32.2
Vega	080 32.5	N38 48.7
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	159 08.9	0941
Mars	211 04.7	0614
Jupiter	211 34.9	0612
Saturn	351 11.2	2051

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
15	00	183 52.4	S18 25.7	116 16.1	S23 31.6	54.2	12.4	7.7
	01	198 52.3	S18 26.3	130 47.4	S23 23.9	54.2	12.4	7.8
	02	213 52.1	S18 27.0	145 18.8	S23 16.0	54.2	12.5	8.0
	03	228 52.0	S18 27.6	159 50.3	S23 08.1	54.2	12.5	8.1
	04	243 51.9	S18 28.2	174 21.8	S23 00.0	54.2	12.6	8.2
	05	258 51.8	S18 28.9	188 53.4	S22 51.9	54.2	12.6	8.3
	06	273 51.7	S18 29.5	203 25.0	S22 43.6	54.2	12.7	8.4
	07	288 51.6	S18 30.1	217 56.7	S22 35.3	54.2	12.7	8.5
	08	303 51.5	S18 30.8	232 28.4	S22 26.8	54.2	12.8	8.6
	09	318 51.4	S18 31.4	247 00.2	S22 18.2	54.3	12.8	8.7
	10	333 51.3	S18 32.1	261 32.0	S22 09.6	54.3	12.9	8.8
	11	348 51.2	S18 32.7	276 03.9	S22 00.8	54.3	12.9	8.9
	12	003 51.1	S18 33.3	290 35.8	S21 52.0	54.3	13.0	9.0
	13	018 51.0	S18 34.0	305 07.8	S21 43.0	54.3	13.0	9.0
	14	033 50.9	S18 34.6	319 39.9	S21 34.0	54.3	13.1	9.1
	15	048 50.8	S18 35.2	334 12.0	S21 24.8	54.3	13.1	9.2
	16	063 50.7	S18 35.8	348 44.1	S21 15.6	54.3	13.2	9.3
	17	078 50.6	S18 36.5	003 16.3	S21 06.3	54.3	13.3	9.4
	18	093 50.5	S18 37.1	017 48.6	S20 56.8	54.4	13.3	9.5
	19	108 50.3	S18 37.7	032 20.9	S20 47.3	54.4	13.4	9.6
	20	123 50.2	S18 38.4	046 53.2	S20 37.7	54.4	13.4	9.7
	21	138 50.1	S18 39.0	061 25.6	S20 28.0	54.4	13.5	9.8
	22	153 50.0	S18 39.6	075 58.1	S20 18.2	54.4	13.5	9.9
	23	168 49.9	S18 40.3	090 30.6	S20 08.3	54.4	13.6	10.0
16	00	183 49.8	S18 40.9	105 03.1	S19 58.4	54.4	13.6	10.1
	01	198 49.7	S18 41.5	119 35.7	S19 48.3	54.5	13.6	10.1
	02	213 49.6	S18 42.1	134 08.4	S19 38.2	54.5	13.7	10.2
	03	228 49.5	S18 42.8	148 41.1	S19 27.9	54.5	13.7	10.3
	04	243 49.3	S18 43.4	163 13.8	S19 17.6	54.5	13.8	10.4
	05	258 49.2	S18 44.0	177 46.6	S19 07.2	54.5	13.8	10.5
	06	273 49.1	S18 44.6	192 19.5	S18 56.7	54.5	13.9	10.6
	07	288 49.0	S18 45.3	206 52.3	S18 46.1	54.6	13.9	10.7
	08	303 48.9	S18 45.9	221 25.3	S18 35.5	54.6	14.0	10.7
	09	318 48.8	S18 46.5	235 58.3	S18 24.7	54.6	14.0	10.8
	10	333 48.7	S18 47.1	250 31.3	S18 13.9	54.6	14.1	10.9
	11	348 48.6	S18 47.7	265 04.3	S18 03.0	54.6	14.1	11.0
	12	003 48.4	S18 48.4	279 37.4	S17 52.0	54.6	14.1	11.1
	13	018 48.3	S18 49.0	294 10.6	S17 41.0	54.7	14.2	11.1
	14	033 48.2	S18 49.6	308 43.8	S17 29.8	54.7	14.2	11.2
	15	048 48.1	S18 50.2	323 17.0	S17 18.6	54.7	14.3	11.3
	16	063 48.0	S18 50.8	337 50.3	S17 07.3	54.7	14.3	11.4
	17	078 47.9	S18 51.5	352 23.6	S16 55.9	54.7	14.3	11.5
	18	093 47.7	S18 52.1	006 56.9	S16 44.4	54.8	14.4	11.5
	19	108 47.6	S18 52.7	021 30.3	S16 32.9	54.8	14.4	11.6
	20	123 47.5	S18 53.3	036 03.7	S16 21.3	54.8	14.5	11.7
	21	138 47.4	S18 53.9	050 37.2	S16 09.6	54.8	14.5	11.8
	22	153 47.3	S18 54.5	065 10.7	S15 57.9	54.8	14.5	11.8
	23	168 47.1	S18 55.1	079 44.2	S15 46.0	54.9	14.6	11.9
17	00	183 47.0	S18 55.8	094 17.8	S15 34.1	54.9	14.6	12.0
	01	198 46.9	S18 56.4	108 51.3	S15 22.2	54.9	14.6	12.0
	02	213 46.8	S18 57.0	123 25.0	S15 10.1	54.9	14.7	12.1
	03	228 46.7	S18 57.6	137 58.6	S14 58.0	55.0	14.7	12.2
	04	243 46.5	S18 58.2	152 32.3	S14 45.8	55.0	14.7	12.3
	05	258 46.4	S18 58.8	167 06.1	S14 33.5	55.0	14.8	12.3
	06	273 46.3	S18 59.4	181 39.8	S14 21.2	55.0	14.8	12.4
	07	288 46.2	S19 00.0	196 13.6	S14 08.8	55.0	14.8	12.5
	08	303 46.1	S19 00.6	210 47.4	S13 56.4	55.1	14.8	12.5
	09	318 45.9	S19 01.3	225 21.2	S13 43.8	55.1	14.9	12.6
	10	333 45.8	S19 01.9	239 55.1	S13 31.2	55.1	14.9	12.7
	11	348 45.7	S19 02.5	254 29.0	S13 18.6	55.1	14.9	12.7
	12	003 45.6	S19 03.1	269 02.9	S13 05.9	55.2	14.9	12.8
	13	018 45.4	S19 03.7	283 36.8	S12 53.1	55.2	15.0	12.9
	14	033 45.3	S19 04.3	298 10.8	S12 40.2	55.2	15.0	12.9
	15	048 45.2	S19 04.9	312 44.7	S12 27.3	55.2	15.0	13.0
	16	063 45.1	S19 05.5	327 18.7	S12 14.3	55.3	15.0	13.0
	17	078 44.9	S19 06.1	341 52.8	S12 01.3	55.3	15.0	13.1
	18	093 44.8	S19 06.7	356 26.8	S11 48.2	55.3	15.1	13.2
	19	108 44.7	S19 07.3	011 00.8	S11 35.0	55.3	15.1	13.2
	20	123 44.6	S19 07.9	025 34.9	S11 21.8	55.4	15.1	13.3
	21	138 44.4	S19 08.5	040 09.0	S11 08.6	55.4	15.1	13.3
	22	153 44.3	S19 09.1	054 43.1	S10 55.2	55.4	15.1	13.4
	23	168 44.2	S19 09.7	069 17.2	S10 41.8	55.5	15.1	13.4

Day 15 noon Sun: v -0.1 d -0.6 SD 16.2 | Moon SD 14.8

Day 16 noon Sun: v -0.1 d -0.6 SD 16.2 | Moon SD 14.9

Day 17 noon Sun: v -0.1 d -0.6 SD 16.2 | Moon SD 15.0

SUN: NOVEMBER 16 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0703	0839	1130	1158	1449	1625
70N	0652	0815	0956	1333	1513	1636
68N	0644	0757	0917	1411	1531	1645
66N	0636	0743	0851	1438	1546	1652
64N	0630	0730	0830	1458	1558	1659
62N	0624	0720	0814	1515	1609	1705
60N	0619	0711	0800	1528	1618	1710
58N	0614	0703	0749	1540	1626	1714
56N	0610	0656	0738	1550	1633	1719
54N	0606	0650	0729	1559	1639	1723
52N	0603	0644	0721	1607	1645	1726
50N	0559	0639	0714	1615	1650	1730
45N	0551	0627	0659	1630	1702	1738
40N	0544	0617	0646	1643	1712	1745
35N	0538	0608	0635	1654	1721	1751
30N	0532	0600	0626	1703	1729	1758
25N	0525	0553	0617	1712	1736	1804
20N	0519	0546	0609	1720	1743	1810
15N	0513	0539	0602	1727	1750	1816
10N	0507	0533	0555	1735	1757	1822
05N	0501	0526	0548	1742	1803	1829
00N	0454	0519	0541	1748	1810	1836
05S	0447	0512	0534	1755	1817	1843
10S	0439	0505	0527	1802	1825	1851
15S	0431	0457	0520	1810	1832	1859
20S	0421	0449	0513	1817	1841	1909
25S	0410	0440	0504	1825	1850	1920
30S	0358	0429	0455	1835	1901	1932
35S	0343	0417	0445	1845	1913	1947
40S	0325	0403	0434	1856	1927	2005
45S	0303	0346	0420	1910	1944	2028
50S	0232	0324	0403	1927	2007	2059
55S	0145	0255	0342	1949	2037	2148
60S	--	0209	0312	2019	2123	--

MOON: RISE / SET | UTC HHMM

Lat	Day 15		Day 16		Day 17	
72N	--	--	1617	1907	1502	2153
70N	--	--	1524	1959	1440	2213
68N	1548	1800	1451	2030	1424	2228
66N	1452	1854	1426	2053	1410	2240
64N	1419	1927	1407	2111	1358	2250
62N	1355	1950	1352	2126	1348	2259
60N	1335	2009	1338	2138	1340	2306
58N	1319	2025	1327	2149	1332	2312
56N	1305	2038	1317	2158	1326	2318
54N	1253	2049	1308	2206	1320	2323
52N	1243	2059	1300	2213	1314	2328
50N	1233	2108	1253	2220	1310	2332
45N	1213	2127	1238	2234	1259	2340
40N	1157	2143	1225	2245	1250	2348
35N	1143	2155	1214	2255	1243	2354
30N	1131	2207	1205	2303	1236	2400
25N	1120	2217	1156	2311	1230	--
20N	1110	2226	1149	2318	1224	--
15N	1101	2234	1141	2324	1219	--
10N	1052	2242	1134	2330	1214	--
05N	1044	2250	1127	2336	1209	--
00N	1035	2257	1121	2342	1204	--
05S	1027	2305	1114	2348	1200	--
10S	1018	2313	1107	2353	1155	--
15S	1010	2321	1100	2400	1150	--
20S	1000	2329	1053	--	1144	0006
25S	0950	2338	1045	--	1139	0013
30S	0939	2347	1036	--	1132	0020
35S	0927	2358	1026	--	1125	0028
40S	0913	--	1015	0010	1118	0037
45S	0856	--	1002	0025	1108	0048
50S	0834	0020	0945	0042	1057	0100
55S	0807	0048	0925	0105	1043	0116
60S	0727	0130	0856	0135	1024	0137

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | NOVEMBER 18 - NOVEMBER 20

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
18	00	057 03.3	215 54.3	S09 43.8	267 28.7	N14 29.5	268 31.1	N13 32.9	048 18.1	N00 54.5
	01	072 05.8	230 56.2	S09 43.4	282 30.1	N14 29.1	283 33.4	N13 32.9	063 20.6	N00 54.5
	02	087 08.3	245 58.1	S09 43.1	297 31.5	N14 28.8	298 35.7	N13 32.8	078 23.2	N00 54.5
	03	102 10.7	261 00.0	S09 42.7	312 32.9	N14 28.5	313 38.0	N13 32.8	093 25.7	N00 54.4
	04	117 13.2	276 01.9	S09 42.4	327 34.3	N14 28.2	328 40.2	N13 32.7	108 28.3	N00 54.4
	05	132 15.7	291 03.7	S09 42.1	342 35.7	N14 27.9	343 42.5	N13 32.7	123 30.8	N00 54.4
	06	147 18.1	306 05.6	S09 41.7	357 37.0	N14 27.6	358 44.8	N13 32.6	138 33.4	N00 54.4
	07	162 20.6	321 07.5	S09 41.4	012 38.4	N14 27.2	013 47.1	N13 32.5	153 36.0	N00 54.3
	08	177 23.1	336 09.4	S09 41.1	027 39.8	N14 26.9	028 49.3	N13 32.5	168 38.5	N00 54.3
	09	192 25.5	351 11.3	S09 40.7	042 41.2	N14 26.6	043 51.6	N13 32.4	183 41.1	N00 54.3
	10	207 28.0	006 13.1	S09 40.4	057 42.6	N14 26.3	058 53.9	N13 32.4	198 43.6	N00 54.2
	11	222 30.5	021 15.0	S09 40.1	072 44.0	N14 26.0	073 56.2	N13 32.3	213 46.2	N00 54.2
	12	237 32.9	036 16.9	S09 39.8	087 45.4	N14 25.6	088 58.4	N13 32.3	228 48.8	N00 54.2
	13	252 35.4	051 18.7	S09 39.4	102 46.7	N14 25.3	104 00.7	N13 32.2	243 51.3	N00 54.1
	14	267 37.8	066 20.6	S09 39.1	117 48.1	N14 25.0	119 03.0	N13 32.1	258 53.9	N00 54.1
	15	282 40.3	081 22.4	S09 38.8	132 49.5	N14 24.7	134 05.3	N13 32.1	273 56.4	N00 54.1
	16	297 42.8	096 24.3	S09 38.5	147 50.9	N14 24.4	149 07.6	N13 32.0	288 59.0	N00 54.1
	17	312 45.2	111 26.1	S09 38.2	162 52.3	N14 24.1	164 09.8	N13 32.0	304 01.5	N00 54.0
	18	327 47.7	126 28.0	S09 37.9	177 53.7	N14 23.7	179 12.1	N13 31.9	319 04.1	N00 54.0
	19	342 50.2	141 29.8	S09 37.6	192 55.1	N14 23.4	194 14.4	N13 31.9	334 06.6	N00 54.0
	20	357 52.6	156 31.6	S09 37.3	207 56.5	N14 23.1	209 16.7	N13 31.8	349 09.2	N00 53.9
	21	012 55.1	171 33.5	S09 37.0	222 57.9	N14 22.8	224 18.9	N13 31.8	004 11.8	N00 53.9
	22	027 57.6	186 35.3	S09 36.7	237 59.3	N14 22.5	239 21.2	N13 31.7	019 14.3	N00 53.9
	23	043 00.0	201 37.1	S09 36.4	253 00.7	N14 22.2	254 23.5	N13 31.7	034 16.9	N00 53.8
19	00	058 02.5	216 38.9	S09 36.1	268 02.0	N14 21.8	269 25.8	N13 31.6	049 19.4	N00 53.8
	01	073 04.9	231 40.8	S09 35.8	283 03.4	N14 21.5	284 28.1	N13 31.5	064 22.0	N00 53.8
	02	088 07.4	246 42.6	S09 35.5	298 04.8	N14 21.2	299 30.3	N13 31.5	079 24.5	N00 53.8
	03	103 09.9	261 44.4	S09 35.2	313 06.2	N14 20.9	314 32.6	N13 31.4	094 27.1	N00 53.7
	04	118 12.3	276 46.2	S09 34.9	328 07.6	N14 20.6	329 34.9	N13 31.4	109 29.6	N00 53.7
	05	133 14.8	291 48.0	S09 34.6	343 09.0	N14 20.3	344 37.2	N13 31.3	124 32.2	N00 53.7
	06	148 17.3	306 49.8	S09 34.3	358 10.4	N14 20.0	359 39.5	N13 31.3	139 34.8	N00 53.6
	07	163 19.7	321 51.6	S09 34.0	013 11.8	N14 19.6	014 41.8	N13 31.2	154 37.3	N00 53.6
	08	178 22.2	336 53.4	S09 33.7	028 13.2	N14 19.3	029 44.0	N13 31.2	169 39.9	N00 53.6
	09	193 24.7	351 55.2	S09 33.5	043 14.6	N14 19.0	044 46.3	N13 31.1	184 42.4	N00 53.5
	10	208 27.1	006 57.0	S09 33.2	058 16.0	N14 18.7	059 48.6	N13 31.1	199 45.0	N00 53.5
	11	223 29.6	021 58.8	S09 32.9	073 17.4	N14 18.4	074 50.9	N13 31.0	214 47.5	N00 53.5
	12	238 32.1	037 00.5	S09 32.6	088 18.8	N14 18.1	089 53.2	N13 31.0	229 50.1	N00 53.5
	13	253 34.5	052 02.3	S09 32.4	103 20.2	N14 17.7	104 55.4	N13 30.9	244 52.6	N00 53.4
	14	268 37.0	067 04.1	S09 32.1	118 21.6	N14 17.4	119 57.7	N13 30.8	259 55.2	N00 53.4
	15	283 39.4	082 05.9	S09 31.8	133 23.0	N14 17.1	135 00.0	N13 30.8	274 57.7	N00 53.4
	16	298 41.9	097 07.6	S09 31.6	148 24.4	N14 16.8	150 02.3	N13 30.7	290 00.3	N00 53.3
	17	313 44.4	112 09.4	S09 31.3	163 25.8	N14 16.5	165 04.6	N13 30.7	305 02.8	N00 53.3
	18	328 46.8	127 11.2	S09 31.0	178 27.2	N14 16.2	180 06.9	N13 30.6	320 05.4	N00 53.3
	19	343 49.3	142 12.9	S09 30.8	193 28.6	N14 15.9	195 09.2	N13 30.6	335 08.0	N00 53.3
	20	358 51.8	157 14.7	S09 30.5	208 30.0	N14 15.5	210 11.4	N13 30.5	350 10.5	N00 53.2
	21	013 54.2	172 16.4	S09 30.2	223 31.4	N14 15.2	225 13.7	N13 30.5	005 13.1	N00 53.2
	22	028 56.7	187 18.2	S09 30.0	238 32.8	N14 14.9	240 16.0	N13 30.4	020 15.6	N00 53.2
	23	043 59.2	202 19.9	S09 29.7	253 34.2	N14 14.6	255 18.3	N13 30.4	035 18.2	N00 53.2
20	00	059 01.6	217 21.7	S09 29.5	268 35.6	N14 14.3	270 20.6	N13 30.3	050 20.7	N00 53.1
	01	074 04.1	232 23.4	S09 29.2	283 37.0	N14 14.0	285 22.9	N13 30.3	065 23.3	N00 53.1
	02	089 06.6	247 25.2	S09 29.0	298 38.4	N14 13.7	300 25.2	N13 30.2	080 25.8	N00 53.1
	03	104 09.0	262 26.9	S09 28.7	313 39.9	N14 13.4	315 27.5	N13 30.2	095 28.4	N00 53.0
	04	119 11.5	277 28.6	S09 28.5	328 41.3	N14 13.0	330 29.7	N13 30.1	110 30.9	N00 53.0
	05	134 13.9	292 30.4	S09 28.3	343 42.7	N14 12.7	345 32.0	N13 30.1	125 33.5	N00 53.0
	06	149 16.4	307 32.1	S09 28.0	358 44.1	N14 12.4	000 34.3	N13 30.0	140 36.0	N00 53.0
	07	164 18.9	322 33.8	S09 27.8	013 45.5	N14 12.1	015 36.6	N13 30.0	155 38.6	N00 52.9
	08	179 21.3	337 35.5	S09 27.5	028 46.9	N14 11.8	030 38.9	N13 29.9	170 41.1	N00 52.9
	09	194 23.8	352 37.2	S09 27.3	043 48.3	N14 11.5	045 41.2	N13 29.9	185 43.7	N00 52.9
	10	209 26.3	007 38.9	S09 27.1	058 49.7	N14 11.2	060 43.5	N13 29.8	200 46.2	N00 52.8
	11	224 28.7	022 40.6	S09 26.8	073 51.1	N14 10.9	075 45.8	N13 29.8	215 48.8	N00 52.8
	12	239 31.2	037 42.4	S09 26.6	088 52.5	N14 10.5	090 48.1	N13 29.7	230 51.3	N00 52.8
	13	254 33.7	052 44.1	S09 26.4	103 54.0	N14 10.2	105 50.3	N13 29.7	245 53.9	N00 52.8
	14	269 36.1	067 45.8	S09 26.2	118 55.4	N14 09.9	120 52.6	N13 29.6	260 56.4	N00 52.7
	15	284 38.6	082 47.4	S09 25.9	133 56.8	N14 09.6	135 54.9	N13 29.6	275 59.0	N00 52.7
	16	299 41.0	097 49.1	S09 25.7	148 58.2	N14 09.3	150 57.2	N13 29.5	291 01.5	N00 52.7
	17	314 43.5	112 50.8	S09 25.5	163 59.6	N14 09.0	165 59.5	N13 29.5	306 04.1	N00 52.7
	18	329 46.0	127 52.5	S09 25.3	179 01.0	N14 08.7	181 01.8	N13 29.4	321 06.6	N00 52.6
	19	344 48.4	142 54.2	S09 25.1	194 02.4	N14 08.4	196 04.1	N13 29.4	336 09.2	N00 52.6
	20	359 50.9	157 55.9	S09 24.9	209 03.9	N14 08.1	211 06.4	N13 29.3	351 11.7	N00 52.6
	21	014 53.4	172 57.5	S09 24.6	224 05.3	N14 07.7	226 08.7	N13 29.3	006 14.3	N00 52.6
	22	029 55.8	187 59.2	S09 24.4	239 06.7	N14 07.4	241 11.0	N13 29.2	021 16.8	N00 52.5
	23	044 58.3	203 00.9	S09 24.2	254 08.1	N14 07.1	256 13.3	N13 29.2	036 19.4	N00 52.5

Venus	Mars	Jupiter	Saturn
18: v 1.9 d 0.3	18: v 1.4 d -0.3	18: v 2.3 d -0.1	18: v 2.6 d 0.0
19: v 1.8 d 0.3	19: v 1.4 d -0.3	19: v 2.3 d -0.1	19: v 2.6 d 0.0
20: v 1.7 d 0.2	20: v 1.4 d -0.3	20: v 2.3 d -0.1	20: v 2.5 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.2	S40 11.8
Achernar	335 18.6	S57 06.1
Acrux	172 58.8	S63 14.7
Adhara	255 04.4	S29 00.3
Al Na'ir	027 31.0	S46 50.0
Aldebaran	290 37.5	N16 33.9
Alioth	166 12.1	N55 48.6
Alkaid	152 51.3	N49 10.6
Alnilam	275 35.9	S01 11.0
Alphard	217 46.2	S08 46.4
Alphecca	126 02.8	N26 37.5
Alpheratz	357 33.0	N29 14.6
Altair	061 58.7	N08 56.5
Ankaa	353 05.4	S42 09.7
Antares	112 14.3	S26 29.4
Arcturus	145 46.8	N19 02.5
Atria	107 07.7	S69 04.6
Avior	234 13.9	S59 35.4
Bellatrix	278 20.9	N06 22.5
Betelgeuse	270 50.1	N07 24.8
Canopus	263 51.3	S52 42.4
Capella	280 19.2	N46 01.4
Deneb	049 24.9	N45 22.9
Denebola	182 23.6	N14 25.3
Diphda	348 45.5	S17 50.3
Dubhe	193 39.4	N61 36.1
Elnath	277 59.6	N28 37.8
Eltanin	090 41.9	N51 29.3
Enif	033 37.3	N10 00.1
Fomalhaut	015 12.7	S29 28.8
Gacrux	171 50.3	S57 15.6
Gienah	175 42.2	S17 41.4
Hadar	148 34.4	S60 30.0
Hamal	327 49.1	N23 35.5
Kaus Australi	083 30.8	S34 22.3
Kochab	137 21.0	N74 02.5
Markab	013 28.3	N15 21.2
Menkar	314 04.2	N04 11.8
Menkent	147 56.2	S36 30.0
Miaplacidus	221 37.8	S69 49.3
Mirfak	308 25.5	N49 57.5
Nunki	075 46.1	S26 15.8
Peacock	053 03.6	S56 39.1
Polaris	312 44.0	N89 22.7
Pollux	243 15.3	N27 57.6
Procyon	244 49.1	N05 09.4
Rasalhague	095 57.5	N12 32.5
Regulus	207 32.9	N11 50.1
Rigel	281 02.1	S08 10.1
Rigil Kentaur	139 38.8	S60 56.7
Sabik	102 01.4	S15 45.4
Schedar	349 28.9	N56 41.4
Shaula	096 08.7	S37 07.4
Sirius	258 24.6	S16 45.0
Spica	158 21.0	S11 18.0
Suhail	222 45.1	S43 32.2
Vega	080 32.5	N38 48.7
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	158 28.5	0932
Mars	209 46.8	0607
Jupiter	211 21.1	0601
Saturn	351 18.0	2039

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
18	00	183 44.1	S19 10.3	083 51.3	S10 28.4	55.5	15.1	13.5
	01	198 43.9	S19 10.9	098 25.5	S10 14.9	55.5	15.1	13.6
	02	213 43.8	S19 11.5	112 59.6	S10 01.3	55.5	15.2	13.6
	03	228 43.7	S19 12.1	127 33.8	S09 47.7	55.6	15.2	13.7
	04	243 43.5	S19 12.7	142 07.9	S09 34.1	55.6	15.2	13.7
	05	258 43.4	S19 13.3	156 42.1	S09 20.3	55.6	15.2	13.8
	06	273 43.3	S19 13.9	171 16.3	S09 06.6	55.7	15.2	13.8
	07	288 43.2	S19 14.5	185 50.5	S08 52.7	55.7	15.2	13.9
	08	303 43.0	S19 15.1	200 24.7	S08 38.9	55.7	15.2	13.9
	09	318 42.9	S19 15.7	214 58.9	S08 24.9	55.8	15.2	14.0
	10	333 42.8	S19 16.3	229 33.0	S08 11.0	55.8	15.2	14.0
	11	348 42.6	S19 16.9	244 07.2	S07 57.0	55.8	15.2	14.1
	12	003 42.5	S19 17.4	258 41.4	S07 42.9	55.8	15.2	14.1
	13	018 42.4	S19 18.0	273 15.6	S07 28.8	55.9	15.2	14.2
	14	033 42.2	S19 18.6	287 49.8	S07 14.6	55.9	15.2	14.2
	15	048 42.1	S19 19.2	302 24.0	S07 00.4	55.9	15.2	14.3
	16	063 42.0	S19 19.8	316 58.2	S06 46.1	56.0	15.2	14.3
	17	078 41.8	S19 20.4	331 32.4	S06 31.9	56.0	15.2	14.3
	18	093 41.7	S19 21.0	346 06.5	S06 17.5	56.0	15.2	14.4
	19	108 41.6	S19 21.6	000 40.7	S06 03.1	56.1	15.1	14.4
	20	123 41.4	S19 22.2	015 14.8	S05 48.7	56.1	15.1	14.5
	21	138 41.3	S19 22.7	029 49.0	S05 34.2	56.1	15.1	14.5
	22	153 41.2	S19 23.3	044 23.1	S05 19.7	56.2	15.1	14.5
	23	168 41.0	S19 23.9	058 57.2	S05 05.2	56.2	15.1	14.6
19	00	183 40.9	S19 24.5	073 31.3	S04 50.6	56.2	15.1	14.6
	01	198 40.7	S19 25.1	088 05.4	S04 36.0	56.3	15.1	14.7
	02	213 40.6	S19 25.7	102 39.5	S04 21.3	56.3	15.0	14.7
	03	228 40.5	S19 26.3	117 13.5	S04 06.6	56.3	15.0	14.7
	04	243 40.3	S19 26.8	131 47.5	S03 51.9	56.4	15.0	14.8
	05	258 40.2	S19 27.4	146 21.6	S03 37.1	56.4	15.0	14.8
	06	273 40.1	S19 28.0	160 55.5	S03 22.3	56.4	15.0	14.8
	07	288 39.9	S19 28.6	175 29.5	S03 07.5	56.5	14.9	14.9
	08	303 39.8	S19 29.2	190 03.5	S02 52.6	56.5	14.9	14.9
	09	318 39.6	S19 29.7	204 37.4	S02 37.7	56.6	14.9	14.9
	10	333 39.5	S19 30.3	219 11.3	S02 22.8	56.6	14.9	15.0
	11	348 39.4	S19 30.9	233 45.1	S02 07.8	56.6	14.8	15.0
	12	003 39.2	S19 31.5	248 19.0	S01 52.9	56.7	14.8	15.0
	13	018 39.1	S19 32.0	262 52.8	S01 37.8	56.7	14.8	15.0
	14	033 38.9	S19 32.6	277 26.5	S01 22.8	56.7	14.7	15.1
	15	048 38.8	S19 33.2	292 00.3	S01 07.7	56.8	14.7	15.1
	16	063 38.7	S19 33.8	306 34.0	S00 52.6	56.8	14.7	15.1
	17	078 38.5	S19 34.3	321 07.6	S00 37.5	56.8	14.6	15.1
	18	093 38.4	S19 34.9	335 41.3	S00 22.4	56.9	14.6	15.2
	19	108 38.2	S19 35.5	350 14.9	S00 07.2	56.9	14.6	15.2
	20	123 38.1	S19 36.1	004 48.4	N00 08.0	57.0	14.5	15.2
	21	138 37.9	S19 36.6	019 21.9	N00 23.2	57.0	14.5	15.2
	22	153 37.8	S19 37.2	033 55.4	N00 38.4	57.0	14.4	15.2
	23	168 37.7	S19 37.8	048 28.8	N00 53.6	57.1	14.4	15.3
20	00	183 37.5	S19 38.3	063 02.2	N01 08.9	57.1	14.3	15.3
	01	198 37.4	S19 38.9	077 35.5	N01 24.2	57.2	14.3	15.3
	02	213 37.2	S19 39.5	092 08.8	N01 39.5	57.2	14.2	15.3
	03	228 37.1	S19 40.1	106 42.1	N01 54.8	57.2	14.2	15.3
	04	243 36.9	S19 40.6	121 15.3	N02 10.1	57.3	14.1	15.3
	05	258 36.8	S19 41.2	135 48.4	N02 25.4	57.3	14.1	15.3
	06	273 36.6	S19 41.8	150 21.5	N02 40.7	57.3	14.0	15.4
	07	288 36.5	S19 42.3	164 54.5	N02 56.1	57.4	14.0	15.4
	08	303 36.3	S19 42.9	179 27.5	N03 11.5	57.4	13.9	15.4
	09	318 36.2	S19 43.4	194 00.4	N03 26.8	57.5	13.9	15.4
	10	333 36.0	S19 44.0	208 33.3	N03 42.2	57.5	13.8	15.4
	11	348 35.9	S19 44.6	223 06.1	N03 57.6	57.5	13.7	15.4
	12	003 35.7	S19 45.1	237 38.8	N04 13.0	57.6	13.7	15.4
	13	018 35.6	S19 45.7	252 11.5	N04 28.3	57.6	13.6	15.4
	14	033 35.4	S19 46.3	266 44.1	N04 43.7	57.7	13.5	15.4
	15	048 35.3	S19 46.8	281 16.6	N04 59.1	57.7	13.5	15.4
	16	063 35.1	S19 47.4	295 49.1	N05 14.5	57.7	13.4	15.4
	17	078 35.0	S19 47.9	310 21.5	N05 29.9	57.8	13.3	15.4
	18	093 34.8	S19 48.5	324 53.9	N05 45.3	57.8	13.3	15.4
	19	108 34.7	S19 49.1	339 26.1	N06 00.6	57.9	13.2	15.4
	20	123 34.5	S19 49.6	353 58.3	N06 16.0	57.9	13.1	15.4
	21	138 34.4	S19 50.2	008 30.5	N06 31.4	57.9	13.1	15.4
	22	153 34.2	S19 50.7	023 02.5	N06 46.7	58.0	13.0	15.3
	23	168 34.1	S19 51.3	037 34.5	N07 02.1	58.0	12.9	15.3

Day 18 noon Sun: v -0.1 d -0.6 SD 16.2 | Moon SD 15.2

Day 19 noon Sun: v -0.1 d -0.6 SD 16.2 | Moon SD 15.4

Day 20 noon Sun: v -0.1 d -0.6 SD 16.2 | Moon SD 15.7

SUN: NOVEMBER 19 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0713	0853	--	--	1437	1616
70N	0702	0827	1018	1312	1503	1628
68N	0652	0807	0932	1358	1523	1638
66N	0644	0751	0902	1428	1539	1646
64N	0637	0738	0840	1450	1552	1653
62N	0630	0727	0822	1508	1603	1700
60N	0625	0717	0808	1522	1613	1705
58N	0620	0709	0755	1535	1621	1710
56N	0615	0701	0745	1546	1629	1715
54N	0611	0655	0735	1555	1635	1719
52N	0607	0649	0727	1604	1642	1723
50N	0603	0643	0719	1611	1647	1727
45N	0555	0631	0703	1627	1700	1735
40N	0547	0620	0650	1641	1710	1743
35N	0540	0611	0638	1652	1719	1750
30N	0534	0603	0628	1702	1728	1757
25N	0527	0555	0619	1711	1735	1803
20N	0521	0548	0611	1719	1743	1810
15N	0515	0541	0603	1727	1750	1816
10N	0508	0534	0556	1735	1757	1823
05N	0501	0527	0549	1742	1804	1829
00N	0454	0520	0542	1749	1811	1836
05S	0447	0513	0535	1756	1818	1844
10S	0439	0505	0527	1803	1826	1852
15S	0430	0457	0520	1811	1834	1901
20S	0420	0448	0512	1819	1843	1911
25S	0409	0439	0503	1828	1852	1922
30S	0356	0428	0454	1837	1903	1935
35S	0341	0415	0444	1848	1916	1950
40S	0322	0401	0432	1900	1931	2009
45S	0259	0343	0417	1914	1949	2033
50S	0226	0320	0400	1932	2012	2106
55S	0135	0248	0337	1955	2044	2159
60S	--	0200	0306	2027	2134	--

MOON: RISE / SET | UTC HHMM

Lat	Day 18		Day 19		Day 20	
72N	1422	--	1349	0004	1317	0211
70N	1412	--	1347	0012	1323	0209
68N	1403	--	1345	0017	1328	0207
66N	1356	--	1344	0022	1332	0205
64N	1350	--	1343	0026	1335	0204
62N	1345	--	1342	0030	1338	0203
60N	1340	--	1341	0033	1341	0202
58N	1336	--	1340	0036	1344	0201
56N	1333	--	1339	0038	1346	0200
54N	1330	--	1339	0040	1348	0200
52N	1327	--	1338	0042	1350	0159
50N	1324	--	1337	0044	1351	0158
45N	1318	--	1336	0048	1355	0157
40N	1313	--	1335	0051	1358	0156
35N	1309	--	1334	0054	1400	0155
30N	1305	--	1333	0056	1403	0154
25N	1302	0004	1333	0058	1405	0154
20N	1258	0009	1332	0100	1407	0153
15N	1255	0013	1332	0102	1409	0152
10N	1253	0017	1331	0104	1411	0152
05N	1250	0021	1330	0106	1412	0151
00N	1247	0025	1330	0107	1414	0151
05S	1244	0029	1329	0109	1416	0150
10S	1242	0032	1329	0111	1418	0149
15S	1239	0036	1328	0112	1419	0149
20S	1236	0040	1328	0114	1421	0148
25S	1232	0045	1327	0116	1423	0147
30S	1229	0050	1326	0118	1426	0147
35S	1225	0055	1326	0120	1428	0146
40S	1221	0101	1325	0123	1431	0145
45S	1215	0107	1324	0126	1434	0144
50S	1209	0116	1323	0129	1438	0143
55S	1201	0126	1321	0133	1444	0141
60S	1151	0138	1319	0139	1450	0139

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | NOVEMBER 21 - NOVEMBER 23

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
21	00	060 00.8	218 02.6	S09 24.0	269 09.5	N14 06.8	271 15.6	N13 29.1	051 21.9	N00 52.5
	01	075 03.2	233 04.2	S09 23.8	284 10.9	N14 06.5	286 17.9	N13 29.1	066 24.5	N00 52.4
	02	090 05.7	248 05.9	S09 23.6	299 12.4	N14 06.2	301 20.2	N13 29.0	081 27.0	N00 52.4
	03	105 08.2	263 07.5	S09 23.4	314 13.8	N14 05.9	316 22.4	N13 29.0	096 29.6	N00 52.4
	04	120 10.6	278 09.2	S09 23.2	329 15.2	N14 05.6	331 24.7	N13 28.9	111 32.1	N00 52.4
	05	135 13.1	293 10.8	S09 23.0	344 16.6	N14 05.3	346 27.0	N13 28.9	126 34.7	N00 52.3
	06	150 15.5	308 12.5	S09 22.8	359 18.0	N14 04.9	001 29.3	N13 28.8	141 37.2	N00 52.3
	07	165 18.0	323 14.1	S09 22.6	014 19.5	N14 04.6	016 31.6	N13 28.8	156 39.7	N00 52.3
	08	180 20.5	338 15.8	S09 22.4	029 20.9	N14 04.3	031 33.9	N13 28.7	171 42.3	N00 52.3
	09	195 22.9	353 17.4	S09 22.3	044 22.3	N14 04.0	046 36.2	N13 28.7	186 44.8	N00 52.2
	10	210 25.4	008 19.1	S09 22.1	059 23.7	N14 03.7	061 38.5	N13 28.6	201 47.4	N00 52.2
	11	225 27.9	023 20.7	S09 21.9	074 25.1	N14 03.4	076 40.8	N13 28.6	216 49.9	N00 52.2
	12	240 30.3	038 22.3	S09 21.7	089 26.6	N14 03.1	091 43.1	N13 28.5	231 52.5	N00 52.2
	13	255 32.8	053 23.9	S09 21.5	104 28.0	N14 02.8	106 45.4	N13 28.5	246 55.0	N00 52.1
	14	270 35.3	068 25.6	S09 21.3	119 29.4	N14 02.5	121 47.7	N13 28.4	261 57.6	N00 52.1
	15	285 37.7	083 27.2	S09 21.2	134 30.8	N14 02.2	136 50.0	N13 28.4	277 00.1	N00 52.1
	16	300 40.2	098 28.8	S09 21.0	149 32.3	N14 01.9	151 52.3	N13 28.3	292 02.7	N00 52.1
	17	315 42.6	113 30.4	S09 20.8	164 33.7	N14 01.6	166 54.6	N13 28.3	307 05.2	N00 52.0
	18	330 45.1	128 32.0	S09 20.6	179 35.1	N14 01.2	181 56.9	N13 28.2	322 07.8	N00 52.0
	19	345 47.6	143 33.6	S09 20.5	194 36.6	N14 00.9	196 59.2	N13 28.2	337 10.3	N00 52.0
	20	000 50.0	158 35.2	S09 20.3	209 38.0	N14 00.6	212 01.5	N13 28.1	352 12.8	N00 52.0
	21	015 52.5	173 36.8	S09 20.1	224 39.4	N14 00.3	227 03.8	N13 28.1	007 15.4	N00 51.9
	22	030 55.0	188 38.4	S09 20.0	239 40.8	N14 00.0	242 06.1	N13 28.0	022 17.9	N00 51.9
	23	045 57.4	203 40.0	S09 19.8	254 42.3	N13 59.7	257 08.4	N13 28.0	037 20.5	N00 51.9
22	00	060 59.9	218 41.6	S09 19.6	269 43.7	N13 59.4	272 10.7	N13 27.9	052 23.0	N00 51.9
	01	076 02.4	233 43.2	S09 19.5	284 45.1	N13 59.1	287 13.0	N13 27.9	067 25.6	N00 51.8
	02	091 04.8	248 44.8	S09 19.3	299 46.6	N13 58.8	302 15.3	N13 27.9	082 28.1	N00 51.8
	03	106 07.3	263 46.4	S09 19.2	314 48.0	N13 58.5	317 17.6	N13 27.8	097 30.7	N00 51.8
	04	121 09.8	278 48.0	S09 19.0	329 49.4	N13 58.2	332 19.9	N13 27.8	112 33.2	N00 51.8
	05	136 12.2	293 49.5	S09 18.9	344 50.9	N13 57.9	347 22.2	N13 27.7	127 35.7	N00 51.7
	06	151 14.7	308 51.1	S09 18.7	359 52.3	N13 57.6	002 24.5	N13 27.7	142 38.3	N00 51.7
	07	166 17.1	323 52.7	S09 18.6	014 53.7	N13 57.3	017 26.8	N13 27.6	157 40.8	N00 51.7
	08	181 19.6	338 54.2	S09 18.4	029 55.2	N13 56.9	032 29.1	N13 27.6	172 43.4	N00 51.7
	09	196 22.1	353 55.8	S09 18.3	044 56.6	N13 56.6	047 31.4	N13 27.5	187 45.9	N00 51.6
	10	211 24.5	008 57.4	S09 18.1	059 58.0	N13 56.3	062 33.7	N13 27.5	202 48.5	N00 51.6
	11	226 27.0	023 58.9	S09 18.0	074 59.5	N13 56.0	077 36.0	N13 27.4	217 51.0	N00 51.6
	12	241 29.5	039 00.5	S09 17.9	090 00.9	N13 55.7	092 38.3	N13 27.4	232 53.5	N00 51.6
	13	256 31.9	054 02.0	S09 17.7	105 02.3	N13 55.4	107 40.6	N13 27.3	247 56.1	N00 51.6
	14	271 34.4	069 03.6	S09 17.6	120 03.8	N13 55.1	122 42.9	N13 27.3	262 58.6	N00 51.5
	15	286 36.9	084 05.1	S09 17.5	135 05.2	N13 54.8	137 45.3	N13 27.3	278 01.2	N00 51.5
	16	301 39.3	099 06.7	S09 17.3	150 06.6	N13 54.5	152 47.6	N13 27.2	293 03.7	N00 51.5
	17	316 41.8	114 08.2	S09 17.2	165 08.1	N13 54.2	167 49.9	N13 27.2	308 06.3	N00 51.5
	18	331 44.3	129 09.8	S09 17.1	180 09.5	N13 53.9	182 52.2	N13 27.1	323 08.8	N00 51.4
	19	346 46.7	144 11.3	S09 16.9	195 11.0	N13 53.6	197 54.5	N13 27.1	338 11.3	N00 51.4
	20	001 49.2	159 12.8	S09 16.8	210 12.4	N13 53.3	212 56.8	N13 27.0	353 13.9	N00 51.4
	21	016 51.6	174 14.4	S09 16.7	225 13.9	N13 53.0	227 59.1	N13 27.0	008 16.4	N00 51.4
	22	031 54.1	189 15.9	S09 16.6	240 15.3	N13 52.7	243 01.4	N13 26.9	023 19.0	N00 51.3
	23	046 56.6	204 17.4	S09 16.4	255 16.7	N13 52.4	258 03.7	N13 26.9	038 21.5	N00 51.3
23	00	061 59.0	219 18.9	S09 16.3	270 18.2	N13 52.1	273 06.0	N13 26.8	053 24.0	N00 51.3
	01	077 01.5	234 20.4	S09 16.2	285 19.6	N13 51.8	288 08.3	N13 26.8	068 26.6	N00 51.3
	02	092 04.0	249 22.0	S09 16.1	300 21.1	N13 51.5	303 10.6	N13 26.8	083 29.1	N00 51.3
	03	107 06.4	264 23.5	S09 16.0	315 22.5	N13 51.2	318 12.9	N13 26.7	098 31.7	N00 51.2
	04	122 08.9	279 25.0	S09 15.9	330 24.0	N13 50.9	333 15.2	N13 26.7	113 34.2	N00 51.2
	05	137 11.4	294 26.5	S09 15.8	345 25.4	N13 50.5	348 17.6	N13 26.6	128 36.7	N00 51.2
	06	152 13.8	309 28.0	S09 15.7	000 26.8	N13 50.2	003 19.9	N13 26.6	143 39.3	N00 51.2
	07	167 16.3	324 29.5	S09 15.6	015 28.3	N13 49.9	018 22.2	N13 26.5	158 41.8	N00 51.1
	08	182 18.8	339 31.0	S09 15.5	030 29.7	N13 49.6	033 24.5	N13 26.5	173 44.4	N00 51.1
	09	197 21.2	354 32.5	S09 15.4	045 31.2	N13 49.3	048 26.8	N13 26.5	188 46.9	N00 51.1
	10	212 23.7	009 34.0	S09 15.3	060 32.6	N13 49.0	063 29.1	N13 26.4	203 49.4	N00 51.1
	11	227 26.1	024 35.4	S09 15.2	075 34.1	N13 48.7	078 31.4	N13 26.4	218 52.0	N00 51.1
	12	242 28.6	039 36.9	S09 15.1	090 35.5	N13 48.4	093 33.7	N13 26.3	233 54.5	N00 51.0
	13	257 31.1	054 38.4	S09 15.0	105 37.0	N13 48.1	108 36.0	N13 26.3	248 57.1	N00 51.0
	14	272 33.5	069 39.9	S09 14.9	120 38.4	N13 47.8	123 38.4	N13 26.2	263 59.6	N00 51.0
	15	287 36.0	084 41.4	S09 14.8	135 39.9	N13 47.5	138 40.7	N13 26.2	279 02.1	N00 51.0
	16	302 38.5	099 42.8	S09 14.7	150 41.3	N13 47.2	153 43.0	N13 26.1	294 04.7	N00 50.9
	17	317 40.9	114 44.3	S09 14.6	165 42.8	N13 46.9	168 45.3	N13 26.1	309 07.2	N00 50.9
	18	332 43.4	129 45.8	S09 14.5	180 44.2	N13 46.6	183 47.6	N13 26.1	324 09.8	N00 50.9
	19	347 45.9	144 47.2	S09 14.4	195 45.7	N13 46.3	198 49.9	N13 26.0	339 12.3	N00 50.9
	20	002 48.3	159 48.7	S09 14.4	210 47.1	N13 46.0	213 52.2	N13 26.0	354 14.8	N00 50.9
	21	017 50.8	174 50.2	S09 14.3	225 48.6	N13 45.7	228 54.5	N13 25.9	009 17.4	N00 50.8
	22	032 53.2	189 51.6	S09 14.2	240 50.0	N13 45.4	243 56.9	N13 25.9	024 19.9	N00 50.8
	23	047 55.7	204 53.1	S09 14.1	255 51.5	N13 45.1	258 59.2	N13 25.8	039 22.4	N00 50.8

Venus	Mars	Jupiter	Saturn
21: v 1.6 d 0.2	21: v 1.4 d -0.3	21: v 2.3 d 0.0	21: v 2.5 d 0.0
22: v 1.6 d 0.1	22: v 1.4 d -0.3	22: v 2.3 d 0.0	22: v 2.5 d 0.0
23: v 1.5 d 0.1	23: v 1.4 d -0.3	23: v 2.3 d 0.0	23: v 2.5 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.2	S40 11.8
Achernar	335 18.6	S57 06.1
Acrux	172 58.8	S63 14.7
Adhara	255 04.4	S29 00.3
Al Na'ir	027 31.0	S46 50.0
Aldebaran	290 37.5	N16 33.9
Alioth	166 12.1	N55 48.6
Alkaid	152 51.2	N49 10.6
Alnilam	275 35.9	S01 11.0
Alphard	217 46.2	S08 46.4
Alphecca	126 02.8	N26 37.4
Alpheratz	357 33.0	N29 14.6
Altair	061 58.7	N08 56.5
Ankaa	353 05.4	S42 09.7
Antares	112 14.3	S26 29.4
Arcturus	145 46.8	N19 02.5
Atria	107 07.7	S69 04.5
Avior	234 13.8	S59 35.4
Bellatrix	278 20.9	N06 22.5
Betelgeuse	270 50.1	N07 24.8
Canopus	263 51.3	S52 42.4
Capella	280 19.2	N46 01.4
Deneb	049 24.9	N45 22.9
Denebola	182 23.6	N14 25.2
Diphda	348 45.6	S17 50.3
Dubhe	193 39.4	N61 36.0
Elnath	277 59.6	N28 37.8
Eltanin	090 42.0	N51 29.2
Enif	033 37.3	N10 00.1
Fomalhaut	015 12.8	S29 28.8
Gacrux	171 50.3	S57 15.6
Gienah	175 42.2	S17 41.4
Hadar	148 34.4	S60 30.0
Hamal	327 49.2	N23 35.5
Kaus Australi	083 30.8	S34 22.3
Kochab	137 21.0	N74 02.5
Markab	013 28.3	N15 21.2
Menkar	314 04.2	N04 11.8
Menkent	147 56.2	S36 30.0
Miaplacidus	221 37.7	S69 49.3
Mirfak	308 25.5	N49 57.5
Nunki	075 46.2	S26 15.8
Peacock	053 03.6	S56 39.1
Polaris	312 44.0	N89 22.7
Pollux	243 15.2	N27 57.6
Procyon	244 49.0	N05 09.4
Rasalhague	095 57.5	N12 32.5
Regulus	207 32.8	N11 50.1
Rigel	281 02.1	S08 10.1
Rigil Kentaur	139 38.8	S60 56.7
Sabik	102 01.4	S15 45.4
Schedar	349 28.9	N56 41.4
Shaula	096 08.7	S37 07.4
Sirius	258 24.6	S16 45.1
Spica	158 21.0	S11 18.0
Suhail	222 45.1	S43 32.2
Vega	080 32.5	N38 48.7
Zubenelgenubi	136 54.7	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	157 31.0	0924
Mars	208 31.4	0601
Jupiter	211 08.9	0550
Saturn	351 24.1	2027

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
21	00	183 33.9	S19 51.8	052 06.4	N07 17.4	58.0	12.8	15.3
	01	198 33.8	S19 52.4	066 38.2	N07 32.7	58.1	12.7	15.3
	02	213 33.6	S19 52.9	081 09.9	N07 48.1	58.1	12.7	15.3
	03	228 33.5	S19 53.5	095 41.6	N08 03.4	58.2	12.6	15.3
	04	243 33.3	S19 54.1	110 13.2	N08 18.6	58.2	12.5	15.3
	05	258 33.2	S19 54.6	124 44.6	N08 33.9	58.2	12.4	15.2
	06	273 33.0	S19 55.2	139 16.1	N08 49.1	58.3	12.3	15.2
	07	288 32.9	S19 55.7	153 47.4	N09 04.3	58.3	12.2	15.2
	08	303 32.7	S19 56.3	168 18.6	N09 19.5	58.4	12.1	15.2
	09	318 32.5	S19 56.8	182 49.7	N09 34.7	58.4	12.0	15.1
	10	333 32.4	S19 57.4	197 20.8	N09 49.9	58.4	11.9	15.1
	11	348 32.2	S19 57.9	211 51.7	N10 05.0	58.5	11.9	15.1
	12	003 32.1	S19 58.4	226 22.6	N10 20.1	58.5	11.8	15.1
	13	018 31.9	S19 59.0	240 53.3	N10 35.1	58.6	11.7	15.0
	14	033 31.8	S19 59.5	255 24.0	N10 50.2	58.6	11.6	15.0
	15	048 31.6	S20 00.1	269 54.6	N11 05.1	58.6	11.5	15.0
	16	063 31.4	S20 00.6	284 25.0	N11 20.1	58.7	11.4	14.9
	17	078 31.3	S20 01.2	298 55.4	N11 35.0	58.7	11.3	14.9
	18	093 31.1	S20 01.7	313 25.6	N11 49.9	58.8	11.2	14.8
	19	108 31.0	S20 02.3	327 55.8	N12 04.8	58.8	11.1	14.8
	20	123 30.8	S20 02.8	342 25.9	N12 19.6	58.8	10.9	14.8
	21	138 30.6	S20 03.3	356 55.8	N12 34.3	58.9	10.8	14.7
	22	153 30.5	S20 03.9	011 25.7	N12 49.0	58.9	10.7	14.7
	23	168 30.3	S20 04.4	025 55.4	N13 03.7	58.9	10.6	14.6
22	00	183 30.2	S20 05.0	040 25.0	N13 18.3	59.0	10.5	14.6
	01	198 30.0	S20 05.5	054 54.5	N13 32.9	59.0	10.4	14.5
	02	213 29.8	S20 06.0	069 23.9	N13 47.4	59.1	10.3	14.5
	03	228 29.7	S20 06.6	083 53.2	N14 01.8	59.1	10.2	14.4
	04	243 29.5	S20 07.1	098 22.4	N14 16.2	59.1	10.1	14.3
	05	258 29.4	S20 07.7	112 51.5	N14 30.6	59.2	9.9	14.3
	06	273 29.2	S20 08.2	127 20.4	N14 44.8	59.2	9.8	14.2
	07	288 29.0	S20 08.7	141 49.2	N14 59.0	59.2	9.7	14.2
	08	303 28.9	S20 09.3	156 17.9	N15 13.2	59.3	9.6	14.1
	09	318 28.7	S20 09.8	170 46.5	N15 27.3	59.3	9.5	14.0
	10	333 28.5	S20 10.3	185 15.0	N15 41.3	59.4	9.3	13.9
	11	348 28.4	S20 10.9	199 43.3	N15 55.2	59.4	9.2	13.9
	12	003 28.2	S20 11.4	214 11.6	N16 09.1	59.4	9.1	13.8
	13	018 28.0	S20 11.9	228 39.7	N16 22.9	59.5	9.0	13.7
	14	033 27.9	S20 12.5	243 07.6	N16 36.6	59.5	8.9	13.6
	15	048 27.7	S20 13.0	257 35.5	N16 50.3	59.5	8.7	13.6
	16	063 27.5	S20 13.5	272 03.2	N17 03.8	59.6	8.6	13.5
	17	078 27.4	S20 14.0	286 30.8	N17 17.3	59.6	8.5	13.4
	18	093 27.2	S20 14.6	300 58.3	N17 30.7	59.6	8.3	13.3
	19	108 27.0	S20 15.1	315 25.7	N17 44.0	59.7	8.2	13.2
	20	123 26.9	S20 15.6	329 52.9	N17 57.2	59.7	8.1	13.1
	21	138 26.7	S20 16.2	344 20.0	N18 10.4	59.7	8.0	13.0
	22	153 26.5	S20 16.7	358 46.9	N18 23.4	59.8	7.8	12.9
	23	168 26.4	S20 17.2	013 13.7	N18 36.3	59.8	7.7	12.8
23	00	183 26.2	S20 17.7	027 40.4	N18 49.2	59.8	7.6	12.7
	01	198 26.0	S20 18.3	042 07.0	N19 01.9	59.9	7.4	12.6
	02	213 25.9	S20 18.8	056 33.4	N19 14.6	59.9	7.3	12.5
	03	228 25.7	S20 19.3	070 59.8	N19 27.1	59.9	7.2	12.4
	04	243 25.5	S20 19.8	085 25.9	N19 39.5	60.0	7.0	12.3
	05	258 25.3	S20 20.3	099 52.0	N19 51.8	60.0	6.9	12.2
	06	273 25.2	S20 20.9	114 17.9	N20 04.1	60.0	6.8	12.1
	07	288 25.0	S20 21.4	128 43.6	N20 16.1	60.0	6.6	12.0
	08	303 24.8	S20 21.9	143 09.3	N20 28.1	60.1	6.5	11.9
	09	318 24.7	S20 22.4	157 34.8	N20 40.0	60.1	6.4	11.7
	10	333 24.5	S20 22.9	172 00.2	N20 51.7	60.1	6.2	11.6
	11	348 24.3	S20 23.5	186 25.4	N21 03.3	60.2	6.1	11.5
	12	003 24.1	S20 24.0	200 50.5	N21 14.8	60.2	6.0	11.4
	13	018 24.0	S20 24.5	215 15.5	N21 26.2	60.2	5.8	11.2
	14	033 23.8	S20 25.0	229 40.3	N21 37.4	60.2	5.7	11.1
	15	048 23.6	S20 25.5	244 05.0	N21 48.5	60.3	5.6	11.0
	16	063 23.4	S20 26.0	258 29.6	N21 59.5	60.3	5.4	10.8
	17	078 23.3	S20 26.5	272 54.0	N22 10.3	60.3	5.3	10.7
	18	093 23.1	S20 27.1	287 18.4	N22 21.0	60.3	5.2	10.6
	19	108 22.9	S20 27.6	301 42.5	N22 31.6	60.4	5.1	10.4
	20	123 22.7	S20 28.1	316 06.6	N22 42.0	60.4	4.9	10.3
	21	138 22.6	S20 28.6	330 30.5	N22 52.3	60.4	4.8	10.1
	22	153 22.4	S20 29.1	344 54.3	N23 02.4	60.4	4.7	10.0
	23	168 22.2	S20 29.6	359 18.0	N23 12.4	60.5	4.5	9.8

Day 21 noon Sun: v -0.2 d -0.5 SD 16.2 | Moon SD 15.9

Day 22 noon Sun: v -0.2 d -0.5 SD 16.2 | Moon SD 16.2

Day 23 noon Sun: v -0.2 d -0.5 SD 16.2 | Moon SD 16.4

SUN: NOVEMBER 22 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0724	0907	--	--	1424	1608
70N	0711	0838	1045	1247	1453	1621
68N	0700	0817	0947	1345	1515	1631
66N	0651	0800	0914	1418	1532	1640
64N	0643	0746	0849	1442	1546	1648
62N	0636	0734	0830	1501	1558	1655
60N	0630	0724	0815	1517	1608	1701
58N	0625	0715	0802	1530	1617	1707
56N	0620	0707	0750	1541	1625	1712
54N	0615	0700	0740	1551	1632	1716
52N	0611	0653	0732	1600	1639	1720
50N	0607	0647	0724	1608	1644	1724
45N	0558	0634	0707	1625	1657	1733
40N	0550	0623	0653	1639	1708	1742
35N	0543	0614	0641	1651	1718	1749
30N	0536	0605	0631	1701	1727	1756
25N	0529	0557	0621	1711	1735	1803
20N	0523	0549	0613	1719	1743	1810
15N	0516	0542	0605	1727	1750	1816
10N	0509	0535	0557	1735	1757	1823
05N	0502	0528	0550	1742	1804	1830
00N	0455	0520	0542	1750	1812	1837
05S	0447	0513	0535	1757	1819	1845
10S	0439	0505	0528	1805	1827	1854
15S	0430	0457	0520	1813	1836	1903
20S	0419	0448	0512	1821	1845	1913
25S	0408	0438	0503	1830	1855	1925
30S	0355	0427	0453	1840	1906	1938
35S	0339	0414	0442	1851	1919	1954
40S	0320	0358	0430	1903	1934	2013
45S	0255	0340	0415	1918	1953	2038
50S	0221	0316	0356	1937	2018	2113
55S	0125	0243	0333	2001	2051	2211
60S	--	0150	0259	2035	2145	--

MOON: RISE / SET | UTC HHMM

Lat	Day 21		Day 22		Day 23	
72N	1239	0426	1137	0713	--	--
70N	1255	0413	1215	0637	--	--
68N	1308	0402	1242	0612	1147	0901
66N	1319	0354	1302	0553	1236	0814
64N	1328	0347	1319	0538	1307	0743
62N	1335	0340	1333	0525	1331	0721
60N	1342	0335	1345	0515	1350	0703
58N	1348	0330	1355	0505	1406	0648
56N	1354	0326	1404	0457	1419	0635
54N	1358	0322	1412	0450	1431	0624
52N	1403	0319	1419	0444	1441	0614
50N	1407	0316	1426	0438	1451	0605
45N	1415	0309	1440	0426	1511	0547
40N	1423	0304	1451	0416	1527	0532
35N	1429	0259	1502	0407	1541	0519
30N	1434	0255	1510	0400	1553	0508
25N	1440	0251	1518	0353	1604	0458
20N	1444	0248	1526	0347	1613	0450
15N	1449	0245	1533	0341	1623	0441
10N	1453	0242	1539	0335	1632	0433
05N	1457	0239	1546	0330	1640	0426
00N	1501	0236	1552	0325	1649	0418
05S	1505	0233	1559	0319	1657	0411
10S	1509	0230	1605	0314	1706	0403
15S	1514	0227	1612	0309	1715	0355
20S	1518	0224	1619	0303	1724	0347
25S	1523	0221	1627	0257	1735	0339
30S	1528	0217	1635	0250	1746	0329
35S	1534	0213	1644	0243	1759	0318
40S	1541	0208	1655	0235	1813	0306
45S	1549	0203	1708	0225	1831	0252
50S	1558	0157	1723	0214	1852	0235
55S	1611	0149	1743	0159	1921	0213
60S	1627	0139	1811	0140	2004	0143

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | NOVEMBER 24 - NOVEMBER 26

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
24	00	062 58.2	219 54.5	S09 14.0	270 53.0	N13 44.8	274 01.5	N13 25.8	054 25.0	N00 50.8
	01	078 00.6	234 56.0	S09 14.0	285 54.4	N13 44.5	289 03.8	N13 25.8	069 27.5	N00 50.8
	02	093 03.1	249 57.4	S09 13.9	300 55.9	N13 44.2	304 06.1	N13 25.7	084 30.0	N00 50.7
	03	108 05.6	264 58.9	S09 13.8	315 57.3	N13 43.9	319 08.4	N13 25.7	099 32.6	N00 50.7
	04	123 08.0	280 00.3	S09 13.8	330 58.8	N13 43.6	334 10.8	N13 25.6	114 35.1	N00 50.7
	05	138 10.5	295 01.7	S09 13.7	346 00.2	N13 43.3	349 13.1	N13 25.6	129 37.7	N00 50.7
	06	153 13.0	310 03.2	S09 13.6	001 01.7	N13 43.0	004 15.4	N13 25.6	144 40.2	N00 50.7
	07	168 15.4	325 04.6	S09 13.6	016 03.2	N13 42.7	019 17.7	N13 25.5	159 42.7	N00 50.6
	08	183 17.9	340 06.0	S09 13.5	031 04.6	N13 42.4	034 20.0	N13 25.5	174 45.3	N00 50.6
	09	198 20.4	355 07.4	S09 13.4	046 06.1	N13 42.1	049 22.3	N13 25.4	189 47.8	N00 50.6
	10	213 22.8	010 08.9	S09 13.4	061 07.5	N13 41.8	064 24.7	N13 25.4	204 50.3	N00 50.6
	11	228 25.3	025 10.3	S09 13.3	076 09.0	N13 41.5	079 27.0	N13 25.4	219 52.9	N00 50.5
	12	243 27.7	040 11.7	S09 13.3	091 10.5	N13 41.2	094 29.3	N13 25.3	234 55.4	N00 50.5
	13	258 30.2	055 13.1	S09 13.2	106 11.9	N13 40.9	109 31.6	N13 25.3	249 57.9	N00 50.5
	14	273 32.7	070 14.5	S09 13.2	121 13.4	N13 40.6	124 33.9	N13 25.2	265 00.5	N00 50.5
	15	288 35.1	085 15.9	S09 13.1	136 14.9	N13 40.3	139 36.3	N13 25.2	280 03.0	N00 50.5
	16	303 37.6	100 17.3	S09 13.1	151 16.3	N13 40.0	154 38.6	N13 25.1	295 05.5	N00 50.4
	17	318 40.1	115 18.7	S09 13.0	166 17.8	N13 39.7	169 40.9	N13 25.1	310 08.1	N00 50.4
	18	333 42.5	130 20.1	S09 13.0	181 19.2	N13 39.4	184 43.2	N13 25.1	325 10.6	N00 50.4
	19	348 45.0	145 21.5	S09 12.9	196 20.7	N13 39.1	199 45.5	N13 25.0	340 13.1	N00 50.4
	20	003 47.5	160 22.9	S09 12.9	211 22.2	N13 38.8	214 47.9	N13 25.0	355 15.7	N00 50.4
	21	018 49.9	175 24.3	S09 12.9	226 23.6	N13 38.5	229 50.2	N13 24.9	010 18.2	N00 50.4
	22	033 52.4	190 25.7	S09 12.8	241 25.1	N13 38.2	244 52.5	N13 24.9	025 20.7	N00 50.3
	23	048 54.9	205 27.1	S09 12.8	256 26.6	N13 37.9	259 54.8	N13 24.9	040 23.3	N00 50.3
25	00	063 57.3	220 28.5	S09 12.8	271 28.1	N13 37.6	274 57.1	N13 24.8	055 25.8	N00 50.3
	01	078 59.8	235 29.8	S09 12.7	286 29.5	N13 37.4	289 59.5	N13 24.8	070 28.3	N00 50.3
	02	094 02.2	250 31.2	S09 12.7	301 31.0	N13 37.1	305 01.8	N13 24.7	085 30.9	N00 50.3
	03	109 04.7	265 32.6	S09 12.7	316 32.5	N13 36.8	320 04.1	N13 24.7	100 33.4	N00 50.2
	04	124 07.2	280 34.0	S09 12.6	331 33.9	N13 36.5	335 06.4	N13 24.7	115 35.9	N00 50.2
	05	139 09.6	295 35.3	S09 12.6	346 35.4	N13 36.2	350 08.8	N13 24.6	130 38.5	N00 50.2
	06	154 12.1	310 36.7	S09 12.6	001 36.9	N13 35.9	005 11.1	N13 24.6	145 41.0	N00 50.2
	07	169 14.6	325 38.1	S09 12.6	016 38.3	N13 35.6	020 13.4	N13 24.6	160 43.5	N00 50.2
	08	184 17.0	340 39.4	S09 12.6	031 39.8	N13 35.3	035 15.7	N13 24.5	175 46.1	N00 50.1
	09	199 19.5	355 40.8	S09 12.5	046 41.3	N13 35.0	050 18.1	N13 24.5	190 48.6	N00 50.1
	10	214 22.0	010 42.1	S09 12.5	061 42.8	N13 34.7	065 20.4	N13 24.4	205 51.1	N00 50.1
	11	229 24.4	025 43.5	S09 12.5	076 44.2	N13 34.4	080 22.7	N13 24.4	220 53.7	N00 50.1
	12	244 26.9	040 44.8	S09 12.5	091 45.7	N13 34.1	095 25.0	N13 24.4	235 56.2	N00 50.1
	13	259 29.4	055 46.2	S09 12.5	106 47.2	N13 33.8	110 27.4	N13 24.3	250 58.7	N00 50.0
	14	274 31.8	070 47.5	S09 12.5	121 48.7	N13 33.5	125 29.7	N13 24.3	266 01.3	N00 50.0
	15	289 34.3	085 48.9	S09 12.5	136 50.1	N13 33.2	140 32.0	N13 24.2	281 03.8	N00 50.0
	16	304 36.7	100 50.2	S09 12.5	151 51.6	N13 32.9	155 34.3	N13 24.2	296 06.3	N00 50.0
	17	319 39.2	115 51.5	S09 12.4	166 53.1	N13 32.6	170 36.7	N13 24.2	311 08.9	N00 50.0
	18	334 41.7	130 52.9	S09 12.4	181 54.6	N13 32.3	185 39.0	N13 24.1	326 11.4	N00 50.0
	19	349 44.1	145 54.2	S09 12.4	196 56.1	N13 32.0	200 41.3	N13 24.1	341 13.9	N00 49.9
	20	004 46.6	160 55.5	S09 12.4	211 57.5	N13 31.7	215 43.7	N13 24.1	356 16.4	N00 49.9
	21	019 49.1	175 56.9	S09 12.4	226 59.0	N13 31.5	230 46.0	N13 24.0	011 19.0	N00 49.9
	22	034 51.5	190 58.2	S09 12.4	242 00.5	N13 31.2	245 48.3	N13 24.0	026 21.5	N00 49.9
	23	049 54.0	205 59.5	S09 12.5	257 02.0	N13 30.9	260 50.6	N13 23.9	041 24.0	N00 49.9
26	00	064 56.5	221 00.8	S09 12.5	272 03.5	N13 30.6	275 53.0	N13 23.9	056 26.6	N00 49.9
	01	079 58.9	236 02.1	S09 12.5	287 04.9	N13 30.3	290 55.3	N13 23.9	071 29.1	N00 49.8
	02	095 01.4	251 03.4	S09 12.5	302 06.4	N13 30.0	305 57.6	N13 23.8	086 31.6	N00 49.8
	03	110 03.9	266 04.7	S09 12.5	317 07.9	N13 29.7	321 00.0	N13 23.8	101 34.1	N00 49.8
	04	125 06.3	281 06.1	S09 12.5	332 09.4	N13 29.4	336 02.3	N13 23.8	116 36.7	N00 49.8
	05	140 08.8	296 07.4	S09 12.5	347 10.9	N13 29.1	351 04.6	N13 23.7	131 39.2	N00 49.8
	06	155 11.2	311 08.7	S09 12.5	002 12.4	N13 28.8	006 07.0	N13 23.7	146 41.7	N00 49.7
	07	170 13.7	326 10.0	S09 12.5	017 13.8	N13 28.5	021 09.3	N13 23.7	161 44.3	N00 49.7
	08	185 16.2	341 11.2	S09 12.6	032 15.3	N13 28.2	036 11.6	N13 23.6	176 46.8	N00 49.7
	09	200 18.6	356 12.5	S09 12.6	047 16.8	N13 27.9	051 14.0	N13 23.6	191 49.3	N00 49.7
	10	215 21.1	011 13.8	S09 12.6	062 18.3	N13 27.6	066 16.3	N13 23.5	206 51.8	N00 49.7
	11	230 23.6	026 15.1	S09 12.6	077 19.8	N13 27.4	081 18.6	N13 23.5	221 54.4	N00 49.7
	12	245 26.0	041 16.4	S09 12.7	092 21.3	N13 27.1	096 20.9	N13 23.5	236 56.9	N00 49.6
	13	260 28.5	056 17.7	S09 12.7	107 22.8	N13 26.8	111 23.3	N13 23.4	251 59.4	N00 49.6
	14	275 31.0	071 19.0	S09 12.7	122 24.3	N13 26.5	126 25.6	N13 23.4	267 02.0	N00 49.6
	15	290 33.4	086 20.2	S09 12.7	137 25.7	N13 26.2	141 28.0	N13 23.4	282 04.5	N00 49.6
	16	305 35.9	101 21.5	S09 12.8	152 27.2	N13 25.9	156 30.3	N13 23.3	297 07.0	N00 49.6
	17	320 38.4	116 22.8	S09 12.8	167 28.7	N13 25.6	171 32.6	N13 23.3	312 09.5	N00 49.6
	18	335 40.8	131 24.1	S09 12.8	182 30.2	N13 25.3	186 35.0	N13 23.3	327 12.1	N00 49.6
	19	350 43.3	146 25.3	S09 12.9	197 31.7	N13 25.0	201 37.3	N13 23.2	342 14.6	N00 49.5
	20	005 45.7	161 26.6	S09 12.9	212 33.2	N13 24.7	216 39.6	N13 23.2	357 17.1	N00 49.5
	21	020 48.2	176 27.8	S09 13.0	227 34.7	N13 24.5	231 42.0	N13 23.2	012 19.6	N00 49.5
	22	035 50.7	191 29.1	S09 13.0	242 36.2	N13 24.2	246 44.3	N13 23.1	027 22.2	N00 49.5
	23	050 53.1	206 30.4	S09 13.1	257 37.7	N13 23.9	261 46.6	N13 23.1	042 24.7	N00 49.5

Venus	Mars	Jupiter	Saturn
24: v 1.4 d 0.1	24: v 1.5 d -0.3	24: v 2.3 d 0.0	24: v 2.5 d 0.0
25: v 1.3 d 0.0	25: v 1.5 d -0.3	25: v 2.3 d 0.0	25: v 2.5 d 0.0
26: v 1.3 d 0.0	26: v 1.5 d -0.3	26: v 2.3 d 0.0	26: v 2.5 d 0.0

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.2	S40 11.8
Achernar	335 18.6	S57 06.1
Acrux	172 58.8	S63 14.7
Adhara	255 04.4	S29 00.4
Al Na'ir	027 31.0	S46 50.0
Aldebaran	290 37.5	N16 33.8
Alioth	166 12.0	N55 48.6
Alkaid	152 51.2	N49 10.6
Alnilam	275 35.9	S01 11.0
Alphard	217 46.2	S08 46.4
Alphecca	126 02.8	N26 37.4
Alpheratz	357 33.0	N29 14.6
Altair	061 58.7	N08 56.5
Ankaa	353 05.4	S42 09.7
Antares	112 14.3	S26 29.4
Arcturus	145 46.8	N19 02.5
Atria	107 07.7	S69 04.5
Avior	234 13.8	S59 35.5
Bellatrix	278 20.9	N06 22.5
Betelgeuse	270 50.1	N07 24.8
Canopus	263 51.2	S52 42.4
Capella	280 19.1	N46 01.4
Deneb	049 25.0	N45 22.9
Denebola	182 23.5	N14 25.2
Diphda	348 45.6	S17 50.3
Dubhe	193 39.3	N61 36.0
Elnath	277 59.6	N28 37.8
Eltanin	090 42.0	N51 29.2
Enif	033 37.3	N10 00.1
Fomalhaut	015 12.8	S29 28.8
Gacrux	171 50.3	S57 15.6
Gienah	175 42.2	S17 41.4
Hadar	148 34.4	S60 30.0
Hamal	327 49.1	N23 35.5
Kaus Australi	083 30.8	S34 22.3
Kochab	137 21.0	N74 02.5
Markab	013 28.3	N15 21.2
Menkar	314 04.2	N04 11.8
Menkent	147 56.2	S36 30.0
Miaplacidus	221 37.7	S69 49.3
Mirfak	308 25.5	N49 57.5
Nunki	075 46.2	S26 15.8
Peacock	053 03.6	S56 39.1
Polaris	312 43.8	N89 22.7
Pollux	243 15.2	N27 57.5
Procyon	244 49.0	N05 09.4
Rasalhague	095 57.5	N12 32.5
Regulus	207 32.8	N11 50.1
Rigel	281 02.1	S08 10.2
Rigil Kentaur	139 38.8	S60 56.7
Sabik	102 01.4	S15 45.4
Schedar	349 28.9	N56 41.4
Shaula	096 08.7	S37 07.4
Sirius	258 24.6	S16 45.1
Spica	158 20.9	S11 18.0
Suhail	222 45.0	S43 32.2
Vega	080 32.5	N38 48.7
Zubenelgenubi	136 54.6	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	156 17.9	0917
Mars	207 18.8	0554
Jupiter	210 58.1	0539
Saturn	351 29.3	2015

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
24	00	183 22.0	S20 30.1	013 41.5	N23 22.2	60.5	4.4	9.7
	01	198 21.9	S20 30.6	028 04.9	N23 31.8	60.5	4.3	9.5
	02	213 21.7	S20 31.1	042 28.2	N23 41.4	60.5	4.2	9.4
	03	228 21.5	S20 31.6	056 51.4	N23 50.7	60.6	4.0	9.2
	04	243 21.3	S20 32.1	071 14.4	N23 59.9	60.6	3.9	9.0
	05	258 21.1	S20 32.6	085 37.3	N24 08.9	60.6	3.8	8.9
	06	273 21.0	S20 33.2	100 00.1	N24 17.8	60.6	3.7	8.7
	07	288 20.8	S20 33.7	114 22.8	N24 26.5	60.6	3.6	8.5
	08	303 20.6	S20 34.2	128 45.4	N24 35.0	60.7	3.4	8.4
	09	318 20.4	S20 34.7	143 07.8	N24 43.4	60.7	3.3	8.2
	10	333 20.2	S20 35.2	157 30.2	N24 51.6	60.7	3.2	8.0
	11	348 20.1	S20 35.7	171 52.4	N24 59.6	60.7	3.1	7.8
	12	003 19.9	S20 36.2	186 14.5	N25 07.4	60.7	3.0	7.7
	13	018 19.7	S20 36.7	200 36.5	N25 15.1	60.7	2.9	7.5
	14	033 19.5	S20 37.2	214 58.4	N25 22.5	60.8	2.8	7.3
	15	048 19.3	S20 37.7	229 20.2	N25 29.8	60.8	2.7	7.1
	16	063 19.2	S20 38.2	243 41.9	N25 36.9	60.8	2.6	6.9
	17	078 19.0	S20 38.7	258 03.5	N25 43.9	60.8	2.5	6.7
	18	093 18.8	S20 39.2	272 25.0	N25 50.6	60.8	2.4	6.5
	19	108 18.6	S20 39.7	286 46.4	N25 57.1	60.8	2.3	6.4
	20	123 18.4	S20 40.2	301 07.7	N26 03.5	60.9	2.2	6.2
	21	138 18.2	S20 40.6	315 28.9	N26 09.6	60.9	2.1	6.0
	22	153 18.1	S20 41.1	329 50.0	N26 15.6	60.9	2.0	5.8
	23	168 17.9	S20 41.6	344 11.0	N26 21.4	60.9	2.0	5.6
25	00	183 17.7	S20 42.1	358 32.0	N26 27.0	60.9	1.9	5.4
	01	198 17.5	S20 42.6	012 52.9	N26 32.3	60.9	1.8	5.2
	02	213 17.3	S20 43.1	027 13.7	N26 37.5	60.9	1.7	5.0
	03	228 17.1	S20 43.6	041 34.4	N26 42.5	60.9	1.6	4.8
	04	243 16.9	S20 44.1	055 55.0	N26 47.2	60.9	1.6	4.6
	05	258 16.8	S20 44.6	070 15.6	N26 51.8	61.0	1.5	4.4
	06	273 16.6	S20 45.1	084 36.1	N26 56.2	61.0	1.5	4.2
	07	288 16.4	S20 45.6	098 56.6	N27 00.3	61.0	1.4	3.9
	08	303 16.2	S20 46.0	113 17.0	N27 04.3	61.0	1.3	3.7
	09	318 16.0	S20 46.5	127 37.3	N27 08.0	61.0	1.3	3.5
	10	333 15.8	S20 47.0	141 57.6	N27 11.5	61.0	1.2	3.3
	11	348 15.6	S20 47.5	156 17.8	N27 14.9	61.0	1.2	3.1
	12	003 15.4	S20 48.0	170 38.0	N27 18.0	61.0	1.1	2.9
	13	018 15.2	S20 48.5	184 58.1	N27 20.9	61.0	1.1	2.7
	14	033 15.1	S20 49.0	199 18.2	N27 23.5	61.0	1.1	2.5
	15	048 14.9	S20 49.4	213 38.3	N27 26.0	61.0	1.0	2.3
	16	063 14.7	S20 49.9	227 58.3	N27 28.3	61.0	1.0	2.0
	17	078 14.5	S20 50.4	242 18.3	N27 30.3	61.0	1.0	1.8
	18	093 14.3	S20 50.9	256 38.3	N27 32.1	61.0	1.0	1.6
	19	108 14.1	S20 51.4	270 58.3	N27 33.7	61.0	0.9	1.4
	20	123 13.9	S20 51.8	285 18.2	N27 35.1	61.0	0.9	1.2
	21	138 13.7	S20 52.3	299 38.1	N27 36.3	61.0	0.9	1.0
	22	153 13.5	S20 52.8	313 58.0	N27 37.2	61.0	0.9	0.7
	23	168 13.3	S20 53.3	328 17.9	N27 38.0	61.0	0.9	0.5
26	00	183 13.1	S20 53.8	342 37.8	N27 38.5	61.0	0.9	0.3
	01	198 12.9	S20 54.2	356 57.7	N27 38.8	61.0	0.9	0.1
	02	213 12.8	S20 54.7	011 17.6	N27 38.9	61.0	0.9	-0.1
	03	228 12.6	S20 55.2	025 37.5	N27 38.8	61.0	0.9	-0.3
	04	243 12.4	S20 55.7	039 57.4	N27 38.4	61.0	0.9	-0.6
	05	258 12.2	S20 56.1	054 17.3	N27 37.9	61.0	0.9	-0.8
	06	273 12.0	S20 56.6	068 37.2	N27 37.1	61.0	1.0	-1.0
	07	288 11.8	S20 57.1	082 57.2	N27 36.1	61.0	1.0	-1.2
	08	303 11.6	S20 57.5	097 17.2	N27 34.9	61.0	1.0	-1.4
	09	318 11.4	S20 58.0	111 37.2	N27 33.5	61.0	1.0	-1.6
	10	333 11.2	S20 58.5	125 57.2	N27 31.8	61.0	1.1	-1.9
	11	348 11.0	S20 59.0	140 17.3	N27 30.0	61.0	1.1	-2.1
	12	003 10.8	S20 59.4	154 37.4	N27 27.9	61.0	1.2	-2.3
	13	018 10.6	S20 59.9	168 57.6	N27 25.6	61.0	1.2	-2.5
	14	033 10.4	S21 00.4	183 17.8	N27 23.1	60.9	1.2	-2.7
	15	048 10.2	S21 00.8	197 38.0	N27 20.4	60.9	1.3	-2.9
	16	063 10.0	S21 01.3	211 58.3	N27 17.5	60.9	1.3	-3.1
	17	078 09.8	S21 01.8	226 18.7	N27 14.4	60.9	1.4	-3.3
	18	093 09.6	S21 02.2	240 39.1	N27 11.0	60.9	1.5	-3.5
	19	108 09.4	S21 02.7	254 59.5	N27 07.5	60.9	1.5	-3.7
	20	123 09.2	S21 03.1	269 20.1	N27 03.7	60.9	1.6	-4.0
	21	138 09.0	S21 03.6	283 40.7	N26 59.8	60.9	1.7	-4.2
	22	153 08.8	S21 04.1	298 01.3	N26 55.6	60.9	1.7	-4.4
	23	168 08.6	S21 04.5	312 22.1	N26 51.3	60.8	1.8	-4.6

Day 24 noon Sun: v -0.2 d -0.5 SD 16.2 | Moon SD 16.5

Day 25 noon Sun: v -0.2 d -0.5 SD 16.2 | Moon SD 16.6

Day 26 noon Sun: v -0.2 d -0.5 SD 16.2 | Moon SD 16.6

SUN: NOVEMBER 25 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0733	0922	--	--	1411	1600
70N	0719	0850	1132	1201	1443	1614
68N	0708	0826	1002	1331	1507	1626
66N	0658	0808	0925	1408	1525	1635
64N	0650	0753	0859	1435	1540	1644
62N	0642	0740	0838	1455	1553	1651
60N	0636	0730	0822	1511	1604	1658
58N	0630	0720	0808	1525	1613	1703
56N	0625	0712	0756	1537	1622	1709
54N	0620	0704	0746	1548	1629	1714
52N	0615	0658	0736	1557	1636	1718
50N	0611	0651	0728	1605	1642	1722
45N	0602	0638	0711	1623	1656	1732
40N	0553	0627	0656	1637	1707	1740
35N	0545	0617	0644	1650	1717	1748
30N	0538	0607	0633	1700	1726	1756
25N	0531	0559	0624	1710	1735	1803
20N	0524	0551	0615	1719	1743	1810
15N	0517	0544	0606	1727	1750	1817
10N	0510	0536	0559	1735	1758	1824
05N	0503	0529	0551	1743	1805	1831
00N	0456	0521	0543	1751	1813	1838
05S	0447	0513	0536	1758	1821	1847
10S	0439	0505	0528	1806	1829	1855
15S	0429	0457	0520	1814	1837	1905
20S	0419	0447	0511	1823	1847	1915
25S	0407	0437	0502	1832	1857	1927
30S	0353	0425	0452	1842	1909	1941
35S	0337	0412	0441	1853	1922	1957
40S	0317	0356	0428	1907	1938	2018
45S	0251	0337	0412	1922	1958	2043
50S	0216	0312	0353	1941	2023	2120
55S	0115	0238	0329	2006	2058	2223
60S	--	0141	0253	2042	2156	--

MOON: RISE / SET | UTC HHMM

Lat	Day 24		Day 25		Day 26	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	1244	1013	--	--	--	--
62N	1331	0926	1341	1133	1449	1246
60N	1402	0856	1432	1043	1541	1155
58N	1425	0833	1504	1011	1613	1123
56N	1444	0815	1527	0948	1637	1059
54N	1500	0759	1547	0929	1656	1039
52N	1514	0746	1603	0912	1712	1023
50N	1526	0734	1617	0858	1726	1009
45N	1552	0710	1646	0830	1755	0940
40N	1612	0651	1709	0808	1817	0917
35N	1629	0634	1727	0749	1836	0858
30N	1643	0621	1744	0733	1852	0842
25N	1657	0608	1758	0719	1906	0828
20N	1709	0557	1811	0706	1919	0814
15N	1720	0546	1823	0655	1931	0802
10N	1730	0536	1835	0643	1942	0751
05N	1741	0527	1846	0632	1953	0740
00N	1751	0517	1857	0622	2004	0729
05S	1801	0508	1908	0611	2014	0718
10S	1811	0459	1919	0600	2025	0707
15S	1822	0449	1930	0549	2036	0655
20S	1833	0438	1943	0537	2048	0643
25S	1846	0427	1956	0524	2101	0629
30S	1859	0415	2010	0510	2115	0615
35S	1914	0401	2027	0455	2131	0558
40S	1932	0346	2046	0436	2150	0539
45S	1953	0327	2109	0414	2212	0516
50S	2021	0304	2139	0346	2240	0446
55S	2058	0234	2221	0308	2318	0405
60S	2158	0150	2332	0207	--	0253

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | NOVEMBER 27 - NOVEMBER 29

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
27	00	065 55.6	221 31.6	S09 13.1	272 39.2	N13 23.6	276 49.0	N13 23.1	057 27.2	N00 49.5
	01	080 58.1	236 32.9	S09 13.1	287 40.7	N13 23.3	291 51.3	N13 23.0	072 29.7	N00 49.4
	02	096 00.5	251 34.1	S09 13.2	302 42.2	N13 23.0	306 53.6	N13 23.0	087 32.3	N00 49.4
	03	111 03.0	266 35.4	S09 13.2	317 43.7	N13 22.7	321 56.0	N13 23.0	102 34.8	N00 49.4
	04	126 05.5	281 36.6	S09 13.3	332 45.2	N13 22.4	336 58.3	N13 22.9	117 37.3	N00 49.4
	05	141 07.9	296 37.8	S09 13.3	347 46.7	N13 22.1	352 00.7	N13 22.9	132 39.8	N00 49.4
	06	156 10.4	311 39.1	S09 13.4	002 48.2	N13 21.9	007 03.0	N13 22.8	147 42.4	N00 49.4
	07	171 12.9	326 40.3	S09 13.5	017 49.7	N13 21.6	022 05.3	N13 22.8	162 44.9	N00 49.3
	08	186 15.3	341 41.5	S09 13.5	032 51.2	N13 21.3	037 07.7	N13 22.8	177 47.4	N00 49.3
	09	201 17.8	356 42.8	S09 13.6	047 52.7	N13 21.0	052 10.0	N13 22.7	192 49.9	N00 49.3
	10	216 20.2	011 44.0	S09 13.6	062 54.2	N13 20.7	067 12.4	N13 22.7	207 52.5	N00 49.3
	11	231 22.7	026 45.2	S09 13.7	077 55.7	N13 20.4	082 14.7	N13 22.7	222 55.0	N00 49.3
	12	246 25.2	041 46.4	S09 13.8	092 57.2	N13 20.1	097 17.0	N13 22.6	237 57.5	N00 49.3
	13	261 27.6	056 47.7	S09 13.8	107 58.7	N13 19.8	112 19.4	N13 22.6	253 00.0	N00 49.3
	14	276 30.1	071 48.9	S09 13.9	123 00.2	N13 19.6	127 21.7	N13 22.6	268 02.6	N00 49.2
	15	291 32.6	086 50.1	S09 14.0	138 01.7	N13 19.3	142 24.1	N13 22.5	283 05.1	N00 49.2
	16	306 35.0	101 51.3	S09 14.0	153 03.2	N13 19.0	157 26.4	N13 22.5	298 07.6	N00 49.2
	17	321 37.5	116 52.5	S09 14.1	168 04.7	N13 18.7	172 28.7	N13 22.5	313 10.1	N00 49.2
	18	336 40.0	131 53.7	S09 14.2	183 06.2	N13 18.4	187 31.1	N13 22.5	328 12.6	N00 49.2
	19	351 42.4	146 54.9	S09 14.2	198 07.7	N13 18.1	202 33.4	N13 22.4	343 15.2	N00 49.2
	20	006 44.9	161 56.1	S09 14.3	213 09.2	N13 17.8	217 35.8	N13 22.4	358 17.7	N00 49.2
	21	021 47.4	176 57.3	S09 14.4	228 10.7	N13 17.6	232 38.1	N13 22.4	013 20.2	N00 49.1
	22	036 49.8	191 58.5	S09 14.5	243 12.2	N13 17.3	247 40.5	N13 22.3	028 22.7	N00 49.1
	23	051 52.3	206 59.7	S09 14.6	258 13.7	N13 17.0	262 42.8	N13 22.3	043 25.3	N00 49.1
28	00	066 54.7	222 00.9	S09 14.6	273 15.2	N13 16.7	277 45.1	N13 22.3	058 27.8	N00 49.1
	01	081 57.2	237 02.1	S09 14.7	288 16.7	N13 16.4	292 47.5	N13 22.2	073 30.3	N00 49.1
	02	096 59.7	252 03.3	S09 14.8	303 18.2	N13 16.1	307 49.8	N13 22.2	088 32.8	N00 49.1
	03	112 02.1	267 04.5	S09 14.9	318 19.8	N13 15.8	322 52.2	N13 22.2	103 35.3	N00 49.1
	04	127 04.6	282 05.7	S09 15.0	333 21.3	N13 15.6	337 54.5	N13 22.1	118 37.9	N00 49.0
	05	142 07.1	297 06.8	S09 15.1	348 22.8	N13 15.3	352 56.9	N13 22.1	133 40.4	N00 49.0
	06	157 09.5	312 08.0	S09 15.2	003 24.3	N13 15.0	007 59.2	N13 22.1	148 42.9	N00 49.0
	07	172 12.0	327 09.2	S09 15.3	018 25.8	N13 14.7	023 01.6	N13 22.0	163 45.4	N00 49.0
	08	187 14.5	342 10.4	S09 15.4	033 27.3	N13 14.4	038 03.9	N13 22.0	178 47.9	N00 49.0
	09	202 16.9	357 11.5	S09 15.5	048 28.8	N13 14.1	053 06.3	N13 22.0	193 50.5	N00 49.0
	10	217 19.4	012 12.7	S09 15.6	063 30.3	N13 13.9	068 08.6	N13 21.9	208 53.0	N00 49.0
	11	232 21.9	027 13.9	S09 15.6	078 31.9	N13 13.6	083 11.0	N13 21.9	223 55.5	N00 49.0
	12	247 24.3	042 15.0	S09 15.7	093 33.4	N13 13.3	098 13.3	N13 21.9	238 58.0	N00 48.9
	13	262 26.8	057 16.2	S09 15.9	108 34.9	N13 13.0	113 15.6	N13 21.9	254 00.5	N00 48.9
	14	277 29.2	072 17.3	S09 16.0	123 36.4	N13 12.7	128 18.0	N13 21.8	269 03.1	N00 48.9
	15	292 31.7	087 18.5	S09 16.1	138 37.9	N13 12.4	143 20.3	N13 21.8	284 05.6	N00 48.9
	16	307 34.2	102 19.6	S09 16.2	153 39.4	N13 12.2	158 22.7	N13 21.8	299 08.1	N00 48.9
	17	322 36.6	117 20.8	S09 16.3	168 41.0	N13 11.9	173 25.0	N13 21.7	314 10.6	N00 48.9
	18	337 39.1	132 21.9	S09 16.4	183 42.5	N13 11.6	188 27.4	N13 21.7	329 13.1	N00 48.9
	19	352 41.6	147 23.1	S09 16.5	198 44.0	N13 11.3	203 29.7	N13 21.7	344 15.7	N00 48.8
	20	007 44.0	162 24.2	S09 16.6	213 45.5	N13 11.0	218 32.1	N13 21.6	359 18.2	N00 48.8
	21	022 46.5	177 25.4	S09 16.7	228 47.0	N13 10.8	233 34.4	N13 21.6	014 20.7	N00 48.8
	22	037 49.0	192 26.5	S09 16.8	243 48.6	N13 10.5	248 36.8	N13 21.6	029 23.2	N00 48.8
	23	052 51.4	207 27.6	S09 17.0	258 50.1	N13 10.2	263 39.1	N13 21.6	044 25.7	N00 48.8
29	00	067 53.9	222 28.8	S09 17.1	273 51.6	N13 09.9	278 41.5	N13 21.5	059 28.2	N00 48.8
	01	082 56.3	237 29.9	S09 17.2	288 53.1	N13 09.6	293 43.9	N13 21.5	074 30.8	N00 48.8
	02	097 58.8	252 31.0	S09 17.3	303 54.6	N13 09.4	308 46.2	N13 21.5	089 33.3	N00 48.8
	03	113 01.3	267 32.2	S09 17.4	318 56.2	N13 09.1	323 48.6	N13 21.4	104 35.8	N00 48.8
	04	128 03.7	282 33.3	S09 17.6	333 57.7	N13 08.8	338 50.9	N13 21.4	119 38.3	N00 48.7
	05	143 06.2	297 34.4	S09 17.7	348 59.2	N13 08.5	353 53.3	N13 21.4	134 40.8	N00 48.7
	06	158 08.7	312 35.5	S09 17.8	004 00.7	N13 08.2	008 55.6	N13 21.4	149 43.3	N00 48.7
	07	173 11.1	327 36.6	S09 17.9	019 02.3	N13 08.0	023 58.0	N13 21.3	164 45.9	N00 48.7
	08	188 13.6	342 37.8	S09 18.1	034 03.8	N13 07.7	039 00.3	N13 21.3	179 48.4	N00 48.7
	09	203 16.1	357 38.9	S09 18.2	049 05.3	N13 07.4	054 02.7	N13 21.3	194 50.9	N00 48.7
	10	218 18.5	012 40.0	S09 18.3	064 06.9	N13 07.1	069 05.0	N13 21.2	209 53.4	N00 48.7
	11	233 21.0	027 41.1	S09 18.5	079 08.4	N13 06.8	084 07.4	N13 21.2	224 55.9	N00 48.7
	12	248 23.5	042 42.2	S09 18.6	094 09.9	N13 06.6	099 09.7	N13 21.2	239 58.4	N00 48.6
	13	263 25.9	057 43.3	S09 18.7	109 11.4	N13 06.3	114 12.1	N13 21.2	255 01.0	N00 48.6
	14	278 28.4	072 44.4	S09 18.9	124 13.0	N13 06.0	129 14.5	N13 21.1	270 03.5	N00 48.6
	15	293 30.8	087 45.5	S09 19.0	139 14.5	N13 05.7	144 16.8	N13 21.1	285 06.0	N00 48.6
	16	308 33.3	102 46.6	S09 19.2	154 16.0	N13 05.5	159 19.2	N13 21.1	300 08.5	N00 48.6
	17	323 35.8	117 47.7	S09 19.3	169 17.6	N13 05.2	174 21.5	N13 21.1	315 11.0	N00 48.6
	18	338 38.2	132 48.8	S09 19.4	184 19.1	N13 04.9	189 23.9	N13 21.0	330 13.5	N00 48.6
	19	353 40.7	147 49.8	S09 19.6	199 20.6	N13 04.6	204 26.2	N13 21.0	345 16.0	N00 48.6
	20	008 43.2	162 50.9	S09 19.7	214 22.2	N13 04.3	219 28.6	N13 21.0	000 18.6	N00 48.6
	21	023 45.6	177 52.0	S09 19.9	229 23.7	N13 04.1	234 31.0	N13 20.9	015 21.1	N00 48.5
	22	038 48.1	192 53.1	S09 20.0	244 25.2	N13 03.8	249 33.3	N13 20.9	030 23.6	N00 48.5
	23	053 50.6	207 54.2	S09 20.2	259 26.8	N13 03.5	264 35.7	N13 20.9	045 26.1	N00 48.5

Venus	Mars	Jupiter	Saturn
27: v 1.2 d -0.1	27: v 1.5 d -0.3	27: v 2.3 d 0.0	27: v 2.5 d 0.0
28: v 1.2 d -0.1	28: v 1.5 d -0.3	28: v 2.3 d 0.0	28: v 2.5 d 0.0
29: v 1.1 d -0.1	29: v 1.5 d -0.3	29: v 2.4 d 0.0	29: v 2.5 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.2	S40 11.8
Achernar	335 18.6	S57 06.1
Acrux	172 58.7	S63 14.7
Adhara	255 04.3	S29 00.4
Al Na'ir	027 31.0	S46 50.0
Aldebaran	290 37.5	N16 33.8
Alioth	166 12.0	N55 48.6
Alkaid	152 51.2	N49 10.5
Alnilam	275 35.8	S01 11.0
Alphard	217 46.1	S08 46.5
Alphecca	126 02.8	N26 37.4
Alpheratz	357 33.0	N29 14.6
Altair	061 58.7	N08 56.5
Ankaa	353 05.4	S42 09.7
Antares	112 14.3	S26 29.4
Arcturus	145 46.8	N19 02.5
Atria	107 07.7	S69 04.5
Avior	234 13.7	S59 35.5
Bellatrix	278 20.9	N06 22.5
Betelgeuse	270 50.1	N07 24.7
Canopus	263 51.2	S52 42.4
Capella	280 19.1	N46 01.5
Deneb	049 25.0	N45 22.9
Denebola	182 23.5	N14 25.2
Diphda	348 45.6	S17 50.3
Dubhe	193 39.3	N61 36.0
Elnath	277 59.5	N28 37.8
Eltanin	090 42.0	N51 29.2
Enif	033 37.3	N10 00.1
Fomalhaut	015 12.8	S29 28.8
Gacrux	171 50.2	S57 15.6
Gienah	175 42.2	S17 41.4
Hadar	148 34.3	S60 30.0
Hamal	327 49.1	N23 35.5
Kaus Australi	083 30.8	S34 22.3
Kochab	137 21.0	N74 02.5
Markab	013 28.3	N15 21.2
Menkar	314 04.2	N04 11.8
Menkent	147 56.1	S36 30.0
Miaplacidus	221 37.6	S69 49.3
Mirfak	308 25.5	N49 57.5
Nunki	075 46.1	S26 15.8
Peacock	053 03.6	S56 39.0
Polaris	312 43.7	N89 22.7
Pollux	243 15.2	N27 57.5
Procyon	244 49.0	N05 09.4
Rasalhague	095 57.4	N12 32.5
Regulus	207 32.8	N11 50.1
Rigel	281 02.0	S08 10.2
Rigil Kentaur	139 38.8	S60 56.7
Sabik	102 01.4	S15 45.4
Schedar	349 28.9	N56 41.4
Shaula	096 08.7	S37 07.4
Sirius	258 24.6	S16 45.1
Spica	158 20.9	S11 18.1
Suhail	222 45.0	S43 32.2
Vega	080 32.5	N38 48.7
Zubenelgenubi	136 54.6	S16 09.1

PLANETS | noon UTC

Name	SHA	Transit
Venus	154 50.7	0911
Mars	206 09.1	0546
Jupiter	210 49.0	0528
Saturn	351 33.7	2003

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
27	00	183 08.4	S21 05.0	326 42.9	N26 46.7	60.8	1.9	-4.8
	01	198 08.2	S21 05.4	341 03.8	N26 41.9	60.8	2.0	-5.0
	02	213 08.0	S21 05.9	355 24.7	N26 37.0	60.8	2.1	-5.2
	03	228 07.8	S21 06.4	009 45.8	N26 31.8	60.8	2.1	-5.4
	04	243 07.6	S21 06.8	024 06.9	N26 26.4	60.8	2.2	-5.6
	05	258 07.4	S21 07.3	038 28.2	N26 20.9	60.8	2.3	-5.7
	06	273 07.2	S21 07.7	052 49.5	N26 15.1	60.7	2.4	-5.9
	07	288 07.0	S21 08.2	067 10.9	N26 09.2	60.7	2.5	-6.1
	08	303 06.8	S21 08.6	081 32.4	N26 03.1	60.7	2.6	-6.3
	09	318 06.6	S21 09.1	095 54.0	N25 56.8	60.7	2.7	-6.5
	10	333 06.4	S21 09.6	110 15.7	N25 50.3	60.7	2.8	-6.7
	11	348 06.2	S21 10.0	124 37.6	N25 43.6	60.7	2.9	-6.9
	12	003 06.0	S21 10.5	138 59.5	N25 36.7	60.6	3.0	-7.1
	13	018 05.8	S21 10.9	153 21.5	N25 29.6	60.6	3.1	-7.2
	14	033 05.6	S21 11.4	167 43.6	N25 22.4	60.6	3.2	-7.4
	15	048 05.4	S21 11.8	182 05.9	N25 15.0	60.6	3.4	-7.6
	16	063 05.2	S21 12.3	196 28.2	N25 07.4	60.6	3.5	-7.8
	17	078 04.9	S21 12.7	210 50.7	N24 59.6	60.5	3.6	-7.9
	18	093 04.7	S21 13.2	225 13.3	N24 51.7	60.5	3.7	-8.1
	19	108 04.5	S21 13.6	239 36.0	N24 43.6	60.5	3.8	-8.3
	20	123 04.3	S21 14.1	253 58.8	N24 35.3	60.5	3.9	-8.4
	21	138 04.1	S21 14.5	268 21.7	N24 26.9	60.5	4.1	-8.6
	22	153 03.9	S21 14.9	282 44.8	N24 18.3	60.4	4.2	-8.8
	23	168 03.7	S21 15.4	297 08.0	N24 09.5	60.4	4.3	-8.9
28	00	183 03.5	S21 15.8	311 31.3	N24 00.6	60.4	4.4	-9.1
	01	198 03.3	S21 16.3	325 54.7	N23 51.5	60.4	4.5	-9.2
	02	213 03.1	S21 16.7	340 18.2	N23 42.3	60.3	4.7	-9.4
	03	228 02.9	S21 17.2	354 41.9	N23 32.9	60.3	4.8	-9.5
	04	243 02.7	S21 17.6	009 05.7	N23 23.3	60.3	4.9	-9.7
	05	258 02.4	S21 18.0	023 29.6	N23 13.6	60.3	5.1	-9.8
	06	273 02.2	S21 18.5	037 53.7	N23 03.8	60.3	5.2	-10.0
	07	288 02.0	S21 18.9	052 17.9	N22 53.8	60.2	5.3	-10.1
	08	303 01.8	S21 19.4	066 42.2	N22 43.7	60.2	5.4	-10.3
	09	318 01.6	S21 19.8	081 06.6	N22 33.4	60.2	5.6	-10.4
	10	333 01.4	S21 20.2	095 31.2	N22 23.0	60.2	5.7	-10.6
	11	348 01.2	S21 20.7	109 55.9	N22 12.4	60.1	5.8	-10.7
	12	003 01.0	S21 21.1	124 20.7	N22 01.7	60.1	6.0	-10.8
	13	018 00.8	S21 21.5	138 45.7	N21 50.9	60.1	6.1	-10.9
	14	033 00.5	S21 22.0	153 10.8	N21 40.0	60.0	6.2	-11.1
	15	048 00.3	S21 22.4	167 36.0	N21 28.9	60.0	6.4	-11.2
	16	063 00.1	S21 22.8	182 01.4	N21 17.7	60.0	6.5	-11.3
	17	077 59.9	S21 23.3	196 26.9	N21 06.4	60.0	6.6	-11.4
	18	092 59.7	S21 23.7	210 52.5	N20 54.9	59.9	6.8	-11.6
	19	107 59.5	S21 24.1	225 18.2	N20 43.4	59.9	6.9	-11.7
	20	122 59.3	S21 24.6	239 44.1	N20 31.7	59.9	7.0	-11.8
	21	137 59.0	S21 25.0	254 10.1	N20 19.9	59.9	7.1	-11.9
	22	152 58.8	S21 25.4	268 36.3	N20 07.9	59.8	7.3	-12.0
	23	167 58.6	S21 25.9	283 02.5	N19 55.9	59.8	7.4	-12.1
29	00	182 58.4	S21 26.3	297 28.9	N19 43.8	59.8	7.5	-12.2
	01	197 58.2	S21 26.7	311 55.5	N19 31.5	59.7	7.7	-12.4
	02	212 58.0	S21 27.1	326 22.1	N19 19.2	59.7	7.8	-12.5
	03	227 57.7	S21 27.6	340 48.9	N19 06.7	59.7	7.9	-12.6
	04	242 57.5	S21 28.0	355 15.8	N18 54.2	59.6	8.0	-12.7
	05	257 57.3	S21 28.4	009 42.9	N18 41.5	59.6	8.2	-12.8
	06	272 57.1	S21 28.8	024 10.0	N18 28.8	59.6	8.3	-12.8
	07	287 56.9	S21 29.2	038 37.3	N18 15.9	59.6	8.4	-12.9
	08	302 56.7	S21 29.7	053 04.8	N18 03.0	59.5	8.5	-13.0
	09	317 56.4	S21 30.1	067 32.3	N17 50.0	59.5	8.7	-13.1
	10	332 56.2	S21 30.5	082 00.0	N17 36.8	59.5	8.8	-13.2
	11	347 56.0	S21 30.9	096 27.7	N17 23.6	59.4	8.9	-13.3
	12	002 55.8	S21 31.3	110 55.7	N17 10.3	59.4	9.0	-13.4
	13	017 55.6	S21 31.8	125 23.7	N16 57.0	59.4	9.1	-13.5
	14	032 55.3	S21 32.2	139 51.8	N16 43.5	59.3	9.3	-13.5
	15	047 55.1	S21 32.6	154 20.1	N16 30.0	59.3	9.4	-13.6
	16	062 54.9	S21 33.0	168 48.5	N16 16.4	59.3	9.5	-13.7
	17	077 54.7	S21 33.4	183 17.0	N16 02.7	59.2	9.6	-13.8
	18	092 54.5	S21 33.8	197 45.6	N15 48.9	59.2	9.7	-13.8
	19	107 54.2	S21 34.3	212 14.3	N15 35.1	59.2	9.8	-13.9
	20	122 54.0	S21 34.7	226 43.2	N15 21.2	59.2	10.0	-14.0
	21	137 53.8	S21 35.1	241 12.2	N15 07.2	59.1	10.1	-14.0
	22	152 53.6	S21 35.5	255 41.2	N14 53.2	59.1	10.2	-14.1
	23	167 53.3	S21 35.9	270 10.4	N14 39.1	59.1	10.3	-14.2

Day 27 noon Sun: v -0.2 d -0.5 SD 16.2 | Moon SD 16.5

Day 28 noon Sun: v -0.2 d -0.4 SD 16.2 | Moon SD 16.4

Day 29 noon Sun: v -0.2 d -0.4 SD 16.2 | Moon SD 16.2

SUN: NOVEMBER 28 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0742	0936	--	--	1359	1553
70N	0727	0900	--	--	1435	1608
68N	0715	0835	1019	1316	1500	1620
66N	0704	0816	0936	1359	1520	1631
64N	0656	0800	0908	1428	1535	1640
62N	0648	0747	0846	1449	1549	1648
60N	0641	0735	0829	1507	1600	1654
58N	0635	0725	0814	1521	1610	1701
56N	0629	0717	0802	1534	1619	1706
54N	0624	0709	0751	1545	1627	1711
52N	0619	0702	0741	1554	1634	1716
50N	0615	0655	0732	1603	1640	1721
45N	0605	0641	0714	1621	1654	1731
40N	0556	0630	0659	1636	1706	1739
35N	0548	0619	0647	1649	1716	1748
30N	0540	0610	0636	1700	1726	1755
25N	0533	0601	0626	1710	1735	1803
20N	0526	0553	0617	1719	1743	1810
15N	0519	0545	0608	1728	1751	1817
10N	0512	0537	0600	1736	1758	1824
05N	0504	0530	0552	1744	1806	1832
00N	0456	0522	0544	1752	1814	1840
05S	0448	0514	0536	1759	1822	1848
10S	0439	0506	0528	1808	1830	1857
15S	0429	0457	0520	1816	1839	1907
20S	0419	0447	0511	1825	1849	1917
25S	0406	0437	0502	1834	1859	1930
30S	0352	0425	0452	1845	1911	1944
35S	0336	0411	0440	1856	1925	2001
40S	0315	0355	0426	1910	1942	2021
45S	0248	0335	0411	1926	2002	2048
50S	0211	0309	0351	1946	2028	2126
55S	0104	0233	0325	2012	2104	2235
60S	--	0132	0248	2049	2207	--

MOON: RISE / SET | UTC HHMM

Lat	Day 27		Day 28		Day 29	
72N	--	--	--	--	1858	1501
70N	--	--	--	--	1938	1419
68N	--	--	1710	1451	2005	1350
66N	--	--	1804	1356	2025	1329
64N	1604	1349	1836	1323	2041	1311
62N	1654	1258	1859	1258	2054	1257
60N	1726	1226	1918	1239	2105	1244
58N	1749	1202	1934	1223	2115	1234
56N	1808	1143	1947	1209	2123	1224
54N	1824	1127	1958	1157	2131	1216
52N	1837	1113	2008	1146	2137	1208
50N	1849	1100	2017	1136	2143	1202
45N	1914	1035	2036	1116	2156	1147
40N	1933	1014	2051	1059	2207	1135
35N	1950	0957	2104	1045	2216	1125
30N	2004	0942	2115	1033	2224	1115
25N	2016	0929	2125	1022	2231	1107
20N	2028	0917	2135	1012	2237	1100
15N	2038	0906	2143	1003	2243	1053
10N	2048	0855	2151	0954	2249	1046
05N	2058	0845	2159	0945	2254	1039
00N	2108	0835	2207	0936	2300	1033
05S	2117	0824	2214	0928	2305	1026
10S	2127	0814	2222	0919	2311	1019
15S	2137	0803	2230	0910	2317	1012
20S	2147	0752	2238	0900	2322	1005
25S	2158	0739	2247	0850	2329	0957
30S	2211	0726	2257	0838	2336	0948
35S	2224	0710	2308	0825	2343	0939
40S	2240	0652	2320	0810	2352	0928
45S	2259	0631	2335	0753	--	0915
50S	2323	0603	2352	0730	--	0858
55S	2353	0526	--	0701	0015	0838
60S	0020	0424	0038	0618	0046	0809

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | NOVEMBER 30 - DECEMBER 2

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
30	00	068 53.0	222 55.2	S09 20.3	274 28.3	N13 03.2	279 38.0	N13 20.9	060 28.6	N00 48.5
	01	083 55.5	237 56.3	S09 20.5	289 29.8	N13 03.0	294 40.4	N13 20.8	075 31.1	N00 48.5
	02	098 58.0	252 57.4	S09 20.6	304 31.4	N13 02.7	309 42.8	N13 20.8	090 33.6	N00 48.5
	03	114 00.4	267 58.5	S09 20.8	319 32.9	N13 02.4	324 45.1	N13 20.8	105 36.2	N00 48.5
	04	129 02.9	282 59.5	S09 21.0	334 34.5	N13 02.1	339 47.5	N13 20.8	120 38.7	N00 48.5
	05	144 05.3	298 00.6	S09 21.1	349 36.0	N13 01.9	354 49.8	N13 20.7	135 41.2	N00 48.5
	06	159 07.8	313 01.7	S09 21.3	004 37.5	N13 01.6	009 52.2	N13 20.7	150 43.7	N00 48.5
	07	174 10.3	328 02.7	S09 21.4	019 39.1	N13 01.3	024 54.6	N13 20.7	165 46.2	N00 48.4
	08	189 12.7	343 03.8	S09 21.6	034 40.6	N13 01.0	039 56.9	N13 20.7	180 48.7	N00 48.4
	09	204 15.2	358 04.8	S09 21.8	049 42.2	N13 00.8	054 59.3	N13 20.6	195 51.2	N00 48.4
	10	219 17.7	013 05.9	S09 21.9	064 43.7	N13 00.5	070 01.6	N13 20.6	210 53.7	N00 48.4
	11	234 20.1	028 06.9	S09 22.1	079 45.3	N13 00.2	085 04.0	N13 20.6	225 56.3	N00 48.4
	12	249 22.6	043 08.0	S09 22.3	094 46.8	N12 59.9	100 06.4	N13 20.6	240 58.8	N00 48.4
	13	264 25.1	058 09.0	S09 22.4	109 48.3	N12 59.7	115 08.7	N13 20.5	256 01.3	N00 48.4
	14	279 27.5	073 10.1	S09 22.6	124 49.9	N12 59.4	130 11.1	N13 20.5	271 03.8	N00 48.4
	15	294 30.0	088 11.1	S09 22.8	139 51.4	N12 59.1	145 13.5	N13 20.5	286 06.3	N00 48.4
	16	309 32.5	103 12.1	S09 23.0	154 53.0	N12 58.9	160 15.8	N13 20.5	301 08.8	N00 48.4
	17	324 34.9	118 13.2	S09 23.1	169 54.5	N12 58.6	175 18.2	N13 20.4	316 11.3	N00 48.4
	18	339 37.4	133 14.2	S09 23.3	184 56.1	N12 58.3	190 20.5	N13 20.4	331 13.8	N00 48.3
	19	354 39.8	148 15.3	S09 23.5	199 57.6	N12 58.0	205 22.9	N13 20.4	346 16.3	N00 48.3
	20	009 42.3	163 16.3	S09 23.7	214 59.2	N12 57.8	220 25.3	N13 20.4	001 18.9	N00 48.3
	21	024 44.8	178 17.3	S09 23.9	230 00.7	N12 57.5	235 27.6	N13 20.3	016 21.4	N00 48.3
	22	039 47.2	193 18.3	S09 24.0	245 02.3	N12 57.2	250 30.0	N13 20.3	031 23.9	N00 48.3
	23	054 49.7	208 19.4	S09 24.2	260 03.8	N12 57.0	265 32.4	N13 20.3	046 26.4	N00 48.3
1	00	069 52.2	223 20.4	S09 24.4	275 05.4	N12 56.7	280 34.7	N13 20.3	061 28.9	N00 48.3
	01	084 54.6	238 21.4	S09 24.6	290 06.9	N12 56.4	295 37.1	N13 20.2	076 31.4	N00 48.3
	02	099 57.1	253 22.4	S09 24.8	305 08.5	N12 56.1	310 39.5	N13 20.2	091 33.9	N00 48.3
	03	114 59.6	268 23.4	S09 25.0	320 10.0	N12 55.9	325 41.8	N13 20.2	106 36.4	N00 48.3
	04	130 02.0	283 24.4	S09 25.2	335 11.6	N12 55.6	340 44.2	N13 20.2	121 38.9	N00 48.3
	05	145 04.5	298 25.4	S09 25.4	350 13.1	N12 55.3	355 46.6	N13 20.1	136 41.4	N00 48.2
	06	160 06.9	313 26.5	S09 25.6	005 14.7	N12 55.1	010 48.9	N13 20.1	151 44.0	N00 48.2
	07	175 09.4	328 27.5	S09 25.7	020 16.2	N12 54.8	025 51.3	N13 20.1	166 46.5	N00 48.2
	08	190 11.9	343 28.5	S09 25.9	035 17.8	N12 54.5	040 53.7	N13 20.1	181 49.0	N00 48.2
	09	205 14.3	358 29.5	S09 26.1	050 19.4	N12 54.2	055 56.1	N13 20.1	196 51.5	N00 48.2
	10	220 16.8	013 30.5	S09 26.3	065 20.9	N12 54.0	070 58.4	N13 20.0	211 54.0	N00 48.2
	11	235 19.3	028 31.5	S09 26.5	080 22.5	N12 53.7	086 00.8	N13 20.0	226 56.5	N00 48.2
	12	250 21.7	043 32.5	S09 26.7	095 24.0	N12 53.4	101 03.2	N13 20.0	241 59.0	N00 48.2
	13	265 24.2	058 33.4	S09 26.9	110 25.6	N12 53.2	116 05.5	N13 20.0	257 01.5	N00 48.2
	14	280 26.7	073 34.4	S09 27.1	125 27.1	N12 52.9	131 07.9	N13 19.9	272 04.0	N00 48.2
	15	295 29.1	088 35.4	S09 27.4	140 28.7	N12 52.6	146 10.3	N13 19.9	287 06.5	N00 48.2
	16	310 31.6	103 36.4	S09 27.6	155 30.3	N12 52.4	161 12.7	N13 19.9	302 09.0	N00 48.2
	17	325 34.1	118 37.4	S09 27.8	170 31.8	N12 52.1	176 15.0	N13 19.9	317 11.5	N00 48.2
	18	340 36.5	133 38.4	S09 28.0	185 33.4	N12 51.8	191 17.4	N13 19.9	332 14.0	N00 48.1
	19	355 39.0	148 39.4	S09 28.2	200 35.0	N12 51.6	206 19.8	N13 19.8	347 16.5	N00 48.1
	20	010 41.4	163 40.3	S09 28.4	215 36.5	N12 51.3	221 22.1	N13 19.8	002 19.1	N00 48.1
	21	025 43.9	178 41.3	S09 28.6	230 38.1	N12 51.0	236 24.5	N13 19.8	017 21.6	N00 48.1
	22	040 46.4	193 42.3	S09 28.8	245 39.6	N12 50.8	251 26.9	N13 19.8	032 24.1	N00 48.1
	23	055 48.8	208 43.2	S09 29.0	260 41.2	N12 50.5	266 29.3	N13 19.7	047 26.6	N00 48.1
2	00	070 51.3	223 44.2	S09 29.3	275 42.8	N12 50.2	281 31.6	N13 19.7	062 29.1	N00 48.1
	01	085 53.8	238 45.2	S09 29.5	290 44.3	N12 50.0	296 34.0	N13 19.7	077 31.6	N00 48.1
	02	100 56.2	253 46.1	S09 29.7	305 45.9	N12 49.7	311 36.4	N13 19.7	092 34.1	N00 48.1
	03	115 58.7	268 47.1	S09 29.9	320 47.5	N12 49.4	326 38.8	N13 19.7	107 36.6	N00 48.1
	04	131 01.2	283 48.1	S09 30.1	335 49.0	N12 49.2	341 41.1	N13 19.6	122 39.1	N00 48.1
	05	146 03.6	298 49.0	S09 30.4	350 50.6	N12 48.9	356 43.5	N13 19.6	137 41.6	N00 48.1
	06	161 06.1	313 50.0	S09 30.6	005 52.2	N12 48.6	011 45.9	N13 19.6	152 44.1	N00 48.1
	07	176 08.5	328 50.9	S09 30.8	020 53.8	N12 48.4	026 48.3	N13 19.6	167 46.6	N00 48.1
	08	191 11.0	343 51.9	S09 31.0	035 55.3	N12 48.1	041 50.6	N13 19.6	182 49.1	N00 48.1
	09	206 13.5	358 52.8	S09 31.3	050 56.9	N12 47.8	056 53.0	N13 19.5	197 51.6	N00 48.0
	10	221 15.9	013 53.8	S09 31.5	065 58.5	N12 47.6	071 55.4	N13 19.5	212 54.1	N00 48.0
	11	236 18.4	028 54.7	S09 31.7	081 00.0	N12 47.3	086 57.8	N13 19.5	227 56.6	N00 48.0
	12	251 20.9	043 55.7	S09 32.0	096 01.6	N12 47.1	102 00.2	N13 19.5	242 59.1	N00 48.0
	13	266 23.3	058 56.6	S09 32.2	111 03.2	N12 46.8	117 02.5	N13 19.5	258 01.6	N00 48.0
	14	281 25.8	073 57.5	S09 32.4	126 04.8	N12 46.5	132 04.9	N13 19.4	273 04.1	N00 48.0
	15	296 28.3	088 58.5	S09 32.7	141 06.3	N12 46.3	147 07.3	N13 19.4	288 06.6	N00 48.0
	16	311 30.7	103 59.4	S09 32.9	156 07.9	N12 46.0	162 09.7	N13 19.4	303 09.1	N00 48.0
	17	326 33.2	119 00.3	S09 33.1	171 09.5	N12 45.7	177 12.0	N13 19.4	318 11.6	N00 48.0
	18	341 35.7	134 01.3	S09 33.4	186 11.1	N12 45.5	192 14.4	N13 19.4	333 14.1	N00 48.0
	19	356 38.1	149 02.2	S09 33.6	201 12.6	N12 45.2	207 16.8	N13 19.3	348 16.7	N00 48.0
	20	011 40.6	164 03.1	S09 33.9	216 14.2	N12 45.0	222 19.2	N13 19.3	003 19.2	N00 48.0
	21	026 43.0	179 04.0	S09 34.1	231 15.8	N12 44.7	237 21.6	N13 19.3	018 21.7	N00 48.0
	22	041 45.5	194 05.0	S09 34.4	246 17.4	N12 44.4	252 23.9	N13 19.3	033 24.2	N00 48.0
	23	056 48.0	209 05.9	S09 34.6	261 19.0	N12 44.2	267 26.3	N13 19.3	048 26.7	N00 48.0

Venus	Mars	Jupiter	Saturn
30: v 1.0 d -0.2	30: v 1.5 d -0.3	30: v 2.4 d 0.0	30: v 2.5 d 0.0
1: v 1.0 d -0.2	1: v 1.6 d -0.3	1: v 2.4 d 0.0	1: v 2.5 d 0.0
2: v 0.9 d -0.2	2: v 1.6 d -0.3	2: v 2.4 d 0.0	2: v 2.5 d 0.0

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.2	S40 11.8
Achernar	335 18.6	S57 06.1
Acrux	172 58.7	S63 14.7
Adhara	255 04.3	S29 00.4
Al Na'ir	027 31.1	S46 50.0
Aldebaran	290 37.5	N16 33.9
Alioth	166 12.0	N55 48.6
Alkaid	152 51.2	N49 10.5
Alnilam	275 35.8	S01 11.0
Alphard	217 46.1	S08 46.5
Alphecca	126 02.8	N26 37.4
Alpheratz	357 33.0	N29 14.6
Altair	061 58.7	N08 56.5
Ankaa	353 05.4	S42 09.7
Antares	112 14.3	S26 29.4
Arcturus	145 46.8	N19 02.5
Atria	107 07.7	S69 04.5
Avior	234 13.7	S59 35.5
Bellatrix	278 20.9	N06 22.5
Betelgeuse	270 50.1	N07 24.7
Canopus	263 51.2	S52 42.4
Capella	280 19.1	N46 01.5
Deneb	049 25.0	N45 22.9
Denebola	182 23.5	N14 25.2
Diphda	348 45.6	S17 50.3
Dubhe	193 39.2	N61 36.0
Elnath	277 59.5	N28 37.8
Eltanin	090 42.0	N51 29.2
Enif	033 37.4	N10 00.1
Fomalhaut	015 12.8	S29 28.8
Gacrux	171 50.2	S57 15.6
Gienah	175 42.1	S17 41.4
Hadar	148 34.3	S60 30.0
Hamal	327 49.1	N23 35.5
Kaus Australi	083 30.8	S34 22.3
Kochab	137 21.0	N74 02.5
Markab	013 28.3	N15 21.2
Menkar	314 04.2	N04 11.8
Menkent	147 56.1	S36 30.0
Miaplacidus	221 37.6	S69 49.4
Mirfak	308 25.5	N49 57.5
Nunki	075 46.1	S26 15.8
Peacock	053 03.6	S56 39.0
Polaris	312 44.0	N89 22.8
Pollux	243 15.1	N27 57.5
Procyon	244 49.0	N05 09.3
Rasalhague	095 57.4	N12 32.5
Regulus	207 32.7	N11 50.1
Rigel	281 02.0	S08 10.2
Rigil Kentaur	139 38.7	S60 56.6
Sabik	102 01.3	S15 45.4
Schedar	349 28.9	N56 41.4
Shaula	096 08.7	S37 07.4
Sirius	258 24.6	S16 45.1
Spica	158 20.9	S11 18.1
Suhail	222 45.0	S43 32.2
Vega	080 32.6	N38 48.6
Zubenelgenubi	136 54.6	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	153 10.7	0906
Mars	205 02.3	0539
Jupiter	210 41.4	0517
Saturn	351 37.3	1951

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

2026 | NOVEMBER 30 - DECEMBER 2

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
30	00	182 53.1	S21 36.3	284 39.7	N14 24.9	59.0	10.4	-14.2
	01	197 52.9	S21 36.7	299 09.1	N14 10.7	59.0	10.5	-14.3
	02	212 52.7	S21 37.1	313 38.6	N13 56.4	59.0	10.6	-14.3
	03	227 52.5	S21 37.5	328 08.2	N13 42.1	58.9	10.7	-14.4
	04	242 52.2	S21 38.0	342 37.9	N13 27.7	58.9	10.8	-14.5
	05	257 52.0	S21 38.4	357 07.7	N13 13.2	58.9	10.9	-14.5
	06	272 51.8	S21 38.8	011 37.7	N12 58.7	58.8	11.0	-14.6
	07	287 51.6	S21 39.2	026 07.7	N12 44.1	58.8	11.1	-14.6
	08	302 51.3	S21 39.6	040 37.8	N12 29.5	58.8	11.2	-14.7
	09	317 51.1	S21 40.0	055 08.0	N12 14.9	58.7	11.3	-14.7
	10	332 50.9	S21 40.4	069 38.3	N12 00.2	58.7	11.4	-14.7
	11	347 50.6	S21 40.8	084 08.7	N11 45.4	58.7	11.5	-14.8
	12	002 50.4	S21 41.2	098 39.2	N11 30.7	58.6	11.6	-14.8
	13	017 50.2	S21 41.6	113 09.8	N11 15.8	58.6	11.7	-14.9
	14	032 50.0	S21 42.0	127 40.5	N11 01.0	58.6	11.8	-14.9
	15	047 49.7	S21 42.4	142 11.3	N10 46.1	58.5	11.9	-14.9
	16	062 49.5	S21 42.8	156 42.1	N10 31.1	58.5	11.9	-15.0
	17	077 49.3	S21 43.2	171 13.1	N10 16.1	58.5	12.0	-15.0
	18	092 49.1	S21 43.6	185 44.1	N10 01.1	58.4	12.1	-15.0
	19	107 48.8	S21 44.0	200 15.2	N09 46.1	58.4	12.2	-15.1
	20	122 48.6	S21 44.4	214 46.4	N09 31.0	58.4	12.3	-15.1
	21	137 48.4	S21 44.8	229 17.7	N09 15.9	58.3	12.4	-15.1
	22	152 48.1	S21 45.2	243 49.1	N09 00.8	58.3	12.4	-15.2
	23	167 47.9	S21 45.6	258 20.5	N08 45.6	58.3	12.5	-15.2
1	00	182 47.7	S21 45.9	272 52.0	N08 30.5	58.2	12.6	-15.2
	01	197 47.4	S21 46.3	287 23.6	N08 15.3	58.2	12.7	-15.2
	02	212 47.2	S21 46.7	301 55.3	N08 00.0	58.2	12.7	-15.2
	03	227 47.0	S21 47.1	316 27.0	N07 44.8	58.1	12.8	-15.3
	04	242 46.8	S21 47.5	330 58.9	N07 29.5	58.1	12.9	-15.3
	05	257 46.5	S21 47.9	345 30.7	N07 14.2	58.1	13.0	-15.3
	06	272 46.3	S21 48.3	000 02.7	N06 58.9	58.0	13.0	-15.3
	07	287 46.1	S21 48.7	014 34.7	N06 43.6	58.0	13.1	-15.3
	08	302 45.8	S21 49.1	029 06.8	N06 28.3	58.0	13.1	-15.3
	09	317 45.6	S21 49.4	043 38.9	N06 12.9	58.0	13.2	-15.4
	10	332 45.4	S21 49.8	058 11.1	N05 57.6	57.9	13.3	-15.4
	11	347 45.1	S21 50.2	072 43.4	N05 42.2	57.9	13.3	-15.4
	12	002 44.9	S21 50.6	087 15.8	N05 26.8	57.9	13.4	-15.4
	13	017 44.7	S21 51.0	101 48.1	N05 11.4	57.8	13.4	-15.4
	14	032 44.4	S21 51.4	116 20.6	N04 56.1	57.8	13.5	-15.4
	15	047 44.2	S21 51.8	130 53.1	N04 40.7	57.8	13.6	-15.4
	16	062 43.9	S21 52.1	145 25.6	N04 25.3	57.7	13.6	-15.4
	17	077 43.7	S21 52.5	159 58.3	N04 09.9	57.7	13.7	-15.4
	18	092 43.5	S21 52.9	174 30.9	N03 54.4	57.7	13.7	-15.4
	19	107 43.2	S21 53.3	189 03.6	N03 39.0	57.6	13.8	-15.4
	20	122 43.0	S21 53.7	203 36.4	N03 23.6	57.6	13.8	-15.4
	21	137 42.8	S21 54.0	218 09.2	N03 08.2	57.6	13.9	-15.4
	22	152 42.5	S21 54.4	232 42.1	N02 52.8	57.5	13.9	-15.4
	23	167 42.3	S21 54.8	247 15.0	N02 37.4	57.5	13.9	-15.4
2	00	182 42.1	S21 55.2	261 47.9	N02 22.0	57.5	14.0	-15.4
	01	197 41.8	S21 55.5	276 20.9	N02 06.6	57.4	14.0	-15.4
	02	212 41.6	S21 55.9	290 53.9	N01 51.3	57.4	14.1	-15.4
	03	227 41.3	S21 56.3	305 27.0	N01 35.9	57.4	14.1	-15.4
	04	242 41.1	S21 56.7	320 00.1	N01 20.5	57.4	14.1	-15.4
	05	257 40.9	S21 57.0	334 33.2	N01 05.2	57.3	14.2	-15.3
	06	272 40.6	S21 57.4	349 06.4	N00 49.8	57.3	14.2	-15.3
	07	287 40.4	S21 57.8	003 39.6	N00 34.5	57.3	14.2	-15.3
	08	302 40.2	S21 58.1	018 12.8	N00 19.2	57.2	14.3	-15.3
	09	317 39.9	S21 58.5	032 46.1	N00 03.9	57.2	14.3	-15.3
	10	332 39.7	S21 58.9	047 19.4	S00 11.4	57.2	14.3	-15.3
	11	347 39.4	S21 59.2	061 52.7	S00 26.7	57.1	14.4	-15.3
	12	002 39.2	S21 59.6	076 26.1	S00 42.0	57.1	14.4	-15.2
	13	017 38.9	S22 00.0	090 59.5	S00 57.2	57.1	14.4	-15.2
	14	032 38.7	S22 00.3	105 32.9	S01 12.4	57.1	14.4	-15.2
	15	047 38.5	S22 00.7	120 06.3	S01 27.6	57.0	14.4	-15.2
	16	062 38.2	S22 01.1	134 39.7	S01 42.8	57.0	14.5	-15.2
	17	077 38.0	S22 01.4	149 13.2	S01 58.0	57.0	14.5	-15.1
	18	092 37.7	S22 01.8	163 46.7	S02 13.1	56.9	14.5	-15.1
	19	107 37.5	S22 02.2	178 20.2	S02 28.2	56.9	14.5	-15.1
	20	122 37.3	S22 02.5	192 53.7	S02 43.3	56.9	14.5	-15.1
	21	137 37.0	S22 02.9	207 27.3	S02 58.3	56.9	14.6	-15.0
	22	152 36.8	S22 03.2	222 00.8	S03 13.4	56.8	14.6	-15.0
	23	167 36.5	S22 03.6	236 34.4	S03 28.4	56.8	14.6	-15.0

Day 30 noon Sun: v -0.2 d -0.4 SD 16.2 | Moon SD 16.0

Day 1 noon Sun: v -0.2 d -0.4 SD 16.2 | Moon SD 15.8

Day 2 noon Sun: v -0.2 d -0.4 SD 16.2 | Moon SD 15.6

SUN: DECEMBER 1 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0751	0950	--	--	1347	1546
70N	0735	0911	--	--	1427	1603
68N	0721	0844	1036	1301	1454	1616
66N	0710	0823	0947	1351	1515	1627
64N	0701	0806	0916	1422	1531	1636
62N	0653	0752	0853	1444	1545	1645
60N	0646	0741	0835	1503	1557	1652
58N	0639	0730	0820	1518	1607	1658
56N	0633	0721	0807	1531	1616	1704
54N	0628	0713	0755	1542	1624	1710
52N	0623	0706	0745	1552	1632	1715
50N	0618	0659	0737	1601	1638	1719
45N	0608	0645	0718	1620	1653	1730
40N	0559	0632	0702	1635	1705	1739
35N	0550	0622	0649	1648	1716	1747
30N	0543	0612	0638	1700	1726	1755
25N	0535	0603	0628	1710	1735	1803
20N	0528	0555	0619	1719	1743	1810
15N	0520	0547	0610	1728	1751	1818
10N	0513	0539	0601	1737	1759	1825
05N	0505	0531	0553	1745	1807	1833
00N	0457	0523	0545	1753	1815	1841
05S	0449	0515	0537	1801	1823	1849
10S	0440	0506	0529	1809	1832	1859
15S	0430	0457	0521	1818	1841	1909
20S	0419	0447	0512	1827	1851	1920
25S	0406	0436	0502	1836	1902	1932
30S	0352	0424	0451	1847	1914	1947
35S	0335	0410	0439	1859	1928	2004
40S	0313	0354	0425	1913	1945	2025
45S	0246	0333	0409	1929	2006	2053
50S	0207	0306	0349	1950	2033	2133
55S	0053	0229	0322	2017	2111	2249
60S	--	0123	0243	2056	2218	--

MOON: RISE / SET | UTC HHMM

Lat	Day 30		Day 1		Day 2	
72N	2149	1354	--	1316	0006	1243
70N	2204	1337	--	1309	0009	1244
68N	2215	1323	--	1303	0012	1245
66N	2225	1312	--	1259	0014	1246
64N	2232	1302	--	1255	0016	1247
62N	2239	1254	--	1251	0017	1248
60N	2245	1247	--	1248	0019	1248
58N	2250	1240	--	1245	0020	1249
56N	2255	1235	--	1243	0021	1249
54N	2259	1230	--	1240	0022	1250
52N	2302	1225	--	1238	0023	1250
50N	2305	1221	--	1237	0024	1251
45N	2313	1212	--	1233	0025	1251
40N	2319	1204	--	1229	0027	1252
35N	2324	1157	--	1226	0028	1253
30N	2328	1152	--	1223	0029	1253
25N	2332	1146	--	1221	0030	1254
20N	2336	1141	--	1219	0031	1254
15N	2339	1137	--	1217	0032	1254
10N	2342	1132	--	1215	0033	1255
05N	2346	1128	--	1213	0034	1255
00N	2349	1124	--	1211	0034	1255
05S	2352	1119	--	1209	0035	1256
10S	2355	1115	--	1207	0036	1256
15S	2358	1110	--	1205	0037	1256
20S	--	1106	0002	1203	0038	1257
25S	--	1101	0005	1200	0039	1257
30S	--	1055	0009	1158	0040	1258
35S	--	1049	0014	1155	0041	1258
40S	--	1042	0018	1151	0042	1259
45S	0002	1033	0024	1148	0044	1259
50S	0014	1023	0031	1143	0045	1300
55S	0029	1010	0039	1137	0048	1301
60S	0049	0953	0050	1130	0050	1302

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | DECEMBER 3 - DECEMBER 5

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
3	00	071 50.4	224 06.8	S09 34.8	276 20.5	N12 43.9	282 28.7	N13 19.3	063 29.2	N00 48.0
	01	086 52.9	239 07.7	S09 35.1	291 22.1	N12 43.6	297 31.1	N13 19.2	078 31.7	N00 48.0
	02	101 55.4	254 08.6	S09 35.3	306 23.7	N12 43.4	312 33.5	N13 19.2	093 34.2	N00 48.0
	03	116 57.8	269 09.5	S09 35.6	321 25.3	N12 43.1	327 35.9	N13 19.2	108 36.7	N00 47.9
	04	132 00.3	284 10.5	S09 35.8	336 26.9	N12 42.9	342 38.2	N13 19.2	123 39.2	N00 47.9
	05	147 02.8	299 11.4	S09 36.1	351 28.5	N12 42.6	357 40.6	N13 19.2	138 41.7	N00 47.9
	06	162 05.2	314 12.3	S09 36.4	006 30.0	N12 42.3	012 43.0	N13 19.1	153 44.2	N00 47.9
	07	177 07.7	329 13.2	S09 36.6	021 31.6	N12 42.1	027 45.4	N13 19.1	168 46.7	N00 47.9
	08	192 10.2	344 14.1	S09 36.9	036 33.2	N12 41.8	042 47.8	N13 19.1	183 49.2	N00 47.9
	09	207 12.6	359 15.0	S09 37.1	051 34.8	N12 41.6	057 50.2	N13 19.1	198 51.7	N00 47.9
	10	222 15.1	014 15.9	S09 37.4	066 36.4	N12 41.3	072 52.5	N13 19.1	213 54.2	N00 47.9
	11	237 17.5	029 16.8	S09 37.6	081 38.0	N12 41.1	087 54.9	N13 19.1	228 56.7	N00 47.9
	12	252 20.0	044 17.6	S09 37.9	096 39.6	N12 40.8	102 57.3	N13 19.0	243 59.2	N00 47.9
	13	267 22.5	059 18.5	S09 38.2	111 41.1	N12 40.5	117 59.7	N13 19.0	259 01.7	N00 47.9
	14	282 24.9	074 19.4	S09 38.4	126 42.7	N12 40.3	133 02.1	N13 19.0	274 04.2	N00 47.9
	15	297 27.4	089 20.3	S09 38.7	141 44.3	N12 40.0	148 04.5	N13 19.0	289 06.7	N00 47.9
	16	312 29.9	104 21.2	S09 39.0	156 45.9	N12 39.8	163 06.9	N13 19.0	304 09.2	N00 47.9
	17	327 32.3	119 22.1	S09 39.2	171 47.5	N12 39.5	178 09.3	N13 19.0	319 11.7	N00 47.9
	18	342 34.8	134 23.0	S09 39.5	186 49.1	N12 39.2	193 11.6	N13 18.9	334 14.2	N00 47.9
	19	357 37.3	149 23.8	S09 39.8	201 50.7	N12 39.0	208 14.0	N13 18.9	349 16.7	N00 47.9
	20	012 39.7	164 24.7	S09 40.0	216 52.3	N12 38.7	223 16.4	N13 18.9	004 19.2	N00 47.9
	21	027 42.2	179 25.6	S09 40.3	231 53.9	N12 38.5	238 18.8	N13 18.9	019 21.7	N00 47.9
	22	042 44.6	194 26.5	S09 40.6	246 55.5	N12 38.2	253 21.2	N13 18.9	034 24.2	N00 47.9
	23	057 47.1	209 27.3	S09 40.9	261 57.1	N12 38.0	268 23.6	N13 18.9	049 26.7	N00 47.9
4	00	072 49.6	224 28.2	S09 41.1	276 58.7	N12 37.7	283 26.0	N13 18.8	064 29.1	N00 47.9
	01	087 52.0	239 29.1	S09 41.4	292 00.3	N12 37.5	298 28.4	N13 18.8	079 31.6	N00 47.9
	02	102 54.5	254 29.9	S09 41.7	307 01.9	N12 37.2	313 30.8	N13 18.8	094 34.1	N00 47.9
	03	117 57.0	269 30.8	S09 42.0	322 03.5	N12 36.9	328 33.1	N13 18.8	109 36.6	N00 47.9
	04	132 59.4	284 31.7	S09 42.2	337 05.1	N12 36.7	343 35.5	N13 18.8	124 39.1	N00 47.9
	05	148 01.9	299 32.5	S09 42.5	352 06.7	N12 36.4	358 37.9	N13 18.8	139 41.6	N00 47.8
	06	163 04.4	314 33.4	S09 42.8	007 08.3	N12 36.2	013 40.3	N13 18.8	154 44.1	N00 47.8
	07	178 06.8	329 34.2	S09 43.1	022 09.9	N12 35.9	028 42.7	N13 18.7	169 46.6	N00 47.8
	08	193 09.3	344 35.1	S09 43.4	037 11.5	N12 35.7	043 45.1	N13 18.7	184 49.1	N00 47.8
	09	208 11.8	359 35.9	S09 43.7	052 13.1	N12 35.4	058 47.5	N13 18.7	199 51.6	N00 47.8
	10	223 14.2	014 36.8	S09 44.0	067 14.7	N12 35.2	073 49.9	N13 18.7	214 54.1	N00 47.8
	11	238 16.7	029 37.6	S09 44.2	082 16.3	N12 34.9	088 52.3	N13 18.7	229 56.6	N00 47.8
	12	253 19.1	044 38.5	S09 44.5	097 17.9	N12 34.7	103 54.7	N13 18.7	244 59.1	N00 47.8
	13	268 21.6	059 39.3	S09 44.8	112 19.5	N12 34.4	118 57.1	N13 18.7	260 01.6	N00 47.8
	14	283 24.1	074 40.1	S09 45.1	127 21.1	N12 34.2	133 59.5	N13 18.6	275 04.1	N00 47.8
	15	298 26.5	089 41.0	S09 45.4	142 22.7	N12 33.9	149 01.9	N13 18.6	290 06.6	N00 47.8
	16	313 29.0	104 41.8	S09 45.7	157 24.3	N12 33.7	164 04.2	N13 18.6	305 09.1	N00 47.8
	17	328 31.5	119 42.6	S09 46.0	172 25.9	N12 33.4	179 06.6	N13 18.6	320 11.6	N00 47.8
	18	343 33.9	134 43.5	S09 46.3	187 27.5	N12 33.1	194 09.0	N13 18.6	335 14.1	N00 47.8
	19	358 36.4	149 44.3	S09 46.6	202 29.1	N12 32.9	209 11.4	N13 18.6	350 16.6	N00 47.8
	20	013 38.9	164 45.1	S09 46.9	217 30.7	N12 32.6	224 13.8	N13 18.6	005 19.1	N00 47.8
	21	028 41.3	179 46.0	S09 47.2	232 32.3	N12 32.4	239 16.2	N13 18.5	020 21.6	N00 47.8
	22	043 43.8	194 46.8	S09 47.5	247 33.9	N12 32.1	254 18.6	N13 18.5	035 24.0	N00 47.8
	23	058 46.3	209 47.6	S09 47.8	262 35.6	N12 31.9	269 21.0	N13 18.5	050 26.5	N00 47.8
5	00	073 48.7	224 48.4	S09 48.1	277 37.2	N12 31.6	284 23.4	N13 18.5	065 29.0	N00 47.8
	01	088 51.2	239 49.3	S09 48.4	292 38.8	N12 31.4	299 25.8	N13 18.5	080 31.5	N00 47.8
	02	103 53.6	254 50.1	S09 48.7	307 40.4	N12 31.1	314 28.2	N13 18.5	095 34.0	N00 47.8
	03	118 56.1	269 50.9	S09 49.0	322 42.0	N12 30.9	329 30.6	N13 18.5	110 36.5	N00 47.8
	04	133 58.6	284 51.7	S09 49.3	337 43.6	N12 30.6	344 33.0	N13 18.5	125 39.0	N00 47.8
	05	149 01.0	299 52.5	S09 49.6	352 45.2	N12 30.4	359 35.4	N13 18.4	140 41.5	N00 47.8
	06	164 03.5	314 53.3	S09 49.9	007 46.9	N12 30.1	014 37.8	N13 18.4	155 44.0	N00 47.8
	07	179 06.0	329 54.1	S09 50.2	022 48.5	N12 29.9	029 40.2	N13 18.4	170 46.5	N00 47.8
	08	194 08.4	344 54.9	S09 50.6	037 50.1	N12 29.7	044 42.6	N13 18.4	185 49.0	N00 47.8
	09	209 10.9	359 55.7	S09 50.9	052 51.7	N12 29.4	059 45.0	N13 18.4	200 51.5	N00 47.8
	10	224 13.4	014 56.5	S09 51.2	067 53.3	N12 29.2	074 47.4	N13 18.4	215 54.0	N00 47.8
	11	239 15.8	029 57.3	S09 51.5	082 54.9	N12 28.9	089 49.8	N13 18.4	230 56.5	N00 47.8
	12	254 18.3	044 58.1	S09 51.8	097 56.6	N12 28.7	104 52.2	N13 18.4	245 58.9	N00 47.8
	13	269 20.7	059 58.9	S09 52.1	112 58.2	N12 28.4	119 54.6	N13 18.4	261 01.4	N00 47.8
	14	284 23.2	074 59.7	S09 52.4	127 59.8	N12 28.2	134 57.0	N13 18.3	276 03.9	N00 47.8
	15	299 25.7	090 00.5	S09 52.8	143 01.4	N12 27.9	149 59.4	N13 18.3	291 06.4	N00 47.8
	16	314 28.1	105 01.3	S09 53.1	158 03.0	N12 27.7	165 01.8	N13 18.3	306 08.9	N00 47.8
	17	329 30.6	120 02.1	S09 53.4	173 04.7	N12 27.4	180 04.2	N13 18.3	321 11.4	N00 47.8
	18	344 33.1	135 02.9	S09 53.7	188 06.3	N12 27.2	195 06.6	N13 18.3	336 13.9	N00 47.8
	19	359 35.5	150 03.7	S09 54.1	203 07.9	N12 26.9	210 09.0	N13 18.3	351 16.4	N00 47.8
	20	014 38.0	165 04.4	S09 54.4	218 09.5	N12 26.7	225 11.4	N13 18.3	006 18.9	N00 47.8
	21	029 40.5	180 05.2	S09 54.7	233 11.2	N12 26.4	240 13.8	N13 18.3	021 21.4	N00 47.8
	22	044 42.9	195 06.0	S09 55.0	248 12.8	N12 26.2	255 16.2	N13 18.3	036 23.8	N00 47.8
	23	059 45.4	210 06.8	S09 55.4	263 14.4	N12 26.0	270 18.6	N13 18.2	051 26.3	N00 47.8

Venus	Mars	Jupiter	Saturn
3: v 0.9 d -0.3	3: v 1.6 d -0.3	3: v 2.4 d 0.0	3: v 2.5 d 0.0
4: v 0.8 d -0.3	4: v 1.6 d -0.3	4: v 2.4 d 0.0	4: v 2.5 d 0.0
5: v 0.8 d -0.3	5: v 1.6 d -0.2	5: v 2.4 d 0.0	5: v 2.5 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.2	S40 11.8
Achernar	335 18.6	S57 06.1
Acrux	172 58.6	S63 14.7
Adhara	255 04.3	S29 00.4
Al Na'ir	027 31.1	S46 50.0
Aldebaran	290 37.5	N16 33.8
Alioth	166 11.9	N55 48.5
Alkaid	152 51.2	N49 10.5
Alnilam	275 35.8	S01 11.0
Alphard	217 46.1	S08 46.5
Alphecca	126 02.8	N26 37.4
Alpheratz	357 33.0	N29 14.6
Altair	061 58.7	N08 56.5
Ankaa	353 05.4	S42 09.7
Antares	112 14.3	S26 29.4
Arcturus	145 46.8	N19 02.5
Atria	107 07.7	S69 04.5
Avior	234 13.7	S59 35.5
Bellatrix	278 20.9	N06 22.5
Betelgeuse	270 50.1	N07 24.7
Canopus	263 51.2	S52 42.4
Capella	280 19.1	N46 01.5
Deneb	049 25.0	N45 22.8
Denebola	182 23.5	N14 25.2
Diphda	348 45.6	S17 50.3
Dubhe	193 39.2	N61 36.0
Elnath	277 59.5	N28 37.8
Eltanin	090 42.0	N51 29.2
Enif	033 37.4	N10 00.1
Fomalhaut	015 12.8	S29 28.8
Gacrux	171 50.1	S57 15.6
Gienah	175 42.1	S17 41.4
Hadar	148 34.3	S60 30.0
Hamal	327 49.1	N23 35.5
Kaus Australi	083 30.8	S34 22.3
Kochab	137 20.9	N74 02.4
Markab	013 28.3	N15 21.2
Menkar	314 04.2	N04 11.8
Menkent	147 56.1	S36 30.0
Miaplacidus	221 37.5	S69 49.4
Mirfak	308 25.5	N49 57.5
Nunki	075 46.2	S26 15.8
Peacock	053 03.7	S56 39.0
Polaris	312 44.4	N89 22.8
Pollux	243 15.1	N27 57.5
Procyon	244 49.0	N05 09.3
Rasalhague	095 57.4	N12 32.5
Regulus	207 32.7	N11 50.0
Rigel	281 02.0	S08 10.2
Rigil Kentaur	139 38.7	S60 56.6
Sabik	102 01.3	S15 45.4
Schedar	349 28.9	N56 41.4
Shaula	096 08.7	S37 07.4
Sirius	258 24.6	S16 45.1
Spica	158 20.9	S11 18.1
Suhail	222 45.0	S43 32.3
Vega	080 32.6	N38 48.6
Zubenelgenubi	136 54.6	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	151 19.3	0902
Mars	203 58.7	0531
Jupiter	210 35.5	0505
Saturn	351 40.0	1939

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
3	00	182 36.3	S22 04.0	251 08.0	S03 43.3	56.8	14.6	-14.9
	01	197 36.0	S22 04.3	265 41.5	S03 58.3	56.7	14.6	-14.9
	02	212 35.8	S22 04.7	280 15.1	S04 13.2	56.7	14.6	-14.9
	03	227 35.5	S22 05.0	294 48.7	S04 28.1	56.7	14.6	-14.8
	04	242 35.3	S22 05.4	309 22.4	S04 42.9	56.7	14.6	-14.8
	05	257 35.1	S22 05.7	323 56.0	S04 57.7	56.6	14.6	-14.8
	06	272 34.8	S22 06.1	338 29.6	S05 12.5	56.6	14.6	-14.7
	07	287 34.6	S22 06.4	353 03.2	S05 27.3	56.6	14.6	-14.7
	08	302 34.3	S22 06.8	007 36.9	S05 42.0	56.6	14.6	-14.7
	09	317 34.1	S22 07.1	022 10.5	S05 56.7	56.5	14.6	-14.6
	10	332 33.8	S22 07.5	036 44.1	S06 11.3	56.5	14.6	-14.6
	11	347 33.6	S22 07.8	051 17.7	S06 25.9	56.5	14.6	-14.6
	12	002 33.3	S22 08.2	065 51.4	S06 40.4	56.4	14.6	-14.5
	13	017 33.1	S22 08.5	080 25.0	S06 55.0	56.4	14.6	-14.5
	14	032 32.8	S22 08.9	094 58.6	S07 09.4	56.4	14.6	-14.4
	15	047 32.6	S22 09.2	109 32.2	S07 23.9	56.4	14.6	-14.4
	16	062 32.3	S22 09.6	124 05.8	S07 38.3	56.3	14.6	-14.3
	17	077 32.1	S22 09.9	138 39.4	S07 52.6	56.3	14.6	-14.3
	18	092 31.8	S22 10.3	153 13.0	S08 06.9	56.3	14.6	-14.3
	19	107 31.6	S22 10.6	167 46.6	S08 21.1	56.3	14.6	-14.2
	20	122 31.3	S22 11.0	182 20.1	S08 35.4	56.2	14.6	-14.2
	21	137 31.1	S22 11.3	196 53.7	S08 49.5	56.2	14.5	-14.1
	22	152 30.8	S22 11.6	211 27.2	S09 03.6	56.2	14.5	-14.1
	23	167 30.6	S22 12.0	226 00.7	S09 17.7	56.2	14.5	-14.0
4	00	182 30.3	S22 12.3	240 34.2	S09 31.7	56.1	14.5	-14.0
	01	197 30.1	S22 12.7	255 07.7	S09 45.6	56.1	14.5	-13.9
	02	212 29.8	S22 13.0	269 41.2	S09 59.5	56.1	14.5	-13.9
	03	227 29.6	S22 13.3	284 14.7	S10 13.4	56.1	14.4	-13.8
	04	242 29.3	S22 13.7	298 48.1	S10 27.2	56.0	14.4	-13.7
	05	257 29.1	S22 14.0	313 21.5	S10 40.9	56.0	14.4	-13.7
	06	272 28.8	S22 14.3	327 54.9	S10 54.6	56.0	14.4	-13.6
	07	287 28.6	S22 14.7	342 28.3	S11 08.3	56.0	14.3	-13.6
	08	302 28.3	S22 15.0	357 01.6	S11 21.8	55.9	14.3	-13.5
	09	317 28.1	S22 15.3	011 34.9	S11 35.4	55.9	14.3	-13.5
	10	332 27.8	S22 15.7	026 08.2	S11 48.8	55.9	14.3	-13.4
	11	347 27.6	S22 16.0	040 41.5	S12 02.2	55.9	14.2	-13.3
	12	002 27.3	S22 16.3	055 14.8	S12 15.6	55.9	14.2	-13.3
	13	017 27.1	S22 16.7	069 48.0	S12 28.8	55.8	14.2	-13.2
	14	032 26.8	S22 17.0	084 21.2	S12 42.0	55.8	14.2	-13.1
	15	047 26.6	S22 17.3	098 54.3	S12 55.2	55.8	14.1	-13.1
	16	062 26.3	S22 17.7	113 27.5	S13 08.3	55.8	14.1	-13.0
	17	077 26.0	S22 18.0	128 00.5	S13 21.3	55.7	14.1	-13.0
	18	092 25.8	S22 18.3	142 33.6	S13 34.3	55.7	14.0	-12.9
	19	107 25.5	S22 18.6	157 06.6	S13 47.1	55.7	14.0	-12.8
	20	122 25.3	S22 19.0	171 39.6	S14 00.0	55.7	14.0	-12.8
	21	137 25.0	S22 19.3	186 12.6	S14 12.7	55.7	13.9	-12.7
	22	152 24.8	S22 19.6	200 45.5	S14 25.4	55.6	13.9	-12.6
	23	167 24.5	S22 19.9	215 18.4	S14 38.0	55.6	13.9	-12.5
5	00	182 24.3	S22 20.3	229 51.3	S14 50.5	55.6	13.8	-12.5
	01	197 24.0	S22 20.6	244 24.1	S15 03.0	55.6	13.8	-12.4
	02	212 23.7	S22 20.9	258 56.9	S15 15.4	55.5	13.7	-12.3
	03	227 23.5	S22 21.2	273 29.6	S15 27.7	55.5	13.7	-12.2
	04	242 23.2	S22 21.5	288 02.3	S15 40.0	55.5	13.7	-12.2
	05	257 23.0	S22 21.9	302 35.0	S15 52.2	55.5	13.6	-12.1
	06	272 22.7	S22 22.2	317 07.6	S16 04.3	55.5	13.6	-12.0
	07	287 22.5	S22 22.5	331 40.2	S16 16.3	55.4	13.5	-11.9
	08	302 22.2	S22 22.8	346 12.7	S16 28.2	55.4	13.5	-11.9
	09	317 21.9	S22 23.1	000 45.2	S16 40.1	55.4	13.5	-11.8
	10	332 21.7	S22 23.4	015 17.7	S16 51.9	55.4	13.4	-11.7
	11	347 21.4	S22 23.8	029 50.1	S17 03.6	55.4	13.4	-11.6
	12	002 21.2	S22 24.1	044 22.5	S17 15.2	55.3	13.3	-11.5
	13	017 20.9	S22 24.4	058 54.8	S17 26.7	55.3	13.3	-11.5
	14	032 20.6	S22 24.7	073 27.1	S17 38.2	55.3	13.2	-11.4
	15	047 20.4	S22 25.0	087 59.3	S17 49.6	55.3	13.2	-11.3
	16	062 20.1	S22 25.3	102 31.5	S18 00.8	55.3	13.1	-11.2
	17	077 19.9	S22 25.6	117 03.6	S18 12.1	55.3	13.1	-11.1
	18	092 19.6	S22 25.9	131 35.7	S18 23.2	55.2	13.0	-11.0
	19	107 19.3	S22 26.2	146 07.7	S18 34.2	55.2	13.0	-10.9
	20	122 19.1	S22 26.5	160 39.7	S18 45.1	55.2	12.9	-10.9
	21	137 18.8	S22 26.8	175 11.7	S18 56.0	55.2	12.9	-10.8
	22	152 18.6	S22 27.2	189 43.6	S19 06.7	55.2	12.8	-10.7
	23	167 18.3	S22 27.5	204 15.4	S19 17.4	55.1	12.8	-10.6

Day 3 noon Sun: v -0.2 d -0.3 SD 16.2 | Moon SD 15.4

Day 4 noon Sun: v -0.3 d -0.3 SD 16.2 | Moon SD 15.2

Day 5 noon Sun: v -0.3 d -0.3 SD 16.2 | Moon SD 15.1

SUN: DECEMBER 4 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0759	1004	--	--	1336	1541
70N	0742	0920	--	--	1419	1558
68N	0728	0852	1055	1245	1448	1612
66N	0716	0830	0957	1343	1510	1624
64N	0706	0812	0924	1416	1528	1634
62N	0658	0758	0900	1440	1542	1642
60N	0650	0746	0841	1459	1554	1650
58N	0643	0735	0825	1515	1605	1657
56N	0637	0726	0811	1529	1614	1703
54N	0632	0717	0800	1540	1623	1708
52N	0627	0710	0750	1550	1630	1713
50N	0622	0703	0740	1600	1637	1718
45N	0611	0648	0721	1619	1652	1729
40N	0602	0635	0705	1635	1705	1739
35N	0553	0624	0652	1648	1716	1747
30N	0545	0614	0640	1700	1726	1755
25N	0537	0605	0630	1710	1735	1803
20N	0529	0557	0620	1720	1744	1811
15N	0522	0548	0611	1729	1752	1818
10N	0514	0540	0603	1737	1800	1826
05N	0506	0532	0555	1746	1808	1834
00N	0458	0524	0546	1754	1816	1842
05S	0449	0516	0538	1802	1825	1851
10S	0440	0507	0530	1811	1833	1900
15S	0430	0458	0521	1819	1843	1910
20S	0419	0448	0512	1829	1853	1922
25S	0406	0437	0502	1838	1904	1935
30S	0351	0424	0451	1849	1917	1949
35S	0334	0410	0439	1902	1931	2007
40S	0312	0353	0425	1916	1948	2029
45S	0244	0332	0408	1933	2009	2057
50S	0203	0304	0347	1954	2037	2138
55S	0042	0225	0319	2022	2117	2303
60S	--	0114	0239	2102	2229	--

MOON: RISE / SET | UTC HHMM

Lat	Day 3		Day 4		Day 5	
72N	0214	1210	0427	1130	0714	1017
70N	0208	1220	0409	1151	0625	1108
68N	0203	1228	0354	1207	0555	1140
66N	0158	1234	0343	1221	0532	1204
64N	0155	1240	0333	1232	0514	1223
62N	0151	1245	0325	1241	0500	1238
60N	0149	1249	0318	1250	0448	1251
58N	0146	1253	0312	1257	0438	1303
56N	0144	1256	0306	1303	0429	1312
54N	0142	1259	0301	1309	0421	1321
52N	0140	1302	0257	1314	0413	1329
50N	0139	1304	0253	1319	0407	1336
45N	0135	1310	0245	1329	0353	1351
40N	0133	1315	0237	1338	0342	1404
35N	0130	1319	0231	1345	0333	1415
30N	0128	1322	0226	1352	0324	1424
25N	0126	1325	0221	1358	0317	1432
20N	0124	1328	0217	1403	0310	1440
15N	0123	1331	0213	1408	0304	1447
10N	0121	1334	0209	1413	0258	1454
05N	0120	1336	0205	1418	0252	1501
00N	0118	1339	0202	1423	0246	1508
05S	0117	1342	0158	1428	0240	1515
10S	0115	1344	0154	1432	0235	1521
15S	0114	1347	0151	1437	0229	1528
20S	0112	1350	0147	1442	0222	1536
25S	0111	1353	0143	1448	0216	1544
30S	0109	1356	0138	1454	0209	1552
35S	0107	1400	0133	1501	0201	1602
40S	0105	1404	0127	1509	0152	1613
45S	0102	1409	0121	1518	0141	1626
50S	0059	1414	0113	1529	0129	1642
55S	0055	1422	0103	1542	0113	1703
60S	0051	1431	0051	1601	0052	1731

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | DECEMBER 6 - DECEMBER 8

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
6	00	074 47.9	225 07.6	S09 55.7	278 16.1	N12 25.7	285 21.0	N13 18.2	066 28.8	N00 47.8
	01	089 50.3	240 08.3	S09 56.0	293 17.7	N12 25.5	300 23.5	N13 18.2	081 31.3	N00 47.8
	02	104 52.8	255 09.1	S09 56.3	308 19.3	N12 25.2	315 25.9	N13 18.2	096 33.8	N00 47.8
	03	119 55.2	270 09.9	S09 56.7	323 20.9	N12 25.0	330 28.3	N13 18.2	111 36.3	N00 47.8
	04	134 57.7	285 10.6	S09 57.0	338 22.6	N12 24.7	345 30.7	N13 18.2	126 38.8	N00 47.8
	05	150 00.2	300 11.4	S09 57.3	353 24.2	N12 24.5	000 33.1	N13 18.2	141 41.3	N00 47.8
	06	165 02.6	315 12.2	S09 57.7	008 25.8	N12 24.3	015 35.5	N13 18.2	156 43.8	N00 47.8
	07	180 05.1	330 12.9	S09 58.0	023 27.5	N12 24.0	030 37.9	N13 18.2	171 46.2	N00 47.8
	08	195 07.6	345 13.7	S09 58.4	038 29.1	N12 23.8	045 40.3	N13 18.2	186 48.7	N00 47.8
	09	210 10.0	000 14.4	S09 58.7	053 30.7	N12 23.5	060 42.7	N13 18.1	201 51.2	N00 47.8
	10	225 12.5	015 15.2	S09 59.0	068 32.4	N12 23.3	075 45.1	N13 18.1	216 53.7	N00 47.8
	11	240 15.0	030 16.0	S09 59.4	083 34.0	N12 23.0	090 47.5	N13 18.1	231 56.2	N00 47.8
	12	255 17.4	045 16.7	S09 59.7	098 35.6	N12 22.8	105 49.9	N13 18.1	246 58.7	N00 47.8
	13	270 19.9	060 17.5	S10 00.1	113 37.3	N12 22.6	120 52.3	N13 18.1	262 01.2	N00 47.8
	14	285 22.4	075 18.2	S10 00.4	128 38.9	N12 22.3	135 54.8	N13 18.1	277 03.7	N00 47.8
	15	300 24.8	090 19.0	S10 00.7	143 40.5	N12 22.1	150 57.2	N13 18.1	292 06.1	N00 47.8
	16	315 27.3	105 19.7	S10 01.1	158 42.2	N12 21.8	165 59.6	N13 18.1	307 08.6	N00 47.8
	17	330 29.7	120 20.4	S10 01.4	173 43.8	N12 21.6	181 02.0	N13 18.1	322 11.1	N00 47.8
	18	345 32.2	135 21.2	S10 01.8	188 45.5	N12 21.4	196 04.4	N13 18.1	337 13.6	N00 47.8
	19	000 34.7	150 21.9	S10 02.1	203 47.1	N12 21.1	211 06.8	N13 18.1	352 16.1	N00 47.8
	20	015 37.1	165 22.7	S10 02.5	218 48.7	N12 20.9	226 09.2	N13 18.1	007 18.6	N00 47.8
	21	030 39.6	180 23.4	S10 02.8	233 50.4	N12 20.6	241 11.6	N13 18.1	022 21.1	N00 47.8
	22	045 42.1	195 24.1	S10 03.2	248 52.0	N12 20.4	256 14.0	N13 18.0	037 23.5	N00 47.8
	23	060 44.5	210 24.9	S10 03.5	263 53.7	N12 20.2	271 16.5	N13 18.0	052 26.0	N00 47.8
7	00	075 47.0	225 25.6	S10 03.9	278 55.3	N12 19.9	286 18.9	N13 18.0	067 28.5	N00 47.8
	01	090 49.5	240 26.3	S10 04.2	293 57.0	N12 19.7	301 21.3	N13 18.0	082 31.0	N00 47.8
	02	105 51.9	255 27.1	S10 04.6	308 58.6	N12 19.4	316 23.7	N13 18.0	097 33.5	N00 47.8
	03	120 54.4	270 27.8	S10 05.0	324 00.3	N12 19.2	331 26.1	N13 18.0	112 36.0	N00 47.8
	04	135 56.9	285 28.5	S10 05.3	339 01.9	N12 19.0	346 28.5	N13 18.0	127 38.5	N00 47.8
	05	150 59.3	300 29.2	S10 05.7	354 03.5	N12 18.7	001 30.9	N13 18.0	142 40.9	N00 47.8
	06	166 01.8	315 29.9	S10 06.0	009 05.2	N12 18.5	016 33.3	N13 18.0	157 43.4	N00 47.8
	07	181 04.2	330 30.7	S10 06.4	024 06.8	N12 18.3	031 35.8	N13 18.0	172 45.9	N00 47.9
	08	196 06.7	345 31.4	S10 06.7	039 08.5	N12 18.0	046 38.2	N13 18.0	187 48.4	N00 47.9
	09	211 09.2	000 32.1	S10 07.1	054 10.1	N12 17.8	061 40.6	N13 18.0	202 50.9	N00 47.9
	10	226 11.6	015 32.8	S10 07.5	069 11.8	N12 17.5	076 43.0	N13 18.0	217 53.4	N00 47.9
	11	241 14.1	030 33.5	S10 07.8	084 13.4	N12 17.3	091 45.4	N13 18.0	232 55.8	N00 47.9
	12	256 16.6	045 34.2	S10 08.2	099 15.1	N12 17.1	106 47.8	N13 17.9	247 58.3	N00 47.9
	13	271 19.0	060 34.9	S10 08.6	114 16.8	N12 16.8	121 50.3	N13 17.9	263 00.8	N00 47.9
	14	286 21.5	075 35.6	S10 08.9	129 18.4	N12 16.6	136 52.7	N13 17.9	278 03.3	N00 47.9
	15	301 24.0	090 36.3	S10 09.3	144 20.1	N12 16.4	151 55.1	N13 17.9	293 05.8	N00 47.9
	16	316 26.4	105 37.0	S10 09.7	159 21.7	N12 16.1	166 57.5	N13 17.9	308 08.3	N00 47.9
	17	331 28.9	120 37.7	S10 10.0	174 23.4	N12 15.9	181 59.9	N13 17.9	323 10.7	N00 47.9
	18	346 31.3	135 38.4	S10 10.4	189 25.0	N12 15.7	197 02.3	N13 17.9	338 13.2	N00 47.9
	19	001 33.8	150 39.1	S10 10.8	204 26.7	N12 15.4	212 04.8	N13 17.9	353 15.7	N00 47.9
	20	016 36.3	165 39.8	S10 11.2	219 28.3	N12 15.2	227 07.2	N13 17.9	008 18.2	N00 47.9
	21	031 38.7	180 40.5	S10 11.5	234 30.0	N12 15.0	242 09.6	N13 17.9	023 20.7	N00 47.9
	22	046 41.2	195 41.2	S10 11.9	249 31.7	N12 14.7	257 12.0	N13 17.9	038 23.1	N00 47.9
	23	061 43.7	210 41.9	S10 12.3	264 33.3	N12 14.5	272 14.4	N13 17.9	053 25.6	N00 47.9
8	00	076 46.1	225 42.6	S10 12.7	279 35.0	N12 14.3	287 16.9	N13 17.9	068 28.1	N00 47.9
	01	091 48.6	240 43.3	S10 13.0	294 36.6	N12 14.0	302 19.3	N13 17.9	083 30.6	N00 47.9
	02	106 51.1	255 44.0	S10 13.4	309 38.3	N12 13.8	317 21.7	N13 17.9	098 33.1	N00 47.9
	03	121 53.5	270 44.7	S10 13.8	324 40.0	N12 13.6	332 24.1	N13 17.9	113 35.5	N00 47.9
	04	136 56.0	285 45.3	S10 14.2	339 41.6	N12 13.3	347 26.6	N13 17.9	128 38.0	N00 47.9
	05	151 58.5	300 46.0	S10 14.6	354 43.3	N12 13.1	002 29.0	N13 17.9	143 40.5	N00 47.9
	06	167 00.9	315 46.7	S10 14.9	009 45.0	N12 12.9	017 31.4	N13 17.9	158 43.0	N00 47.9
	07	182 03.4	330 47.4	S10 15.3	024 46.6	N12 12.7	032 33.8	N13 17.9	173 45.5	N00 47.9
	08	197 05.8	345 48.0	S10 15.7	039 48.3	N12 12.4	047 36.2	N13 17.9	188 47.9	N00 47.9
	09	212 08.3	000 48.7	S10 16.1	054 50.0	N12 12.2	062 38.7	N13 17.9	203 50.4	N00 48.0
	10	227 10.8	015 49.4	S10 16.5	069 51.6	N12 12.0	077 41.1	N13 17.8	218 52.9	N00 48.0
	11	242 13.2	030 50.1	S10 16.9	084 53.3	N12 11.7	092 43.5	N13 17.8	233 55.4	N00 48.0
	12	257 15.7	045 50.7	S10 17.2	099 55.0	N12 11.5	107 45.9	N13 17.8	248 57.9	N00 48.0
	13	272 18.2	060 51.4	S10 17.6	114 56.6	N12 11.3	122 48.4	N13 17.8	264 00.3	N00 48.0
	14	287 20.6	075 52.1	S10 18.0	129 58.3	N12 11.0	137 50.8	N13 17.8	279 02.8	N00 48.0
	15	302 23.1	090 52.7	S10 18.4	145 00.0	N12 10.8	152 53.2	N13 17.8	294 05.3	N00 48.0
	16	317 25.6	105 53.4	S10 18.8	160 01.6	N12 10.6	167 55.6	N13 17.8	309 07.8	N00 48.0
	17	332 28.0	120 54.0	S10 19.2	175 03.3	N12 10.4	182 58.1	N13 17.8	324 10.3	N00 48.0
	18	347 30.5	135 54.7	S10 19.6	190 05.0	N12 10.1	198 00.5	N13 17.8	339 12.7	N00 48.0
	19	002 33.0	150 55.4	S10 20.0	205 06.7	N12 09.9	213 02.9	N13 17.8	354 15.2	N00 48.0
	20	017 35.4	165 56.0	S10 20.4	220 08.3	N12 09.7	228 05.3	N13 17.8	009 17.7	N00 48.0
	21	032 37.9	180 56.7	S10 20.8	235 10.0	N12 09.5	243 07.8	N13 17.8	024 20.2	N00 48.0
	22	047 40.3	195 57.3	S10 21.2	250 11.7	N12 09.2	258 10.2	N13 17.8	039 22.6	N00 48.0
	23	062 42.8	210 58.0	S10 21.6	265 13.4	N12 09.0	273 12.6	N13 17.8	054 25.1	N00 48.0

Venus	Mars	Jupiter	Saturn
6: v 0.8 d -0.3	6: v 1.6 d -0.2	6: v 2.4 d 0.0	6: v 2.5 d 0.0
7: v 0.7 d -0.4	7: v 1.7 d -0.2	7: v 2.4 d 0.0	7: v 2.5 d 0.0
8: v 0.7 d -0.4	8: v 1.7 d -0.2	8: v 2.4 d 0.0	8: v 2.5 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.2	S40 11.8
Achernar	335 18.7	S57 06.1
Acrux	172 58.6	S63 14.7
Adhara	255 04.3	S29 00.4
Al Na'ir	027 31.1	S46 50.0
Aldebaran	290 37.5	N16 33.8
Alioth	166 11.9	N55 48.5
Alkaid	152 51.1	N49 10.5
Alnilam	275 35.8	S01 11.1
Alphard	217 46.1	S08 46.5
Alphecca	126 02.8	N26 37.4
Alpheratz	357 33.0	N29 14.6
Altair	061 58.7	N08 56.5
Ankaa	353 05.5	S42 09.7
Antares	112 14.3	S26 29.4
Arcturus	145 46.8	N19 02.4
Atria	107 07.7	S69 04.5
Avior	234 13.7	S59 35.5
Bellatrix	278 20.9	N06 22.5
Betelgeuse	270 50.1	N07 24.7
Canopus	263 51.2	S52 42.5
Capella	280 19.1	N46 01.5
Deneb	049 25.0	N45 22.8
Denebola	182 23.4	N14 25.2
Diphda	348 45.6	S17 50.3
Dubhe	193 39.1	N61 36.0
Elnath	277 59.5	N28 37.8
Eltanin	090 42.0	N51 29.2
Enif	033 37.4	N10 00.1
Fomalhaut	015 12.8	S29 28.8
Gacrux	171 50.1	S57 15.6
Gienah	175 42.1	S17 41.4
Hadar	148 34.2	S60 30.0
Hamal	327 49.1	N23 35.5
Kaus Australi	083 30.8	S34 22.3
Kochab	137 20.9	N74 02.4
Markab	013 28.3	N15 21.2
Menkar	314 04.2	N04 11.8
Menkent	147 56.1	S36 30.0
Miaplacidus	221 37.5	S69 49.4
Mirfak	308 25.5	N49 57.5
Nunki	075 46.2	S26 15.8
Peacock	053 03.7	S56 39.0
Polaris	312 44.6	N89 22.8
Pollux	243 15.1	N27 57.5
Procyon	244 48.9	N05 09.3
Rasalhague	095 57.4	N12 32.5
Regulus	207 32.7	N11 50.0
Rigel	281 02.0	S08 10.2
Rigil Kentaur	139 38.7	S60 56.6
Sabik	102 01.3	S15 45.4
Schedar	349 29.0	N56 41.4
Shaula	096 08.7	S37 07.4
Sirius	258 24.5	S16 45.1
Spica	158 20.8	S11 18.1
Suhail	222 44.9	S43 32.3
Vega	080 32.6	N38 48.6
Zubenelgenubi	136 54.6	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	149 17.7	0858
Mars	202 58.5	0524
Jupiter	210 31.3	0454
Saturn	351 41.8	1927

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
6	00	182 18.0	S22 27.8	218 47.2	S19 28.0	55.1	12.8	-10.5
	01	197 17.8	S22 28.1	233 19.0	S19 38.5	55.1	12.7	-10.4
	02	212 17.5	S22 28.4	247 50.7	S19 48.9	55.1	12.7	-10.3
	03	227 17.2	S22 28.7	262 22.3	S19 59.2	55.1	12.6	-10.2
	04	242 17.0	S22 29.0	276 53.9	S20 09.4	55.1	12.6	-10.1
	05	257 16.7	S22 29.3	291 25.5	S20 19.5	55.0	12.5	-10.0
	06	272 16.4	S22 29.6	305 57.0	S20 29.5	55.0	12.4	-9.9
	07	287 16.2	S22 29.9	320 28.4	S20 39.4	55.0	12.4	-9.8
	08	302 15.9	S22 30.2	334 59.8	S20 49.2	55.0	12.3	-9.7
	09	317 15.7	S22 30.5	349 31.2	S20 59.0	55.0	12.3	-9.6
	10	332 15.4	S22 30.8	004 02.5	S21 08.6	55.0	12.2	-9.5
	11	347 15.1	S22 31.1	018 33.7	S21 18.1	54.9	12.2	-9.4
	12	002 14.9	S22 31.3	033 04.9	S21 27.5	54.9	12.1	-9.3
	13	017 14.6	S22 31.6	047 36.1	S21 36.8	54.9	12.1	-9.2
	14	032 14.3	S22 31.9	062 07.1	S21 46.0	54.9	12.0	-9.1
	15	047 14.1	S22 32.2	076 38.2	S21 55.2	54.9	12.0	-9.0
	16	062 13.8	S22 32.5	091 09.2	S22 04.2	54.9	11.9	-8.9
	17	077 13.5	S22 32.8	105 40.1	S22 13.1	54.8	11.9	-8.8
	18	092 13.3	S22 33.1	120 11.0	S22 21.8	54.8	11.8	-8.7
	19	107 13.0	S22 33.4	134 41.8	S22 30.5	54.8	11.8	-8.6
	20	122 12.7	S22 33.7	149 12.6	S22 39.1	54.8	11.7	-8.5
	21	137 12.5	S22 34.0	163 43.4	S22 47.6	54.8	11.7	-8.4
	22	152 12.2	S22 34.3	178 14.0	S22 55.9	54.8	11.6	-8.3
	23	167 11.9	S22 34.5	192 44.7	S23 04.2	54.8	11.6	-8.1
7	00	182 11.7	S22 34.8	207 15.3	S23 12.3	54.7	11.5	-8.0
	01	197 11.4	S22 35.1	221 45.8	S23 20.4	54.7	11.5	-7.9
	02	212 11.1	S22 35.4	236 16.3	S23 28.3	54.7	11.4	-7.8
	03	227 10.9	S22 35.7	250 46.7	S23 36.1	54.7	11.4	-7.7
	04	242 10.6	S22 36.0	265 17.1	S23 43.8	54.7	11.3	-7.6
	05	257 10.3	S22 36.2	279 47.5	S23 51.3	54.7	11.3	-7.5
	06	272 10.1	S22 36.5	294 17.7	S23 58.8	54.7	11.2	-7.3
	07	287 09.8	S22 36.8	308 48.0	S24 06.1	54.6	11.2	-7.2
	08	302 09.5	S22 37.1	323 18.2	S24 13.4	54.6	11.2	-7.1
	09	317 09.2	S22 37.4	337 48.3	S24 20.5	54.6	11.1	-7.0
	10	332 09.0	S22 37.6	352 18.4	S24 27.5	54.6	11.1	-6.9
	11	347 08.7	S22 37.9	006 48.5	S24 34.4	54.6	11.0	-6.8
	12	002 08.4	S22 38.2	021 18.5	S24 41.1	54.6	11.0	-6.6
	13	017 08.2	S22 38.5	035 48.5	S24 47.8	54.6	10.9	-6.5
	14	032 07.9	S22 38.7	050 18.4	S24 54.3	54.5	10.9	-6.4
	15	047 07.6	S22 39.0	064 48.3	S25 00.7	54.5	10.8	-6.3
	16	062 07.3	S22 39.3	079 18.1	S25 06.9	54.5	10.8	-6.2
	17	077 07.1	S22 39.6	093 47.9	S25 13.1	54.5	10.8	-6.0
	18	092 06.8	S22 39.8	108 17.7	S25 19.1	54.5	10.7	-5.9
	19	107 06.5	S22 40.1	122 47.4	S25 25.0	54.5	10.7	-5.8
	20	122 06.3	S22 40.4	137 17.1	S25 30.8	54.5	10.6	-5.7
	21	137 06.0	S22 40.6	151 46.7	S25 36.5	54.5	10.6	-5.5
	22	152 05.7	S22 40.9	166 16.3	S25 42.0	54.5	10.6	-5.4
	23	167 05.4	S22 41.2	180 45.9	S25 47.4	54.4	10.5	-5.3
8	00	182 05.2	S22 41.5	195 15.4	S25 52.7	54.4	10.5	-5.2
	01	197 04.9	S22 41.7	209 44.9	S25 57.8	54.4	10.5	-5.0
	02	212 04.6	S22 42.0	224 14.3	S26 02.9	54.4	10.4	-4.9
	03	227 04.3	S22 42.2	238 43.8	S26 07.8	54.4	10.4	-4.8
	04	242 04.1	S22 42.5	253 13.2	S26 12.5	54.4	10.4	-4.6
	05	257 03.8	S22 42.8	267 42.5	S26 17.2	54.4	10.3	-4.5
	06	272 03.5	S22 43.0	282 11.8	S26 21.7	54.4	10.3	-4.4
	07	287 03.2	S22 43.3	296 41.1	S26 26.1	54.4	10.3	-4.3
	08	302 03.0	S22 43.6	311 10.4	S26 30.3	54.3	10.2	-4.1
	09	317 02.7	S22 43.8	325 39.6	S26 34.5	54.3	10.2	-4.0
	10	332 02.4	S22 44.1	340 08.8	S26 38.5	54.3	10.2	-3.9
	11	347 02.1	S22 44.3	354 38.0	S26 42.3	54.3	10.2	-3.7
	12	002 01.9	S22 44.6	009 07.1	S26 46.1	54.3	10.1	-3.6
	13	017 01.6	S22 44.9	023 36.3	S26 49.7	54.3	10.1	-3.5
	14	032 01.3	S22 45.1	038 05.4	S26 53.1	54.3	10.1	-3.3
	15	047 01.0	S22 45.4	052 34.5	S26 56.5	54.3	10.1	-3.2
	16	062 00.8	S22 45.6	067 03.5	S26 59.7	54.3	10.0	-3.1
	17	077 00.5	S22 45.9	081 32.6	S27 02.8	54.3	10.0	-2.9
	18	092 00.2	S22 46.1	096 01.6	S27 05.7	54.2	10.0	-2.8
	19	106 59.9	S22 46.4	110 30.6	S27 08.5	54.2	10.0	-2.7
	20	121 59.7	S22 46.6	124 59.6	S27 11.2	54.2	10.0	-2.5
	21	136 59.4	S22 46.9	139 28.6	S27 13.7	54.2	10.0	-2.4
	22	151 59.1	S22 47.1	153 57.5	S27 16.1	54.2	9.9	-2.3
	23	166 58.8	S22 47.4	168 26.5	S27 18.4	54.2	9.9	-2.1

Day 6 noon Sun: v -0.3 d -0.3 SD 16.2 | Moon SD 15.0

Day 7 noon Sun: v -0.3 d -0.3 SD 16.2 | Moon SD 14.9

Day 8 noon Sun: v -0.3 d -0.3 SD 16.2 | Moon SD 14.8

SUN: DECEMBER 7 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0806	1017	--	--	1325	1537
70N	0748	0929	--	--	1413	1555
68N	0733	0859	1119	1224	1444	1609
66N	0721	0836	1007	1336	1507	1621
64N	0711	0818	0931	1411	1525	1632
62N	0702	0803	0906	1437	1540	1640
60N	0654	0750	0846	1457	1552	1648
58N	0647	0739	0830	1513	1603	1655
56N	0641	0729	0816	1527	1613	1702
54N	0635	0721	0804	1539	1622	1707
52N	0630	0713	0753	1549	1629	1713
50N	0625	0706	0744	1559	1637	1718
45N	0614	0651	0724	1618	1652	1729
40N	0604	0638	0708	1635	1705	1739
35N	0555	0627	0655	1648	1716	1748
30N	0547	0617	0643	1700	1726	1756
25N	0539	0607	0632	1711	1736	1804
20N	0531	0558	0622	1720	1744	1812
15N	0523	0550	0613	1730	1753	1819
10N	0516	0542	0604	1738	1801	1827
05N	0508	0534	0556	1747	1809	1835
00N	0459	0525	0548	1755	1818	1844
05S	0450	0517	0539	1804	1826	1852
10S	0441	0508	0531	1812	1835	1902
15S	0431	0458	0522	1821	1845	1912
20S	0419	0448	0513	1830	1855	1924
25S	0406	0437	0502	1841	1906	1937
30S	0351	0424	0451	1852	1919	1952
35S	0333	0410	0439	1904	1934	2010
40S	0311	0352	0424	1919	1951	2032
45S	0242	0331	0407	1936	2013	2101
50S	0200	0302	0346	1958	2041	2144
55S	0029	0222	0317	2026	2122	2319
60S	--	0106	0236	2108	2239	--

MOON: RISE / SET | UTC HHMM

Lat	Day 6		Day 7		Day 8	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	0828	1043	--	--	--	--
66N	0735	1138	--	--	--	--
64N	0702	1211	0904	1150	--	--
62N	0639	1236	0821	1234	1005	1235
60N	0620	1255	0752	1303	0920	1320
58N	0604	1311	0731	1325	0851	1349
56N	0551	1325	0713	1343	0828	1412
54N	0540	1337	0658	1359	0810	1430
52N	0530	1348	0645	1412	0755	1446
50N	0521	1357	0633	1424	0741	1500
45N	0502	1417	0610	1449	0714	1528
40N	0447	1433	0551	1508	0652	1550
35N	0434	1447	0535	1525	0634	1608
30N	0423	1459	0521	1539	0619	1624
25N	0413	1510	0509	1552	0605	1638
20N	0404	1520	0458	1603	0553	1650
15N	0355	1529	0448	1614	0542	1702
10N	0347	1538	0438	1624	0531	1713
05N	0340	1546	0429	1634	0520	1724
00N	0332	1555	0420	1644	0510	1735
05S	0324	1603	0411	1654	0500	1745
10S	0317	1612	0402	1704	0449	1756
15S	0309	1621	0352	1714	0438	1807
20S	0301	1630	0342	1725	0427	1819
25S	0252	1640	0331	1736	0415	1832
30S	0242	1651	0319	1749	0402	1846
35S	0231	1703	0306	1804	0347	1902
40S	0219	1718	0251	1821	0329	1920
45S	0205	1735	0233	1841	0308	1942
50S	0147	1756	0211	1906	0242	2011
55S	0125	1824	0142	1941	0207	2050
60S	0055	1904	0101	2034	0113	2155

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | DECEMBER 9 - DECEMBER 11

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
9	00	077 45.3	225 58.6	S10 22.0	280 15.0	N12 08.8	288 15.1	N13 17.8	069 27.6	N00 48.0
	01	092 47.7	240 59.3	S10 22.4	295 16.7	N12 08.5	303 17.5	N13 17.8	084 30.1	N00 48.0
	02	107 50.2	255 59.9	S10 22.8	310 18.4	N12 08.3	318 19.9	N13 17.8	099 32.5	N00 48.0
	03	122 52.7	271 00.5	S10 23.2	325 20.1	N12 08.1	333 22.3	N13 17.8	114 35.0	N00 48.1
	04	137 55.1	286 01.2	S10 23.6	340 21.8	N12 07.9	348 24.8	N13 17.8	129 37.5	N00 48.1
	05	152 57.6	301 01.8	S10 24.0	355 23.4	N12 07.6	003 27.2	N13 17.8	144 40.0	N00 48.1
	06	168 00.1	316 02.5	S10 24.4	010 25.1	N12 07.4	018 29.6	N13 17.8	159 42.5	N00 48.1
	07	183 02.5	331 03.1	S10 24.8	025 26.8	N12 07.2	033 32.1	N13 17.8	174 44.9	N00 48.1
	08	198 05.0	346 03.7	S10 25.2	040 28.5	N12 07.0	048 34.5	N13 17.8	189 47.4	N00 48.1
	09	213 07.5	001 04.4	S10 25.6	055 30.2	N12 06.8	063 36.9	N13 17.8	204 49.9	N00 48.1
	10	228 09.9	016 05.0	S10 26.0	070 31.9	N12 06.5	078 39.4	N13 17.8	219 52.4	N00 48.1
	11	243 12.4	031 05.6	S10 26.4	085 33.5	N12 06.3	093 41.8	N13 17.8	234 54.8	N00 48.1
	12	258 14.8	046 06.2	S10 26.8	100 35.2	N12 06.1	108 44.2	N13 17.8	249 57.3	N00 48.1
	13	273 17.3	061 06.9	S10 27.2	115 36.9	N12 05.9	123 46.7	N13 17.8	264 59.8	N00 48.1
	14	288 19.8	076 07.5	S10 27.6	130 38.6	N12 05.6	138 49.1	N13 17.8	280 02.3	N00 48.1
	15	303 22.2	091 08.1	S10 28.0	145 40.3	N12 05.4	153 51.5	N13 17.8	295 04.7	N00 48.1
	16	318 24.7	106 08.7	S10 28.5	160 42.0	N12 05.2	168 54.0	N13 17.8	310 07.2	N00 48.1
	17	333 27.2	121 09.4	S10 28.9	175 43.7	N12 05.0	183 56.4	N13 17.8	325 09.7	N00 48.1
	18	348 29.6	136 10.0	S10 29.3	190 45.4	N12 04.8	198 58.8	N13 17.8	340 12.1	N00 48.2
	19	003 32.1	151 10.6	S10 29.7	205 47.0	N12 04.5	214 01.3	N13 17.8	355 14.6	N00 48.2
	20	018 34.6	166 11.2	S10 30.1	220 48.7	N12 04.3	229 03.7	N13 17.8	010 17.1	N00 48.2
	21	033 37.0	181 11.8	S10 30.5	235 50.4	N12 04.1	244 06.1	N13 17.8	025 19.6	N00 48.2
	22	048 39.5	196 12.4	S10 30.9	250 52.1	N12 03.9	259 08.6	N13 17.8	040 22.0	N00 48.2
	23	063 42.0	211 13.0	S10 31.4	265 53.8	N12 03.7	274 11.0	N13 17.8	055 24.5	N00 48.2
10	00	078 44.4	226 13.6	S10 31.8	280 55.5	N12 03.4	289 13.4	N13 17.8	070 27.0	N00 48.2
	01	093 46.9	241 14.3	S10 32.2	295 57.2	N12 03.2	304 15.9	N13 17.8	085 29.5	N00 48.2
	02	108 49.3	256 14.9	S10 32.6	310 58.9	N12 03.0	319 18.3	N13 17.8	100 31.9	N00 48.2
	03	123 51.8	271 15.5	S10 33.0	326 00.6	N12 02.8	334 20.8	N13 17.8	115 34.4	N00 48.2
	04	138 54.3	286 16.1	S10 33.5	341 02.3	N12 02.6	349 23.2	N13 17.8	130 36.9	N00 48.2
	05	153 56.7	301 16.7	S10 33.9	356 04.0	N12 02.3	004 25.6	N13 17.8	145 39.3	N00 48.2
	06	168 59.2	316 17.3	S10 34.3	011 05.7	N12 02.1	019 28.1	N13 17.8	160 41.8	N00 48.3
	07	184 01.7	331 17.9	S10 34.7	026 07.4	N12 01.9	034 30.5	N13 17.8	175 44.3	N00 48.3
	08	199 04.1	346 18.4	S10 35.2	041 09.1	N12 01.7	049 32.9	N13 17.8	190 46.8	N00 48.3
	09	214 06.6	001 19.0	S10 35.6	056 10.8	N12 01.5	064 35.4	N13 17.8	205 49.2	N00 48.3
	10	229 09.1	016 19.6	S10 36.0	071 12.5	N12 01.3	079 37.8	N13 17.8	220 51.7	N00 48.3
	11	244 11.5	031 20.2	S10 36.4	086 14.2	N12 01.0	094 40.3	N13 17.8	235 54.2	N00 48.3
	12	259 14.0	046 20.8	S10 36.9	101 15.9	N12 00.8	109 42.7	N13 17.8	250 56.6	N00 48.3
	13	274 16.5	061 21.4	S10 37.3	116 17.6	N12 00.6	124 45.1	N13 17.8	265 59.1	N00 48.3
	14	289 18.9	076 22.0	S10 37.7	131 19.3	N12 00.4	139 47.6	N13 17.8	281 01.6	N00 48.3
	15	304 21.4	091 22.6	S10 38.2	146 21.0	N12 00.2	154 50.0	N13 17.8	296 04.1	N00 48.3
	16	319 23.8	106 23.1	S10 38.6	161 22.7	N12 00.0	169 52.5	N13 17.8	311 06.5	N00 48.3
	17	334 26.3	121 23.7	S10 39.0	176 24.4	N11 59.7	184 54.9	N13 17.8	326 09.0	N00 48.3
	18	349 28.8	136 24.3	S10 39.5	191 26.1	N11 59.5	199 57.4	N13 17.9	341 11.5	N00 48.4
	19	004 31.2	151 24.9	S10 39.9	206 27.8	N11 59.3	214 59.8	N13 17.9	356 13.9	N00 48.4
	20	019 33.7	166 25.5	S10 40.3	221 29.6	N11 59.1	230 02.2	N13 17.9	011 16.4	N00 48.4
	21	034 36.2	181 26.0	S10 40.8	236 31.3	N11 58.9	245 04.7	N13 17.9	026 18.9	N00 48.4
	22	049 38.6	196 26.6	S10 41.2	251 33.0	N11 58.7	260 07.1	N13 17.9	041 21.3	N00 48.4
	23	064 41.1	211 27.2	S10 41.6	266 34.7	N11 58.5	275 09.6	N13 17.9	056 23.8	N00 48.4
11	00	079 43.6	226 27.7	S10 42.1	281 36.4	N11 58.2	290 12.0	N13 17.9	071 26.3	N00 48.4
	01	094 46.0	241 28.3	S10 42.5	296 38.1	N11 58.0	305 14.5	N13 17.9	086 28.7	N00 48.4
	02	109 48.5	256 28.9	S10 43.0	311 39.8	N11 57.8	320 16.9	N13 17.9	101 31.2	N00 48.4
	03	124 50.9	271 29.4	S10 43.4	326 41.5	N11 57.6	335 19.3	N13 17.9	116 33.7	N00 48.4
	04	139 53.4	286 30.0	S10 43.8	341 43.2	N11 57.4	350 21.8	N13 17.9	131 36.1	N00 48.5
	05	154 55.9	301 30.6	S10 44.3	356 45.0	N11 57.2	005 24.2	N13 17.9	146 38.6	N00 48.5
	06	169 58.3	316 31.1	S10 44.7	011 46.7	N11 57.0	020 26.7	N13 17.9	161 41.1	N00 48.5
	07	185 00.8	331 31.7	S10 45.2	026 48.4	N11 56.8	035 29.1	N13 17.9	176 43.5	N00 48.5
	08	200 03.3	346 32.2	S10 45.6	041 50.1	N11 56.6	050 31.6	N13 17.9	191 46.0	N00 48.5
	09	215 05.7	001 32.8	S10 46.1	056 51.8	N11 56.3	065 34.0	N13 17.9	206 48.5	N00 48.5
	10	230 08.2	016 33.3	S10 46.5	071 53.6	N11 56.1	080 36.5	N13 17.9	221 50.9	N00 48.5
	11	245 10.7	031 33.9	S10 47.0	086 55.3	N11 55.9	095 38.9	N13 17.9	236 53.4	N00 48.5
	12	260 13.1	046 34.4	S10 47.4	101 57.0	N11 55.7	110 41.4	N13 17.9	251 55.9	N00 48.5
	13	275 15.6	061 35.0	S10 47.9	116 58.7	N11 55.5	125 43.8	N13 17.9	266 58.3	N00 48.5
	14	290 18.1	076 35.5	S10 48.3	132 00.4	N11 55.3	140 46.3	N13 17.9	282 00.8	N00 48.6
	15	305 20.5	091 36.1	S10 48.8	147 02.2	N11 55.1	155 48.7	N13 17.9	297 03.3	N00 48.6
	16	320 23.0	106 36.6	S10 49.2	162 03.9	N11 54.9	170 51.2	N13 18.0	312 05.7	N00 48.6
	17	335 25.4	121 37.2	S10 49.7	177 05.6	N11 54.7	185 53.6	N13 18.0	327 08.2	N00 48.6
	18	350 27.9	136 37.7	S10 50.1	192 07.3	N11 54.5	200 56.1	N13 18.0	342 10.7	N00 48.6
	19	005 30.4	151 38.3	S10 50.6	207 09.1	N11 54.3	215 58.5	N13 18.0	357 13.1	N00 48.6
	20	020 32.8	166 38.8	S10 51.0	222 10.8	N11 54.1	231 01.0	N13 18.0	012 15.6	N00 48.6
	21	035 35.3	181 39.3	S10 51.5	237 12.5	N11 53.8	246 03.4	N13 18.0	027 18.1	N00 48.6
	22	050 37.8	196 39.9	S10 51.9	252 14.2	N11 53.6	261 05.9	N13 18.0	042 20.5	N00 48.6
	23	065 40.2	211 40.4	S10 52.4	267 16.0	N11 53.4	276 08.3	N13 18.0	057 23.0	N00 48.7

Venus	Mars	Jupiter	Saturn
9: v 0.6 d -0.4	9: v 1.7 d -0.2	9: v 2.4 d 0.0	9: v 2.5 d 0.0
10: v 0.6 d -0.4	10: v 1.7 d -0.2	10: v 2.4 d 0.0	10: v 2.5 d 0.0
11: v 0.5 d -0.4	11: v 1.7 d -0.2	11: v 2.4 d 0.0	11: v 2.5 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.2	S40 11.9
Achernar	335 18.7	S57 06.2
Acrux	172 58.5	S63 14.7
Adhara	255 04.3	S29 00.4
Al Na'ir	027 31.1	S46 50.0
Aldebaran	290 37.5	N16 33.8
Alioth	166 11.9	N55 48.5
Alkaid	152 51.1	N49 10.5
Alnilam	275 35.8	S01 11.1
Alphard	217 46.1	S08 46.5
Alphecca	126 02.8	N26 37.4
Alpheratz	357 33.0	N29 14.6
Altair	061 58.7	N08 56.5
Ankaa	353 05.5	S42 09.7
Antares	112 14.3	S26 29.4
Arcturus	145 46.7	N19 02.4
Atria	107 07.6	S69 04.5
Avior	234 13.6	S59 35.5
Bellatrix	278 20.8	N06 22.5
Betelgeuse	270 50.0	N07 24.7
Canopus	263 51.2	S52 42.5
Capella	280 19.1	N46 01.5
Deneb	049 25.0	N45 22.8
Denebola	182 23.4	N14 25.2
Diphda	348 45.6	S17 50.3
Dubhe	193 39.1	N61 36.0
Elnath	277 59.5	N28 37.8
Eltanin	090 42.0	N51 29.2
Enif	033 37.4	N10 00.1
Fomalhaut	015 12.8	S29 28.8
Gacrux	171 50.1	S57 15.6
Gienah	175 42.1	S17 41.4
Hadar	148 34.2	S60 30.0
Hamal	327 49.1	N23 35.6
Kaus Australi	083 30.8	S34 22.3
Kochab	137 20.9	N74 02.4
Markab	013 28.3	N15 21.2
Menkar	314 04.2	N04 11.8
Menkent	147 56.0	S36 30.0
Miaplacidus	221 37.4	S69 49.4
Mirfak	308 25.5	N49 57.5
Nunki	075 46.2	S26 15.8
Peacock	053 03.7	S56 39.0
Polaris	312 44.9	N89 22.8
Pollux	243 15.1	N27 57.5
Procyon	244 48.9	N05 09.3
Rasalhague	095 57.4	N12 32.5
Regulus	207 32.7	N11 50.0
Rigel	281 02.0	S08 10.2
Rigil Kentaur	139 38.6	S60 56.6
Sabik	102 01.3	S15 45.4
Schedar	349 29.0	N56 41.4
Shaula	096 08.7	S37 07.4
Sirius	258 24.5	S16 45.1
Spica	158 20.8	S11 18.1
Suhail	222 44.9	S43 32.3
Vega	080 32.6	N38 48.6
Zubenelgenubi	136 54.6	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	147 06.8	0855
Mars	202 01.9	0516
Jupiter	210 28.7	0442
Saturn	351 42.7	1915

2026 | DECEMBER 9 - DECEMBER 11

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
9	00	181 58.6	S22 47.6	182 55.4	S27 20.5	54.2	9.9	-2.0
	01	196 58.3	S22 47.9	197 24.3	S27 22.5	54.2	9.9	-1.9
	02	211 58.0	S22 48.1	211 53.2	S27 24.4	54.2	9.9	-1.7
	03	226 57.7	S22 48.4	226 22.1	S27 26.1	54.2	9.9	-1.6
	04	241 57.4	S22 48.6	240 51.0	S27 27.7	54.2	9.9	-1.5
	05	256 57.2	S22 48.9	255 19.9	S27 29.2	54.2	9.9	-1.3
	06	271 56.9	S22 49.1	269 48.8	S27 30.5	54.1	9.9	-1.2
	07	286 56.6	S22 49.4	284 17.7	S27 31.7	54.1	9.9	-1.1
	08	301 56.3	S22 49.6	298 46.6	S27 32.7	54.1	9.9	-0.9
	09	316 56.0	S22 49.8	313 15.5	S27 33.7	54.1	9.9	-0.8
	10	331 55.8	S22 50.1	327 44.3	S27 34.5	54.1	9.9	-0.7
	11	346 55.5	S22 50.3	342 13.2	S27 35.1	54.1	9.9	-0.5
	12	001 55.2	S22 50.6	356 42.1	S27 35.6	54.1	9.9	-0.4
	13	016 54.9	S22 50.8	011 11.0	S27 36.0	54.1	9.9	-0.2
	14	031 54.6	S22 51.0	025 39.9	S27 36.2	54.1	9.9	-0.1
	15	046 54.4	S22 51.3	040 08.8	S27 36.4	54.1	9.9	0.0
	16	061 54.1	S22 51.5	054 37.7	S27 36.3	54.1	9.9	0.2
	17	076 53.8	S22 51.7	069 06.6	S27 36.2	54.1	9.9	0.3
	18	091 53.5	S22 52.0	083 35.6	S27 35.9	54.1	9.9	0.4
	19	106 53.2	S22 52.2	098 04.5	S27 35.4	54.1	10.0	0.6
	20	121 53.0	S22 52.4	112 33.5	S27 34.9	54.1	10.0	0.7
	21	136 52.7	S22 52.7	127 02.4	S27 34.2	54.0	10.0	0.8
	22	151 52.4	S22 52.9	141 31.4	S27 33.4	54.0	10.0	1.0
	23	166 52.1	S22 53.1	156 00.4	S27 32.4	54.0	10.0	1.1
10	00	181 51.8	S22 53.4	170 29.4	S27 31.3	54.0	10.0	1.2
	01	196 51.5	S22 53.6	184 58.5	S27 30.1	54.0	10.1	1.4
	02	211 51.3	S22 53.8	199 27.5	S27 28.7	54.0	10.1	1.5
	03	226 51.0	S22 54.0	213 56.6	S27 27.2	54.0	10.1	1.6
	04	241 50.7	S22 54.3	228 25.7	S27 25.6	54.0	10.1	1.8
	05	256 50.4	S22 54.5	242 54.9	S27 23.8	54.0	10.2	1.9
	06	271 50.1	S22 54.7	257 24.0	S27 21.9	54.0	10.2	2.0
	07	286 49.8	S22 55.0	271 53.2	S27 19.9	54.0	10.2	2.2
	08	301 49.6	S22 55.2	286 22.4	S27 17.7	54.0	10.2	2.3
	09	316 49.3	S22 55.4	300 51.6	S27 15.4	54.0	10.3	2.4
	10	331 49.0	S22 55.6	315 20.9	S27 13.0	54.0	10.3	2.6
	11	346 48.7	S22 55.8	329 50.2	S27 10.4	54.0	10.3	2.7
	12	001 48.4	S22 56.1	344 19.5	S27 07.8	54.0	10.4	2.8
	13	016 48.1	S22 56.3	358 48.9	S27 05.0	54.0	10.4	2.9
	14	031 47.8	S22 56.5	013 18.3	S27 02.0	54.0	10.4	3.1
	15	046 47.6	S22 56.7	027 47.7	S26 59.0	54.0	10.5	3.2
	16	061 47.3	S22 56.9	042 17.1	S26 55.8	54.0	10.5	3.3
	17	076 47.0	S22 57.2	056 46.6	S26 52.4	54.0	10.5	3.5
	18	091 46.7	S22 57.4	071 16.2	S26 49.0	54.0	10.6	3.6
	19	106 46.4	S22 57.6	085 45.7	S26 45.4	54.0	10.6	3.7
	20	121 46.1	S22 57.8	100 15.4	S26 41.7	54.0	10.7	3.8
	21	136 45.8	S22 58.0	114 45.0	S26 37.9	54.0	10.7	4.0
	22	151 45.6	S22 58.2	129 14.7	S26 33.9	54.0	10.7	4.1
	23	166 45.3	S22 58.4	143 44.4	S26 29.8	54.0	10.8	4.2
11	00	181 45.0	S22 58.6	158 14.2	S26 25.6	54.0	10.8	4.3
	01	196 44.7	S22 58.9	172 44.1	S26 21.3	54.0	10.9	4.5
	02	211 44.4	S22 59.1	187 13.9	S26 16.8	54.0	10.9	4.6
	03	226 44.1	S22 59.3	201 43.8	S26 12.3	54.0	11.0	4.7
	04	241 43.8	S22 59.5	216 13.8	S26 07.6	54.0	11.0	4.8
	05	256 43.6	S22 59.7	230 43.8	S26 02.8	54.0	11.1	4.9
	06	271 43.3	S22 59.9	245 13.9	S25 57.8	54.0	11.1	5.1
	07	286 43.0	S23 00.1	259 44.0	S25 52.8	54.0	11.2	5.2
	08	301 42.7	S23 00.3	274 14.1	S25 47.6	54.0	11.2	5.3
	09	316 42.4	S23 00.5	288 44.3	S25 42.3	54.0	11.3	5.4
	10	331 42.1	S23 00.7	303 14.6	S25 36.9	54.0	11.3	5.5
	11	346 41.8	S23 00.9	317 44.9	S25 31.3	54.0	11.4	5.6
	12	001 41.5	S23 01.1	332 15.2	S25 25.7	54.0	11.4	5.8
	13	016 41.2	S23 01.3	346 45.6	S25 19.9	54.0	11.5	5.9
	14	031 41.0	S23 01.5	001 16.1	S25 14.1	54.0	11.5	6.0
	15	046 40.7	S23 01.7	015 46.6	S25 08.1	54.0	11.6	6.1
	16	061 40.4	S23 01.9	030 17.2	S25 01.9	54.0	11.6	6.2
	17	076 40.1	S23 02.1	044 47.8	S24 55.7	54.0	11.7	6.3
	18	091 39.8	S23 02.3	059 18.5	S24 49.4	54.0	11.7	6.4
	19	106 39.5	S23 02.5	073 49.2	S24 42.9	54.0	11.8	6.6
	20	121 39.2	S23 02.7	088 20.0	S24 36.4	54.0	11.8	6.7
	21	136 38.9	S23 02.9	102 50.8	S24 29.7	54.0	11.9	6.8
	22	151 38.6	S23 03.1	117 21.7	S24 22.9	54.0	12.0	6.9
	23	166 38.3	S23 03.3	131 52.7	S24 16.0	54.0	12.0	7.0

Day 9 noon Sun: v -0.3 d -0.2 SD 16.2 | Moon SD 14.7

Day 10 noon Sun: v -0.3 d -0.2 SD 16.2 | Moon SD 14.7

Day 11 noon Sun: v -0.3 d -0.2 SD 16.2 | Moon SD 14.7

SUN: DECEMBER 10 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0812	1029	--	--	1316	1533
70N	0753	0937	--	--	1408	1552
68N	0738	0905	--	--	1440	1607
66N	0726	0841	1015	1330	1504	1620
64N	0715	0823	0938	1408	1523	1630
62N	0706	0807	0911	1434	1538	1639
60N	0658	0754	0851	1455	1551	1647
58N	0651	0743	0834	1511	1602	1655
56N	0644	0733	0820	1526	1612	1701
54N	0638	0724	0808	1538	1621	1707
52N	0633	0716	0757	1549	1629	1712
50N	0628	0709	0747	1558	1636	1718
45N	0616	0653	0727	1618	1652	1729
40N	0606	0640	0711	1635	1705	1739
35N	0557	0629	0657	1648	1717	1748
30N	0549	0619	0645	1701	1727	1757
25N	0541	0609	0634	1711	1736	1805
20N	0533	0600	0624	1721	1745	1813
15N	0525	0552	0615	1731	1754	1821
10N	0517	0543	0606	1739	1802	1828
05N	0509	0535	0557	1748	1811	1837
00N	0500	0527	0549	1757	1819	1845
05S	0452	0518	0541	1805	1828	1854
10S	0442	0509	0532	1814	1837	1904
15S	0431	0459	0523	1823	1846	1914
20S	0420	0449	0513	1832	1857	1926
25S	0407	0437	0503	1843	1908	1939
30S	0351	0425	0452	1854	1921	1954
35S	0333	0410	0439	1907	1936	2013
40S	0311	0352	0424	1921	1954	2035
45S	0241	0330	0407	1939	2016	2105
50S	0158	0301	0345	2001	2045	2149
55S	0012	0220	0316	2030	2127	2344
60S	--	0059	0234	2113	2249	--

MOON: RISE / SET | UTC HHMM

Lat	Day 9		Day 10		Day 11	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	--	--	--	--	--	--
64N	--	--	--	--	1301	1457
62N	1135	1252	1204	1410	1206	1551
60N	1031	1356	1114	1500	1134	1623
58N	0957	1430	1043	1531	1110	1647
56N	0932	1455	1019	1554	1050	1706
54N	0912	1515	1000	1613	1034	1722
52N	0855	1532	0944	1629	1020	1736
50N	0841	1546	0930	1643	1007	1748
45N	0812	1615	0901	1711	0942	1812
40N	0749	1638	0839	1733	0921	1832
35N	0730	1657	0820	1751	0904	1849
30N	0714	1713	0804	1807	0850	1903
25N	0700	1728	0750	1821	0837	1915
20N	0647	1741	0737	1833	0825	1927
15N	0634	1753	0726	1845	0814	1937
10N	0623	1804	0714	1856	0803	1947
05N	0612	1815	0703	1907	0753	1957
00N	0601	1826	0653	1917	0743	2006
05S	0550	1837	0642	1928	0733	2016
10S	0539	1848	0631	1938	0723	2026
15S	0528	1859	0620	1949	0712	2036
20S	0516	1912	0608	2001	0701	2046
25S	0503	1924	0555	2013	0649	2057
30S	0449	1939	0541	2027	0636	2109
35S	0433	1955	0525	2042	0621	2123
40S	0414	2014	0506	2100	0603	2139
45S	0352	2036	0444	2121	0542	2158
50S	0323	2105	0415	2148	0516	2221
55S	0244	2145	0335	2225	0440	2252
60S	0138	2252	0228	2323	0343	2337

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | DECEMBER 12 - DECEMBER 14

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
12	00	080 42.7	226 40.9	S10 52.8	282 17.7	N11 53.2	291 10.8	N13 18.0	072 25.5	N00 48.7
	01	095 45.2	241 41.5	S10 53.3	297 19.4	N11 53.0	306 13.2	N13 18.0	087 27.9	N00 48.7
	02	110 47.6	256 42.0	S10 53.7	312 21.2	N11 52.8	321 15.7	N13 18.0	102 30.4	N00 48.7
	03	125 50.1	271 42.5	S10 54.2	327 22.9	N11 52.6	336 18.1	N13 18.0	117 32.9	N00 48.7
	04	140 52.6	286 43.0	S10 54.7	342 24.6	N11 52.4	351 20.6	N13 18.0	132 35.3	N00 48.7
	05	155 55.0	301 43.6	S10 55.1	357 26.4	N11 52.2	006 23.0	N13 18.0	147 37.8	N00 48.7
	06	170 57.5	316 44.1	S10 55.6	012 28.1	N11 52.0	021 25.5	N13 18.0	162 40.2	N00 48.7
	07	185 59.9	331 44.6	S10 56.0	027 29.8	N11 51.8	036 27.9	N13 18.1	177 42.7	N00 48.8
	08	201 02.4	346 45.1	S10 56.5	042 31.6	N11 51.6	051 30.4	N13 18.1	192 45.2	N00 48.8
	09	216 04.9	001 45.7	S10 57.0	057 33.3	N11 51.4	066 32.9	N13 18.1	207 47.6	N00 48.8
	10	231 07.3	016 46.2	S10 57.4	072 35.0	N11 51.2	081 35.3	N13 18.1	222 50.1	N00 48.8
	11	246 09.8	031 46.7	S10 57.9	087 36.8	N11 51.0	096 37.8	N13 18.1	237 52.6	N00 48.8
	12	261 12.3	046 47.2	S10 58.4	102 38.5	N11 50.8	111 40.2	N13 18.1	252 55.0	N00 48.8
	13	276 14.7	061 47.7	S10 58.8	117 40.3	N11 50.6	126 42.7	N13 18.1	267 57.5	N00 48.8
	14	291 17.2	076 48.2	S10 59.3	132 42.0	N11 50.4	141 45.1	N13 18.1	282 59.9	N00 48.8
	15	306 19.7	091 48.7	S10 59.8	147 43.7	N11 50.2	156 47.6	N13 18.1	298 02.4	N00 48.9
	16	321 22.1	106 49.2	S11 00.2	162 45.5	N11 50.0	171 50.1	N13 18.1	313 04.9	N00 48.9
	17	336 24.6	121 49.7	S11 00.7	177 47.2	N11 49.8	186 52.5	N13 18.1	328 07.3	N00 48.9
	18	351 27.1	136 50.2	S11 01.2	192 49.0	N11 49.6	201 55.0	N13 18.1	343 09.8	N00 48.9
	19	006 29.5	151 50.8	S11 01.6	207 50.7	N11 49.4	216 57.4	N13 18.2	358 12.2	N00 48.9
	20	021 32.0	166 51.3	S11 02.1	222 52.5	N11 49.2	231 59.9	N13 18.2	013 14.7	N00 48.9
	21	036 34.4	181 51.8	S11 02.6	237 54.2	N11 49.0	247 02.3	N13 18.2	028 17.2	N00 48.9
	22	051 36.9	196 52.3	S11 03.1	252 55.9	N11 48.8	262 04.8	N13 18.2	043 19.6	N00 48.9
	23	066 39.4	211 52.7	S11 03.5	267 57.7	N11 48.6	277 07.3	N13 18.2	058 22.1	N00 49.0
13	00	081 41.8	226 53.2	S11 04.0	282 59.4	N11 48.4	292 09.7	N13 18.2	073 24.5	N00 49.0
	01	096 44.3	241 53.7	S11 04.5	298 01.2	N11 48.2	307 12.2	N13 18.2	088 27.0	N00 49.0
	02	111 46.8	256 54.2	S11 05.0	313 02.9	N11 48.0	322 14.6	N13 18.2	103 29.5	N00 49.0
	03	126 49.2	271 54.7	S11 05.4	328 04.7	N11 47.8	337 17.1	N13 18.2	118 31.9	N00 49.0
	04	141 51.7	286 55.2	S11 05.9	343 06.4	N11 47.6	352 19.6	N13 18.2	133 34.4	N00 49.0
	05	156 54.2	301 55.7	S11 06.4	358 08.2	N11 47.4	007 22.0	N13 18.3	148 36.8	N00 49.0
	06	171 56.6	316 56.2	S11 06.9	013 09.9	N11 47.2	022 24.5	N13 18.3	163 39.3	N00 49.1
	07	186 59.1	331 56.7	S11 07.3	028 11.7	N11 47.0	037 27.0	N13 18.3	178 41.8	N00 49.1
	08	202 01.6	346 57.2	S11 07.8	043 13.5	N11 46.8	052 29.4	N13 18.3	193 44.2	N00 49.1
	09	217 04.0	001 57.6	S11 08.3	058 15.2	N11 46.6	067 31.9	N13 18.3	208 46.7	N00 49.1
	10	232 06.5	016 58.1	S11 08.8	073 17.0	N11 46.4	082 34.3	N13 18.3	223 49.1	N00 49.1
	11	247 08.9	031 58.6	S11 09.3	088 18.7	N11 46.2	097 36.8	N13 18.3	238 51.6	N00 49.1
	12	262 11.4	046 59.1	S11 09.7	103 20.5	N11 46.0	112 39.3	N13 18.3	253 54.1	N00 49.1
	13	277 13.9	061 59.6	S11 10.2	118 22.2	N11 45.8	127 41.7	N13 18.3	268 56.5	N00 49.2
	14	292 16.3	077 00.0	S11 10.7	133 24.0	N11 45.6	142 44.2	N13 18.3	283 59.0	N00 49.2
	15	307 18.8	092 00.5	S11 11.2	148 25.7	N11 45.4	157 46.7	N13 18.4	299 01.4	N00 49.2
	16	322 21.3	107 01.0	S11 11.7	163 27.5	N11 45.2	172 49.1	N13 18.4	314 03.9	N00 49.2
	17	337 23.7	122 01.4	S11 12.2	178 29.3	N11 45.0	187 51.6	N13 18.4	329 06.3	N00 49.2
	18	352 26.2	137 01.9	S11 12.6	193 31.0	N11 44.8	202 54.1	N13 18.4	344 08.8	N00 49.2
	19	007 28.7	152 02.4	S11 13.1	208 32.8	N11 44.7	217 56.5	N13 18.4	359 11.3	N00 49.2
	20	022 31.1	167 02.9	S11 13.6	223 34.6	N11 44.5	232 59.0	N13 18.4	014 13.7	N00 49.3
	21	037 33.6	182 03.3	S11 14.1	238 36.3	N11 44.3	248 01.5	N13 18.4	029 16.2	N00 49.3
	22	052 36.0	197 03.8	S11 14.6	253 38.1	N11 44.1	263 03.9	N13 18.4	044 18.6	N00 49.3
	23	067 38.5	212 04.2	S11 15.1	268 39.9	N11 43.9	278 06.4	N13 18.5	059 21.1	N00 49.3
14	00	082 41.0	227 04.7	S11 15.6	283 41.6	N11 43.7	293 08.9	N13 18.5	074 23.5	N00 49.3
	01	097 43.4	242 05.2	S11 16.1	298 43.4	N11 43.5	308 11.3	N13 18.5	089 26.0	N00 49.3
	02	112 45.9	257 05.6	S11 16.5	313 45.2	N11 43.3	323 13.8	N13 18.5	104 28.4	N00 49.3
	03	127 48.4	272 06.1	S11 17.0	328 46.9	N11 43.1	338 16.3	N13 18.5	119 30.9	N00 49.4
	04	142 50.8	287 06.5	S11 17.5	343 48.7	N11 42.9	353 18.7	N13 18.5	134 33.4	N00 49.4
	05	157 53.3	302 07.0	S11 18.0	358 50.5	N11 42.7	008 21.2	N13 18.5	149 35.8	N00 49.4
	06	172 55.8	317 07.4	S11 18.5	013 52.2	N11 42.5	023 23.7	N13 18.5	164 38.3	N00 49.4
	07	187 58.2	332 07.9	S11 19.0	028 54.0	N11 42.4	038 26.1	N13 18.6	179 40.7	N00 49.4
	08	203 00.7	347 08.3	S11 19.5	043 55.8	N11 42.2	053 28.6	N13 18.6	194 43.2	N00 49.4
	09	218 03.2	002 08.8	S11 20.0	058 57.5	N11 42.0	068 31.1	N13 18.6	209 45.6	N00 49.5
	10	233 05.6	017 09.2	S11 20.5	073 59.3	N11 41.8	083 33.6	N13 18.6	224 48.1	N00 49.5
	11	248 08.1	032 09.7	S11 21.0	089 01.1	N11 41.6	098 36.0	N13 18.6	239 50.5	N00 49.5
	12	263 10.5	047 10.1	S11 21.5	104 02.9	N11 41.4	113 38.5	N13 18.6	254 53.0	N00 49.5
	13	278 13.0	062 10.6	S11 22.0	119 04.6	N11 41.2	128 41.0	N13 18.6	269 55.4	N00 49.5
	14	293 15.5	077 11.0	S11 22.5	134 06.4	N11 41.0	143 43.4	N13 18.7	284 57.9	N00 49.5
	15	308 17.9	092 11.4	S11 23.0	149 08.2	N11 40.9	158 45.9	N13 18.7	300 00.4	N00 49.5
	16	323 20.4	107 11.9	S11 23.5	164 10.0	N11 40.7	173 48.4	N13 18.7	315 02.8	N00 49.6
	17	338 22.9	122 12.3	S11 24.0	179 11.8	N11 40.5	188 50.9	N13 18.7	330 05.3	N00 49.6
	18	353 25.3	137 12.8	S11 24.5	194 13.5	N11 40.3	203 53.3	N13 18.7	345 07.7	N00 49.6
	19	008 27.8	152 13.2	S11 25.0	209 15.3	N11 40.1	218 55.8	N13 18.7	000 10.2	N00 49.6
	20	023 30.3	167 13.6	S11 25.5	224 17.1	N11 39.9	233 58.3	N13 18.7	015 12.6	N00 49.6
	21	038 32.7	182 14.0	S11 26.0	239 18.9	N11 39.7	249 00.8	N13 18.8	030 15.1	N00 49.6
	22	053 35.2	197 14.5	S11 26.5	254 20.7	N11 39.6	264 03.2	N13 18.8	045 17.5	N00 49.7
	23	068 37.7	212 14.9	S11 27.0	269 22.5	N11 39.4	279 05.7	N13 18.8	060 20.0	N00 49.7

Venus	Mars	Jupiter	Saturn
12: v 0.5 d -0.5	12: v 1.7 d -0.2	12: v 2.5 d 0.0	12: v 2.5 d 0.0
13: v 0.5 d -0.5	13: v 1.8 d -0.2	13: v 2.5 d 0.0	13: v 2.5 d 0.0
14: v 0.4 d -0.5	14: v 1.8 d -0.2	14: v 2.5 d 0.0	14: v 2.5 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.2	S40 11.9
Achernar	335 18.7	S57 06.2
Acrux	172 58.5	S63 14.7
Adhara	255 04.3	S29 00.4
Al Na'ir	027 31.1	S46 50.0
Aldebaran	290 37.4	N16 33.8
Alioth	166 11.8	N55 48.5
Alkaid	152 51.1	N49 10.5
Alnilam	275 35.8	S01 11.1
Alphard	217 46.0	S08 46.5
Alphecca	126 02.7	N26 37.3
Alpheratz	357 33.0	N29 14.6
Altair	061 58.7	N08 56.5
Ankaa	353 05.5	S42 09.7
Antares	112 14.3	S26 29.4
Arcturus	145 46.7	N19 02.4
Atria	107 07.6	S69 04.4
Avior	234 13.6	S59 35.5
Bellatrix	278 20.8	N06 22.5
Betelgeuse	270 50.0	N07 24.7
Canopus	263 51.1	S52 42.5
Capella	280 19.0	N46 01.5
Deneb	049 25.0	N45 22.8
Denebola	182 23.4	N14 25.2
Diphda	348 45.6	S17 50.3
Dubhe	193 39.0	N61 36.0
Elnath	277 59.5	N28 37.8
Eltanin	090 42.0	N51 29.1
Enif	033 37.4	N10 00.0
Fomalhaut	015 12.8	S29 28.8
Gacrux	171 50.0	S57 15.6
Gienah	175 42.0	S17 41.4
Hadar	148 34.2	S60 30.0
Hamal	327 49.1	N23 35.6
Kaus Australi	083 30.8	S34 22.3
Kochab	137 20.9	N74 02.4
Markab	013 28.3	N15 21.2
Menkar	314 04.2	N04 11.8
Menkent	147 56.0	S36 30.0
Miaplacidus	221 37.4	S69 49.4
Mirfak	308 25.5	N49 57.6
Nunki	075 46.1	S26 15.8
Peacock	053 03.7	S56 39.0
Polaris	312 45.4	N89 22.8
Pollux	243 15.1	N27 57.5
Procyon	244 48.9	N05 09.3
Rasalhague	095 57.4	N12 32.4
Regulus	207 32.6	N11 50.0
Rigel	281 02.0	S08 10.2
Rigil Kentaur	139 38.6	S60 56.6
Sabik	102 01.3	S15 45.5
Schedar	349 29.0	N56 41.4
Shaula	096 08.6	S37 07.4
Sirius	258 24.5	S16 45.1
Spica	158 20.8	S11 18.1
Suhail	222 44.9	S43 32.3
Vega	080 32.6	N38 48.6
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	144 47.7	0852
Mars	201 09.1	0507
Jupiter	210 27.9	0431
Saturn	351 42.6	1903

2026 | DECEMBER 12 - DECEMBER 14

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
12	00	181 38.1	S23 03.5	146 23.7	S24 09.0	54.0	12.1	7.1
	01	196 37.8	S23 03.7	160 54.7	S24 01.9	54.0	12.1	7.2
	02	211 37.5	S23 03.8	175 25.9	S23 54.7	54.0	12.2	7.3
	03	226 37.2	S23 04.0	189 57.0	S23 47.4	54.0	12.2	7.4
	04	241 36.9	S23 04.2	204 28.3	S23 40.0	54.0	12.3	7.5
	05	256 36.6	S23 04.4	218 59.6	S23 32.4	54.0	12.4	7.6
	06	271 36.3	S23 04.6	233 30.9	S23 24.8	54.0	12.4	7.7
	07	286 36.0	S23 04.8	248 02.3	S23 17.1	54.0	12.5	7.8
	08	301 35.7	S23 05.0	262 33.8	S23 09.2	54.0	12.5	7.9
	09	316 35.4	S23 05.2	277 05.3	S23 01.3	54.0	12.6	8.0
	10	331 35.1	S23 05.3	291 36.9	S22 53.2	54.0	12.6	8.1
	11	346 34.8	S23 05.5	306 08.6	S22 45.1	54.0	12.7	8.2
	12	001 34.6	S23 05.7	320 40.3	S22 36.9	54.0	12.8	8.3
	13	016 34.3	S23 05.9	335 12.0	S22 28.5	54.0	12.8	8.4
	14	031 34.0	S23 06.1	349 43.8	S22 20.1	54.0	12.9	8.5
	15	046 33.7	S23 06.3	004 15.7	S22 11.5	54.1	12.9	8.6
	16	061 33.4	S23 06.4	018 47.7	S22 02.9	54.1	13.0	8.7
	17	076 33.1	S23 06.6	033 19.7	S21 54.2	54.1	13.1	8.8
	18	091 32.8	S23 06.8	047 51.7	S21 45.3	54.1	13.1	8.9
	19	106 32.5	S23 07.0	062 23.8	S21 36.4	54.1	13.2	9.0
	20	121 32.2	S23 07.1	076 56.0	S21 27.4	54.1	13.2	9.1
	21	136 31.9	S23 07.3	091 28.2	S21 18.3	54.1	13.3	9.2
	22	151 31.6	S23 07.5	106 00.5	S21 09.1	54.1	13.3	9.3
	23	166 31.3	S23 07.7	120 32.8	S20 59.8	54.1	13.4	9.4
13	00	181 31.0	S23 07.8	135 05.2	S20 50.4	54.1	13.5	9.5
	01	196 30.7	S23 08.0	149 37.7	S20 41.0	54.1	13.5	9.6
	02	211 30.4	S23 08.2	164 10.2	S20 31.4	54.1	13.6	9.6
	03	226 30.2	S23 08.3	178 42.7	S20 21.8	54.1	13.6	9.7
	04	241 29.9	S23 08.5	193 15.4	S20 12.0	54.1	13.7	9.8
	05	256 29.6	S23 08.7	207 48.0	S20 02.2	54.2	13.7	9.9
	06	271 29.3	S23 08.9	222 20.8	S19 52.3	54.2	13.8	10.0
	07	286 29.0	S23 09.0	236 53.5	S19 42.3	54.2	13.8	10.1
	08	301 28.7	S23 09.2	251 26.4	S19 32.3	54.2	13.9	10.2
	09	316 28.4	S23 09.4	265 59.3	S19 22.1	54.2	13.9	10.2
	10	331 28.1	S23 09.5	280 32.2	S19 11.9	54.2	14.0	10.3
	11	346 27.8	S23 09.7	295 05.2	S19 01.5	54.2	14.0	10.4
	12	001 27.5	S23 09.8	309 38.3	S18 51.1	54.2	14.1	10.5
	13	016 27.2	S23 10.0	324 11.4	S18 40.7	54.2	14.2	10.6
	14	031 26.9	S23 10.2	338 44.5	S18 30.1	54.3	14.2	10.6
	15	046 26.6	S23 10.3	353 17.7	S18 19.4	54.3	14.3	10.7
	16	061 26.3	S23 10.5	007 51.0	S18 08.7	54.3	14.3	10.8
	17	076 26.0	S23 10.7	022 24.3	S17 57.9	54.3	14.4	10.9
	18	091 25.7	S23 10.8	036 57.6	S17 47.1	54.3	14.4	10.9
	19	106 25.4	S23 11.0	051 31.0	S17 36.1	54.3	14.5	11.0
	20	121 25.1	S23 11.1	066 04.5	S17 25.1	54.3	14.5	11.1
	21	136 24.8	S23 11.3	080 38.0	S17 14.0	54.3	14.5	11.2
	22	151 24.5	S23 11.4	095 11.5	S17 02.8	54.4	14.6	11.2
	23	166 24.2	S23 11.6	109 45.1	S16 51.6	54.4	14.6	11.3
14	00	181 23.9	S23 11.7	124 18.7	S16 40.3	54.4	14.7	11.4
	01	196 23.6	S23 11.9	138 52.4	S16 28.9	54.4	14.7	11.5
	02	211 23.3	S23 12.0	153 26.2	S16 17.4	54.4	14.8	11.5
	03	226 23.0	S23 12.2	167 59.9	S16 05.9	54.4	14.8	11.6
	04	241 22.7	S23 12.3	182 33.7	S15 54.3	54.4	14.9	11.7
	05	256 22.5	S23 12.5	197 07.6	S15 42.6	54.5	14.9	11.7
	06	271 22.2	S23 12.6	211 41.5	S15 30.9	54.5	14.9	11.8
	07	286 21.9	S23 12.8	226 15.4	S15 19.1	54.5	15.0	11.9
	08	301 21.6	S23 12.9	240 49.4	S15 07.2	54.5	15.0	11.9
	09	316 21.3	S23 13.1	255 23.4	S14 55.3	54.5	15.1	12.0
	10	331 21.0	S23 13.2	269 57.5	S14 43.3	54.5	15.1	12.1
	11	346 20.7	S23 13.4	284 31.6	S14 31.2	54.5	15.1	12.1
	12	001 20.4	S23 13.5	299 05.7	S14 19.1	54.6	15.2	12.2
	13	016 20.1	S23 13.7	313 39.9	S14 06.9	54.6	15.2	12.2
	14	031 19.8	S23 13.8	328 14.1	S13 54.7	54.6	15.2	12.3
	15	046 19.5	S23 14.0	342 48.3	S13 42.3	54.6	15.3	12.4
	16	061 19.2	S23 14.1	357 22.6	S13 30.0	54.6	15.3	12.4
	17	076 18.9	S23 14.2	011 56.9	S13 17.5	54.7	15.3	12.5
	18	091 18.6	S23 14.4	026 31.2	S13 05.1	54.7	15.4	12.5
	19	106 18.3	S23 14.5	041 05.6	S12 52.5	54.7	15.4	12.6
	20	121 18.0	S23 14.6	055 39.9	S12 39.9	54.7	15.4	12.7
	21	136 17.7	S23 14.8	070 14.4	S12 27.2	54.7	15.5	12.7
	22	151 17.4	S23 14.9	084 48.8	S12 14.5	54.7	15.5	12.8
	23	166 17.1	S23 15.1	099 23.3	S12 01.7	54.8	15.5	12.8

Day 12 noon Sun: v -0.3 d -0.2 SD 16.2 | Moon SD 14.7

Day 13 noon Sun: v -0.3 d -0.2 SD 16.2 | Moon SD 14.8

Day 14 noon Sun: v -0.3 d -0.1 SD 16.2 | Moon SD 14.9

SUN: DECEMBER 13 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0817	1040	--	--	1308	1531
70N	0758	0944	--	--	1404	1550
68N	0742	0910	--	--	1438	1606
66N	0730	0846	1023	1325	1502	1619
64N	0719	0827	0943	1405	1521	1629
62N	0709	0811	0916	1432	1537	1639
60N	0701	0758	0855	1453	1551	1647
58N	0654	0746	0838	1511	1602	1654
56N	0647	0736	0823	1525	1612	1701
54N	0641	0727	0811	1537	1621	1707
52N	0636	0719	0800	1548	1629	1713
50N	0630	0712	0750	1558	1636	1718
45N	0619	0656	0730	1619	1652	1729
40N	0609	0643	0713	1635	1706	1740
35N	0559	0631	0659	1649	1717	1749
30N	0551	0621	0647	1701	1728	1757
25N	0543	0611	0636	1712	1737	1806
20N	0535	0602	0626	1722	1746	1814
15N	0527	0553	0617	1732	1755	1822
10N	0519	0545	0608	1741	1803	1830
05N	0510	0536	0559	1749	1812	1838
00N	0502	0528	0550	1758	1820	1847
05S	0453	0519	0542	1807	1829	1856
10S	0443	0510	0533	1815	1838	1905
15S	0432	0500	0524	1824	1848	1916
20S	0421	0450	0514	1834	1859	1928
25S	0407	0438	0504	1844	1910	1941
30S	0352	0425	0453	1856	1923	1957
35S	0334	0410	0440	1909	1938	2015
40S	0311	0352	0425	1924	1956	2038
45S	0241	0330	0407	1941	2019	2108
50S	0156	0301	0345	2004	2048	2153
55S	--	0218	0315	2033	2131	--
60S	--	0053	0232	2117	2258	--

MOON: RISE / SET | UTC HHMM

Lat	Day 12		Day 13		Day 14	
72N	--	--	--	--	1329	1917
70N	--	--	1356	1718	1302	1942
68N	--	--	1312	1800	1241	2001
66N	1314	1623	1243	1829	1224	2016
64N	1233	1703	1220	1850	1211	2028
62N	1205	1731	1202	1907	1159	2039
60N	1143	1752	1147	1921	1149	2048
58N	1125	1809	1135	1933	1141	2055
56N	1110	1824	1124	1943	1133	2102
54N	1057	1836	1114	1952	1126	2108
52N	1046	1847	1105	2000	1120	2113
50N	1036	1857	1057	2008	1115	2118
45N	1014	1917	1041	2023	1103	2129
40N	0957	1934	1027	2036	1053	2137
35N	0942	1947	1015	2046	1044	2145
30N	0930	1959	1005	2056	1036	2151
25N	0918	2010	0956	2104	1029	2157
20N	0908	2020	0947	2112	1023	2202
15N	0858	2029	0939	2119	1017	2207
10N	0849	2037	0932	2125	1011	2212
05N	0840	2045	0924	2132	1006	2216
00N	0831	2054	0917	2138	1001	2221
05S	0822	2102	0910	2145	0955	2225
10S	0813	2110	0902	2151	0950	2230
15S	0804	2118	0855	2158	0944	2235
20S	0754	2127	0847	2205	0938	2239
25S	0744	2137	0838	2212	0931	2244
30S	0732	2147	0828	2220	0924	2250
35S	0719	2158	0818	2229	0917	2256
40S	0704	2211	0806	2239	0908	2303
45S	0646	2227	0751	2251	0857	2311
50S	0623	2246	0734	2305	0844	2321
55S	0554	2310	0711	2323	0828	2333
60S	0510	2344	0639	2347	0806	2348

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | DECEMBER 15 - DECEMBER 17

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
15	00	083 40.1	227 15.3	S11 27.5	284 24.2	N11 39.2	294 08.2	N13 18.8	075 22.4	N00 49.7
	01	098 42.6	242 15.8	S11 28.0	299 26.0	N11 39.0	309 10.7	N13 18.8	090 24.9	N00 49.7
	02	113 45.0	257 16.2	S11 28.5	314 27.8	N11 38.8	324 13.1	N13 18.8	105 27.3	N00 49.7
	03	128 47.5	272 16.6	S11 29.0	329 29.6	N11 38.6	339 15.6	N13 18.8	120 29.8	N00 49.8
	04	143 50.0	287 17.0	S11 29.5	344 31.4	N11 38.5	354 18.1	N13 18.9	135 32.2	N00 49.8
	05	158 52.4	302 17.4	S11 30.0	359 33.2	N11 38.3	009 20.6	N13 18.9	150 34.7	N00 49.8
	06	173 54.9	317 17.9	S11 30.5	014 35.0	N11 38.1	024 23.1	N13 18.9	165 37.1	N00 49.8
	07	188 57.4	332 18.3	S11 31.0	029 36.8	N11 37.9	039 25.5	N13 18.9	180 39.6	N00 49.8
	08	203 59.8	347 18.7	S11 31.5	044 38.5	N11 37.7	054 28.0	N13 18.9	195 42.0	N00 49.8
	09	219 02.3	002 19.1	S11 32.1	059 40.3	N11 37.5	069 30.5	N13 18.9	210 44.5	N00 49.9
	10	234 04.8	017 19.5	S11 32.6	074 42.1	N11 37.4	084 33.0	N13 19.0	225 46.9	N00 49.9
	11	249 07.2	032 19.9	S11 33.1	089 43.9	N11 37.2	099 35.4	N13 19.0	240 49.4	N00 49.9
	12	264 09.7	047 20.3	S11 33.6	104 45.7	N11 37.0	114 37.9	N13 19.0	255 51.8	N00 49.9
	13	279 12.1	062 20.8	S11 34.1	119 47.5	N11 36.8	129 40.4	N13 19.0	270 54.3	N00 49.9
	14	294 14.6	077 21.2	S11 34.6	134 49.3	N11 36.6	144 42.9	N13 19.0	285 56.7	N00 49.9
	15	309 17.1	092 21.6	S11 35.1	149 51.1	N11 36.5	159 45.4	N13 19.0	300 59.2	N00 50.0
	16	324 19.5	107 22.0	S11 35.6	164 52.9	N11 36.3	174 47.8	N13 19.1	316 01.6	N00 50.0
	17	339 22.0	122 22.4	S11 36.1	179 54.7	N11 36.1	189 50.3	N13 19.1	331 04.1	N00 50.0
	18	354 24.5	137 22.8	S11 36.7	194 56.5	N11 35.9	204 52.8	N13 19.1	346 06.5	N00 50.0
	19	009 26.9	152 23.2	S11 37.2	209 58.3	N11 35.7	219 55.3	N13 19.1	001 09.0	N00 50.0
	20	024 29.4	167 23.6	S11 37.7	225 00.1	N11 35.6	234 57.8	N13 19.1	016 11.4	N00 50.1
	21	039 31.9	182 24.0	S11 38.2	240 01.9	N11 35.4	250 00.3	N13 19.1	031 13.9	N00 50.1
	22	054 34.3	197 24.4	S11 38.7	255 03.7	N11 35.2	265 02.7	N13 19.2	046 16.3	N00 50.1
	23	069 36.8	212 24.8	S11 39.2	270 05.5	N11 35.0	280 05.2	N13 19.2	061 18.8	N00 50.1
16	00	084 39.3	227 25.2	S11 39.8	285 07.3	N11 34.9	295 07.7	N13 19.2	076 21.2	N00 50.1
	01	099 41.7	242 25.6	S11 40.3	300 09.1	N11 34.7	310 10.2	N13 19.2	091 23.7	N00 50.1
	02	114 44.2	257 25.9	S11 40.8	315 10.9	N11 34.5	325 12.7	N13 19.2	106 26.1	N00 50.2
	03	129 46.6	272 26.3	S11 41.3	330 12.7	N11 34.3	340 15.2	N13 19.3	121 28.5	N00 50.2
	04	144 49.1	287 26.7	S11 41.8	345 14.5	N11 34.2	355 17.6	N13 19.3	136 31.0	N00 50.2
	05	159 51.6	302 27.1	S11 42.4	000 16.3	N11 34.0	010 20.1	N13 19.3	151 33.4	N00 50.2
	06	174 54.0	317 27.5	S11 42.9	015 18.2	N11 33.8	025 22.6	N13 19.3	166 35.9	N00 50.2
	07	189 56.5	332 27.9	S11 43.4	030 20.0	N11 33.6	040 25.1	N13 19.3	181 38.3	N00 50.3
	08	204 59.0	347 28.3	S11 43.9	045 21.8	N11 33.5	055 27.6	N13 19.4	196 40.8	N00 50.3
	09	220 01.4	002 28.6	S11 44.4	060 23.6	N11 33.3	070 30.1	N13 19.4	211 43.2	N00 50.3
	10	235 03.9	017 29.0	S11 45.0	075 25.4	N11 33.1	085 32.6	N13 19.4	226 45.7	N00 50.3
	11	250 06.4	032 29.4	S11 45.5	090 27.2	N11 32.9	100 35.1	N13 19.4	241 48.1	N00 50.3
	12	265 08.8	047 29.8	S11 46.0	105 29.0	N11 32.8	115 37.5	N13 19.4	256 50.6	N00 50.4
	13	280 11.3	062 30.2	S11 46.5	120 30.8	N11 32.6	130 40.0	N13 19.4	271 53.0	N00 50.4
	14	295 13.8	077 30.5	S11 47.1	135 32.7	N11 32.4	145 42.5	N13 19.5	286 55.4	N00 50.4
	15	310 16.2	092 30.9	S11 47.6	150 34.5	N11 32.3	160 45.0	N13 19.5	301 57.9	N00 50.4
	16	325 18.7	107 31.3	S11 48.1	165 36.3	N11 32.1	175 47.5	N13 19.5	317 00.3	N00 50.4
	17	340 21.1	122 31.6	S11 48.6	180 38.1	N11 31.9	190 50.0	N13 19.5	332 02.8	N00 50.5
	18	355 23.6	137 32.0	S11 49.2	195 39.9	N11 31.7	205 52.5	N13 19.5	347 05.2	N00 50.5
	19	010 26.1	152 32.4	S11 49.7	210 41.7	N11 31.6	220 55.0	N13 19.6	002 07.7	N00 50.5
	20	025 28.5	167 32.7	S11 50.2	225 43.6	N11 31.4	235 57.5	N13 19.6	017 10.1	N00 50.5
	21	040 31.0	182 33.1	S11 50.7	240 45.4	N11 31.2	250 59.9	N13 19.6	032 12.6	N00 50.5
	22	055 33.5	197 33.5	S11 51.3	255 47.2	N11 31.1	266 02.4	N13 19.6	047 15.0	N00 50.6
	23	070 35.9	212 33.8	S11 51.8	270 49.0	N11 30.9	281 04.9	N13 19.7	062 17.4	N00 50.6
17	00	085 38.4	227 34.2	S11 52.3	285 50.9	N11 30.7	296 07.4	N13 19.7	077 19.9	N00 50.6
	01	100 40.9	242 34.6	S11 52.9	300 52.7	N11 30.6	311 09.9	N13 19.7	092 22.3	N00 50.6
	02	115 43.3	257 34.9	S11 53.4	315 54.5	N11 30.4	326 12.4	N13 19.7	107 24.8	N00 50.6
	03	130 45.8	272 35.3	S11 53.9	330 56.3	N11 30.2	341 14.9	N13 19.7	122 27.2	N00 50.7
	04	145 48.2	287 35.6	S11 54.5	345 58.2	N11 30.0	356 17.4	N13 19.8	137 29.7	N00 50.7
	05	160 50.7	302 36.0	S11 55.0	001 00.0	N11 29.9	011 19.9	N13 19.8	152 32.1	N00 50.7
	06	175 53.2	317 36.3	S11 55.5	016 01.8	N11 29.7	026 22.4	N13 19.8	167 34.5	N00 50.7
	07	190 55.6	332 36.7	S11 56.1	031 03.6	N11 29.5	041 24.9	N13 19.8	182 37.0	N00 50.8
	08	205 58.1	347 37.0	S11 56.6	046 05.5	N11 29.4	056 27.4	N13 19.8	197 39.4	N00 50.8
	09	221 00.6	002 37.4	S11 57.1	061 07.3	N11 29.2	071 29.9	N13 19.9	212 41.9	N00 50.8
	10	236 03.0	017 37.7	S11 57.7	076 09.1	N11 29.1	086 32.4	N13 19.9	227 44.3	N00 50.8
	11	251 05.5	032 38.1	S11 58.2	091 11.0	N11 28.9	101 34.8	N13 19.9	242 46.8	N00 50.8
	12	266 08.0	047 38.4	S11 58.7	106 12.8	N11 28.7	116 37.3	N13 19.9	257 49.2	N00 50.9
	13	281 10.4	062 38.8	S11 59.3	121 14.6	N11 28.6	131 39.8	N13 20.0	272 51.6	N00 50.9
	14	296 12.9	077 39.1	S11 59.8	136 16.5	N11 28.4	146 42.3	N13 20.0	287 54.1	N00 50.9
	15	311 15.4	092 39.5	S12 00.3	151 18.3	N11 28.2	161 44.8	N13 20.0	302 56.5	N00 50.9
	16	326 17.8	107 39.8	S12 00.9	166 20.1	N11 28.1	176 47.3	N13 20.0	317 59.0	N00 50.9
	17	341 20.3	122 40.1	S12 01.4	181 22.0	N11 27.9	191 49.8	N13 20.0	333 01.4	N00 51.0
	18	356 22.7	137 40.5	S12 02.0	196 23.8	N11 27.7	206 52.3	N13 20.1	348 03.8	N00 51.0
	19	011 25.2	152 40.8	S12 02.5	211 25.7	N11 27.6	221 54.8	N13 20.1	003 06.3	N00 51.0
	20	026 27.7	167 41.1	S12 03.0	226 27.5	N11 27.4	236 57.3	N13 20.1	018 08.7	N00 51.0
	21	041 30.1	182 41.5	S12 03.6	241 29.3	N11 27.3	251 59.8	N13 20.1	033 11.2	N00 51.1
	22	056 32.6	197 41.8	S12 04.1	256 31.2	N11 27.1	267 02.3	N13 20.2	048 13.6	N00 51.1
	23	071 35.1	212 42.1	S12 04.7	271 33.0	N11 26.9	282 04.8	N13 20.2	063 16.0	N00 51.1

Venus	Mars	Jupiter	Saturn
15: v 0.4 d -0.5	15: v 1.8 d -0.2	15: v 2.5 d 0.0	15: v 2.4 d 0.0
16: v 0.4 d -0.5	16: v 1.8 d -0.2	16: v 2.5 d 0.0	16: v 2.4 d 0.0
17: v 0.3 d -0.5	17: v 1.8 d -0.2	17: v 2.5 d 0.0	17: v 2.4 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.2	S40 11.9
Achernar	335 18.7	S57 06.2
Acrux	172 58.4	S63 14.7
Adhara	255 04.2	S29 00.5
Al Na'ir	027 31.1	S46 50.0
Aldebaran	290 37.4	N16 33.8
Alioth	166 11.8	N55 48.5
Alkaid	152 51.0	N49 10.4
Alnilam	275 35.8	S01 11.1
Alphard	217 46.0	S08 46.5
Alphecca	126 02.7	N26 37.3
Alpheratz	357 33.1	N29 14.6
Altair	061 58.7	N08 56.5
Ankaa	353 05.5	S42 09.7
Antares	112 14.2	S26 29.4
Arcturus	145 46.7	N19 02.4
Atria	107 07.6	S69 04.4
Avior	234 13.6	S59 35.6
Bellatrix	278 20.8	N06 22.5
Betelgeuse	270 50.0	N07 24.7
Canopus	263 51.1	S52 42.5
Capella	280 19.0	N46 01.5
Deneb	049 25.0	N45 22.8
Denebola	182 23.3	N14 25.1
Diphda	348 45.6	S17 50.3
Dubhe	193 39.0	N61 36.0
Elnath	277 59.5	N28 37.8
Eltanin	090 42.0	N51 29.1
Enif	033 37.4	N10 00.0
Fomalhaut	015 12.8	S29 28.9
Gacrux	171 50.0	S57 15.6
Gienah	175 42.0	S17 41.4
Hadar	148 34.1	S60 30.0
Hamal	327 49.2	N23 35.6
Kaus Australi	083 30.8	S34 22.3
Kochab	137 20.8	N74 02.4
Markab	013 28.4	N15 21.2
Menkar	314 04.2	N04 11.8
Menkent	147 56.0	S36 30.0
Miaplacidus	221 37.3	S69 49.4
Mirfak	308 25.5	N49 57.6
Nunki	075 46.1	S26 15.8
Peacock	053 03.7	S56 39.0
Polaris	312 46.1	N89 22.8
Pollux	243 15.0	N27 57.5
Procyon	244 48.9	N05 09.3
Rasalhague	095 57.4	N12 32.4
Regulus	207 32.6	N11 50.0
Rigel	281 02.0	S08 10.2
Rigil Kentaur	139 38.6	S60 56.6
Sabik	102 01.3	S15 45.5
Schedar	349 29.0	N56 41.5
Shaula	096 08.6	S37 07.3
Sirius	258 24.5	S16 45.2
Spica	158 20.8	S11 18.1
Suhail	222 44.8	S43 32.3
Vega	080 32.6	N38 48.6
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	142 21.0	0850
Mars	200 20.2	0459
Jupiter	210 28.7	0419
Saturn	351 41.7	1852

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
15	00	181 16.8	S23 15.2	113 57.8	S11 48.9	54.8	15.5	12.9
	01	196 16.5	S23 15.3	128 32.3	S11 36.0	54.8	15.6	12.9
	02	211 16.2	S23 15.5	143 06.9	S11 23.1	54.8	15.6	13.0
	03	226 15.9	S23 15.6	157 41.5	S11 10.1	54.8	15.6	13.0
	04	241 15.6	S23 15.7	172 16.1	S10 57.1	54.9	15.6	13.1
	05	256 15.3	S23 15.8	186 50.7	S10 44.0	54.9	15.6	13.1
	06	271 15.0	S23 16.0	201 25.3	S10 30.8	54.9	15.7	13.2
	07	286 14.7	S23 16.1	216 00.0	S10 17.6	54.9	15.7	13.2
	08	301 14.4	S23 16.2	230 34.7	S10 04.4	55.0	15.7	13.3
	09	316 14.1	S23 16.4	245 09.4	S09 51.1	55.0	15.7	13.3
	10	331 13.8	S23 16.5	259 44.1	S09 37.8	55.0	15.7	13.4
	11	346 13.5	S23 16.6	274 18.8	S09 24.4	55.0	15.7	13.4
	12	001 13.2	S23 16.7	288 53.5	S09 10.9	55.0	15.8	13.5
	13	016 12.9	S23 16.9	303 28.3	S08 57.5	55.1	15.8	13.5
	14	031 12.6	S23 17.0	318 03.1	S08 43.9	55.1	15.8	13.6
	15	046 12.3	S23 17.1	332 37.9	S08 30.4	55.1	15.8	13.6
	16	061 12.0	S23 17.2	347 12.7	S08 16.8	55.1	15.8	13.7
	17	076 11.7	S23 17.3	001 47.5	S08 03.1	55.2	15.8	13.7
	18	091 11.4	S23 17.5	016 22.3	S07 49.4	55.2	15.8	13.7
	19	106 11.0	S23 17.6	030 57.1	S07 35.7	55.2	15.8	13.8
	20	121 10.7	S23 17.7	045 31.9	S07 21.9	55.2	15.8	13.8
	21	136 10.4	S23 17.8	060 06.7	S07 08.1	55.3	15.8	13.9
	22	151 10.1	S23 17.9	074 41.6	S06 54.2	55.3	15.8	13.9
	23	166 09.8	S23 18.1	089 16.4	S06 40.3	55.3	15.8	13.9
16	00	181 09.5	S23 18.2	103 51.2	S06 26.4	55.3	15.8	14.0
	01	196 09.2	S23 18.3	118 26.1	S06 12.4	55.4	15.8	14.0
	02	211 08.9	S23 18.4	133 00.9	S05 58.4	55.4	15.8	14.0
	03	226 08.6	S23 18.5	147 35.7	S05 44.3	55.4	15.8	14.1
	04	241 08.3	S23 18.6	162 10.6	S05 30.2	55.4	15.8	14.1
	05	256 08.0	S23 18.7	176 45.4	S05 16.1	55.5	15.8	14.2
	06	271 07.7	S23 18.8	191 20.2	S05 02.0	55.5	15.8	14.2
	07	286 07.4	S23 19.0	205 55.0	S04 47.8	55.5	15.8	14.2
	08	301 07.1	S23 19.1	220 29.8	S04 33.6	55.6	15.8	14.2
	09	316 06.8	S23 19.2	235 04.6	S04 19.3	55.6	15.8	14.3
	10	331 06.5	S23 19.3	249 39.4	S04 05.0	55.6	15.8	14.3
	11	346 06.2	S23 19.4	264 14.2	S03 50.7	55.6	15.8	14.3
	12	001 05.9	S23 19.5	278 48.9	S03 36.4	55.7	15.7	14.4
	13	016 05.6	S23 19.6	293 23.7	S03 22.0	55.7	15.7	14.4
	14	031 05.3	S23 19.7	307 58.4	S03 07.6	55.7	15.7	14.4
	15	046 05.0	S23 19.8	322 33.1	S02 53.2	55.8	15.7	14.5
	16	061 04.7	S23 19.9	337 07.8	S02 38.7	55.8	15.7	14.5
	17	076 04.4	S23 20.0	351 42.5	S02 24.3	55.8	15.7	14.5
	18	091 04.1	S23 20.1	006 17.2	S02 09.8	55.9	15.6	14.5
	19	106 03.8	S23 20.2	020 51.8	S01 55.2	55.9	15.6	14.5
	20	121 03.5	S23 20.3	035 26.4	S01 40.7	55.9	15.6	14.6
	21	136 03.2	S23 20.4	050 01.0	S01 26.1	55.9	15.6	14.6
	22	151 02.9	S23 20.5	064 35.6	S01 11.5	56.0	15.5	14.6
	23	166 02.6	S23 20.6	079 10.1	S00 56.9	56.0	15.5	14.6
17	00	181 02.3	S23 20.7	093 44.7	S00 42.3	56.0	15.5	14.7
	01	196 01.9	S23 20.8	108 19.1	S00 27.6	56.1	15.5	14.7
	02	211 01.6	S23 20.9	122 53.6	S00 12.9	56.1	15.4	14.7
	03	226 01.3	S23 21.0	137 28.0	N00 01.8	56.1	15.4	14.7
	04	241 01.0	S23 21.1	152 02.4	N00 16.5	56.2	15.4	14.7
	05	256 00.7	S23 21.2	166 36.8	N00 31.2	56.2	15.3	14.7
	06	271 00.4	S23 21.2	181 11.1	N00 45.9	56.2	15.3	14.8
	07	286 00.1	S23 21.3	195 45.4	N01 00.7	56.3	15.2	14.8
	08	300 59.8	S23 21.4	210 19.6	N01 15.5	56.3	15.2	14.8
	09	315 59.5	S23 21.5	224 53.8	N01 30.2	56.3	15.2	14.8
	10	330 59.2	S23 21.6	239 28.0	N01 45.0	56.4	15.1	14.8
	11	345 58.9	S23 21.7	254 02.1	N01 59.8	56.4	15.1	14.8
	12	000 58.6	S23 21.8	268 36.2	N02 14.6	56.4	15.0	14.8
	13	015 58.3	S23 21.9	283 10.2	N02 29.5	56.5	15.0	14.8
	14	030 58.0	S23 21.9	297 44.2	N02 44.3	56.5	14.9	14.8
	15	045 57.7	S23 22.0	312 18.1	N02 59.1	56.5	14.9	14.8
	16	060 57.4	S23 22.1	326 52.0	N03 14.0	56.6	14.8	14.9
	17	075 57.1	S23 22.2	341 25.9	N03 28.8	56.6	14.8	14.9
	18	090 56.8	S23 22.3	355 59.7	N03 43.7	56.7	14.7	14.9
	19	105 56.5	S23 22.3	010 33.4	N03 58.6	56.7	14.7	14.9
	20	120 56.1	S23 22.4	025 07.1	N04 13.4	56.7	14.6	14.9
	21	135 55.8	S23 22.5	039 40.7	N04 28.3	56.8	14.6	14.9
	22	150 55.5	S23 22.6	054 14.3	N04 43.1	56.8	14.5	14.9
	23	165 55.2	S23 22.7	068 47.8	N04 58.0	56.8	14.4	14.9

Day 15 noon Sun: v -0.3 d -0.1 SD 16.2 | Moon SD 15.0

Day 16 noon Sun: v -0.3 d -0.1 SD 16.3 | Moon SD 15.2

Day 17 noon Sun: v -0.3 d -0.1 SD 16.3 | Moon SD 15.4

SUN: DECEMBER 16 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0821	1049	--	--	1302	1530
70N	0801	0949	--	--	1402	1550
68N	0746	0915	--	--	1437	1605
66N	0733	0850	1029	1322	1502	1618
64N	0722	0830	0947	1404	1521	1629
62N	0712	0814	0919	1432	1537	1639
60N	0704	0801	0858	1453	1551	1647
58N	0656	0749	0841	1510	1602	1655
56N	0650	0739	0826	1525	1612	1701
54N	0644	0730	0813	1538	1621	1708
52N	0638	0722	0802	1549	1630	1713
50N	0633	0714	0753	1558	1637	1718
45N	0621	0658	0732	1619	1653	1730
40N	0611	0645	0715	1636	1706	1740
35N	0601	0633	0701	1650	1718	1750
30N	0553	0622	0649	1702	1729	1759
25N	0544	0613	0638	1713	1738	1807
20N	0536	0604	0628	1723	1748	1815
15N	0528	0555	0618	1733	1756	1823
10N	0520	0546	0609	1742	1805	1831
05N	0512	0538	0600	1751	1813	1839
00N	0503	0529	0552	1759	1822	1848
05S	0454	0521	0543	1808	1831	1857
10S	0444	0511	0534	1817	1840	1907
15S	0434	0501	0525	1826	1850	1918
20S	0422	0451	0515	1836	1900	1930
25S	0408	0439	0505	1846	1912	1943
30S	0353	0426	0453	1858	1925	1959
35S	0334	0411	0441	1911	1940	2017
40S	0311	0353	0426	1926	1959	2040
45S	0241	0330	0408	1944	2021	2111
50S	0156	0301	0345	2006	2051	2156
55S	--	0218	0315	2036	2134	--
60S	--	0048	0231	2121	2305	--

MOON: RISE / SET | UTC HHMM

Lat	Day 15		Day 16		Day 17	
72N	1244	2130	1211	2333	1140	--
70N	1231	2141	1206	2334	1143	--
68N	1220	2150	1202	2335	1145	--
66N	1211	2157	1158	2336	1147	--
64N	1203	2203	1155	2337	1148	--
62N	1156	2208	1153	2337	1150	--
60N	1150	2213	1151	2338	1151	--
58N	1145	2217	1149	2338	1152	--
56N	1141	2220	1147	2339	1153	--
54N	1136	2223	1145	2339	1154	--
52N	1133	2226	1144	2340	1155	--
50N	1129	2229	1142	2340	1156	--
45N	1122	2234	1140	2341	1157	--
40N	1115	2239	1137	2341	1159	--
35N	1110	2243	1135	2342	1200	--
30N	1105	2246	1133	2342	1201	--
25N	1101	2250	1131	2343	1202	--
20N	1057	2252	1130	2343	1203	--
15N	1053	2255	1128	2343	1204	--
10N	1050	2258	1127	2344	1205	--
05N	1046	2300	1126	2344	1205	--
00N	1043	2303	1124	2344	1206	--
05S	1039	2305	1123	2344	1207	--
10S	1036	2307	1121	2345	1208	--
15S	1032	2310	1120	2345	1209	--
20S	1028	2312	1119	2345	1210	--
25S	1024	2315	1117	2346	1211	--
30S	1020	2318	1115	2346	1212	--
35S	1015	2322	1113	2346	1213	--
40S	1009	2325	1111	2347	1214	--
45S	1003	2330	1109	2347	1216	--
50S	0955	2335	1106	2348	1218	--
55S	0945	2341	1102	2348	1220	2356
60S	0932	2349	1057	2349	1223	2349

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | DECEMBER 18 - DECEMBER 20

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
18	00	086 37.5	227 42.5	S12 05.2	286 34.9	N11 26.8	297 07.3	N13 20.2	078 18.5	N00 51.1
	01	101 40.0	242 42.8	S12 05.7	301 36.7	N11 26.6	312 09.8	N13 20.2	093 20.9	N00 51.1
	02	116 42.5	257 43.1	S12 06.3	316 38.6	N11 26.4	327 12.3	N13 20.3	108 23.3	N00 51.2
	03	131 44.9	272 43.5	S12 06.8	331 40.4	N11 26.3	342 14.8	N13 20.3	123 25.8	N00 51.2
	04	146 47.4	287 43.8	S12 07.4	346 42.2	N11 26.1	357 17.3	N13 20.3	138 28.2	N00 51.2
	05	161 49.9	302 44.1	S12 07.9	001 44.1	N11 26.0	012 19.8	N13 20.3	153 30.7	N00 51.2
	06	176 52.3	317 44.4	S12 08.5	016 45.9	N11 25.8	027 22.3	N13 20.4	168 33.1	N00 51.3
	07	191 54.8	332 44.7	S12 09.0	031 47.8	N11 25.7	042 24.8	N13 20.4	183 35.5	N00 51.3
	08	206 57.2	347 45.1	S12 09.5	046 49.6	N11 25.5	057 27.3	N13 20.4	198 38.0	N00 51.3
	09	221 59.7	002 45.4	S12 10.1	061 51.5	N11 25.3	072 29.8	N13 20.4	213 40.4	N00 51.3
	10	237 02.2	017 45.7	S12 10.6	076 53.3	N11 25.2	087 32.3	N13 20.5	228 42.9	N00 51.3
	11	252 04.6	032 46.0	S12 11.2	091 55.2	N11 25.0	102 34.8	N13 20.5	243 45.3	N00 51.4
	12	267 07.1	047 46.3	S12 11.7	106 57.0	N11 24.9	117 37.3	N13 20.5	258 47.7	N00 51.4
	13	282 09.6	062 46.6	S12 12.3	121 58.9	N11 24.7	132 39.8	N13 20.5	273 50.2	N00 51.4
	14	297 12.0	077 47.0	S12 12.8	137 00.8	N11 24.6	147 42.3	N13 20.6	288 52.6	N00 51.4
	15	312 14.5	092 47.3	S12 13.4	152 02.6	N11 24.4	162 44.8	N13 20.6	303 55.0	N00 51.5
	16	327 17.0	107 47.6	S12 13.9	167 04.5	N11 24.2	177 47.4	N13 20.6	318 57.5	N00 51.5
	17	342 19.4	122 47.9	S12 14.5	182 06.3	N11 24.1	192 49.9	N13 20.6	333 59.9	N00 51.5
	18	357 21.9	137 48.2	S12 15.0	197 08.2	N11 23.9	207 52.4	N13 20.7	349 02.3	N00 51.5
	19	012 24.3	152 48.5	S12 15.6	212 10.0	N11 23.8	222 54.9	N13 20.7	004 04.8	N00 51.6
	20	027 26.8	167 48.8	S12 16.1	227 11.9	N11 23.6	237 57.4	N13 20.7	019 07.2	N00 51.6
	21	042 29.3	182 49.1	S12 16.7	242 13.8	N11 23.5	252 59.9	N13 20.7	034 09.6	N00 51.6
	22	057 31.7	197 49.4	S12 17.2	257 15.6	N11 23.3	268 02.4	N13 20.8	049 12.1	N00 51.6
	23	072 34.2	212 49.7	S12 17.8	272 17.5	N11 23.2	283 04.9	N13 20.8	064 14.5	N00 51.7
19	00	087 36.7	227 50.0	S12 18.3	287 19.3	N11 23.0	298 07.4	N13 20.8	079 17.0	N00 51.7
	01	102 39.1	242 50.3	S12 18.9	302 21.2	N11 22.9	313 09.9	N13 20.8	094 19.4	N00 51.7
	02	117 41.6	257 50.6	S12 19.4	317 23.1	N11 22.7	328 12.4	N13 20.9	109 21.8	N00 51.7
	03	132 44.1	272 50.9	S12 20.0	332 24.9	N11 22.6	343 14.9	N13 20.9	124 24.3	N00 51.8
	04	147 46.5	287 51.2	S12 20.5	347 26.8	N11 22.4	358 17.4	N13 20.9	139 26.7	N00 51.8
	05	162 49.0	302 51.5	S12 21.1	002 28.7	N11 22.3	013 19.9	N13 20.9	154 29.1	N00 51.8
	06	177 51.5	317 51.8	S12 21.6	017 30.5	N11 22.1	028 22.5	N13 21.0	169 31.6	N00 51.8
	07	192 53.9	332 52.1	S12 22.2	032 32.4	N11 22.0	043 25.0	N13 21.0	184 34.0	N00 51.9
	08	207 56.4	347 52.4	S12 22.8	047 34.3	N11 21.8	058 27.5	N13 21.0	199 36.4	N00 51.9
	09	222 58.8	002 52.6	S12 23.3	062 36.2	N11 21.7	073 30.0	N13 21.1	214 38.9	N00 51.9
	10	238 01.3	017 52.9	S12 23.9	077 38.0	N11 21.5	088 32.5	N13 21.1	229 41.3	N00 51.9
	11	253 03.8	032 53.2	S12 24.4	092 39.9	N11 21.4	103 35.0	N13 21.1	244 43.7	N00 52.0
	12	268 06.2	047 53.5	S12 25.0	107 41.8	N11 21.2	118 37.5	N13 21.1	259 46.2	N00 52.0
	13	283 08.7	062 53.8	S12 25.5	122 43.6	N11 21.1	133 40.0	N13 21.2	274 48.6	N00 52.0
	14	298 11.2	077 54.1	S12 26.1	137 45.5	N11 20.9	148 42.5	N13 21.2	289 51.0	N00 52.0
	15	313 13.6	092 54.3	S12 26.7	152 47.4	N11 20.8	163 45.1	N13 21.2	304 53.5	N00 52.1
	16	328 16.1	107 54.6	S12 27.2	167 49.3	N11 20.6	178 47.6	N13 21.2	319 55.9	N00 52.1
	17	343 18.6	122 54.9	S12 27.8	182 51.2	N11 20.5	193 50.1	N13 21.3	334 58.3	N00 52.1
	18	358 21.0	137 55.2	S12 28.3	197 53.0	N11 20.3	208 52.6	N13 21.3	350 00.7	N00 52.1
	19	013 23.5	152 55.5	S12 28.9	212 54.9	N11 20.2	223 55.1	N13 21.3	005 03.2	N00 52.2
	20	028 26.0	167 55.7	S12 29.4	227 56.8	N11 20.0	238 57.6	N13 21.4	020 05.6	N00 52.2
	21	043 28.4	182 56.0	S12 30.0	242 58.7	N11 19.9	254 00.1	N13 21.4	035 08.0	N00 52.2
	22	058 30.9	197 56.3	S12 30.6	258 00.6	N11 19.7	269 02.6	N13 21.4	050 10.5	N00 52.2
	23	073 33.3	212 56.5	S12 31.1	273 02.4	N11 19.6	284 05.2	N13 21.5	065 12.9	N00 52.3
20	00	088 35.8	227 56.8	S12 31.7	288 04.3	N11 19.5	299 07.7	N13 21.5	080 15.3	N00 52.3
	01	103 38.3	242 57.1	S12 32.2	303 06.2	N11 19.3	314 10.2	N13 21.5	095 17.8	N00 52.3
	02	118 40.7	257 57.3	S12 32.8	318 08.1	N11 19.2	329 12.7	N13 21.5	110 20.2	N00 52.3
	03	133 43.2	272 57.6	S12 33.4	333 10.0	N11 19.0	344 15.2	N13 21.6	125 22.6	N00 52.4
	04	148 45.7	287 57.9	S12 33.9	348 11.9	N11 18.9	359 17.7	N13 21.6	140 25.1	N00 52.4
	05	163 48.1	302 58.1	S12 34.5	003 13.7	N11 18.7	014 20.3	N13 21.6	155 27.5	N00 52.4
	06	178 50.6	317 58.4	S12 35.1	018 15.6	N11 18.6	029 22.8	N13 21.7	170 29.9	N00 52.4
	07	193 53.1	332 58.7	S12 35.6	033 17.5	N11 18.5	044 25.3	N13 21.7	185 32.3	N00 52.5
	08	208 55.5	347 58.9	S12 36.2	048 19.4	N11 18.3	059 27.8	N13 21.7	200 34.8	N00 52.5
	09	223 58.0	002 59.2	S12 36.8	063 21.3	N11 18.2	074 30.3	N13 21.7	215 37.2	N00 52.5
	10	239 00.4	017 59.4	S12 37.3	078 23.2	N11 18.0	089 32.9	N13 21.8	230 39.6	N00 52.5
	11	254 02.9	032 59.7	S12 37.9	093 25.1	N11 17.9	104 35.4	N13 21.8	245 42.1	N00 52.6
	12	269 05.4	047 59.9	S12 38.4	108 27.0	N11 17.7	119 37.9	N13 21.8	260 44.5	N00 52.6
	13	284 07.8	063 00.2	S12 39.0	123 28.9	N11 17.6	134 40.4	N13 21.9	275 46.9	N00 52.6
	14	299 10.3	078 00.4	S12 39.6	138 30.8	N11 17.5	149 42.9	N13 21.9	290 49.3	N00 52.7
	15	314 12.8	093 00.7	S12 40.1	153 32.7	N11 17.3	164 45.4	N13 21.9	305 51.8	N00 52.7
	16	329 15.2	108 01.0	S12 40.7	168 34.6	N11 17.2	179 48.0	N13 22.0	320 54.2	N00 52.7
	17	344 17.7	123 01.2	S12 41.3	183 36.5	N11 17.1	194 50.5	N13 22.0	335 56.6	N00 52.7
	18	359 20.2	138 01.4	S12 41.8	198 38.4	N11 16.9	209 53.0	N13 22.0	350 59.1	N00 52.8
	19	014 22.6	153 01.7	S12 42.4	213 40.3	N11 16.8	224 55.5	N13 22.1	006 01.5	N00 52.8
	20	029 25.1	168 01.9	S12 43.0	228 42.2	N11 16.6	239 58.1	N13 22.1	021 03.9	N00 52.8
	21	044 27.6	183 02.2	S12 43.6	243 44.1	N11 16.5	255 00.6	N13 22.1	036 06.3	N00 52.8
	22	059 30.0	198 02.4	S12 44.1	258 46.0	N11 16.4	270 03.1	N13 22.2	051 08.8	N00 52.9
	23	074 32.5	213 02.7	S12 44.7	273 47.9	N11 16.2	285 05.6	N13 22.2	066 11.2	N00 52.9

Venus	Mars	Jupiter	Saturn
18: v 0.3 d -0.5	18: v 1.9 d -0.2	18: v 2.5 d 0.0	18: v 2.4 d 0.0
19: v 0.3 d -0.6	19: v 1.9 d -0.1	19: v 2.5 d 0.0	19: v 2.4 d 0.0
20: v 0.3 d -0.6	20: v 1.9 d -0.1	20: v 2.5 d 0.0	20: v 2.4 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.2	S40 11.9
Achernar	335 18.7	S57 06.2
Acrux	172 58.4	S63 14.7
Adhara	255 04.2	S29 00.5
Al Na'ir	027 31.1	S46 50.0
Aldebaran	290 37.4	N16 33.8
Alioth	166 11.8	N55 48.5
Alkaid	152 51.0	N49 10.4
Alnilam	275 35.8	S01 11.1
Alphard	217 46.0	S08 46.5
Alphecca	126 02.7	N26 37.3
Alpheratz	357 33.1	N29 14.6
Altair	061 58.7	N08 56.4
Ankaa	353 05.5	S42 09.7
Antares	112 14.2	S26 29.4
Arcturus	145 46.7	N19 02.4
Atria	107 07.6	S69 04.4
Avior	234 13.5	S59 35.6
Bellatrix	278 20.8	N06 22.4
Betelgeuse	270 50.0	N07 24.7
Canopus	263 51.1	S52 42.5
Capella	280 19.0	N46 01.5
Deneb	049 25.1	N45 22.8
Denebola	182 23.3	N14 25.1
Diphda	348 45.6	S17 50.4
Dubhe	193 39.0	N61 36.0
Elnath	277 59.5	N28 37.8
Eltanin	090 42.0	N51 29.1
Enif	033 37.4	N10 00.0
Fomalhaut	015 12.9	S29 28.9
Gacrux	171 50.0	S57 15.6
Gienah	175 42.0	S17 41.4
Hadar	148 34.1	S60 30.0
Hamal	327 49.2	N23 35.6
Kaus Australi	083 30.8	S34 22.3
Kochab	137 20.8	N74 02.4
Markab	013 28.4	N15 21.2
Menkar	314 04.2	N04 11.8
Menkent	147 56.0	S36 30.0
Miaplacidus	221 37.3	S69 49.4
Mirfak	308 25.5	N49 57.6
Nunki	075 46.1	S26 15.8
Peacock	053 03.7	S56 39.0
Polaris	312 46.9	N89 22.9
Pollux	243 15.0	N27 57.5
Procyon	244 48.9	N05 09.3
Rasalhague	095 57.4	N12 32.4
Regulus	207 32.6	N11 50.0
Rigel	281 02.0	S08 10.2
Rigil Kentaur	139 38.5	S60 56.6
Sabik	102 01.3	S15 45.5
Schedar	349 29.0	N56 41.5
Shaula	096 08.6	S37 07.3
Sirius	258 24.5	S16 45.2
Spica	158 20.8	S11 18.1
Suhail	222 44.8	S43 32.3
Vega	080 32.6	N38 48.6
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	139 47.3	0848
Mars	199 35.5	0450
Jupiter	210 31.3	0407
Saturn	351 39.9	1840

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
18	00	180 54.9	S23 22.7	083 21.2	N05 12.9	56.9	14.4	14.9
	01	195 54.6	S23 22.8	097 54.6	N05 27.7	56.9	14.3	14.9
	02	210 54.3	S23 22.9	112 27.9	N05 42.6	57.0	14.3	14.9
	03	225 54.0	S23 23.0	127 01.2	N05 57.4	57.0	14.2	14.8
	04	240 53.7	S23 23.0	141 34.4	N06 12.3	57.0	14.1	14.8
	05	255 53.4	S23 23.1	156 07.5	N06 27.1	57.1	14.1	14.8
	06	270 53.1	S23 23.2	170 40.6	N06 42.0	57.1	14.0	14.8
	07	285 52.8	S23 23.2	185 13.5	N06 56.8	57.1	13.9	14.8
	08	300 52.5	S23 23.3	199 46.5	N07 11.6	57.2	13.8	14.8
	09	315 52.2	S23 23.4	214 19.3	N07 26.4	57.2	13.8	14.8
	10	330 51.9	S23 23.5	228 52.1	N07 41.2	57.3	13.7	14.8
	11	345 51.6	S23 23.5	243 24.8	N07 56.0	57.3	13.6	14.8
	12	000 51.2	S23 23.6	257 57.4	N08 10.7	57.3	13.5	14.7
	13	015 50.9	S23 23.6	272 29.9	N08 25.5	57.4	13.5	14.7
	14	030 50.6	S23 23.7	287 02.3	N08 40.2	57.4	13.4	14.7
	15	045 50.3	S23 23.8	301 34.7	N08 54.9	57.5	13.3	14.7
	16	060 50.0	S23 23.8	316 07.0	N09 09.6	57.5	13.2	14.7
	17	075 49.7	S23 23.9	330 39.2	N09 24.3	57.5	13.1	14.6
	18	090 49.4	S23 24.0	345 11.3	N09 38.9	57.6	13.0	14.6
	19	105 49.1	S23 24.0	359 43.4	N09 53.6	57.6	12.9	14.6
	20	120 48.8	S23 24.1	014 15.3	N10 08.2	57.7	12.8	14.6
	21	135 48.5	S23 24.1	028 47.1	N10 22.7	57.7	12.8	14.5
	22	150 48.2	S23 24.2	043 18.9	N10 37.3	57.7	12.7	14.5
	23	165 47.9	S23 24.3	057 50.6	N10 51.8	57.8	12.6	14.5
19	00	180 47.6	S23 24.3	072 22.1	N11 06.3	57.8	12.5	14.5
	01	195 47.2	S23 24.4	086 53.6	N11 20.7	57.9	12.4	14.4
	02	210 46.9	S23 24.4	101 25.0	N11 35.2	57.9	12.3	14.4
	03	225 46.6	S23 24.5	115 56.3	N11 49.5	57.9	12.2	14.4
	04	240 46.3	S23 24.5	130 27.4	N12 03.9	58.0	12.1	14.3
	05	255 46.0	S23 24.6	144 58.5	N12 18.2	58.0	12.0	14.3
	06	270 45.7	S23 24.6	159 29.5	N12 32.5	58.1	11.9	14.2
	07	285 45.4	S23 24.7	174 00.3	N12 46.7	58.1	11.8	14.2
	08	300 45.1	S23 24.7	188 31.1	N13 00.9	58.1	11.7	14.1
	09	315 44.8	S23 24.8	203 01.8	N13 15.0	58.2	11.5	14.1
	10	330 44.5	S23 24.8	217 32.3	N13 29.1	58.2	11.4	14.1
	11	345 44.2	S23 24.9	232 02.7	N13 43.2	58.3	11.3	14.0
	12	000 43.9	S23 24.9	246 33.1	N13 57.2	58.3	11.2	14.0
	13	015 43.6	S23 25.0	261 03.3	N14 11.2	58.3	11.1	13.9
	14	030 43.2	S23 25.0	275 33.4	N14 25.1	58.4	11.0	13.9
	15	045 42.9	S23 25.1	290 03.3	N14 38.9	58.4	10.9	13.8
	16	060 42.6	S23 25.1	304 33.2	N14 52.7	58.5	10.7	13.7
	17	075 42.3	S23 25.2	319 03.0	N15 06.5	58.5	10.6	13.7
	18	090 42.0	S23 25.2	333 32.6	N15 20.1	58.5	10.5	13.6
	19	105 41.7	S23 25.2	348 02.1	N15 33.8	58.6	10.4	13.6
	20	120 41.4	S23 25.3	002 31.5	N15 47.3	58.6	10.3	13.5
	21	135 41.1	S23 25.3	017 00.7	N16 00.8	58.7	10.1	13.4
	22	150 40.8	S23 25.4	031 29.9	N16 14.2	58.7	10.0	13.4
	23	165 40.5	S23 25.4	045 58.9	N16 27.6	58.8	9.9	13.3
20	00	180 40.2	S23 25.4	060 27.8	N16 40.9	58.8	9.8	13.2
	01	195 39.9	S23 25.5	074 56.6	N16 54.1	58.8	9.6	13.1
	02	210 39.5	S23 25.5	089 25.2	N17 07.3	58.9	9.5	13.1
	03	225 39.2	S23 25.5	103 53.7	N17 20.3	58.9	9.4	13.0
	04	240 38.9	S23 25.6	118 22.1	N17 33.3	59.0	9.2	12.9
	05	255 38.6	S23 25.6	132 50.3	N17 46.2	59.0	9.1	12.8
	06	270 38.3	S23 25.6	147 18.4	N17 59.1	59.0	9.0	12.8
	07	285 38.0	S23 25.7	161 46.4	N18 11.8	59.1	8.8	12.7
	08	300 37.7	S23 25.7	176 14.2	N18 24.5	59.1	8.7	12.6
	09	315 37.4	S23 25.7	190 42.0	N18 37.1	59.2	8.6	12.5
	10	330 37.1	S23 25.8	205 09.5	N18 49.6	59.2	8.4	12.4
	11	345 36.8	S23 25.8	219 37.0	N19 02.0	59.2	8.3	12.3
	12	000 36.5	S23 25.8	234 04.3	N19 14.3	59.3	8.2	12.2
	13	015 36.1	S23 25.8	248 31.4	N19 26.5	59.3	8.0	12.1
	14	030 35.8	S23 25.9	262 58.5	N19 38.6	59.4	7.9	12.0
	15	045 35.5	S23 25.9	277 25.4	N19 50.6	59.4	7.7	11.9
	16	060 35.2	S23 25.9	291 52.1	N20 02.5	59.4	7.6	11.8
	17	075 34.9	S23 25.9	306 18.7	N20 14.3	59.5	7.5	11.7
	18	090 34.6	S23 26.0	320 45.2	N20 26.1	59.5	7.3	11.6
	19	105 34.3	S23 26.0	335 11.5	N20 37.6	59.6	7.2	11.5
	20	120 34.0	S23 26.0	349 37.7	N20 49.1	59.6	7.0	11.4
	21	135 33.7	S23 26.0	004 03.7	N21 00.5	59.6	6.9	11.3
	22	150 33.4	S23 26.0	018 29.6	N21 11.8	59.7	6.8	11.1
	23	165 33.1	S23 26.1	032 55.4	N21 22.9	59.7	6.6	11.0

Day 18 noon Sun: v -0.3 d -0.1 SD 16.3 | Moon SD 15.6

Day 19 noon Sun: v -0.3 d 0.0 SD 16.3 | Moon SD 15.9

Day 20 noon Sun: v -0.3 d 0.0 SD 16.3 | Moon SD 16.2

SUN: DECEMBER 19 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0824	1056	--	--	1259	1530
70N	0804	0953	--	--	1401	1550
68N	0748	0918	--	--	1436	1606
66N	0735	0852	1033	1321	1502	1619
64N	0724	0833	0951	1404	1521	1630
62N	0714	0816	0922	1432	1538	1640
60N	0706	0803	0901	1453	1551	1648
58N	0659	0751	0843	1511	1603	1656
56N	0652	0741	0828	1526	1613	1702
54N	0646	0732	0816	1538	1622	1709
52N	0640	0724	0805	1550	1630	1714
50N	0635	0716	0755	1559	1638	1719
45N	0623	0700	0734	1620	1654	1731
40N	0612	0647	0717	1637	1708	1742
35N	0603	0635	0703	1651	1719	1751
30N	0554	0624	0651	1704	1730	1800
25N	0546	0614	0639	1715	1740	1808
20N	0538	0605	0629	1725	1749	1816
15N	0530	0557	0620	1734	1758	1824
10N	0522	0548	0611	1743	1806	1833
05N	0513	0539	0602	1752	1815	1841
00N	0505	0531	0553	1801	1823	1850
05S	0455	0522	0545	1810	1832	1859
10S	0446	0513	0536	1818	1842	1909
15S	0435	0503	0526	1828	1851	1919
20S	0423	0452	0517	1837	1902	1931
25S	0409	0440	0506	1848	1914	1945
30S	0354	0427	0455	1900	1927	2000
35S	0335	0412	0442	1913	1942	2019
40S	0312	0354	0427	1928	2000	2042
45S	0241	0331	0409	1946	2023	2113
50S	0156	0301	0346	2008	2053	2159
55S	--	0218	0316	2038	2137	--
60S	--	0046	0231	2123	2309	--

MOON: RISE / SET | UTC HHMM

Lat	Day 18		Day 19		Day 20	
72N	1106	0138	1021	0400	--	--
70N	1118	0130	1046	0338	0947	0622
68N	1127	0123	1105	0321	1031	0540
66N	1134	0118	1120	0307	1101	0512
64N	1141	0113	1133	0256	1123	0450
62N	1147	0109	1144	0247	1141	0433
60N	1152	0106	1153	0239	1157	0419
58N	1156	0103	1201	0232	1209	0407
56N	1200	0100	1209	0226	1221	0357
54N	1203	0058	1215	0220	1231	0348
52N	1207	0055	1221	0215	1239	0340
50N	1210	0053	1226	0211	1247	0333
45N	1216	0049	1238	0201	1304	0317
40N	1222	0045	1247	0153	1318	0305
35N	1226	0042	1256	0146	1330	0254
30N	1230	0040	1303	0140	1341	0245
25N	1234	0037	1310	0135	1350	0236
20N	1238	0035	1316	0130	1359	0229
15N	1241	0033	1321	0125	1407	0221
10N	1244	0031	1327	0121	1415	0215
05N	1247	0029	1332	0116	1422	0208
00N	1250	0027	1338	0112	1430	0202
05S	1253	0025	1343	0108	1437	0155
10S	1256	0023	1348	0104	1445	0149
15S	1300	0021	1354	0100	1453	0142
20S	1303	0019	1400	0055	1501	0135
25S	1307	0017	1406	0050	1510	0128
30S	1311	0014	1413	0045	1520	0120
35S	1315	0012	1421	0039	1531	0111
40S	1320	0009	1430	0032	1544	0100
45S	1326	0005	1440	0025	1559	0048
50S	1333	0001	1453	0016	1618	0034
55S	1342	--	1509	0004	1642	0016
60S	1354	2350	1531	2352	1716	2356

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | DECEMBER 21 - DECEMBER 23

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
21	00	089 34.9	228 02.9	S12 45.3	288 49.8	N11 16.1	300 08.1	N13 22.2	081 13.6	N00 52.9
	01	104 37.4	243 03.1	S12 45.8	303 51.7	N11 16.0	315 10.7	N13 22.2	096 16.0	N00 53.0
	02	119 39.9	258 03.4	S12 46.4	318 53.6	N11 15.8	330 13.2	N13 22.3	111 18.5	N00 53.0
	03	134 42.3	273 03.6	S12 47.0	333 55.5	N11 15.7	345 15.7	N13 22.3	126 20.9	N00 53.0
	04	149 44.8	288 03.8	S12 47.5	348 57.4	N11 15.6	000 18.2	N13 22.3	141 23.3	N00 53.0
	05	164 47.3	303 04.1	S12 48.1	003 59.3	N11 15.4	015 20.8	N13 22.4	156 25.7	N00 53.1
	06	179 49.7	318 04.3	S12 48.7	019 01.2	N11 15.3	030 23.3	N13 22.4	171 28.2	N00 53.1
	07	194 52.2	333 04.5	S12 49.3	034 03.1	N11 15.2	045 25.8	N13 22.4	186 30.6	N00 53.1
	08	209 54.7	348 04.8	S12 49.8	049 05.0	N11 15.0	060 28.3	N13 22.5	201 33.0	N00 53.2
	09	224 57.1	003 05.0	S12 50.4	064 07.0	N11 14.9	075 30.9	N13 22.5	216 35.4	N00 53.2
	10	239 59.6	018 05.2	S12 51.0	079 08.9	N11 14.8	090 33.4	N13 22.5	231 37.9	N00 53.2
	11	255 02.1	033 05.5	S12 51.5	094 10.8	N11 14.6	105 35.9	N13 22.6	246 40.3	N00 53.2
	12	270 04.5	048 05.7	S12 52.1	109 12.7	N11 14.5	120 38.4	N13 22.6	261 42.7	N00 53.3
	13	285 07.0	063 05.9	S12 52.7	124 14.6	N11 14.4	135 41.0	N13 22.6	276 45.1	N00 53.3
	14	300 09.4	078 06.1	S12 53.3	139 16.5	N11 14.2	150 43.5	N13 22.7	291 47.6	N00 53.3
	15	315 11.9	093 06.4	S12 53.8	154 18.5	N11 14.1	165 46.0	N13 22.7	306 50.0	N00 53.4
	16	330 14.4	108 06.6	S12 54.4	169 20.4	N11 14.0	180 48.6	N13 22.7	321 52.4	N00 53.4
	17	345 16.8	123 06.8	S12 55.0	184 22.3	N11 13.8	195 51.1	N13 22.8	336 54.8	N00 53.4
	18	000 19.3	138 07.0	S12 55.6	199 24.2	N11 13.7	210 53.6	N13 22.8	351 57.3	N00 53.4
	19	015 21.8	153 07.2	S12 56.1	214 26.1	N11 13.6	225 56.1	N13 22.8	006 59.7	N00 53.5
	20	030 24.2	168 07.4	S12 56.7	229 28.1	N11 13.5	240 58.7	N13 22.9	022 02.1	N00 53.5
	21	045 26.7	183 07.7	S12 57.3	244 30.0	N11 13.3	256 01.2	N13 22.9	037 04.5	N00 53.5
	22	060 29.2	198 07.9	S12 57.9	259 31.9	N11 13.2	271 03.7	N13 22.9	052 07.0	N00 53.6
	23	075 31.6	213 08.1	S12 58.4	274 33.8	N11 13.1	286 06.3	N13 23.0	067 09.4	N00 53.6
22	00	090 34.1	228 08.3	S12 59.0	289 35.8	N11 12.9	301 08.8	N13 23.0	082 11.8	N00 53.6
	01	105 36.6	243 08.5	S12 59.6	304 37.7	N11 12.8	316 11.3	N13 23.0	097 14.2	N00 53.6
	02	120 39.0	258 08.7	S13 00.2	319 39.6	N11 12.7	331 13.9	N13 23.1	112 16.6	N00 53.7
	03	135 41.5	273 08.9	S13 00.8	334 41.5	N11 12.6	346 16.4	N13 23.1	127 19.1	N00 53.7
	04	150 43.9	288 09.1	S13 01.3	349 43.5	N11 12.4	001 18.9	N13 23.2	142 21.5	N00 53.7
	05	165 46.4	303 09.3	S13 01.9	004 45.4	N11 12.3	016 21.5	N13 23.2	157 23.9	N00 53.8
	06	180 48.9	318 09.5	S13 02.5	019 47.3	N11 12.2	031 24.0	N13 23.2	172 26.3	N00 53.8
	07	195 51.3	333 09.7	S13 03.1	034 49.3	N11 12.1	046 26.5	N13 23.3	187 28.8	N00 53.8
	08	210 53.8	348 09.9	S13 03.7	049 51.2	N11 11.9	061 29.1	N13 23.3	202 31.2	N00 53.9
	09	225 56.3	003 10.1	S13 04.2	064 53.1	N11 11.8	076 31.6	N13 23.3	217 33.6	N00 53.9
	10	240 58.7	018 10.3	S13 04.8	079 55.1	N11 11.7	091 34.1	N13 23.4	232 36.0	N00 53.9
	11	256 01.2	033 10.5	S13 05.4	094 57.0	N11 11.6	106 36.7	N13 23.4	247 38.4	N00 54.0
	12	271 03.7	048 10.7	S13 06.0	109 58.9	N11 11.4	121 39.2	N13 23.4	262 40.9	N00 54.0
	13	286 06.1	063 10.9	S13 06.6	125 00.9	N11 11.3	136 41.7	N13 23.5	277 43.3	N00 54.0
	14	301 08.6	078 11.1	S13 07.1	140 02.8	N11 11.2	151 44.3	N13 23.5	292 45.7	N00 54.0
	15	316 11.1	093 11.3	S13 07.7	155 04.7	N11 11.1	166 46.8	N13 23.5	307 48.1	N00 54.1
	16	331 13.5	108 11.5	S13 08.3	170 06.7	N11 11.0	181 49.3	N13 23.6	322 50.5	N00 54.1
	17	346 16.0	123 11.7	S13 08.9	185 08.6	N11 10.8	196 51.9	N13 23.6	337 53.0	N00 54.1
	18	001 18.4	138 11.9	S13 09.5	200 10.6	N11 10.7	211 54.4	N13 23.7	352 55.4	N00 54.2
	19	016 20.9	153 12.1	S13 10.0	215 12.5	N11 10.6	226 56.9	N13 23.7	007 57.8	N00 54.2
	20	031 23.4	168 12.3	S13 10.6	230 14.4	N11 10.5	241 59.5	N13 23.7	023 00.2	N00 54.2
	21	046 25.8	183 12.5	S13 11.2	245 16.4	N11 10.4	257 02.0	N13 23.8	038 02.6	N00 54.3
	22	061 28.3	198 12.6	S13 11.8	260 18.3	N11 10.2	272 04.6	N13 23.8	053 05.0	N00 54.3
	23	076 30.8	213 12.8	S13 12.4	275 20.3	N11 10.1	287 07.1	N13 23.8	068 07.5	N00 54.3
23	00	091 33.2	228 13.0	S13 13.0	290 22.2	N11 10.0	302 09.6	N13 23.9	083 09.9	N00 54.4
	01	106 35.7	243 13.2	S13 13.5	305 24.2	N11 09.9	317 12.2	N13 23.9	098 12.3	N00 54.4
	02	121 38.2	258 13.4	S13 14.1	320 26.1	N11 09.8	332 14.7	N13 24.0	113 14.7	N00 54.4
	03	136 40.6	273 13.5	S13 14.7	335 28.1	N11 09.6	347 17.3	N13 24.0	128 17.1	N00 54.4
	04	151 43.1	288 13.7	S13 15.3	350 30.0	N11 09.5	002 19.8	N13 24.0	143 19.6	N00 54.5
	05	166 45.6	303 13.9	S13 15.9	005 32.0	N11 09.4	017 22.3	N13 24.1	158 22.0	N00 54.5
	06	181 48.0	318 14.1	S13 16.5	020 33.9	N11 09.3	032 24.9	N13 24.1	173 24.4	N00 54.5
	07	196 50.5	333 14.3	S13 17.0	035 35.9	N11 09.2	047 27.4	N13 24.1	188 26.8	N00 54.6
	08	211 52.9	348 14.4	S13 17.6	050 37.8	N11 09.1	062 30.0	N13 24.2	203 29.2	N00 54.6
	09	226 55.4	003 14.6	S13 18.2	065 39.8	N11 08.9	077 32.5	N13 24.2	218 31.6	N00 54.6
	10	241 57.9	018 14.8	S13 18.8	080 41.7	N11 08.8	092 35.0	N13 24.3	233 34.1	N00 54.7
	11	257 00.3	033 14.9	S13 19.4	095 43.7	N11 08.7	107 37.6	N13 24.3	248 36.5	N00 54.7
	12	272 02.8	048 15.1	S13 20.0	110 45.7	N11 08.6	122 40.1	N13 24.3	263 38.9	N00 54.7
	13	287 05.3	063 15.3	S13 20.6	125 47.6	N11 08.5	137 42.7	N13 24.4	278 41.3	N00 54.8
	14	302 07.7	078 15.4	S13 21.1	140 49.6	N11 08.4	152 45.2	N13 24.4	293 43.7	N00 54.8
	15	317 10.2	093 15.6	S13 21.7	155 51.5	N11 08.3	167 47.8	N13 24.5	308 46.1	N00 54.8
	16	332 12.7	108 15.8	S13 22.3	170 53.5	N11 08.2	182 50.3	N13 24.5	323 48.5	N00 54.9
	17	347 15.1	123 15.9	S13 22.9	185 55.5	N11 08.0	197 52.8	N13 24.5	338 51.0	N00 54.9
	18	002 17.6	138 16.1	S13 23.5	200 57.4	N11 07.9	212 55.4	N13 24.6	353 53.4	N00 54.9
	19	017 20.1	153 16.3	S13 24.1	215 59.4	N11 07.8	227 57.9	N13 24.6	008 55.8	N00 55.0
	20	032 22.5	168 16.4	S13 24.7	231 01.4	N11 07.7	243 00.5	N13 24.6	023 58.2	N00 55.0
	21	047 25.0	183 16.6	S13 25.3	246 03.3	N11 07.6	258 03.0	N13 24.7	039 00.6	N00 55.0
	22	062 27.4	198 16.7	S13 25.9	261 05.3	N11 07.5	273 05.6	N13 24.7	054 03.0	N00 55.1
	23	077 29.9	213 16.9	S13 26.4	276 07.3	N11 07.4	288 08.1	N13 24.8	069 05.5	N00 55.1

Venus	Mars	Jupiter	Saturn
21: v 0.2 d -0.6	21: v 1.9 d -0.1	21: v 2.5 d 0.0	21: v 2.4 d 0.0
22: v 0.2 d -0.6	22: v 1.9 d -0.1	22: v 2.5 d 0.0	22: v 2.4 d 0.0
23: v 0.2 d -0.6	23: v 2.0 d -0.1	23: v 2.5 d 0.0	23: v 2.4 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.2	S40 11.9
Achernar	335 18.8	S57 06.2
Acrux	172 58.3	S63 14.7
Adhara	255 04.2	S29 00.5
Al Na'ir	027 31.2	S46 50.0
Aldebaran	290 37.4	N16 33.8
Alioth	166 11.7	N55 48.5
Alkaid	152 51.0	N49 10.4
Alnilam	275 35.8	S01 11.1
Alphard	217 46.0	S08 46.5
Alphecca	126 02.7	N26 37.3
Alpheratz	357 33.1	N29 14.6
Altair	061 58.7	N08 56.4
Ankaa	353 05.5	S42 09.7
Antares	112 14.2	S26 29.4
Arcturus	145 46.7	N19 02.4
Atria	107 07.5	S69 04.4
Avior	234 13.5	S59 35.6
Bellatrix	278 20.8	N06 22.4
Betelgeuse	270 50.0	N07 24.7
Canopus	263 51.1	S52 42.5
Capella	280 19.0	N46 01.5
Deneb	049 25.1	N45 22.8
Denebola	182 23.3	N14 25.1
Diphda	348 45.6	S17 50.4
Dubhe	193 38.9	N61 36.0
Elnath	277 59.4	N28 37.8
Eltanin	090 42.0	N51 29.1
Enif	033 37.4	N10 00.0
Fomalhaut	015 12.9	S29 28.9
Gacrux	171 49.9	S57 15.6
Gienah	175 42.0	S17 41.5
Hadar	148 34.0	S60 30.0
Hamal	327 49.2	N23 35.6
Kaus Australi	083 30.8	S34 22.3
Kochab	137 20.7	N74 02.3
Markab	013 28.4	N15 21.2
Menkar	314 04.2	N04 11.8
Menkent	147 55.9	S36 30.0
Miaplacidus	221 37.3	S69 49.4
Mirfak	308 25.5	N49 57.6
Nunki	075 46.1	S26 15.8
Peacock	053 03.7	S56 39.0
Polaris	312 47.5	N89 22.9
Pollux	243 15.0	N27 57.5
Procyon	244 48.8	N05 09.3
Rasalhague	095 57.4	N12 32.4
Regulus	207 32.6	N11 50.0
Rigel	281 02.0	S08 10.2
Rigil Kentaur	139 38.5	S60 56.6
Sabik	102 01.3	S15 45.5
Schedar	349 29.1	N56 41.5
Shaula	096 08.6	S37 07.3
Sirius	258 24.5	S16 45.2
Spica	158 20.7	S11 18.1
Suhail	222 44.8	S43 32.3
Vega	080 32.6	N38 48.5
Zubenelgenubi	136 54.5	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	137 07.1	0847
Mars	198 55.3	0441
Jupiter	210 35.5	0355
Saturn	351 37.2	1828

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
21	00	180 32.7	S23 26.1	047 21.0	N21 33.9	59.7	6.5	10.9
	01	195 32.4	S23 26.1	061 46.5	N21 44.8	59.8	6.3	10.8
	02	210 32.1	S23 26.1	076 11.8	N21 55.6	59.8	6.2	10.7
	03	225 31.8	S23 26.1	090 37.0	N22 06.3	59.9	6.0	10.5
	04	240 31.5	S23 26.1	105 02.0	N22 16.8	59.9	5.9	10.4
	05	255 31.2	S23 26.1	119 26.9	N22 27.2	59.9	5.8	10.3
	06	270 30.9	S23 26.2	133 51.7	N22 37.5	60.0	5.6	10.1
	07	285 30.6	S23 26.2	148 16.3	N22 47.6	60.0	5.5	10.0
	08	300 30.3	S23 26.2	162 40.8	N22 57.6	60.0	5.3	9.9
	09	315 30.0	S23 26.2	177 05.1	N23 07.4	60.1	5.2	9.7
	10	330 29.7	S23 26.2	191 29.3	N23 17.1	60.1	5.1	9.6
	11	345 29.3	S23 26.2	205 53.4	N23 26.7	60.1	4.9	9.4
	12	000 29.0	S23 26.2	220 17.3	N23 36.1	60.2	4.8	9.3
	13	015 28.7	S23 26.2	234 41.1	N23 45.4	60.2	4.6	9.1
	14	030 28.4	S23 26.2	249 04.7	N23 54.5	60.2	4.5	9.0
	15	045 28.1	S23 26.2	263 28.2	N24 03.5	60.3	4.4	8.8
	16	060 27.8	S23 26.2	277 51.6	N24 12.3	60.3	4.2	8.7
	17	075 27.5	S23 26.2	292 14.8	N24 21.0	60.3	4.1	8.5
	18	090 27.2	S23 26.2	306 37.9	N24 29.5	60.4	4.0	8.3
	19	105 26.9	S23 26.2	321 00.9	N24 37.8	60.4	3.8	8.2
	20	120 26.6	S23 26.2	335 23.7	N24 46.0	60.4	3.7	8.0
	21	135 26.2	S23 26.2	349 46.4	N24 54.0	60.5	3.6	7.8
	22	150 25.9	S23 26.2	004 09.0	N25 01.8	60.5	3.4	7.7
	23	165 25.6	S23 26.2	018 31.4	N25 09.5	60.5	3.3	7.5
22	00	180 25.3	S23 26.2	032 53.7	N25 17.0	60.6	3.2	7.3
	01	195 25.0	S23 26.2	047 15.9	N25 24.3	60.6	3.1	7.1
	02	210 24.7	S23 26.2	061 38.0	N25 31.5	60.6	2.9	7.0
	03	225 24.4	S23 26.2	076 00.0	N25 38.4	60.7	2.8	6.8
	04	240 24.1	S23 26.2	090 21.8	N25 45.2	60.7	2.7	6.6
	05	255 23.8	S23 26.2	104 43.5	N25 51.8	60.7	2.6	6.4
	06	270 23.5	S23 26.2	119 05.1	N25 58.3	60.7	2.5	6.2
	07	285 23.1	S23 26.2	133 26.6	N26 04.5	60.8	2.4	6.1
	08	300 22.8	S23 26.2	147 47.9	N26 10.6	60.8	2.3	5.9
	09	315 22.5	S23 26.2	162 09.2	N26 16.4	60.8	2.2	5.7
	10	330 22.2	S23 26.2	176 30.4	N26 22.1	60.8	2.1	5.5
	11	345 21.9	S23 26.2	190 51.4	N26 27.6	60.9	2.0	5.3
	12	000 21.6	S23 26.2	205 12.4	N26 32.9	60.9	1.9	5.1
	13	015 21.3	S23 26.1	219 33.2	N26 37.9	60.9	1.8	4.9
	14	030 21.0	S23 26.1	233 54.0	N26 42.8	60.9	1.7	4.7
	15	045 20.7	S23 26.1	248 14.6	N26 47.5	61.0	1.6	4.5
	16	060 20.4	S23 26.1	262 35.2	N26 52.0	61.0	1.5	4.3
	17	075 20.1	S23 26.1	276 55.7	N26 56.3	61.0	1.4	4.1
	18	090 19.7	S23 26.1	291 16.1	N27 00.4	61.0	1.3	3.9
	19	105 19.4	S23 26.0	305 36.4	N27 04.2	61.1	1.2	3.7
	20	120 19.1	S23 26.0	319 56.6	N27 07.9	61.1	1.2	3.5
	21	135 18.8	S23 26.0	334 16.8	N27 11.3	61.1	1.1	3.2
	22	150 18.5	S23 26.0	348 36.9	N27 14.6	61.1	1.0	3.0
	23	165 18.2	S23 26.0	002 56.9	N27 17.6	61.1	1.0	2.8
23	00	180 17.9	S23 25.9	017 16.9	N27 20.4	61.2	0.9	2.6
	01	195 17.6	S23 25.9	031 36.7	N27 23.1	61.2	0.8	2.4
	02	210 17.3	S23 25.9	045 56.6	N27 25.4	61.2	0.8	2.2
	03	225 17.0	S23 25.9	060 16.4	N27 27.6	61.2	0.7	2.0
	04	240 16.6	S23 25.8	074 36.1	N27 29.6	61.2	0.7	1.7
	05	255 16.3	S23 25.8	088 55.7	N27 31.3	61.3	0.6	1.5
	06	270 16.0	S23 25.8	103 15.4	N27 32.9	61.3	0.6	1.3
	07	285 15.7	S23 25.8	117 35.0	N27 34.2	61.3	0.5	1.1
	08	300 15.4	S23 25.7	131 54.5	N27 35.3	61.3	0.5	0.9
	09	315 15.1	S23 25.7	146 14.0	N27 36.1	61.3	0.5	0.6
	10	330 14.8	S23 25.7	160 33.5	N27 36.8	61.3	0.5	0.4
	11	345 14.5	S23 25.7	174 53.0	N27 37.2	61.3	0.4	0.2
	12	000 14.2	S23 25.6	189 12.4	N27 37.4	61.4	0.4	0.0
	13	015 13.9	S23 25.6	203 31.8	N27 37.4	61.4	0.4	-0.2
	14	030 13.5	S23 25.6	217 51.2	N27 37.2	61.4	0.4	-0.5
	15	045 13.2	S23 25.5	232 10.6	N27 36.7	61.4	0.4	-0.7
	16	060 12.9	S23 25.5	246 30.0	N27 36.0	61.4	0.4	-0.9
	17	075 12.6	S23 25.4	260 49.3	N27 35.1	61.4	0.4	-1.1
	18	090 12.3	S23 25.4	275 08.7	N27 34.0	61.4	0.4	-1.3
	19	105 12.0	S23 25.4	289 28.1	N27 32.6	61.4	0.4	-1.6
	20	120 11.7	S23 25.3	303 47.5	N27 31.1	61.4	0.4	-1.8
	21	135 11.4	S23 25.3	318 06.9	N27 29.3	61.4	0.4	-2.0
	22	150 11.1	S23 25.3	332 26.3	N27 27.3	61.4	0.4	-2.2
	23	165 10.8	S23 25.2	346 45.7	N27 25.0	61.5	0.4	-2.5

Day 21 noon Sun: v -0.3 d 0.0 SD 16.3 | Moon SD 16.4

Day 22 noon Sun: v -0.3 d 0.0 SD 16.3 | Moon SD 16.6

Day 23 noon Sun: v -0.3 d 0.0 SD 16.3 | Moon SD 16.7

SUN: DECEMBER 22 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0826	1058	--	--	1259	1531
70N	0806	0955	--	--	1402	1551
68N	0750	0919	--	--	1438	1607
66N	0737	0854	1035	1322	1503	1620
64N	0726	0834	0952	1405	1523	1631
62N	0716	0818	0924	1433	1539	1641
60N	0708	0805	0902	1455	1553	1649
58N	0700	0753	0845	1512	1604	1657
56N	0653	0743	0830	1527	1615	1704
54N	0647	0733	0817	1540	1624	1710
52N	0642	0725	0806	1551	1632	1716
50N	0636	0718	0756	1601	1639	1721
45N	0624	0702	0736	1622	1655	1733
40N	0614	0648	0719	1638	1709	1743
35N	0605	0636	0704	1653	1721	1753
30N	0556	0626	0652	1705	1731	1801
25N	0547	0616	0641	1716	1741	1810
20N	0539	0607	0631	1726	1750	1818
15N	0531	0558	0621	1736	1759	1826
10N	0523	0549	0612	1745	1808	1834
05N	0515	0541	0603	1754	1816	1842
00N	0506	0532	0555	1802	1825	1851
05S	0457	0523	0546	1811	1834	1900
10S	0447	0514	0537	1820	1843	1910
15S	0436	0504	0528	1829	1853	1921
20S	0424	0454	0518	1839	1904	1933
25S	0411	0442	0508	1849	1915	1946
30S	0355	0429	0456	1901	1928	2002
35S	0337	0413	0443	1914	1944	2021
40S	0313	0355	0428	1929	2002	2044
45S	0243	0332	0410	1947	2025	2114
50S	0157	0303	0347	2010	2054	2200
55S	--	0219	0317	2040	2138	--
60S	--	0046	0232	2125	2311	--

MOON: RISE / SET | UTC HHMM

Lat	Day 21		Day 22		Day 23	
72N	--	--	--	--	--	--
70N	--	--	--	--	--	--
68N	--	--	--	--	--	--
66N	1019	0751	--	--	--	--
64N	1109	0702	--	--	--	--
62N	1140	0631	1144	0838	1213	1029
60N	1204	0608	1223	0759	1310	0933
58N	1224	0549	1250	0732	1343	0859
56N	1240	0534	1312	0711	1408	0835
54N	1254	0521	1330	0653	1428	0815
52N	1306	0509	1345	0639	1444	0758
50N	1316	0459	1358	0626	1459	0744
45N	1339	0438	1426	0559	1528	0715
40N	1357	0420	1447	0538	1551	0652
35N	1413	0406	1505	0521	1610	0633
30N	1426	0353	1521	0505	1626	0617
25N	1438	0342	1535	0452	1640	0602
20N	1449	0332	1547	0440	1653	0549
15N	1459	0323	1559	0429	1706	0537
10N	1509	0314	1610	0418	1717	0526
05N	1519	0305	1621	0408	1728	0515
00N	1528	0257	1632	0358	1739	0504
05S	1537	0248	1642	0348	1750	0453
10S	1547	0240	1653	0337	1801	0442
15S	1557	0231	1705	0327	1813	0430
20S	1607	0221	1717	0316	1825	0418
25S	1619	0212	1729	0304	1838	0405
30S	1631	0201	1744	0250	1853	0350
35S	1645	0149	1800	0236	1909	0334
40S	1701	0135	1818	0219	1928	0315
45S	1721	0118	1841	0158	1951	0252
50S	1746	0058	1910	0133	2021	0223
55S	1819	0032	1950	0058	2102	0142
60S	1909	--	2058	0006	2211	0034

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | DECEMBER 24 - DECEMBER 26

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
24	00	092 32.4	228 17.0	S13 27.0	291 09.2	N11 07.3	303 10.7	N13 24.8	084 07.9	N00 55.1
	01	107 34.8	243 17.2	S13 27.6	306 11.2	N11 07.2	318 13.2	N13 24.8	099 10.3	N00 55.2
	02	122 37.3	258 17.4	S13 28.2	321 13.2	N11 07.1	333 15.8	N13 24.9	114 12.7	N00 55.2
	03	137 39.8	273 17.5	S13 28.8	336 15.1	N11 06.9	348 18.3	N13 24.9	129 15.1	N00 55.2
	04	152 42.2	288 17.7	S13 29.4	351 17.1	N11 06.8	003 20.8	N13 25.0	144 17.5	N00 55.3
	05	167 44.7	303 17.8	S13 30.0	006 19.1	N11 06.7	018 23.4	N13 25.0	159 19.9	N00 55.3
	06	182 47.2	318 18.0	S13 30.6	021 21.1	N11 06.6	033 25.9	N13 25.1	174 22.3	N00 55.3
	07	197 49.6	333 18.1	S13 31.2	036 23.0	N11 06.5	048 28.5	N13 25.1	189 24.8	N00 55.4
	08	212 52.1	348 18.2	S13 31.7	051 25.0	N11 06.4	063 31.0	N13 25.1	204 27.2	N00 55.4
	09	227 54.6	003 18.4	S13 32.3	066 27.0	N11 06.3	078 33.6	N13 25.2	219 29.6	N00 55.4
	10	242 57.0	018 18.5	S13 32.9	081 29.0	N11 06.2	093 36.1	N13 25.2	234 32.0	N00 55.5
	11	257 59.5	033 18.7	S13 33.5	096 31.0	N11 06.1	108 38.7	N13 25.3	249 34.4	N00 55.5
	12	273 01.9	048 18.8	S13 34.1	111 32.9	N11 06.0	123 41.2	N13 25.3	264 36.8	N00 55.5
	13	288 04.4	063 19.0	S13 34.7	126 34.9	N11 05.9	138 43.8	N13 25.3	279 39.2	N00 55.6
	14	303 06.9	078 19.1	S13 35.3	141 36.9	N11 05.8	153 46.3	N13 25.4	294 41.6	N00 55.6
	15	318 09.3	093 19.2	S13 35.9	156 38.9	N11 05.7	168 48.9	N13 25.4	309 44.1	N00 55.6
	16	333 11.8	108 19.4	S13 36.5	171 40.9	N11 05.6	183 51.4	N13 25.5	324 46.5	N00 55.7
	17	348 14.3	123 19.5	S13 37.1	186 42.8	N11 05.5	198 54.0	N13 25.5	339 48.9	N00 55.7
	18	003 16.7	138 19.6	S13 37.7	201 44.8	N11 05.4	213 56.6	N13 25.5	354 51.3	N00 55.7
	19	018 19.2	153 19.8	S13 38.3	216 46.8	N11 05.3	228 59.1	N13 25.6	009 53.7	N00 55.8
	20	033 21.7	168 19.9	S13 38.9	231 48.8	N11 05.2	244 01.7	N13 25.6	024 56.1	N00 55.8
	21	048 24.1	183 20.0	S13 39.4	246 50.8	N11 05.1	259 04.2	N13 25.7	039 58.5	N00 55.8
	22	063 26.6	198 20.2	S13 40.0	261 52.8	N11 05.0	274 06.8	N13 25.7	055 00.9	N00 55.9
	23	078 29.1	213 20.3	S13 40.6	276 54.8	N11 04.9	289 09.3	N13 25.8	070 03.3	N00 55.9
25	00	093 31.5	228 20.4	S13 41.2	291 56.8	N11 04.8	304 11.9	N13 25.8	085 05.8	N00 55.9
	01	108 34.0	243 20.6	S13 41.8	306 58.8	N11 04.7	319 14.4	N13 25.8	100 08.2	N00 56.0
	02	123 36.4	258 20.7	S13 42.4	322 00.7	N11 04.6	334 17.0	N13 25.9	115 10.6	N00 56.0
	03	138 38.9	273 20.8	S13 43.0	337 02.7	N11 04.5	349 19.5	N13 25.9	130 13.0	N00 56.0
	04	153 41.4	288 20.9	S13 43.6	352 04.7	N11 04.4	004 22.1	N13 26.0	145 15.4	N00 56.1
	05	168 43.8	303 21.1	S13 44.2	007 06.7	N11 04.3	019 24.6	N13 26.0	160 17.8	N00 56.1
	06	183 46.3	318 21.2	S13 44.8	022 08.7	N11 04.2	034 27.2	N13 26.1	175 20.2	N00 56.2
	07	198 48.8	333 21.3	S13 45.4	037 10.7	N11 04.1	049 29.8	N13 26.1	190 22.6	N00 56.2
	08	213 51.2	348 21.4	S13 46.0	052 12.7	N11 04.0	064 32.3	N13 26.1	205 25.0	N00 56.2
	09	228 53.7	003 21.5	S13 46.6	067 14.7	N11 03.9	079 34.9	N13 26.2	220 27.4	N00 56.3
	10	243 56.2	018 21.6	S13 47.2	082 16.7	N11 03.8	094 37.4	N13 26.2	235 29.8	N00 56.3
	11	258 58.6	033 21.8	S13 47.8	097 18.7	N11 03.7	109 40.0	N13 26.3	250 32.2	N00 56.3
	12	274 01.1	048 21.9	S13 48.4	112 20.7	N11 03.6	124 42.5	N13 26.3	265 34.7	N00 56.4
	13	289 03.6	063 22.0	S13 49.0	127 22.7	N11 03.5	139 45.1	N13 26.4	280 37.1	N00 56.4
	14	304 06.0	078 22.1	S13 49.5	142 24.7	N11 03.4	154 47.7	N13 26.4	295 39.5	N00 56.4
	15	319 08.5	093 22.2	S13 50.1	157 26.7	N11 03.3	169 50.2	N13 26.5	310 41.9	N00 56.5
	16	334 10.9	108 22.3	S13 50.7	172 28.8	N11 03.2	184 52.8	N13 26.5	325 44.3	N00 56.5
	17	349 13.4	123 22.4	S13 51.3	187 30.8	N11 03.1	199 55.3	N13 26.5	340 46.7	N00 56.5
	18	004 15.9	138 22.5	S13 51.9	202 32.8	N11 03.0	214 57.9	N13 26.6	355 49.1	N00 56.6
	19	019 18.3	153 22.6	S13 52.5	217 34.8	N11 02.9	230 00.5	N13 26.6	010 51.5	N00 56.6
	20	034 20.8	168 22.8	S13 53.1	232 36.8	N11 02.8	245 03.0	N13 26.7	025 53.9	N00 56.7
	21	049 23.3	183 22.9	S13 53.7	247 38.8	N11 02.8	260 05.6	N13 26.7	040 56.3	N00 56.7
	22	064 25.7	198 23.0	S13 54.3	262 40.8	N11 02.7	275 08.1	N13 26.8	055 58.7	N00 56.7
	23	079 28.2	213 23.1	S13 54.9	277 42.8	N11 02.6	290 10.7	N13 26.8	071 01.1	N00 56.8
26	00	094 30.7	228 23.2	S13 55.5	292 44.8	N11 02.5	305 13.3	N13 26.9	086 03.5	N00 56.8
	01	109 33.1	243 23.3	S13 56.1	307 46.9	N11 02.4	320 15.8	N13 26.9	101 05.9	N00 56.8
	02	124 35.6	258 23.4	S13 56.7	322 48.9	N11 02.3	335 18.4	N13 27.0	116 08.3	N00 56.9
	03	139 38.0	273 23.5	S13 57.3	337 50.9	N11 02.2	350 21.0	N13 27.0	131 10.8	N00 56.9
	04	154 40.5	288 23.6	S13 57.9	352 52.9	N11 02.1	005 23.5	N13 27.0	146 13.2	N00 56.9
	05	169 43.0	303 23.7	S13 58.5	007 54.9	N11 02.0	020 26.1	N13 27.1	161 15.6	N00 57.0
	06	184 45.4	318 23.8	S13 59.1	022 56.9	N11 01.9	035 28.6	N13 27.1	176 18.0	N00 57.0
	07	199 47.9	333 23.8	S13 59.7	037 59.0	N11 01.9	050 31.2	N13 27.2	191 20.4	N00 57.1
	08	214 50.4	348 23.9	S14 00.3	053 01.0	N11 01.8	065 33.8	N13 27.2	206 22.8	N00 57.1
	09	229 52.8	003 24.0	S14 00.9	068 03.0	N11 01.7	080 36.3	N13 27.3	221 25.2	N00 57.1
	10	244 55.3	018 24.1	S14 01.5	083 05.0	N11 01.6	095 38.9	N13 27.3	236 27.6	N00 57.2
	11	259 57.8	033 24.2	S14 02.1	098 07.1	N11 01.5	110 41.5	N13 27.4	251 30.0	N00 57.2
	12	275 00.2	048 24.3	S14 02.7	113 09.1	N11 01.4	125 44.0	N13 27.4	266 32.4	N00 57.2
	13	290 02.7	063 24.4	S14 03.3	128 11.1	N11 01.3	140 46.6	N13 27.5	281 34.8	N00 57.3
	14	305 05.2	078 24.5	S14 03.9	143 13.1	N11 01.3	155 49.2	N13 27.5	296 37.2	N00 57.3
	15	320 07.6	093 24.6	S14 04.5	158 15.2	N11 01.2	170 51.7	N13 27.6	311 39.6	N00 57.4
	16	335 10.1	108 24.6	S14 05.1	173 17.2	N11 01.1	185 54.3	N13 27.6	326 42.0	N00 57.4
	17	350 12.5	123 24.7	S14 05.7	188 19.2	N11 01.0	200 56.9	N13 27.7	341 44.4	N00 57.4
	18	005 15.0	138 24.8	S14 06.3	203 21.3	N11 00.9	215 59.4	N13 27.7	356 46.8	N00 57.5
	19	020 17.5	153 24.9	S14 06.9	218 23.3	N11 00.8	231 02.0	N13 27.7	011 49.2	N00 57.5
	20	035 19.9	168 25.0	S14 07.5	233 25.3	N11 00.8	246 04.6	N13 27.8	026 51.6	N00 57.5
	21	050 22.4	183 25.0	S14 08.1	248 27.4	N11 00.7	261 07.1	N13 27.8	041 54.0	N00 57.6
	22	065 24.9	198 25.1	S14 08.7	263 29.4	N11 00.6	276 09.7	N13 27.9	056 56.4	N00 57.6
	23	080 27.3	213 25.2	S14 09.3	278 31.4	N11 00.5	291 12.3	N13 27.9	071 58.8	N00 57.7

Venus	Mars	Jupiter	Saturn
24: v 0.1 d -0.6	24: v 2.0 d -0.1	24: v 2.6 d 0.0	24: v 2.4 d 0.0
25: v 0.1 d -0.6	25: v 2.0 d -0.1	25: v 2.6 d 0.0	25: v 2.4 d 0.0
26: v 0.1 d -0.6	26: v 2.0 d -0.1	26: v 2.6 d 0.0	26: v 2.4 d 0.0

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.3	S40 11.9
Achernar	335 18.8	S57 06.2
Acrux	172 58.3	S63 14.7
Adhara	255 04.2	S29 00.5
Al Na'ir	027 31.2	S46 50.0
Aldebaran	290 37.4	N16 33.8
Alioth	166 11.7	N55 48.4
Alkaid	152 51.0	N49 10.4
Alnilam	275 35.7	S01 11.1
Alphard	217 45.9	S08 46.6
Alphecca	126 02.7	N26 37.3
Alpheratz	357 33.1	N29 14.6
Altair	061 58.7	N08 56.4
Ankaa	353 05.5	S42 09.7
Antares	112 14.2	S26 29.4
Arcturus	145 46.6	N19 02.4
Atria	107 07.5	S69 04.4
Avior	234 13.5	S59 35.6
Bellatrix	278 20.8	N06 22.4
Betelgeuse	270 50.0	N07 24.7
Canopus	263 51.1	S52 42.6
Capella	280 19.0	N46 01.5
Deneb	049 25.1	N45 22.8
Denebola	182 23.3	N14 25.1
Diphda	348 45.6	S17 50.4
Dubhe	193 38.9	N61 36.0
Elnath	277 59.4	N28 37.8
Eltanin	090 42.0	N51 29.1
Enif	033 37.4	N10 00.0
Fomalhaut	015 12.9	S29 28.9
Gacrux	171 49.9	S57 15.6
Gienah	175 41.9	S17 41.5
Hadar	148 34.0	S60 30.0
Hamal	327 49.2	N23 35.6
Kaus Australi	083 30.8	S34 22.3
Kochab	137 20.7	N74 02.3
Markab	013 28.4	N15 21.2
Menkar	314 04.2	N04 11.8
Menkent	147 55.9	S36 30.0
Miaplacidus	221 37.2	S69 49.5
Mirfak	308 25.5	N49 57.6
Nunki	075 46.1	S26 15.8
Peacock	053 03.7	S56 39.0
Polaris	312 48.0	N89 22.9
Pollux	243 15.0	N27 57.5
Procyon	244 48.8	N05 09.3
Rasalhague	095 57.4	N12 32.4
Regulus	207 32.5	N11 50.0
Rigel	281 02.0	S08 10.2
Rigil Kentaur	139 38.5	S60 56.6
Sabik	102 01.3	S15 45.5
Schedar	349 29.1	N56 41.5
Shaula	096 08.6	S37 07.3
Sirius	258 24.5	S16 45.2
Spica	158 20.7	S11 18.1
Suhail	222 44.8	S43 32.4
Vega	080 32.6	N38 48.5
Zubenelgenubi	136 54.4	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	134 20.8	0847
Mars	198 19.6	0432
Jupiter	210 41.5	0343
Saturn	351 33.6	1817

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

2026 | DECEMBER 24 - DECEMBER 26

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
24	00	180 10.5	S23 25.2	001 05.1	N27 22.6	61.5	0.5	-2.7
	01	195 10.1	S23 25.1	015 24.6	N27 19.9	61.5	0.5	-2.9
	02	210 09.8	S23 25.1	029 44.1	N27 17.0	61.5	0.5	-3.1
	03	225 09.5	S23 25.0	044 03.7	N27 13.9	61.5	0.6	-3.3
	04	240 09.2	S23 25.0	058 23.2	N27 10.5	61.5	0.6	-3.6
	05	255 08.9	S23 25.0	072 42.9	N27 07.0	61.5	0.7	-3.8
	06	270 08.6	S23 24.9	087 02.5	N27 03.2	61.5	0.7	-4.0
	07	285 08.3	S23 24.9	101 22.2	N26 59.2	61.5	0.8	-4.2
	08	300 08.0	S23 24.8	115 42.0	N26 55.0	61.5	0.8	-4.4
	09	315 07.7	S23 24.8	130 01.8	N26 50.6	61.5	0.9	-4.6
	10	330 07.4	S23 24.7	144 21.7	N26 46.0	61.5	0.9	-4.8
	11	345 07.0	S23 24.7	158 41.6	N26 41.1	61.5	1.0	-5.1
	12	000 06.7	S23 24.6	173 01.6	N26 36.1	61.5	1.1	-5.3
	13	015 06.4	S23 24.6	187 21.7	N26 30.8	61.5	1.1	-5.5
	14	030 06.1	S23 24.5	201 41.8	N26 25.4	61.5	1.2	-5.7
	15	045 05.8	S23 24.5	216 02.0	N26 19.7	61.5	1.3	-5.9
	16	060 05.5	S23 24.4	230 22.3	N26 13.8	61.5	1.4	-6.1
	17	075 05.2	S23 24.3	244 42.6	N26 07.7	61.5	1.4	-6.3
	18	090 04.9	S23 24.3	259 03.1	N26 01.4	61.5	1.5	-6.5
	19	105 04.6	S23 24.2	273 23.6	N25 54.9	61.4	1.6	-6.7
	20	120 04.3	S23 24.2	287 44.2	N25 48.2	61.4	1.7	-6.9
	21	135 04.0	S23 24.1	302 04.9	N25 41.4	61.4	1.8	-7.1
	22	150 03.6	S23 24.1	316 25.7	N25 34.3	61.4	1.9	-7.3
	23	165 03.3	S23 24.0	330 46.6	N25 27.0	61.4	2.0	-7.5
25	00	180 03.0	S23 23.9	345 07.6	N25 19.5	61.4	2.1	-7.7
	01	195 02.7	S23 23.9	359 28.7	N25 11.9	61.4	2.2	-7.9
	02	210 02.4	S23 23.8	013 49.9	N25 04.0	61.4	2.3	-8.0
	03	225 02.1	S23 23.8	028 11.2	N24 56.0	61.4	2.4	-8.2
	04	240 01.8	S23 23.7	042 32.6	N24 47.7	61.4	2.5	-8.4
	05	255 01.5	S23 23.6	056 54.1	N24 39.3	61.4	2.6	-8.6
	06	270 01.2	S23 23.6	071 15.8	N24 30.8	61.3	2.7	-8.8
	07	285 00.9	S23 23.5	085 37.5	N24 22.0	61.3	2.9	-8.9
	08	300 00.6	S23 23.4	099 59.4	N24 13.0	61.3	3.0	-9.1
	09	315 00.2	S23 23.4	114 21.3	N24 03.9	61.3	3.1	-9.3
	10	329 59.9	S23 23.3	128 43.4	N23 54.6	61.3	3.2	-9.5
	11	344 59.6	S23 23.2	143 05.6	N23 45.2	61.3	3.3	-9.6
	12	359 59.3	S23 23.1	157 28.0	N23 35.5	61.3	3.4	-9.8
	13	014 59.0	S23 23.1	171 50.4	N23 25.8	61.2	3.6	-10.0
	14	029 58.7	S23 23.0	186 13.0	N23 15.8	61.2	3.7	-10.1
	15	044 58.4	S23 22.9	200 35.7	N23 05.7	61.2	3.8	-10.3
	16	059 58.1	S23 22.9	214 58.5	N22 55.4	61.2	3.9	-10.4
	17	074 57.8	S23 22.8	229 21.5	N22 45.0	61.2	4.1	-10.6
	18	089 57.5	S23 22.7	243 44.5	N22 34.4	61.2	4.2	-10.7
	19	104 57.2	S23 22.6	258 07.7	N22 23.6	61.1	4.3	-10.9
	20	119 56.9	S23 22.6	272 31.1	N22 12.7	61.1	4.5	-11.0
	21	134 56.5	S23 22.5	286 54.5	N22 01.7	61.1	4.6	-11.2
	22	149 56.2	S23 22.4	301 18.1	N21 50.5	61.1	4.7	-11.3
	23	164 55.9	S23 22.3	315 41.9	N21 39.2	61.0	4.9	-11.5
26	00	179 55.6	S23 22.2	330 05.7	N21 27.7	61.0	5.0	-11.6
	01	194 55.3	S23 22.2	344 29.7	N21 16.1	61.0	5.1	-11.7
	02	209 55.0	S23 22.1	358 53.8	N21 04.3	61.0	5.3	-11.9
	03	224 54.7	S23 22.0	013 18.1	N20 52.5	61.0	5.4	-12.0
	04	239 54.4	S23 21.9	027 42.5	N20 40.4	60.9	5.5	-12.1
	05	254 54.1	S23 21.8	042 07.0	N20 28.3	60.9	5.7	-12.3
	06	269 53.8	S23 21.7	056 31.7	N20 16.0	60.9	5.8	-12.4
	07	284 53.5	S23 21.7	070 56.4	N20 03.6	60.9	5.9	-12.5
	08	299 53.2	S23 21.6	085 21.4	N19 51.1	60.8	6.1	-12.6
	09	314 52.9	S23 21.5	099 46.4	N19 38.5	60.8	6.2	-12.7
	10	329 52.5	S23 21.4	114 11.6	N19 25.8	60.8	6.3	-12.9
	11	344 52.2	S23 21.3	128 36.9	N19 12.9	60.8	6.5	-13.0
	12	359 51.9	S23 21.2	143 02.4	N18 59.9	60.7	6.6	-13.1
	13	014 51.6	S23 21.1	157 28.0	N18 46.8	60.7	6.7	-13.2
	14	029 51.3	S23 21.0	171 53.7	N18 33.6	60.7	6.9	-13.3
	15	044 51.0	S23 20.9	186 19.5	N18 20.3	60.6	7.0	-13.4
	16	059 50.7	S23 20.8	200 45.5	N18 06.9	60.6	7.1	-13.5
	17	074 50.4	S23 20.7	215 11.6	N17 53.4	60.6	7.2	-13.6
	18	089 50.1	S23 20.6	229 37.9	N17 39.8	60.6	7.4	-13.7
	19	104 49.8	S23 20.6	244 04.3	N17 26.2	60.5	7.5	-13.8
	20	119 49.5	S23 20.5	258 30.8	N17 12.4	60.5	7.6	-13.9
	21	134 49.2	S23 20.4	272 57.4	N16 58.5	60.5	7.8	-14.0
	22	149 48.9	S23 20.3	287 24.2	N16 44.5	60.4	7.9	-14.1
	23	164 48.5	S23 20.2	301 51.0	N16 30.5	60.4	8.0	-14.1

Day 24 noon Sun: v -0.3 d 0.1 SD 16.3 | Moon SD 16.8

Day 25 noon Sun: v -0.3 d 0.1 SD 16.3 | Moon SD 16.7

Day 26 noon Sun: v -0.3 d 0.1 SD 16.3 | Moon SD 16.5

SUN: DECEMBER 25 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0827	1057	--	--	1303	1533
70N	0807	0955	--	--	1405	1553
68N	0751	0920	--	--	1440	1609
66N	0738	0855	1035	1325	1505	1622
64N	0727	0835	0953	1407	1525	1633
62N	0717	0819	0925	1435	1541	1643
60N	0709	0806	0903	1457	1555	1651
58N	0701	0754	0846	1514	1606	1659
56N	0655	0744	0831	1529	1616	1706
54N	0648	0735	0818	1542	1625	1712
52N	0643	0726	0807	1553	1634	1717
50N	0637	0719	0758	1603	1641	1723
45N	0626	0703	0737	1623	1657	1734
40N	0615	0649	0720	1640	1711	1745
35N	0606	0638	0706	1654	1722	1754
30N	0557	0627	0653	1707	1733	1803
25N	0549	0617	0642	1718	1743	1811
20N	0541	0608	0632	1728	1752	1819
15N	0533	0559	0623	1737	1801	1827
10N	0525	0551	0614	1746	1809	1836
05N	0516	0542	0605	1755	1818	1844
00N	0508	0534	0556	1804	1826	1853
05S	0458	0525	0548	1812	1835	1902
10S	0449	0516	0539	1821	1844	1912
15S	0438	0506	0529	1831	1854	1922
20S	0426	0455	0520	1840	1905	1934
25S	0412	0443	0509	1851	1917	1948
30S	0357	0430	0458	1902	1930	2003
35S	0338	0415	0445	1915	1945	2022
40S	0315	0357	0430	1930	2003	2045
45S	0244	0334	0412	1948	2026	2115
50S	0159	0304	0349	2011	2055	2201
55S	--	0221	0319	2041	2139	--
60S	--	0049	0234	2125	2310	--

MOON: RISE / SET | UTC HHMM

Lat	Day 24		Day 25		Day 26	
72N	--	--	--	--	--	--
70N	--	--	--	--	1630	1301
68N	--	--	--	--	1711	1217
66N	--	--	1449	1234	1739	1148
64N	--	--	1541	1141	1801	1125
62N	1401	1104	1613	1108	1818	1107
60N	1442	1023	1637	1044	1832	1052
58N	1509	0955	1656	1024	1843	1039
56N	1531	0933	1711	1008	1854	1028
54N	1549	0915	1725	0954	1903	1018
52N	1604	0900	1736	0941	1911	1009
50N	1617	0846	1747	0931	1918	1001
45N	1644	0819	1808	0908	1933	0944
40N	1705	0757	1826	0849	1946	0930
35N	1723	0739	1840	0834	1957	0918
30N	1738	0723	1853	0820	2006	0908
25N	1752	0709	1904	0808	2014	0858
20N	1804	0656	1914	0757	2022	0850
15N	1815	0644	1924	0746	2029	0841
10N	1826	0633	1933	0737	2036	0834
05N	1836	0622	1942	0727	2042	0826
00N	1847	0612	1950	0717	2048	0819
05S	1857	0601	1959	0708	2055	0811
10S	1907	0550	2007	0658	2101	0803
15S	1918	0539	2016	0648	2108	0755
20S	1929	0527	2026	0638	2115	0747
25S	1941	0514	2036	0626	2122	0738
30S	1955	0459	2047	0614	2130	0728
35S	2010	0443	2059	0559	2139	0717
40S	2027	0424	2113	0543	2150	0704
45S	2048	0402	2130	0523	2201	0649
50S	2113	0333	2150	0458	2216	0630
55S	2148	0252	2216	0424	2234	0605
60S	2242	0143	2253	0333	2258	0531

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | DECEMBER 27 - DECEMBER 29

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
27	00	095 29.8	228 25.3	S14 09.9	293 33.5	N11 00.4	306 14.8	N13 28.0	087 01.2	N00 57.7
	01	110 32.3	243 25.3	S14 10.5	308 35.5	N11 00.4	321 17.4	N13 28.0	102 03.6	N00 57.7
	02	125 34.7	258 25.4	S14 11.1	323 37.5	N11 00.3	336 20.0	N13 28.1	117 06.0	N00 57.8
	03	140 37.2	273 25.5	S14 11.7	338 39.6	N11 00.2	351 22.6	N13 28.1	132 08.4	N00 57.8
	04	155 39.7	288 25.6	S14 12.3	353 41.6	N11 00.1	006 25.1	N13 28.2	147 10.8	N00 57.9
	05	170 42.1	303 25.6	S14 12.9	008 43.7	N11 00.0	021 27.7	N13 28.2	162 13.2	N00 57.9
	06	185 44.6	318 25.7	S14 13.5	023 45.7	N11 00.0	036 30.3	N13 28.3	177 15.6	N00 57.9
	07	200 47.0	333 25.8	S14 14.1	038 47.8	N10 59.9	051 32.8	N13 28.3	192 18.0	N00 58.0
	08	215 49.5	348 25.8	S14 14.7	053 49.8	N10 59.8	066 35.4	N13 28.4	207 20.4	N00 58.0
	09	230 52.0	003 25.9	S14 15.3	068 51.8	N10 59.7	081 38.0	N13 28.4	222 22.8	N00 58.0
	10	245 54.4	018 26.0	S14 15.9	083 53.9	N10 59.6	096 40.6	N13 28.5	237 25.2	N00 58.1
	11	260 56.9	033 26.0	S14 16.5	098 55.9	N10 59.6	111 43.1	N13 28.5	252 27.6	N00 58.1
	12	275 59.4	048 26.1	S14 17.1	113 58.0	N10 59.5	126 45.7	N13 28.6	267 30.0	N00 58.2
	13	291 01.8	063 26.2	S14 17.7	129 00.0	N10 59.4	141 48.3	N13 28.6	282 32.4	N00 58.2
	14	306 04.3	078 26.2	S14 18.3	144 02.1	N10 59.3	156 50.9	N13 28.7	297 34.8	N00 58.2
	15	321 06.8	093 26.3	S14 18.9	159 04.1	N10 59.3	171 53.4	N13 28.7	312 37.2	N00 58.3
	16	336 09.2	108 26.3	S14 19.5	174 06.2	N10 59.2	186 56.0	N13 28.8	327 39.6	N00 58.3
	17	351 11.7	123 26.4	S14 20.1	189 08.3	N10 59.1	201 58.6	N13 28.8	342 42.0	N00 58.4
	18	006 14.2	138 26.4	S14 20.7	204 10.3	N10 59.1	217 01.2	N13 28.9	357 44.4	N00 58.4
	19	021 16.6	153 26.5	S14 21.3	219 12.4	N10 59.0	232 03.7	N13 28.9	012 46.8	N00 58.4
	20	036 19.1	168 26.6	S14 21.9	234 14.4	N10 58.9	247 06.3	N13 29.0	027 49.2	N00 58.5
	21	051 21.5	183 26.6	S14 22.5	249 16.5	N10 58.8	262 08.9	N13 29.0	042 51.6	N00 58.5
	22	066 24.0	198 26.7	S14 23.1	264 18.5	N10 58.8	277 11.5	N13 29.1	057 54.0	N00 58.6
	23	081 26.5	213 26.7	S14 23.7	279 20.6	N10 58.7	292 14.0	N13 29.1	072 56.4	N00 58.6
28	00	096 28.9	228 26.8	S14 24.3	294 22.7	N10 58.6	307 16.6	N13 29.2	087 58.8	N00 58.6
	01	111 31.4	243 26.8	S14 24.9	309 24.7	N10 58.6	322 19.2	N13 29.2	103 01.2	N00 58.7
	02	126 33.9	258 26.9	S14 25.5	324 26.8	N10 58.5	337 21.8	N13 29.3	118 03.6	N00 58.7
	03	141 36.3	273 26.9	S14 26.1	339 28.9	N10 58.4	352 24.3	N13 29.3	133 06.0	N00 58.8
	04	156 38.8	288 26.9	S14 26.7	354 30.9	N10 58.3	007 26.9	N13 29.4	148 08.4	N00 58.8
	05	171 41.3	303 27.0	S14 27.3	009 33.0	N10 58.3	022 29.5	N13 29.4	163 10.8	N00 58.8
	06	186 43.7	318 27.0	S14 27.9	024 35.0	N10 58.2	037 32.1	N13 29.5	178 13.2	N00 58.9
	07	201 46.2	333 27.1	S14 28.5	039 37.1	N10 58.1	052 34.7	N13 29.5	193 15.6	N00 58.9
	08	216 48.6	348 27.1	S14 29.1	054 39.2	N10 58.1	067 37.2	N13 29.6	208 18.0	N00 59.0
	09	231 51.1	003 27.2	S14 29.7	069 41.3	N10 58.0	082 39.8	N13 29.6	223 20.4	N00 59.0
	10	246 53.6	018 27.2	S14 30.3	084 43.3	N10 57.9	097 42.4	N13 29.7	238 22.8	N00 59.0
	11	261 56.0	033 27.2	S14 30.9	099 45.4	N10 57.9	112 45.0	N13 29.7	253 25.2	N00 59.1
	12	276 58.5	048 27.3	S14 31.5	114 47.5	N10 57.8	127 47.6	N13 29.8	268 27.6	N00 59.1
	13	292 01.0	063 27.3	S14 32.1	129 49.5	N10 57.7	142 50.1	N13 29.8	283 30.0	N00 59.2
	14	307 03.4	078 27.3	S14 32.7	144 51.6	N10 57.7	157 52.7	N13 29.9	298 32.4	N00 59.2
	15	322 05.9	093 27.4	S14 33.3	159 53.7	N10 57.6	172 55.3	N13 29.9	313 34.8	N00 59.2
	16	337 08.4	108 27.4	S14 33.9	174 55.8	N10 57.5	187 57.9	N13 30.0	328 37.2	N00 59.3
	17	352 10.8	123 27.4	S14 34.5	189 57.9	N10 57.5	203 00.5	N13 30.1	343 39.6	N00 59.3
	18	007 13.3	138 27.5	S14 35.1	204 59.9	N10 57.4	218 03.1	N13 30.1	358 41.9	N00 59.4
	19	022 15.8	153 27.5	S14 35.7	220 02.0	N10 57.4	233 05.6	N13 30.2	013 44.3	N00 59.4
	20	037 18.2	168 27.5	S14 36.3	235 04.1	N10 57.3	248 08.2	N13 30.2	028 46.7	N00 59.4
	21	052 20.7	183 27.6	S14 36.9	250 06.2	N10 57.2	263 10.8	N13 30.3	043 49.1	N00 59.5
	22	067 23.1	198 27.6	S14 37.5	265 08.3	N10 57.2	278 13.4	N13 30.3	058 51.5	N00 59.5
	23	082 25.6	213 27.6	S14 38.1	280 10.3	N10 57.1	293 16.0	N13 30.4	073 53.9	N00 59.6
29	00	097 28.1	228 27.6	S14 38.7	295 12.4	N10 57.0	308 18.6	N13 30.4	088 56.3	N00 59.6
	01	112 30.5	243 27.7	S14 39.3	310 14.5	N10 57.0	323 21.1	N13 30.5	103 58.7	N00 59.7
	02	127 33.0	258 27.7	S14 39.9	325 16.6	N10 56.9	338 23.7	N13 30.5	119 01.1	N00 59.7
	03	142 35.5	273 27.7	S14 40.5	340 18.7	N10 56.9	353 26.3	N13 30.6	134 03.5	N00 59.7
	04	157 37.9	288 27.7	S14 41.1	355 20.8	N10 56.8	008 28.9	N13 30.6	149 05.9	N00 59.8
	05	172 40.4	303 27.7	S14 41.7	010 22.9	N10 56.8	023 31.5	N13 30.7	164 08.3	N00 59.8
	06	187 42.9	318 27.8	S14 42.3	025 25.0	N10 56.7	038 34.1	N13 30.7	179 10.7	N00 59.9
	07	202 45.3	333 27.8	S14 43.0	040 27.1	N10 56.6	053 36.7	N13 30.8	194 13.1	N00 59.9
	08	217 47.8	348 27.8	S14 43.6	055 29.2	N10 56.6	068 39.2	N13 30.9	209 15.5	N01 00.0
	09	232 50.3	003 27.8	S14 44.2	070 31.2	N10 56.5	083 41.8	N13 30.9	224 17.8	N01 00.0
	10	247 52.7	018 27.8	S14 44.8	085 33.3	N10 56.5	098 44.4	N13 31.0	239 20.2	N01 00.0
	11	262 55.2	033 27.8	S14 45.4	100 35.4	N10 56.4	113 47.0	N13 31.0	254 22.6	N01 00.1
	12	277 57.6	048 27.8	S14 46.0	115 37.5	N10 56.4	128 49.6	N13 31.1	269 25.0	N01 00.1
	13	293 00.1	063 27.9	S14 46.6	130 39.6	N10 56.3	143 52.2	N13 31.1	284 27.4	N01 00.2
	14	308 02.6	078 27.9	S14 47.2	145 41.7	N10 56.2	158 54.8	N13 31.2	299 29.8	N01 00.2
	15	323 05.0	093 27.9	S14 47.8	160 43.8	N10 56.2	173 57.4	N13 31.2	314 32.2	N01 00.2
	16	338 07.5	108 27.9	S14 48.4	175 45.9	N10 56.1	189 00.0	N13 31.3	329 34.6	N01 00.3
	17	353 10.0	123 27.9	S14 49.0	190 48.0	N10 56.1	204 02.5	N13 31.3	344 37.0	N01 00.3
	18	008 12.4	138 27.9	S14 49.6	205 50.1	N10 56.0	219 05.1	N13 31.4	359 39.4	N01 00.4
	19	023 14.9	153 27.9	S14 50.2	220 52.3	N10 56.0	234 07.7	N13 31.5	014 41.8	N01 00.4
	20	038 17.4	168 27.9	S14 50.8	235 54.4	N10 55.9	249 10.3	N13 31.5	029 44.2	N01 00.5
	21	053 19.8	183 27.9	S14 51.4	250 56.5	N10 55.9	264 12.9	N13 31.6	044 46.5	N01 00.5
	22	068 22.3	198 27.9	S14 52.0	265 58.6	N10 55.8	279 15.5	N13 31.6	059 48.9	N01 00.5
	23	083 24.7	213 27.9	S14 52.6	281 00.7	N10 55.8	294 18.1	N13 31.7	074 51.3	N01 00.6

Venus	Mars	Jupiter	Saturn
27: v 0.1 d -0.6	27: v 2.1 d -0.1	27: v 2.6 d 0.0	27: v 2.4 d 0.0
28: v 0.0 d -0.6	28: v 2.1 d -0.1	28: v 2.6 d 0.1	28: v 2.4 d 0.0
29: v 0.0 d -0.6	29: v 2.1 d -0.1	29: v 2.6 d 0.1	29: v 2.4 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.3	S40 11.9
Achernar	335 18.8	S57 06.2
Acrux	172 58.2	S63 14.7
Adhara	255 04.2	S29 00.5
Al Na'ir	027 31.2	S46 50.0
Aldebaran	290 37.4	N16 33.8
Alioth	166 11.7	N55 48.4
Alkaid	152 50.9	N49 10.4
Alnilam	275 35.7	S01 11.1
Alphard	217 45.9	S08 46.6
Alphecca	126 02.6	N26 37.3
Alpheratz	357 33.1	N29 14.6
Altair	061 58.7	N08 56.4
Ankaa	353 05.5	S42 09.7
Antares	112 14.2	S26 29.4
Arcturus	145 46.6	N19 02.3
Atria	107 07.4	S69 04.4
Avior	234 13.5	S59 35.6
Bellatrix	278 20.8	N06 22.4
Betelgeuse	270 50.0	N07 24.7
Canopus	263 51.1	S52 42.6
Capella	280 19.0	N46 01.5
Deneb	049 25.1	N45 22.8
Denebola	182 23.2	N14 25.1
Diphda	348 45.6	S17 50.4
Dubhe	193 38.8	N61 36.0
Elnath	277 59.4	N28 37.8
Eltanin	090 42.0	N51 29.0
Enif	033 37.4	N10 00.0
Fomalhaut	015 12.9	S29 28.9
Gacrux	171 49.8	S57 15.6
Gienah	175 41.9	S17 41.5
Hadar	148 33.9	S60 30.0
Hamal	327 49.2	N23 35.6
Kaus Australi	083 30.8	S34 22.3
Kochab	137 20.6	N74 02.3
Markab	013 28.4	N15 21.2
Menkar	314 04.2	N04 11.8
Menkent	147 55.9	S36 30.0
Miaplacidus	221 37.2	S69 49.5
Mirfak	308 25.5	N49 57.6
Nunki	075 46.1	S26 15.8
Peacock	053 03.7	S56 39.0
Polaris	312 49.0	N89 22.9
Pollux	243 15.0	N27 57.5
Procyon	244 48.8	N05 09.3
Rasalhague	095 57.4	N12 32.4
Regulus	207 32.5	N11 50.0
Rigel	281 02.0	S08 10.3
Rigil Kentaur	139 38.4	S60 56.6
Sabik	102 01.2	S15 45.5
Schedar	349 29.1	N56 41.5
Shaula	096 08.6	S37 07.3
Sirius	258 24.4	S16 45.2
Spica	158 20.7	S11 18.1
Suhail	222 44.7	S43 32.4
Vega	080 32.6	N38 48.5
Zubenelgenubi	136 54.4	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	131 28.8	0846
Mars	197 49.0	0422
Jupiter	210 49.1	0330
Saturn	351 29.1	1805

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
27	00	179 48.2	S23 20.1	316 18.1	N16 16.3	60.4	8.1	-14.2
	01	194 47.9	S23 20.0	330 45.2	N16 02.1	60.3	8.3	-14.3
	02	209 47.6	S23 19.9	345 12.5	N15 47.8	60.3	8.4	-14.4
	03	224 47.3	S23 19.8	359 39.8	N15 33.4	60.3	8.5	-14.5
	04	239 47.0	S23 19.7	014 07.4	N15 19.0	60.2	8.6	-14.5
	05	254 46.7	S23 19.6	028 35.0	N15 04.4	60.2	8.8	-14.6
	06	269 46.4	S23 19.4	043 02.7	N14 49.8	60.2	8.9	-14.7
	07	284 46.1	S23 19.3	057 30.6	N14 35.2	60.1	9.0	-14.7
	08	299 45.8	S23 19.2	071 58.6	N14 20.4	60.1	9.1	-14.8
	09	314 45.5	S23 19.1	086 26.7	N14 05.6	60.1	9.2	-14.9
	10	329 45.2	S23 19.0	100 54.9	N13 50.8	60.0	9.3	-14.9
	11	344 44.9	S23 18.9	115 23.3	N13 35.9	60.0	9.5	-15.0
	12	359 44.6	S23 18.8	129 51.7	N13 20.9	60.0	9.6	-15.0
	13	014 44.3	S23 18.7	144 20.3	N13 05.8	59.9	9.7	-15.1
	14	029 43.9	S23 18.6	158 49.0	N12 50.7	59.9	9.8	-15.1
	15	044 43.6	S23 18.5	173 17.7	N12 35.6	59.9	9.9	-15.2
	16	059 43.3	S23 18.4	187 46.6	N12 20.4	59.8	10.0	-15.2
	17	074 43.0	S23 18.2	202 15.6	N12 05.2	59.8	10.1	-15.3
	18	089 42.7	S23 18.1	216 44.8	N11 49.9	59.7	10.2	-15.3
	19	104 42.4	S23 18.0	231 14.0	N11 34.5	59.7	10.3	-15.4
	20	119 42.1	S23 17.9	245 43.3	N11 19.1	59.7	10.4	-15.4
	21	134 41.8	S23 17.8	260 12.7	N11 03.7	59.6	10.5	-15.5
	22	149 41.5	S23 17.7	274 42.3	N10 48.3	59.6	10.6	-15.5
	23	164 41.2	S23 17.5	289 11.9	N10 32.8	59.6	10.7	-15.5
28	00	179 40.9	S23 17.4	303 41.6	N10 17.2	59.5	10.8	-15.6
	01	194 40.6	S23 17.3	318 11.4	N10 01.7	59.5	10.9	-15.6
	02	209 40.3	S23 17.2	332 41.3	N09 46.1	59.5	11.0	-15.6
	03	224 40.0	S23 17.1	347 11.4	N09 30.4	59.4	11.1	-15.7
	04	239 39.7	S23 16.9	001 41.5	N09 14.8	59.4	11.2	-15.7
	05	254 39.4	S23 16.8	016 11.7	N08 59.1	59.3	11.3	-15.7
	06	269 39.1	S23 16.7	030 42.0	N08 43.4	59.3	11.4	-15.7
	07	284 38.8	S23 16.6	045 12.3	N08 27.6	59.3	11.5	-15.8
	08	299 38.4	S23 16.4	059 42.8	N08 11.9	59.2	11.6	-15.8
	09	314 38.1	S23 16.3	074 13.4	N07 56.1	59.2	11.6	-15.8
	10	329 37.8	S23 16.2	088 44.0	N07 40.3	59.1	11.7	-15.8
	11	344 37.5	S23 16.1	103 14.7	N07 24.5	59.1	11.8	-15.8
	12	359 37.2	S23 15.9	117 45.5	N07 08.6	59.1	11.9	-15.8
	13	014 36.9	S23 15.8	132 16.4	N06 52.8	59.0	12.0	-15.9
	14	029 36.6	S23 15.7	146 47.4	N06 36.9	59.0	12.0	-15.9
	15	044 36.3	S23 15.5	161 18.4	N06 21.1	58.9	12.1	-15.9
	16	059 36.0	S23 15.4	175 49.5	N06 05.2	58.9	12.2	-15.9
	17	074 35.7	S23 15.3	190 20.7	N05 49.3	58.9	12.3	-15.9
	18	089 35.4	S23 15.1	204 52.0	N05 33.4	58.8	12.3	-15.9
	19	104 35.1	S23 15.0	219 23.3	N05 17.5	58.8	12.4	-15.9
	20	119 34.8	S23 14.9	233 54.7	N05 01.6	58.8	12.5	-15.9
	21	134 34.5	S23 14.7	248 26.2	N04 45.7	58.7	12.5	-15.9
	22	149 34.2	S23 14.6	262 57.7	N04 29.8	58.7	12.6	-15.9
	23	164 33.9	S23 14.4	277 29.3	N04 13.9	58.6	12.7	-15.9
29	00	179 33.6	S23 14.3	292 01.0	N03 58.0	58.6	12.7	-15.9
	01	194 33.3	S23 14.2	306 32.7	N03 42.1	58.6	12.8	-15.9
	02	209 33.0	S23 14.0	321 04.5	N03 26.2	58.5	12.9	-15.9
	03	224 32.7	S23 13.9	335 36.4	N03 10.3	58.5	12.9	-15.9
	04	239 32.4	S23 13.7	350 08.3	N02 54.4	58.4	13.0	-15.9
	05	254 32.1	S23 13.6	004 40.3	N02 38.5	58.4	13.0	-15.9
	06	269 31.8	S23 13.5	019 12.3	N02 22.7	58.4	13.1	-15.9
	07	284 31.4	S23 13.3	033 44.4	N02 06.8	58.3	13.1	-15.8
	08	299 31.1	S23 13.2	048 16.5	N01 51.0	58.3	13.2	-15.8
	09	314 30.8	S23 13.0	062 48.7	N01 35.2	58.2	13.2	-15.8
	10	329 30.5	S23 12.9	077 20.9	N01 19.3	58.2	13.3	-15.8
	11	344 30.2	S23 12.7	091 53.2	N01 03.6	58.2	13.3	-15.8
	12	359 29.9	S23 12.6	106 25.6	N00 47.8	58.1	13.4	-15.8
	13	014 29.6	S23 12.4	120 57.9	N00 32.0	58.1	13.4	-15.7
	14	029 29.3	S23 12.3	135 30.4	N00 16.3	58.0	13.5	-15.7
	15	044 29.0	S23 12.1	150 02.8	N00 00.5	58.0	13.5	-15.7
	16	059 28.7	S23 12.0	164 35.3	S00 15.2	58.0	13.5	-15.7
	17	074 28.4	S23 11.8	179 07.9	S00 30.8	57.9	13.6	-15.7
	18	089 28.1	S23 11.7	193 40.5	S00 46.5	57.9	13.6	-15.6
	19	104 27.8	S23 11.5	208 13.1	S01 02.1	57.9	13.7	-15.6
	20	119 27.5	S23 11.4	222 45.7	S01 17.7	57.8	13.7	-15.6
	21	134 27.2	S23 11.2	237 18.4	S01 33.3	57.8	13.7	-15.5
	22	149 26.9	S23 11.1	251 51.2	S01 48.8	57.7	13.8	-15.5
	23	164 26.6	S23 10.9	266 23.9	S02 04.4	57.7	13.8	-15.5

Day 27 noon Sun: v -0.3 d 0.1 SD 16.3 | Moon SD 16.3

Day 28 noon Sun: v -0.3 d 0.1 SD 16.3 | Moon SD 16.1

Day 29 noon Sun: v -0.3 d 0.1 SD 16.3 | Moon SD 15.8

SUN: DECEMBER 28 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0826	1053	--	--	1311	1537
70N	0807	0954	--	--	1409	1557
68N	0751	0920	--	--	1444	1612
66N	0738	0855	1033	1330	1508	1625
64N	0727	0835	0952	1411	1528	1636
62N	0718	0819	0925	1438	1544	1645
60N	0709	0806	0903	1500	1557	1654
58N	0702	0755	0846	1517	1609	1701
56N	0655	0744	0832	1532	1619	1708
54N	0649	0735	0819	1544	1628	1714
52N	0644	0727	0808	1555	1636	1720
50N	0638	0720	0758	1605	1643	1725
45N	0627	0704	0738	1625	1659	1736
40N	0616	0650	0721	1642	1713	1747
35N	0607	0639	0707	1656	1724	1756
30N	0558	0628	0655	1708	1735	1805
25N	0550	0619	0644	1719	1744	1813
20N	0542	0610	0634	1730	1754	1821
15N	0534	0601	0624	1739	1802	1829
10N	0526	0552	0615	1748	1811	1837
05N	0518	0544	0606	1757	1819	1845
00N	0509	0535	0558	1805	1828	1854
05S	0500	0526	0549	1814	1837	1903
10S	0450	0517	0540	1823	1846	1913
15S	0440	0507	0531	1832	1856	1923
20S	0428	0457	0521	1842	1906	1935
25S	0414	0445	0511	1852	1918	1949
30S	0359	0432	0459	1903	1931	2004
35S	0340	0417	0447	1916	1946	2023
40S	0317	0359	0432	1931	2004	2046
45S	0247	0336	0414	1949	2026	2116
50S	0202	0307	0351	2012	2056	2201
55S	--	0224	0322	2041	2139	--
60S	--	0055	0237	2125	2307	--

MOON: RISE / SET | UTC HHMM

Lat	Day 27		Day 28		Day 29	
72N	1902	1224	2132	1138	2346	1104
70N	1922	1201	2138	1128	2342	1102
68N	1938	1143	2144	1120	2339	1101
66N	1951	1128	2148	1113	2337	1101
64N	2002	1116	2152	1107	2335	1100
62N	2011	1105	2155	1102	2333	1059
60N	2019	1056	2158	1058	2332	1059
58N	2025	1048	2200	1054	2330	1058
56N	2031	1041	2203	1050	2329	1058
54N	2036	1035	2205	1047	2328	1057
52N	2041	1029	2206	1044	2327	1057
50N	2045	1024	2208	1042	2326	1057
45N	2055	1013	2212	1036	2325	1056
40N	2102	1003	2214	1031	2323	1055
35N	2109	0955	2217	1027	2322	1055
30N	2115	0948	2219	1023	2321	1054
25N	2120	0941	2221	1019	2320	1054
20N	2124	0936	2223	1016	2319	1053
15N	2129	0930	2225	1013	2318	1053
10N	2133	0924	2226	1010	2317	1052
05N	2137	0919	2228	1007	2316	1052
00N	2141	0914	2230	1005	2315	1052
05S	2145	0909	2231	1002	2315	1051
10S	2149	0904	2233	0959	2314	1051
15S	2153	0858	2235	0956	2313	1050
20S	2158	0852	2236	0953	2312	1050
25S	2202	0846	2238	0950	2311	1049
30S	2207	0839	2240	0946	2310	1049
35S	2213	0832	2242	0942	2309	1048
40S	2219	0823	2245	0937	2308	1048
45S	2227	0813	2248	0932	2307	1047
50S	2235	0800	2251	0925	2305	1046
55S	2246	0744	2255	0917	2304	1045
60S	2300	0723	2301	0906	2301	1043

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

2026 | DECEMBER 30 - DECEMBER 31

UTC		ARIES	Venus		Mars		Jupiter		Saturn	
Day	h	GHA	GHA	DEC	GHA	DEC	GHA	DEC	GHA	DEC
30	00	098 27.2	228 27.9	S14 53.2	296 02.8	N10 55.7	309 20.7	N13 31.7	089 53.7	N01 00.6
	01	113 29.7	243 27.9	S14 53.8	311 04.9	N10 55.7	324 23.3	N13 31.8	104 56.1	N01 00.7
	02	128 32.1	258 27.9	S14 54.4	326 07.0	N10 55.6	339 25.9	N13 31.9	119 58.5	N01 00.7
	03	143 34.6	273 27.9	S14 55.0	341 09.1	N10 55.6	354 28.5	N13 31.9	135 00.9	N01 00.8
	04	158 37.1	288 27.9	S14 55.6	356 11.2	N10 55.5	009 31.1	N13 32.0	150 03.3	N01 00.8
	05	173 39.5	303 27.9	S14 56.2	011 13.4	N10 55.5	024 33.7	N13 32.0	165 05.7	N01 00.9
	06	188 42.0	318 27.9	S14 56.8	026 15.5	N10 55.4	039 36.2	N13 32.1	180 08.0	N01 00.9
	07	203 44.5	333 27.9	S14 57.4	041 17.6	N10 55.4	054 38.8	N13 32.1	195 10.4	N01 00.9
	08	218 46.9	348 27.9	S14 58.0	056 19.7	N10 55.3	069 41.4	N13 32.2	210 12.8	N01 01.0
	09	233 49.4	003 27.9	S14 58.6	071 21.8	N10 55.3	084 44.0	N13 32.2	225 15.2	N01 01.0
	10	248 51.9	018 27.9	S14 59.2	086 24.0	N10 55.2	099 46.6	N13 32.3	240 17.6	N01 01.1
	11	263 54.3	033 27.8	S14 59.8	101 26.1	N10 55.2	114 49.2	N13 32.4	255 20.0	N01 01.1
	12	278 56.8	048 27.8	S15 00.4	116 28.2	N10 55.2	129 51.8	N13 32.4	270 22.4	N01 01.2
	13	293 59.2	063 27.8	S15 01.0	131 30.3	N10 55.1	144 54.4	N13 32.5	285 24.8	N01 01.2
	14	309 01.7	078 27.8	S15 01.6	146 32.4	N10 55.1	159 57.0	N13 32.5	300 27.1	N01 01.2
	15	324 04.2	093 27.8	S15 02.2	161 34.6	N10 55.0	174 59.6	N13 32.6	315 29.5	N01 01.3
	16	339 06.6	108 27.8	S15 02.8	176 36.7	N10 55.0	190 02.2	N13 32.6	330 31.9	N01 01.3
	17	354 09.1	123 27.8	S15 03.4	191 38.8	N10 54.9	205 04.8	N13 32.7	345 34.3	N01 01.4
	18	009 11.6	138 27.7	S15 04.0	206 41.0	N10 54.9	220 07.4	N13 32.8	000 36.7	N01 01.4
	19	024 14.0	153 27.7	S15 04.6	221 43.1	N10 54.9	235 10.0	N13 32.8	015 39.1	N01 01.5
	20	039 16.5	168 27.7	S15 05.2	236 45.2	N10 54.8	250 12.6	N13 32.9	030 41.5	N01 01.5
	21	054 19.0	183 27.7	S15 05.8	251 47.4	N10 54.8	265 15.2	N13 32.9	045 43.9	N01 01.6
	22	069 21.4	198 27.7	S15 06.4	266 49.5	N10 54.7	280 17.8	N13 33.0	060 46.2	N01 01.6
	23	084 23.9	213 27.6	S15 07.0	281 51.6	N10 54.7	295 20.4	N13 33.1	075 48.6	N01 01.7
31	00	099 26.4	228 27.6	S15 07.6	296 53.8	N10 54.6	310 23.0	N13 33.1	090 51.0	N01 01.7
	01	114 28.8	243 27.6	S15 08.2	311 55.9	N10 54.6	325 25.6	N13 33.2	105 53.4	N01 01.7
	02	129 31.3	258 27.6	S15 08.8	326 58.0	N10 54.6	340 28.2	N13 33.2	120 55.8	N01 01.8
	03	144 33.7	273 27.5	S15 09.4	342 00.2	N10 54.5	355 30.8	N13 33.3	135 58.2	N01 01.8
	04	159 36.2	288 27.5	S15 10.0	357 02.3	N10 54.5	010 33.4	N13 33.3	151 00.6	N01 01.9
	05	174 38.7	303 27.5	S15 10.6	012 04.4	N10 54.5	025 36.0	N13 33.4	166 02.9	N01 01.9
	06	189 41.1	318 27.4	S15 11.2	027 06.6	N10 54.4	040 38.6	N13 33.5	181 05.3	N01 02.0
	07	204 43.6	333 27.4	S15 11.8	042 08.7	N10 54.4	055 41.2	N13 33.5	196 07.7	N01 02.0
	08	219 46.1	348 27.4	S15 12.4	057 10.9	N10 54.3	070 43.8	N13 33.6	211 10.1	N01 02.1
	09	234 48.5	003 27.3	S15 13.0	072 13.0	N10 54.3	085 46.4	N13 33.6	226 12.5	N01 02.1
	10	249 51.0	018 27.3	S15 13.6	087 15.2	N10 54.3	100 49.0	N13 33.7	241 14.9	N01 02.1
	11	264 53.5	033 27.3	S15 14.2	102 17.3	N10 54.2	115 51.6	N13 33.8	256 17.2	N01 02.2
	12	279 55.9	048 27.2	S15 14.8	117 19.5	N10 54.2	130 54.2	N13 33.8	271 19.6	N01 02.2
	13	294 58.4	063 27.2	S15 15.4	132 21.6	N10 54.2	145 56.8	N13 33.9	286 22.0	N01 02.3
	14	310 00.8	078 27.2	S15 16.0	147 23.8	N10 54.1	160 59.4	N13 33.9	301 24.4	N01 02.3
	15	325 03.3	093 27.1	S15 16.6	162 25.9	N10 54.1	176 02.0	N13 34.0	316 26.8	N01 02.4
	16	340 05.8	108 27.1	S15 17.2	177 28.1	N10 54.1	191 04.6	N13 34.1	331 29.2	N01 02.4
	17	355 08.2	123 27.0	S15 17.8	192 30.2	N10 54.0	206 07.2	N13 34.1	346 31.5	N01 02.5
	18	010 10.7	138 27.0	S15 18.4	207 32.4	N10 54.0	221 09.8	N13 34.2	001 33.9	N01 02.5
	19	025 13.2	153 27.0	S15 19.0	222 34.5	N10 54.0	236 12.5	N13 34.2	016 36.3	N01 02.6
	20	040 15.6	168 26.9	S15 19.6	237 36.7	N10 53.9	251 15.1	N13 34.3	031 38.7	N01 02.6
	21	055 18.1	183 26.9	S15 20.2	252 38.8	N10 53.9	266 17.7	N13 34.4	046 41.1	N01 02.7
	22	070 20.6	198 26.8	S15 20.8	267 41.0	N10 53.9	281 20.3	N13 34.4	061 43.4	N01 02.7
	23	085 23.0	213 26.8	S15 21.4	282 43.2	N10 53.9	296 22.9	N13 34.5	076 45.8	N01 02.8

STARS | middle date 00 UTC

Name	SHA	Dec
Acamar	315 10.3	S40 11.9
Achernar	335 18.8	S57 06.2
Acrux	172 58.2	S63 14.7
Adhara	255 04.2	S29 00.5
Al Na'ir	027 31.2	S46 50.0
Aldebaran	290 37.4	N16 33.8
Alioth	166 11.6	N55 48.4
Alkaid	152 50.9	N49 10.4
Alnilam	275 35.7	S01 11.1
Alphard	217 45.9	S08 46.6
Alphecca	126 02.6	N26 37.3
Alpheratz	357 33.1	N29 14.6
Altair	061 58.7	N08 56.4
Ankaa	353 05.6	S42 09.7
Antares	112 14.1	S26 29.4
Arcturus	145 46.6	N19 02.3
Atria	107 07.4	S69 04.4
Avior	234 13.5	S59 35.6
Bellatrix	278 20.8	N06 22.4
Betelgeuse	270 50.0	N07 24.7
Canopus	263 51.1	S52 42.6
Capella	280 19.0	N46 01.5
Deneb	049 25.1	N45 22.7
Denebola	182 23.2	N14 25.1
Diphda	348 45.6	S17 50.4
Dubhe	193 38.8	N61 36.0
Elnath	277 59.4	N28 37.8
Eltanin	090 42.0	N51 29.0
Enif	033 37.4	N10 00.0
Fomalhaut	015 12.9	S29 28.9
Gacrux	171 49.8	S57 15.6
Gienah	175 41.9	S17 41.5
Hadar	148 33.9	S60 30.0
Hamal	327 49.2	N23 35.6
Kaus Australi	083 30.8	S34 22.3
Kochab	137 20.6	N74 02.3
Markab	013 28.4	N15 21.2
Menkar	314 04.2	N04 11.8
Menkent	147 55.8	S36 30.0
Miaplacidus	221 37.1	S69 49.5
Mirfak	308 25.5	N49 57.6
Nunki	075 46.1	S26 15.8
Peacock	053 03.7	S56 39.0
Polaris	312 50.1	N89 22.9
Pollux	243 14.9	N27 57.5
Procyon	244 48.8	N05 09.3
Rasalhague	095 57.4	N12 32.4
Regulus	207 32.5	N11 50.0
Rigel	281 02.0	S08 10.3
Rigil Kentaur	139 38.4	S60 56.6
Sabik	102 01.2	S15 45.5
Schedar	349 29.1	N56 41.5
Shaula	096 08.6	S37 07.3
Sirius	258 24.4	S16 45.2
Spica	158 20.6	S11 18.1
Suhail	222 44.7	S43 32.4
Vega	080 32.6	N38 48.5
Zubenelgenubi	136 54.4	S16 09.2

PLANETS | noon UTC

Name	SHA	Transit
Venus	128 31.3	0846
Mars	197 23.5	0412
Jupiter	210 58.3	0318
Saturn	351 23.7	1754

Venus	Mars	Jupiter	Saturn
30: v 0.0 d -0.6	30: v 2.1 d 0.0	30: v 2.6 d 0.1	30: v 2.4 d 0.0
31: v 0.0 d -0.6	31: v 2.1 d 0.0	31: v 2.6 d 0.1	31: v 2.4 d 0.0

Rates by day at 12-13 UTC; v and d in arcminutes/hour.

2026 | DECEMBER 30 - DECEMBER 31

UTC		SUN		MOON				
Day	h	GHA	DEC	GHA	DEC	HP	v	d
30	00	179 26.3	S23 10.7	280 56.7	S02 19.9	57.7	13.8	-15.5
	01	194 26.0	S23 10.6	295 29.5	S02 35.3	57.6	13.8	-15.4
	02	209 25.7	S23 10.4	310 02.4	S02 50.7	57.6	13.9	-15.4
	03	224 25.4	S23 10.3	324 35.2	S03 06.1	57.5	13.9	-15.4
	04	239 25.1	S23 10.1	339 08.1	S03 21.5	57.5	13.9	-15.3
	05	254 24.8	S23 09.9	353 41.1	S03 36.8	57.5	13.9	-15.3
	06	269 24.5	S23 09.8	008 14.0	S03 52.1	57.4	14.0	-15.2
	07	284 24.2	S23 09.6	022 47.0	S04 07.3	57.4	14.0	-15.2
	08	299 23.9	S23 09.4	037 19.9	S04 22.6	57.4	14.0	-15.2
	09	314 23.6	S23 09.3	051 52.9	S04 37.7	57.3	14.0	-15.1
	10	329 23.3	S23 09.1	066 26.0	S04 52.9	57.3	14.0	-15.1
	11	344 23.0	S23 08.9	080 59.0	S05 07.9	57.2	14.1	-15.0
	12	359 22.7	S23 08.8	095 32.1	S05 23.0	57.2	14.1	-15.0
	13	014 22.4	S23 08.6	110 05.1	S05 38.0	57.2	14.1	-15.0
	14	029 22.1	S23 08.4	124 38.2	S05 53.0	57.1	14.1	-14.9
	15	044 21.8	S23 08.3	139 11.3	S06 07.9	57.1	14.1	-14.9
	16	059 21.5	S23 08.1	153 44.4	S06 22.8	57.1	14.1	-14.8
	17	074 21.2	S23 07.9	168 17.5	S06 37.6	57.0	14.1	-14.8
	18	089 20.9	S23 07.7	182 50.6	S06 52.4	57.0	14.1	-14.7
	19	104 20.6	S23 07.6	197 23.7	S07 07.1	57.0	14.1	-14.7
	20	119 20.3	S23 07.4	211 56.9	S07 21.8	56.9	14.1	-14.6
	21	134 20.0	S23 07.2	226 30.0	S07 36.4	56.9	14.1	-14.6
	22	149 19.7	S23 07.0	241 03.1	S07 51.0	56.9	14.1	-14.5
	23	164 19.4	S23 06.9	255 36.3	S08 05.5	56.8	14.1	-14.5
31	00	179 19.1	S23 06.7	270 09.4	S08 20.0	56.8	14.1	-14.4
	01	194 18.8	S23 06.5	284 42.5	S08 34.4	56.7	14.1	-14.4
	02	209 18.5	S23 06.3	299 15.7	S08 48.8	56.7	14.1	-14.3
	03	224 18.2	S23 06.2	313 48.8	S09 03.1	56.7	14.1	-14.3
	04	239 17.9	S23 06.0	328 21.9	S09 17.3	56.6	14.1	-14.2
	05	254 17.6	S23 05.8	342 55.1	S09 31.5	56.6	14.1	-14.1
	06	269 17.3	S23 05.6	357 28.2	S09 45.7	56.6	14.1	-14.1
	07	284 17.0	S23 05.4	012 01.3	S09 59.8	56.5	14.1	-14.0
	08	299 16.7	S23 05.2	026 34.4	S10 13.8	56.5	14.1	-14.0
	09	314 16.4	S23 05.1	041 07.5	S10 27.8	56.5	14.1	-13.9
	10	329 16.1	S23 04.9	055 40.6	S10 41.7	56.4	14.1	-13.8
	11	344 15.8	S23 04.7	070 13.6	S10 55.5	56.4	14.1	-13.8
	12	359 15.5	S23 04.5	084 46.7	S11 09.3	56.4	14.0	-13.7
	13	014 15.2	S23 04.3	099 19.7	S11 23.0	56.3	14.0	-13.7
	14	029 14.9	S23 04.1	113 52.8	S11 36.7	56.3	14.0	-13.6
	15	044 14.6	S23 03.9	128 25.8	S11 50.2	56.3	14.0	-13.5
	16	059 14.3	S23 03.7	142 58.8	S12 03.8	56.3	14.0	-13.5
	17	074 14.0	S23 03.6	157 31.8	S12 17.2	56.2	14.0	-13.4
	18	089 13.7	S23 03.4	172 04.7	S12 30.6	56.2	13.9	-13.3
	19	104 13.4	S23 03.2	186 37.7	S12 43.9	56.2	13.9	-13.3
	20	119 13.1	S23 03.0	201 10.6	S12 57.2	56.1	13.9	-13.2
	21	134 12.8	S23 02.8	215 43.5	S13 10.4	56.1	13.9	-13.1
	22	149 12.5	S23 02.6	230 16.4	S13 23.5	56.1	13.9	-13.0
	23	164 12.2	S23 02.4	244 49.2	S13 36.5	56.0	13.8	-13.0

Day 30 noon Sun: v -0.3 d 0.2 SD 16.3 | Moon SD 15.6

Day 31 noon Sun: v -0.3 d 0.2 SD 16.3 | Moon SD 15.4

SUN: DECEMBER 31 | UTC HHMM

Lat	Ntwl	Ctwl	Rise	Set	Ctwl	Ntwl
72N	0825	1046	--	--	1321	1541
70N	0806	0951	--	--	1415	1601
68N	0750	0918	--	--	1448	1616
66N	0738	0854	1030	1337	1513	1629
64N	0727	0835	0950	1416	1532	1639
62N	0718	0819	0924	1443	1547	1649
60N	0709	0806	0903	1503	1600	1657
58N	0702	0754	0846	1520	1612	1704
56N	0656	0744	0831	1535	1622	1711
54N	0650	0736	0819	1547	1631	1717
52N	0644	0728	0808	1558	1639	1722
50N	0639	0720	0759	1608	1646	1727
45N	0627	0704	0738	1628	1702	1739
40N	0617	0651	0722	1644	1715	1749
35N	0608	0640	0708	1658	1726	1758
30N	0559	0629	0656	1710	1737	1807
25N	0551	0620	0645	1721	1746	1815
20N	0543	0611	0635	1731	1755	1823
15N	0535	0602	0625	1741	1804	1831
10N	0527	0554	0616	1750	1812	1839
05N	0519	0545	0608	1758	1821	1847
00N	0511	0537	0559	1807	1829	1855
05S	0502	0528	0551	1815	1838	1904
10S	0452	0519	0542	1824	1847	1914
15S	0441	0509	0533	1833	1857	1925
20S	0430	0459	0523	1843	1907	1936
25S	0416	0447	0513	1853	1919	1950
30S	0401	0434	0501	1904	1932	2005
35S	0343	0419	0449	1917	1947	2023
40S	0320	0401	0434	1932	2005	2046
45S	0250	0339	0416	1950	2027	2116
50S	0205	0310	0354	2012	2056	2200
55S	--	0227	0325	2041	2138	--
60S	--	0102	0241	2124	2301	--

MOON: RISE / SET | UTC HHMM

Lat	Day 30		Day 31	
72N	--	1031	0159	0953
70N	--	1038	0144	1010
68N	--	1043	0133	1024
66N	--	1048	0123	1035
64N	--	1052	0115	1045
62N	--	1056	0109	1053
60N	--	1059	0103	1100
58N	--	1102	0058	1106
56N	--	1105	0053	1112
54N	--	1107	0049	1117
52N	--	1109	0046	1121
50N	--	1111	0042	1125
45N	--	1115	0035	1134
40N	--	1118	0030	1142
35N	--	1121	0025	1148
30N	--	1124	0020	1154
25N	--	1126	0016	1159
20N	--	1129	0013	1204
15N	--	1131	0009	1208
10N	--	1133	0006	1213
05N	--	1135	0003	1217
00N	2400	1137	--	1221
05S	2357	1139	--	1225
10S	2354	1141	--	1229
15S	2351	1143	--	1234
20S	2347	1145	--	1238
25S	2344	1147	--	1243
30S	2340	1149	--	1248
35S	2336	1152	--	1254
40S	2331	1155	2355	1301
45S	2326	1159	2346	1309
50S	2320	1203	2335	1318
55S	2312	1208	2321	1330
60S	2302	1215	2303	1346

-- : no crossing in this UTC day. Sea level.

Greenwich longitude only; see conventions.

These direct spherical-triangle formulas work from your DR or assumed position. This is a NAVALM calculator guide, not the NAO Concise lookup tables. Use degree mode. Latitude and declination are positive north, negative south. Longitude is positive east.

```
LHA = (GHA + longitude) modulo 360

up = sin(lat)*sin(dec) + cos(lat)*cos(dec)*cos(LHA)

north = cos(lat)*sin(dec) - sin(lat)*cos(dec)*cos(LHA)

east = -cos(dec)*sin(LHA)

Hc = atan2(up, sqrt(north*north + east*east))

Zn = atan2(east, north), reduced to 0 through 360

Intercept NM = (Ho - Hc) * 60
```

atan2 conventions differ between calculators: verify that atan2(east, north) means the angle whose sine follows east and cosine follows north. Positive intercept is Toward the body's geographic position, negative is Away. A body below the horizon has negative Hc. At the zenith or nadir, azimuth is undefined.

WORKSHEET | signed north/east positive

```
Lat _______ N/S  signed _______   Lon _______ E/W  signed _______

GHA _______ Dec _______ N/S  signed _______   LHA _______

up ______________  north ______________  east ______________

Hc ______________  Zn (0-360) ______________

Ho _______  Ho-Hc _______ x60 = _______ NM   Toward / Away

AUDIT: degree mode [ ]  longitude sign [ ]  azimuth quadrant [ ]
```

A(x) = -1,000,000 log10(abs(sin x)); B(x) = -1,000,000 log10(abs(cos x)). This edition uses a half-minute grid and SIX-place logarithms, a tenfold scale change from traditional Ageton tables. All entries are freshly calculated rounded integers. Never combine them with historical 100,000-scale entries.

Each row lists x, A(x), B(x), and c = 90 - x. To use c, SWAP the A and B columns: A(c)=B(x), B(c)=A(x). Thus 0 through 45 degrees covers 0 through 90. For obtuse or signed angles, use absolute sine/cosine magnitudes and carry signs separately as below. INF is a singular value, not a number for subtraction.

Let t be the smaller of LHA and 360-LHA (0 to 180). Let q0 be an acute auxiliary angle. The Q used below is a signed meridian ANGLE that may exceed 90 degrees; it is not a signed latitude. This convention keeps the far-side case explicit.

```
1  A(R) = A(t) + B(dec)          -> R; look up B(R)

2  A(q0) = A(dec) - B(R)

   B(q0) = B(dec) + B(t) - B(R)

   A(q0) >=150515: invert A; otherwise invert B.

3  t <90: Q = sign(dec)*q0

   t >90: Q = sign(dec)*(180-q0)

4  gap = Q - lat, normalized to -180 through +180

5  A(abs Hc) = B(R) + B(gap)     -> abs Hc

6  A(z0) = A(R) - B(Hc)

   B(z0) = B(R) + A(gap) - B(Hc)

   A(z0) >=150515: invert A; otherwise invert B.

7  gap >=0: Z = z0; gap <0: Z = 180-z0

8  LHA <180: Zn = 360-Z; LHA >180: Zn = Z
```

Choose the nearest printed row for a quick estimate. For finer work use linear interpolation in forward and inverse lookups. Half-minute spacing does not guarantee a half-minute final altitude: rounding can be amplified by the triangle.

INTERPOLATION AND COMPLEMENTS

Example: x = 30 degrees 00.2 minutes lies 0.4 of the way from the 00.0 to the 00.5 row. Interpolate the rounded A or B entries by that fraction. For an inverse lookup, divide the log difference by the difference between adjacent printed entries to obtain the same fraction of a half minute.

For an angle above 45 degrees, find it in the c column and swap A/B. For example, at c=60 degrees use the x=30 degrees row: A(60)=B(30), B(60)=A(30). Always record whether you used x or c before copying a log.

Stop and use direct formulas for t at 0, 90 or 180 degrees, declination within half a minute of zero, R above 87 degrees, or Hc outside 5 to 85 degrees. Do not subtract INF from INF or conceal a negative logarithm. A rounded lookup at a singular endpoint is a warning to change method, not evidence of an exact answer.

If abs(gap) exceeds 90 degrees the body is below the horizon. Hc is then negative; do not treat the positive acute lookup as an observable altitude. At abs(gap) =90, Hc=0. The printed worksheet deliberately asks you to check these signs before plotting.

```
Lat ______ N/S  signed ______   Lon ______ E/W  signed ______

GHA ______  Dec ______ N/S  signed ______  Ho ______

LHA (0-360) ______  t ______  [ ] t <90  [ ] t >90

A(t) ______  B(dec) ______  A(R) ______  R ______  B(R) ______

A(dec) ______  A(q0) ______  B(q0) ______  q0 ______

Q sign from dec ____  Q magnitude: q0 / 180-q0 ____

SIGNED Q ______  SIGNED lat ______  SIGNED gap ______

[ ] abs gap <90: above  [ ] >90: below - STOP

B(gap) ______  A(abs Hc) ______  Hc ______  B(Hc) ______

A(z0) ______  B(z0) ______  z0 ______  gap sign ____

[ ] gap >=0: Z=z0  [ ] gap <0: Z=180-z0   Z ______

[ ] LHA <180: 360-Z  [ ] LHA >180: Z   Zn ______

Ho-Hc ______ x60 = ______ NM   [ ] Toward  [ ] Away

AUDIT: [ ] six-place scale  [ ] complement columns swapped

[ ] interpolation recorded  [ ] limits checked  [ ] signs checked
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COMPACT AGETON | 000 00.0 to 002 00.0

x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c
00 00.0	INF	0	90 00.0	00 30.0	2059158	17	89 30.0	01 00.0	1758145	66	89 00.0	01 30.0	1582081	149	88 30.0
00 00.5	3837304	0	89 59.5	00 30.5	2051980	17	89 29.5	01 00.5	1754541	67	88 59.5	01 30.5	1579675	151	88 29.5
00 01.0	3536274	0	89 59.0	00 31.0	2044918	18	89 29.0	01 01.0	1750967	68	88 59.0	01 31.0	1577283	152	88 29.0
00 01.5	3360183	0	89 58.5	00 31.5	2037969	18	89 28.5	01 01.5	1747422	69	88 58.5	01 31.5	1574904	154	88 28.5
00 02.0	3235244	0	89 58.0	00 32.0	2031130	19	89 28.0	01 02.0	1743906	71	88 58.0	01 32.0	1572538	156	88 28.0
00 02.5	3138334	0	89 57.5	00 32.5	2024397	19	89 27.5	01 02.5	1740418	72	88 57.5	01 32.5	1570185	157	88 27.5
00 03.0	3059153	0	89 57.0	00 33.0	2017767	20	89 27.0	01 03.0	1736958	73	88 57.0	01 33.0	1567844	159	88 27.0
00 03.5	2992206	0	89 56.5	00 33.5	2011236	21	89 26.5	01 03.5	1733525	74	88 56.5	01 33.5	1565516	161	88 26.5
00 04.0	2934214	0	89 56.0	00 34.0	2004802	21	89 26.0	01 04.0	1730119	75	88 56.0	01 34.0	1563200	162	88 26.0
00 04.5	2883061	0	89 55.5	00 34.5	1998462	22	89 25.5	01 04.5	1726740	76	88 55.5	01 34.5	1560897	164	88 25.5
00 05.0	2837304	0	89 55.0	00 35.0	1992213	23	89 25.0	01 05.0	1723386	78	88 55.0	01 35.0	1558606	166	88 25.0
00 05.5	2795911	1	89 54.5	00 35.5	1986053	23	89 24.5	01 05.5	1720059	79	88 54.5	01 35.5	1556326	168	88 24.5
00 06.0	2758123	1	89 54.0	00 36.0	1979979	24	89 24.0	01 06.0	1716757	80	88 54.0	01 36.0	1554059	169	88 24.0
00 06.5	2723361	1	89 53.5	00 36.5	1973989	24	89 23.5	01 06.5	1713479	81	88 53.5	01 36.5	1551804	171	88 23.5
00 07.0	2691176	1	89 53.0	00 37.0	1968081	25	89 23.0	01 07.0	1710227	82	88 53.0	01 37.0	1549560	173	88 23.0
00 07.5	2661213	1	89 52.5	00 37.5	1962251	26	89 22.5	01 07.5	1706998	84	88 52.5	01 37.5	1547327	175	88 22.5
00 08.0	2633184	1	89 52.0	00 38.0	1956499	27	89 22.0	01 08.0	1703793	85	88 52.0	01 38.0	1545107	176	88 22.0
00 08.5	2606855	1	89 51.5	00 38.5	1950822	27	89 21.5	01 08.5	1700612	86	88 51.5	01 38.5	1542897	178	88 21.5
00 09.0	2582032	1	89 51.0	00 39.0	1945219	28	89 21.0	01 09.0	1697454	87	88 51.0	01 39.0	1540699	180	88 21.0
00 09.5	2558551	2	89 50.5	00 39.5	1939686	29	89 20.5	01 09.5	1694319	89	88 50.5	01 39.5	1538511	182	88 20.5
00 10.0	2536274	2	89 50.0	00 40.0	1934224	29	89 20.0	01 10.0	1691206	90	88 50.0	01 40.0	1536335	184	88 20.0
00 10.5	2515085	2	89 49.5	00 40.5	1928829	30	89 19.5	01 10.5	1688115	91	88 49.5	01 40.5	1534170	186	88 19.5
00 11.0	2494882	2	89 49.0	00 41.0	1923500	31	89 19.0	01 11.0	1685046	93	88 49.0	01 41.0	1532015	187	88 19.0
00 11.5	2475577	2	89 48.5	00 41.5	1918236	32	89 18.5	01 11.5	1681999	94	88 48.5	01 41.5	1529871	189	88 18.5
00 12.0	2457094	3	89 48.0	00 42.0	1913035	32	89 18.0	01 12.0	1678973	95	88 48.0	01 42.0	1527737	191	88 18.0
00 12.5	2439365	3	89 47.5	00 42.5	1907896	33	89 17.5	01 12.5	1675968	97	88 47.5	01 42.5	1525614	193	88 17.5
00 13.0	2422332	3	89 47.0	00 43.0	1902817	34	89 17.0	01 13.0	1672984	98	88 47.0	01 43.0	1523502	195	88 17.0
00 13.5	2405941	3	89 46.5	00 43.5	1897796	35	89 16.5	01 13.5	1670020	99	88 46.5	01 43.5	1521399	197	88 16.5
00 14.0	2390147	4	89 46.0	00 44.0	1892833	36	89 16.0	01 14.0	1667076	101	88 46.0	01 44.0	1519307	199	88 16.0
00 14.5	2374907	4	89 45.5	00 44.5	1887926	36	89 15.5	01 14.5	1664152	102	88 45.5	01 44.5	1517224	201	88 15.5
00 15.0	2360184	4	89 45.0	00 45.0	1883074	37	89 15.0	01 15.0	1661247	103	88 45.0	01 45.0	1515152	203	88 15.0
00 15.5	2345944	4	89 44.5	00 45.5	1878275	38	89 14.5	01 15.5	1658362	105	88 44.5	01 45.5	1513090	205	88 14.5
00 16.0	2332155	5	89 44.0	00 46.0	1873529	39	89 14.0	01 16.0	1655496	106	88 44.0	01 46.0	1511037	206	88 14.0
00 16.5	2318792	5	89 43.5	00 46.5	1868834	40	89 13.5	01 16.5	1652648	108	88 43.5	01 46.5	1508994	208	88 13.5
00 17.0	2305827	5	89 43.0	00 47.0	1864190	41	89 13.0	01 17.0	1649819	109	88 43.0	01 47.0	1506960	210	88 13.0
00 17.5	2293238	6	89 42.5	00 47.5	1859594	41	89 12.5	01 17.5	1647009	110	88 42.5	01 47.5	1504936	212	88 12.5
00 18.0	2281003	6	89 42.0	00 48.0	1855047	42	89 12.0	01 18.0	1644217	112	88 42.0	01 48.0	1502922	214	88 12.0
00 18.5	2269104	6	89 41.5	00 48.5	1850547	43	89 11.5	01 18.5	1641442	113	88 41.5	01 48.5	1500916	216	88 11.5
00 19.0	2257522	7	89 41.0	00 49.0	1846093	44	89 11.0	01 19.0	1638685	115	88 41.0	01 49.0	1498920	218	88 11.0
00 19.5	2246242	7	89 40.5	00 49.5	1841684	45	89 10.5	01 19.5	1635945	116	88 40.5	01 49.5	1496933	220	88 10.5
00 20.0	2235246	7	89 40.0	00 50.0	1837319	46	89 10.0	01 20.0	1633223	118	88 40.0	01 50.0	1494955	222	88 10.0
00 20.5	2224523	8	89 39.5	00 50.5	1832998	47	89 09.5	01 20.5	1630518	119	88 39.5	01 50.5	1492986	224	88 09.5
00 21.0	2214057	8	89 39.0	00 51.0	1828720	48	89 09.0	01 21.0	1627829	121	88 39.0	01 51.0	1491026	226	88 09.0
00 21.5	2203838	8	89 38.5	00 51.5	1824483	49	89 08.5	01 21.5	1625157	122	88 38.5	01 51.5	1489075	228	88 08.5
00 22.0	2193854	9	89 38.0	00 52.0	1820287	50	89 08.0	01 22.0	1622501	124	88 38.0	01 52.0	1487133	231	88 08.0
00 22.5	2184094	9	89 37.5	00 52.5	1816131	51	89 07.5	01 22.5	1619862	125	88 37.5	01 52.5	1485199	233	88 07.5
00 23.0	2174549	10	89 37.0	00 53.0	1812015	52	89 07.0	01 23.0	1617238	127	88 37.0	01 53.0	1483274	235	88 07.0
00 23.5	2165209	10	89 36.5	00 53.5	1807938	53	89 06.5	01 23.5	1614630	128	88 36.5	01 53.5	1481357	237	88 06.5
00 24.0	2156066	11	89 36.0	00 54.0	1803898	54	89 06.0	01 24.0	1612038	130	88 36.0	01 54.0	1479449	239	88 06.0
00 24.5	2147111	11	89 35.5	00 54.5	1799896	55	89 05.5	01 24.5	1609461	131	88 35.5	01 54.5	1477549	241	88 05.5
00 25.0	2138338	11	89 35.0	00 55.0	1795930	56	89 05.0	01 25.0	1606899	133	88 35.0	01 55.0	1475657	243	88 05.0
00 25.5	2129738	12	89 34.5	00 55.5	1792000	57	89 04.5	01 25.5	1604353	134	88 34.5	01 55.5	1473774	245	88 04.5
00 26.0	2121305	12	89 34.0	00 56.0	1788105	58	89 04.0	01 26.0	1601821	136	88 34.0	01 56.0	1471898	247	88 04.0
00 26.5	2113032	13	89 33.5	00 56.5	1784245	59	89 03.5	01 26.5	1599304	137	88 33.5	01 56.5	1470031	249	88 03.5
00 27.0	2104915	13	89 33.0	00 57.0	1780419	60	89 03.0	01 27.0	1596801	139	88 33.0	01 57.0	1468172	252	88 03.0
00 27.5	2096946	14	89 32.5	00 57.5	1776626	61	89 02.5	01 27.5	1594313	141	88 32.5	01 57.5	1466321	254	88 02.5
00 28.0	2089121	14	89 32.0	00 58.0	1772866	62	89 02.0	01 28.0	1591839	142	88 32.0	01 58.0	1464477	256	88 02.0
00 28.5	2081434	15	89 31.5	00 58.5	1769139	63	89 01.5	01 28.5	1589379	144	88 31.5	01 58.5	1462642	258	88 01.5
00 29.0	2073881	15	89 31.0	00 59.0	1765443	64	89 01.0	01 29.0	1586932	146	88 31.0	01 59.0	1460814	260	88 01.0
00 29.5	2066457	16	89 30.5	00 59.5	1761779	65	89 00.5	01 29.5	1584500	147	88 30.5	01 59.5	1458993	262	88 00.5
00 30.0	2059158	17	89 30.0	01 00.0	1758145	66	89 00.0	01 30.0	1582081	149	88 30.0	02 00.0	1457181	265	88 00.0

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c
02 00.0	1457181	265	88 00.0	02 30.0	1360320	414	87 30.0	03 00.0	1281200	596	87 00.0	03 30.0	1214325	811	86 30.0
02 00.5	1455376	267	87 59.5	02 30.5	1358876	416	87 29.5	03 00.5	1279996	599	86 59.5	03 30.5	1213293	815	86 29.5
02 01.0	1453578	269	87 59.0	02 31.0	1357437	419	87 29.0	03 01.0	1278796	602	86 59.0	03 31.0	1212264	819	86 29.0
02 01.5	1451788	271	87 58.5	02 31.5	1356002	422	87 28.5	03 01.5	1277599	606	86 58.5	03 31.5	1211238	822	86 28.5
02 02.0	1450005	274	87 58.0	02 32.0	1354572	425	87 28.0	03 02.0	1276405	609	86 58.0	03 32.0	1210213	826	86 28.0
02 02.5	1448230	276	87 57.5	02 32.5	1353146	427	87 27.5	03 02.5	1275215	612	86 57.5	03 32.5	1209192	830	86 27.5
02 03.0	1446461	278	87 57.0	02 33.0	1351726	430	87 27.0	03 03.0	1274028	616	86 57.0	03 33.0	1208172	834	86 27.0
02 03.5	1444700	280	87 56.5	02 33.5	1350310	433	87 26.5	03 03.5	1272844	619	86 56.5	03 33.5	1207155	838	86 26.5
02 04.0	1442946	283	87 56.0	02 34.0	1348898	436	87 26.0	03 04.0	1271663	622	86 56.0	03 34.0	1206141	842	86 26.0
02 04.5	1441199	285	87 55.5	02 34.5	1347492	439	87 25.5	03 04.5	1270486	626	86 55.5	03 34.5	1205128	846	86 25.5
02 05.0	1439460	287	87 55.0	02 35.0	1346089	442	87 25.0	03 05.0	1269312	629	86 55.0	03 35.0	1204119	850	86 25.0
02 05.5	1437727	289	87 54.5	02 35.5	1344692	444	87 24.5	03 05.5	1268141	633	86 54.5	03 35.5	1203111	854	86 24.5
02 06.0	1436001	292	87 54.0	02 36.0	1343298	447	87 24.0	03 06.0	1266973	636	86 54.0	03 36.0	1202106	858	86 24.0
02 06.5	1434281	294	87 53.5	02 36.5	1341910	450	87 23.5	03 06.5	1265808	639	86 53.5	03 36.5	1201103	862	86 23.5
02 07.0	1432569	296	87 53.0	02 37.0	1340525	453	87 23.0	03 07.0	1264646	643	86 53.0	03 37.0	1200103	866	86 23.0
02 07.5	1430863	299	87 52.5	02 37.5	1339145	456	87 22.5	03 07.5	1263488	646	86 52.5	03 37.5	1199104	870	86 22.5
02 08.0	1429164	301	87 52.0	02 38.0	1337770	459	87 22.0	03 08.0	1262333	650	86 52.0	03 38.0	1198108	874	86 22.0
02 08.5	1427472	303	87 51.5	02 38.5	1336398	462	87 21.5	03 08.5	1261180	653	86 51.5	03 38.5	1197115	878	86 21.5
02 09.0	1425786	306	87 51.0	02 39.0	1335032	465	87 21.0	03 09.0	1260031	657	86 51.0	03 39.0	1196124	882	86 21.0
02 09.5	1424107	308	87 50.5	02 39.5	1333669	468	87 20.5	03 09.5	1258885	660	86 50.5	03 39.5	1195134	886	86 20.5
02 10.0	1422434	311	87 50.0	02 40.0	1332311	471	87 20.0	03 10.0	1257741	664	86 50.0	03 40.0	1194148	890	86 20.0
02 10.5	1420768	313	87 49.5	02 40.5	1330957	473	87 19.5	03 10.5	1256601	667	86 49.5	03 40.5	1193163	894	86 19.5
02 11.0	1419108	315	87 49.0	02 41.0	1329607	476	87 19.0	03 11.0	1255464	671	86 49.0	03 41.0	1192181	898	86 19.0
02 11.5	1417454	318	87 48.5	02 41.5	1328261	479	87 18.5	03 11.5	1254330	674	86 48.5	03 41.5	1191201	902	86 18.5
02 12.0	1415807	320	87 48.0	02 42.0	1326920	482	87 18.0	03 12.0	1253198	678	86 48.0	03 42.0	1190223	906	86 18.0
02 12.5	1414166	323	87 47.5	02 42.5	1325582	485	87 17.5	03 12.5	1252070	681	86 47.5	03 42.5	1189247	910	86 17.5
02 13.0	1412531	325	87 47.0	02 43.0	1324249	488	87 17.0	03 13.0	1250945	685	86 47.0	03 43.0	1188274	914	86 17.0
02 13.5	1410902	328	87 46.5	02 43.5	1322920	491	87 16.5	03 13.5	1249822	688	86 46.5	03 43.5	1187302	918	86 16.5
02 14.0	1409279	330	87 46.0	02 44.0	1321595	494	87 16.0	03 14.0	1248703	692	86 46.0	03 44.0	1186333	923	86 16.0
02 14.5	1407662	332	87 45.5	02 44.5	1320274	497	87 15.5	03 14.5	1247586	695	86 45.5	03 44.5	1185366	927	86 15.5
02 15.0	1406052	335	87 45.0	02 45.0	1318957	500	87 15.0	03 15.0	1246472	699	86 45.0	03 45.0	1184401	931	86 15.0
02 15.5	1404447	337	87 44.5	02 45.5	1317644	503	87 14.5	03 15.5	1245361	703	86 44.5	03 45.5	1183439	935	86 14.5
02 16.0	1402848	340	87 44.0	02 46.0	1316335	507	87 14.0	03 16.0	1244253	706	86 44.0	03 46.0	1182478	939	86 14.0
02 16.5	1401255	342	87 43.5	02 46.5	1315029	510	87 13.5	03 16.5	1243148	710	86 43.5	03 46.5	1181520	943	86 13.5
02 17.0	1399668	345	87 43.0	02 47.0	1313728	513	87 13.0	03 17.0	1242045	713	86 43.0	03 47.0	1180564	947	86 13.0
02 17.5	1398087	347	87 42.5	02 47.5	1312431	516	87 12.5	03 17.5	1240946	717	86 42.5	03 47.5	1179610	952	86 12.5
02 18.0	1396511	350	87 42.0	02 48.0	1311137	519	87 12.0	03 18.0	1239849	721	86 42.0	03 48.0	1178657	956	86 12.0
02 18.5	1394942	353	87 41.5	02 48.5	1309848	522	87 11.5	03 18.5	1238755	724	86 41.5	03 48.5	1177708	960	86 11.5
02 19.0	1393377	355	87 41.0	02 49.0	1308562	525	87 11.0	03 19.0	1237663	728	86 41.0	03 49.0	1176760	964	86 11.0
02 19.5	1391819	358	87 40.5	02 49.5	1307280	528	87 10.5	03 19.5	1236575	732	86 40.5	03 49.5	1175814	968	86 10.5
02 20.0	1390266	360	87 40.0	02 50.0	1306002	531	87 10.0	03 20.0	1235489	735	86 40.0	03 50.0	1174870	973	86 10.0
02 20.5	1388718	363	87 39.5	02 50.5	1304728	534	87 09.5	03 20.5	1234406	739	86 39.5	03 50.5	1173928	977	86 09.5
02 21.0	1387177	365	87 39.0	02 51.0	1303457	537	87 09.0	03 21.0	1233325	743	86 39.0	03 51.0	1172989	981	86 09.0
02 21.5	1385640	368	87 38.5	02 51.5	1302190	541	87 08.5	03 21.5	1232248	746	86 38.5	03 51.5	1172051	985	86 08.5
02 22.0	1384109	371	87 38.0	02 52.0	1300927	544	87 08.0	03 22.0	1231172	750	86 38.0	03 52.0	1171116	990	86 08.0
02 22.5	1382583	373	87 37.5	02 52.5	1299667	547	87 07.5	03 22.5	1230100	754	86 37.5	03 52.5	1170182	994	86 07.5
02 23.0	1381063	376	87 37.0	02 53.0	1298411	550	87 07.0	03 23.0	1229030	758	86 37.0	03 53.0	1169251	998	86 07.0
02 23.5	1379548	378	87 36.5	02 53.5	1297159	553	87 06.5	03 23.5	1227963	761	86 36.5	03 53.5	1168321	1003	86 06.5
02 24.0	1378038	381	87 36.0	02 54.0	1295910	557	87 06.0	03 24.0	1226899	765	86 36.0	03 54.0	1167393	1007	86 06.0
02 24.5	1376534	384	87 35.5	02 54.5	1294665	560	87 05.5	03 24.5	1225837	769	86 35.5	03 54.5	1166468	1011	86 05.5
02 25.0	1375035	386	87 35.0	02 55.0	1293423	563	87 05.0	03 25.0	1224777	773	86 35.0	03 55.0	1165544	1016	86 05.0
02 25.5	1373541	389	87 34.5	02 55.5	1292185	566	87 04.5	03 25.5	1223721	776	86 34.5	03 55.5	1164623	1020	86 04.5
02 26.0	1372052	392	87 34.0	02 56.0	1290951	569	87 04.0	03 26.0	1222667	780	86 34.0	03 56.0	1163703	1024	86 04.0
02 26.5	1370568	394	87 33.5	02 56.5	1289720	573	87 03.5	03 26.5	1221615	784	86 33.5	03 56.5	1162785	1029	86 03.5
02 27.0	1369089	397	87 33.0	02 57.0	1288493	576	87 03.0	03 27.0	1220566	788	86 33.0	03 57.0	1161870	1033	86 03.0
02 27.5	1367615	400	87 32.5	02 57.5	1287269	579	87 02.5	03 27.5	1219520	792	86 32.5	03 57.5	1160956	1037	86 02.5
02 28.0	1366146	403	87 32.0	02 58.0	1286048	582	87 02.0	03 28.0	1218476	795	86 32.0	03 58.0	1160044	1042	86 02.0
02 28.5	1364683	405	87 31.5	02 58.5	1284831	586	87 01.5	03 28.5	1217434	799	86 31.5	03 58.5	1159134	1046	86 01.5
02 29.0	1363224	408	87 31.0	02 59.0	1283617	589	87 01.0	03 29.0	1216395	803	86 31.0	03 59.0	1158226	1050	86 01.0
02 29.5	1361770	411	87 30.5	02 59.5	1282407	592	87 00.5	03 29.5	1215359	807	86 30.5	03 59.5	1157320	1055	86 00.5
02 30.0	1360320	414	87 30.0	03 00.0	1281200	596	87 00.0	03 30.0	1214325	811	86 30.0	04 00.0	1156415	1059	86 00.0

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

x	A(x)	B(x)	c
04 00.0	1156415	1059 86	00.0
04 00.5	1155513	1064 85	59.5
04 01.0	1154613	1068 85	59.0
04 01.5	1153714	1073 85	58.5
04 02.0	1152817	1077 85	58.0
04 02.5	1151922	1081 85	57.5
04 03.0	1151029	1086 85	57.0
04 03.5	1150138	1090 85	56.5
04 04.0	1149249	1095 85	56.0
04 04.5	1148361	1099 85	55.5
04 05.0	1147475	1104 85	55.0
04 05.5	1146592	1108 85	54.5
04 06.0	1145709	1113 85	54.0
04 06.5	1144829	1117 85	53.5
04 07.0	1143951	1122 85	53.0
04 07.5	1143074	1127 85	52.5
04 08.0	1142199	1131 85	52.0
04 08.5	1141326	1136 85	51.5
04 09.0	1140454	1140 85	51.0
04 09.5	1139585	1145 85	50.5
04 10.0	1138717	1149 85	50.0
04 10.5	1137851	1154 85	49.5
04 11.0	1136986	1159 85	49.0
04 11.5	1136123	1163 85	48.5
04 12.0	1135262	1168 85	48.0
04 12.5	1134403	1173 85	47.5
04 13.0	1133545	1177 85	47.0
04 13.5	1132690	1182 85	46.5
04 14.0	1131835	1187 85	46.0
04 14.5	1130983	1191 85	45.5
04 15.0	1130132	1196 85	45.0
04 15.5	1129283	1201 85	44.5
04 16.0	1128435	1205 85	44.0
04 16.5	1127590	1210 85	43.5
04 17.0	1126745	1215 85	43.0
04 17.5	1125903	1219 85	42.5
04 18.0	1125062	1224 85	42.0
04 18.5	1124223	1229 85	41.5
04 19.0	1123385	1234 85	41.0
04 19.5	1122549	1238 85	40.5
04 20.0	1121715	1243 85	40.0
04 20.5	1120882	1248 85	39.5
04 21.0	1120051	1253 85	39.0
04 21.5	1119221	1258 85	38.5
04 22.0	1118393	1262 85	38.0
04 22.5	1117567	1267 85	37.5
04 23.0	1116742	1272 85	37.0
04 23.5	1115919	1277 85	36.5
04 24.0	1115097	1282 85	36.0
04 24.5	1114277	1287 85	35.5
04 25.0	1113458	1292 85	35.0
04 25.5	1112641	1296 85	34.5
04 26.0	1111826	1301 85	34.0
04 26.5	1111012	1306 85	33.5
04 27.0	1110199	1311 85	33.0
04 27.5	1109388	1316 85	32.5
04 28.0	1108579	1321 85	32.0
04 28.5	1107771	1326 85	31.5
04 29.0	1106965	1331 85	31.0
04 29.5	1106160	1336 85	30.5
04 30.0	1105357	1341 85	30.0
04 30.0	1105357	1341 85	30.0
04 30.5	1104555	1346 85	29.5
04 31.0	1103754	1351 85	29.0
04 31.5	1102956	1356 85	28.5
04 32.0	1102158	1361 85	28.0
04 32.5	1101362	1366 85	27.5
04 33.0	1100568	1371 85	27.0
04 33.5	1099775	1376 85	26.5
04 34.0	1098983	1381 85	26.0
04 34.5	1098193	1386 85	25.5
04 35.0	1097404	1391 85	25.0
04 35.5	1096617	1396 85	24.5
04 36.0	1095831	1401 85	24.0
04 36.5	1095047	1406 85	23.5
04 37.0	1094264	1411 85	23.0
04 37.5	1093483	1416 85	22.5
04 38.0	1092703	1422 85	22.0
04 38.5	1091924	1427 85	21.5
04 39.0	1091147	1432 85	21.0
04 39.5	1090371	1437 85	20.5
04 40.0	1089596	1442 85	20.0
04 40.5	1088823	1447 85	19.5
04 41.0	1088051	1452 85	19.0
04 41.5	1087281	1458 85	18.5
04 42.0	1086512	1463 85	18.0
04 42.5	1085744	1468 85	17.5
04 43.0	1084978	1473 85	17.0
04 43.5	1084213	1478 85	16.5
04 44.0	1083450	1484 85	16.0
04 44.5	1082687	1489 85	15.5
04 45.0	1081927	1494 85	15.0
04 45.5	1081167	1499 85	14.5
04 46.0	1080409	1505 85	14.0
04 46.5	1079652	1510 85	13.5
04 47.0	1078897	1515 85	13.0
04 47.5	1078142	1521 85	12.5
04 48.0	1077390	1526 85	12.0
04 48.5	1076638	1531 85	11.5
04 49.0	1075888	1536 85	11.0
04 49.5	1075139	1542 85	10.5
04 50.0	1074391	1547 85	10.0
04 50.5	1073645	1552 85	09.5
04 51.0	1072900	1558 85	09.0
04 51.5	1072156	1563 85	08.5
04 52.0	1071413	1569 85	08.0
04 52.5	1070672	1574 85	07.5
04 53.0	1069932	1579 85	07.0
04 53.5	1069194	1585 85	06.5
04 54.0	1068456	1590 85	06.0
04 54.5	1067720	1596 85	05.5
04 55.0	1066985	1601 85	05.0
04 55.5	1066251	1606 85	04.5
04 56.0	1065519	1612 85	04.0
04 56.5	1064788	1617 85	03.5
04 57.0	1064058	1623 85	03.0
04 57.5	1063329	1628 85	02.5
04 58.0	1062602	1634 85	02.0
04 58.5	1061875	1639 85	01.5
04 59.0	1061150	1645 85	01.0
04 59.5	1060427	1650 85	00.5
05 00.0	1059704	1656 85	00.0
05 00.0	1059704	1656 85	00.0
05 00.5	1058983	1661 84	59.5
05 01.0	1058262	1667 84	59.0
05 01.5	1057543	1672 84	58.5
05 02.0	1056826	1678 84	58.0
05 02.5	1056109	1684 84	57.5
05 03.0	1055394	1689 84	57.0
05 03.5	1054679	1695 84	56.5
05 04.0	1053966	1700 84	56.0
05 04.5	1053255	1706 84	55.5
05 05.0	1052544	1711 84	55.0
05 05.5	1051834	1717 84	54.5
05 06.0	1051126	1723 84	54.0
05 06.5	1050419	1728 84	53.5
05 07.0	1049713	1734 84	53.0
05 07.5	1049008	1740 84	52.5
05 08.0	1048304	1745 84	52.0
05 08.5	1047602	1751 84	51.5
05 09.0	1046900	1757 84	51.0
05 09.5	1046200	1762 84	50.5
05 10.0	1045501	1768 84	50.0
05 10.5	1044803	1774 84	49.5
05 11.0	1044106	1780 84	49.0
05 11.5	1043410	1785 84	48.5
05 12.0	1042716	1791 84	48.0
05 12.5	1042022	1797 84	47.5
05 13.0	1041330	1803 84	47.0
05 13.5	1040638	1808 84	46.5
05 14.0	1039948	1814 84	46.0
05 14.5	1039259	1820 84	45.5
05 15.0	1038571	1826 84	45.0
05 15.5	1037884	1832 84	44.5
05 16.0	1037199	1837 84	44.0
05 16.5	1036514	1843 84	43.5
05 17.0	1035830	1849 84	43.0
05 17.5	1035148	1855 84	42.5
05 18.0	1034466	1861 84	42.0
05 18.5	1033786	1867 84	41.5
05 19.0	1033107	1872 84	41.0
05 19.5	1032428	1878 84	40.5
05 20.0	1031751	1884 84	40.0
05 20.5	1031075	1890 84	39.5
05 21.0	1030400	1896 84	39.0
05 21.5	1029726	1902 84	38.5
05 22.0	1029053	1908 84	38.0
05 22.5	1028381	1914 84	37.5
05 23.0	1027711	1920 84	37.0
05 23.5	1027041	1926 84	36.5
05 24.0	1026372	1932 84	36.0
05 24.5	1025704	1938 84	35.5
05 25.0	1025038	1944 84	35.0
05 25.5	1024372	1950 84	34.5
05 26.0	1023707	1956 84	34.0
05 26.5	1023044	1962 84	33.5
05 27.0	1022381	1968 84	33.0
05 27.5	1021720	1974 84	32.5
05 28.0	1021059	1980 84	32.0
05 28.5	1020400	1986 84	31.5
05 29.0	1019741	1992 84	31.0
05 29.5	1019084	1998 84	30.5
05 30.0	1018427	2004 84	30.0
05 30.0	1018427	2004 84	30.0
05 30.5	1017772	2010 84	29.5
05 31.0	1017117	2016 84	29.0
05 31.5	1016464	2022 84	28.5
05 32.0	1015811	2028 84	28.0
05 32.5	1015160	2035 84	27.5
05 33.0	1014509	2041 84	27.0
05 33.5	1013859	2047 84	26.5
05 34.0	1013211	2053 84	26.0
05 34.5	1012563	2059 84	25.5
05 35.0	1011917	2065 84	25.0
05 35.5	1011271	2071 84	24.5
05 36.0	1010626	2078 84	24.0
05 36.5	1009983	2084 84	23.5
05 37.0	1009340	2090 84	23.0
05 37.5	1008698	2096 84	22.5
05 38.0	1008057	2103 84	22.0
05 38.5	1007417	2109 84	21.5
05 39.0	1006778	2115 84	21.0
05 39.5	1006140	2121 84	20.5
05 40.0	1005503	2128 84	20.0
05 40.5	1004867	2134 84	19.5
05 41.0	1004232	2140 84	19.0
05 41.5	1003598	2146 84	18.5
05 42.0	1002964	2153 84	18.0
05 42.5	1002332	2159 84	17.5
05 43.0	1001701	2165 84	17.0
05 43.5	1001070	2172 84	16.5
05 44.0	1000440	2178 84	16.0
05 44.5	999812	2184 84	15.5
05 45.0	999184	2191 84	15.0
05 45.5	998557	2197 84	14.5
05 46.0	997931	2203 84	14.0
05 46.5	997306	2210 84	13.5
05 47.0	996682	2216 84	13.0
05 47.5	996059	2223 84	12.5
05 48.0	995437	2229 84	12.0
05 48.5	994815	2235 84	11.5
05 49.0	994195	2242 84	11.0
05 49.5	993575	2248 84	10.5
05 50.0	992956	2255 84	10.0
05 50.5	992339	2261 84	09.5
05 51.0	991722	2268 84	09.0
05 51.5	991106	2274 84	08.5
05 52.0	990490	2281 84	08.0
05 52.5	989876	2287 84	07.5
05 53.0	989263	2294 84	07.0
05 53.5	988650	2300 84	06.5
05 54.0	988038	2307 84	06.0
05 54.5	987428	2313 84	05.5
05 55.0	986818	2320 84	05.0
05 55.5	986209	2326 84	04.5
05 56.0	985600	2333 84	04.0
05 56.5	984993	2339 84	03.5
05 57.0	984387	2346 84	03.0
05 57.5	983781	2353 84	02.5
05 58.0	983176	2359 84	02.0
05 58.5	982572	2366 84	01.5
05 59.0	981969	2372 84	01.0
05 59.5	981367	2379 84	00.5
06 00.0	980765	2386 84	00.0

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c
06 00.0	980765	2386	84 00.0	06 30.0	946141	2801	83 30.0	07 00.0	914106	3249	83 00.0	07 30.0	884302	3731	82 30.0
06 00.5	980165	2392	83 59.5	06 30.5	945587	2808	83 29.5	07 00.5	913591	3257	82 59.5	07 30.5	883823	3740	82 29.5
06 01.0	979565	2399	83 59.0	06 31.0	945034	2815	83 29.0	07 01.0	913078	3265	82 59.0	07 31.0	883344	3748	82 29.0
06 01.5	978966	2406	83 58.5	06 31.5	944481	2822	83 28.5	07 01.5	912565	3273	82 58.5	07 31.5	882865	3756	82 28.5
06 02.0	978368	2412	83 58.0	06 32.0	943929	2830	83 28.0	07 02.0	912053	3280	82 58.0	07 32.0	882387	3765	82 28.0
06 02.5	977771	2419	83 57.5	06 32.5	943378	2837	83 27.5	07 02.5	911541	3288	82 57.5	07 32.5	881910	3773	82 27.5
06 03.0	977175	2426	83 57.0	06 33.0	942828	2844	83 27.0	07 03.0	911030	3296	82 57.0	07 33.0	881433	3781	82 27.0
06 03.5	976579	2432	83 56.5	06 33.5	942278	2851	83 26.5	07 03.5	910520	3304	82 56.5	07 33.5	880957	3790	82 26.5
06 04.0	975984	2439	83 56.0	06 34.0	941729	2859	83 26.0	07 04.0	910010	3312	82 56.0	07 34.0	880481	3798	82 26.0
06 04.5	975390	2446	83 55.5	06 34.5	941180	2866	83 25.5	07 04.5	909500	3319	82 55.5	07 34.5	880006	3807	82 25.5
06 05.0	974797	2453	83 55.0	06 35.0	940633	2873	83 25.0	07 05.0	908992	3327	82 55.0	07 35.0	879531	3815	82 25.0
06 05.5	974205	2459	83 54.5	06 35.5	940086	2880	83 24.5	07 05.5	908484	3335	82 54.5	07 35.5	879057	3823	82 24.5
06 06.0	973614	2466	83 54.0	06 36.0	939540	2888	83 24.0	07 06.0	907976	3343	82 54.0	07 36.0	878583	3832	82 24.0
06 06.5	973023	2473	83 53.5	06 36.5	938994	2895	83 23.5	07 06.5	907470	3351	82 53.5	07 36.5	878110	3840	82 23.5
06 07.0	972433	2480	83 53.0	06 37.0	938449	2902	83 23.0	07 07.0	906963	3359	82 53.0	07 37.0	877638	3849	82 23.0
06 07.5	971844	2486	83 52.5	06 37.5	937905	2910	83 22.5	07 07.5	906458	3367	82 52.5	07 37.5	877165	3857	82 22.5
06 08.0	971256	2493	83 52.0	06 38.0	937361	2917	83 22.0	07 08.0	905953	3375	82 52.0	07 38.0	876694	3866	82 22.0
06 08.5	970668	2500	83 51.5	06 38.5	936819	2924	83 21.5	07 08.5	905448	3382	82 51.5	07 38.5	876223	3874	82 21.5
06 09.0	970082	2507	83 51.0	06 39.0	936276	2932	83 21.0	07 09.0	904944	3390	82 51.0	07 39.0	875752	3883	82 21.0
06 09.5	969496	2513	83 50.5	06 39.5	935735	2939	83 20.5	07 09.5	904441	3398	82 50.5	07 39.5	875282	3891	82 20.5
06 10.0	968911	2520	83 50.0	06 40.0	935194	2947	83 20.0	07 10.0	903938	3406	82 50.0	07 40.0	874813	3900	82 20.0
06 10.5	968327	2527	83 49.5	06 40.5	934654	2954	83 19.5	07 10.5	903436	3414	82 49.5	07 40.5	874344	3908	82 19.5
06 11.0	967743	2534	83 49.0	06 41.0	934115	2961	83 19.0	07 11.0	902935	3422	82 49.0	07 41.0	873875	3917	82 19.0
06 11.5	967161	2541	83 48.5	06 41.5	933576	2969	83 18.5	07 11.5	902434	3430	82 48.5	07 41.5	873407	3925	82 18.5
06 12.0	966579	2548	83 48.0	06 42.0	933038	2976	83 18.0	07 12.0	901934	3438	82 48.0	07 42.0	872940	3934	82 18.0
06 12.5	965998	2555	83 47.5	06 42.5	932501	2984	83 17.5	07 12.5	901434	3446	82 47.5	07 42.5	872473	3942	82 17.5
06 13.0	965418	2561	83 47.0	06 43.0	931964	2991	83 17.0	07 13.0	900935	3454	82 47.0	07 43.0	872007	3951	82 17.0
06 13.5	964838	2568	83 46.5	06 43.5	931428	2998	83 16.5	07 13.5	900436	3462	82 46.5	07 43.5	871541	3959	82 16.5
06 14.0	964259	2575	83 46.0	06 44.0	930893	3006	83 16.0	07 14.0	899938	3470	82 46.0	07 44.0	871075	3968	82 16.0
06 14.5	963681	2582	83 45.5	06 44.5	930358	3013	83 15.5	07 14.5	899441	3478	82 45.5	07 44.5	870610	3977	82 15.5
06 15.0	963104	2589	83 45.0	06 45.0	929824	3021	83 15.0	07 15.0	898944	3486	82 45.0	07 45.0	870146	3985	82 15.0
06 15.5	962528	2596	83 44.5	06 45.5	929291	3028	83 14.5	07 15.5	898448	3494	82 44.5	07 45.5	869682	3994	82 14.5
06 16.0	961952	2603	83 44.0	06 46.0	928758	3036	83 14.0	07 16.0	897952	3502	82 44.0	07 46.0	869219	4002	82 14.0
06 16.5	961377	2610	83 43.5	06 46.5	928226	3043	83 13.5	07 16.5	897457	3510	82 43.5	07 46.5	868756	4011	82 13.5
06 17.0	960803	2617	83 43.0	06 47.0	927694	3051	83 13.0	07 17.0	896963	3518	82 43.0	07 47.0	868294	4020	82 13.0
06 17.5	960230	2624	83 42.5	06 47.5	927164	3058	83 12.5	07 17.5	896469	3526	82 42.5	07 47.5	867832	4028	82 12.5
06 18.0	959658	2631	83 42.0	06 48.0	926634	3066	83 12.0	07 18.0	895975	3535	82 42.0	07 48.0	867370	4037	82 12.0
06 18.5	959086	2638	83 41.5	06 48.5	926104	3073	83 11.5	07 18.5	895483	3543	82 41.5	07 48.5	866909	4046	82 11.5
06 19.0	958515	2645	83 41.0	06 49.0	925576	3081	83 11.0	07 19.0	894990	3551	82 41.0	07 49.0	866449	4054	82 11.0
06 19.5	957945	2652	83 40.5	06 49.5	925048	3088	83 10.5	07 19.5	894499	3559	82 40.5	07 49.5	865989	4063	82 10.5
06 20.0	957375	2659	83 40.0	06 50.0	924520	3096	83 10.0	07 20.0	894008	3567	82 40.0	07 50.0	865530	4072	82 10.0
06 20.5	956806	2666	83 39.5	06 50.5	923993	3104	83 09.5	07 20.5	893517	3575	82 39.5	07 50.5	865071	4080	82 09.5
06 21.0	956238	2673	83 39.0	06 51.0	923467	3111	83 09.0	07 21.0	893027	3583	82 39.0	07 51.0	864613	4089	82 09.0
06 21.5	955671	2680	83 38.5	06 51.5	922942	3119	83 08.5	07 21.5	892538	3591	82 38.5	07 51.5	864155	4098	82 08.5
06 22.0	955105	2687	83 38.0	06 52.0	922417	3126	83 08.0	07 22.0	892049	3600	82 38.0	07 52.0	863697	4106	82 08.0
06 22.5	954539	2694	83 37.5	06 52.5	921893	3134	83 07.5	07 22.5	891561	3608	82 37.5	07 52.5	863240	4115	82 07.5
06 23.0	953974	2701	83 37.0	06 53.0	921369	3142	83 07.0	07 23.0	891073	3616	82 37.0	07 53.0	862784	4124	82 07.0
06 23.5	953410	2708	83 36.5	06 53.5	920846	3149	83 06.5	07 23.5	890586	3624	82 36.5	07 53.5	862328	4133	82 06.5
06 24.0	952846	2715	83 36.0	06 54.0	920324	3157	83 06.0	07 24.0	890099	3632	82 36.0	07 54.0	861872	4141	82 06.0
06 24.5	952283	2722	83 35.5	06 54.5	919802	3165	83 05.5	07 24.5	889613	3641	82 35.5	07 54.5	861418	4150	82 05.5
06 25.0	951721	2729	83 35.0	06 55.0	919281	3172	83 05.0	07 25.0	889127	3649	82 35.0	07 55.0	860963	4159	82 05.0
06 25.5	951160	2736	83 34.5	06 55.5	918761	3180	83 04.5	07 25.5	888642	3657	82 34.5	07 55.5	860509	4168	82 04.5
06 26.0	950600	2743	83 34.0	06 56.0	918241	3188	83 04.0	07 26.0	888158	3665	82 34.0	07 56.0	860056	4177	82 04.0
06 26.5	950040	2751	83 33.5	06 56.5	917722	3195	83 03.5	07 26.5	887674	3673	82 33.5	07 56.5	859602	4185	82 03.5
06 27.0	949481	2758	83 33.0	06 57.0	917203	3203	83 03.0	07 27.0	887191	3682	82 33.0	07 57.0	859150	4194	82 03.0
06 27.5	948922	2765	83 32.5	06 57.5	916686	3211	83 02.5	07 27.5	886708	3690	82 32.5	07 57.5	858698	4203	82 02.5
06 28.0	948365	2772	83 32.0	06 58.0	916168	3218	83 02.0	07 28.0	886226	3698	82 32.0	07 58.0	858246	4212	82 02.0
06 28.5	947808	2779	83 31.5	06 58.5	915652	3226	83 01.5	07 28.5	885744	3707	82 31.5	07 58.5	857795	4221	82 01.5
06 29.0	947251	2786	83 31.0	06 59.0	915136	3234	83 01.0	07 29.0	885263	3715	82 31.0	07 59.0	857345	4229	82 01.0
06 29.5	946696	2794	83 30.5	06 59.5	914620	3242	83 00.5	07 29.5	884782	3723	82 30.5	07 59.5	856894	4238	82 00.5
06 30.0	946141	2801	83 30.0	07 00.0	914106	3249	83 00.0	07 30.0	884302	3731	82 30.0	08 00.0	856445	4247	82 00.0

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

COMPACT AGETON | 008 00.0 to 010 00.0

x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c
08 00.0	856445	4247	82 00.0	08 30.0	830298	4797	81 30.0	09 00.0	805668	5380	81 00.0	09 30.0	782391	5997	80 30.0
08 00.5	855995	4256	81 59.5	08 30.5	829875	4806	81 29.5	09 00.5	805269	5390	80 59.5	09 30.5	782013	6008	80 29.5
08 01.0	855547	4265	81 59.0	08 31.0	829453	4816	81 29.0	09 01.0	804871	5400	80 59.0	09 31.0	781637	6018	80 29.0
08 01.5	855098	4274	81 58.5	08 31.5	829032	4825	81 28.5	09 01.5	804473	5410	80 58.5	09 31.5	781260	6029	80 28.5
08 02.0	854651	4283	81 58.0	08 32.0	828611	4835	81 28.0	09 02.0	804075	5420	80 58.0	09 32.0	780884	6040	80 28.0
08 02.5	854203	4292	81 57.5	08 32.5	828190	4844	81 27.5	09 02.5	803678	5430	80 57.5	09 32.5	780508	6050	80 27.5
08 03.0	853757	4301	81 57.0	08 33.0	827770	4854	81 27.0	09 03.0	803281	5440	80 57.0	09 33.0	780132	6061	80 27.0
08 03.5	853310	4310	81 56.5	08 33.5	827350	4863	81 26.5	09 03.5	802885	5450	80 56.5	09 33.5	779757	6072	80 26.5
08 04.0	852864	4319	81 56.0	08 34.0	826930	4873	81 26.0	09 04.0	802489	5460	80 56.0	09 34.0	779382	6082	80 26.0
08 04.5	852419	4328	81 55.5	08 34.5	826511	4882	81 25.5	09 04.5	802093	5470	80 55.5	09 34.5	779007	6093	80 25.5
08 05.0	851974	4336	81 55.0	08 35.0	826092	4892	81 25.0	09 05.0	801698	5481	80 55.0	09 35.0	778633	6103	80 25.0
08 05.5	851529	4345	81 54.5	08 35.5	825674	4901	81 24.5	09 05.5	801303	5491	80 54.5	09 35.5	778259	6114	80 24.5
08 06.0	851085	4354	81 54.0	08 36.0	825256	4911	81 24.0	09 06.0	800909	5501	80 54.0	09 36.0	777885	6125	80 24.0
08 06.5	850642	4363	81 53.5	08 36.5	824839	4920	81 23.5	09 06.5	800514	5511	80 53.5	09 36.5	777512	6136	80 23.5
08 07.0	850198	4372	81 53.0	08 37.0	824422	4930	81 23.0	09 07.0	800121	5521	80 53.0	09 37.0	777139	6146	80 23.0
08 07.5	849756	4381	81 52.5	08 37.5	824005	4939	81 22.5	09 07.5	799727	5531	80 52.5	09 37.5	776766	6157	80 22.5
08 08.0	849314	4390	81 52.0	08 38.0	823589	4949	81 22.0	09 08.0	799334	5541	80 52.0	09 38.0	776394	6168	80 22.0
08 08.5	848872	4399	81 51.5	08 38.5	823173	4959	81 21.5	09 08.5	798941	5552	80 51.5	09 38.5	776022	6178	80 21.5
08 09.0	848431	4409	81 51.0	08 39.0	822758	4968	81 21.0	09 09.0	798549	5562	80 51.0	09 39.0	775651	6189	80 21.0
08 09.5	847990	4418	81 50.5	08 39.5	822343	4978	81 20.5	09 09.5	798157	5572	80 50.5	09 39.5	775279	6200	80 20.5
08 10.0	847549	4427	81 50.0	08 40.0	821928	4987	81 20.0	09 10.0	797766	5582	80 50.0	09 40.0	774908	6211	80 20.0
08 10.5	847109	4436	81 49.5	08 40.5	821514	4997	81 19.5	09 10.5	797374	5592	80 49.5	09 40.5	774538	6221	80 19.5
08 11.0	846670	4445	81 49.0	08 41.0	821100	5007	81 19.0	09 11.0	796983	5602	80 49.0	09 41.0	774167	6232	80 19.0
08 11.5	846231	4454	81 48.5	08 41.5	820687	5016	81 18.5	09 11.5	796593	5613	80 48.5	09 41.5	773797	6243	80 18.5
08 12.0	845792	4463	81 48.0	08 42.0	820274	5026	81 18.0	09 12.0	796203	5623	80 48.0	09 42.0	773427	6254	80 18.0
08 12.5	845354	4472	81 47.5	08 42.5	819861	5036	81 17.5	09 12.5	795813	5633	80 47.5	09 42.5	773058	6265	80 17.5
08 13.0	844917	4481	81 47.0	08 43.0	819449	5045	81 17.0	09 13.0	795423	5643	80 47.0	09 43.0	772689	6275	80 17.0
08 13.5	844479	4490	81 46.5	08 43.5	819037	5055	81 16.5	09 13.5	795034	5654	80 46.5	09 43.5	772320	6286	80 16.5
08 14.0	844043	4499	81 46.0	08 44.0	818626	5065	81 16.0	09 14.0	794646	5664	80 46.0	09 44.0	771952	6297	80 16.0
08 14.5	843606	4509	81 45.5	08 44.5	818215	5074	81 15.5	09 14.5	794257	5674	80 45.5	09 44.5	771584	6308	80 15.5
08 15.0	843170	4518	81 45.0	08 45.0	817804	5084	81 15.0	09 15.0	793869	5684	80 45.0	09 45.0	771216	6319	80 15.0
08 15.5	842735	4527	81 44.5	08 45.5	817394	5094	81 14.5	09 15.5	793481	5695	80 44.5	09 45.5	770849	6330	80 14.5
08 16.0	842300	4536	81 44.0	08 46.0	816984	5104	81 14.0	09 16.0	793094	5705	80 44.0	09 46.0	770482	6340	80 14.0
08 16.5	841865	4545	81 43.5	08 46.5	816575	5113	81 13.5	09 16.5	792707	5715	80 43.5	09 46.5	770115	6351	80 13.5
08 17.0	841431	4554	81 43.0	08 47.0	816166	5123	81 13.0	09 17.0	792321	5726	80 43.0	09 47.0	769748	6362	80 13.0
08 17.5	840998	4564	81 42.5	08 47.5	815757	5133	81 12.5	09 17.5	791934	5736	80 42.5	09 47.5	769382	6373	80 12.5
08 18.0	840565	4573	81 42.0	08 48.0	815349	5143	81 12.0	09 18.0	791548	5746	80 42.0	09 48.0	769016	6384	80 12.0
08 18.5	840132	4582	81 41.5	08 48.5	814941	5152	81 11.5	09 18.5	791163	5757	80 41.5	09 48.5	768651	6395	80 11.5
08 19.0	839699	4591	81 41.0	08 49.0	814534	5162	81 11.0	09 19.0	790778	5767	80 41.0	09 49.0	768285	6406	80 11.0
08 19.5	839268	4601	81 40.5	08 49.5	814126	5172	81 10.5	09 19.5	790393	5777	80 40.5	09 49.5	767921	6417	80 10.5
08 20.0	838836	4610	81 40.0	08 50.0	813720	5182	81 10.0	09 20.0	790008	5788	80 40.0	09 50.0	767556	6428	80 10.0
08 20.5	838405	4619	81 39.5	08 50.5	813314	5192	81 09.5	09 20.5	789624	5798	80 39.5	09 50.5	767192	6439	80 09.5
08 21.0	837975	4628	81 39.0	08 51.0	812908	5202	81 09.0	09 21.0	789240	5809	80 39.0	09 51.0	766828	6450	80 09.0
08 21.5	837544	4638	81 38.5	08 51.5	812502	5211	81 08.5	09 21.5	788857	5819	80 38.5	09 51.5	766464	6461	80 08.5
08 22.0	837115	4647	81 38.0	08 52.0	812097	5221	81 08.0	09 22.0	788474	5829	80 38.0	09 52.0	766101	6472	80 08.0
08 22.5	836685	4656	81 37.5	08 52.5	811692	5231	81 07.5	09 22.5	788091	5840	80 37.5	09 52.5	765738	6483	80 07.5
08 23.0	836257	4666	81 37.0	08 53.0	811288	5241	81 07.0	09 23.0	787709	5850	80 37.0	09 53.0	765375	6494	80 07.0
08 23.5	835828	4675	81 36.5	08 53.5	810884	5251	81 06.5	09 23.5	787326	5861	80 36.5	09 53.5	765013	6505	80 06.5
08 24.0	835400	4684	81 36.0	08 54.0	810481	5261	81 06.0	09 24.0	786945	5871	80 36.0	09 54.0	764651	6516	80 06.0
08 24.5	834973	4693	81 35.5	08 54.5	810077	5271	81 05.5	09 24.5	786563	5882	80 35.5	09 54.5	764289	6527	80 05.5
08 25.0	834546	4703	81 35.0	08 55.0	809675	5280	81 05.0	09 25.0	786182	5892	80 35.0	09 55.0	763927	6538	80 05.0
08 25.5	834119	4712	81 34.5	08 55.5	809272	5290	81 04.5	09 25.5	785802	5903	80 34.5	09 55.5	763566	6549	80 04.5
08 26.0	833693	4722	81 34.0	08 56.0	808870	5300	81 04.0	09 26.0	785421	5913	80 34.0	09 56.0	763205	6560	80 04.0
08 26.5	833267	4731	81 33.5	08 56.5	808468	5310	81 03.5	09 26.5	785041	5924	80 33.5	09 56.5	762845	6571	80 03.5
08 27.0	832841	4740	81 33.0	08 57.0	808067	5320	81 03.0	09 27.0	784662	5934	80 33.0	09 57.0	762485	6582	80 03.0
08 27.5	832416	4750	81 32.5	08 57.5	807666	5330	81 02.5	09 27.5	784282	5945	80 32.5	09 57.5	762125	6593	80 02.5
08 28.0	831992	4759	81 32.0	08 58.0	807266	5340	81 02.0	09 28.0	783903	5955	80 32.0	09 58.0	761765	6604	80 02.0
08 28.5	831568	4768	81 31.5	08 58.5	806866	5350	81 01.5	09 28.5	783525	5966	80 31.5	09 58.5	761406	6615	80 01.5
08 29.0	831144	4778	81 31.0	08 59.0	806466	5360	81 01.0	09 29.0	783146	5976	80 31.0	09 59.0	761047	6626	80 01.0
08 29.5	830721	4787	81 30.5	08 59.5	806067	5370	81 00.5	09 29.5	782768	5987	80 30.5	09 59.5	760688	6637	80 00.5
08 30.0	830298	4797	81 30.0	09 00.0	805668	5380	81 00.0	09 30.0	782391	5997	80 30.0	10 00.0	760330	6649	80 00.0

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c
10 00.0	760330	6649	80 00.0	10 30.0	739367	7334	79 30.0	11 00.0	719401	8053	79 00.0	11 30.0	700345	8807	78 30.0
10 00.5	759972	6660	79 59.5	10 30.5	739026	7346	79 29.5	11 00.5	719076	8066	78 59.5	11 30.5	700034	8820	78 29.5
10 01.0	759614	6671	79 59.0	10 31.0	738686	7357	79 29.0	11 01.0	718752	8078	78 59.0	11 31.0	699724	8833	78 29.0
10 01.5	759256	6682	79 58.5	10 31.5	738346	7369	79 28.5	11 01.5	718427	8090	78 58.5	11 31.5	699414	8846	78 28.5
10 02.0	758899	6693	79 58.0	10 32.0	738006	7381	79 28.0	11 02.0	718103	8103	78 58.0	11 32.0	699105	8859	78 28.0
10 02.5	758542	6704	79 57.5	10 32.5	737666	7393	79 27.5	11 02.5	717780	8115	78 57.5	11 32.5	698795	8872	78 27.5
10 03.0	758186	6716	79 57.0	10 33.0	737327	7404	79 27.0	11 03.0	717456	8127	78 57.0	11 33.0	698486	8885	78 27.0
10 03.5	757830	6727	79 56.5	10 33.5	736988	7416	79 26.5	11 03.5	717133	8140	78 56.5	11 33.5	698177	8897	78 26.5
10 04.0	757474	6738	79 56.0	10 34.0	736649	7428	79 26.0	11 04.0	716810	8152	78 56.0	11 34.0	697868	8910	78 26.0
10 04.5	757118	6749	79 55.5	10 34.5	736311	7440	79 25.5	11 04.5	716487	8164	78 55.5	11 34.5	697560	8923	78 25.5
10 05.0	756763	6760	79 55.0	10 35.0	735973	7451	79 25.0	11 05.0	716164	8177	78 55.0	11 35.0	697252	8936	78 25.0
10 05.5	756408	6772	79 54.5	10 35.5	735635	7463	79 24.5	11 05.5	715842	8189	78 54.5	11 35.5	696943	8949	78 24.5
10 06.0	756053	6783	79 54.0	10 36.0	735297	7475	79 24.0	11 06.0	715520	8201	78 54.0	11 36.0	696636	8962	78 24.0
10 06.5	755698	6794	79 53.5	10 36.5	734960	7487	79 23.5	11 06.5	715198	8214	78 53.5	11 36.5	696328	8975	78 23.5
10 07.0	755344	6805	79 53.0	10 37.0	734623	7499	79 23.0	11 07.0	714876	8226	78 53.0	11 37.0	696021	8988	78 23.0
10 07.5	754990	6817	79 52.5	10 37.5	734286	7511	79 22.5	11 07.5	714555	8239	78 52.5	11 37.5	695713	9001	78 22.5
10 08.0	754637	6828	79 52.0	10 38.0	733949	7522	79 22.0	11 08.0	714234	8251	78 52.0	11 38.0	695407	9014	78 22.0
10 08.5	754283	6839	79 51.5	10 38.5	733613	7534	79 21.5	11 08.5	713913	8264	78 51.5	11 38.5	695100	9027	78 21.5
10 09.0	753931	6851	79 51.0	10 39.0	733277	7546	79 21.0	11 09.0	713592	8276	78 51.0	11 39.0	694793	9040	78 21.0
10 09.5	753578	6862	79 50.5	10 39.5	732941	7558	79 20.5	11 09.5	713272	8288	78 50.5	11 39.5	694487	9053	78 20.5
10 10.0	753225	6873	79 50.0	10 40.0	732605	7570	79 20.0	11 10.0	712952	8301	78 50.0	11 40.0	694181	9066	78 20.0
10 10.5	752873	6885	79 49.5	10 40.5	732270	7582	79 19.5	11 10.5	712632	8313	78 49.5	11 40.5	693875	9079	78 19.5
10 11.0	752522	6896	79 49.0	10 41.0	731935	7594	79 19.0	11 11.0	712312	8326	78 49.0	11 41.0	693570	9092	78 19.0
10 11.5	752170	6907	79 48.5	10 41.5	731601	7606	79 18.5	11 11.5	711993	8338	78 48.5	11 41.5	693264	9105	78 18.5
10 12.0	751819	6919	79 48.0	10 42.0	731266	7618	79 18.0	11 12.0	711674	8351	78 48.0	11 42.0	692959	9118	78 18.0
10 12.5	751468	6930	79 47.5	10 42.5	730932	7630	79 17.5	11 12.5	711355	8363	78 47.5	11 42.5	692654	9132	78 17.5
10 13.0	751117	6941	79 47.0	10 43.0	730598	7641	79 17.0	11 13.0	711036	8376	78 47.0	11 43.0	692350	9145	78 17.0
10 13.5	750767	6953	79 46.5	10 43.5	730264	7653	79 16.5	11 13.5	710718	8388	78 46.5	11 43.5	692045	9158	78 16.5
10 14.0	750417	6964	79 46.0	10 44.0	729931	7665	79 16.0	11 14.0	710400	8401	78 46.0	11 44.0	691741	9171	78 16.0
10 14.5	750067	6976	79 45.5	10 44.5	729598	7677	79 15.5	11 14.5	710082	8414	78 45.5	11 44.5	691437	9184	78 15.5
10 15.0	749718	6987	79 45.0	10 45.0	729265	7689	79 15.0	11 15.0	709764	8426	78 45.0	11 45.0	691133	9197	78 15.0
10 15.5	749369	6998	79 44.5	10 45.5	728933	7701	79 14.5	11 15.5	709447	8439	78 44.5	11 45.5	690830	9210	78 14.5
10 16.0	749020	7010	79 44.0	10 46.0	728600	7713	79 14.0	11 16.0	709130	8451	78 44.0	11 46.0	690526	9223	78 14.0
10 16.5	748671	7021	79 43.5	10 46.5	728268	7725	79 13.5	11 16.5	708813	8464	78 43.5	11 46.5	690223	9237	78 13.5
10 17.0	748323	7033	79 43.0	10 47.0	727936	7737	79 13.0	11 17.0	708496	8476	78 43.0	11 47.0	689920	9250	78 13.0
10 17.5	747975	7044	79 42.5	10 47.5	727605	7749	79 12.5	11 17.5	708180	8489	78 42.5	11 47.5	689618	9263	78 12.5
10 18.0	747627	7056	79 42.0	10 48.0	727274	7761	79 12.0	11 18.0	707863	8502	78 42.0	11 48.0	689315	9276	78 12.0
10 18.5	747280	7067	79 41.5	10 48.5	726943	7774	79 11.5	11 18.5	707547	8514	78 41.5	11 48.5	689013	9289	78 11.5
10 19.0	746933	7079	79 41.0	10 49.0	726612	7786	79 11.0	11 19.0	707232	8527	78 41.0	11 49.0	688711	9303	78 11.0
10 19.5	746586	7090	79 40.5	10 49.5	726282	7798	79 10.5	11 19.5	706916	8540	78 40.5	11 49.5	688409	9316	78 10.5
10 20.0	746239	7102	79 40.0	10 50.0	725951	7810	79 10.0	11 20.0	706601	8552	78 40.0	11 50.0	688107	9329	78 10.0
10 20.5	745893	7113	79 39.5	10 50.5	725621	7822	79 09.5	11 20.5	706286	8565	78 39.5	11 50.5	687806	9342	78 09.5
10 21.0	745547	7125	79 39.0	10 51.0	725292	7834	79 09.0	11 21.0	705971	8578	78 39.0	11 51.0	687505	9355	78 09.0
10 21.5	745201	7136	79 38.5	10 51.5	724962	7846	79 08.5	11 21.5	705656	8590	78 38.5	11 51.5	687204	9369	78 08.5
10 22.0	744856	7148	79 38.0	10 52.0	724633	7858	79 08.0	11 22.0	705342	8603	78 38.0	11 52.0	686903	9382	78 08.0
10 22.5	744510	7159	79 37.5	10 52.5	724304	7870	79 07.5	11 22.5	705028	8616	78 37.5	11 52.5	686603	9395	78 07.5
10 23.0	744166	7171	79 37.0	10 53.0	723975	7882	79 07.0	11 23.0	704714	8628	78 37.0	11 53.0	686302	9409	78 07.0
10 23.5	743821	7182	79 36.5	10 53.5	723647	7895	79 06.5	11 23.5	704400	8641	78 36.5	11 53.5	686002	9422	78 06.5
10 24.0	743477	7194	79 36.0	10 54.0	723319	7907	79 06.0	11 24.0	704087	8654	78 36.0	11 54.0	685703	9435	78 06.0
10 24.5	743133	7206	79 35.5	10 54.5	722991	7919	79 05.5	11 24.5	703774	8667	78 35.5	11 54.5	685403	9448	78 05.5
10 25.0	742789	7217	79 35.0	10 55.0	722663	7931	79 05.0	11 25.0	703461	8679	78 35.0	11 55.0	685103	9462	78 05.0
10 25.5	742446	7229	79 34.5	10 55.5	722336	7943	79 04.5	11 25.5	703148	8692	78 34.5	11 55.5	684804	9475	78 04.5
10 26.0	742102	7241	79 34.0	10 56.0	722009	7956	79 04.0	11 26.0	702836	8705	78 34.0	11 56.0	684505	9489	78 04.0
10 26.5	741759	7252	79 33.5	10 56.5	721682	7968	79 03.5	11 26.5	702524	8718	78 33.5	11 56.5	684207	9502	78 03.5
10 27.0	741417	7264	79 33.0	10 57.0	721355	7980	79 03.0	11 27.0	702212	8730	78 33.0	11 57.0	683908	9515	78 03.0
10 27.5	741074	7275	79 32.5	10 57.5	721029	7992	79 02.5	11 27.5	701900	8743	78 32.5	11 57.5	683610	9529	78 02.5
10 28.0	740732	7287	79 32.0	10 58.0	720703	8004	79 02.0	11 28.0	701588	8756	78 32.0	11 58.0	683311	9542	78 02.0
10 28.5	740391	7299	79 31.5	10 58.5	720377	8017	79 01.5	11 28.5	701277	8769	78 31.5	11 58.5	683014	9555	78 01.5
10 29.0	740049	7310	79 31.0	10 59.0	720052	8029	79 01.0	11 29.0	700966	8782	78 31.0	11 59.0	682716	9569	78 01.0
10 29.5	739708	7322	79 30.5	10 59.5	719726	8041	79 00.5	11 29.5	700655	8794	78 30.5	11 59.5	682418	9582	78 00.5
10 30.0	739367	7334	79 30.0	11 00.0	719401	8053	79 00.0	11 30.0	700345	8807	78 30.0	12 00.0	682121	9596	78 00.0

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c
12 00.0	682121	9596	78 00.0	12 30.0	664663	10418	77 30.0	13 00.0	647912	11276	77 00.0	13 30.0	631815	12168	76 30.0
12 00.5	681824	9609	77 59.5	12 30.5	664378	10432	77 29.5	13 00.5	647638	11291	76 59.5	13 30.5	631552	12184	76 29.5
12 01.0	681527	9622	77 59.0	12 31.0	664094	10447	77 29.0	13 01.0	647365	11305	76 59.0	13 31.0	631289	12199	76 29.0
12 01.5	681231	9636	77 58.5	12 31.5	663809	10461	77 28.5	13 01.5	647092	11320	76 58.5	13 31.5	631026	12214	76 28.5
12 02.0	680934	9649	77 58.0	12 32.0	663525	10475	77 28.0	13 02.0	646819	11334	76 58.0	13 32.0	630764	12229	76 28.0
12 02.5	680638	9663	77 57.5	12 32.5	663241	10489	77 27.5	13 02.5	646546	11349	76 57.5	13 32.5	630501	12244	76 27.5
12 03.0	680342	9676	77 57.0	12 33.0	662957	10503	77 27.0	13 03.0	646274	11364	76 57.0	13 33.0	630239	12260	76 27.0
12 03.5	680046	9690	77 56.5	12 33.5	662674	10517	77 26.5	13 03.5	646001	11378	76 56.5	13 33.5	629977	12275	76 26.5
12 04.0	679751	9703	77 56.0	12 34.0	662390	10531	77 26.0	13 04.0	645729	11393	76 56.0	13 34.0	629715	12290	76 26.0
12 04.5	679455	9717	77 55.5	12 34.5	662107	10545	77 25.5	13 04.5	645457	11408	76 55.5	13 34.5	629454	12305	76 25.5
12 05.0	679160	9730	77 55.0	12 35.0	661824	10559	77 25.0	13 05.0	645185	11422	76 55.0	13 35.0	629192	12321	76 25.0
12 05.5	678865	9744	77 54.5	12 35.5	661541	10573	77 24.5	13 05.5	644913	11437	76 54.5	13 35.5	628931	12336	76 24.5
12 06.0	678570	9757	77 54.0	12 36.0	661258	10587	77 24.0	13 06.0	644642	11452	76 54.0	13 36.0	628670	12351	76 24.0
12 06.5	678276	9771	77 53.5	12 36.5	660976	10601	77 23.5	13 06.5	644370	11466	76 53.5	13 36.5	628409	12366	76 23.5
12 07.0	677981	9785	77 53.0	12 37.0	660693	10615	77 23.0	13 07.0	644099	11481	76 53.0	13 37.0	628148	12382	76 23.0
12 07.5	677687	9798	77 52.5	12 37.5	660411	10630	77 22.5	13 07.5	643828	11496	76 52.5	13 37.5	627887	12397	76 22.5
12 08.0	677393	9812	77 52.0	12 38.0	660129	10644	77 22.0	13 08.0	643557	11511	76 52.0	13 38.0	627627	12412	76 22.0
12 08.5	677100	9825	77 51.5	12 38.5	659848	10658	77 21.5	13 08.5	643287	11525	76 51.5	13 38.5	627366	12428	76 21.5
12 09.0	676806	9839	77 51.0	12 39.0	659566	10672	77 21.0	13 09.0	643016	11540	76 51.0	13 39.0	627106	12443	76 21.0
12 09.5	676513	9852	77 50.5	12 39.5	659285	10686	77 20.5	13 09.5	642746	11555	76 50.5	13 39.5	626846	12458	76 20.5
12 10.0	676220	9866	77 50.0	12 40.0	659004	10700	77 20.0	13 10.0	642476	11570	76 50.0	13 40.0	626586	12474	76 20.0
12 10.5	675927	9880	77 49.5	12 40.5	658723	10715	77 19.5	13 10.5	642206	11584	76 49.5	13 40.5	626326	12489	76 19.5
12 11.0	675634	9893	77 49.0	12 41.0	658442	10729	77 19.0	13 11.0	641936	11599	76 49.0	13 41.0	626067	12504	76 19.0
12 11.5	675342	9907	77 48.5	12 41.5	658161	10743	77 18.5	13 11.5	641667	11614	76 48.5	13 41.5	625808	12520	76 18.5
12 12.0	675050	9921	77 48.0	12 42.0	657881	10757	77 18.0	13 12.0	641397	11629	76 48.0	13 42.0	625548	12535	76 18.0
12 12.5	674757	9934	77 47.5	12 42.5	657601	10772	77 17.5	13 12.5	641128	11644	76 47.5	13 42.5	625289	12551	76 17.5
12 13.0	674466	9948	77 47.0	12 43.0	657321	10786	77 17.0	13 13.0	640859	11658	76 47.0	13 43.0	625030	12566	76 17.0
12 13.5	674174	9962	77 46.5	12 43.5	657041	10800	77 16.5	13 13.5	640590	11673	76 46.5	13 43.5	624772	12581	76 16.5
12 14.0	673883	9975	77 46.0	12 44.0	656761	10814	77 16.0	13 14.0	640322	11688	76 46.0	13 44.0	624513	12597	76 16.0
12 14.5	673591	9989	77 45.5	12 44.5	656482	10829	77 15.5	13 14.5	640053	11703	76 45.5	13 44.5	624255	12612	76 15.5
12 15.0	673300	10003	77 45.0	12 45.0	656203	10843	77 15.0	13 15.0	639785	11718	76 45.0	13 45.0	623997	12628	76 15.0
12 15.5	673009	10016	77 44.5	12 45.5	655924	10857	77 14.5	13 15.5	639516	11733	76 44.5	13 45.5	623739	12643	76 14.5
12 16.0	672719	10030	77 44.0	12 46.0	655645	10872	77 14.0	13 16.0	639248	11748	76 44.0	13 46.0	623481	12659	76 14.0
12 16.5	672428	10044	77 43.5	12 46.5	655366	10886	77 13.5	13 16.5	638981	11763	76 43.5	13 46.5	623223	12674	76 13.5
12 17.0	672138	10058	77 43.0	12 47.0	655088	10900	77 13.0	13 17.0	638713	11777	76 43.0	13 47.0	622965	12690	76 13.0
12 17.5	671848	10071	77 42.5	12 47.5	654809	10915	77 12.5	13 17.5	638446	11792	76 42.5	13 47.5	622708	12705	76 12.5
12 18.0	671558	10085	77 42.0	12 48.0	654531	10929	77 12.0	13 18.0	638178	11807	76 42.0	13 48.0	622451	12721	76 12.0
12 18.5	671269	10099	77 41.5	12 48.5	654253	10943	77 11.5	13 18.5	637911	11822	76 41.5	13 48.5	622194	12736	76 11.5
12 19.0	670979	10113	77 41.0	12 49.0	653976	10958	77 11.0	13 19.0	637644	11837	76 41.0	13 49.0	621937	12752	76 11.0
12 19.5	670690	10127	77 40.5	12 49.5	653698	10972	77 10.5	13 19.5	637377	11852	76 40.5	13 49.5	621680	12767	76 10.5
12 20.0	670401	10140	77 40.0	12 50.0	653421	10986	77 10.0	13 20.0	637111	11867	76 40.0	13 50.0	621423	12783	76 10.0
12 20.5	670112	10154	77 39.5	12 50.5	653143	11001	77 09.5	13 20.5	636844	11882	76 39.5	13 50.5	621167	12798	76 09.5
12 21.0	669824	10168	77 39.0	12 51.0	652866	11015	77 09.0	13 21.0	636578	11897	76 39.0	13 51.0	620911	12814	76 09.0
12 21.5	669535	10182	77 38.5	12 51.5	652590	11030	77 08.5	13 21.5	636312	11912	76 38.5	13 51.5	620654	12830	76 08.5
12 22.0	669247	10196	77 38.0	12 52.0	652313	11044	77 08.0	13 22.0	636046	11927	76 38.0	13 52.0	620399	12845	76 08.0
12 22.5	668959	10210	77 37.5	12 52.5	652037	11058	77 07.5	13 22.5	635780	11942	76 37.5	13 52.5	620143	12861	76 07.5
12 23.0	668671	10223	77 37.0	12 53.0	651760	11073	77 07.0	13 23.0	635515	11957	76 37.0	13 53.0	619887	12876	76 07.0
12 23.5	668384	10237	77 36.5	12 53.5	651484	11087	77 06.5	13 23.5	635249	11972	76 36.5	13 53.5	619632	12892	76 06.5
12 24.0	668097	10251	77 36.0	12 54.0	651208	11102	77 06.0	13 24.0	634984	11987	76 36.0	13 54.0	619376	12908	76 06.0
12 24.5	667809	10265	77 35.5	12 54.5	650933	11116	77 05.5	13 24.5	634719	12002	76 35.5	13 54.5	619121	12923	76 05.5
12 25.0	667522	10279	77 35.0	12 55.0	650657	11131	77 05.0	13 25.0	634454	12017	76 35.0	13 55.0	618866	12939	76 05.0
12 25.5	667236	10293	77 34.5	12 55.5	650382	11145	77 04.5	13 25.5	634190	12032	76 34.5	13 55.5	618611	12955	76 04.5
12 26.0	666949	10307	77 34.0	12 56.0	650107	11160	77 04.0	13 26.0	633925	12047	76 34.0	13 56.0	618357	12970	76 04.0
12 26.5	666663	10321	77 33.5	12 56.5	649832	11174	77 03.5	13 26.5	633661	12063	76 33.5	13 56.5	618102	12986	76 03.5
12 27.0	666376	10335	77 33.0	12 57.0	649557	11189	77 03.0	13 27.0	633396	12078	76 33.0	13 57.0	617848	13002	76 03.0
12 27.5	666090	10349	77 32.5	12 57.5	649282	11203	77 02.5	13 27.5	633132	12093	76 32.5	13 57.5	617594	13017	76 02.5
12 28.0	665805	10363	77 32.0	12 58.0	649008	11218	77 02.0	13 28.0	632869	12108	76 32.0	13 58.0	617339	13033	76 02.0
12 28.5	665519	10377	77 31.5	12 58.5	648734	11232	77 01.5	13 28.5	632605	12123	76 31.5	13 58.5	617086	13049	76 01.5
12 29.0	665233	10390	77 31.0	12 59.0	648460	11247	77 01.0	13 29.0	632341	12138	76 31.0	13 59.0	616832	13064	76 01.0
12 29.5	664948	10404	77 30.5	12 59.5	648186	11261	77 00.5	13 29.5	632078	12153	76 30.5	13 59.5	616578	13080	76 00.5
12 30.0	664663	10418	77 30.0	13 00.0	647912	11276	77 00.0	13 30.0	631815	12168	76 30.0	14 00.0	616325	13096	76 00.0

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

COMPACT AGETON | 014 00.0 to 016 00.0

x	A(x)	B(x)	c
14 00.0	616325	13096	76 00.0
14 00.5	616072	13112	75 59.5
14 01.0	615818	13127	75 59.0
14 01.5	615565	13143	75 58.5
14 02.0	615313	13159	75 58.0
14 02.5	615060	13175	75 57.5
14 03.0	614808	13191	75 57.0
14 03.5	614555	13206	75 56.5
14 04.0	614303	13222	75 56.0
14 04.5	614051	13238	75 55.5
14 05.0	613799	13254	75 55.0
14 05.5	613548	13270	75 54.5
14 06.0	613296	13286	75 54.0
14 06.5	613045	13301	75 53.5
14 07.0	612793	13317	75 53.0
14 07.5	612542	13333	75 52.5
14 08.0	612291	13349	75 52.0
14 08.5	612041	13365	75 51.5
14 09.0	611790	13381	75 51.0
14 09.5	611539	13397	75 50.5
14 10.0	611289	13413	75 50.0
14 10.5	611039	13429	75 49.5
14 11.0	610789	13445	75 49.0
14 11.5	610539	13461	75 48.5
14 12.0	610289	13477	75 48.0
14 12.5	610040	13493	75 47.5
14 13.0	609790	13509	75 47.0
14 13.5	609541	13525	75 46.5
14 14.0	609292	13541	75 46.0
14 14.5	609043	13557	75 45.5
14 15.0	608794	13573	75 45.0
14 15.5	608546	13589	75 44.5
14 16.0	608297	13605	75 44.0
14 16.5	608049	13621	75 43.5
14 17.0	607801	13637	75 43.0
14 17.5	607553	13653	75 42.5
14 18.0	607305	13669	75 42.0
14 18.5	607057	13685	75 41.5
14 19.0	606809	13701	75 41.0
14 19.5	606562	13718	75 40.5
14 20.0	606315	13734	75 40.0
14 20.5	606068	13750	75 39.5
14 21.0	605821	13766	75 39.0
14 21.5	605574	13782	75 38.5
14 22.0	605327	13798	75 38.0
14 22.5	605081	13814	75 37.5
14 23.0	604834	13831	75 37.0
14 23.5	604588	13847	75 36.5
14 24.0	604342	13863	75 36.0
14 24.5	604096	13879	75 35.5
14 25.0	603850	13896	75 35.0
14 25.5	603605	13912	75 34.5
14 26.0	603359	13928	75 34.0
14 26.5	603114	13944	75 33.5
14 27.0	602868	13961	75 33.0
14 27.5	602623	13977	75 32.5
14 28.0	602379	13993	75 32.0
14 28.5	602134	14009	75 31.5
14 29.0	601889	14026	75 31.0
14 29.5	601645	14042	75 30.5
14 30.0	601400	14058	75 30.0

x	A(x)	B(x)	c
14 30.0	601400	14058	75 30.0
14 30.5	601156	14075	75 29.5
14 31.0	600912	14091	75 29.0
14 31.5	600668	14107	75 28.5
14 32.0	600425	14124	75 28.0
14 32.5	600181	14140	75 27.5
14 33.0	599938	14157	75 27.0
14 33.5	599694	14173	75 26.5
14 34.0	599451	14189	75 26.0
14 34.5	599208	14206	75 25.5
14 35.0	598965	14222	75 25.0
14 35.5	598723	14239	75 24.5
14 36.0	598480	14255	75 24.0
14 36.5	598238	14272	75 23.5
14 37.0	597995	14288	75 23.0
14 37.5	597753	14305	75 22.5
14 38.0	597511	14321	75 22.0
14 38.5	597269	14338	75 21.5
14 39.0	597028	14354	75 21.0
14 39.5	596786	14371	75 20.5
14 40.0	596545	14387	75 20.0
14 40.5	596303	14404	75 19.5
14 41.0	596062	14420	75 19.0
14 41.5	595821	14437	75 18.5
14 42.0	595580	14453	75 18.0
14 42.5	595340	14470	75 17.5
14 43.0	595099	14486	75 17.0
14 43.5	594859	14503	75 16.5
14 44.0	594618	14520	75 16.0
14 44.5	594378	14536	75 15.5
14 45.0	594138	14553	75 15.0
14 45.5	593898	14570	75 14.5
14 46.0	593659	14586	75 14.0
14 46.5	593419	14603	75 13.5
14 47.0	593180	14619	75 13.0
14 47.5	592940	14636	75 12.5
14 48.0	592701	14653	75 12.0
14 48.5	592462	14670	75 11.5
14 49.0	592223	14686	75 11.0
14 49.5	591985	14703	75 10.5
14 50.0	591746	14720	75 10.0
14 50.5	591508	14736	75 09.5
14 51.0	591269	14753	75 09.0
14 51.5	591031	14770	75 08.5
14 52.0	590793	14787	75 08.0
14 52.5	590555	14803	75 07.5
14 53.0	590318	14820	75 07.0
14 53.5	590080	14837	75 06.5
14 54.0	589843	14854	75 06.0
14 54.5	589605	14871	75 05.5
14 55.0	589368	14887	75 05.0
14 55.5	589131	14904	75 04.5
14 56.0	588894	14921	75 04.0
14 56.5	588657	14938	75 03.5
14 57.0	588421	14955	75 03.0
14 57.5	588184	14972	75 02.5
14 58.0	587948	14989	75 02.0
14 58.5	587712	15005	75 01.5
14 59.0	587476	15022	75 01.0
14 59.5	587240	15039	75 00.5
15 00.0	587004	15056	75 00.0

x	A(x)	B(x)	c
15 00.0	587004	15056	75 00.0
15 00.5	586768	15073	74 59.5
15 01.0	586533	15090	74 59.0
15 01.5	586297	15107	74 58.5
15 02.0	586062	15124	74 58.0
15 02.5	585827	15141	74 57.5
15 03.0	585592	15158	74 57.0
15 03.5	585357	15175	74 56.5
15 04.0	585122	15192	74 56.0
15 04.5	584888	15209	74 55.5
15 05.0	584653	15226	74 55.0
15 05.5	584419	15243	74 54.5
15 06.0	584185	15260	74 54.0
15 06.5	583951	15277	74 53.5
15 07.0	583717	15294	74 53.0
15 07.5	583483	15311	74 52.5
15 08.0	583249	15328	74 52.0
15 08.5	583016	15345	74 51.5
15 09.0	582783	15362	74 51.0
15 09.5	582549	15380	74 50.5
15 10.0	582316	15397	74 50.0
15 10.5	582083	15414	74 49.5
15 11.0	581850	15431	74 49.0
15 11.5	581618	15448	74 48.5
15 12.0	581385	15465	74 48.0
15 12.5	581153	15482	74 47.5
15 13.0	580921	15500	74 47.0
15 13.5	580688	15517	74 46.5
15 14.0	580456	15534	74 46.0
15 14.5	580224	15551	74 45.5
15 15.0	579993	15568	74 45.0
15 15.5	579761	15586	74 44.5
15 16.0	579530	15603	74 44.0
15 16.5	579298	15620	74 43.5
15 17.0	579067	15637	74 43.0
15 17.5	578836	15655	74 42.5
15 18.0	578605	15672	74 42.0
15 18.5	578374	15689	74 41.5
15 19.0	578143	15706	74 41.0
15 19.5	577913	15724	74 40.5
15 20.0	577682	15741	74 40.0
15 20.5	577452	15758	74 39.5
15 21.0	577222	15776	74 39.0
15 21.5	576992	15793	74 38.5
15 22.0	576762	15810	74 38.0
15 22.5	576532	15828	74 37.5
15 23.0	576303	15845	74 37.0
15 23.5	576073	15863	74 36.5
15 24.0	575844	15880	74 36.0
15 24.5	575614	15897	74 35.5
15 25.0	575385	15915	74 35.0
15 25.5	575156	15932	74 34.5
15 26.0	574927	15950	74 34.0
15 26.5	574699	15967	74 33.5
15 27.0	574470	15985	74 33.0
15 27.5	574242	16002	74 32.5
15 28.0	574013	16019	74 32.0
15 28.5	573785	16037	74 31.5
15 29.0	573557	16054	74 31.0
15 29.5	573329	16072	74 30.5
15 30.0	573101	16089	74 30.0

x	A(x)	B(x)	c
15 30.0	573101	16089	74 30.0
15 30.5	572873	16107	74 29.5
15 31.0	572646	16125	74 29.0
15 31.5	572418	16142	74 28.5
15 32.0	572191	16160	74 28.0
15 32.5	571964	16177	74 27.5
15 33.0	571737	16195	74 27.0
15 33.5	571510	16212	74 26.5
15 34.0	571283	16230	74 26.0
15 34.5	571056	16248	74 25.5
15 35.0	570830	16265	74 25.0
15 35.5	570603	16283	74 24.5
15 36.0	570377	16300	74 24.0
15 36.5	570151	16318	74 23.5
15 37.0	569925	16336	74 23.0
15 37.5	569699	16353	74 22.5
15 38.0	569473	16371	74 22.0
15 38.5	569248	16389	74 21.5
15 39.0	569022	16406	74 21.0
15 39.5	568797	16424	74 20.5
15 40.0	568571	16442	74 20.0
15 40.5	568346	16460	74 19.5
15 41.0	568121	16477	74 19.0
15 41.5	567896	16495	74 18.5
15 42.0	567671	16513	74 18.0
15 42.5	567447	16531	74 17.5
15 43.0	567222	16548	74 17.0
15 43.5	566998	16566	74 16.5
15 44.0	566774	16584	74 16.0
15 44.5	566549	16602	74 15.5
15 45.0	566325	16619	74 15.0
15 45.5	566102	16637	74 14.5
15 46.0	565878	16655	74 14.0
15 46.5	565654	16673	74 13.5
15 47.0	565431	16691	74 13.0
15 47.5	565207	16709	74 12.5
15 48.0	564984	16727	74 12.0
15 48.5	564761	16744	74 11.5
15 49.0	564538	16762	74 11.0
15 49.5	564315	16780	74 10.5
15 50.0	564092	16798	74 10.0
15 50.5	563869	16816	74 09.5
15 51.0	563647	16834	74 09.0
15 51.5	563424	16852	74 08.5
15 52.0	563202	16870	74 08.0
15 52.5	562980	16888	74 07.5
15 53.0	562758	16906	74 07.0
15 53.5	562536	16924	74 06.5
15 54.0	562314	16942	74 06.0
15 54.5	562092	16960	74 05.5
15 55.0	561871	16978	74 05.0
15 55.5	561649	16996	74 04.5
15 56.0	561428	17014	74 04.0
15 56.5	561207	17032	74 03.5
15 57.0	560986	17050	74 03.0
15 57.5	560765	17068	74 02.5
15 58.0	560544	17086	74 02.0
15 58.5	560323	17104	74 01.5
15 59.0	560103	17122	74 01.0
15 59.5	559882	17140	74 00.5
16 00.0	559662	17158	74 00.0

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

COMPACT AGETON | 016 00.0 to 018 00.0

x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c
16 00.0	559662	17158	74 00.0	16 30.0	546658	18263	73 30.0	17 00.0	534065	19404	73 00.0	17 30.0	521858	20580	72 30.0
16 00.5	559442	17176	73 59.5	16 30.5	546445	18282	73 29.5	17 00.5	533858	19423	72 59.5	17 30.5	521658	20600	72 29.5
16 01.0	559222	17195	73 59.0	16 31.0	546232	18300	73 29.0	17 01.0	533652	19442	72 59.0	17 31.0	521458	20620	72 29.0
16 01.5	559002	17213	73 58.5	16 31.5	546019	18319	73 28.5	17 01.5	533445	19462	72 58.5	17 31.5	521258	20640	72 28.5
16 02.0	558782	17231	73 58.0	16 32.0	545806	18338	73 28.0	17 02.0	533239	19481	72 58.0	17 32.0	521058	20660	72 28.0
16 02.5	558562	17249	73 57.5	16 32.5	545593	18357	73 27.5	17 02.5	533033	19500	72 57.5	17 32.5	520858	20680	72 27.5
16 03.0	558342	17267	73 57.0	16 33.0	545381	18375	73 27.0	17 03.0	532827	19520	72 57.0	17 33.0	520658	20700	72 27.0
16 03.5	558123	17285	73 56.5	16 33.5	545168	18394	73 26.5	17 03.5	532621	19539	72 56.5	17 33.5	520458	20720	72 26.5
16 04.0	557904	17304	73 56.0	16 34.0	544956	18413	73 26.0	17 04.0	532415	19558	72 56.0	17 34.0	520259	20740	72 26.0
16 04.5	557684	17322	73 55.5	16 34.5	544744	18432	73 25.5	17 04.5	532210	19578	72 55.5	17 34.5	520059	20760	72 25.5
16 05.0	557465	17340	73 55.0	16 35.0	544531	18451	73 25.0	17 05.0	532004	19597	72 55.0	17 35.0	519860	20780	72 25.0
16 05.5	557246	17358	73 54.5	16 35.5	544319	18469	73 24.5	17 05.5	531798	19617	72 54.5	17 35.5	519661	20800	72 24.5
16 06.0	557027	17376	73 54.0	16 36.0	544107	18488	73 24.0	17 06.0	531593	19636	72 54.0	17 36.0	519461	20820	72 24.0
16 06.5	556808	17395	73 53.5	16 36.5	543896	18507	73 23.5	17 06.5	531388	19656	72 53.5	17 36.5	519262	20840	72 23.5
16 07.0	556590	17413	73 53.0	16 37.0	543684	18526	73 23.0	17 07.0	531183	19675	72 53.0	17 37.0	519063	20860	72 23.0
16 07.5	556371	17431	73 52.5	16 37.5	543472	18545	73 22.5	17 07.5	530978	19694	72 52.5	17 37.5	518865	20880	72 22.5
16 08.0	556153	17449	73 52.0	16 38.0	543261	18564	73 22.0	17 08.0	530773	19714	72 52.0	17 38.0	518666	20900	72 22.0
16 08.5	555934	17468	73 51.5	16 38.5	543049	18583	73 21.5	17 08.5	530568	19733	72 51.5	17 38.5	518467	20921	72 21.5
16 09.0	555716	17486	73 51.0	16 39.0	542838	18601	73 21.0	17 09.0	530363	19753	72 51.0	17 39.0	518269	20941	72 21.0
16 09.5	555498	17504	73 50.5	16 39.5	542627	18620	73 20.5	17 09.5	530158	19772	72 50.5	17 39.5	518070	20961	72 20.5
16 10.0	555280	17523	73 50.0	16 40.0	542416	18639	73 20.0	17 10.0	529954	19792	72 50.0	17 40.0	517872	20981	72 20.0
16 10.5	555062	17541	73 49.5	16 40.5	542205	18658	73 19.5	17 10.5	529749	19811	72 49.5	17 40.5	517673	21001	72 19.5
16 11.0	554845	17559	73 49.0	16 41.0	541994	18677	73 19.0	17 11.0	529545	19831	72 49.0	17 41.0	517475	21021	72 19.0
16 11.5	554627	17578	73 48.5	16 41.5	541783	18696	73 18.5	17 11.5	529341	19851	72 48.5	17 41.5	517277	21041	72 18.5
16 12.0	554410	17596	73 48.0	16 42.0	541573	18715	73 18.0	17 12.0	529137	19870	72 48.0	17 42.0	517079	21061	72 18.0
16 12.5	554192	17614	73 47.5	16 42.5	541362	18734	73 17.5	17 12.5	528933	19890	72 47.5	17 42.5	516881	21082	72 17.5
16 13.0	553975	17633	73 47.0	16 43.0	541152	18753	73 17.0	17 13.0	528729	19909	72 47.0	17 43.0	516684	21102	72 17.0
16 13.5	553758	17651	73 46.5	16 43.5	540942	18772	73 16.5	17 13.5	528525	19929	72 46.5	17 43.5	516486	21122	72 16.5
16 14.0	553541	17669	73 46.0	16 44.0	540732	18791	73 16.0	17 14.0	528321	19948	72 46.0	17 44.0	516288	21142	72 16.0
16 14.5	553324	17688	73 45.5	16 44.5	540522	18810	73 15.5	17 14.5	528118	19968	72 45.5	17 44.5	516091	21162	72 15.5
16 15.0	553107	17706	73 45.0	16 45.0	540312	18829	73 15.0	17 15.0	527914	19988	72 45.0	17 45.0	515893	21183	72 15.0
16 15.5	552891	17725	73 44.5	16 45.5	540102	18848	73 14.5	17 15.5	527711	20007	72 44.5	17 45.5	515696	21203	72 14.5
16 16.0	552674	17743	73 44.0	16 46.0	539892	18867	73 14.0	17 16.0	527508	20027	72 44.0	17 46.0	515499	21223	72 14.0
16 16.5	552458	17761	73 43.5	16 46.5	539683	18886	73 13.5	17 16.5	527305	20046	72 43.5	17 46.5	515302	21243	72 13.5
16 17.0	552241	17780	73 43.0	16 47.0	539473	18905	73 13.0	17 17.0	527102	20066	72 43.0	17 47.0	515105	21263	72 13.0
16 17.5	552025	17798	73 42.5	16 47.5	539264	18924	73 12.5	17 17.5	526899	20086	72 42.5	17 47.5	514908	21284	72 12.5
16 18.0	551809	17817	73 42.0	16 48.0	539054	18943	73 12.0	17 18.0	526696	20105	72 42.0	17 48.0	514711	21304	72 12.0
16 18.5	551593	17835	73 41.5	16 48.5	538845	18962	73 11.5	17 18.5	526493	20125	72 41.5	17 48.5	514515	21324	72 11.5
16 19.0	551377	17854	73 41.0	16 49.0	538636	18981	73 11.0	17 19.0	526290	20145	72 41.0	17 49.0	514318	21345	72 11.0
16 19.5	551162	17872	73 40.5	16 49.5	538427	19000	73 10.5	17 19.5	526088	20164	72 40.5	17 49.5	514121	21365	72 10.5
16 20.0	550946	17891	73 40.0	16 50.0	538218	19019	73 10.0	17 20.0	525885	20184	72 40.0	17 50.0	513925	21385	72 10.0
16 20.5	550731	17909	73 39.5	16 50.5	538010	19039	73 09.5	17 20.5	525683	20204	72 39.5	17 50.5	513729	21406	72 09.5
16 21.0	550515	17928	73 39.0	16 51.0	537801	19058	73 09.0	17 21.0	525481	20224	72 39.0	17 51.0	513533	21426	72 09.0
16 21.5	550300	17946	73 38.5	16 51.5	537593	19077	73 08.5	17 21.5	525279	20243	72 38.5	17 51.5	513336	21446	72 08.5
16 22.0	550085	17965	73 38.0	16 52.0	537384	19096	73 08.0	17 22.0	525077	20263	72 38.0	17 52.0	513140	21467	72 08.0
16 22.5	549870	17984	73 37.5	16 52.5	537176	19115	73 07.5	17 22.5	524875	20283	72 37.5	17 52.5	512945	21487	72 07.5
16 23.0	549655	18002	73 37.0	16 53.0	536968	19134	73 07.0	17 23.0	524673	20303	72 37.0	17 53.0	512749	21507	72 07.0
16 23.5	549440	18021	73 36.5	16 53.5	536760	19153	73 06.5	17 23.5	524471	20322	72 36.5	17 53.5	512553	21528	72 06.5
16 24.0	549225	18039	73 36.0	16 54.0	536552	19173	73 06.0	17 24.0	524270	20342	72 36.0	17 54.0	512357	21548	72 06.0
16 24.5	549011	18058	73 35.5	16 54.5	536344	19192	73 05.5	17 24.5	524068	20362	72 35.5	17 54.5	512162	21569	72 05.5
16 25.0	548796	18076	73 35.0	16 55.0	536136	19211	73 05.0	17 25.0	523867	20382	72 35.0	17 55.0	511966	21589	72 05.0
16 25.5	548582	18095	73 34.5	16 55.5	535928	19230	73 04.5	17 25.5	523665	20402	72 34.5	17 55.5	511771	21609	72 04.5
16 26.0	548368	18114	73 34.0	16 56.0	535721	19250	73 04.0	17 26.0	523464	20421	72 34.0	17 56.0	511576	21630	72 04.0
16 26.5	548154	18132	73 33.5	16 56.5	535514	19269	73 03.5	17 26.5	523263	20441	72 33.5	17 56.5	511381	21650	72 03.5
16 27.0	547940	18151	73 33.0	16 57.0	535306	19288	73 03.0	17 27.0	523062	20461	72 33.0	17 57.0	511186	21671	72 03.0
16 27.5	547726	18170	73 32.5	16 57.5	535099	19307	73 02.5	17 27.5	522861	20481	72 32.5	17 57.5	510991	21691	72 02.5
16 28.0	547512	18188	73 32.0	16 58.0	534892	19327	73 02.0	17 28.0	522660	20501	72 32.0	17 58.0	510796	21712	72 02.0
16 28.5	547298	18207	73 31.5	16 58.5	534685	19346	73 01.5	17 28.5	522460	20521	72 31.5	17 58.5	510601	21732	72 01.5
16 29.0	547085	18226	73 31.0	16 59.0	534478	19365	73 01.0	17 29.0	522259	20541	72 31.0	17 59.0	510407	21753	72 01.0
16 29.5	546871	18244	73 30.5	16 59.5	534271	19384	73 00.5	17 29.5	522059	20561	72 30.5	17 59.5	510212	21773	72 00.5
16 30.0	546658	18263	73 30.0	17 00.0	534065	19404	73 00.0	17 30.0	521858	20580	72 30.0	18 00.0	510018	21794	72 00.0

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c
18 00.0	510018	21794	72 00.0	18 30.0	498524	23043	71 30.0	19 00.0	487358	24330	71 00.0	19 30.0	476505	25653	70 30.0
18 00.5	509823	21814	71 59.5	18 30.5	498335	23065	71 29.5	19 00.5	487175	24352	70 59.5	19 30.5	476326	25676	70 29.5
18 01.0	509629	21835	71 59.0	18 31.0	498146	23086	71 29.0	19 01.0	486991	24373	70 59.0	19 31.0	476148	25698	70 29.0
18 01.5	509435	21855	71 58.5	18 31.5	497958	23107	71 28.5	19 01.5	486808	24395	70 58.5	19 31.5	475970	25721	70 28.5
18 02.0	509241	21876	71 58.0	18 32.0	497769	23128	71 28.0	19 02.0	486625	24417	70 58.0	19 32.0	475792	25743	70 28.0
18 02.5	509047	21896	71 57.5	18 32.5	497581	23149	71 27.5	19 02.5	486442	24439	70 57.5	19 32.5	475614	25765	70 27.5
18 03.0	508853	21917	71 57.0	18 33.0	497393	23170	71 27.0	19 03.0	486259	24461	70 57.0	19 33.0	475436	25788	70 27.0
18 03.5	508659	21938	71 56.5	18 33.5	497204	23192	71 26.5	19 03.5	486076	24482	70 56.5	19 33.5	475258	25810	70 26.5
18 04.0	508465	21958	71 56.0	18 34.0	497016	23213	71 26.0	19 04.0	485893	24504	70 56.0	19 34.0	475080	25833	70 26.0
18 04.5	508272	21979	71 55.5	18 34.5	496828	23234	71 25.5	19 04.5	485711	24526	70 55.5	19 34.5	474903	25855	70 25.5
18 05.0	508078	21999	71 55.0	18 35.0	496640	23255	71 25.0	19 05.0	485528	24548	70 55.0	19 35.0	474725	25878	70 25.0
18 05.5	507885	22020	71 54.5	18 35.5	496452	23277	71 24.5	19 05.5	485345	24570	70 54.5	19 35.5	474548	25900	70 24.5
18 06.0	507692	22041	71 54.0	18 36.0	496265	23298	71 24.0	19 06.0	485163	24592	70 54.0	19 36.0	474370	25923	70 24.0
18 06.5	507498	22061	71 53.5	18 36.5	496077	23319	71 23.5	19 06.5	484981	24614	70 53.5	19 36.5	474193	25945	70 23.5
18 07.0	507305	22082	71 53.0	18 37.0	495890	23340	71 23.0	19 07.0	484798	24635	70 53.0	19 37.0	474016	25968	70 23.0
18 07.5	507112	22103	71 52.5	18 37.5	495702	23362	71 22.5	19 07.5	484616	24657	70 52.5	19 37.5	473838	25990	70 22.5
18 08.0	506919	22123	71 52.0	18 38.0	495515	23383	71 22.0	19 08.0	484434	24679	70 52.0	19 38.0	473661	26013	70 22.0
18 08.5	506727	22144	71 51.5	18 38.5	495327	23404	71 21.5	19 08.5	484252	24701	70 51.5	19 38.5	473484	26035	70 21.5
18 09.0	506534	22165	71 51.0	18 39.0	495140	23426	71 21.0	19 09.0	484070	24723	70 51.0	19 39.0	473307	26058	70 21.0
18 09.5	506341	22185	71 50.5	18 39.5	494953	23447	71 20.5	19 09.5	483888	24745	70 50.5	19 39.5	473130	26080	70 20.5
18 10.0	506149	22206	71 50.0	18 40.0	494766	23468	71 20.0	19 10.0	483706	24767	70 50.0	19 40.0	472954	26103	70 20.0
18 10.5	505956	22227	71 49.5	18 40.5	494579	23490	71 19.5	19 10.5	483525	24789	70 49.5	19 40.5	472777	26125	70 19.5
18 11.0	505764	22248	71 49.0	18 41.0	494392	23511	71 19.0	19 11.0	483343	24811	70 49.0	19 41.0	472600	26148	70 19.0
18 11.5	505572	22268	71 48.5	18 41.5	494206	23532	71 18.5	19 11.5	483162	24833	70 48.5	19 41.5	472424	26171	70 18.5
18 12.0	505379	22289	71 48.0	18 42.0	494019	23554	71 18.0	19 12.0	482980	24855	70 48.0	19 42.0	472247	26193	70 18.0
18 12.5	505187	22310	71 47.5	18 42.5	493832	23575	71 17.5	19 12.5	482799	24877	70 47.5	19 42.5	472071	26216	70 17.5
18 13.0	504995	22331	71 47.0	18 43.0	493646	23596	71 17.0	19 13.0	482618	24899	70 47.0	19 43.0	471895	26239	70 17.0
18 13.5	504804	22352	71 46.5	18 43.5	493459	23618	71 16.5	19 13.5	482436	24921	70 46.5	19 43.5	471718	26261	70 16.5
18 14.0	504612	22372	71 46.0	18 44.0	493273	23639	71 16.0	19 14.0	482255	24943	70 46.0	19 44.0	471542	26284	70 16.0
18 14.5	504420	22393	71 45.5	18 44.5	493087	23661	71 15.5	19 14.5	482074	24965	70 45.5	19 44.5	471366	26306	70 15.5
18 15.0	504228	22414	71 45.0	18 45.0	492901	23682	71 15.0	19 15.0	481893	24987	70 45.0	19 45.0	471190	26329	70 15.0
18 15.5	504037	22435	71 44.5	18 45.5	492715	23704	71 14.5	19 15.5	481713	25009	70 44.5	19 45.5	471014	26352	70 14.5
18 16.0	503846	22456	71 44.0	18 46.0	492529	23725	71 14.0	19 16.0	481532	25031	70 44.0	19 46.0	470839	26375	70 14.0
18 16.5	503654	22476	71 43.5	18 46.5	492343	23746	71 13.5	19 16.5	481351	25053	70 43.5	19 46.5	470663	26397	70 13.5
18 17.0	503463	22497	71 43.0	18 47.0	492157	23768	71 13.0	19 17.0	481171	25075	70 43.0	19 47.0	470487	26420	70 13.0
18 17.5	503272	22518	71 42.5	18 47.5	491972	23789	71 12.5	19 17.5	480990	25097	70 42.5	19 47.5	470312	26443	70 12.5
18 18.0	503081	22539	71 42.0	18 48.0	491786	23811	71 12.0	19 18.0	480810	25120	70 42.0	19 48.0	470136	26465	70 12.0
18 18.5	502890	22560	71 41.5	18 48.5	491600	23832	71 11.5	19 18.5	480629	25142	70 41.5	19 48.5	469961	26488	70 11.5
18 19.0	502699	22581	71 41.0	18 49.0	491415	23854	71 11.0	19 19.0	480449	25164	70 41.0	19 49.0	469785	26511	70 11.0
18 19.5	502508	22602	71 40.5	18 49.5	491230	23875	71 10.5	19 19.5	480269	25186	70 40.5	19 49.5	469610	26534	70 10.5
18 20.0	502318	22623	71 40.0	18 50.0	491044	23897	71 10.0	19 20.0	480089	25208	70 40.0	19 50.0	469435	26556	70 10.0
18 20.5	502127	22644	71 39.5	18 50.5	490859	23919	71 09.5	19 20.5	479909	25230	70 39.5	19 50.5	469260	26579	70 09.5
18 21.0	501936	22665	71 39.0	18 51.0	490674	23940	71 09.0	19 21.0	479729	25252	70 39.0	19 51.0	469085	26602	70 09.0
18 21.5	501746	22686	71 38.5	18 51.5	490489	23962	71 08.5	19 21.5	479549	25275	70 38.5	19 51.5	468910	26625	70 08.5
18 22.0	501556	22707	71 38.0	18 52.0	490304	23983	71 08.0	19 22.0	479369	25297	70 38.0	19 52.0	468735	26648	70 08.0
18 22.5	501366	22728	71 37.5	18 52.5	490120	24005	71 07.5	19 22.5	479190	25319	70 37.5	19 52.5	468560	26670	70 07.5
18 23.0	501175	22749	71 37.0	18 53.0	489935	24026	71 07.0	19 23.0	479010	25341	70 37.0	19 53.0	468386	26693	70 07.0
18 23.5	500985	22770	71 36.5	18 53.5	489750	24048	71 06.5	19 23.5	478831	25364	70 36.5	19 53.5	468211	26716	70 06.5
18 24.0	500796	22791	71 36.0	18 54.0	489566	24070	71 06.0	19 24.0	478651	25386	70 36.0	19 54.0	468037	26739	70 06.0
18 24.5	500606	22812	71 35.5	18 54.5	489381	24091	71 05.5	19 24.5	478472	25408	70 35.5	19 54.5	467862	26762	70 05.5
18 25.0	500416	22833	71 35.0	18 55.0	489197	24113	71 05.0	19 25.0	478293	25430	70 35.0	19 55.0	467688	26785	70 05.0
18 25.5	500226	22854	71 34.5	18 55.5	489013	24135	71 04.5	19 25.5	478113	25453	70 34.5	19 55.5	467513	26808	70 04.5
18 26.0	500037	22875	71 34.0	18 56.0	488828	24156	71 04.0	19 26.0	477934	25475	70 34.0	19 56.0	467339	26831	70 04.0
18 26.5	499847	22896	71 33.5	18 56.5	488644	24178	71 03.5	19 26.5	477755	25497	70 33.5	19 56.5	467165	26854	70 03.5
18 27.0	499658	22917	71 33.0	18 57.0	488460	24200	71 03.0	19 27.0	477576	25519	70 33.0	19 57.0	466991	26876	70 03.0
18 27.5	499469	22938	71 32.5	18 57.5	488276	24221	71 02.5	19 27.5	477398	25542	70 32.5	19 57.5	466817	26899	70 02.5
18 28.0	499279	22959	71 32.0	18 58.0	488093	24243	71 02.0	19 28.0	477219	25564	70 32.0	19 58.0	466643	26922	70 02.0
18 28.5	499090	22980	71 31.5	18 58.5	487909	24265	71 01.5	19 28.5	477040	25586	70 31.5	19 58.5	466469	26945	70 01.5
18 29.0	498901	23001	71 31.0	18 59.0	487725	24286	71 01.0	19 29.0	476862	25609	70 31.0	19 59.0	466296	26968	70 01.0
18 29.5	498712	23022	71 30.5	18 59.5	487542	24308	71 00.5	19 29.5	476683	25631	70 30.5	19 59.5	466122	26991	70 00.5
18 30.0	498524	23043	71 30.0	19 00.0	487358	24330	71 00.0	19 30.0	476505	25653	70 30.0	20 00.0	465948	27014	70 00.0

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c
20 00.0	465948	27014	70 00.0	20 30.0	455675	28412	69 30.0	21 00.0	445671	29848	69 00.0	21 30.0	435925	31322	68 30.0
20 00.5	465775	27037	69 59.5	20 30.5	455506	28436	69 29.5	21 00.5	445506	29873	68 59.5	21 30.5	435764	31347	68 29.5
20 01.0	465601	27060	69 59.0	20 31.0	455337	28460	69 29.0	21 01.0	445342	29897	68 59.0	21 31.0	435604	31372	68 29.0
20 01.5	465428	27083	69 58.5	20 31.5	455168	28483	69 28.5	21 01.5	445178	29921	68 58.5	21 31.5	435444	31397	68 28.5
20 02.0	465255	27106	69 58.0	20 32.0	455000	28507	69 28.0	21 02.0	445013	29945	68 58.0	21 32.0	435284	31422	68 28.0
20 02.5	465082	27129	69 57.5	20 32.5	454831	28531	69 27.5	21 02.5	444849	29970	68 57.5	21 32.5	435124	31447	68 27.5
20 03.0	464908	27152	69 57.0	20 33.0	454662	28554	69 27.0	21 03.0	444685	29994	68 57.0	21 33.0	434964	31472	68 27.0
20 03.5	464735	27175	69 56.5	20 33.5	454494	28578	69 26.5	21 03.5	444521	30018	68 56.5	21 33.5	434804	31497	68 26.5
20 04.0	464562	27198	69 56.0	20 34.0	454326	28602	69 26.0	21 04.0	444357	30043	68 56.0	21 34.0	434644	31521	68 26.0
20 04.5	464390	27222	69 55.5	20 34.5	454157	28625	69 25.5	21 04.5	444193	30067	68 55.5	21 34.5	434484	31546	68 25.5
20 05.0	464217	27245	69 55.0	20 35.0	453989	28649	69 25.0	21 05.0	444029	30091	68 55.0	21 35.0	434324	31571	68 25.0
20 05.5	464044	27268	69 54.5	20 35.5	453821	28673	69 24.5	21 05.5	443865	30116	68 54.5	21 35.5	434165	31596	68 24.5
20 06.0	463871	27291	69 54.0	20 36.0	453653	28697	69 24.0	21 06.0	443701	30140	68 54.0	21 36.0	434005	31621	68 24.0
20 06.5	463699	27314	69 53.5	20 36.5	453485	28720	69 23.5	21 06.5	443538	30164	68 53.5	21 36.5	433846	31646	68 23.5
20 07.0	463526	27337	69 53.0	20 37.0	453317	28744	69 23.0	21 07.0	443374	30189	68 53.0	21 37.0	433686	31671	68 23.0
20 07.5	463354	27360	69 52.5	20 37.5	453149	28768	69 22.5	21 07.5	443211	30213	68 52.5	21 37.5	433527	31697	68 22.5
20 08.0	463182	27383	69 52.0	20 38.0	452981	28792	69 22.0	21 08.0	443047	30238	68 52.0	21 38.0	433368	31722	68 22.0
20 08.5	463009	27407	69 51.5	20 38.5	452813	28815	69 21.5	21 08.5	442884	30262	68 51.5	21 38.5	433208	31747	68 21.5
20 09.0	462837	27430	69 51.0	20 39.0	452646	28839	69 21.0	21 09.0	442720	30286	68 51.0	21 39.0	433049	31772	68 21.0
20 09.5	462665	27453	69 50.5	20 39.5	452478	28863	69 20.5	21 09.5	442557	30311	68 50.5	21 39.5	432890	31797	68 20.5
20 10.0	462493	27476	69 50.0	20 40.0	452311	28887	69 20.0	21 10.0	442394	30335	68 50.0	21 40.0	432731	31822	68 20.0
20 10.5	462321	27499	69 49.5	20 40.5	452143	28911	69 19.5	21 10.5	442231	30360	68 49.5	21 40.5	432572	31847	68 19.5
20 11.0	462149	27522	69 49.0	20 41.0	451976	28934	69 19.0	21 11.0	442068	30384	68 49.0	21 41.0	432413	31872	68 19.0
20 11.5	461977	27546	69 48.5	20 41.5	451809	28958	69 18.5	21 11.5	441905	30409	68 48.5	21 41.5	432254	31897	68 18.5
20 12.0	461806	27569	69 48.0	20 42.0	451641	28982	69 18.0	21 12.0	441742	30433	68 48.0	21 42.0	432096	31922	68 18.0
20 12.5	461634	27592	69 47.5	20 42.5	451474	29006	69 17.5	21 12.5	441579	30458	68 47.5	21 42.5	431937	31947	68 17.5
20 13.0	461462	27615	69 47.0	20 43.0	451307	29030	69 17.0	21 13.0	441417	30482	68 47.0	21 43.0	431778	31973	68 17.0
20 13.5	461291	27639	69 46.5	20 43.5	451140	29054	69 16.5	21 13.5	441254	30507	68 46.5	21 43.5	431620	31998	68 16.5
20 14.0	461120	27662	69 46.0	20 44.0	450973	29078	69 16.0	21 14.0	441091	30531	68 46.0	21 44.0	431461	32023	68 16.0
20 14.5	460948	27685	69 45.5	20 44.5	450807	29102	69 15.5	21 14.5	440929	30556	68 45.5	21 44.5	431303	32048	68 15.5
20 15.0	460777	27709	69 45.0	20 45.0	450640	29126	69 15.0	21 15.0	440766	30580	68 45.0	21 45.0	431144	32073	68 15.0
20 15.5	460606	27732	69 44.5	20 45.5	450473	29150	69 14.5	21 15.5	440604	30605	68 44.5	21 45.5	430986	32099	68 14.5
20 16.0	460435	27755	69 44.0	20 46.0	450307	29173	69 14.0	21 16.0	440442	30630	68 44.0	21 46.0	430828	32124	68 14.0
20 16.5	460264	27779	69 43.5	20 46.5	450140	29197	69 13.5	21 16.5	440279	30654	68 43.5	21 46.5	430670	32149	68 13.5
20 17.0	460093	27802	69 43.0	20 47.0	449974	29221	69 13.0	21 17.0	440117	30679	68 43.0	21 47.0	430512	32174	68 13.0
20 17.5	459922	27825	69 42.5	20 47.5	449807	29245	69 12.5	21 17.5	439955	30703	68 42.5	21 47.5	430354	32199	68 12.5
20 18.0	459751	27849	69 42.0	20 48.0	449641	29269	69 12.0	21 18.0	439793	30728	68 42.0	21 48.0	430196	32225	68 12.0
20 18.5	459580	27872	69 41.5	20 48.5	449475	29293	69 11.5	21 18.5	439631	30753	68 41.5	21 48.5	430038	32250	68 11.5
20 19.0	459410	27895	69 41.0	20 49.0	449308	29317	69 11.0	21 19.0	439469	30777	68 41.0	21 49.0	429880	32275	68 11.0
20 19.5	459239	27919	69 40.5	20 49.5	449142	29341	69 10.5	21 19.5	439307	30802	68 40.5	21 49.5	429722	32301	68 10.5
20 20.0	459069	27942	69 40.0	20 50.0	448976	29365	69 10.0	21 20.0	439145	30827	68 40.0	21 50.0	429565	32326	68 10.0
20 20.5	458898	27966	69 39.5	20 50.5	448810	29389	69 09.5	21 20.5	438984	30851	68 39.5	21 50.5	429407	32351	68 09.5
20 21.0	458728	27989	69 39.0	20 51.0	448644	29414	69 09.0	21 21.0	438822	30876	68 39.0	21 51.0	429249	32376	68 09.0
20 21.5	458558	28012	69 38.5	20 51.5	448479	29438	69 08.5	21 21.5	438661	30901	68 38.5	21 51.5	429092	32402	68 08.5
20 22.0	458387	28036	69 38.0	20 52.0	448313	29462	69 08.0	21 22.0	438499	30925	68 38.0	21 52.0	428934	32427	68 08.0
20 22.5	458217	28059	69 37.5	20 52.5	448147	29486	69 07.5	21 22.5	438338	30950	68 37.5	21 52.5	428777	32453	68 07.5
20 23.0	458047	28083	69 37.0	20 53.0	447982	29510	69 07.0	21 23.0	438176	30975	68 37.0	21 53.0	428620	32478	68 07.0
20 23.5	457877	28106	69 36.5	20 53.5	447816	29534	69 06.5	21 23.5	438015	31000	68 36.5	21 53.5	428463	32503	68 06.5
20 24.0	457707	28130	69 36.0	20 54.0	447651	29558	69 06.0	21 24.0	437854	31024	68 36.0	21 54.0	428305	32529	68 06.0
20 24.5	457538	28153	69 35.5	20 54.5	447485	29582	69 05.5	21 24.5	437693	31049	68 35.5	21 54.5	428148	32554	68 05.5
20 25.0	457368	28177	69 35.0	20 55.0	447320	29606	69 05.0	21 25.0	437532	31074	68 35.0	21 55.0	427991	32579	68 05.0
20 25.5	457198	28200	69 34.5	20 55.5	447155	29630	69 04.5	21 25.5	437371	31099	68 34.5	21 55.5	427834	32605	68 04.5
20 26.0	457029	28224	69 34.0	20 56.0	446990	29655	69 04.0	21 26.0	437210	31123	68 34.0	21 56.0	427677	32630	68 04.0
20 26.5	456859	28247	69 33.5	20 56.5	446824	29679	69 03.5	21 26.5	437049	31148	68 33.5	21 56.5	427521	32656	68 03.5
20 27.0	456690	28271	69 33.0	20 57.0	446659	29703	69 03.0	21 27.0	436888	31173	68 33.0	21 57.0	427364	32681	68 03.0
20 27.5	456520	28294	69 32.5	20 57.5	446494	29727	69 02.5	21 27.5	436727	31198	68 32.5	21 57.5	427207	32707	68 02.5
20 28.0	456351	28318	69 32.0	20 58.0	446330	29751	69 02.0	21 28.0	436567	31223	68 32.0	21 58.0	427050	32732	68 02.0
20 28.5	456182	28342	69 31.5	20 58.5	446165	29776	69 01.5	21 28.5	436406	31248	68 31.5	21 58.5	426894	32758	68 01.5
20 29.0	456013	28365	69 31.0	20 59.0	446000	29800	69 01.0	21 29.0	436245	31272	68 31.0	21 59.0	426737	32783	68 01.0
20 29.5	455844	28389	69 30.5	20 59.5	445835	29824	69 00.5	21 29.5	436085	31297	68 30.5	21 59.5	426581	32809	68 00.5
20 30.0	455675	28412	69 30.0	21 00.0	445671	29848	69 00.0	21 30.0	435925	31322	68 30.0	22 00.0	426425	32834	68 00.0

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c
22 00.0	426425	32834	68 00.0	22 30.0	417160	34385	67 30.0	23 00.0	408122	35974	67 00.0	23 30.0	399300	37602	66 30.0
22 00.5	426268	32860	67 59.5	22 30.5	417008	34411	67 29.5	23 00.5	407973	36001	66 59.5	23 30.5	399155	37630	66 29.5
22 01.0	426112	32885	67 59.0	22 31.0	416855	34437	67 29.0	23 01.0	407824	36028	66 59.0	23 31.0	399010	37657	66 29.0
22 01.5	425956	32911	67 58.5	22 31.5	416703	34463	67 28.5	23 01.5	407676	36054	66 58.5	23 31.5	398865	37685	66 28.5
22 02.0	425800	32936	67 58.0	22 32.0	416551	34489	67 28.0	23 02.0	407527	36081	66 58.0	23 32.0	398720	37712	66 28.0
22 02.5	425644	32962	67 57.5	22 32.5	416399	34516	67 27.5	23 02.5	407379	36108	66 57.5	23 32.5	398575	37740	66 27.5
22 03.0	425488	32987	67 57.0	22 33.0	416246	34542	67 27.0	23 03.0	407230	36135	66 57.0	23 33.0	398430	37767	66 27.0
22 03.5	425332	33013	67 56.5	22 33.5	416094	34568	67 26.5	23 03.5	407082	36162	66 56.5	23 33.5	398285	37795	66 26.5
22 04.0	425176	33039	67 56.0	22 34.0	415942	34594	67 26.0	23 04.0	406933	36189	66 56.0	23 34.0	398140	37822	66 26.0
22 04.5	425020	33064	67 55.5	22 34.5	415790	34621	67 25.5	23 04.5	406785	36216	66 55.5	23 34.5	397995	37850	66 25.5
22 05.0	424864	33090	67 55.0	22 35.0	415639	34647	67 25.0	23 05.0	406637	36243	66 55.0	23 35.0	397850	37877	66 25.0
22 05.5	424709	33116	67 54.5	22 35.5	415487	34673	67 24.5	23 05.5	406489	36270	66 54.5	23 35.5	397706	37905	66 24.5
22 06.0	424553	33141	67 54.0	22 36.0	415335	34699	67 24.0	23 06.0	406341	36296	66 54.0	23 36.0	397561	37933	66 24.0
22 06.5	424398	33167	67 53.5	22 36.5	415183	34726	67 23.5	23 06.5	406193	36323	66 53.5	23 36.5	397417	37960	66 23.5
22 07.0	424242	33192	67 53.0	22 37.0	415032	34752	67 23.0	23 07.0	406045	36350	66 53.0	23 37.0	397272	37988	66 23.0
22 07.5	424087	33218	67 52.5	22 37.5	414880	34778	67 22.5	23 07.5	405897	36377	66 52.5	23 37.5	397128	38015	66 22.5
22 08.0	423931	33244	67 52.0	22 38.0	414728	34805	67 22.0	23 08.0	405749	36404	66 52.0	23 38.0	396983	38043	66 22.0
22 08.5	423776	33270	67 51.5	22 38.5	414577	34831	67 21.5	23 08.5	405601	36431	66 51.5	23 38.5	396839	38071	66 21.5
22 09.0	423621	33295	67 51.0	22 39.0	414426	34857	67 21.0	23 09.0	405453	36458	66 51.0	23 39.0	396695	38098	66 21.0
22 09.5	423466	33321	67 50.5	22 39.5	414274	34884	67 20.5	23 09.5	405305	36485	66 50.5	23 39.5	396551	38126	66 20.5
22 10.0	423311	33347	67 50.0	22 40.0	414123	34910	67 20.0	23 10.0	405158	36512	66 50.0	23 40.0	396406	38154	66 20.0
22 10.5	423156	33372	67 49.5	22 40.5	413972	34936	67 19.5	23 10.5	405010	36539	66 49.5	23 40.5	396262	38181	66 19.5
22 11.0	423001	33398	67 49.0	22 41.0	413821	34963	67 19.0	23 11.0	404863	36566	66 49.0	23 41.0	396118	38209	66 19.0
22 11.5	422846	33424	67 48.5	22 41.5	413669	34989	67 18.5	23 11.5	404715	36593	66 48.5	23 41.5	395974	38237	66 18.5
22 12.0	422691	33450	67 48.0	22 42.0	413518	35016	67 18.0	23 12.0	404568	36621	66 48.0	23 42.0	395830	38265	66 18.0
22 12.5	422536	33475	67 47.5	22 42.5	413367	35042	67 17.5	23 12.5	404420	36648	66 47.5	23 42.5	395687	38292	66 17.5
22 13.0	422382	33501	67 47.0	22 43.0	413217	35069	67 17.0	23 13.0	404273	36675	66 47.0	23 43.0	395543	38320	66 17.0
22 13.5	422227	33527	67 46.5	22 43.5	413066	35095	67 16.5	23 13.5	404126	36702	66 46.5	23 43.5	395399	38348	66 16.5
22 14.0	422073	33553	67 46.0	22 44.0	412915	35121	67 16.0	23 14.0	403979	36729	66 46.0	23 44.0	395255	38376	66 16.0
22 14.5	421918	33579	67 45.5	22 44.5	412764	35148	67 15.5	23 14.5	403832	36756	66 45.5	23 44.5	395112	38403	66 15.5
22 15.0	421764	33605	67 45.0	22 45.0	412614	35174	67 15.0	23 15.0	403685	36783	66 45.0	23 45.0	394968	38431	66 15.0
22 15.5	421609	33630	67 44.5	22 45.5	412463	35201	67 14.5	23 15.5	403538	36810	66 44.5	23 45.5	394824	38459	66 14.5
22 16.0	421455	33656	67 44.0	22 46.0	412312	35227	67 14.0	23 16.0	403391	36837	66 44.0	23 46.0	394681	38487	66 14.0
22 16.5	421301	33682	67 43.5	22 46.5	412162	35254	67 13.5	23 16.5	403244	36865	66 43.5	23 46.5	394538	38515	66 13.5
22 17.0	421147	33708	67 43.0	22 47.0	412011	35280	67 13.0	23 17.0	403097	36892	66 43.0	23 47.0	394394	38542	66 13.0
22 17.5	420992	33734	67 42.5	22 47.5	411861	35307	67 12.5	23 17.5	402950	36919	66 42.5	23 47.5	394251	38570	66 12.5
22 18.0	420838	33760	67 42.0	22 48.0	411711	35334	67 12.0	23 18.0	402804	36946	66 42.0	23 48.0	394108	38598	66 12.0
22 18.5	420684	33786	67 41.5	22 48.5	411561	35360	67 11.5	23 18.5	402657	36973	66 41.5	23 48.5	393965	38626	66 11.5
22 19.0	420530	33812	67 41.0	22 49.0	411410	35387	67 11.0	23 19.0	402510	37001	66 41.0	23 49.0	393821	38654	66 11.0
22 19.5	420377	33838	67 40.5	22 49.5	411260	35413	67 10.5	23 19.5	402364	37028	66 40.5	23 49.5	393678	38682	66 10.5
22 20.0	420223	33864	67 40.0	22 50.0	411110	35440	67 10.0	23 20.0	402217	37055	66 40.0	23 50.0	393535	38710	66 10.0
22 20.5	420069	33889	67 39.5	22 50.5	410960	35466	67 09.5	23 20.5	402071	37082	66 39.5	23 50.5	393392	38737	66 09.5
22 21.0	419915	33915	67 39.0	22 51.0	410810	35493	67 09.0	23 21.0	401925	37110	66 39.0	23 51.0	393249	38765	66 09.0
22 21.5	419762	33941	67 38.5	22 51.5	410660	35520	67 08.5	23 21.5	401778	37137	66 38.5	23 51.5	393107	38793	66 08.5
22 22.0	419608	33967	67 38.0	22 52.0	410511	35546	67 08.0	23 22.0	401632	37164	66 38.0	23 52.0	392964	38821	66 08.0
22 22.5	419455	33993	67 37.5	22 52.5	410361	35573	67 07.5	23 22.5	401486	37191	66 37.5	23 52.5	392821	38849	66 07.5
22 23.0	419301	34019	67 37.0	22 53.0	410211	35600	67 07.0	23 23.0	401340	37219	66 37.0	23 53.0	392678	38877	66 07.0
22 23.5	419148	34045	67 36.5	22 53.5	410062	35626	67 06.5	23 23.5	401194	37246	66 36.5	23 53.5	392536	38905	66 06.5
22 24.0	418995	34071	67 36.0	22 54.0	409912	35653	67 06.0	23 24.0	401048	37273	66 36.0	23 54.0	392393	38933	66 06.0
22 24.5	418842	34098	67 35.5	22 54.5	409763	35680	67 05.5	23 24.5	400902	37301	66 35.5	23 54.5	392251	38961	66 05.5
22 25.0	418688	34124	67 35.0	22 55.0	409613	35706	67 05.0	23 25.0	400756	37328	66 35.0	23 55.0	392108	38989	66 05.0
22 25.5	418535	34150	67 34.5	22 55.5	409464	35733	67 04.5	23 25.5	400610	37355	66 34.5	23 55.5	391966	39017	66 04.5
22 26.0	418382	34176	67 34.0	22 56.0	409314	35760	67 04.0	23 26.0	400464	37383	66 34.0	23 56.0	391823	39045	66 04.0
22 26.5	418229	34202	67 33.5	22 56.5	409165	35786	67 03.5	23 26.5	400319	37410	66 33.5	23 56.5	391681	39073	66 03.5
22 27.0	418076	34228	67 33.0	22 57.0	409016	35813	67 03.0	23 27.0	400173	37438	66 33.0	23 57.0	391539	39101	66 03.0
22 27.5	417924	34254	67 32.5	22 57.5	408867	35840	67 02.5	23 27.5	400027	37465	66 32.5	23 57.5	391397	39129	66 02.5
22 28.0	417771	34280	67 32.0	22 58.0	408718	35867	67 02.0	23 28.0	399882	37492	66 32.0	23 58.0	391255	39157	66 02.0
22 28.5	417618	34306	67 31.5	22 58.5	408569	35894	67 01.5	23 28.5	399736	37520	66 31.5	23 58.5	391113	39186	66 01.5
22 29.0	417465	34332	67 31.0	22 59.0	408420	35920	67 01.0	23 29.0	399591	37547	66 31.0	23 59.0	390971	39214	66 01.0
22 29.5	417313	34358	67 30.5	22 59.5	408271	35947	67 00.5	23 29.5	399446	37575	66 30.5	23 59.5	390829	39242	66 00.5
22 30.0	417160	34385	67 30.0	23 00.0	408122	35974	67 00.0	23 30.0	399300	37602	66 30.0	24 00.0	390687	39270	66 00.0

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c
24 00.0	390687	39270	66 00.0	24 30.0	382273	40977	65 30.0	25 00.0	374052	42724	65 00.0	25 30.0	366016	44512	64 30.0
24 00.5	390545	39298	65 59.5	24 30.5	382134	41006	65 29.5	25 00.5	373916	42754	64 59.5	25 30.5	365883	44542	64 29.5
24 01.0	390403	39326	65 59.0	24 31.0	381996	41035	65 29.0	25 01.0	373781	42783	64 59.0	25 31.0	365751	44572	64 29.0
24 01.5	390261	39354	65 58.5	24 31.5	381857	41063	65 28.5	25 01.5	373646	42813	64 58.5	25 31.5	365619	44602	64 28.5
24 02.0	390120	39382	65 58.0	24 32.0	381719	41092	65 28.0	25 02.0	373510	42842	64 58.0	25 32.0	365486	44632	64 28.0
24 02.5	389978	39411	65 57.5	24 32.5	381581	41121	65 27.5	25 02.5	373375	42872	64 57.5	25 32.5	365354	44663	64 27.5
24 03.0	389836	39439	65 57.0	24 33.0	381442	41150	65 27.0	25 03.0	373240	42901	64 57.0	25 33.0	365222	44693	64 27.0
24 03.5	389695	39467	65 56.5	24 33.5	381304	41179	65 26.5	25 03.5	373105	42931	64 56.5	25 33.5	365090	44723	64 26.5
24 04.0	389553	39495	65 56.0	24 34.0	381166	41208	65 26.0	25 04.0	372970	42960	64 56.0	25 34.0	364958	44753	64 26.0
24 04.5	389412	39523	65 55.5	24 34.5	381028	41237	65 25.5	25 04.5	372835	42990	64 55.5	25 34.5	364826	44783	64 25.5
24 05.0	389271	39552	65 55.0	24 35.0	380890	41266	65 25.0	25 05.0	372700	43019	64 55.0	25 35.0	364694	44814	64 25.0
24 05.5	389129	39580	65 54.5	24 35.5	380752	41294	65 24.5	25 05.5	372565	43049	64 54.5	25 35.5	364562	44844	64 24.5
24 06.0	388988	39608	65 54.0	24 36.0	380614	41323	65 24.0	25 06.0	372430	43079	64 54.0	25 36.0	364430	44874	64 24.0
24 06.5	388847	39636	65 53.5	24 36.5	380476	41352	65 23.5	25 06.5	372295	43108	64 53.5	25 36.5	364298	44904	64 23.5
24 07.0	388706	39665	65 53.0	24 37.0	380338	41381	65 23.0	25 07.0	372160	43138	64 53.0	25 37.0	364166	44935	64 23.0
24 07.5	388565	39693	65 52.5	24 37.5	380200	41410	65 22.5	25 07.5	372026	43167	64 52.5	25 37.5	364035	44965	64 22.5
24 08.0	388424	39721	65 52.0	24 38.0	380062	41439	65 22.0	25 08.0	371891	43197	64 52.0	25 38.0	363903	44995	64 22.0
24 08.5	388283	39750	65 51.5	24 38.5	379924	41468	65 21.5	25 08.5	371756	43227	64 51.5	25 38.5	363771	45026	64 21.5
24 09.0	388142	39778	65 51.0	24 39.0	379787	41497	65 21.0	25 09.0	371622	43256	64 51.0	25 39.0	363640	45056	64 21.0
24 09.5	388001	39806	65 50.5	24 39.5	379649	41526	65 20.5	25 09.5	371487	43286	64 50.5	25 39.5	363508	45086	64 20.5
24 10.0	387860	39835	65 50.0	24 40.0	379512	41555	65 20.0	25 10.0	371353	43316	64 50.0	25 40.0	363377	45117	64 20.0
24 10.5	387720	39863	65 49.5	24 40.5	379374	41584	65 19.5	25 10.5	371218	43345	64 49.5	25 40.5	363246	45147	64 19.5
24 11.0	387579	39891	65 49.0	24 41.0	379237	41613	65 19.0	25 11.0	371084	43375	64 49.0	25 41.0	363114	45177	64 19.0
24 11.5	387438	39920	65 48.5	24 41.5	379099	41642	65 18.5	25 11.5	370950	43405	64 48.5	25 41.5	362983	45208	64 18.5
24 12.0	387298	39948	65 48.0	24 42.0	378962	41671	65 18.0	25 12.0	370815	43434	64 48.0	25 42.0	362852	45238	64 18.0
24 12.5	387157	39976	65 47.5	24 42.5	378825	41700	65 17.5	25 12.5	370681	43464	64 47.5	25 42.5	362720	45268	64 17.5
24 13.0	387017	40005	65 47.0	24 43.0	378687	41729	65 17.0	25 13.0	370547	43494	64 47.0	25 43.0	362589	45299	64 17.0
24 13.5	386876	40033	65 46.5	24 43.5	378550	41758	65 16.5	25 13.5	370413	43524	64 46.5	25 43.5	362458	45329	64 16.5
24 14.0	386736	40062	65 46.0	24 44.0	378413	41787	65 16.0	25 14.0	370279	43553	64 46.0	25 44.0	362327	45360	64 16.0
24 14.5	386596	40090	65 45.5	24 44.5	378276	41817	65 15.5	25 14.5	370145	43583	64 45.5	25 44.5	362196	45390	64 15.5
24 15.0	386455	40118	65 45.0	24 45.0	378139	41846	65 15.0	25 15.0	370011	43613	64 45.0	25 45.0	362065	45421	64 15.0
24 15.5	386315	40147	65 44.5	24 45.5	378002	41875	65 14.5	25 15.5	369877	43643	64 44.5	25 45.5	361934	45451	64 14.5
24 16.0	386175	40175	65 44.0	24 46.0	377865	41904	65 14.0	25 16.0	369743	43673	64 44.0	25 46.0	361803	45482	64 14.0
24 16.5	386035	40204	65 43.5	24 46.5	377728	41933	65 13.5	25 16.5	369609	43702	64 43.5	25 46.5	361672	45512	64 13.5
24 17.0	385895	40232	65 43.0	24 47.0	377591	41962	65 13.0	25 17.0	369476	43732	64 43.0	25 47.0	361542	45543	64 13.0
24 17.5	385755	40261	65 42.5	24 47.5	377454	41991	65 12.5	25 17.5	369342	43762	64 42.5	25 47.5	361411	45573	64 12.5
24 18.0	385615	40289	65 42.0	24 48.0	377318	42021	65 12.0	25 18.0	369208	43792	64 42.0	25 48.0	361280	45604	64 12.0
24 18.5	385475	40318	65 41.5	24 48.5	377181	42050	65 11.5	25 18.5	369075	43822	64 41.5	25 48.5	361149	45634	64 11.5
24 19.0	385335	40346	65 41.0	24 49.0	377044	42079	65 11.0	25 19.0	368941	43852	64 41.0	25 49.0	361019	45665	64 11.0
24 19.5	385196	40375	65 40.5	24 49.5	376908	42108	65 10.5	25 19.5	368808	43882	64 40.5	25 49.5	360888	45695	64 10.5
24 20.0	385056	40404	65 40.0	24 50.0	376771	42137	65 10.0	25 20.0	368674	43911	64 40.0	25 50.0	360758	45726	64 10.0
24 20.5	384916	40432	65 39.5	24 50.5	376635	42167	65 09.5	25 20.5	368541	43941	64 39.5	25 50.5	360627	45757	64 09.5
24 21.0	384777	40461	65 39.0	24 51.0	376498	42196	65 09.0	25 21.0	368407	43971	64 39.0	25 51.0	360497	45787	64 09.0
24 21.5	384637	40489	65 38.5	24 51.5	376362	42225	65 08.5	25 21.5	368274	44001	64 38.5	25 51.5	360367	45818	64 08.5
24 22.0	384498	40518	65 38.0	24 52.0	376226	42254	65 08.0	25 22.0	368141	44031	64 38.0	25 52.0	360236	45848	64 08.0
24 22.5	384358	40547	65 37.5	24 52.5	376089	42284	65 07.5	25 22.5	368008	44061	64 37.5	25 52.5	360106	45879	64 07.5
24 23.0	384219	40575	65 37.0	24 53.0	375953	42313	65 07.0	25 23.0	367875	44091	64 37.0	25 53.0	359976	45910	64 07.0
24 23.5	384079	40604	65 36.5	24 53.5	375817	42342	65 06.5	25 23.5	367741	44121	64 36.5	25 53.5	359846	45940	64 06.5
24 24.0	383940	40632	65 36.0	24 54.0	375681	42372	65 06.0	25 24.0	367608	44151	64 36.0	25 54.0	359716	45971	64 06.0
24 24.5	383801	40661	65 35.5	24 54.5	375545	42401	65 05.5	25 24.5	367475	44181	64 35.5	25 54.5	359586	46002	64 05.5
24 25.0	383662	40690	65 35.0	24 55.0	375409	42430	65 05.0	25 25.0	367342	44211	64 35.0	25 55.0	359456	46032	64 05.0
24 25.5	383523	40718	65 34.5	24 55.5	375273	42460	65 04.5	25 25.5	367210	44241	64 34.5	25 55.5	359326	46063	64 04.5
24 26.0	383384	40747	65 34.0	24 56.0	375137	42489	65 04.0	25 26.0	367077	44271	64 34.0	25 56.0	359196	46094	64 04.0
24 26.5	383245	40776	65 33.5	24 56.5	375001	42518	65 03.5	25 26.5	366944	44301	64 33.5	25 56.5	359066	46124	64 03.5
24 27.0	383106	40805	65 33.0	24 57.0	374865	42548	65 03.0	25 27.0	366811	44331	64 33.0	25 57.0	358936	46155	64 03.0
24 27.5	382967	40833	65 32.5	24 57.5	374730	42577	65 02.5	25 27.5	366678	44361	64 32.5	25 57.5	358806	46186	64 02.5
24 28.0	382828	40862	65 32.0	24 58.0	374594	42607	65 02.0	25 28.0	366546	44391	64 32.0	25 58.0	358676	46217	64 02.0
24 28.5	382689	40891	65 31.5	24 58.5	374458	42636	65 01.5	25 28.5	366413	44421	64 31.5	25 58.5	358547	46247	64 01.5
24 29.0	382550	40920	65 31.0	24 59.0	374323	42665	65 01.0	25 29.0	366281	44452	64 31.0	25 59.0	358417	46278	64 01.0
24 29.5	382412	40948	65 30.5	24 59.5	374187	42695	65 00.5	25 29.5	366148	44482	64 30.5	25 59.5	358288	46309	64 00.5
24 30.0	382273	40977	65 30.0	25 00.0	374052	42724	65 00.0	25 30.0	366016	44512	64 30.0	26 00.0	358158	46340	64 00.0

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c
26 00.0	358158	46340	64 00.0	26 30.0	350473	48209	63 30.0	27 00.0	342953	50119	63 00.0	27 30.0	335594	52071	62 30.0
26 00.5	358029	46371	63 59.5	26 30.5	350346	48240	63 29.5	27 00.5	342829	50151	62 59.5	27 30.5	335473	52104	62 29.5
26 01.0	357899	46401	63 59.0	26 31.0	350219	48272	63 29.0	27 01.0	342705	50184	62 59.0	27 31.0	335352	52137	62 29.0
26 01.5	357770	46432	63 58.5	26 31.5	350093	48303	63 28.5	27 01.5	342582	50216	62 58.5	27 31.5	335231	52170	62 28.5
26 02.0	357640	46463	63 58.0	26 32.0	349966	48335	63 28.0	27 02.0	342458	50248	62 58.0	27 32.0	335109	52203	62 28.0
26 02.5	357511	46494	63 57.5	26 32.5	349840	48366	63 27.5	27 02.5	342334	50280	62 57.5	27 32.5	334988	52236	62 27.5
26 03.0	357382	46525	63 57.0	26 33.0	349713	48398	63 27.0	27 03.0	342210	50312	62 57.0	27 33.0	334867	52269	62 27.0
26 03.5	357253	46556	63 56.5	26 33.5	349587	48430	63 26.5	27 03.5	342087	50345	62 56.5	27 33.5	334746	52302	62 26.5
26 04.0	357123	46587	63 56.0	26 34.0	349461	48461	63 26.0	27 04.0	341963	50377	62 56.0	27 34.0	334625	52335	62 26.0
26 04.5	356994	46618	63 55.5	26 34.5	349334	48493	63 25.5	27 04.5	341839	50409	62 55.5	27 34.5	334504	52367	62 25.5
26 05.0	356865	46648	63 55.0	26 35.0	349208	48524	63 25.0	27 05.0	341716	50442	62 55.0	27 35.0	334383	52400	62 25.0
26 05.5	356736	46679	63 54.5	26 35.5	349082	48556	63 24.5	27 05.5	341592	50474	62 54.5	27 35.5	334262	52433	62 24.5
26 06.0	356607	46710	63 54.0	26 36.0	348956	48588	63 24.0	27 06.0	341469	50506	62 54.0	27 36.0	334141	52467	62 24.0
26 06.5	356478	46741	63 53.5	26 36.5	348829	48619	63 23.5	27 06.5	341345	50538	62 53.5	27 36.5	334021	52500	62 23.5
26 07.0	356350	46772	63 53.0	26 37.0	348703	48651	63 23.0	27 07.0	341222	50571	62 53.0	27 37.0	333900	52533	62 23.0
26 07.5	356221	46803	63 52.5	26 37.5	348577	48683	63 22.5	27 07.5	341099	50603	62 52.5	27 37.5	333779	52566	62 22.5
26 08.0	356092	46834	63 52.0	26 38.0	348451	48714	63 22.0	27 08.0	340975	50636	62 52.0	27 38.0	333658	52599	62 22.0
26 08.5	355963	46865	63 51.5	26 38.5	348325	48746	63 21.5	27 08.5	340852	50668	62 51.5	27 38.5	333538	52632	62 21.5
26 09.0	355835	46896	63 51.0	26 39.0	348200	48778	63 21.0	27 09.0	340729	50700	62 51.0	27 39.0	333417	52665	62 21.0
26 09.5	355706	46927	63 50.5	26 39.5	348074	48809	63 20.5	27 09.5	340606	50733	62 50.5	27 39.5	333297	52698	62 20.5
26 10.0	355577	46958	63 50.0	26 40.0	347948	48841	63 20.0	27 10.0	340483	50765	62 50.0	27 40.0	333176	52731	62 20.0
26 10.5	355449	46989	63 49.5	26 40.5	347822	48873	63 19.5	27 10.5	340360	50798	62 49.5	27 40.5	333056	52764	62 19.5
26 11.0	355320	47020	63 49.0	26 41.0	347696	48904	63 19.0	27 11.0	340237	50830	62 49.0	27 41.0	332935	52797	62 19.0
26 11.5	355192	47051	63 48.5	26 41.5	347571	48936	63 18.5	27 11.5	340114	50862	62 48.5	27 41.5	332815	52830	62 18.5
26 12.0	355064	47082	63 48.0	26 42.0	347445	48968	63 18.0	27 12.0	339991	50895	62 48.0	27 42.0	332695	52864	62 18.0
26 12.5	354935	47114	63 47.5	26 42.5	347320	49000	63 17.5	27 12.5	339868	50927	62 47.5	27 42.5	332574	52897	62 17.5
26 13.0	354807	47145	63 47.0	26 43.0	347194	49032	63 17.0	27 13.0	339745	50960	62 47.0	27 43.0	332454	52930	62 17.0
26 13.5	354679	47176	63 46.5	26 43.5	347069	49063	63 16.5	27 13.5	339622	50992	62 46.5	27 43.5	332334	52963	62 16.5
26 14.0	354550	47207	63 46.0	26 44.0	346943	49095	63 16.0	27 14.0	339499	51025	62 46.0	27 44.0	332214	52996	62 16.0
26 14.5	354422	47238	63 45.5	26 44.5	346818	49127	63 15.5	27 14.5	339377	51057	62 45.5	27 44.5	332094	53030	62 15.5
26 15.0	354294	47269	63 45.0	26 45.0	346692	49159	63 15.0	27 15.0	339254	51090	62 45.0	27 45.0	331973	53063	62 15.0
26 15.5	354166	47300	63 44.5	26 45.5	346567	49191	63 14.5	27 15.5	339131	51122	62 44.5	27 45.5	331853	53096	62 14.5
26 16.0	354038	47331	63 44.0	26 46.0	346442	49222	63 14.0	27 16.0	339009	51155	62 44.0	27 46.0	331733	53129	62 14.0
26 16.5	353910	47363	63 43.5	26 46.5	346317	49254	63 13.5	27 16.5	338886	51188	62 43.5	27 46.5	331614	53163	62 13.5
26 17.0	353782	47394	63 43.0	26 47.0	346192	49286	63 13.0	27 17.0	338764	51220	62 43.0	27 47.0	331494	53196	62 13.0
26 17.5	353654	47425	63 42.5	26 47.5	346066	49318	63 12.5	27 17.5	338641	51253	62 42.5	27 47.5	331374	53229	62 12.5
26 18.0	353526	47456	63 42.0	26 48.0	345941	49350	63 12.0	27 18.0	338519	51285	62 42.0	27 48.0	331254	53262	62 12.0
26 18.5	353399	47488	63 41.5	26 48.5	345816	49382	63 11.5	27 18.5	338397	51318	62 41.5	27 48.5	331134	53296	62 11.5
26 19.0	353271	47519	63 41.0	26 49.0	345691	49414	63 11.0	27 19.0	338274	51350	62 41.0	27 49.0	331014	53329	62 11.0
26 19.5	353143	47550	63 40.5	26 49.5	345566	49446	63 10.5	27 19.5	338152	51383	62 40.5	27 49.5	330895	53362	62 10.5
26 20.0	353016	47581	63 40.0	26 50.0	345442	49478	63 10.0	27 20.0	338030	51416	62 40.0	27 50.0	330775	53396	62 10.0
26 20.5	352888	47613	63 39.5	26 50.5	345317	49510	63 09.5	27 20.5	337908	51448	62 39.5	27 50.5	330655	53429	62 09.5
26 21.0	352760	47644	63 39.0	26 51.0	345192	49542	63 09.0	27 21.0	337786	51481	62 39.0	27 51.0	330536	53462	62 09.0
26 21.5	352633	47675	63 38.5	26 51.5	345067	49574	63 08.5	27 21.5	337663	51514	62 38.5	27 51.5	330416	53496	62 08.5
26 22.0	352506	47706	63 38.0	26 52.0	344942	49606	63 08.0	27 22.0	337541	51546	62 38.0	27 52.0	330297	53529	62 08.0
26 22.5	352378	47738	63 37.5	26 52.5	344818	49638	63 07.5	27 22.5	337419	51579	62 37.5	27 52.5	330177	53563	62 07.5
26 23.0	352251	47769	63 37.0	26 53.0	344693	49670	63 07.0	27 23.0	337297	51612	62 37.0	27 53.0	330058	53596	62 07.0
26 23.5	352123	47800	63 36.5	26 53.5	344569	49702	63 06.5	27 23.5	337175	51645	62 36.5	27 53.5	329939	53629	62 06.5
26 24.0	351996	47832	63 36.0	26 54.0	344444	49734	63 06.0	27 24.0	337054	51677	62 36.0	27 54.0	329819	53663	62 06.0
26 24.5	351869	47863	63 35.5	26 54.5	344320	49766	63 05.5	27 24.5	336932	51710	62 35.5	27 54.5	329700	53696	62 05.5
26 25.0	351742	47894	63 35.0	26 55.0	344195	49798	63 05.0	27 25.0	336810	51743	62 35.0	27 55.0	329581	53730	62 05.0
26 25.5	351615	47926	63 34.5	26 55.5	344071	49830	63 04.5	27 25.5	336688	51776	62 34.5	27 55.5	329462	53763	62 04.5
26 26.0	351488	47957	63 34.0	26 56.0	343946	49862	63 04.0	27 26.0	336567	51808	62 34.0	27 56.0	329342	53797	62 04.0
26 26.5	351361	47989	63 33.5	26 56.5	343822	49894	63 03.5	27 26.5	336445	51841	62 33.5	27 56.5	329223	53830	62 03.5
26 27.0	351234	48020	63 33.0	26 57.0	343698	49926	63 03.0	27 27.0	336323	51874	62 33.0	27 57.0	329104	53864	62 03.0
26 27.5	351107	48051	63 32.5	26 57.5	343574	49958	63 02.5	27 27.5	336202	51907	62 32.5	27 57.5	328985	53897	62 02.5
26 28.0	350980	48083	63 32.0	26 58.0	343449	49990	63 02.0	27 28.0	336080	51940	62 32.0	27 58.0	328866	53931	62 02.0
26 28.5	350853	48114	63 31.5	26 58.5	343325	50023	63 01.5	27 28.5	335959	51972	62 31.5	27 58.5	328747	53964	62 01.5
26 29.0	350726	48146	63 31.0	26 59.0	343201	50055	63 01.0	27 29.0	335837	52005	62 31.0	27 59.0	328628	53998	62 01.0
26 29.5	350599	48177	63 30.5	26 59.5	343077	50087	63 00.5	27 29.5	335716	52038	62 30.5	27 59.5	328510	54031	62 00.5
26 30.0	350473	48209	63 30.0	27 00.0	342953	50119	63 00.0	27 30.0	335594	52071	62 30.0	28 00.0	328391	54065	62 00.0

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c
28 00.0	328391	54065	62 00.0	28 30.0	321337	56101	61 30.0	29 00.0	314429	58181	61 00.0	29 30.0	307661	60303	60 30.0
28 00.5	328272	54099	61 59.5	28 30.5	321221	56136	61 29.5	29 00.5	314315	58216	60 59.5	29 30.5	307550	60339	60 29.5
28 01.0	328153	54132	61 59.0	28 31.0	321105	56170	61 29.0	29 01.0	314201	58251	60 59.0	29 31.0	307438	60375	60 29.0
28 01.5	328035	54166	61 58.5	28 31.5	320988	56204	61 28.5	29 01.5	314087	58286	60 58.5	29 31.5	307326	60410	60 28.5
28 02.0	327916	54200	61 58.0	28 32.0	320872	56239	61 28.0	29 02.0	313973	58321	60 58.0	29 32.0	307215	60446	60 28.0
28 02.5	327797	54233	61 57.5	28 32.5	320756	56273	61 27.5	29 02.5	313859	58356	60 57.5	29 32.5	307103	60482	60 27.5
28 03.0	327679	54267	61 57.0	28 33.0	320640	56307	61 27.0	29 03.0	313746	58391	60 57.0	29 33.0	306992	60518	60 27.0
28 03.5	327560	54300	61 56.5	28 33.5	320524	56342	61 26.5	29 03.5	313632	58426	60 56.5	29 33.5	306881	60554	60 26.5
28 04.0	327442	54334	61 56.0	28 34.0	320408	56376	61 26.0	29 04.0	313518	58461	60 56.0	29 34.0	306769	60590	60 26.0
28 04.5	327323	54368	61 55.5	28 34.5	320292	56411	61 25.5	29 04.5	313405	58496	60 55.5	29 34.5	306658	60625	60 25.5
28 05.0	327205	54402	61 55.0	28 35.0	320176	56445	61 25.0	29 05.0	313291	58531	60 55.0	29 35.0	306547	60661	60 25.0
28 05.5	327086	54435	61 54.5	28 35.5	320060	56479	61 24.5	29 05.5	313178	58567	60 54.5	29 35.5	306435	60697	60 24.5
28 06.0	326968	54469	61 54.0	28 36.0	319944	56514	61 24.0	29 06.0	313064	58602	60 54.0	29 36.0	306324	60733	60 24.0
28 06.5	326850	54503	61 53.5	28 36.5	319828	56548	61 23.5	29 06.5	312951	58637	60 53.5	29 36.5	306213	60769	60 23.5
28 07.0	326732	54536	61 53.0	28 37.0	319712	56583	61 23.0	29 07.0	312837	58672	60 53.0	29 37.0	306102	60805	60 23.0
28 07.5	326613	54570	61 52.5	28 37.5	319597	56617	61 22.5	29 07.5	312724	58707	60 52.5	29 37.5	305991	60841	60 22.5
28 08.0	326495	54604	61 52.0	28 38.0	319481	56652	61 22.0	29 08.0	312611	58742	60 52.0	29 38.0	305880	60877	60 22.0
28 08.5	326377	54638	61 51.5	28 38.5	319365	56686	61 21.5	29 08.5	312497	58778	60 51.5	29 38.5	305769	60913	60 21.5
28 09.0	326259	54672	61 51.0	28 39.0	319250	56721	61 21.0	29 09.0	312384	58813	60 51.0	29 39.0	305658	60948	60 21.0
28 09.5	326141	54705	61 50.5	28 39.5	319134	56755	61 20.5	29 09.5	312271	58848	60 50.5	29 39.5	305547	60984	60 20.5
28 10.0	326023	54739	61 50.0	28 40.0	319018	56790	61 20.0	29 10.0	312157	58883	60 50.0	29 40.0	305436	61020	60 20.0
28 10.5	325905	54773	61 49.5	28 40.5	318903	56824	61 19.5	29 10.5	312044	58919	60 49.5	29 40.5	305325	61056	60 19.5
28 11.0	325787	54807	61 49.0	28 41.0	318787	56859	61 19.0	29 11.0	311931	58954	60 49.0	29 41.0	305214	61092	60 19.0
28 11.5	325669	54841	61 48.5	28 41.5	318672	56893	61 18.5	29 11.5	311818	58989	60 48.5	29 41.5	305103	61128	60 18.5
28 12.0	325552	54875	61 48.0	28 42.0	318557	56928	61 18.0	29 12.0	311705	59025	60 48.0	29 42.0	304993	61164	60 18.0
28 12.5	325434	54908	61 47.5	28 42.5	318441	56963	61 17.5	29 12.5	311592	59060	60 47.5	29 42.5	304882	61200	60 17.5
28 13.0	325316	54942	61 47.0	28 43.0	318326	56997	61 17.0	29 13.0	311479	59095	60 47.0	29 43.0	304771	61237	60 17.0
28 13.5	325198	54976	61 46.5	28 43.5	318211	57032	61 16.5	29 13.5	311366	59130	60 46.5	29 43.5	304661	61273	60 16.5
28 14.0	325081	55010	61 46.0	28 44.0	318095	57066	61 16.0	29 14.0	311253	59166	60 46.0	29 44.0	304550	61309	60 16.0
28 14.5	324963	55044	61 45.5	28 44.5	317980	57101	61 15.5	29 14.5	311140	59201	60 45.5	29 44.5	304439	61345	60 15.5
28 15.0	324845	55078	61 45.0	28 45.0	317865	57136	61 15.0	29 15.0	311028	59237	60 45.0	29 45.0	304329	61381	60 15.0
28 15.5	324728	55112	61 44.5	28 45.5	317750	57170	61 14.5	29 15.5	310915	59272	60 44.5	29 45.5	304218	61417	60 14.5
28 16.0	324610	55146	61 44.0	28 46.0	317635	57205	61 14.0	29 16.0	310802	59307	60 44.0	29 46.0	304108	61453	60 14.0
28 16.5	324493	55180	61 43.5	28 46.5	317520	57240	61 13.5	29 16.5	310689	59343	60 43.5	29 46.5	303997	61489	60 13.5
28 17.0	324376	55214	61 43.0	28 47.0	317405	57274	61 13.0	29 17.0	310577	59378	60 43.0	29 47.0	303887	61525	60 13.0
28 17.5	324258	55248	61 42.5	28 47.5	317290	57309	61 12.5	29 17.5	310464	59414	60 42.5	29 47.5	303777	61561	60 12.5
28 18.0	324141	55282	61 42.0	28 48.0	317175	57344	61 12.0	29 18.0	310352	59449	60 42.0	29 48.0	303666	61598	60 12.0
28 18.5	324024	55316	61 41.5	28 48.5	317060	57379	61 11.5	29 18.5	310239	59484	60 41.5	29 48.5	303556	61634	60 11.5
28 19.0	323906	55350	61 41.0	28 49.0	316945	57413	61 11.0	29 19.0	310127	59520	60 41.0	29 49.0	303446	61670	60 11.0
28 19.5	323789	55384	61 40.5	28 49.5	316830	57448	61 10.5	29 19.5	310014	59555	60 40.5	29 49.5	303336	61706	60 10.5
28 20.0	323672	55418	61 40.0	28 50.0	316716	57483	61 10.0	29 20.0	309902	59591	60 40.0	29 50.0	303225	61742	60 10.0
28 20.5	323555	55452	61 39.5	28 50.5	316601	57518	61 09.5	29 20.5	309789	59626	60 39.5	29 50.5	303115	61779	60 09.5
28 21.0	323438	55486	61 39.0	28 51.0	316486	57552	61 09.0	29 21.0	309677	59662	60 39.0	29 51.0	303005	61815	60 09.0
28 21.5	323321	55520	61 38.5	28 51.5	316372	57587	61 08.5	29 21.5	309565	59697	60 38.5	29 51.5	302895	61851	60 08.5
28 22.0	323204	55554	61 38.0	28 52.0	316257	57622	61 08.0	29 22.0	309452	59733	60 38.0	29 52.0	302785	61887	60 08.0
28 22.5	323087	55588	61 37.5	28 52.5	316142	57657	61 07.5	29 22.5	309340	59769	60 37.5	29 52.5	302675	61924	60 07.5
28 23.0	322970	55623	61 37.0	28 53.0	316028	57692	61 07.0	29 23.0	309228	59804	60 37.0	29 53.0	302565	61960	60 07.0
28 23.5	322853	55657	61 36.5	28 53.5	315913	57727	61 06.5	29 23.5	309116	59840	60 36.5	29 53.5	302455	61996	60 06.5
28 24.0	322736	55691	61 36.0	28 54.0	315799	57761	61 06.0	29 24.0	309004	59875	60 36.0	29 54.0	302346	62033	60 06.0
28 24.5	322619	55725	61 35.5	28 54.5	315685	57796	61 05.5	29 24.5	308892	59911	60 35.5	29 54.5	302236	62069	60 05.5
28 25.0	322502	55759	61 35.0	28 55.0	315570	57831	61 05.0	29 25.0	308780	59946	60 35.0	29 55.0	302126	62105	60 05.0
28 25.5	322386	55793	61 34.5	28 55.5	315456	57866	61 04.5	29 25.5	308668	59982	60 34.5	29 55.5	302016	62142	60 04.5
28 26.0	322269	55828	61 34.0	28 56.0	315342	57901	61 04.0	29 26.0	308556	60018	60 34.0	29 56.0	301906	62178	60 04.0
28 26.5	322152	55862	61 33.5	28 56.5	315227	57936	61 03.5	29 26.5	308444	60053	60 33.5	29 56.5	301797	62214	60 03.5
28 27.0	322036	55896	61 33.0	28 57.0	315113	57971	61 03.0	29 27.0	308332	60089	60 33.0	29 57.0	301687	62251	60 03.0
28 27.5	321919	55930	61 32.5	28 57.5	314999	58006	61 02.5	29 27.5	308220	60125	60 32.5	29 57.5	301577	62287	60 02.5
28 28.0	321803	55964	61 32.0	28 58.0	314885	58041	61 02.0	29 28.0	308108	60160	60 32.0	29 58.0	301468	62324	60 02.0
28 28.5	321686	55999	61 31.5	28 58.5	314771	58076	61 01.5	29 28.5	307996	60196	60 31.5	29 58.5	301358	62360	60 01.5
28 29.0	321570	56033	61 31.0	28 59.0	314657	58111	61 01.0	29 29.0	307885	60232	60 31.0	29 59.0	301249	62396	60 01.0
28 29.5	321453	56067	61 30.5	28 59.5	314543	58146	61 00.5	29 29.5	307773	60267	60 30.5	29 59.5	301139	62433	60 00.5
28 30.0	321337	56101	61 30.0	29 00.0	314429	58181	61 00.0	29 30.0	307661	60303	60 30.0	30 00.0	301030	62469	60 00.0

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

COMPACT AGETON | 030 00.0 to 032 00.0

x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c
30 00.0	301030	62469	60 00.0	30 30.0	294531	64680	59 30.0	31 00.0	288161	66934	59 00.0	31 30.0	281915	69234	58 30.0
30 00.5	300921	62506	59 59.5	30 30.5	294424	64717	59 29.5	31 00.5	288056	66972	58 59.5	31 30.5	281812	69273	58 29.5
30 01.0	300811	62542	59 59.0	30 31.0	294317	64754	59 29.0	31 01.0	287950	67010	58 59.0	31 31.0	281709	69312	58 29.0
30 01.5	300702	62579	59 58.5	30 31.5	294210	64791	59 28.5	31 01.5	287845	67048	58 58.5	31 31.5	281606	69350	58 28.5
30 02.0	300593	62615	59 58.0	30 32.0	294102	64829	59 28.0	31 02.0	287740	67086	58 58.0	31 32.0	281503	69389	58 28.0
30 02.5	300483	62652	59 57.5	30 32.5	293995	64866	59 27.5	31 02.5	287635	67124	58 57.5	31 32.5	281400	69428	58 27.5
30 03.0	300374	62688	59 57.0	30 33.0	293888	64903	59 27.0	31 03.0	287531	67162	58 57.0	31 33.0	281297	69467	58 27.0
30 03.5	300265	62725	59 56.5	30 33.5	293781	64940	59 26.5	31 03.5	287426	67200	58 56.5	31 33.5	281194	69505	58 26.5
30 04.0	300156	62762	59 56.0	30 34.0	293674	64978	59 26.0	31 04.0	287321	67238	58 56.0	31 34.0	281091	69544	58 26.0
30 04.5	300047	62798	59 55.5	30 34.5	293567	65015	59 25.5	31 04.5	287216	67276	58 55.5	31 34.5	280989	69583	58 25.5
30 05.0	299938	62835	59 55.0	30 35.0	293461	65052	59 25.0	31 05.0	287111	67315	58 55.0	31 35.0	280886	69622	58 25.0
30 05.5	299829	62871	59 54.5	30 35.5	293354	65090	59 24.5	31 05.5	287006	67353	58 54.5	31 35.5	280783	69661	58 24.5
30 06.0	299720	62908	59 54.0	30 36.0	293247	65127	59 24.0	31 06.0	286902	67391	58 54.0	31 36.0	280680	69700	58 24.0
30 06.5	299611	62944	59 53.5	30 36.5	293140	65164	59 23.5	31 06.5	286797	67429	58 53.5	31 36.5	280578	69738	58 23.5
30 07.0	299502	62981	59 53.0	30 37.0	293033	65202	59 23.0	31 07.0	286692	67467	58 53.0	31 37.0	280475	69777	58 23.0
30 07.5	299393	63018	59 52.5	30 37.5	292927	65239	59 22.5	31 07.5	286588	67505	58 52.5	31 37.5	280373	69816	58 22.5
30 08.0	299284	63054	59 52.0	30 38.0	292820	65277	59 22.0	31 08.0	286483	67543	58 52.0	31 38.0	280270	69855	58 22.0
30 08.5	299175	63091	59 51.5	30 38.5	292713	65314	59 21.5	31 08.5	286379	67581	58 51.5	31 38.5	280167	69894	58 21.5
30 09.0	299067	63128	59 51.0	30 39.0	292607	65351	59 21.0	31 09.0	286274	67620	58 51.0	31 39.0	280065	69933	58 21.0
30 09.5	298958	63164	59 50.5	30 39.5	292500	65389	59 20.5	31 09.5	286170	67658	58 50.5	31 39.5	279962	69972	58 20.5
30 10.0	298849	63201	59 50.0	30 40.0	292394	65426	59 20.0	31 10.0	286065	67696	58 50.0	31 40.0	279860	70011	58 20.0
30 10.5	298741	63238	59 49.5	30 40.5	292287	65464	59 19.5	31 10.5	285961	67734	58 49.5	31 40.5	279758	70050	58 19.5
30 11.0	298632	63275	59 49.0	30 41.0	292181	65501	59 19.0	31 11.0	285856	67772	58 49.0	31 41.0	279655	70089	58 19.0
30 11.5	298523	63311	59 48.5	30 41.5	292074	65539	59 18.5	31 11.5	285752	67811	58 48.5	31 41.5	279553	70128	58 18.5
30 12.0	298415	63348	59 48.0	30 42.0	291968	65576	59 18.0	31 12.0	285648	67849	58 48.0	31 42.0	279451	70167	58 18.0
30 12.5	298306	63385	59 47.5	30 42.5	291861	65614	59 17.5	31 12.5	285543	67887	58 47.5	31 42.5	279348	70206	58 17.5
30 13.0	298198	63422	59 47.0	30 43.0	291755	65651	59 17.0	31 13.0	285439	67925	58 47.0	31 43.0	279246	70245	58 17.0
30 13.5	298089	63458	59 46.5	30 43.5	291649	65689	59 16.5	31 13.5	285335	67964	58 46.5	31 43.5	279144	70284	58 16.5
30 14.0	297981	63495	59 46.0	30 44.0	291542	65726	59 16.0	31 14.0	285231	68002	58 46.0	31 44.0	279042	70323	58 16.0
30 14.5	297873	63532	59 45.5	30 44.5	291436	65764	59 15.5	31 14.5	285127	68040	58 45.5	31 44.5	278940	70362	58 15.5
30 15.0	297764	63569	59 45.0	30 45.0	291330	65801	59 15.0	31 15.0	285022	68079	58 45.0	31 45.0	278838	70401	58 15.0
30 15.5	297656	63606	59 44.5	30 45.5	291224	65839	59 14.5	31 15.5	284918	68117	58 44.5	31 45.5	278736	70440	58 14.5
30 16.0	297548	63643	59 44.0	30 46.0	291118	65877	59 14.0	31 16.0	284814	68155	58 44.0	31 46.0	278634	70479	58 14.0
30 16.5	297439	63680	59 43.5	30 46.5	291012	65914	59 13.5	31 16.5	284710	68194	58 43.5	31 46.5	278532	70518	58 13.5
30 17.0	297331	63716	59 43.0	30 47.0	290906	65952	59 13.0	31 17.0	284606	68232	58 43.0	31 47.0	278430	70558	58 13.0
30 17.5	297223	63753	59 42.5	30 47.5	290800	65989	59 12.5	31 17.5	284502	68270	58 42.5	31 47.5	278328	70597	58 12.5
30 18.0	297115	63790	59 42.0	30 48.0	290694	66027	59 12.0	31 18.0	284398	68309	58 42.0	31 48.0	278226	70636	58 12.0
30 18.5	297007	63827	59 41.5	30 48.5	290588	66065	59 11.5	31 18.5	284295	68347	58 41.5	31 48.5	278124	70675	58 11.5
30 19.0	296899	63864	59 41.0	30 49.0	290482	66102	59 11.0	31 19.0	284191	68386	58 41.0	31 49.0	278022	70714	58 11.0
30 19.5	296791	63901	59 40.5	30 49.5	290376	66140	59 10.5	31 19.5	284087	68424	58 40.5	31 49.5	277920	70753	58 10.5
30 20.0	296683	63938	59 40.0	30 50.0	290270	66178	59 10.0	31 20.0	283983	68463	58 40.0	31 50.0	277819	70793	58 10.0
30 20.5	296575	63975	59 39.5	30 50.5	290164	66216	59 09.5	31 20.5	283879	68501	58 39.5	31 50.5	277717	70832	58 09.5
30 21.0	296467	64012	59 39.0	30 51.0	290059	66253	59 09.0	31 21.0	283776	68540	58 39.0	31 51.0	277615	70871	58 09.0
30 21.5	296359	64049	59 38.5	30 51.5	289953	66291	59 08.5	31 21.5	283672	68578	58 38.5	31 51.5	277513	70910	58 08.5
30 22.0	296251	64086	59 38.0	30 52.0	289847	66329	59 08.0	31 22.0	283568	68617	58 38.0	31 52.0	277412	70950	58 08.0
30 22.5	296144	64123	59 37.5	30 52.5	289741	66367	59 07.5	31 22.5	283465	68655	58 37.5	31 52.5	277310	70989	58 07.5
30 23.0	296036	64160	59 37.0	30 53.0	289636	66404	59 07.0	31 23.0	283361	68694	58 37.0	31 53.0	277209	71028	58 07.0
30 23.5	295928	64197	59 36.5	30 53.5	289530	66442	59 06.5	31 23.5	283258	68732	58 36.5	31 53.5	277107	71067	58 06.5
30 24.0	295821	64234	59 36.0	30 54.0	289425	66480	59 06.0	31 24.0	283154	68771	58 36.0	31 54.0	277006	71107	58 06.0
30 24.5	295713	64271	59 35.5	30 54.5	289319	66518	59 05.5	31 24.5	283051	68809	58 35.5	31 54.5	276904	71146	58 05.5
30 25.0	295605	64308	59 35.0	30 55.0	289214	66555	59 05.0	31 25.0	282947	68848	58 35.0	31 55.0	276803	71185	58 05.0
30 25.5	295498	64345	59 34.5	30 55.5	289108	66593	59 04.5	31 25.5	282844	68886	58 34.5	31 55.5	276701	71225	58 04.5
30 26.0	295390	64382	59 34.0	30 56.0	289003	66631	59 04.0	31 26.0	282741	68925	58 34.0	31 56.0	276600	71264	58 04.0
30 26.5	295283	64419	59 33.5	30 56.5	288897	66669	59 03.5	31 26.5	282637	68964	58 33.5	31 56.5	276499	71304	58 03.5
30 27.0	295175	64457	59 33.0	30 57.0	288792	66707	59 03.0	31 27.0	282534	69002	58 33.0	31 57.0	276397	71343	58 03.0
30 27.5	295068	64494	59 32.5	30 57.5	288687	66745	59 02.5	31 27.5	282431	69041	58 32.5	31 57.5	276296	71382	58 02.5
30 28.0	294960	64531	59 32.0	30 58.0	288581	66783	59 02.0	31 28.0	282327	69079	58 32.0	31 58.0	276195	71422	58 02.0
30 28.5	294853	64568	59 31.5	30 58.5	288476	66821	59 01.5	31 28.5	282224	69118	58 31.5	31 58.5	276094	71461	58 01.5
30 29.0	294746	64605	59 31.0	30 59.0	288371	66859	59 01.0	31 29.0	282121	69157	58 31.0	31 59.0	275993	71501	58 01.0
30 29.5	294638	64642	59 30.5	30 59.5	288266	66896	59 00.5	31 29.5	282018	69196	58 30.5	31 59.5	275891	71540	58 00.5
30 30.0	294531	64680	59 30.0	31 00.0	288161	66934	59 00.0	31 30.0	281915	69234	58 30.0	32 00.0	275790	71580	58 00.0

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c
32 00.0	275790	71580	58 00.0	32 30.0	269783	73971	57 30.0	33 00.0	263891	76409	57 00.0	33 30.0	258111	78893	56 30.0
32 00.5	275689	71619	57 59.5	32 30.5	269684	74011	57 29.5	33 00.5	263794	76450	56 59.5	33 30.5	258015	78935	56 29.5
32 01.0	275588	71658	57 59.0	32 31.0	269585	74051	57 29.0	33 01.0	263697	76491	56 59.0	33 31.0	257920	78977	56 29.0
32 01.5	275487	71698	57 58.5	32 31.5	269486	74092	57 28.5	33 01.5	263600	76532	56 58.5	33 31.5	257824	79019	56 28.5
32 02.0	275386	71737	57 58.0	32 32.0	269387	74132	57 28.0	33 02.0	263502	76573	56 58.0	33 32.0	257729	79061	56 28.0
32 02.5	275285	71777	57 57.5	32 32.5	269288	74172	57 27.5	33 02.5	263405	76614	56 57.5	33 32.5	257634	79103	56 27.5
32 03.0	275184	71817	57 57.0	32 33.0	269189	74212	57 27.0	33 03.0	263308	76655	56 57.0	33 33.0	257538	79144	56 27.0
32 03.5	275083	71856	57 56.5	32 33.5	269090	74253	57 26.5	33 03.5	263211	76696	56 56.5	33 33.5	257443	79186	56 26.5
32 04.0	274983	71896	57 56.0	32 34.0	268991	74293	57 26.0	33 04.0	263114	76737	56 56.0	33 34.0	257348	79228	56 26.0
32 04.5	274882	71935	57 55.5	32 34.5	268892	74333	57 25.5	33 04.5	263017	76778	56 55.5	33 34.5	257253	79270	56 25.5
32 05.0	274781	71975	57 55.0	32 35.0	268794	74374	57 25.0	33 05.0	262920	76819	56 55.0	33 35.0	257158	79312	56 25.0
32 05.5	274680	72014	57 54.5	32 35.5	268695	74414	57 24.5	33 05.5	262823	76861	56 54.5	33 35.5	257063	79354	56 24.5
32 06.0	274580	72054	57 54.0	32 36.0	268596	74455	57 24.0	33 06.0	262726	76902	56 54.0	33 36.0	256967	79396	56 24.0
32 06.5	274479	72094	57 53.5	32 36.5	268497	74495	57 23.5	33 06.5	262629	76943	56 53.5	33 36.5	256872	79438	56 23.5
32 07.0	274378	72133	57 53.0	32 37.0	268398	74535	57 23.0	33 07.0	262533	76984	56 53.0	33 37.0	256777	79480	56 23.0
32 07.5	274278	72173	57 52.5	32 37.5	268300	74576	57 22.5	33 07.5	262436	77025	56 52.5	33 37.5	256682	79522	56 22.5
32 08.0	274177	72213	57 52.0	32 38.0	268201	74616	57 22.0	33 08.0	262339	77067	56 52.0	33 38.0	256587	79564	56 22.0
32 08.5	274077	72252	57 51.5	32 38.5	268103	74657	57 21.5	33 08.5	262242	77108	56 51.5	33 38.5	256492	79606	56 21.5
32 09.0	273976	72292	57 51.0	32 39.0	268004	74697	57 21.0	33 09.0	262145	77149	56 51.0	33 39.0	256398	79648	56 21.0
32 09.5	273876	72332	57 50.5	32 39.5	267905	74738	57 20.5	33 09.5	262049	77190	56 50.5	33 39.5	256303	79690	56 20.5
32 10.0	273775	72371	57 50.0	32 40.0	267807	74778	57 20.0	33 10.0	261952	77232	56 50.0	33 40.0	256208	79732	56 20.0
32 10.5	273675	72411	57 49.5	32 40.5	267708	74819	57 19.5	33 10.5	261855	77273	56 49.5	33 40.5	256113	79774	56 19.5
32 11.0	273574	72451	57 49.0	32 41.0	267610	74859	57 19.0	33 11.0	261759	77314	56 49.0	33 41.0	256018	79816	56 19.0
32 11.5	273474	72491	57 48.5	32 41.5	267511	74900	57 18.5	33 11.5	261662	77356	56 48.5	33 41.5	255923	79859	56 18.5
32 12.0	273374	72530	57 48.0	32 42.0	267413	74940	57 18.0	33 12.0	261566	77397	56 48.0	33 42.0	255829	79901	56 18.0
32 12.5	273273	72570	57 47.5	32 42.5	267315	74981	57 17.5	33 12.5	261469	77438	56 47.5	33 42.5	255734	79943	56 17.5
32 13.0	273173	72610	57 47.0	32 43.0	267216	75021	57 17.0	33 13.0	261373	77480	56 47.0	33 43.0	255639	79985	56 17.0
32 13.5	273073	72650	57 46.5	32 43.5	267118	75062	57 16.5	33 13.5	261276	77521	56 46.5	33 43.5	255545	80027	56 16.5
32 14.0	272973	72690	57 46.0	32 44.0	267020	75103	57 16.0	33 14.0	261180	77562	56 46.0	33 44.0	255450	80069	56 16.0
32 14.5	272872	72730	57 45.5	32 44.5	266921	75143	57 15.5	33 14.5	261083	77604	56 45.5	33 44.5	255356	80111	56 15.5
32 15.0	272772	72769	57 45.0	32 45.0	266823	75184	57 15.0	33 15.0	260987	77645	56 45.0	33 45.0	255261	80154	56 15.0
32 15.5	272672	72809	57 44.5	32 45.5	266725	75224	57 14.5	33 15.5	260891	77687	56 44.5	33 45.5	255167	80196	56 14.5
32 16.0	272572	72849	57 44.0	32 46.0	266627	75265	57 14.0	33 16.0	260794	77728	56 44.0	33 46.0	255072	80238	56 14.0
32 16.5	272472	72889	57 43.5	32 46.5	266529	75306	57 13.5	33 16.5	260698	77769	56 43.5	33 46.5	254978	80280	56 13.5
32 17.0	272372	72929	57 43.0	32 47.0	266431	75346	57 13.0	33 17.0	260602	77811	56 43.0	33 47.0	254883	80323	56 13.0
32 17.5	272272	72969	57 42.5	32 47.5	266333	75387	57 12.5	33 17.5	260506	77852	56 42.5	33 47.5	254789	80365	56 12.5
32 18.0	272172	73009	57 42.0	32 48.0	266235	75428	57 12.0	33 18.0	260410	77894	56 42.0	33 48.0	254694	80407	56 12.0
32 18.5	272072	73049	57 41.5	32 48.5	266137	75469	57 11.5	33 18.5	260313	77935	56 41.5	33 48.5	254600	80449	56 11.5
32 19.0	271973	73089	57 41.0	32 49.0	266039	75509	57 11.0	33 19.0	260217	77977	56 41.0	33 49.0	254506	80492	56 11.0
32 19.5	271873	73129	57 40.5	32 49.5	265941	75550	57 10.5	33 19.5	260121	78018	56 40.5	33 49.5	254411	80534	56 10.5
32 20.0	271773	73169	57 40.0	32 50.0	265843	75591	57 10.0	33 20.0	260025	78060	56 40.0	33 50.0	254317	80576	56 10.0
32 20.5	271673	73209	57 39.5	32 50.5	265745	75632	57 09.5	33 20.5	259929	78101	56 39.5	33 50.5	254223	80619	56 09.5
32 21.0	271573	73249	57 39.0	32 51.0	265647	75672	57 09.0	33 21.0	259833	78143	56 39.0	33 51.0	254129	80661	56 09.0
32 21.5	271474	73289	57 38.5	32 51.5	265549	75713	57 08.5	33 21.5	259737	78185	56 38.5	33 51.5	254035	80703	56 08.5
32 22.0	271374	73329	57 38.0	32 52.0	265451	75754	57 08.0	33 22.0	259641	78226	56 38.0	33 52.0	253940	80746	56 08.0
32 22.5	271274	73369	57 37.5	32 52.5	265354	75795	57 07.5	33 22.5	259545	78268	56 37.5	33 52.5	253846	80788	56 07.5
32 23.0	271175	73409	57 37.0	32 53.0	265256	75836	57 07.0	33 23.0	259450	78309	56 37.0	33 53.0	253752	80831	56 07.0
32 23.5	271075	73449	57 36.5	32 53.5	265158	75876	57 06.5	33 23.5	259354	78351	56 36.5	33 53.5	253658	80873	56 06.5
32 24.0	270976	73489	57 36.0	32 54.0	265061	75917	57 06.0	33 24.0	259258	78393	56 36.0	33 54.0	253564	80915	56 06.0
32 24.5	270876	73529	57 35.5	32 54.5	264963	75958	57 05.5	33 24.5	259162	78434	56 35.5	33 54.5	253470	80958	56 05.5
32 25.0	270777	73569	57 35.0	32 55.0	264865	75999	57 05.0	33 25.0	259066	78476	56 35.0	33 55.0	253376	81000	56 05.0
32 25.5	270677	73609	57 34.5	32 55.5	264768	76040	57 04.5	33 25.5	258971	78518	56 34.5	33 55.5	253282	81043	56 04.5
32 26.0	270578	73649	57 34.0	32 56.0	264670	76081	57 04.0	33 26.0	258875	78559	56 34.0	33 56.0	253188	81085	56 04.0
32 26.5	270478	73689	57 33.5	32 56.5	264573	76122	57 03.5	33 26.5	258779	78601	56 33.5	33 56.5	253095	81128	56 03.5
32 27.0	270379	73730	57 33.0	32 57.0	264475	76163	57 03.0	33 27.0	258684	78643	56 33.0	33 57.0	253001	81170	56 03.0
32 27.5	270280	73770	57 32.5	32 57.5	264378	76204	57 02.5	33 27.5	258588	78685	56 32.5	33 57.5	252907	81213	56 02.5
32 28.0	270180	73810	57 32.0	32 58.0	264281	76245	57 02.0	33 28.0	258492	78726	56 32.0	33 58.0	252813	81255	56 02.0
32 28.5	270081	73850	57 31.5	32 58.5	264183	76286	57 01.5	33 28.5	258397	78768	56 31.5	33 58.5	252719	81298	56 01.5
32 29.0	269982	73890	57 31.0	32 59.0	264086	76327	57 01.0	33 29.0	258301	78810	56 31.0	33 59.0	252626	81341	56 01.0
32 29.5	269883	73931	57 30.5	32 59.5	263989	76368	57 00.5	33 29.5	258206	78852	56 30.5	33 59.5	252532	81383	56 00.5
32 30.0	269783	73971	57 30.0	33 00.0	263891	76409	57 00.0	33 30.0	258111	78893	56 30.0	34 00.0	252438	81426	56 00.0

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c
34 00.0	252438	81426	56 00.0	34 30.0	246872	84006	55 30.0	35 00.0	241409	86635	55 00.0	35 30.0	236046	89314	54 30.0
34 00.5	252345	81468	55 59.5	34 30.5	246780	84050	55 29.5	35 00.5	241319	86680	54 59.5	35 30.5	235957	89359	54 29.5
34 01.0	252251	81511	55 59.0	34 31.0	246688	84093	55 29.0	35 01.0	241228	86724	54 59.0	35 31.0	235869	89404	54 29.0
34 01.5	252158	81554	55 58.5	34 31.5	246596	84137	55 28.5	35 01.5	241138	86768	54 58.5	35 31.5	235780	89449	54 28.5
34 02.0	252064	81596	55 58.0	34 32.0	246505	84180	55 28.0	35 02.0	241048	86813	54 58.0	35 32.0	235692	89494	54 28.0
34 02.5	251970	81639	55 57.5	34 32.5	246413	84224	55 27.5	35 02.5	240958	86857	54 57.5	35 32.5	235604	89539	54 27.5
34 03.0	251877	81682	55 57.0	34 33.0	246321	84267	55 27.0	35 03.0	240868	86901	54 57.0	35 33.0	235515	89585	54 27.0
34 03.5	251784	81724	55 56.5	34 33.5	246229	84311	55 26.5	35 03.5	240778	86945	54 56.5	35 33.5	235427	89630	54 26.5
34 04.0	251690	81767	55 56.0	34 34.0	246138	84354	55 26.0	35 04.0	240688	86990	54 56.0	35 34.0	235338	89675	54 26.0
34 04.5	251597	81810	55 55.5	34 34.5	246046	84398	55 25.5	35 04.5	240598	87034	54 55.5	35 34.5	235250	89720	54 25.5
34 05.0	251503	81853	55 55.0	34 35.0	245954	84441	55 25.0	35 05.0	240508	87078	54 55.0	35 35.0	235162	89765	54 25.0
34 05.5	251410	81895	55 54.5	34 35.5	245863	84485	55 24.5	35 05.5	240418	87123	54 54.5	35 35.5	235074	89810	54 24.5
34 06.0	251317	81938	55 54.0	34 36.0	245771	84528	55 24.0	35 06.0	240328	87167	54 54.0	35 36.0	234985	89856	54 24.0
34 06.5	251223	81981	55 53.5	34 36.5	245680	84572	55 23.5	35 06.5	240238	87212	54 53.5	35 36.5	234897	89901	54 23.5
34 07.0	251130	82024	55 53.0	34 37.0	245588	84615	55 23.0	35 07.0	240148	87256	54 53.0	35 37.0	234809	89946	54 23.0
34 07.5	251037	82066	55 52.5	34 37.5	245497	84659	55 22.5	35 07.5	240059	87300	54 52.5	35 37.5	234721	89991	54 22.5
34 08.0	250944	82109	55 52.0	34 38.0	245405	84703	55 22.0	35 08.0	239969	87345	54 52.0	35 38.0	234633	90037	54 22.0
34 08.5	250851	82152	55 51.5	34 38.5	245314	84746	55 21.5	35 08.5	239879	87389	54 51.5	35 38.5	234544	90082	54 21.5
34 09.0	250757	82195	55 51.0	34 39.0	245222	84790	55 21.0	35 09.0	239789	87434	54 51.0	35 39.0	234456	90127	54 21.0
34 09.5	250664	82238	55 50.5	34 39.5	245131	84834	55 20.5	35 09.5	239700	87478	54 50.5	35 39.5	234368	90173	54 20.5
34 10.0	250571	82281	55 50.0	34 40.0	245040	84877	55 20.0	35 10.0	239610	87523	54 50.0	35 40.0	234280	90218	54 20.0
34 10.5	250478	82323	55 49.5	34 40.5	244948	84921	55 19.5	35 10.5	239520	87567	54 49.5	35 40.5	234192	90263	54 19.5
34 11.0	250385	82366	55 49.0	34 41.0	244857	84965	55 19.0	35 11.0	239431	87612	54 49.0	35 41.0	234104	90309	54 19.0
34 11.5	250292	82409	55 48.5	34 41.5	244766	85008	55 18.5	35 11.5	239341	87656	54 48.5	35 41.5	234016	90354	54 18.5
34 12.0	250199	82452	55 48.0	34 42.0	244674	85052	55 18.0	35 12.0	239252	87701	54 48.0	35 42.0	233928	90399	54 18.0
34 12.5	250106	82495	55 47.5	34 42.5	244583	85096	55 17.5	35 12.5	239162	87745	54 47.5	35 42.5	233841	90445	54 17.5
34 13.0	250013	82538	55 47.0	34 43.0	244492	85140	55 17.0	35 13.0	239073	87790	54 47.0	35 43.0	233753	90490	54 17.0
34 13.5	249921	82581	55 46.5	34 43.5	244401	85183	55 16.5	35 13.5	238983	87835	54 46.5	35 43.5	233665	90536	54 16.5
34 14.0	249828	82624	55 46.0	34 44.0	244310	85227	55 16.0	35 14.0	238894	87879	54 46.0	35 44.0	233577	90581	54 16.0
34 14.5	249735	82667	55 45.5	34 44.5	244219	85271	55 15.5	35 14.5	238804	87924	54 45.5	35 44.5	233489	90626	54 15.5
34 15.0	249642	82710	55 45.0	34 45.0	244128	85315	55 15.0	35 15.0	238715	87969	54 45.0	35 45.0	233402	90672	54 15.0
34 15.5	249549	82753	55 44.5	34 45.5	244037	85359	55 14.5	35 15.5	238626	88013	54 44.5	35 45.5	233314	90717	54 14.5
34 16.0	249457	82796	55 44.0	34 46.0	243946	85402	55 14.0	35 16.0	238536	88058	54 44.0	35 46.0	233226	90763	54 14.0
34 16.5	249364	82839	55 43.5	34 46.5	243855	85446	55 13.5	35 16.5	238447	88103	54 43.5	35 46.5	233138	90808	54 13.5
34 17.0	249271	82882	55 43.0	34 47.0	243764	85490	55 13.0	35 17.0	238358	88147	54 43.0	35 47.0	233051	90854	54 13.0
34 17.5	249179	82925	55 42.5	34 47.5	243673	85534	55 12.5	35 17.5	238268	88192	54 42.5	35 47.5	232963	90899	54 12.5
34 18.0	249086	82968	55 42.0	34 48.0	243582	85578	55 12.0	35 18.0	238179	88237	54 42.0	35 48.0	232876	90945	54 12.0
34 18.5	248993	83011	55 41.5	34 48.5	243491	85622	55 11.5	35 18.5	238090	88281	54 41.5	35 48.5	232788	90991	54 11.5
34 19.0	248901	83054	55 41.0	34 49.0	243400	85666	55 11.0	35 19.0	238001	88326	54 41.0	35 49.0	232700	91036	54 11.0
34 19.5	248808	83098	55 40.5	34 49.5	243309	85710	55 10.5	35 19.5	237912	88371	54 40.5	35 49.5	232613	91082	54 10.5
34 20.0	248716	83141	55 40.0	34 50.0	243218	85754	55 10.0	35 20.0	237823	88416	54 40.0	35 50.0	232525	91127	54 10.0
34 20.5	248623	83184	55 39.5	34 50.5	243128	85798	55 09.5	35 20.5	237733	88460	54 39.5	35 50.5	232438	91173	54 09.5
34 21.0	248531	83227	55 39.0	34 51.0	243037	85842	55 09.0	35 21.0	237644	88505	54 39.0	35 51.0	232351	91219	54 09.0
34 21.5	248439	83270	55 38.5	34 51.5	242946	85886	55 08.5	35 21.5	237555	88550	54 38.5	35 51.5	232263	91264	54 08.5
34 22.0	248346	83313	55 38.0	34 52.0	242856	85930	55 08.0	35 22.0	237466	88595	54 38.0	35 52.0	232176	91310	54 08.0
34 22.5	248254	83357	55 37.5	34 52.5	242765	85974	55 07.5	35 22.5	237377	88640	54 37.5	35 52.5	232088	91356	54 07.5
34 23.0	248161	83400	55 37.0	34 53.0	242674	86018	55 07.0	35 23.0	237288	88685	54 37.0	35 53.0	232001	91401	54 07.0
34 23.5	248069	83443	55 36.5	34 53.5	242584	86062	55 06.5	35 23.5	237199	88729	54 36.5	35 53.5	231914	91447	54 06.5
34 24.0	247977	83486	55 36.0	34 54.0	242493	86106	55 06.0	35 24.0	237111	88774	54 36.0	35 54.0	231827	91493	54 06.0
34 24.5	247885	83530	55 35.5	34 54.5	242403	86150	55 05.5	35 24.5	237022	88819	54 35.5	35 54.5	231739	91538	54 05.5
34 25.0	247792	83573	55 35.0	34 55.0	242312	86194	55 05.0	35 25.0	236933	88864	54 35.0	35 55.0	231652	91584	54 05.0
34 25.5	247700	83616	55 34.5	34 55.5	242222	86238	55 04.5	35 25.5	236844	88909	54 34.5	35 55.5	231565	91630	54 04.5
34 26.0	247608	83659	55 34.0	34 56.0	242131	86282	55 04.0	35 26.0	236755	88954	54 34.0	35 56.0	231478	91676	54 04.0
34 26.5	247516	83703	55 33.5	34 56.5	242041	86326	55 03.5	35 26.5	236667	88999	54 33.5	35 56.5	231391	91721	54 03.5
34 27.0	247424	83746	55 33.0	34 57.0	241950	86370	55 03.0	35 27.0	236578	89044	54 33.0	35 57.0	231303	91767	54 03.0
34 27.5	247332	83789	55 32.5	34 57.5	241860	86415	55 02.5	35 27.5	236489	89089	54 32.5	35 57.5	231216	91813	54 02.5
34 28.0	247240	83833	55 32.0	34 58.0	241770	86459	55 02.0	35 28.0	236400	89134	54 32.0	35 58.0	231129	91859	54 02.0
34 28.5	247148	83876	55 31.5	34 58.5	241679	86503	55 01.5	35 28.5	236312	89179	54 31.5	35 58.5	231042	91905	54 01.5
34 29.0	247056	83919	55 31.0	34 59.0	241589	86547	55 01.0	35 29.0	236223	89224	54 31.0	35 59.0	230955	91951	54 01.0
34 29.5	246964	83963	55 30.5	34 59.5	241499	86591	55 00.5	35 29.5	236135	89269	54 30.5	35 59.5	230868	91996	54 00.5
34 30.0	246872	84006	55 30.0	35 00.0	241409	86635	55 00.0	35 30.0	236046	89314	54 30.0	36 00.0	230781	92042	54 00.0

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c
36 00.0	230781	92042	54 00.0	36 30.0	225612	94821	53 30.0	37 00.0	220537	97651	53 00.0	37 30.0	215553	100533	52 30.0
36 00.5	230694	92088	53 59.5	36 30.5	225527	94868	53 29.5	37 00.5	220453	97699	52 59.5	37 30.5	215471	100582	52 29.5
36 01.0	230607	92134	53 59.0	36 31.0	225442	94915	53 29.0	37 01.0	220369	97747	52 59.0	37 31.0	215388	100630	52 29.0
36 01.5	230521	92180	53 58.5	36 31.5	225356	94962	53 28.5	37 01.5	220286	97794	52 58.5	37 31.5	215306	100679	52 28.5
36 02.0	230434	92226	53 58.0	36 32.0	225271	95008	53 28.0	37 02.0	220202	97842	52 58.0	37 32.0	215224	100727	52 28.0
36 02.5	230347	92272	53 57.5	36 32.5	225186	95055	53 27.5	37 02.5	220118	97890	52 57.5	37 32.5	215142	100776	52 27.5
36 03.0	230260	92318	53 57.0	36 33.0	225101	95102	53 27.0	37 03.0	220034	97937	52 57.0	37 33.0	215059	100824	52 27.0
36 03.5	230173	92364	53 56.5	36 33.5	225015	95149	53 26.5	37 03.5	219951	97985	52 56.5	37 33.5	214977	100873	52 26.5
36 04.0	230087	92410	53 56.0	36 34.0	224930	95196	53 26.0	37 04.0	219867	98033	52 56.0	37 34.0	214895	100922	52 26.0
36 04.5	230000	92456	53 55.5	36 34.5	224845	95243	53 25.5	37 04.5	219784	98080	52 55.5	37 34.5	214813	100970	52 25.5
36 05.0	229913	92502	53 55.0	36 35.0	224760	95289	53 25.0	37 05.0	219700	98128	52 55.0	37 35.0	214731	101019	52 25.0
36 05.5	229827	92548	53 54.5	36 35.5	224675	95336	53 24.5	37 05.5	219616	98176	52 54.5	37 35.5	214649	101067	52 24.5
36 06.0	229740	92594	53 54.0	36 36.0	224590	95383	53 24.0	37 06.0	219533	98224	52 54.0	37 36.0	214567	101116	52 24.0
36 06.5	229653	92640	53 53.5	36 36.5	224505	95430	53 23.5	37 06.5	219449	98271	52 53.5	37 36.5	214485	101165	52 23.5
36 07.0	229567	92686	53 53.0	36 37.0	224420	95477	53 23.0	37 07.0	219366	98319	52 53.0	37 37.0	214403	101213	52 23.0
36 07.5	229480	92732	53 52.5	36 37.5	224335	95524	53 22.5	37 07.5	219282	98367	52 52.5	37 37.5	214321	101262	52 22.5
36 08.0	229394	92778	53 52.0	36 38.0	224250	95571	53 22.0	37 08.0	219199	98415	52 52.0	37 38.0	214239	101311	52 22.0
36 08.5	229307	92825	53 51.5	36 38.5	224165	95618	53 21.5	37 08.5	219116	98463	52 51.5	37 38.5	214157	101359	52 21.5
36 09.0	229221	92871	53 51.0	36 39.0	224080	95665	53 21.0	37 09.0	219032	98510	52 51.0	37 39.0	214075	101408	52 21.0
36 09.5	229134	92917	53 50.5	36 39.5	223995	95712	53 20.5	37 09.5	218949	98558	52 50.5	37 39.5	213993	101457	52 20.5
36 10.0	229048	92963	53 50.0	36 40.0	223910	95759	53 20.0	37 10.0	218866	98606	52 50.0	37 40.0	213911	101506	52 20.0
36 10.5	228961	93009	53 49.5	36 40.5	223825	95806	53 19.5	37 10.5	218782	98654	52 49.5	37 40.5	213830	101554	52 19.5
36 11.0	228875	93055	53 49.0	36 41.0	223741	95853	53 19.0	37 11.0	218699	98702	52 49.0	37 41.0	213748	101603	52 19.0
36 11.5	228789	93102	53 48.5	36 41.5	223656	95900	53 18.5	37 11.5	218616	98750	52 48.5	37 41.5	213666	101652	52 18.5
36 12.0	228702	93148	53 48.0	36 42.0	223571	95947	53 18.0	37 12.0	218532	98798	52 48.0	37 42.0	213584	101701	52 18.0
36 12.5	228616	93194	53 47.5	36 42.5	223486	95994	53 17.5	37 12.5	218449	98846	52 47.5	37 42.5	213503	101750	52 17.5
36 13.0	228530	93240	53 47.0	36 43.0	223402	96041	53 17.0	37 13.0	218366	98894	52 47.0	37 43.0	213421	101798	52 17.0
36 13.5	228444	93287	53 46.5	36 43.5	223317	96088	53 16.5	37 13.5	218283	98942	52 46.5	37 43.5	213339	101847	52 16.5
36 14.0	228357	93333	53 46.0	36 44.0	223232	96136	53 16.0	37 14.0	218200	98990	52 46.0	37 44.0	213258	101896	52 16.0
36 14.5	228271	93379	53 45.5	36 44.5	223148	96183	53 15.5	37 14.5	218117	99038	52 45.5	37 44.5	213176	101945	52 15.5
36 15.0	228185	93425	53 45.0	36 45.0	223063	96230	53 15.0	37 15.0	218034	99086	52 45.0	37 45.0	213094	101994	52 15.0
36 15.5	228099	93472	53 44.5	36 45.5	222979	96277	53 14.5	37 15.5	217951	99134	52 44.5	37 45.5	213013	102043	52 14.5
36 16.0	228013	93518	53 44.0	36 46.0	222894	96324	53 14.0	37 16.0	217868	99182	52 44.0	37 46.0	212931	102092	52 14.0
36 16.5	227927	93564	53 43.5	36 46.5	222809	96371	53 13.5	37 16.5	217785	99230	52 43.5	37 46.5	212850	102141	52 13.5
36 17.0	227841	93611	53 43.0	36 47.0	222725	96419	53 13.0	37 17.0	217702	99278	52 43.0	37 47.0	212768	102190	52 13.0
36 17.5	227755	93657	53 42.5	36 47.5	222641	96466	53 12.5	37 17.5	217619	99326	52 42.5	37 47.5	212687	102239	52 12.5
36 18.0	227669	93704	53 42.0	36 48.0	222556	96513	53 12.0	37 18.0	217536	99374	52 42.0	37 48.0	212605	102288	52 12.0
36 18.5	227583	93750	53 41.5	36 48.5	222472	96560	53 11.5	37 18.5	217453	99422	52 41.5	37 48.5	212524	102337	52 11.5
36 19.0	227497	93796	53 41.0	36 49.0	222387	96608	53 11.0	37 19.0	217370	99471	52 41.0	37 49.0	212443	102386	52 11.0
36 19.5	227411	93843	53 40.5	36 49.5	222303	96655	53 10.5	37 19.5	217287	99519	52 40.5	37 49.5	212361	102435	52 10.5
36 20.0	227325	93889	53 40.0	36 50.0	222219	96702	53 10.0	37 20.0	217204	99567	52 40.0	37 50.0	212280	102484	52 10.0
36 20.5	227239	93936	53 39.5	36 50.5	222134	96750	53 09.5	37 20.5	217121	99615	52 39.5	37 50.5	212199	102533	52 09.5
36 21.0	227153	93982	53 39.0	36 51.0	222050	96797	53 09.0	37 21.0	217039	99663	52 39.0	37 51.0	212117	102582	52 09.0
36 21.5	227067	94029	53 38.5	36 51.5	221966	96844	53 08.5	37 21.5	216956	99711	52 38.5	37 51.5	212036	102631	52 08.5
36 22.0	226982	94075	53 38.0	36 52.0	221881	96892	53 08.0	37 22.0	216873	99760	52 38.0	37 52.0	211955	102680	52 08.0
36 22.5	226896	94122	53 37.5	36 52.5	221797	96939	53 07.5	37 22.5	216790	99808	52 37.5	37 52.5	211873	102729	52 07.5
36 23.0	226810	94168	53 37.0	36 53.0	221713	96986	53 07.0	37 23.0	216708	99856	52 37.0	37 53.0	211792	102778	52 07.0
36 23.5	226724	94215	53 36.5	36 53.5	221629	97034	53 06.5	37 23.5	216625	99904	52 36.5	37 53.5	211711	102828	52 06.5
36 24.0	226639	94261	53 36.0	36 54.0	221545	97081	53 06.0	37 24.0	216542	99953	52 36.0	37 54.0	211630	102877	52 06.0
36 24.5	226553	94308	53 35.5	36 54.5	221461	97129	53 05.5	37 24.5	216460	100001	52 35.5	37 54.5	211549	102926	52 05.5
36 25.0	226467	94355	53 35.0	36 55.0	221376	97176	53 05.0	37 25.0	216377	100049	52 35.0	37 55.0	211468	102975	52 05.0
36 25.5	226382	94401	53 34.5	36 55.5	221292	97224	53 04.5	37 25.5	216295	100098	52 34.5	37 55.5	211387	103024	52 04.5
36 26.0	226296	94448	53 34.0	36 56.0	221208	97271	53 04.0	37 26.0	216212	100146	52 34.0	37 56.0	211306	103074	52 04.0
36 26.5	226211	94494	53 33.5	36 56.5	221124	97319	53 03.5	37 26.5	216130	100194	52 33.5	37 56.5	211225	103123	52 03.5
36 27.0	226125	94541	53 33.0	36 57.0	221040	97366	53 03.0	37 27.0	216047	100243	52 33.0	37 57.0	211144	103172	52 03.0
36 27.5	226040	94588	53 32.5	36 57.5	220956	97414	53 02.5	37 27.5	215965	100291	52 32.5	37 57.5	211063	103221	52 02.5
36 28.0	225954	94634	53 32.0	36 58.0	220872	97461	53 02.0	37 28.0	215882	100340	52 32.0	37 58.0	210982	103271	52 02.0
36 28.5	225869	94681	53 31.5	36 58.5	220789	97509	53 01.5	37 28.5	215800	100388	52 31.5	37 58.5	210901	103320	52 01.5
36 29.0	225783	94728	53 31.0	36 59.0	220705	97556	53 01.0	37 29.0	215718	100436	52 31.0	37 59.0	210820	103369	52 01.0
36 29.5	225698	94775	53 30.5	36 59.5	220621	97604	53 00.5	37 29.5	215635	100485	52 30.5	37 59.5	210739	103419	52 00.5
36 30.0	225612	94821	53 30.0	37 00.0	220537	97651	53 00.0	37 30.0	215553	100533	52 30.0	38 00.0	210658	103468	52 00.0

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

COMPACT AGETON | 038 00.0 to 040 00.0

x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c
38 00.0	210658	103468	52 00.0	38 30.0	205850	106456	51 30.0	39 00.0	201128	109497	51 00.0	39 30.0	196489	112594	50 30.0
38 00.5	210577	103517	51 59.5	38 30.5	205771	106506	51 29.5	39 00.5	201050	109549	50 59.5	39 30.5	196413	112646	50 29.5
38 01.0	210496	103567	51 59.0	38 31.0	205692	106556	51 29.0	39 01.0	200972	109600	50 59.0	39 31.0	196336	112698	50 29.0
38 01.5	210416	103616	51 58.5	38 31.5	205612	106606	51 28.5	39 01.5	200894	109651	50 58.5	39 31.5	196260	112750	50 28.5
38 02.0	210335	103665	51 58.0	38 32.0	205533	106657	51 28.0	39 02.0	200816	109702	50 58.0	39 32.0	196183	112802	50 28.0
38 02.5	210254	103715	51 57.5	38 32.5	205454	106707	51 27.5	39 02.5	200738	109753	50 57.5	39 32.5	196107	112854	50 27.5
38 03.0	210173	103764	51 57.0	38 33.0	205374	106757	51 27.0	39 03.0	200661	109805	50 57.0	39 33.0	196030	112907	50 27.0
38 03.5	210093	103814	51 56.5	38 33.5	205295	106808	51 26.5	39 03.5	200583	109856	50 56.5	39 33.5	195954	112959	50 26.5
38 04.0	210012	103863	51 56.0	38 34.0	205216	106858	51 26.0	39 04.0	200505	109907	50 56.0	39 34.0	195877	113011	50 26.0
38 04.5	209931	103913	51 55.5	38 34.5	205137	106908	51 25.5	39 04.5	200427	109958	50 55.5	39 34.5	195801	113063	50 25.5
38 05.0	209851	103962	51 55.0	38 35.0	205058	106959	51 25.0	39 05.0	200349	110010	50 55.0	39 35.0	195724	113115	50 25.0
38 05.5	209770	104012	51 54.5	38 35.5	204978	107009	51 24.5	39 05.5	200272	110061	50 54.5	39 35.5	195648	113168	50 24.5
38 06.0	209690	104061	51 54.0	38 36.0	204899	107060	51 24.0	39 06.0	200194	110112	50 54.0	39 36.0	195572	113220	50 24.0
38 06.5	209609	104111	51 53.5	38 36.5	204820	107110	51 23.5	39 06.5	200116	110164	50 53.5	39 36.5	195495	113272	50 23.5
38 07.0	209529	104160	51 53.0	38 37.0	204741	107161	51 23.0	39 07.0	200038	110215	50 53.0	39 37.0	195419	113324	50 23.0
38 07.5	209448	104210	51 52.5	38 37.5	204662	107211	51 22.5	39 07.5	199961	110266	50 52.5	39 37.5	195343	113377	50 22.5
38 08.0	209368	104259	51 52.0	38 38.0	204583	107261	51 22.0	39 08.0	199883	110318	50 52.0	39 38.0	195266	113429	50 22.0
38 08.5	209287	104309	51 51.5	38 38.5	204504	107312	51 21.5	39 08.5	199805	110369	50 51.5	39 38.5	195190	113481	50 21.5
38 09.0	209207	104359	51 51.0	38 39.0	204425	107362	51 21.0	39 09.0	199728	110421	50 51.0	39 39.0	195114	113534	50 21.0
38 09.5	209126	104408	51 50.5	38 39.5	204346	107413	51 20.5	39 09.5	199650	110472	50 50.5	39 39.5	195038	113586	50 20.5
38 10.0	209046	104458	51 50.0	38 40.0	204267	107464	51 20.0	39 10.0	199573	110523	50 50.0	39 40.0	194961	113638	50 20.0
38 10.5	208966	104507	51 49.5	38 40.5	204188	107514	51 19.5	39 10.5	199495	110575	50 49.5	39 40.5	194885	113691	50 19.5
38 11.0	208885	104557	51 49.0	38 41.0	204109	107565	51 19.0	39 11.0	199418	110626	50 49.0	39 41.0	194809	113743	50 19.0
38 11.5	208805	104607	51 48.5	38 41.5	204030	107615	51 18.5	39 11.5	199340	110678	50 48.5	39 41.5	194733	113796	50 18.5
38 12.0	208725	104657	51 48.0	38 42.0	203951	107666	51 18.0	39 12.0	199263	110729	50 48.0	39 42.0	194657	113848	50 18.0
38 12.5	208644	104706	51 47.5	38 42.5	203873	107716	51 17.5	39 12.5	199185	110781	50 47.5	39 42.5	194581	113901	50 17.5
38 13.0	208564	104756	51 47.0	38 43.0	203794	107767	51 17.0	39 13.0	199108	110832	50 47.0	39 43.0	194505	113953	50 17.0
38 13.5	208484	104806	51 46.5	38 43.5	203715	107818	51 16.5	39 13.5	199031	110884	50 46.5	39 43.5	194429	114005	50 16.5
38 14.0	208404	104855	51 46.0	38 44.0	203636	107868	51 16.0	39 14.0	198953	110936	50 46.0	39 44.0	194353	114058	50 16.0
38 14.5	208324	104905	51 45.5	38 44.5	203557	107919	51 15.5	39 14.5	198876	110987	50 45.5	39 44.5	194277	114110	50 15.5
38 15.0	208243	104955	51 45.0	38 45.0	203479	107970	51 15.0	39 15.0	198799	111039	50 45.0	39 45.0	194201	114163	50 15.0
38 15.5	208163	105005	51 44.5	38 45.5	203400	108020	51 14.5	39 15.5	198721	111090	50 44.5	39 45.5	194125	114216	50 14.5
38 16.0	208083	105055	51 44.0	38 46.0	203321	108071	51 14.0	39 16.0	198644	111142	50 44.0	39 46.0	194049	114268	50 14.0
38 16.5	208003	105104	51 43.5	38 46.5	203243	108122	51 13.5	39 16.5	198567	111194	50 43.5	39 46.5	193973	114321	50 13.5
38 17.0	207923	105154	51 43.0	38 47.0	203164	108173	51 13.0	39 17.0	198489	111245	50 43.0	39 47.0	193897	114373	50 13.0
38 17.5	207843	105204	51 42.5	38 47.5	203086	108223	51 12.5	39 17.5	198412	111297	50 42.5	39 47.5	193821	114426	50 12.5
38 18.0	207763	105254	51 42.0	38 48.0	203007	108274	51 12.0	39 18.0	198335	111349	50 42.0	39 48.0	193746	114478	50 12.0
38 18.5	207683	105304	51 41.5	38 48.5	202928	108325	51 11.5	39 18.5	198258	111400	50 41.5	39 48.5	193670	114531	50 11.5
38 19.0	207603	105354	51 41.0	38 49.0	202850	108376	51 11.0	39 19.0	198181	111452	50 41.0	39 49.0	193594	114584	50 11.0
38 19.5	207523	105404	51 40.5	38 49.5	202771	108427	51 10.5	39 19.5	198104	111504	50 40.5	39 49.5	193518	114636	50 10.5
38 20.0	207443	105454	51 40.0	38 50.0	202693	108477	51 10.0	39 20.0	198027	111556	50 40.0	39 50.0	193443	114689	50 10.0
38 20.5	207364	105504	51 39.5	38 50.5	202614	108528	51 09.5	39 20.5	197949	111607	50 39.5	39 50.5	193367	114742	50 09.5
38 21.0	207284	105554	51 39.0	38 51.0	202536	108579	51 09.0	39 21.0	197872	111659	50 39.0	39 51.0	193291	114795	50 09.0
38 21.5	207204	105604	51 38.5	38 51.5	202458	108630	51 08.5	39 21.5	197795	111711	50 38.5	39 51.5	193215	114847	50 08.5
38 22.0	207124	105654	51 38.0	38 52.0	202379	108681	51 08.0	39 22.0	197718	111763	50 38.0	39 52.0	193140	114900	50 08.0
38 22.5	207044	105704	51 37.5	38 52.5	202301	108732	51 07.5	39 22.5	197641	111815	50 37.5	39 52.5	193064	114953	50 07.5
38 23.0	206965	105754	51 37.0	38 53.0	202223	108783	51 07.0	39 23.0	197564	111866	50 37.0	39 53.0	192989	115006	50 07.0
38 23.5	206885	105804	51 36.5	38 53.5	202144	108834	51 06.5	39 23.5	197488	111918	50 36.5	39 53.5	192913	115058	50 06.5
38 24.0	206805	105854	51 36.0	38 54.0	202066	108885	51 06.0	39 24.0	197411	111970	50 36.0	39 54.0	192837	115111	50 06.0
38 24.5	206725	105904	51 35.5	38 54.5	201988	108936	51 05.5	39 24.5	197334	112022	50 35.5	39 54.5	192762	115164	50 05.5
38 25.0	206646	105954	51 35.0	38 55.0	201909	108987	51 05.0	39 25.0	197257	112074	50 35.0	39 55.0	192686	115217	50 05.0
38 25.5	206566	106004	51 34.5	38 55.5	201831	109038	51 04.5	39 25.5	197180	112126	50 34.5	39 55.5	192611	115270	50 04.5
38 26.0	206486	106054	51 34.0	38 56.0	201753	109089	51 04.0	39 26.0	197103	112178	50 34.0	39 56.0	192535	115323	50 04.0
38 26.5	206407	106104	51 33.5	38 56.5	201675	109140	51 03.5	39 26.5	197026	112230	50 33.5	39 56.5	192460	115375	50 03.5
38 27.0	206327	106154	51 33.0	38 57.0	201597	109191	51 03.0	39 27.0	196950	112282	50 33.0	39 57.0	192385	115428	50 03.0
38 27.5	206248	106205	51 32.5	38 57.5	201519	109242	51 02.5	39 27.5	196873	112334	50 32.5	39 57.5	192309	115481	50 02.5
38 28.0	206168	106255	51 32.0	38 58.0	201440	109293	51 02.0	39 28.0	196796	112386	50 32.0	39 58.0	192234	115534	50 02.0
38 28.5	206089	106305	51 31.5	38 58.5	201362	109344	51 01.5	39 28.5	196719	112438	50 31.5	39 58.5	192158	115587	50 01.5
38 29.0	206009	106355	51 31.0	38 59.0	201284	109395	51 01.0	39 29.0	196643	112490	50 31.0	39 59.0	192083	115640	50 01.0
38 29.5	205930	106405	51 30.5	38 59.5	201206	109446	51 00.5	39 29.5	196566	112542	50 30.5	39 59.5	192008	115693	50 00.5
38 30.0	205850	106456	51 30.0	39 00.0	201128	109497	51 00.0	39 30.0	196489	112594	50 30.0	40 00.0	191933	115746	50 00.0

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

x	A(x)	B(x)	c
40 00.0	191933	115746	50 00.0
40 00.5	191857	115799	49 59.5
40 01.0	191782	115852	49 59.0
40 01.5	191707	115905	49 58.5
40 02.0	191632	115958	49 58.0
40 02.5	191556	116011	49 57.5
40 03.0	191481	116064	49 57.0
40 03.5	191406	116117	49 56.5
40 04.0	191331	116171	49 56.0
40 04.5	191256	116224	49 55.5
40 05.0	191181	116277	49 55.0
40 05.5	191106	116330	49 54.5
40 06.0	191031	116383	49 54.0
40 06.5	190956	116436	49 53.5
40 07.0	190881	116490	49 53.0
40 07.5	190806	116543	49 52.5
40 08.0	190731	116596	49 52.0
40 08.5	190656	116649	49 51.5
40 09.0	190581	116703	49 51.0
40 09.5	190506	116756	49 50.5
40 10.0	190431	116809	49 50.0
40 10.5	190357	116863	49 49.5
40 11.0	190282	116916	49 49.0
40 11.5	190207	116969	49 48.5
40 12.0	190132	117023	49 48.0
40 12.5	190057	117076	49 47.5
40 13.0	189983	117129	49 47.0
40 13.5	189908	117183	49 46.5
40 14.0	189833	117236	49 46.0
40 14.5	189759	117290	49 45.5
40 15.0	189684	117343	49 45.0
40 15.5	189610	117397	49 44.5
40 16.0	189535	117450	49 44.0
40 16.5	189460	117504	49 43.5
40 17.0	189386	117557	49 43.0
40 17.5	189311	117611	49 42.5
40 18.0	189237	117664	49 42.0
40 18.5	189162	117718	49 41.5
40 19.0	189088	117771	49 41.0
40 19.5	189014	117825	49 40.5
40 20.0	188939	117879	49 40.0
40 20.5	188865	117932	49 39.5
40 21.0	188790	117986	49 39.0
40 21.5	188716	118040	49 38.5
40 22.0	188642	118093	49 38.0
40 22.5	188567	118147	49 37.5
40 23.0	188493	118201	49 37.0
40 23.5	188419	118254	49 36.5
40 24.0	188345	118308	49 36.0
40 24.5	188270	118362	49 35.5
40 25.0	188196	118416	49 35.0
40 25.5	188122	118470	49 34.5
40 26.0	188048	118523	49 34.0
40 26.5	187974	118577	49 33.5
40 27.0	187900	118631	49 33.0
40 27.5	187826	118685	49 32.5
40 28.0	187752	118739	49 32.0
40 28.5	187678	118793	49 31.5
40 29.0	187604	118847	49 31.0
40 29.5	187530	118901	49 30.5
40 30.0	187456	118954	49 30.0

x	A(x)	B(x)	c
40 30.0	187456	118954	49 30.0
40 30.5	187382	119008	49 29.5
40 31.0	187308	119062	49 29.0
40 31.5	187234	119116	49 28.5
40 32.0	187160	119170	49 28.0
40 32.5	187086	119224	49 27.5
40 33.0	187012	119278	49 27.0
40 33.5	186938	119333	49 26.5
40 34.0	186865	119387	49 26.0
40 34.5	186791	119441	49 25.5
40 35.0	186717	119495	49 25.0
40 35.5	186643	119549	49 24.5
40 36.0	186570	119603	49 24.0
40 36.5	186496	119657	49 23.5
40 37.0	186422	119711	49 23.0
40 37.5	186349	119766	49 22.5
40 38.0	186275	119820	49 22.0
40 38.5	186201	119874	49 21.5
40 39.0	186128	119928	49 21.0
40 39.5	186054	119982	49 20.5
40 40.0	185981	120037	49 20.0
40 40.5	185907	120091	49 19.5
40 41.0	185834	120145	49 19.0
40 41.5	185760	120200	49 18.5
40 42.0	185687	120254	49 18.0
40 42.5	185613	120308	49 17.5
40 43.0	185540	120363	49 17.0
40 43.5	185467	120417	49 16.5
40 44.0	185393	120471	49 16.0
40 44.5	185320	120526	49 15.5
40 45.0	185247	120580	49 15.0
40 45.5	185173	120635	49 14.5
40 46.0	185100	120689	49 14.0
40 46.5	185027	120743	49 13.5
40 47.0	184954	120798	49 13.0
40 47.5	184880	120852	49 12.5
40 48.0	184807	120907	49 12.0
40 48.5	184734	120961	49 11.5
40 49.0	184661	121016	49 11.0
40 49.5	184588	121071	49 10.5
40 50.0	184515	121125	49 10.0
40 50.5	184442	121180	49 09.5
40 51.0	184368	121234	49 09.0
40 51.5	184295	121289	49 08.5
40 52.0	184222	121344	49 08.0
40 52.5	184149	121398	49 07.5
40 53.0	184076	121453	49 07.0
40 53.5	184004	121508	49 06.5
40 54.0	183931	121562	49 06.0
40 54.5	183858	121617	49 05.5
40 55.0	183785	121672	49 05.0
40 55.5	183712	121727	49 04.5
40 56.0	183639	121781	49 04.0
40 56.5	183566	121836	49 03.5
40 57.0	183493	121891	49 03.0
40 57.5	183421	121946	49 02.5
40 58.0	183348	122001	49 02.0
40 58.5	183275	122055	49 01.5
40 59.0	183202	122110	49 01.0
40 59.5	183130	122165	49 00.5
41 00.0	183057	122220	49 00.0

x	A(x)	B(x)	c
41 00.0	183057	122220	49 00.0
41 00.5	182984	122275	48 59.5
41 01.0	182912	122330	48 59.0
41 01.5	182839	122385	48 58.5
41 02.0	182767	122440	48 58.0
41 02.5	182694	122495	48 57.5
41 03.0	182621	122550	48 57.0
41 03.5	182549	122605	48 56.5
41 04.0	182476	122660	48 56.0
41 04.5	182404	122715	48 55.5
41 05.0	182332	122770	48 55.0
41 05.5	182259	122825	48 54.5
41 06.0	182187	122880	48 54.0
41 06.5	182114	122935	48 53.5
41 07.0	182042	122990	48 53.0
41 07.5	181970	123046	48 52.5
41 08.0	181897	123101	48 52.0
41 08.5	181825	123156	48 51.5
41 09.0	181753	123211	48 51.0
41 09.5	181680	123266	48 50.5
41 10.0	181608	123322	48 50.0
41 10.5	181536	123377	48 49.5
41 11.0	181464	123432	48 49.0
41 11.5	181391	123487	48 48.5
41 12.0	181319	123543	48 48.0
41 12.5	181247	123598	48 47.5
41 13.0	181175	123653	48 47.0
41 13.5	181103	123709	48 46.5
41 14.0	181031	123764	48 46.0
41 14.5	180959	123819	48 45.5
41 15.0	180887	123875	48 45.0
41 15.5	180815	123930	48 44.5
41 16.0	180743	123986	48 44.0
41 16.5	180671	124041	48 43.5
41 17.0	180599	124096	48 43.0
41 17.5	180527	124152	48 42.5
41 18.0	180455	124207	48 42.0
41 18.5	180383	124263	48 41.5
41 19.0	180311	124318	48 41.0
41 19.5	180239	124374	48 40.5
41 20.0	180168	124429	48 40.0
41 20.5	180096	124485	48 39.5
41 21.0	180024	124541	48 39.0
41 21.5	179952	124596	48 38.5
41 22.0	179880	124652	48 38.0
41 22.5	179809	124707	48 37.5
41 23.0	179737	124763	48 37.0
41 23.5	179665	124819	48 36.5
41 24.0	179594	124874	48 36.0
41 24.5	179522	124930	48 35.5
41 25.0	179450	124986	48 35.0
41 25.5	179379	125042	48 34.5
41 26.0	179307	125097	48 34.0
41 26.5	179236	125153	48 33.5
41 27.0	179164	125209	48 33.0
41 27.5	179093	125265	48 32.5
41 28.0	179021	125320	48 32.0
41 28.5	178950	125376	48 31.5
41 29.0	178878	125432	48 31.0
41 29.5	178807	125488	48 30.5
41 30.0	178735	125544	48 30.0

x	A(x)	B(x)	c
41 30.0	178735	125544	48 30.0
41 30.5	178664	125600	48 29.5
41 31.0	178593	125656	48 29.0
41 31.5	178521	125712	48 28.5
41 32.0	178450	125768	48 28.0
41 32.5	178379	125823	48 27.5
41 33.0	178307	125879	48 27.0
41 33.5	178236	125935	48 26.5
41 34.0	178165	125991	48 26.0
41 34.5	178094	126047	48 25.5
41 35.0	178023	126104	48 25.0
41 35.5	177951	126160	48 24.5
41 36.0	177880	126216	48 24.0
41 36.5	177809	126272	48 23.5
41 37.0	177738	126328	48 23.0
41 37.5	177667	126384	48 22.5
41 38.0	177596	126440	48 22.0
41 38.5	177525	126496	48 21.5
41 39.0	177454	126552	48 21.0
41 39.5	177383	126609	48 20.5
41 40.0	177312	126665	48 20.0
41 40.5	177241	126721	48 19.5
41 41.0	177170	126777	48 19.0
41 41.5	177099	126834	48 18.5
41 42.0	177028	126890	48 18.0
41 42.5	176957	126946	48 17.5
41 43.0	176886	127002	48 17.0
41 43.5	176815	127059	48 16.5
41 44.0	176745	127115	48 16.0
41 44.5	176674	127171	48 15.5
41 45.0	176603	127228	48 15.0
41 45.5	176532	127284	48 14.5
41 46.0	176461	127341	48 14.0
41 46.5	176391	127397	48 13.5
41 47.0	176320	127453	48 13.0
41 47.5	176249	127510	48 12.5
41 48.0	176179	127566	48 12.0
41 48.5	176108	127623	48 11.5
41 49.0	176037	127679	48 11.0
41 49.5	175967	127736	48 10.5
41 50.0	175896	127792	48 10.0
41 50.5	175826	127849	48 09.5
41 51.0	175755	127905	48 09.0
41 51.5	175685	127962	48 08.5
41 52.0	175614	128019	48 08.0
41 52.5	175544	128075	48 07.5
41 53.0	175473	128132	48 07.0
41 53.5	175403	128189	48 06.5
41 54.0	175332	128245	48 06.0
41 54.5	175262	128302	48 05.5
41 55.0	175192	128359	48 05.0
41 55.5	175121	128415	48 04.5
41 56.0	175051	128472	48 04.0
41 56.5	174981	128529	48 03.5
41 57.0	174910	128586	48 03.0
41 57.5	174840	128642	48 02.5
41 58.0	174770	128699	48 02.0
41 58.5	174700	128756	48 01.5
41 59.0	174629	128813	48 01.0
41 59.5	174559	128870	48 00.5
42 00.0	174489	128927	48 00.0

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

COMPACT AGETON | 042 00.0 to 044 00.0

x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c	x	A(x)	B(x)	c
42 00.0	174489	128927	48 00.0	42 30.0	170317	132369	47 30.0	43 00.0	166217	135873	47 00.0	43 30.0	162188	139438	46 30.0
42 00.5	174419	128983	47 59.5	42 30.5	170248	132427	47 29.5	43 00.5	166149	135931	46 59.5	43 30.5	162121	139498	46 29.5
42 01.0	174349	129040	47 59.0	42 31.0	170179	132485	47 29.0	43 01.0	166081	135990	46 59.0	43 31.0	162055	139558	46 29.0
42 01.5	174279	129097	47 58.5	42 31.5	170110	132543	47 28.5	43 01.5	166014	136049	46 58.5	43 31.5	161988	139618	46 28.5
42 02.0	174209	129154	47 58.0	42 32.0	170041	132601	47 28.0	43 02.0	165946	136108	46 58.0	43 32.0	161922	139678	46 28.0
42 02.5	174139	129211	47 57.5	42 32.5	169972	132659	47 27.5	43 02.5	165878	136167	46 57.5	43 32.5	161855	139738	46 27.5
42 03.0	174069	129268	47 57.0	42 33.0	169903	132717	47 27.0	43 03.0	165811	136226	46 57.0	43 33.0	161789	139798	46 27.0
42 03.5	173999	129325	47 56.5	42 33.5	169835	132775	47 26.5	43 03.5	165743	136285	46 56.5	43 33.5	161722	139858	46 26.5
42 04.0	173929	129382	47 56.0	42 34.0	169766	132833	47 26.0	43 04.0	165675	136344	46 56.0	43 34.0	161656	139918	46 26.0
42 04.5	173859	129439	47 55.5	42 34.5	169697	132891	47 25.5	43 04.5	165608	136403	46 55.5	43 34.5	161590	139978	46 25.5
42 05.0	173789	129496	47 55.0	42 35.0	169628	132949	47 25.0	43 05.0	165540	136462	46 55.0	43 35.0	161523	140038	46 25.0
42 05.5	173719	129553	47 54.5	42 35.5	169560	133007	47 24.5	43 05.5	165473	136522	46 54.5	43 35.5	161457	140098	46 24.5
42 06.0	173649	129610	47 54.0	42 36.0	169491	133065	47 24.0	43 06.0	165405	136581	46 54.0	43 36.0	161390	140158	46 24.0
42 06.5	173579	129667	47 53.5	42 36.5	169422	133123	47 23.5	43 06.5	165338	136640	46 53.5	43 36.5	161324	140219	46 23.5
42 07.0	173509	129724	47 53.0	42 37.0	169354	133181	47 23.0	43 07.0	165270	136699	46 53.0	43 37.0	161258	140279	46 23.0
42 07.5	173439	129782	47 52.5	42 37.5	169285	133239	47 22.5	43 07.5	165203	136758	46 52.5	43 37.5	161192	140339	46 22.5
42 08.0	173369	129839	47 52.0	42 38.0	169216	133297	47 22.0	43 08.0	165135	136817	46 52.0	43 38.0	161125	140399	46 22.0
42 08.5	173299	129896	47 51.5	42 38.5	169148	133356	47 21.5	43 08.5	165068	136876	46 51.5	43 38.5	161059	140459	46 21.5
42 09.0	173230	129953	47 51.0	42 39.0	169079	133414	47 21.0	43 09.0	165001	136936	46 51.0	43 39.0	160993	140520	46 21.0
42 09.5	173160	130010	47 50.5	42 39.5	169011	133472	47 20.5	43 09.5	164933	136995	46 50.5	43 39.5	160927	140580	46 20.5
42 10.0	173090	130067	47 50.0	42 40.0	168942	133530	47 20.0	43 10.0	164866	137054	46 50.0	43 40.0	160860	140640	46 20.0
42 10.5	173020	130125	47 49.5	42 40.5	168873	133588	47 19.5	43 10.5	164799	137113	46 49.5	43 40.5	160794	140700	46 19.5
42 11.0	172951	130182	47 49.0	42 41.0	168805	133647	47 19.0	43 11.0	164731	137173	46 49.0	43 41.0	160728	140761	46 19.0
42 11.5	172881	130239	47 48.5	42 41.5	168737	133705	47 18.5	43 11.5	164664	137232	46 48.5	43 41.5	160662	140821	46 18.5
42 12.0	172811	130296	47 48.0	42 42.0	168668	133763	47 18.0	43 12.0	164597	137291	46 48.0	43 42.0	160596	140881	46 18.0
42 12.5	172742	130354	47 47.5	42 42.5	168600	133821	47 17.5	43 12.5	164529	137350	46 47.5	43 42.5	160530	140942	46 17.5
42 13.0	172672	130411	47 47.0	42 43.0	168531	133880	47 17.0	43 13.0	164462	137410	46 47.0	43 43.0	160464	141002	46 17.0
42 13.5	172602	130468	47 46.5	42 43.5	168463	133938	47 16.5	43 13.5	164395	137469	46 46.5	43 43.5	160398	141063	46 16.5
42 14.0	172533	130526	47 46.0	42 44.0	168394	133996	47 16.0	43 14.0	164328	137529	46 46.0	43 44.0	160332	141123	46 16.0
42 14.5	172463	130583	47 45.5	42 44.5	168326	134055	47 15.5	43 14.5	164261	137588	46 45.5	43 44.5	160266	141183	46 15.5
42 15.0	172394	130640	47 45.0	42 45.0	168258	134113	47 15.0	43 15.0	164193	137647	46 45.0	43 45.0	160200	141244	46 15.0
42 15.5	172324	130698	47 44.5	42 45.5	168189	134172	47 14.5	43 15.5	164126	137707	46 44.5	43 45.5	160134	141304	46 14.5
42 16.0	172255	130755	47 44.0	42 46.0	168121	134230	47 14.0	43 16.0	164059	137766	46 44.0	43 46.0	160068	141365	46 14.0
42 16.5	172185	130812	47 43.5	42 46.5	168053	134288	47 13.5	43 16.5	163992	137826	46 43.5	43 46.5	160002	141425	46 13.5
42 17.0	172116	130870	47 43.0	42 47.0	167985	134347	47 13.0	43 17.0	163925	137885	46 43.0	43 47.0	159936	141486	46 13.0
42 17.5	172046	130927	47 42.5	42 47.5	167916	134405	47 12.5	43 17.5	163858	137945	46 42.5	43 47.5	159870	141546	46 12.5
42 18.0	171977	130985	47 42.0	42 48.0	167848	134464	47 12.0	43 18.0	163791	138004	46 42.0	43 48.0	159804	141607	46 12.0
42 18.5	171907	131042	47 41.5	42 48.5	167780	134522	47 11.5	43 18.5	163724	138064	46 41.5	43 48.5	159738	141668	46 11.5
42 19.0	171838	131100	47 41.0	42 49.0	167712	134581	47 11.0	43 19.0	163657	138123	46 41.0	43 49.0	159672	141728	46 11.0
42 19.5	171769	131157	47 40.5	42 49.5	167644	134639	47 10.5	43 19.5	163590	138183	46 40.5	43 49.5	159607	141789	46 10.5
42 20.0	171699	131215	47 40.0	42 50.0	167575	134698	47 10.0	43 20.0	163523	138242	46 40.0	43 50.0	159541	141849	46 10.0
42 20.5	171630	131272	47 39.5	42 50.5	167507	134756	47 09.5	43 20.5	163456	138302	46 39.5	43 50.5	159475	141910	46 09.5
42 21.0	171561	131330	47 39.0	42 51.0	167439	134815	47 09.0	43 21.0	163389	138362	46 39.0	43 51.0	159409	141971	46 09.0
42 21.5	171491	131388	47 38.5	42 51.5	167371	134874	47 08.5	43 21.5	163322	138421	46 38.5	43 51.5	159343	142032	46 08.5
42 22.0	171422	131445	47 38.0	42 52.0	167303	134932	47 08.0	43 22.0	163255	138481	46 38.0	43 52.0	159278	142092	46 08.0
42 22.5	171353	131503	47 37.5	42 52.5	167235	134991	47 07.5	43 22.5	163188	138541	46 37.5	43 52.5	159212	142153	46 07.5
42 23.0	171284	131560	47 37.0	42 53.0	167167	135050	47 07.0	43 23.0	163122	138600	46 37.0	43 53.0	159146	142214	46 07.0
42 23.5	171214	131618	47 36.5	42 53.5	167099	135108	47 06.5	43 23.5	163055	138660	46 36.5	43 53.5	159081	142274	46 06.5
42 24.0	171145	131676	47 36.0	42 54.0	167031	135167	47 06.0	43 24.0	162988	138720	46 36.0	43 54.0	159015	142335	46 06.0
42 24.5	171076	131733	47 35.5	42 54.5	166963	135226	47 05.5	43 24.5	162921	138779	46 35.5	43 54.5	158949	142396	46 05.5
42 25.0	171007	131791	47 35.0	42 55.0	166895	135284	47 05.0	43 25.0	162854	138839	46 35.0	43 55.0	158884	142457	46 05.0
42 25.5	170938	131849	47 34.5	42 55.5	166827	135343	47 04.5	43 25.5	162788	138899	46 34.5	43 55.5	158818	142518	46 04.5
42 26.0	170869	131907	47 34.0	42 56.0	166759	135402	47 04.0	43 26.0	162721	138959	46 34.0	43 56.0	158753	142578	46 04.0
42 26.5	170800	131964	47 33.5	42 56.5	166691	135461	47 03.5	43 26.5	162654	139019	46 33.5	43 56.5	158687	142639	46 03.5
42 27.0	170731	132022	47 33.0	42 57.0	166623	135519	47 03.0	43 27.0	162588	139078	46 33.0	43 57.0	158622	142700	46 03.0
42 27.5	170662	132080	47 32.5	42 57.5	166556	135578	47 02.5	43 27.5	162521	139138	46 32.5	43 57.5	158556	142761	46 02.5
42 28.0	170593	132138	47 32.0	42 58.0	166488	135637	47 02.0	43 28.0	162454	139198	46 32.0	43 58.0	158491	142822	46 02.0
42 28.5	170524	132196	47 31.5	42 58.5	166420	135696	47 01.5	43 28.5	162388	139258	46 31.5	43 58.5	158425	142883	46 01.5
42 29.0	170455	132253	47 31.0	42 59.0	166352	135755	47 01.0	43 29.0	162321	139318	46 31.0	43 59.0	158360	142944	46 01.0
42 29.5	170386	132311	47 30.5	42 59.5	166284	135814	47 00.5	43 29.5	162254	139378	46 30.5	43 59.5	158294	143005	46 00.5
42 30.0	170317	132369	47 30.0	43 00.0	166217	135873	47 00.0	43 30.0	162188	139438	46 30.0	44 00.0	158229	143066	46 00.0

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

x	A(x)	B(x)	c
44 00.0	158229	143066	46 00.0
44 00.5	158163	143127	45 59.5
44 01.0	158098	143188	45 59.0
44 01.5	158033	143249	45 58.5
44 02.0	157967	143310	45 58.0
44 02.5	157902	143371	45 57.5
44 03.0	157837	143432	45 57.0
44 03.5	157771	143493	45 56.5
44 04.0	157706	143554	45 56.0
44 04.5	157641	143616	45 55.5
44 05.0	157576	143677	45 55.0
44 05.5	157510	143738	45 54.5
44 06.0	157445	143799	45 54.0
44 06.5	157380	143860	45 53.5
44 07.0	157315	143922	45 53.0
44 07.5	157250	143983	45 52.5
44 08.0	157185	144044	45 52.0
44 08.5	157120	144105	45 51.5
44 09.0	157054	144167	45 51.0
44 09.5	156989	144228	45 50.5
44 10.0	156924	144289	45 50.0
44 10.5	156859	144351	45 49.5
44 11.0	156794	144412	45 49.0
44 11.5	156729	144474	45 48.5
44 12.0	156664	144535	45 48.0
44 12.5	156599	144596	45 47.5
44 13.0	156534	144658	45 47.0
44 13.5	156470	144719	45 46.5
44 14.0	156405	144781	45 46.0
44 14.5	156340	144842	45 45.5
44 15.0	156275	144904	45 45.0
44 15.5	156210	144965	45 44.5
44 16.0	156145	145027	45 44.0
44 16.5	156081	145089	45 43.5
44 17.0	156016	145150	45 43.0
44 17.5	155951	145212	45 42.5
44 18.0	155886	145273	45 42.0
44 18.5	155822	145335	45 41.5
44 19.0	155757	145397	45 41.0
44 19.5	155692	145458	45 40.5
44 20.0	155628	145520	45 40.0
44 20.5	155563	145582	45 39.5
44 21.0	155498	145644	45 39.0
44 21.5	155434	145705	45 38.5
44 22.0	155369	145767	45 38.0
44 22.5	155304	145829	45 37.5
44 23.0	155240	145891	45 37.0
44 23.5	155175	145953	45 36.5
44 24.0	155111	146014	45 36.0
44 24.5	155046	146076	45 35.5
44 25.0	154982	146138	45 35.0
44 25.5	154917	146200	45 34.5
44 26.0	154853	146262	45 34.0
44 26.5	154789	146324	45 33.5
44 27.0	154724	146386	45 33.0
44 27.5	154660	146448	45 32.5
44 28.0	154595	146510	45 32.0
44 28.5	154531	146572	45 31.5
44 29.0	154467	146634	45 31.0
44 29.5	154402	146696	45 30.5
44 30.0	154338	146758	45 30.0

x	A(x)	B(x)	c
44 30.0	154338	146758	45 30.0
44 30.5	154274	146820	45 29.5
44 31.0	154210	146882	45 29.0
44 31.5	154145	146944	45 28.5
44 32.0	154081	147006	45 28.0
44 32.5	154017	147069	45 27.5
44 33.0	153953	147131	45 27.0
44 33.5	153889	147193	45 26.5
44 34.0	153825	147255	45 26.0
44 34.5	153760	147317	45 25.5
44 35.0	153696	147380	45 25.0
44 35.5	153632	147442	45 24.5
44 36.0	153568	147504	45 24.0
44 36.5	153504	147566	45 23.5
44 37.0	153440	147629	45 23.0
44 37.5	153376	147691	45 22.5
44 38.0	153312	147753	45 22.0
44 38.5	153248	147816	45 21.5
44 39.0	153184	147878	45 21.0
44 39.5	153120	147941	45 20.5
44 40.0	153056	148003	45 20.0
44 40.5	152992	148065	45 19.5
44 41.0	152929	148128	45 19.0
44 41.5	152865	148190	45 18.5
44 42.0	152801	148253	45 18.0
44 42.5	152737	148315	45 17.5
44 43.0	152673	148378	45 17.0
44 43.5	152609	148441	45 16.5
44 44.0	152546	148503	45 16.0
44 44.5	152482	148566	45 15.5
44 45.0	152418	148628	45 15.0
44 45.5	152355	148691	45 14.5
44 46.0	152291	148754	45 14.0
44 46.5	152227	148816	45 13.5
44 47.0	152164	148879	45 13.0
44 47.5	152100	148942	45 12.5
44 48.0	152036	149004	45 12.0
44 48.5	151973	149067	45 11.5
44 49.0	151909	149130	45 11.0
44 49.5	151846	149193	45 10.5
44 50.0	151782	149255	45 10.0
44 50.5	151718	149318	45 09.5
44 51.0	151655	149381	45 09.0
44 51.5	151591	149444	45 08.5
44 52.0	151528	149507	45 08.0
44 52.5	151465	149570	45 07.5
44 53.0	151401	149632	45 07.0
44 53.5	151338	149695	45 06.5
44 54.0	151274	149758	45 06.0
44 54.5	151211	149821	45 05.5
44 55.0	151148	149884	45 05.0
44 55.5	151084	149947	45 04.5
44 56.0	151021	150010	45 04.0
44 56.5	150958	150073	45 03.5
44 57.0	150894	150136	45 03.0
44 57.5	150831	150199	45 02.5
44 58.0	150768	150262	45 02.0
44 58.5	150705	150326	45 01.5
44 59.0	150641	150389	45 01.0
44 59.5	150578	150452	45 00.5
45 00.0	150515	150515	45 00.0

WORKED CHECK AND TABLE AUDIT

Nearest-row check: latitude 20 S, declination 15 N. LHA 60 and 300 exercise opposite east/west branches with the same altitude.

LHA 60: R 056 46.5 Q N28 11.5

Hc 021 25.5 Zn 296 01.5

LHA 300: R 056 46.5 Q N28 11.5

Hc 021 25.5 Zn 063 58.5

NUMERICAL CHECK: 200,000 random cases per domain, solar-range and full-sky. Within the stated limits, sampled maximum Hc errors were 0.95 minute using nearest rows and 0.26 minute using interpolation. These are sample results, not universal error bounds.

HAND CHECK: try all four latitude/declination hemisphere pairs, both LHA halves and both t quadrants. Record the sign of Q, latitude and gap. Confirm the azimuth quadrant before plotting.

BACKGROUND: Ageton's divided navigational triangle (H.O. 211). NAVALM independently generates these entries and its worksheet. www.siranah.de/html/sail040u.htm describes the underlying functions.

This edition's signed meridian angle Q and 1,000,000 log scale differ from other Ageton variants. Follow these instructions and tables together. Do not mix procedures or log scales.

x,c = DD MM.m | c=90-x: SWAP A/B | scale 1,000,000 | INF: stop

Near singular angles, change method. Half-minute rows do not guarantee half-minute Hc.

INCREMENTS AND CORRECTIONS | Minute 00

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	000 00.0	000 00.0	000 00.0
01	000 00.3	000 00.3	000 00.2
02	000 00.5	000 00.5	000 00.5
03	000 00.8	000 00.8	000 00.7
04	000 01.0	000 01.0	000 01.0
05	000 01.3	000 01.3	000 01.2
06	000 01.5	000 01.5	000 01.4
07	000 01.8	000 01.8	000 01.7
08	000 02.0	000 02.0	000 01.9
09	000 02.3	000 02.3	000 02.1
10	000 02.5	000 02.5	000 02.4
11	000 02.8	000 02.8	000 02.6
12	000 03.0	000 03.0	000 02.9
13	000 03.3	000 03.3	000 03.1
14	000 03.5	000 03.5	000 03.3
15	000 03.8	000 03.8	000 03.6
16	000 04.0	000 04.0	000 03.8
17	000 04.3	000 04.3	000 04.1
18	000 04.5	000 04.5	000 04.3
19	000 04.8	000 04.8	000 04.5
20	000 05.0	000 05.0	000 04.8
21	000 05.3	000 05.3	000 05.0
22	000 05.5	000 05.5	000 05.2
23	000 05.8	000 05.8	000 05.5
24	000 06.0	000 06.0	000 05.7
25	000 06.3	000 06.3	000 06.0
26	000 06.5	000 06.5	000 06.2
27	000 06.8	000 06.8	000 06.4
28	000 07.0	000 07.0	000 06.7
29	000 07.3	000 07.3	000 06.9
30	000 07.5	000 07.5	000 07.2
31	000 07.8	000 07.8	000 07.4
32	000 08.0	000 08.0	000 07.6
33	000 08.3	000 08.3	000 07.9
34	000 08.5	000 08.5	000 08.1
35	000 08.8	000 08.8	000 08.4
36	000 09.0	000 09.0	000 08.6
37	000 09.3	000 09.3	000 08.8
38	000 09.5	000 09.5	000 09.1
39	000 09.8	000 09.8	000 09.3
40	000 10.0	000 10.0	000 09.5
41	000 10.3	000 10.3	000 09.8
42	000 10.5	000 10.5	000 10.0
43	000 10.8	000 10.8	000 10.3
44	000 11.0	000 11.0	000 10.5
45	000 11.3	000 11.3	000 10.7
46	000 11.5	000 11.5	000 11.0
47	000 11.8	000 11.8	000 11.2
48	000 12.0	000 12.0	000 11.5
49	000 12.3	000 12.3	000 11.7
50	000 12.5	000 12.5	000 11.9
51	000 12.8	000 12.8	000 12.2
52	000 13.0	000 13.0	000 12.4
53	000 13.3	000 13.3	000 12.6
54	000 13.5	000 13.5	000 12.9
55	000 13.8	000 13.8	000 13.1
56	000 14.0	000 14.0	000 13.4
57	000 14.3	000 14.3	000 13.6
58	000 14.5	000 14.5	000 13.8
59	000 14.8	000 14.8	000 14.1

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	0.0	10.2	0.0	15.3	0.0	20.4	0.0	25.5	0.0
0.1	0.0	5.2	0.0	10.3	0.0	15.4	0.0	20.5	0.0	25.6	0.0
0.2	0.0	5.3	0.0	10.4	0.0	15.5	0.0	20.6	0.0	25.7	0.0
0.3	0.0	5.4	0.0	10.5	0.0	15.6	0.0	20.7	0.0	25.8	0.0
0.4	0.0	5.5	0.0	10.6	0.0	15.7	0.0	20.8	0.0	25.9	0.0
0.5	0.0	5.6	0.0	10.7	0.0	15.8	0.0	20.9	0.0	26.0	0.0
0.6	0.0	5.7	0.0	10.8	0.0	15.9	0.0	21.0	0.0	26.1	0.0
0.7	0.0	5.8	0.0	10.9	0.0	16.0	0.0	21.1	0.0	26.2	0.0
0.8	0.0	5.9	0.0	11.0	0.0	16.1	0.0	21.2	0.0	26.3	0.0
0.9	0.0	6.0	0.0	11.1	0.0	16.2	0.0	21.3	0.0	26.4	0.0
1.0	0.0	6.1	0.0	11.2	0.0	16.3	0.0	21.4	0.0	26.5	0.0
1.1	0.0	6.2	0.0	11.3	0.0	16.4	0.0	21.5	0.0	26.6	0.0
1.2	0.0	6.3	0.0	11.4	0.0	16.5	0.0	21.6	0.0	26.7	0.0
1.3	0.0	6.4	0.0	11.5	0.0	16.6	0.0	21.7	0.0	26.8	0.0
1.4	0.0	6.5	0.0	11.6	0.0	16.7	0.0	21.8	0.0	26.9	0.0
1.5	0.0	6.6	0.0	11.7	0.0	16.8	0.0	21.9	0.0	27.0	0.0
1.6	0.0	6.7	0.0	11.8	0.0	16.9	0.0	22.0	0.0	27.1	0.0
1.7	0.0	6.8	0.0	11.9	0.0	17.0	0.0	22.1	0.0	27.2	0.0
1.8	0.0	6.9	0.0	12.0	0.0	17.1	0.0	22.2	0.0	27.3	0.0
1.9	0.0	7.0	0.0	12.1	0.0	17.2	0.0	22.3	0.0	27.4	0.0
2.0	0.0	7.1	0.0	12.2	0.0	17.3	0.0	22.4	0.0	27.5	0.0
2.1	0.0	7.2	0.0	12.3	0.0	17.4	0.0	22.5	0.0	27.6	0.0
2.2	0.0	7.3	0.0	12.4	0.0	17.5	0.0	22.6	0.0	27.7	0.0
2.3	0.0	7.4	0.0	12.5	0.0	17.6	0.0	22.7	0.0	27.8	0.0
2.4	0.0	7.5	0.0	12.6	0.0	17.7	0.0	22.8	0.0	27.9	0.0
2.5	0.0	7.6	0.0	12.7	0.0	17.8	0.0	22.9	0.0	28.0	0.0
2.6	0.0	7.7	0.0	12.8	0.0	17.9	0.0	23.0	0.0	28.1	0.0
2.7	0.0	7.8	0.0	12.9	0.0	18.0	0.0	23.1	0.0	28.2	0.0
2.8	0.0	7.9	0.0	13.0	0.0	18.1	0.0	23.2	0.0	28.3	0.0
2.9	0.0	8.0	0.0	13.1	0.0	18.2	0.0	23.3	0.0	28.4	0.0
3.0	0.0	8.1	0.0	13.2	0.0	18.3	0.0	23.4	0.0	28.5	0.0
3.1	0.0	8.2	0.0	13.3	0.0	18.4	0.0	23.5	0.0	28.6	0.0
3.2	0.0	8.3	0.0	13.4	0.0	18.5	0.0	23.6	0.0	28.7	0.0
3.3	0.0	8.4	0.0	13.5	0.0	18.6	0.0	23.7	0.0	28.8	0.0
3.4	0.0	8.5	0.0	13.6	0.0	18.7	0.0	23.8	0.0	28.9	0.0
3.5	0.0	8.6	0.0	13.7	0.0	18.8	0.0	23.9	0.0	29.0	0.0
3.6	0.0	8.7	0.0	13.8	0.0	18.9	0.0	24.0	0.0	29.1	0.0
3.7	0.0	8.8	0.0	13.9	0.0	19.0	0.0	24.1	0.0	29.2	0.0
3.8	0.0	8.9	0.0	14.0	0.0	19.1	0.0	24.2	0.0	29.3	0.0
3.9	0.0	9.0	0.0	14.1	0.0	19.2	0.0	24.3	0.0	29.4	0.0
4.0	0.0	9.1	0.0	14.2	0.0	19.3	0.0	24.4	0.0	29.5	0.0
4.1	0.0	9.2	0.0	14.3	0.0	19.4	0.0	24.5	0.0	29.6	0.0
4.2	0.0	9.3	0.0	14.4	0.0	19.5	0.0	24.6	0.0	29.7	0.0
4.3	0.0	9.4	0.0	14.5	0.0	19.6	0.0	24.7	0.0	29.8	0.0
4.4	0.0	9.5	0.0	14.6	0.0	19.7	0.0	24.8	0.0	29.9	0.0
4.5	0.0	9.6	0.0	14.7	0.0	19.8	0.0	24.9	0.0	30.0	0.0
4.6	0.0	9.7	0.0	14.8	0.0	19.9	0.0	25.0	0.0	30.1	0.0
4.7	0.0	9.8	0.0	14.9	0.0	20.0	0.0	25.1	0.0	30.2	0.0
4.8	0.0	9.9	0.0	15.0	0.0	20.1	0.0	25.2	0.0	30.3	0.0
4.9	0.0	10.0	0.0	15.1	0.0	20.2	0.0	25.3	0.0	30.4	0.0
5.0	0.0	10.1	0.0	15.2	0.0	20.3	0.0	25.4	0.0	30.5	0.0

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 01

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	000 15.0	000 15.0	000 14.3
01	000 15.3	000 15.3	000 14.6
02	000 15.5	000 15.5	000 14.8
03	000 15.8	000 15.8	000 15.0
04	000 16.0	000 16.0	000 15.3
05	000 16.3	000 16.3	000 15.5
06	000 16.5	000 16.5	000 15.7
07	000 16.8	000 16.8	000 16.0
08	000 17.0	000 17.0	000 16.2
09	000 17.3	000 17.3	000 16.5
10	000 17.5	000 17.5	000 16.7
11	000 17.8	000 17.8	000 16.9
12	000 18.0	000 18.0	000 17.2
13	000 18.3	000 18.3	000 17.4
14	000 18.5	000 18.6	000 17.7
15	000 18.8	000 18.8	000 17.9
16	000 19.0	000 19.1	000 18.1
17	000 19.3	000 19.3	000 18.4
18	000 19.5	000 19.6	000 18.6
19	000 19.8	000 19.8	000 18.9
20	000 20.0	000 20.1	000 19.1
21	000 20.3	000 20.3	000 19.3
22	000 20.5	000 20.6	000 19.6
23	000 20.8	000 20.8	000 19.8
24	000 21.0	000 21.1	000 20.0
25	000 21.3	000 21.3	000 20.3
26	000 21.5	000 21.6	000 20.5
27	000 21.8	000 21.8	000 20.8
28	000 22.0	000 22.1	000 21.0
29	000 22.3	000 22.3	000 21.2
30	000 22.5	000 22.6	000 21.5
31	000 22.8	000 22.8	000 21.7
32	000 23.0	000 23.1	000 22.0
33	000 23.3	000 23.3	000 22.2
34	000 23.5	000 23.6	000 22.4
35	000 23.8	000 23.8	000 22.7
36	000 24.0	000 24.1	000 22.9
37	000 24.3	000 24.3	000 23.1
38	000 24.5	000 24.6	000 23.4
39	000 24.8	000 24.8	000 23.6
40	000 25.0	000 25.1	000 23.9
41	000 25.3	000 25.3	000 24.1
42	000 25.5	000 25.6	000 24.3
43	000 25.8	000 25.8	000 24.6
44	000 26.0	000 26.1	000 24.8
45	000 26.3	000 26.3	000 25.1
46	000 26.5	000 26.6	000 25.3
47	000 26.8	000 26.8	000 25.5
48	000 27.0	000 27.1	000 25.8
49	000 27.3	000 27.3	000 26.0
50	000 27.5	000 27.6	000 26.2
51	000 27.8	000 27.8	000 26.5
52	000 28.0	000 28.1	000 26.7
53	000 28.3	000 28.3	000 27.0
54	000 28.5	000 28.6	000 27.2
55	000 28.8	000 28.8	000 27.4
56	000 29.0	000 29.1	000 27.7
57	000 29.3	000 29.3	000 27.9
58	000 29.5	000 29.6	000 28.2
59	000 29.8	000 29.8	000 28.4

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	0.1	10.2	0.2	15.3	0.3	20.4	0.3	25.5	0.4
0.1	0.0	5.2	0.1	10.3	0.2	15.4	0.3	20.5	0.3	25.6	0.4
0.2	0.0	5.3	0.1	10.4	0.2	15.5	0.3	20.6	0.3	25.7	0.4
0.3	0.0	5.4	0.1	10.5	0.2	15.6	0.3	20.7	0.3	25.8	0.4
0.4	0.0	5.5	0.1	10.6	0.2	15.7	0.3	20.8	0.3	25.9	0.4
0.5	0.0	5.6	0.1	10.7	0.2	15.8	0.3	20.9	0.3	26.0	0.4
0.6	0.0	5.7	0.1	10.8	0.2	15.9	0.3	21.0	0.4	26.1	0.4
0.7	0.0	5.8	0.1	10.9	0.2	16.0	0.3	21.1	0.4	26.2	0.4
0.8	0.0	5.9	0.1	11.0	0.2	16.1	0.3	21.2	0.4	26.3	0.4
0.9	0.0	6.0	0.1	11.1	0.2	16.2	0.3	21.3	0.4	26.4	0.4
1.0	0.0	6.1	0.1	11.2	0.2	16.3	0.3	21.4	0.4	26.5	0.4
1.1	0.0	6.2	0.1	11.3	0.2	16.4	0.3	21.5	0.4	26.6	0.4
1.2	0.0	6.3	0.1	11.4	0.2	16.5	0.3	21.6	0.4	26.7	0.4
1.3	0.0	6.4	0.1	11.5	0.2	16.6	0.3	21.7	0.4	26.8	0.4
1.4	0.0	6.5	0.1	11.6	0.2	16.7	0.3	21.8	0.4	26.9	0.4
1.5	0.0	6.6	0.1	11.7	0.2	16.8	0.3	21.9	0.4	27.0	0.5
1.6	0.0	6.7	0.1	11.8	0.2	16.9	0.3	22.0	0.4	27.1	0.5
1.7	0.0	6.8	0.1	11.9	0.2	17.0	0.3	22.1	0.4	27.2	0.5
1.8	0.0	6.9	0.1	12.0	0.2	17.1	0.3	22.2	0.4	27.3	0.5
1.9	0.0	7.0	0.1	12.1	0.2	17.2	0.3	22.3	0.4	27.4	0.5
2.0	0.0	7.1	0.1	12.2	0.2	17.3	0.3	22.4	0.4	27.5	0.5
2.1	0.0	7.2	0.1	12.3	0.2	17.4	0.3	22.5	0.4	27.6	0.5
2.2	0.0	7.3	0.1	12.4	0.2	17.5	0.3	22.6	0.4	27.7	0.5
2.3	0.0	7.4	0.1	12.5	0.2	17.6	0.3	22.7	0.4	27.8	0.5
2.4	0.0	7.5	0.1	12.6	0.2	17.7	0.3	22.8	0.4	27.9	0.5
2.5	0.0	7.6	0.1	12.7	0.2	17.8	0.3	22.9	0.4	28.0	0.5
2.6	0.0	7.7	0.1	12.8	0.2	17.9	0.3	23.0	0.4	28.1	0.5
2.7	0.0	7.8	0.1	12.9	0.2	18.0	0.3	23.1	0.4	28.2	0.5
2.8	0.0	7.9	0.1	13.0	0.2	18.1	0.3	23.2	0.4	28.3	0.5
2.9	0.0	8.0	0.1	13.1	0.2	18.2	0.3	23.3	0.4	28.4	0.5
3.0	0.1	8.1	0.1	13.2	0.2	18.3	0.3	23.4	0.4	28.5	0.5
3.1	0.1	8.2	0.1	13.3	0.2	18.4	0.3	23.5	0.4	28.6	0.5
3.2	0.1	8.3	0.1	13.4	0.2	18.5	0.3	23.6	0.4	28.7	0.5
3.3	0.1	8.4	0.1	13.5	0.2	18.6	0.3	23.7	0.4	28.8	0.5
3.4	0.1	8.5	0.1	13.6	0.2	18.7	0.3	23.8	0.4	28.9	0.5
3.5	0.1	8.6	0.1	13.7	0.2	18.8	0.3	23.9	0.4	29.0	0.5
3.6	0.1	8.7	0.1	13.8	0.2	18.9	0.3	24.0	0.4	29.1	0.5
3.7	0.1	8.8	0.1	13.9	0.2	19.0	0.3	24.1	0.4	29.2	0.5
3.8	0.1	8.9	0.1	14.0	0.2	19.1	0.3	24.2	0.4	29.3	0.5
3.9	0.1	9.0	0.2	14.1	0.2	19.2	0.3	24.3	0.4	29.4	0.5
4.0	0.1	9.1	0.2	14.2	0.2	19.3	0.3	24.4	0.4	29.5	0.5
4.1	0.1	9.2	0.2	14.3	0.2	19.4	0.3	24.5	0.4	29.6	0.5
4.2	0.1	9.3	0.2	14.4	0.2	19.5	0.3	24.6	0.4	29.7	0.5
4.3	0.1	9.4	0.2	14.5	0.2	19.6	0.3	24.7	0.4	29.8	0.5
4.4	0.1	9.5	0.2	14.6	0.2	19.7	0.3	24.8	0.4	29.9	0.5
4.5	0.1	9.6	0.2	14.7	0.2	19.8	0.3	24.9	0.4	30.0	0.5
4.6	0.1	9.7	0.2	14.8	0.2	19.9	0.3	25.0	0.4	30.1	0.5
4.7	0.1	9.8	0.2	14.9	0.2	20.0	0.3	25.1	0.4	30.2	0.5
4.8	0.1	9.9	0.2	15.0	0.3	20.1	0.3	25.2	0.4	30.3	0.5
4.9	0.1	10.0	0.2	15.1	0.3	20.2	0.3	25.3	0.4	30.4	0.5
5.0	0.1	10.1	0.2	15.2	0.3	20.3	0.3	25.4	0.4	30.5	0.5

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 02

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	000 30.0	000 30.1	000 28.6
01	000 30.3	000 30.3	000 28.9
02	000 30.5	000 30.6	000 29.1
03	000 30.8	000 30.8	000 29.3
04	000 31.0	000 31.1	000 29.6
05	000 31.3	000 31.3	000 29.8
06	000 31.5	000 31.6	000 30.1
07	000 31.8	000 31.8	000 30.3
08	000 32.0	000 32.1	000 30.5
09	000 32.3	000 32.3	000 30.8
10	000 32.5	000 32.6	000 31.0
11	000 32.8	000 32.8	000 31.3
12	000 33.0	000 33.1	000 31.5
13	000 33.3	000 33.3	000 31.7
14	000 33.5	000 33.6	000 32.0
15	000 33.8	000 33.8	000 32.2
16	000 34.0	000 34.1	000 32.5
17	000 34.3	000 34.3	000 32.7
18	000 34.5	000 34.6	000 32.9
19	000 34.8	000 34.8	000 33.2
20	000 35.0	000 35.1	000 33.4
21	000 35.3	000 35.3	000 33.6
22	000 35.5	000 35.6	000 33.9
23	000 35.8	000 35.8	000 34.1
24	000 36.0	000 36.1	000 34.4
25	000 36.3	000 36.3	000 34.6
26	000 36.5	000 36.6	000 34.8
27	000 36.8	000 36.9	000 35.1
28	000 37.0	000 37.1	000 35.3
29	000 37.3	000 37.4	000 35.6
30	000 37.5	000 37.6	000 35.8
31	000 37.8	000 37.9	000 36.0
32	000 38.0	000 38.1	000 36.3
33	000 38.3	000 38.4	000 36.5
34	000 38.5	000 38.6	000 36.7
35	000 38.8	000 38.9	000 37.0
36	000 39.0	000 39.1	000 37.2
37	000 39.3	000 39.4	000 37.5
38	000 39.5	000 39.6	000 37.7
39	000 39.8	000 39.9	000 37.9
40	000 40.0	000 40.1	000 38.2
41	000 40.3	000 40.4	000 38.4
42	000 40.5	000 40.6	000 38.7
43	000 40.8	000 40.9	000 38.9
44	000 41.0	000 41.1	000 39.1
45	000 41.3	000 41.4	000 39.4
46	000 41.5	000 41.6	000 39.6
47	000 41.8	000 41.9	000 39.8
48	000 42.0	000 42.1	000 40.1
49	000 42.3	000 42.4	000 40.3
50	000 42.5	000 42.6	000 40.6
51	000 42.8	000 42.9	000 40.8
52	000 43.0	000 43.1	000 41.0
53	000 43.3	000 43.4	000 41.3
54	000 43.5	000 43.6	000 41.5
55	000 43.8	000 43.9	000 41.8
56	000 44.0	000 44.1	000 42.0
57	000 44.3	000 44.4	000 42.2
58	000 44.5	000 44.6	000 42.5
59	000 44.8	000 44.9	000 42.7

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	0.2	10.2	0.3	15.3	0.5	20.4	0.7	25.5	0.9
0.1	0.0	5.2	0.2	10.3	0.3	15.4	0.5	20.5	0.7	25.6	0.9
0.2	0.0	5.3	0.2	10.4	0.3	15.5	0.5	20.6	0.7	25.7	0.9
0.3	0.0	5.4	0.2	10.5	0.4	15.6	0.5	20.7	0.7	25.8	0.9
0.4	0.0	5.5	0.2	10.6	0.4	15.7	0.5	20.8	0.7	25.9	0.9
0.5	0.0	5.6	0.2	10.7	0.4	15.8	0.5	20.9	0.7	26.0	0.9
0.6	0.0	5.7	0.2	10.8	0.4	15.9	0.5	21.0	0.7	26.1	0.9
0.7	0.0	5.8	0.2	10.9	0.4	16.0	0.5	21.1	0.7	26.2	0.9
0.8	0.0	5.9	0.2	11.0	0.4	16.1	0.5	21.2	0.7	26.3	0.9
0.9	0.0	6.0	0.2	11.1	0.4	16.2	0.5	21.3	0.7	26.4	0.9
1.0	0.0	6.1	0.2	11.2	0.4	16.3	0.5	21.4	0.7	26.5	0.9
1.1	0.0	6.2	0.2	11.3	0.4	16.4	0.5	21.5	0.7	26.6	0.9
1.2	0.0	6.3	0.2	11.4	0.4	16.5	0.6	21.6	0.7	26.7	0.9
1.3	0.0	6.4	0.2	11.5	0.4	16.6	0.6	21.7	0.7	26.8	0.9
1.4	0.0	6.5	0.2	11.6	0.4	16.7	0.6	21.8	0.7	26.9	0.9
1.5	0.1	6.6	0.2	11.7	0.4	16.8	0.6	21.9	0.7	27.0	0.9
1.6	0.1	6.7	0.2	11.8	0.4	16.9	0.6	22.0	0.7	27.1	0.9
1.7	0.1	6.8	0.2	11.9	0.4	17.0	0.6	22.1	0.7	27.2	0.9
1.8	0.1	6.9	0.2	12.0	0.4	17.1	0.6	22.2	0.7	27.3	0.9
1.9	0.1	7.0	0.2	12.1	0.4	17.2	0.6	22.3	0.7	27.4	0.9
2.0	0.1	7.1	0.2	12.2	0.4	17.3	0.6	22.4	0.7	27.5	0.9
2.1	0.1	7.2	0.2	12.3	0.4	17.4	0.6	22.5	0.8	27.6	0.9
2.2	0.1	7.3	0.2	12.4	0.4	17.5	0.6	22.6	0.8	27.7	0.9
2.3	0.1	7.4	0.2	12.5	0.4	17.6	0.6	22.7	0.8	27.8	0.9
2.4	0.1	7.5	0.3	12.6	0.4	17.7	0.6	22.8	0.8	27.9	0.9
2.5	0.1	7.6	0.3	12.7	0.4	17.8	0.6	22.9	0.8	28.0	0.9
2.6	0.1	7.7	0.3	12.8	0.4	17.9	0.6	23.0	0.8	28.1	0.9
2.7	0.1	7.8	0.3	12.9	0.4	18.0	0.6	23.1	0.8	28.2	0.9
2.8	0.1	7.9	0.3	13.0	0.4	18.1	0.6	23.2	0.8	28.3	0.9
2.9	0.1	8.0	0.3	13.1	0.4	18.2	0.6	23.3	0.8	28.4	0.9
3.0	0.1	8.1	0.3	13.2	0.4	18.3	0.6	23.4	0.8	28.5	1.0
3.1	0.1	8.2	0.3	13.3	0.4	18.4	0.6	23.5	0.8	28.6	1.0
3.2	0.1	8.3	0.3	13.4	0.4	18.5	0.6	23.6	0.8	28.7	1.0
3.3	0.1	8.4	0.3	13.5	0.5	18.6	0.6	23.7	0.8	28.8	1.0
3.4	0.1	8.5	0.3	13.6	0.5	18.7	0.6	23.8	0.8	28.9	1.0
3.5	0.1	8.6	0.3	13.7	0.5	18.8	0.6	23.9	0.8	29.0	1.0
3.6	0.1	8.7	0.3	13.8	0.5	18.9	0.6	24.0	0.8	29.1	1.0
3.7	0.1	8.8	0.3	13.9	0.5	19.0	0.6	24.1	0.8	29.2	1.0
3.8	0.1	8.9	0.3	14.0	0.5	19.1	0.6	24.2	0.8	29.3	1.0
3.9	0.1	9.0	0.3	14.1	0.5	19.2	0.6	24.3	0.8	29.4	1.0
4.0	0.1	9.1	0.3	14.2	0.5	19.3	0.6	24.4	0.8	29.5	1.0
4.1	0.1	9.2	0.3	14.3	0.5	19.4	0.6	24.5	0.8	29.6	1.0
4.2	0.1	9.3	0.3	14.4	0.5	19.5	0.7	24.6	0.8	29.7	1.0
4.3	0.1	9.4	0.3	14.5	0.5	19.6	0.7	24.7	0.8	29.8	1.0
4.4	0.1	9.5	0.3	14.6	0.5	19.7	0.7	24.8	0.8	29.9	1.0
4.5	0.2	9.6	0.3	14.7	0.5	19.8	0.7	24.9	0.8	30.0	1.0
4.6	0.2	9.7	0.3	14.8	0.5	19.9	0.7	25.0	0.8	30.1	1.0
4.7	0.2	9.8	0.3	14.9	0.5	20.0	0.7	25.1	0.8	30.2	1.0
4.8	0.2	9.9	0.3	15.0	0.5	20.1	0.7	25.2	0.8	30.3	1.0
4.9	0.2	10.0	0.3	15.1	0.5	20.2	0.7	25.3	0.8	30.4	1.0
5.0	0.2	10.1	0.3	15.2	0.5	20.3	0.7	25.4	0.8	30.5	1.0

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 03

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	000 45.0	000 45.1	000 43.0
01	000 45.3	000 45.4	000 43.2
02	000 45.5	000 45.6	000 43.4
03	000 45.8	000 45.9	000 43.7
04	000 46.0	000 46.1	000 43.9
05	000 46.3	000 46.4	000 44.1
06	000 46.5	000 46.6	000 44.4
07	000 46.8	000 46.9	000 44.6
08	000 47.0	000 47.1	000 44.9
09	000 47.3	000 47.4	000 45.1
10	000 47.5	000 47.6	000 45.3
11	000 47.8	000 47.9	000 45.6
12	000 48.0	000 48.1	000 45.8
13	000 48.3	000 48.4	000 46.1
14	000 48.5	000 48.6	000 46.3
15	000 48.8	000 48.9	000 46.5
16	000 49.0	000 49.1	000 46.8
17	000 49.3	000 49.4	000 47.0
18	000 49.5	000 49.6	000 47.2
19	000 49.8	000 49.9	000 47.5
20	000 50.0	000 50.1	000 47.7
21	000 50.3	000 50.4	000 48.0
22	000 50.5	000 50.6	000 48.2
23	000 50.8	000 50.9	000 48.4
24	000 51.0	000 51.1	000 48.7
25	000 51.3	000 51.4	000 48.9
26	000 51.5	000 51.6	000 49.2
27	000 51.8	000 51.9	000 49.4
28	000 52.0	000 52.1	000 49.6
29	000 52.3	000 52.4	000 49.9
30	000 52.5	000 52.6	000 50.1
31	000 52.8	000 52.9	000 50.3
32	000 53.0	000 53.1	000 50.6
33	000 53.3	000 53.4	000 50.8
34	000 53.5	000 53.6	000 51.1
35	000 53.8	000 53.9	000 51.3
36	000 54.0	000 54.1	000 51.5
37	000 54.3	000 54.4	000 51.8
38	000 54.5	000 54.6	000 52.0
39	000 54.8	000 54.9	000 52.3
40	000 55.0	000 55.2	000 52.5
41	000 55.3	000 55.4	000 52.7
42	000 55.5	000 55.7	000 53.0
43	000 55.8	000 55.9	000 53.2
44	000 56.0	000 56.2	000 53.4
45	000 56.3	000 56.4	000 53.7
46	000 56.5	000 56.7	000 53.9
47	000 56.8	000 56.9	000 54.2
48	000 57.0	000 57.2	000 54.4
49	000 57.3	000 57.4	000 54.6
50	000 57.5	000 57.7	000 54.9
51	000 57.8	000 57.9	000 55.1
52	000 58.0	000 58.2	000 55.4
53	000 58.3	000 58.4	000 55.6
54	000 58.5	000 58.7	000 55.8
55	000 58.8	000 58.9	000 56.1
56	000 59.0	000 59.2	000 56.3
57	000 59.3	000 59.4	000 56.6
58	000 59.5	000 59.7	000 56.8
59	000 59.8	000 59.9	000 57.0

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	0.3	10.2	0.5	15.3	0.8	20.4	1.0	25.5	1.3
0.1	0.0	5.2	0.3	10.3	0.5	15.4	0.8	20.5	1.0	25.6	1.3
0.2	0.0	5.3	0.3	10.4	0.5	15.5	0.8	20.6	1.0	25.7	1.3
0.3	0.0	5.4	0.3	10.5	0.5	15.6	0.8	20.7	1.0	25.8	1.3
0.4	0.0	5.5	0.3	10.6	0.5	15.7	0.8	20.8	1.0	25.9	1.3
0.5	0.0	5.6	0.3	10.7	0.5	15.8	0.8	20.9	1.0	26.0	1.3
0.6	0.0	5.7	0.3	10.8	0.5	15.9	0.8	21.0	1.1	26.1	1.3
0.7	0.0	5.8	0.3	10.9	0.5	16.0	0.8	21.1	1.1	26.2	1.3
0.8	0.0	5.9	0.3	11.0	0.6	16.1	0.8	21.2	1.1	26.3	1.3
0.9	0.0	6.0	0.3	11.1	0.6	16.2	0.8	21.3	1.1	26.4	1.3
1.0	0.1	6.1	0.3	11.2	0.6	16.3	0.8	21.4	1.1	26.5	1.3
1.1	0.1	6.2	0.3	11.3	0.6	16.4	0.8	21.5	1.1	26.6	1.3
1.2	0.1	6.3	0.3	11.4	0.6	16.5	0.8	21.6	1.1	26.7	1.3
1.3	0.1	6.4	0.3	11.5	0.6	16.6	0.8	21.7	1.1	26.8	1.3
1.4	0.1	6.5	0.3	11.6	0.6	16.7	0.8	21.8	1.1	26.9	1.3
1.5	0.1	6.6	0.3	11.7	0.6	16.8	0.8	21.9	1.1	27.0	1.4
1.6	0.1	6.7	0.3	11.8	0.6	16.9	0.8	22.0	1.1	27.1	1.4
1.7	0.1	6.8	0.3	11.9	0.6	17.0	0.9	22.1	1.1	27.2	1.4
1.8	0.1	6.9	0.3	12.0	0.6	17.1	0.9	22.2	1.1	27.3	1.4
1.9	0.1	7.0	0.4	12.1	0.6	17.2	0.9	22.3	1.1	27.4	1.4
2.0	0.1	7.1	0.4	12.2	0.6	17.3	0.9	22.4	1.1	27.5	1.4
2.1	0.1	7.2	0.4	12.3	0.6	17.4	0.9	22.5	1.1	27.6	1.4
2.2	0.1	7.3	0.4	12.4	0.6	17.5	0.9	22.6	1.1	27.7	1.4
2.3	0.1	7.4	0.4	12.5	0.6	17.6	0.9	22.7	1.1	27.8	1.4
2.4	0.1	7.5	0.4	12.6	0.6	17.7	0.9	22.8	1.1	27.9	1.4
2.5	0.1	7.6	0.4	12.7	0.6	17.8	0.9	22.9	1.1	28.0	1.4
2.6	0.1	7.7	0.4	12.8	0.6	17.9	0.9	23.0	1.2	28.1	1.4
2.7	0.1	7.8	0.4	12.9	0.6	18.0	0.9	23.1	1.2	28.2	1.4
2.8	0.1	7.9	0.4	13.0	0.7	18.1	0.9	23.2	1.2	28.3	1.4
2.9	0.1	8.0	0.4	13.1	0.7	18.2	0.9	23.3	1.2	28.4	1.4
3.0	0.2	8.1	0.4	13.2	0.7	18.3	0.9	23.4	1.2	28.5	1.4
3.1	0.2	8.2	0.4	13.3	0.7	18.4	0.9	23.5	1.2	28.6	1.4
3.2	0.2	8.3	0.4	13.4	0.7	18.5	0.9	23.6	1.2	28.7	1.4
3.3	0.2	8.4	0.4	13.5	0.7	18.6	0.9	23.7	1.2	28.8	1.4
3.4	0.2	8.5	0.4	13.6	0.7	18.7	0.9	23.8	1.2	28.9	1.4
3.5	0.2	8.6	0.4	13.7	0.7	18.8	0.9	23.9	1.2	29.0	1.5
3.6	0.2	8.7	0.4	13.8	0.7	18.9	0.9	24.0	1.2	29.1	1.5
3.7	0.2	8.8	0.4	13.9	0.7	19.0	1.0	24.1	1.2	29.2	1.5
3.8	0.2	8.9	0.4	14.0	0.7	19.1	1.0	24.2	1.2	29.3	1.5
3.9	0.2	9.0	0.5	14.1	0.7	19.2	1.0	24.3	1.2	29.4	1.5
4.0	0.2	9.1	0.5	14.2	0.7	19.3	1.0	24.4	1.2	29.5	1.5
4.1	0.2	9.2	0.5	14.3	0.7	19.4	1.0	24.5	1.2	29.6	1.5
4.2	0.2	9.3	0.5	14.4	0.7	19.5	1.0	24.6	1.2	29.7	1.5
4.3	0.2	9.4	0.5	14.5	0.7	19.6	1.0	24.7	1.2	29.8	1.5
4.4	0.2	9.5	0.5	14.6	0.7	19.7	1.0	24.8	1.2	29.9	1.5
4.5	0.2	9.6	0.5	14.7	0.7	19.8	1.0	24.9	1.2	30.0	1.5
4.6	0.2	9.7	0.5	14.8	0.7	19.9	1.0	25.0	1.3	30.1	1.5
4.7	0.2	9.8	0.5	14.9	0.7	20.0	1.0	25.1	1.3	30.2	1.5
4.8	0.2	9.9	0.5	15.0	0.8	20.1	1.0	25.2	1.3	30.3	1.5
4.9	0.2	10.0	0.5	15.1	0.8	20.2	1.0	25.3	1.3	30.4	1.5
5.0	0.3	10.1	0.5	15.2	0.8	20.3	1.0	25.4	1.3	30.5	1.5

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 04

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	001 00.0	001 00.2	000 57.3
01	001 00.3	001 00.4	000 57.5
02	001 00.5	001 00.7	000 57.7
03	001 00.8	001 00.9	000 58.0
04	001 01.0	001 01.2	000 58.2
05	001 01.3	001 01.4	000 58.5
06	001 01.5	001 01.7	000 58.7
07	001 01.8	001 01.9	000 58.9
08	001 02.0	001 02.2	000 59.2
09	001 02.3	001 02.4	000 59.4
10	001 02.5	001 02.7	000 59.7
11	001 02.8	001 02.9	000 59.9
12	001 03.0	001 03.2	001 00.1
13	001 03.3	001 03.4	001 00.4
14	001 03.5	001 03.7	001 00.6
15	001 03.8	001 03.9	001 00.8
16	001 04.0	001 04.2	001 01.1
17	001 04.3	001 04.4	001 01.3
18	001 04.5	001 04.7	001 01.6
19	001 04.8	001 04.9	001 01.8
20	001 05.0	001 05.2	001 02.0
21	001 05.3	001 05.4	001 02.3
22	001 05.5	001 05.7	001 02.5
23	001 05.8	001 05.9	001 02.8
24	001 06.0	001 06.2	001 03.0
25	001 06.3	001 06.4	001 03.2
26	001 06.5	001 06.7	001 03.5
27	001 06.8	001 06.9	001 03.7
28	001 07.0	001 07.2	001 03.9
29	001 07.3	001 07.4	001 04.2
30	001 07.5	001 07.7	001 04.4
31	001 07.8	001 07.9	001 04.7
32	001 08.0	001 08.2	001 04.9
33	001 08.3	001 08.4	001 05.1
34	001 08.5	001 08.7	001 05.4
35	001 08.8	001 08.9	001 05.6
36	001 09.0	001 09.2	001 05.9
37	001 09.3	001 09.4	001 06.1
38	001 09.5	001 09.7	001 06.3
39	001 09.8	001 09.9	001 06.6
40	001 10.0	001 10.2	001 06.8
41	001 10.3	001 10.4	001 07.0
42	001 10.5	001 10.7	001 07.3
43	001 10.8	001 10.9	001 07.5
44	001 11.0	001 11.2	001 07.8
45	001 11.3	001 11.4	001 08.0
46	001 11.5	001 11.7	001 08.2
47	001 11.8	001 11.9	001 08.5
48	001 12.0	001 12.2	001 08.7
49	001 12.3	001 12.4	001 09.0
50	001 12.5	001 12.7	001 09.2
51	001 12.8	001 12.9	001 09.4
52	001 13.0	001 13.2	001 09.7
53	001 13.3	001 13.5	001 09.9
54	001 13.5	001 13.7	001 10.2
55	001 13.8	001 14.0	001 10.4
56	001 14.0	001 14.2	001 10.6
57	001 14.3	001 14.5	001 10.9
58	001 14.5	001 14.7	001 11.1
59	001 14.8	001 15.0	001 11.3

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	0.3	10.2	0.7	15.3	1.0	20.4	1.4	25.5	1.7
0.1	0.0	5.2	0.3	10.3	0.7	15.4	1.0	20.5	1.4	25.6	1.7
0.2	0.0	5.3	0.4	10.4	0.7	15.5	1.0	20.6	1.4	25.7	1.7
0.3	0.0	5.4	0.4	10.5	0.7	15.6	1.0	20.7	1.4	25.8	1.7
0.4	0.0	5.5	0.4	10.6	0.7	15.7	1.0	20.8	1.4	25.9	1.7
0.5	0.0	5.6	0.4	10.7	0.7	15.8	1.1	20.9	1.4	26.0	1.7
0.6	0.0	5.7	0.4	10.8	0.7	15.9	1.1	21.0	1.4	26.1	1.7
0.7	0.0	5.8	0.4	10.9	0.7	16.0	1.1	21.1	1.4	26.2	1.7
0.8	0.1	5.9	0.4	11.0	0.7	16.1	1.1	21.2	1.4	26.3	1.8
0.9	0.1	6.0	0.4	11.1	0.7	16.2	1.1	21.3	1.4	26.4	1.8
1.0	0.1	6.1	0.4	11.2	0.7	16.3	1.1	21.4	1.4	26.5	1.8
1.1	0.1	6.2	0.4	11.3	0.8	16.4	1.1	21.5	1.4	26.6	1.8
1.2	0.1	6.3	0.4	11.4	0.8	16.5	1.1	21.6	1.4	26.7	1.8
1.3	0.1	6.4	0.4	11.5	0.8	16.6	1.1	21.7	1.4	26.8	1.8
1.4	0.1	6.5	0.4	11.6	0.8	16.7	1.1	21.8	1.5	26.9	1.8
1.5	0.1	6.6	0.4	11.7	0.8	16.8	1.1	21.9	1.5	27.0	1.8
1.6	0.1	6.7	0.4	11.8	0.8	16.9	1.1	22.0	1.5	27.1	1.8
1.7	0.1	6.8	0.5	11.9	0.8	17.0	1.1	22.1	1.5	27.2	1.8
1.8	0.1	6.9	0.5	12.0	0.8	17.1	1.1	22.2	1.5	27.3	1.8
1.9	0.1	7.0	0.5	12.1	0.8	17.2	1.1	22.3	1.5	27.4	1.8
2.0	0.1	7.1	0.5	12.2	0.8	17.3	1.2	22.4	1.5	27.5	1.8
2.1	0.1	7.2	0.5	12.3	0.8	17.4	1.2	22.5	1.5	27.6	1.8
2.2	0.1	7.3	0.5	12.4	0.8	17.5	1.2	22.6	1.5	27.7	1.8
2.3	0.2	7.4	0.5	12.5	0.8	17.6	1.2	22.7	1.5	27.8	1.9
2.4	0.2	7.5	0.5	12.6	0.8	17.7	1.2	22.8	1.5	27.9	1.9
2.5	0.2	7.6	0.5	12.7	0.8	17.8	1.2	22.9	1.5	28.0	1.9
2.6	0.2	7.7	0.5	12.8	0.9	17.9	1.2	23.0	1.5	28.1	1.9
2.7	0.2	7.8	0.5	12.9	0.9	18.0	1.2	23.1	1.5	28.2	1.9
2.8	0.2	7.9	0.5	13.0	0.9	18.1	1.2	23.2	1.5	28.3	1.9
2.9	0.2	8.0	0.5	13.1	0.9	18.2	1.2	23.3	1.6	28.4	1.9
3.0	0.2	8.1	0.5	13.2	0.9	18.3	1.2	23.4	1.6	28.5	1.9
3.1	0.2	8.2	0.5	13.3	0.9	18.4	1.2	23.5	1.6	28.6	1.9
3.2	0.2	8.3	0.6	13.4	0.9	18.5	1.2	23.6	1.6	28.7	1.9
3.3	0.2	8.4	0.6	13.5	0.9	18.6	1.2	23.7	1.6	28.8	1.9
3.4	0.2	8.5	0.6	13.6	0.9	18.7	1.2	23.8	1.6	28.9	1.9
3.5	0.2	8.6	0.6	13.7	0.9	18.8	1.3	23.9	1.6	29.0	1.9
3.6	0.2	8.7	0.6	13.8	0.9	18.9	1.3	24.0	1.6	29.1	1.9
3.7	0.2	8.8	0.6	13.9	0.9	19.0	1.3	24.1	1.6	29.2	1.9
3.8	0.3	8.9	0.6	14.0	0.9	19.1	1.3	24.2	1.6	29.3	2.0
3.9	0.3	9.0	0.6	14.1	0.9	19.2	1.3	24.3	1.6	29.4	2.0
4.0	0.3	9.1	0.6	14.2	0.9	19.3	1.3	24.4	1.6	29.5	2.0
4.1	0.3	9.2	0.6	14.3	1.0	19.4	1.3	24.5	1.6	29.6	2.0
4.2	0.3	9.3	0.6	14.4	1.0	19.5	1.3	24.6	1.6	29.7	2.0
4.3	0.3	9.4	0.6	14.5	1.0	19.6	1.3	24.7	1.6	29.8	2.0
4.4	0.3	9.5	0.6	14.6	1.0	19.7	1.3	24.8	1.7	29.9	2.0
4.5	0.3	9.6	0.6	14.7	1.0	19.8	1.3	24.9	1.7	30.0	2.0
4.6	0.3	9.7	0.6	14.8	1.0	19.9	1.3	25.0	1.7	30.1	2.0
4.7	0.3	9.8	0.7	14.9	1.0	20.0	1.3	25.1	1.7	30.2	2.0
4.8	0.3	9.9	0.7	15.0	1.0	20.1	1.3	25.2	1.7	30.3	2.0
4.9	0.3	10.0	0.7	15.1	1.0	20.2	1.3	25.3	1.7	30.4	2.0
5.0	0.3	10.1	0.7	15.2	1.0	20.3	1.4	25.4	1.7	30.5	2.0

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 05

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	001 15.0	001 15.2	001 11.6
01	001 15.3	001 15.5	001 11.8
02	001 15.5	001 15.7	001 12.1
03	001 15.8	001 16.0	001 12.3
04	001 16.0	001 16.2	001 12.5
05	001 16.3	001 16.5	001 12.8
06	001 16.5	001 16.7	001 13.0
07	001 16.8	001 17.0	001 13.3
08	001 17.0	001 17.2	001 13.5
09	001 17.3	001 17.5	001 13.7
10	001 17.5	001 17.7	001 14.0
11	001 17.8	001 18.0	001 14.2
12	001 18.0	001 18.2	001 14.4
13	001 18.3	001 18.5	001 14.7
14	001 18.5	001 18.7	001 14.9
15	001 18.8	001 19.0	001 15.2
16	001 19.0	001 19.2	001 15.4
17	001 19.3	001 19.5	001 15.6
18	001 19.5	001 19.7	001 15.9
19	001 19.8	001 20.0	001 16.1
20	001 20.0	001 20.2	001 16.4
21	001 20.3	001 20.5	001 16.6
22	001 20.5	001 20.7	001 16.8
23	001 20.8	001 21.0	001 17.1
24	001 21.0	001 21.2	001 17.3
25	001 21.3	001 21.5	001 17.5
26	001 21.5	001 21.7	001 17.8
27	001 21.8	001 22.0	001 18.0
28	001 22.0	001 22.2	001 18.3
29	001 22.3	001 22.5	001 18.5
30	001 22.5	001 22.7	001 18.7
31	001 22.8	001 23.0	001 19.0
32	001 23.0	001 23.2	001 19.2
33	001 23.3	001 23.5	001 19.5
34	001 23.5	001 23.7	001 19.7
35	001 23.8	001 24.0	001 19.9
36	001 24.0	001 24.2	001 20.2
37	001 24.3	001 24.5	001 20.4
38	001 24.5	001 24.7	001 20.7
39	001 24.8	001 25.0	001 20.9
40	001 25.0	001 25.2	001 21.1
41	001 25.3	001 25.5	001 21.4
42	001 25.5	001 25.7	001 21.6
43	001 25.8	001 26.0	001 21.8
44	001 26.0	001 26.2	001 22.1
45	001 26.3	001 26.5	001 22.3
46	001 26.5	001 26.7	001 22.6
47	001 26.8	001 27.0	001 22.8
48	001 27.0	001 27.2	001 23.0
49	001 27.3	001 27.5	001 23.3
50	001 27.5	001 27.7	001 23.5
51	001 27.8	001 28.0	001 23.8
52	001 28.0	001 28.2	001 24.0
53	001 28.3	001 28.5	001 24.2
54	001 28.5	001 28.7	001 24.5
55	001 28.8	001 29.0	001 24.7
56	001 29.0	001 29.2	001 24.9
57	001 29.3	001 29.5	001 25.2
58	001 29.5	001 29.7	001 25.4
59	001 29.8	001 30.0	001 25.7

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	0.4	10.2	0.9	15.3	1.3	20.4	1.7	25.5	2.1
0.1	0.0	5.2	0.4	10.3	0.9	15.4	1.3	20.5	1.7	25.6	2.1
0.2	0.0	5.3	0.4	10.4	0.9	15.5	1.3	20.6	1.7	25.7	2.1
0.3	0.0	5.4	0.5	10.5	0.9	15.6	1.3	20.7	1.7	25.8	2.2
0.4	0.0	5.5	0.5	10.6	0.9	15.7	1.3	20.8	1.7	25.9	2.2
0.5	0.0	5.6	0.5	10.7	0.9	15.8	1.3	20.9	1.7	26.0	2.2
0.6	0.1	5.7	0.5	10.8	0.9	15.9	1.3	21.0	1.8	26.1	2.2
0.7	0.1	5.8	0.5	10.9	0.9	16.0	1.3	21.1	1.8	26.2	2.2
0.8	0.1	5.9	0.5	11.0	0.9	16.1	1.3	21.2	1.8	26.3	2.2
0.9	0.1	6.0	0.5	11.1	0.9	16.2	1.4	21.3	1.8	26.4	2.2
1.0	0.1	6.1	0.5	11.2	0.9	16.3	1.4	21.4	1.8	26.5	2.2
1.1	0.1	6.2	0.5	11.3	0.9	16.4	1.4	21.5	1.8	26.6	2.2
1.2	0.1	6.3	0.5	11.4	1.0	16.5	1.4	21.6	1.8	26.7	2.2
1.3	0.1	6.4	0.5	11.5	1.0	16.6	1.4	21.7	1.8	26.8	2.2
1.4	0.1	6.5	0.5	11.6	1.0	16.7	1.4	21.8	1.8	26.9	2.2
1.5	0.1	6.6	0.6	11.7	1.0	16.8	1.4	21.9	1.8	27.0	2.3
1.6	0.1	6.7	0.6	11.8	1.0	16.9	1.4	22.0	1.8	27.1	2.3
1.7	0.1	6.8	0.6	11.9	1.0	17.0	1.4	22.1	1.8	27.2	2.3
1.8	0.2	6.9	0.6	12.0	1.0	17.1	1.4	22.2	1.9	27.3	2.3
1.9	0.2	7.0	0.6	12.1	1.0	17.2	1.4	22.3	1.9	27.4	2.3
2.0	0.2	7.1	0.6	12.2	1.0	17.3	1.4	22.4	1.9	27.5	2.3
2.1	0.2	7.2	0.6	12.3	1.0	17.4	1.5	22.5	1.9	27.6	2.3
2.2	0.2	7.3	0.6	12.4	1.0	17.5	1.5	22.6	1.9	27.7	2.3
2.3	0.2	7.4	0.6	12.5	1.0	17.6	1.5	22.7	1.9	27.8	2.3
2.4	0.2	7.5	0.6	12.6	1.1	17.7	1.5	22.8	1.9	27.9	2.3
2.5	0.2	7.6	0.6	12.7	1.1	17.8	1.5	22.9	1.9	28.0	2.3
2.6	0.2	7.7	0.6	12.8	1.1	17.9	1.5	23.0	1.9	28.1	2.3
2.7	0.2	7.8	0.7	12.9	1.1	18.0	1.5	23.1	1.9	28.2	2.4
2.8	0.2	7.9	0.7	13.0	1.1	18.1	1.5	23.2	1.9	28.3	2.4
2.9	0.2	8.0	0.7	13.1	1.1	18.2	1.5	23.3	1.9	28.4	2.4
3.0	0.3	8.1	0.7	13.2	1.1	18.3	1.5	23.4	2.0	28.5	2.4
3.1	0.3	8.2	0.7	13.3	1.1	18.4	1.5	23.5	2.0	28.6	2.4
3.2	0.3	8.3	0.7	13.4	1.1	18.5	1.5	23.6	2.0	28.7	2.4
3.3	0.3	8.4	0.7	13.5	1.1	18.6	1.6	23.7	2.0	28.8	2.4
3.4	0.3	8.5	0.7	13.6	1.1	18.7	1.6	23.8	2.0	28.9	2.4
3.5	0.3	8.6	0.7	13.7	1.1	18.8	1.6	23.9	2.0	29.0	2.4
3.6	0.3	8.7	0.7	13.8	1.2	18.9	1.6	24.0	2.0	29.1	2.4
3.7	0.3	8.8	0.7	13.9	1.2	19.0	1.6	24.1	2.0	29.2	2.4
3.8	0.3	8.9	0.7	14.0	1.2	19.1	1.6	24.2	2.0	29.3	2.4
3.9	0.3	9.0	0.8	14.1	1.2	19.2	1.6	24.3	2.0	29.4	2.5
4.0	0.3	9.1	0.8	14.2	1.2	19.3	1.6	24.4	2.0	29.5	2.5
4.1	0.3	9.2	0.8	14.3	1.2	19.4	1.6	24.5	2.0	29.6	2.5
4.2	0.4	9.3	0.8	14.4	1.2	19.5	1.6	24.6	2.1	29.7	2.5
4.3	0.4	9.4	0.8	14.5	1.2	19.6	1.6	24.7	2.1	29.8	2.5
4.4	0.4	9.5	0.8	14.6	1.2	19.7	1.6	24.8	2.1	29.9	2.5
4.5	0.4	9.6	0.8	14.7	1.2	19.8	1.7	24.9	2.1	30.0	2.5
4.6	0.4	9.7	0.8	14.8	1.2	19.9	1.7	25.0	2.1	30.1	2.5
4.7	0.4	9.8	0.8	14.9	1.2	20.0	1.7	25.1	2.1	30.2	2.5
4.8	0.4	9.9	0.8	15.0	1.3	20.1	1.7	25.2	2.1	30.3	2.5
4.9	0.4	10.0	0.8	15.1	1.3	20.2	1.7	25.3	2.1	30.4	2.5
5.0	0.4	10.1	0.8	15.2	1.3	20.3	1.7	25.4	2.1	30.5	2.5

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 06

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	001 30.0	001 30.2	001 25.9
01	001 30.3	001 30.5	001 26.1
02	001 30.5	001 30.7	001 26.4
03	001 30.8	001 31.0	001 26.6
04	001 31.0	001 31.2	001 26.9
05	001 31.3	001 31.5	001 27.1
06	001 31.5	001 31.8	001 27.3
07	001 31.8	001 32.0	001 27.6
08	001 32.0	001 32.3	001 27.8
09	001 32.3	001 32.5	001 28.0
10	001 32.5	001 32.8	001 28.3
11	001 32.8	001 33.0	001 28.5
12	001 33.0	001 33.3	001 28.8
13	001 33.3	001 33.5	001 29.0
14	001 33.5	001 33.8	001 29.2
15	001 33.8	001 34.0	001 29.5
16	001 34.0	001 34.3	001 29.7
17	001 34.3	001 34.5	001 30.0
18	001 34.5	001 34.8	001 30.2
19	001 34.8	001 35.0	001 30.4
20	001 35.0	001 35.3	001 30.7
21	001 35.3	001 35.5	001 30.9
22	001 35.5	001 35.8	001 31.1
23	001 35.8	001 36.0	001 31.4
24	001 36.0	001 36.3	001 31.6
25	001 36.3	001 36.5	001 31.9
26	001 36.5	001 36.8	001 32.1
27	001 36.8	001 37.0	001 32.3
28	001 37.0	001 37.3	001 32.6
29	001 37.3	001 37.5	001 32.8
30	001 37.5	001 37.8	001 33.1
31	001 37.8	001 38.0	001 33.3
32	001 38.0	001 38.3	001 33.5
33	001 38.3	001 38.5	001 33.8
34	001 38.5	001 38.8	001 34.0
35	001 38.8	001 39.0	001 34.3
36	001 39.0	001 39.3	001 34.5
37	001 39.3	001 39.5	001 34.7
38	001 39.5	001 39.8	001 35.0
39	001 39.8	001 40.0	001 35.2
40	001 40.0	001 40.3	001 35.4
41	001 40.3	001 40.5	001 35.7
42	001 40.5	001 40.8	001 35.9
43	001 40.8	001 41.0	001 36.2
44	001 41.0	001 41.3	001 36.4
45	001 41.3	001 41.5	001 36.6
46	001 41.5	001 41.8	001 36.9
47	001 41.8	001 42.0	001 37.1
48	001 42.0	001 42.3	001 37.4
49	001 42.3	001 42.5	001 37.6
50	001 42.5	001 42.8	001 37.8
51	001 42.8	001 43.0	001 38.1
52	001 43.0	001 43.3	001 38.3
53	001 43.3	001 43.5	001 38.5
54	001 43.5	001 43.8	001 38.8
55	001 43.8	001 44.0	001 39.0
56	001 44.0	001 44.3	001 39.3
57	001 44.3	001 44.5	001 39.5
58	001 44.5	001 44.8	001 39.7
59	001 44.8	001 45.0	001 40.0

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	0.5	10.2	1.0	15.3	1.5	20.4	2.0	25.5	2.6
0.1	0.0	5.2	0.5	10.3	1.0	15.4	1.5	20.5	2.1	25.6	2.6
0.2	0.0	5.3	0.5	10.4	1.0	15.5	1.6	20.6	2.1	25.7	2.6
0.3	0.0	5.4	0.5	10.5	1.1	15.6	1.6	20.7	2.1	25.8	2.6
0.4	0.0	5.5	0.6	10.6	1.1	15.7	1.6	20.8	2.1	25.9	2.6
0.5	0.1	5.6	0.6	10.7	1.1	15.8	1.6	20.9	2.1	26.0	2.6
0.6	0.1	5.7	0.6	10.8	1.1	15.9	1.6	21.0	2.1	26.1	2.6
0.7	0.1	5.8	0.6	10.9	1.1	16.0	1.6	21.1	2.1	26.2	2.6
0.8	0.1	5.9	0.6	11.0	1.1	16.1	1.6	21.2	2.1	26.3	2.6
0.9	0.1	6.0	0.6	11.1	1.1	16.2	1.6	21.3	2.1	26.4	2.6
1.0	0.1	6.1	0.6	11.2	1.1	16.3	1.6	21.4	2.1	26.5	2.7
1.1	0.1	6.2	0.6	11.3	1.1	16.4	1.6	21.5	2.2	26.6	2.7
1.2	0.1	6.3	0.6	11.4	1.1	16.5	1.7	21.6	2.2	26.7	2.7
1.3	0.1	6.4	0.6	11.5	1.2	16.6	1.7	21.7	2.2	26.8	2.7
1.4	0.1	6.5	0.7	11.6	1.2	16.7	1.7	21.8	2.2	26.9	2.7
1.5	0.2	6.6	0.7	11.7	1.2	16.8	1.7	21.9	2.2	27.0	2.7
1.6	0.2	6.7	0.7	11.8	1.2	16.9	1.7	22.0	2.2	27.1	2.7
1.7	0.2	6.8	0.7	11.9	1.2	17.0	1.7	22.1	2.2	27.2	2.7
1.8	0.2	6.9	0.7	12.0	1.2	17.1	1.7	22.2	2.2	27.3	2.7
1.9	0.2	7.0	0.7	12.1	1.2	17.2	1.7	22.3	2.2	27.4	2.7
2.0	0.2	7.1	0.7	12.2	1.2	17.3	1.7	22.4	2.2	27.5	2.8
2.1	0.2	7.2	0.7	12.3	1.2	17.4	1.7	22.5	2.3	27.6	2.8
2.2	0.2	7.3	0.7	12.4	1.2	17.5	1.8	22.6	2.3	27.7	2.8
2.3	0.2	7.4	0.7	12.5	1.3	17.6	1.8	22.7	2.3	27.8	2.8
2.4	0.2	7.5	0.8	12.6	1.3	17.7	1.8	22.8	2.3	27.9	2.8
2.5	0.3	7.6	0.8	12.7	1.3	17.8	1.8	22.9	2.3	28.0	2.8
2.6	0.3	7.7	0.8	12.8	1.3	17.9	1.8	23.0	2.3	28.1	2.8
2.7	0.3	7.8	0.8	12.9	1.3	18.0	1.8	23.1	2.3	28.2	2.8
2.8	0.3	7.9	0.8	13.0	1.3	18.1	1.8	23.2	2.3	28.3	2.8
2.9	0.3	8.0	0.8	13.1	1.3	18.2	1.8	23.3	2.3	28.4	2.8
3.0	0.3	8.1	0.8	13.2	1.3	18.3	1.8	23.4	2.3	28.5	2.9
3.1	0.3	8.2	0.8	13.3	1.3	18.4	1.8	23.5	2.4	28.6	2.9
3.2	0.3	8.3	0.8	13.4	1.3	18.5	1.9	23.6	2.4	28.7	2.9
3.3	0.3	8.4	0.8	13.5	1.4	18.6	1.9	23.7	2.4	28.8	2.9
3.4	0.3	8.5	0.9	13.6	1.4	18.7	1.9	23.8	2.4	28.9	2.9
3.5	0.4	8.6	0.9	13.7	1.4	18.8	1.9	23.9	2.4	29.0	2.9
3.6	0.4	8.7	0.9	13.8	1.4	18.9	1.9	24.0	2.4	29.1	2.9
3.7	0.4	8.8	0.9	13.9	1.4	19.0	1.9	24.1	2.4	29.2	2.9
3.8	0.4	8.9	0.9	14.0	1.4	19.1	1.9	24.2	2.4	29.3	2.9
3.9	0.4	9.0	0.9	14.1	1.4	19.2	1.9	24.3	2.4	29.4	2.9
4.0	0.4	9.1	0.9	14.2	1.4	19.3	1.9	24.4	2.4	29.5	3.0
4.1	0.4	9.2	0.9	14.3	1.4	19.4	1.9	24.5	2.5	29.6	3.0
4.2	0.4	9.3	0.9	14.4	1.4	19.5	2.0	24.6	2.5	29.7	3.0
4.3	0.4	9.4	0.9	14.5	1.5	19.6	2.0	24.7	2.5	29.8	3.0
4.4	0.4	9.5	1.0	14.6	1.5	19.7	2.0	24.8	2.5	29.9	3.0
4.5	0.5	9.6	1.0	14.7	1.5	19.8	2.0	24.9	2.5	30.0	3.0
4.6	0.5	9.7	1.0	14.8	1.5	19.9	2.0	25.0	2.5	30.1	3.0
4.7	0.5	9.8	1.0	14.9	1.5	20.0	2.0	25.1	2.5	30.2	3.0
4.8	0.5	9.9	1.0	15.0	1.5	20.1	2.0	25.2	2.5	30.3	3.0
4.9	0.5	10.0	1.0	15.1	1.5	20.2	2.0	25.3	2.5	30.4	3.0
5.0	0.5	10.1	1.0	15.2	1.5	20.3	2.0	25.4	2.5	30.5	3.1

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	001 45.0	001 45.3	001 40.2
01	001 45.3	001 45.5	001 40.5
02	001 45.5	001 45.8	001 40.7
03	001 45.8	001 46.0	001 40.9
04	001 46.0	001 46.3	001 41.2
05	001 46.3	001 46.5	001 41.4
06	001 46.5	001 46.8	001 41.6
07	001 46.8	001 47.0	001 41.9
08	001 47.0	001 47.3	001 42.1
09	001 47.3	001 47.5	001 42.4
10	001 47.5	001 47.8	001 42.6
11	001 47.8	001 48.0	001 42.8
12	001 48.0	001 48.3	001 43.1
13	001 48.3	001 48.5	001 43.3
14	001 48.5	001 48.8	001 43.6
15	001 48.8	001 49.0	001 43.8
16	001 49.0	001 49.3	001 44.0
17	001 49.3	001 49.5	001 44.3
18	001 49.5	001 49.8	001 44.5
19	001 49.8	001 50.1	001 44.8
20	001 50.0	001 50.3	001 45.0
21	001 50.3	001 50.6	001 45.2
22	001 50.5	001 50.8	001 45.5
23	001 50.8	001 51.1	001 45.7
24	001 51.0	001 51.3	001 45.9
25	001 51.3	001 51.6	001 46.2
26	001 51.5	001 51.8	001 46.4
27	001 51.8	001 52.1	001 46.7
28	001 52.0	001 52.3	001 46.9
29	001 52.3	001 52.6	001 47.1
30	001 52.5	001 52.8	001 47.4
31	001 52.8	001 53.1	001 47.6
32	001 53.0	001 53.3	001 47.9
33	001 53.3	001 53.6	001 48.1
34	001 53.5	001 53.8	001 48.3
35	001 53.8	001 54.1	001 48.6
36	001 54.0	001 54.3	001 48.8
37	001 54.3	001 54.6	001 49.0
38	001 54.5	001 54.8	001 49.3
39	001 54.8	001 55.1	001 49.5
40	001 55.0	001 55.3	001 49.8
41	001 55.3	001 55.6	001 50.0
42	001 55.5	001 55.8	001 50.2
43	001 55.8	001 56.1	001 50.5
44	001 56.0	001 56.3	001 50.7
45	001 56.3	001 56.6	001 51.0
46	001 56.5	001 56.8	001 51.2
47	001 56.8	001 57.1	001 51.4
48	001 57.0	001 57.3	001 51.7
49	001 57.3	001 57.6	001 51.9
50	001 57.5	001 57.8	001 52.1
51	001 57.8	001 58.1	001 52.4
52	001 58.0	001 58.3	001 52.6
53	001 58.3	001 58.6	001 52.9
54	001 58.5	001 58.8	001 53.1
55	001 58.8	001 59.1	001 53.3
56	001 59.0	001 59.3	001 53.6
57	001 59.3	001 59.6	001 53.8
58	001 59.5	001 59.8	001 54.1
59	001 59.8	002 00.1	001 54.3

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	0.6	10.2	1.2	15.3	1.8	20.4	2.4	25.5	3.0
0.1	0.0	5.2	0.6	10.3	1.2	15.4	1.8	20.5	2.4	25.6	3.0
0.2	0.0	5.3	0.6	10.4	1.2	15.5	1.8	20.6	2.4	25.7	3.0
0.3	0.0	5.4	0.6	10.5	1.2	15.6	1.8	20.7	2.4	25.8	3.0
0.4	0.0	5.5	0.6	10.6	1.2	15.7	1.8	20.8	2.4	25.9	3.0
0.5	0.1	5.6	0.7	10.7	1.2	15.8	1.8	20.9	2.4	26.0	3.0
0.6	0.1	5.7	0.7	10.8	1.3	15.9	1.9	21.0	2.5	26.1	3.0
0.7	0.1	5.8	0.7	10.9	1.3	16.0	1.9	21.1	2.5	26.2	3.1
0.8	0.1	5.9	0.7	11.0	1.3	16.1	1.9	21.2	2.5	26.3	3.1
0.9	0.1	6.0	0.7	11.1	1.3	16.2	1.9	21.3	2.5	26.4	3.1
1.0	0.1	6.1	0.7	11.2	1.3	16.3	1.9	21.4	2.5	26.5	3.1
1.1	0.1	6.2	0.7	11.3	1.3	16.4	1.9	21.5	2.5	26.6	3.1
1.2	0.1	6.3	0.7	11.4	1.3	16.5	1.9	21.6	2.5	26.7	3.1
1.3	0.2	6.4	0.7	11.5	1.3	16.6	1.9	21.7	2.5	26.8	3.1
1.4	0.2	6.5	0.8	11.6	1.4	16.7	1.9	21.8	2.5	26.9	3.1
1.5	0.2	6.6	0.8	11.7	1.4	16.8	2.0	21.9	2.6	27.0	3.2
1.6	0.2	6.7	0.8	11.8	1.4	16.9	2.0	22.0	2.6	27.1	3.2
1.7	0.2	6.8	0.8	11.9	1.4	17.0	2.0	22.1	2.6	27.2	3.2
1.8	0.2	6.9	0.8	12.0	1.4	17.1	2.0	22.2	2.6	27.3	3.2
1.9	0.2	7.0	0.8	12.1	1.4	17.2	2.0	22.3	2.6	27.4	3.2
2.0	0.2	7.1	0.8	12.2	1.4	17.3	2.0	22.4	2.6	27.5	3.2
2.1	0.2	7.2	0.8	12.3	1.4	17.4	2.0	22.5	2.6	27.6	3.2
2.2	0.3	7.3	0.9	12.4	1.4	17.5	2.0	22.6	2.6	27.7	3.2
2.3	0.3	7.4	0.9	12.5	1.5	17.6	2.1	22.7	2.6	27.8	3.2
2.4	0.3	7.5	0.9	12.6	1.5	17.7	2.1	22.8	2.7	27.9	3.3
2.5	0.3	7.6	0.9	12.7	1.5	17.8	2.1	22.9	2.7	28.0	3.3
2.6	0.3	7.7	0.9	12.8	1.5	17.9	2.1	23.0	2.7	28.1	3.3
2.7	0.3	7.8	0.9	12.9	1.5	18.0	2.1	23.1	2.7	28.2	3.3
2.8	0.3	7.9	0.9	13.0	1.5	18.1	2.1	23.2	2.7	28.3	3.3
2.9	0.3	8.0	0.9	13.1	1.5	18.2	2.1	23.3	2.7	28.4	3.3
3.0	0.4	8.1	0.9	13.2	1.5	18.3	2.1	23.4	2.7	28.5	3.3
3.1	0.4	8.2	1.0	13.3	1.6	18.4	2.1	23.5	2.7	28.6	3.3
3.2	0.4	8.3	1.0	13.4	1.6	18.5	2.2	23.6	2.8	28.7	3.3
3.3	0.4	8.4	1.0	13.5	1.6	18.6	2.2	23.7	2.8	28.8	3.4
3.4	0.4	8.5	1.0	13.6	1.6	18.7	2.2	23.8	2.8	28.9	3.4
3.5	0.4	8.6	1.0	13.7	1.6	18.8	2.2	23.9	2.8	29.0	3.4
3.6	0.4	8.7	1.0	13.8	1.6	18.9	2.2	24.0	2.8	29.1	3.4
3.7	0.4	8.8	1.0	13.9	1.6	19.0	2.2	24.1	2.8	29.2	3.4
3.8	0.4	8.9	1.0	14.0	1.6	19.1	2.2	24.2	2.8	29.3	3.4
3.9	0.5	9.0	1.1	14.1	1.6	19.2	2.2	24.3	2.8	29.4	3.4
4.0	0.5	9.1	1.1	14.2	1.7	19.3	2.3	24.4	2.8	29.5	3.4
4.1	0.5	9.2	1.1	14.3	1.7	19.4	2.3	24.5	2.9	29.6	3.5
4.2	0.5	9.3	1.1	14.4	1.7	19.5	2.3	24.6	2.9	29.7	3.5
4.3	0.5	9.4	1.1	14.5	1.7	19.6	2.3	24.7	2.9	29.8	3.5
4.4	0.5	9.5	1.1	14.6	1.7	19.7	2.3	24.8	2.9	29.9	3.5
4.5	0.5	9.6	1.1	14.7	1.7	19.8	2.3	24.9	2.9	30.0	3.5
4.6	0.5	9.7	1.1	14.8	1.7	19.9	2.3	25.0	2.9	30.1	3.5
4.7	0.5	9.8	1.1	14.9	1.7	20.0	2.3	25.1	2.9	30.2	3.5
4.8	0.6	9.9	1.2	15.0	1.8	20.1	2.3	25.2	2.9	30.3	3.5
4.9	0.6	10.0	1.2	15.1	1.8	20.2	2.4	25.3	3.0	30.4	3.5
5.0	0.6	10.1	1.2	15.2	1.8	20.3	2.4	25.4	3.0	30.5	3.6

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 08

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	002 00.0	002 00.3	001 54.5
01	002 00.3	002 00.6	001 54.8
02	002 00.5	002 00.8	001 55.0
03	002 00.8	002 01.1	001 55.2
04	002 01.0	002 01.3	001 55.5
05	002 01.3	002 01.6	001 55.7
06	002 01.5	002 01.8	001 56.0
07	002 01.8	002 02.1	001 56.2
08	002 02.0	002 02.3	001 56.4
09	002 02.3	002 02.6	001 56.7
10	002 02.5	002 02.8	001 56.9
11	002 02.8	002 03.1	001 57.2
12	002 03.0	002 03.3	001 57.4
13	002 03.3	002 03.6	001 57.6
14	002 03.5	002 03.8	001 57.9
15	002 03.8	002 04.1	001 58.1
16	002 04.0	002 04.3	001 58.4
17	002 04.3	002 04.6	001 58.6
18	002 04.5	002 04.8	001 58.8
19	002 04.8	002 05.1	001 59.1
20	002 05.0	002 05.3	001 59.3
21	002 05.3	002 05.6	001 59.5
22	002 05.5	002 05.8	001 59.8
23	002 05.8	002 06.1	002 00.0
24	002 06.0	002 06.3	002 00.3
25	002 06.3	002 06.6	002 00.5
26	002 06.5	002 06.8	002 00.7
27	002 06.8	002 07.1	002 01.0
28	002 07.0	002 07.3	002 01.2
29	002 07.3	002 07.6	002 01.5
30	002 07.5	002 07.8	002 01.7
31	002 07.8	002 08.1	002 01.9
32	002 08.0	002 08.4	002 02.2
33	002 08.3	002 08.6	002 02.4
34	002 08.5	002 08.9	002 02.6
35	002 08.8	002 09.1	002 02.9
36	002 09.0	002 09.4	002 03.1
37	002 09.3	002 09.6	002 03.4
38	002 09.5	002 09.9	002 03.6
39	002 09.8	002 10.1	002 03.8
40	002 10.0	002 10.4	002 04.1
41	002 10.3	002 10.6	002 04.3
42	002 10.5	002 10.9	002 04.6
43	002 10.8	002 11.1	002 04.8
44	002 11.0	002 11.4	002 05.0
45	002 11.3	002 11.6	002 05.3
46	002 11.5	002 11.9	002 05.5
47	002 11.8	002 12.1	002 05.7
48	002 12.0	002 12.4	002 06.0
49	002 12.3	002 12.6	002 06.2
50	002 12.5	002 12.9	002 06.5
51	002 12.8	002 13.1	002 06.7
52	002 13.0	002 13.4	002 06.9
53	002 13.3	002 13.6	002 07.2
54	002 13.5	002 13.9	002 07.4
55	002 13.8	002 14.1	002 07.7
56	002 14.0	002 14.4	002 07.9
57	002 14.3	002 14.6	002 08.1
58	002 14.5	002 14.9	002 08.4
59	002 14.8	002 15.1	002 08.6

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	0.7	10.2	1.4	15.3	2.0	20.4	2.7	25.5	3.4
0.1	0.0	5.2	0.7	10.3	1.4	15.4	2.1	20.5	2.7	25.6	3.4
0.2	0.0	5.3	0.7	10.4	1.4	15.5	2.1	20.6	2.7	25.7	3.4
0.3	0.0	5.4	0.7	10.5	1.4	15.6	2.1	20.7	2.8	25.8	3.4
0.4	0.1	5.5	0.7	10.6	1.4	15.7	2.1	20.8	2.8	25.9	3.5
0.5	0.1	5.6	0.7	10.7	1.4	15.8	2.1	20.9	2.8	26.0	3.5
0.6	0.1	5.7	0.8	10.8	1.4	15.9	2.1	21.0	2.8	26.1	3.5
0.7	0.1	5.8	0.8	10.9	1.5	16.0	2.1	21.1	2.8	26.2	3.5
0.8	0.1	5.9	0.8	11.0	1.5	16.1	2.1	21.2	2.8	26.3	3.5
0.9	0.1	6.0	0.8	11.1	1.5	16.2	2.2	21.3	2.8	26.4	3.5
1.0	0.1	6.1	0.8	11.2	1.5	16.3	2.2	21.4	2.9	26.5	3.5
1.1	0.1	6.2	0.8	11.3	1.5	16.4	2.2	21.5	2.9	26.6	3.5
1.2	0.2	6.3	0.8	11.4	1.5	16.5	2.2	21.6	2.9	26.7	3.6
1.3	0.2	6.4	0.9	11.5	1.5	16.6	2.2	21.7	2.9	26.8	3.6
1.4	0.2	6.5	0.9	11.6	1.5	16.7	2.2	21.8	2.9	26.9	3.6
1.5	0.2	6.6	0.9	11.7	1.6	16.8	2.2	21.9	2.9	27.0	3.6
1.6	0.2	6.7	0.9	11.8	1.6	16.9	2.3	22.0	2.9	27.1	3.6
1.7	0.2	6.8	0.9	11.9	1.6	17.0	2.3	22.1	2.9	27.2	3.6
1.8	0.2	6.9	0.9	12.0	1.6	17.1	2.3	22.2	3.0	27.3	3.6
1.9	0.3	7.0	0.9	12.1	1.6	17.2	2.3	22.3	3.0	27.4	3.7
2.0	0.3	7.1	0.9	12.2	1.6	17.3	2.3	22.4	3.0	27.5	3.7
2.1	0.3	7.2	1.0	12.3	1.6	17.4	2.3	22.5	3.0	27.6	3.7
2.2	0.3	7.3	1.0	12.4	1.7	17.5	2.3	22.6	3.0	27.7	3.7
2.3	0.3	7.4	1.0	12.5	1.7	17.6	2.3	22.7	3.0	27.8	3.7
2.4	0.3	7.5	1.0	12.6	1.7	17.7	2.4	22.8	3.0	27.9	3.7
2.5	0.3	7.6	1.0	12.7	1.7	17.8	2.4	22.9	3.1	28.0	3.7
2.6	0.3	7.7	1.0	12.8	1.7	17.9	2.4	23.0	3.1	28.1	3.7
2.7	0.4	7.8	1.0	12.9	1.7	18.0	2.4	23.1	3.1	28.2	3.8
2.8	0.4	7.9	1.1	13.0	1.7	18.1	2.4	23.2	3.1	28.3	3.8
2.9	0.4	8.0	1.1	13.1	1.7	18.2	2.4	23.3	3.1	28.4	3.8
3.0	0.4	8.1	1.1	13.2	1.8	18.3	2.4	23.4	3.1	28.5	3.8
3.1	0.4	8.2	1.1	13.3	1.8	18.4	2.5	23.5	3.1	28.6	3.8
3.2	0.4	8.3	1.1	13.4	1.8	18.5	2.5	23.6	3.1	28.7	3.8
3.3	0.4	8.4	1.1	13.5	1.8	18.6	2.5	23.7	3.2	28.8	3.8
3.4	0.5	8.5	1.1	13.6	1.8	18.7	2.5	23.8	3.2	28.9	3.9
3.5	0.5	8.6	1.1	13.7	1.8	18.8	2.5	23.9	3.2	29.0	3.9
3.6	0.5	8.7	1.2	13.8	1.8	18.9	2.5	24.0	3.2	29.1	3.9
3.7	0.5	8.8	1.2	13.9	1.9	19.0	2.5	24.1	3.2	29.2	3.9
3.8	0.5	8.9	1.2	14.0	1.9	19.1	2.5	24.2	3.2	29.3	3.9
3.9	0.5	9.0	1.2	14.1	1.9	19.2	2.6	24.3	3.2	29.4	3.9
4.0	0.5	9.1	1.2	14.2	1.9	19.3	2.6	24.4	3.3	29.5	3.9
4.1	0.5	9.2	1.2	14.3	1.9	19.4	2.6	24.5	3.3	29.6	3.9
4.2	0.6	9.3	1.2	14.4	1.9	19.5	2.6	24.6	3.3	29.7	4.0
4.3	0.6	9.4	1.3	14.5	1.9	19.6	2.6	24.7	3.3	29.8	4.0
4.4	0.6	9.5	1.3	14.6	1.9	19.7	2.6	24.8	3.3	29.9	4.0
4.5	0.6	9.6	1.3	14.7	2.0	19.8	2.6	24.9	3.3	30.0	4.0
4.6	0.6	9.7	1.3	14.8	2.0	19.9	2.7	25.0	3.3	30.1	4.0
4.7	0.6	9.8	1.3	14.9	2.0	20.0	2.7	25.1	3.3	30.2	4.0
4.8	0.6	9.9	1.3	15.0	2.0	20.1	2.7	25.2	3.4	30.3	4.0
4.9	0.7	10.0	1.3	15.1	2.0	20.2	2.7	25.3	3.4	30.4	4.1
5.0	0.7	10.1	1.3	15.2	2.0	20.3	2.7	25.4	3.4	30.5	4.1

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 09

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	002 15.0	002 15.4	002 08.9
01	002 15.3	002 15.6	002 09.1
02	002 15.5	002 15.9	002 09.3
03	002 15.8	002 16.1	002 09.6
04	002 16.0	002 16.4	002 09.8
05	002 16.3	002 16.6	002 10.0
06	002 16.5	002 16.9	002 10.3
07	002 16.8	002 17.1	002 10.5
08	002 17.0	002 17.4	002 10.8
09	002 17.3	002 17.6	002 11.0
10	002 17.5	002 17.9	002 11.2
11	002 17.8	002 18.1	002 11.5
12	002 18.0	002 18.4	002 11.7
13	002 18.3	002 18.6	002 12.0
14	002 18.5	002 18.9	002 12.2
15	002 18.8	002 19.1	002 12.4
16	002 19.0	002 19.4	002 12.7
17	002 19.3	002 19.6	002 12.9
18	002 19.5	002 19.9	002 13.1
19	002 19.8	002 20.1	002 13.4
20	002 20.0	002 20.4	002 13.6
21	002 20.3	002 20.6	002 13.9
22	002 20.5	002 20.9	002 14.1
23	002 20.8	002 21.1	002 14.3
24	002 21.0	002 21.4	002 14.6
25	002 21.3	002 21.6	002 14.8
26	002 21.5	002 21.9	002 15.1
27	002 21.8	002 22.1	002 15.3
28	002 22.0	002 22.4	002 15.5
29	002 22.3	002 22.6	002 15.8
30	002 22.5	002 22.9	002 16.0
31	002 22.8	002 23.1	002 16.2
32	002 23.0	002 23.4	002 16.5
33	002 23.3	002 23.6	002 16.7
34	002 23.5	002 23.9	002 17.0
35	002 23.8	002 24.1	002 17.2
36	002 24.0	002 24.4	002 17.4
37	002 24.3	002 24.6	002 17.7
38	002 24.5	002 24.9	002 17.9
39	002 24.8	002 25.1	002 18.2
40	002 25.0	002 25.4	002 18.4
41	002 25.3	002 25.6	002 18.6
42	002 25.5	002 25.9	002 18.9
43	002 25.8	002 26.1	002 19.1
44	002 26.0	002 26.4	002 19.3
45	002 26.3	002 26.7	002 19.6
46	002 26.5	002 26.9	002 19.8
47	002 26.8	002 27.2	002 20.1
48	002 27.0	002 27.4	002 20.3
49	002 27.3	002 27.7	002 20.5
50	002 27.5	002 27.9	002 20.8
51	002 27.8	002 28.2	002 21.0
52	002 28.0	002 28.4	002 21.3
53	002 28.3	002 28.7	002 21.5
54	002 28.5	002 28.9	002 21.7
55	002 28.8	002 29.2	002 22.0
56	002 29.0	002 29.4	002 22.2
57	002 29.3	002 29.7	002 22.5
58	002 29.5	002 29.9	002 22.7
59	002 29.8	002 30.2	002 22.9

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	0.8	10.2	1.5	15.3	2.3	20.4	3.1	25.5	3.8
0.1	0.0	5.2	0.8	10.3	1.5	15.4	2.3	20.5	3.1	25.6	3.8
0.2	0.0	5.3	0.8	10.4	1.6	15.5	2.3	20.6	3.1	25.7	3.9
0.3	0.0	5.4	0.8	10.5	1.6	15.6	2.3	20.7	3.1	25.8	3.9
0.4	0.1	5.5	0.8	10.6	1.6	15.7	2.4	20.8	3.1	25.9	3.9
0.5	0.1	5.6	0.8	10.7	1.6	15.8	2.4	20.9	3.1	26.0	3.9
0.6	0.1	5.7	0.9	10.8	1.6	15.9	2.4	21.0	3.2	26.1	3.9
0.7	0.1	5.8	0.9	10.9	1.6	16.0	2.4	21.1	3.2	26.2	3.9
0.8	0.1	5.9	0.9	11.0	1.7	16.1	2.4	21.2	3.2	26.3	3.9
0.9	0.1	6.0	0.9	11.1	1.7	16.2	2.4	21.3	3.2	26.4	4.0
1.0	0.2	6.1	0.9	11.2	1.7	16.3	2.4	21.4	3.2	26.5	4.0
1.1	0.2	6.2	0.9	11.3	1.7	16.4	2.5	21.5	3.2	26.6	4.0
1.2	0.2	6.3	0.9	11.4	1.7	16.5	2.5	21.6	3.2	26.7	4.0
1.3	0.2	6.4	1.0	11.5	1.7	16.6	2.5	21.7	3.3	26.8	4.0
1.4	0.2	6.5	1.0	11.6	1.7	16.7	2.5	21.8	3.3	26.9	4.0
1.5	0.2	6.6	1.0	11.7	1.8	16.8	2.5	21.9	3.3	27.0	4.1
1.6	0.2	6.7	1.0	11.8	1.8	16.9	2.5	22.0	3.3	27.1	4.1
1.7	0.3	6.8	1.0	11.9	1.8	17.0	2.6	22.1	3.3	27.2	4.1
1.8	0.3	6.9	1.0	12.0	1.8	17.1	2.6	22.2	3.3	27.3	4.1
1.9	0.3	7.0	1.1	12.1	1.8	17.2	2.6	22.3	3.3	27.4	4.1
2.0	0.3	7.1	1.1	12.2	1.8	17.3	2.6	22.4	3.4	27.5	4.1
2.1	0.3	7.2	1.1	12.3	1.8	17.4	2.6	22.5	3.4	27.6	4.1
2.2	0.3	7.3	1.1	12.4	1.9	17.5	2.6	22.6	3.4	27.7	4.2
2.3	0.3	7.4	1.1	12.5	1.9	17.6	2.6	22.7	3.4	27.8	4.2
2.4	0.4	7.5	1.1	12.6	1.9	17.7	2.7	22.8	3.4	27.9	4.2
2.5	0.4	7.6	1.1	12.7	1.9	17.8	2.7	22.9	3.4	28.0	4.2
2.6	0.4	7.7	1.2	12.8	1.9	17.9	2.7	23.0	3.5	28.1	4.2
2.7	0.4	7.8	1.2	12.9	1.9	18.0	2.7	23.1	3.5	28.2	4.2
2.8	0.4	7.9	1.2	13.0	2.0	18.1	2.7	23.2	3.5	28.3	4.2
2.9	0.4	8.0	1.2	13.1	2.0	18.2	2.7	23.3	3.5	28.4	4.3
3.0	0.5	8.1	1.2	13.2	2.0	18.3	2.7	23.4	3.5	28.5	4.3
3.1	0.5	8.2	1.2	13.3	2.0	18.4	2.8	23.5	3.5	28.6	4.3
3.2	0.5	8.3	1.2	13.4	2.0	18.5	2.8	23.6	3.5	28.7	4.3
3.3	0.5	8.4	1.3	13.5	2.0	18.6	2.8	23.7	3.6	28.8	4.3
3.4	0.5	8.5	1.3	13.6	2.0	18.7	2.8	23.8	3.6	28.9	4.3
3.5	0.5	8.6	1.3	13.7	2.1	18.8	2.8	23.9	3.6	29.0	4.4
3.6	0.5	8.7	1.3	13.8	2.1	18.9	2.8	24.0	3.6	29.1	4.4
3.7	0.6	8.8	1.3	13.9	2.1	19.0	2.9	24.1	3.6	29.2	4.4
3.8	0.6	8.9	1.3	14.0	2.1	19.1	2.9	24.2	3.6	29.3	4.4
3.9	0.6	9.0	1.4	14.1	2.1	19.2	2.9	24.3	3.6	29.4	4.4
4.0	0.6	9.1	1.4	14.2	2.1	19.3	2.9	24.4	3.7	29.5	4.4
4.1	0.6	9.2	1.4	14.3	2.1	19.4	2.9	24.5	3.7	29.6	4.4
4.2	0.6	9.3	1.4	14.4	2.2	19.5	2.9	24.6	3.7	29.7	4.5
4.3	0.6	9.4	1.4	14.5	2.2	19.6	2.9	24.7	3.7	29.8	4.5
4.4	0.7	9.5	1.4	14.6	2.2	19.7	3.0	24.8	3.7	29.9	4.5
4.5	0.7	9.6	1.4	14.7	2.2	19.8	3.0	24.9	3.7	30.0	4.5
4.6	0.7	9.7	1.5	14.8	2.2	19.9	3.0	25.0	3.8	30.1	4.5
4.7	0.7	9.8	1.5	14.9	2.2	20.0	3.0	25.1	3.8	30.2	4.5
4.8	0.7	9.9	1.5	15.0	2.3	20.1	3.0	25.2	3.8	30.3	4.5
4.9	0.7	10.0	1.5	15.1	2.3	20.2	3.0	25.3	3.8	30.4	4.6
5.0	0.8	10.1	1.5	15.2	2.3	20.3	3.0	25.4	3.8	30.5	4.6

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 10

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	002 30.0	002 30.4	002 23.2
01	002 30.3	002 30.7	002 23.4
02	002 30.5	002 30.9	002 23.6
03	002 30.8	002 31.2	002 23.9
04	002 31.0	002 31.4	002 24.1
05	002 31.3	002 31.7	002 24.4
06	002 31.5	002 31.9	002 24.6
07	002 31.8	002 32.2	002 24.8
08	002 32.0	002 32.4	002 25.1
09	002 32.3	002 32.7	002 25.3
10	002 32.5	002 32.9	002 25.6
11	002 32.8	002 33.2	002 25.8
12	002 33.0	002 33.4	002 26.0
13	002 33.3	002 33.7	002 26.3
14	002 33.5	002 33.9	002 26.5
15	002 33.8	002 34.2	002 26.7
16	002 34.0	002 34.4	002 27.0
17	002 34.3	002 34.7	002 27.2
18	002 34.5	002 34.9	002 27.5
19	002 34.8	002 35.2	002 27.7
20	002 35.0	002 35.4	002 27.9
21	002 35.3	002 35.7	002 28.2
22	002 35.5	002 35.9	002 28.4
23	002 35.8	002 36.2	002 28.7
24	002 36.0	002 36.4	002 28.9
25	002 36.3	002 36.7	002 29.1
26	002 36.5	002 36.9	002 29.4
27	002 36.8	002 37.2	002 29.6
28	002 37.0	002 37.4	002 29.8
29	002 37.3	002 37.7	002 30.1
30	002 37.5	002 37.9	002 30.3
31	002 37.8	002 38.2	002 30.6
32	002 38.0	002 38.4	002 30.8
33	002 38.3	002 38.7	002 31.0
34	002 38.5	002 38.9	002 31.3
35	002 38.8	002 39.2	002 31.5
36	002 39.0	002 39.4	002 31.8
37	002 39.3	002 39.7	002 32.0
38	002 39.5	002 39.9	002 32.2
39	002 39.8	002 40.2	002 32.5
40	002 40.0	002 40.4	002 32.7
41	002 40.3	002 40.7	002 32.9
42	002 40.5	002 40.9	002 33.2
43	002 40.8	002 41.2	002 33.4
44	002 41.0	002 41.4	002 33.7
45	002 41.3	002 41.7	002 33.9
46	002 41.5	002 41.9	002 34.1
47	002 41.8	002 42.2	002 34.4
48	002 42.0	002 42.4	002 34.6
49	002 42.3	002 42.7	002 34.9
50	002 42.5	002 42.9	002 35.1
51	002 42.8	002 43.2	002 35.3
52	002 43.0	002 43.4	002 35.6
53	002 43.3	002 43.7	002 35.8
54	002 43.5	002 43.9	002 36.1
55	002 43.8	002 44.2	002 36.3
56	002 44.0	002 44.4	002 36.5
57	002 44.3	002 44.7	002 36.8
58	002 44.5	002 45.0	002 37.0
59	002 44.8	002 45.2	002 37.2

v/d RATE ’/h | WHOLE-MINUTE CORRECTION ’

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	0.9	10.2	1.7	15.3	2.6	20.4	3.4	25.5	4.3
0.1	0.0	5.2	0.9	10.3	1.7	15.4	2.6	20.5	3.4	25.6	4.3
0.2	0.0	5.3	0.9	10.4	1.7	15.5	2.6	20.6	3.4	25.7	4.3
0.3	0.1	5.4	0.9	10.5	1.8	15.6	2.6	20.7	3.5	25.8	4.3
0.4	0.1	5.5	0.9	10.6	1.8	15.7	2.6	20.8	3.5	25.9	4.3
0.5	0.1	5.6	0.9	10.7	1.8	15.8	2.6	20.9	3.5	26.0	4.3
0.6	0.1	5.7	1.0	10.8	1.8	15.9	2.7	21.0	3.5	26.1	4.4
0.7	0.1	5.8	1.0	10.9	1.8	16.0	2.7	21.1	3.5	26.2	4.4
0.8	0.1	5.9	1.0	11.0	1.8	16.1	2.7	21.2	3.5	26.3	4.4
0.9	0.2	6.0	1.0	11.1	1.9	16.2	2.7	21.3	3.6	26.4	4.4
1.0	0.2	6.1	1.0	11.2	1.9	16.3	2.7	21.4	3.6	26.5	4.4
1.1	0.2	6.2	1.0	11.3	1.9	16.4	2.7	21.5	3.6	26.6	4.4
1.2	0.2	6.3	1.1	11.4	1.9	16.5	2.8	21.6	3.6	26.7	4.5
1.3	0.2	6.4	1.1	11.5	1.9	16.6	2.8	21.7	3.6	26.8	4.5
1.4	0.2	6.5	1.1	11.6	1.9	16.7	2.8	21.8	3.6	26.9	4.5
1.5	0.3	6.6	1.1	11.7	2.0	16.8	2.8	21.9	3.7	27.0	4.5
1.6	0.3	6.7	1.1	11.8	2.0	16.9	2.8	22.0	3.7	27.1	4.5
1.7	0.3	6.8	1.1	11.9	2.0	17.0	2.8	22.1	3.7	27.2	4.5
1.8	0.3	6.9	1.2	12.0	2.0	17.1	2.9	22.2	3.7	27.3	4.6
1.9	0.3	7.0	1.2	12.1	2.0	17.2	2.9	22.3	3.7	27.4	4.6
2.0	0.3	7.1	1.2	12.2	2.0	17.3	2.9	22.4	3.7	27.5	4.6
2.1	0.4	7.2	1.2	12.3	2.1	17.4	2.9	22.5	3.8	27.6	4.6
2.2	0.4	7.3	1.2	12.4	2.1	17.5	2.9	22.6	3.8	27.7	4.6
2.3	0.4	7.4	1.2	12.5	2.1	17.6	2.9	22.7	3.8	27.8	4.6
2.4	0.4	7.5	1.3	12.6	2.1	17.7	3.0	22.8	3.8	27.9	4.7
2.5	0.4	7.6	1.3	12.7	2.1	17.8	3.0	22.9	3.8	28.0	4.7
2.6	0.4	7.7	1.3	12.8	2.1	17.9	3.0	23.0	3.8	28.1	4.7
2.7	0.5	7.8	1.3	12.9	2.2	18.0	3.0	23.1	3.9	28.2	4.7
2.8	0.5	7.9	1.3	13.0	2.2	18.1	3.0	23.2	3.9	28.3	4.7
2.9	0.5	8.0	1.3	13.1	2.2	18.2	3.0	23.3	3.9	28.4	4.7
3.0	0.5	8.1	1.4	13.2	2.2	18.3	3.1	23.4	3.9	28.5	4.8
3.1	0.5	8.2	1.4	13.3	2.2	18.4	3.1	23.5	3.9	28.6	4.8
3.2	0.5	8.3	1.4	13.4	2.2	18.5	3.1	23.6	3.9	28.7	4.8
3.3	0.6	8.4	1.4	13.5	2.3	18.6	3.1	23.7	4.0	28.8	4.8
3.4	0.6	8.5	1.4	13.6	2.3	18.7	3.1	23.8	4.0	28.9	4.8
3.5	0.6	8.6	1.4	13.7	2.3	18.8	3.1	23.9	4.0	29.0	4.8
3.6	0.6	8.7	1.5	13.8	2.3	18.9	3.2	24.0	4.0	29.1	4.9
3.7	0.6	8.8	1.5	13.9	2.3	19.0	3.2	24.1	4.0	29.2	4.9
3.8	0.6	8.9	1.5	14.0	2.3	19.1	3.2	24.2	4.0	29.3	4.9
3.9	0.7	9.0	1.5	14.1	2.4	19.2	3.2	24.3	4.1	29.4	4.9
4.0	0.7	9.1	1.5	14.2	2.4	19.3	3.2	24.4	4.1	29.5	4.9
4.1	0.7	9.2	1.5	14.3	2.4	19.4	3.2	24.5	4.1	29.6	4.9
4.2	0.7	9.3	1.6	14.4	2.4	19.5	3.3	24.6	4.1	29.7	5.0
4.3	0.7	9.4	1.6	14.5	2.4	19.6	3.3	24.7	4.1	29.8	5.0
4.4	0.7	9.5	1.6	14.6	2.4	19.7	3.3	24.8	4.1	29.9	5.0
4.5	0.8	9.6	1.6	14.7	2.5	19.8	3.3	24.9	4.2	30.0	5.0
4.6	0.8	9.7	1.6	14.8	2.5	19.9	3.3	25.0	4.2	30.1	5.0
4.7	0.8	9.8	1.6	14.9	2.5	20.0	3.3	25.1	4.2	30.2	5.0
4.8	0.8	9.9	1.7	15.0	2.5	20.1	3.4	25.2	4.2	30.3	5.1
4.9	0.8	10.0	1.7	15.1	2.5	20.2	3.4	25.3	4.2	30.4	5.1
5.0	0.8	10.1	1.7	15.2	2.5	20.3	3.4	25.4	4.2	30.5	5.1

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1’, then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4’/h: 1.4’ + 0.0’ = +1.4’.

GHA 123 45.6 + 008 44.0 + 1.4’ = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1’; rounded components can change the last digit. Reduce final GHA modulo 360.

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	002 45.0	002 45.5	002 37.5
01	002 45.3	002 45.7	002 37.7
02	002 45.5	002 46.0	002 38.0
03	002 45.8	002 46.2	002 38.2
04	002 46.0	002 46.5	002 38.4
05	002 46.3	002 46.7	002 38.7
06	002 46.5	002 47.0	002 38.9
07	002 46.8	002 47.2	002 39.2
08	002 47.0	002 47.5	002 39.4
09	002 47.3	002 47.7	002 39.6
10	002 47.5	002 48.0	002 39.9
11	002 47.8	002 48.2	002 40.1
12	002 48.0	002 48.5	002 40.3
13	002 48.3	002 48.7	002 40.6
14	002 48.5	002 49.0	002 40.8
15	002 48.8	002 49.2	002 41.1
16	002 49.0	002 49.5	002 41.3
17	002 49.3	002 49.7	002 41.5
18	002 49.5	002 50.0	002 41.8
19	002 49.8	002 50.2	002 42.0
20	002 50.0	002 50.5	002 42.3
21	002 50.3	002 50.7	002 42.5
22	002 50.5	002 51.0	002 42.7
23	002 50.8	002 51.2	002 43.0
24	002 51.0	002 51.5	002 43.2
25	002 51.3	002 51.7	002 43.4
26	002 51.5	002 52.0	002 43.7
27	002 51.8	002 52.2	002 43.9
28	002 52.0	002 52.5	002 44.2
29	002 52.3	002 52.7	002 44.4
30	002 52.5	002 53.0	002 44.6
31	002 52.8	002 53.2	002 44.9
32	002 53.0	002 53.5	002 45.1
33	002 53.3	002 53.7	002 45.4
34	002 53.5	002 54.0	002 45.6
35	002 53.8	002 54.2	002 45.8
36	002 54.0	002 54.5	002 46.1
37	002 54.3	002 54.7	002 46.3
38	002 54.5	002 55.0	002 46.6
39	002 54.8	002 55.2	002 46.8
40	002 55.0	002 55.5	002 47.0
41	002 55.3	002 55.7	002 47.3
42	002 55.5	002 56.0	002 47.5
43	002 55.8	002 56.2	002 47.7
44	002 56.0	002 56.5	002 48.0
45	002 56.3	002 56.7	002 48.2
46	002 56.5	002 57.0	002 48.5
47	002 56.8	002 57.2	002 48.7
48	002 57.0	002 57.5	002 48.9
49	002 57.3	002 57.7	002 49.2
50	002 57.5	002 58.0	002 49.4
51	002 57.8	002 58.2	002 49.7
52	002 58.0	002 58.5	002 49.9
53	002 58.3	002 58.7	002 50.1
54	002 58.5	002 59.0	002 50.4
55	002 58.8	002 59.2	002 50.6
56	002 59.0	002 59.5	002 50.8
57	002 59.3	002 59.7	002 51.1
58	002 59.5	003 00.0	002 51.3
59	002 59.8	003 00.2	002 51.6

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	0.9	10.2	1.9	15.3	2.8	20.4	3.7	25.5	4.7
0.1	0.0	5.2	1.0	10.3	1.9	15.4	2.8	20.5	3.8	25.6	4.7
0.2	0.0	5.3	1.0	10.4	1.9	15.5	2.8	20.6	3.8	25.7	4.7
0.3	0.1	5.4	1.0	10.5	1.9	15.6	2.9	20.7	3.8	25.8	4.7
0.4	0.1	5.5	1.0	10.6	1.9	15.7	2.9	20.8	3.8	25.9	4.7
0.5	0.1	5.6	1.0	10.7	2.0	15.8	2.9	20.9	3.8	26.0	4.8
0.6	0.1	5.7	1.0	10.8	2.0	15.9	2.9	21.0	3.9	26.1	4.8
0.7	0.1	5.8	1.1	10.9	2.0	16.0	2.9	21.1	3.9	26.2	4.8
0.8	0.1	5.9	1.1	11.0	2.0	16.1	3.0	21.2	3.9	26.3	4.8
0.9	0.2	6.0	1.1	11.1	2.0	16.2	3.0	21.3	3.9	26.4	4.8
1.0	0.2	6.1	1.1	11.2	2.1	16.3	3.0	21.4	3.9	26.5	4.9
1.1	0.2	6.2	1.1	11.3	2.1	16.4	3.0	21.5	3.9	26.6	4.9
1.2	0.2	6.3	1.2	11.4	2.1	16.5	3.0	21.6	4.0	26.7	4.9
1.3	0.2	6.4	1.2	11.5	2.1	16.6	3.0	21.7	4.0	26.8	4.9
1.4	0.3	6.5	1.2	11.6	2.1	16.7	3.1	21.8	4.0	26.9	4.9
1.5	0.3	6.6	1.2	11.7	2.1	16.8	3.1	21.9	4.0	27.0	5.0
1.6	0.3	6.7	1.2	11.8	2.2	16.9	3.1	22.0	4.0	27.1	5.0
1.7	0.3	6.8	1.2	11.9	2.2	17.0	3.1	22.1	4.1	27.2	5.0
1.8	0.3	6.9	1.3	12.0	2.2	17.1	3.1	22.2	4.1	27.3	5.0
1.9	0.3	7.0	1.3	12.1	2.2	17.2	3.2	22.3	4.1	27.4	5.0
2.0	0.4	7.1	1.3	12.2	2.2	17.3	3.2	22.4	4.1	27.5	5.0
2.1	0.4	7.2	1.3	12.3	2.3	17.4	3.2	22.5	4.1	27.6	5.1
2.2	0.4	7.3	1.3	12.4	2.3	17.5	3.2	22.6	4.1	27.7	5.1
2.3	0.4	7.4	1.4	12.5	2.3	17.6	3.2	22.7	4.2	27.8	5.1
2.4	0.4	7.5	1.4	12.6	2.3	17.7	3.2	22.8	4.2	27.9	5.1
2.5	0.5	7.6	1.4	12.7	2.3	17.8	3.3	22.9	4.2	28.0	5.1
2.6	0.5	7.7	1.4	12.8	2.3	17.9	3.3	23.0	4.2	28.1	5.2
2.7	0.5	7.8	1.4	12.9	2.4	18.0	3.3	23.1	4.2	28.2	5.2
2.8	0.5	7.9	1.4	13.0	2.4	18.1	3.3	23.2	4.3	28.3	5.2
2.9	0.5	8.0	1.5	13.1	2.4	18.2	3.3	23.3	4.3	28.4	5.2
3.0	0.6	8.1	1.5	13.2	2.4	18.3	3.4	23.4	4.3	28.5	5.2
3.1	0.6	8.2	1.5	13.3	2.4	18.4	3.4	23.5	4.3	28.6	5.2
3.2	0.6	8.3	1.5	13.4	2.5	18.5	3.4	23.6	4.3	28.7	5.3
3.3	0.6	8.4	1.5	13.5	2.5	18.6	3.4	23.7	4.3	28.8	5.3
3.4	0.6	8.5	1.6	13.6	2.5	18.7	3.4	23.8	4.4	28.9	5.3
3.5	0.6	8.6	1.6	13.7	2.5	18.8	3.4	23.9	4.4	29.0	5.3
3.6	0.7	8.7	1.6	13.8	2.5	18.9	3.5	24.0	4.4	29.1	5.3
3.7	0.7	8.8	1.6	13.9	2.5	19.0	3.5	24.1	4.4	29.2	5.4
3.8	0.7	8.9	1.6	14.0	2.6	19.1	3.5	24.2	4.4	29.3	5.4
3.9	0.7	9.0	1.7	14.1	2.6	19.2	3.5	24.3	4.5	29.4	5.4
4.0	0.7	9.1	1.7	14.2	2.6	19.3	3.5	24.4	4.5	29.5	5.4
4.1	0.8	9.2	1.7	14.3	2.6	19.4	3.6	24.5	4.5	29.6	5.4
4.2	0.8	9.3	1.7	14.4	2.6	19.5	3.6	24.6	4.5	29.7	5.4
4.3	0.8	9.4	1.7	14.5	2.7	19.6	3.6	24.7	4.5	29.8	5.5
4.4	0.8	9.5	1.7	14.6	2.7	19.7	3.6	24.8	4.5	29.9	5.5
4.5	0.8	9.6	1.8	14.7	2.7	19.8	3.6	24.9	4.6	30.0	5.5
4.6	0.8	9.7	1.8	14.8	2.7	19.9	3.6	25.0	4.6	30.1	5.5
4.7	0.9	9.8	1.8	14.9	2.7	20.0	3.7	25.1	4.6	30.2	5.5
4.8	0.9	9.9	1.8	15.0	2.8	20.1	3.7	25.2	4.6	30.3	5.6
4.9	0.9	10.0	1.8	15.1	2.8	20.2	3.7	25.3	4.6	30.4	5.6
5.0	0.9	10.1	1.9	15.2	2.8	20.3	3.7	25.4	4.7	30.5	5.6

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 12

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	003 00.0	003 00.5	002 51.8
01	003 00.3	003 00.7	002 52.0
02	003 00.5	003 01.0	002 52.3
03	003 00.8	003 01.2	002 52.5
04	003 01.0	003 01.5	002 52.8
05	003 01.3	003 01.7	002 53.0
06	003 01.5	003 02.0	002 53.2
07	003 01.8	003 02.2	002 53.5
08	003 02.0	003 02.5	002 53.7
09	003 02.3	003 02.7	002 53.9
10	003 02.5	003 03.0	002 54.2
11	003 02.8	003 03.3	002 54.4
12	003 03.0	003 03.5	002 54.7
13	003 03.3	003 03.8	002 54.9
14	003 03.5	003 04.0	002 55.1
15	003 03.8	003 04.3	002 55.4
16	003 04.0	003 04.5	002 55.6
17	003 04.3	003 04.8	002 55.9
18	003 04.5	003 05.0	002 56.1
19	003 04.8	003 05.3	002 56.3
20	003 05.0	003 05.5	002 56.6
21	003 05.3	003 05.8	002 56.8
22	003 05.5	003 06.0	002 57.0
23	003 05.8	003 06.3	002 57.3
24	003 06.0	003 06.5	002 57.5
25	003 06.3	003 06.8	002 57.8
26	003 06.5	003 07.0	002 58.0
27	003 06.8	003 07.3	002 58.2
28	003 07.0	003 07.5	002 58.5
29	003 07.3	003 07.8	002 58.7
30	003 07.5	003 08.0	002 59.0
31	003 07.8	003 08.3	002 59.2
32	003 08.0	003 08.5	002 59.4
33	003 08.3	003 08.8	002 59.7
34	003 08.5	003 09.0	002 59.9
35	003 08.8	003 09.3	003 00.2
36	003 09.0	003 09.5	003 00.4
37	003 09.3	003 09.8	003 00.6
38	003 09.5	003 10.0	003 00.9
39	003 09.8	003 10.3	003 01.1
40	003 10.0	003 10.5	003 01.3
41	003 10.3	003 10.8	003 01.6
42	003 10.5	003 11.0	003 01.8
43	003 10.8	003 11.3	003 02.1
44	003 11.0	003 11.5	003 02.3
45	003 11.3	003 11.8	003 02.5
46	003 11.5	003 12.0	003 02.8
47	003 11.8	003 12.3	003 03.0
48	003 12.0	003 12.5	003 03.3
49	003 12.3	003 12.8	003 03.5
50	003 12.5	003 13.0	003 03.7
51	003 12.8	003 13.3	003 04.0
52	003 13.0	003 13.5	003 04.2
53	003 13.3	003 13.8	003 04.4
54	003 13.5	003 14.0	003 04.7
55	003 13.8	003 14.3	003 04.9
56	003 14.0	003 14.5	003 05.2
57	003 14.3	003 14.8	003 05.4
58	003 14.5	003 15.0	003 05.6
59	003 14.8	003 15.3	003 05.9

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	1.0	10.2	2.0	15.3	3.1	20.4	4.1	25.5	5.1
0.1	0.0	5.2	1.0	10.3	2.1	15.4	3.1	20.5	4.1	25.6	5.1
0.2	0.0	5.3	1.1	10.4	2.1	15.5	3.1	20.6	4.1	25.7	5.1
0.3	0.1	5.4	1.1	10.5	2.1	15.6	3.1	20.7	4.1	25.8	5.2
0.4	0.1	5.5	1.1	10.6	2.1	15.7	3.1	20.8	4.2	25.9	5.2
0.5	0.1	5.6	1.1	10.7	2.1	15.8	3.2	20.9	4.2	26.0	5.2
0.6	0.1	5.7	1.1	10.8	2.2	15.9	3.2	21.0	4.2	26.1	5.2
0.7	0.1	5.8	1.2	10.9	2.2	16.0	3.2	21.1	4.2	26.2	5.2
0.8	0.2	5.9	1.2	11.0	2.2	16.1	3.2	21.2	4.2	26.3	5.3
0.9	0.2	6.0	1.2	11.1	2.2	16.2	3.2	21.3	4.3	26.4	5.3
1.0	0.2	6.1	1.2	11.2	2.2	16.3	3.3	21.4	4.3	26.5	5.3
1.1	0.2	6.2	1.2	11.3	2.3	16.4	3.3	21.5	4.3	26.6	5.3
1.2	0.2	6.3	1.3	11.4	2.3	16.5	3.3	21.6	4.3	26.7	5.3
1.3	0.3	6.4	1.3	11.5	2.3	16.6	3.3	21.7	4.3	26.8	5.4
1.4	0.3	6.5	1.3	11.6	2.3	16.7	3.3	21.8	4.4	26.9	5.4
1.5	0.3	6.6	1.3	11.7	2.3	16.8	3.4	21.9	4.4	27.0	5.4
1.6	0.3	6.7	1.3	11.8	2.4	16.9	3.4	22.0	4.4	27.1	5.4
1.7	0.3	6.8	1.4	11.9	2.4	17.0	3.4	22.1	4.4	27.2	5.4
1.8	0.4	6.9	1.4	12.0	2.4	17.1	3.4	22.2	4.4	27.3	5.5
1.9	0.4	7.0	1.4	12.1	2.4	17.2	3.4	22.3	4.5	27.4	5.5
2.0	0.4	7.1	1.4	12.2	2.4	17.3	3.5	22.4	4.5	27.5	5.5
2.1	0.4	7.2	1.4	12.3	2.5	17.4	3.5	22.5	4.5	27.6	5.5
2.2	0.4	7.3	1.5	12.4	2.5	17.5	3.5	22.6	4.5	27.7	5.5
2.3	0.5	7.4	1.5	12.5	2.5	17.6	3.5	22.7	4.5	27.8	5.6
2.4	0.5	7.5	1.5	12.6	2.5	17.7	3.5	22.8	4.6	27.9	5.6
2.5	0.5	7.6	1.5	12.7	2.5	17.8	3.6	22.9	4.6	28.0	5.6
2.6	0.5	7.7	1.5	12.8	2.6	17.9	3.6	23.0	4.6	28.1	5.6
2.7	0.5	7.8	1.6	12.9	2.6	18.0	3.6	23.1	4.6	28.2	5.6
2.8	0.6	7.9	1.6	13.0	2.6	18.1	3.6	23.2	4.6	28.3	5.7
2.9	0.6	8.0	1.6	13.1	2.6	18.2	3.6	23.3	4.7	28.4	5.7
3.0	0.6	8.1	1.6	13.2	2.6	18.3	3.7	23.4	4.7	28.5	5.7
3.1	0.6	8.2	1.6	13.3	2.7	18.4	3.7	23.5	4.7	28.6	5.7
3.2	0.6	8.3	1.7	13.4	2.7	18.5	3.7	23.6	4.7	28.7	5.7
3.3	0.7	8.4	1.7	13.5	2.7	18.6	3.7	23.7	4.7	28.8	5.8
3.4	0.7	8.5	1.7	13.6	2.7	18.7	3.7	23.8	4.8	28.9	5.8
3.5	0.7	8.6	1.7	13.7	2.7	18.8	3.8	23.9	4.8	29.0	5.8
3.6	0.7	8.7	1.7	13.8	2.8	18.9	3.8	24.0	4.8	29.1	5.8
3.7	0.7	8.8	1.8	13.9	2.8	19.0	3.8	24.1	4.8	29.2	5.8
3.8	0.8	8.9	1.8	14.0	2.8	19.1	3.8	24.2	4.8	29.3	5.9
3.9	0.8	9.0	1.8	14.1	2.8	19.2	3.8	24.3	4.9	29.4	5.9
4.0	0.8	9.1	1.8	14.2	2.8	19.3	3.9	24.4	4.9	29.5	5.9
4.1	0.8	9.2	1.8	14.3	2.9	19.4	3.9	24.5	4.9	29.6	5.9
4.2	0.8	9.3	1.9	14.4	2.9	19.5	3.9	24.6	4.9	29.7	5.9
4.3	0.9	9.4	1.9	14.5	2.9	19.6	3.9	24.7	4.9	29.8	6.0
4.4	0.9	9.5	1.9	14.6	2.9	19.7	3.9	24.8	5.0	29.9	6.0
4.5	0.9	9.6	1.9	14.7	2.9	19.8	4.0	24.9	5.0	30.0	6.0
4.6	0.9	9.7	1.9	14.8	3.0	19.9	4.0	25.0	5.0	30.1	6.0
4.7	0.9	9.8	2.0	14.9	3.0	20.0	4.0	25.1	5.0	30.2	6.0
4.8	1.0	9.9	2.0	15.0	3.0	20.1	4.0	25.2	5.0	30.3	6.1
4.9	1.0	10.0	2.0	15.1	3.0	20.2	4.0	25.3	5.1	30.4	6.1
5.0	1.0	10.1	2.0	15.2	3.0	20.3	4.1	25.4	5.1	30.5	6.1

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	003 15.0	003 15.5	003 06.1
01	003 15.3	003 15.8	003 06.4
02	003 15.5	003 16.0	003 06.6
03	003 15.8	003 16.3	003 06.8
04	003 16.0	003 16.5	003 07.1
05	003 16.3	003 16.8	003 07.3
06	003 16.5	003 17.0	003 07.5
07	003 16.8	003 17.3	003 07.8
08	003 17.0	003 17.5	003 08.0
09	003 17.3	003 17.8	003 08.3
10	003 17.5	003 18.0	003 08.5
11	003 17.8	003 18.3	003 08.7
12	003 18.0	003 18.5	003 09.0
13	003 18.3	003 18.8	003 09.2
14	003 18.5	003 19.0	003 09.5
15	003 18.8	003 19.3	003 09.7
16	003 19.0	003 19.5	003 09.9
17	003 19.3	003 19.8	003 10.2
18	003 19.5	003 20.0	003 10.4
19	003 19.8	003 20.3	003 10.7
20	003 20.0	003 20.5	003 10.9
21	003 20.3	003 20.8	003 11.1
22	003 20.5	003 21.0	003 11.4
23	003 20.8	003 21.3	003 11.6
24	003 21.0	003 21.6	003 11.8
25	003 21.3	003 21.8	003 12.1
26	003 21.5	003 22.1	003 12.3
27	003 21.8	003 22.3	003 12.6
28	003 22.0	003 22.6	003 12.8
29	003 22.3	003 22.8	003 13.0
30	003 22.5	003 23.1	003 13.3
31	003 22.8	003 23.3	003 13.5
32	003 23.0	003 23.6	003 13.8
33	003 23.3	003 23.8	003 14.0
34	003 23.5	003 24.1	003 14.2
35	003 23.8	003 24.3	003 14.5
36	003 24.0	003 24.6	003 14.7
37	003 24.3	003 24.8	003 14.9
38	003 24.5	003 25.1	003 15.2
39	003 24.8	003 25.3	003 15.4
40	003 25.0	003 25.6	003 15.7
41	003 25.3	003 25.8	003 15.9
42	003 25.5	003 26.1	003 16.1
43	003 25.8	003 26.3	003 16.4
44	003 26.0	003 26.6	003 16.6
45	003 26.3	003 26.8	003 16.9
46	003 26.5	003 27.1	003 17.1
47	003 26.8	003 27.3	003 17.3
48	003 27.0	003 27.6	003 17.6
49	003 27.3	003 27.8	003 17.8
50	003 27.5	003 28.1	003 18.0
51	003 27.8	003 28.3	003 18.3
52	003 28.0	003 28.6	003 18.5
53	003 28.3	003 28.8	003 18.8
54	003 28.5	003 29.1	003 19.0
55	003 28.8	003 29.3	003 19.2
56	003 29.0	003 29.6	003 19.5
57	003 29.3	003 29.8	003 19.7
58	003 29.5	003 30.1	003 20.0
59	003 29.8	003 30.3	003 20.2

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	1.1	10.2	2.2	15.3	3.3	20.4	4.4	25.5	5.5
0.1	0.0	5.2	1.1	10.3	2.2	15.4	3.3	20.5	4.4	25.6	5.5
0.2	0.0	5.3	1.1	10.4	2.3	15.5	3.4	20.6	4.5	25.7	5.6
0.3	0.1	5.4	1.2	10.5	2.3	15.6	3.4	20.7	4.5	25.8	5.6
0.4	0.1	5.5	1.2	10.6	2.3	15.7	3.4	20.8	4.5	25.9	5.6
0.5	0.1	5.6	1.2	10.7	2.3	15.8	3.4	20.9	4.5	26.0	5.6
0.6	0.1	5.7	1.2	10.8	2.3	15.9	3.4	21.0	4.6	26.1	5.7
0.7	0.2	5.8	1.3	10.9	2.4	16.0	3.5	21.1	4.6	26.2	5.7
0.8	0.2	5.9	1.3	11.0	2.4	16.1	3.5	21.2	4.6	26.3	5.7
0.9	0.2	6.0	1.3	11.1	2.4	16.2	3.5	21.3	4.6	26.4	5.7
1.0	0.2	6.1	1.3	11.2	2.4	16.3	3.5	21.4	4.6	26.5	5.7
1.1	0.2	6.2	1.3	11.3	2.4	16.4	3.6	21.5	4.7	26.6	5.8
1.2	0.3	6.3	1.4	11.4	2.5	16.5	3.6	21.6	4.7	26.7	5.8
1.3	0.3	6.4	1.4	11.5	2.5	16.6	3.6	21.7	4.7	26.8	5.8
1.4	0.3	6.5	1.4	11.6	2.5	16.7	3.6	21.8	4.7	26.9	5.8
1.5	0.3	6.6	1.4	11.7	2.5	16.8	3.6	21.9	4.7	27.0	5.9
1.6	0.3	6.7	1.5	11.8	2.6	16.9	3.7	22.0	4.8	27.1	5.9
1.7	0.4	6.8	1.5	11.9	2.6	17.0	3.7	22.1	4.8	27.2	5.9
1.8	0.4	6.9	1.5	12.0	2.6	17.1	3.7	22.2	4.8	27.3	5.9
1.9	0.4	7.0	1.5	12.1	2.6	17.2	3.7	22.3	4.8	27.4	5.9
2.0	0.4	7.1	1.5	12.2	2.6	17.3	3.7	22.4	4.9	27.5	6.0
2.1	0.5	7.2	1.6	12.3	2.7	17.4	3.8	22.5	4.9	27.6	6.0
2.2	0.5	7.3	1.6	12.4	2.7	17.5	3.8	22.6	4.9	27.7	6.0
2.3	0.5	7.4	1.6	12.5	2.7	17.6	3.8	22.7	4.9	27.8	6.0
2.4	0.5	7.5	1.6	12.6	2.7	17.7	3.8	22.8	4.9	27.9	6.0
2.5	0.5	7.6	1.6	12.7	2.8	17.8	3.9	22.9	5.0	28.0	6.1
2.6	0.6	7.7	1.7	12.8	2.8	17.9	3.9	23.0	5.0	28.1	6.1
2.7	0.6	7.8	1.7	12.9	2.8	18.0	3.9	23.1	5.0	28.2	6.1
2.8	0.6	7.9	1.7	13.0	2.8	18.1	3.9	23.2	5.0	28.3	6.1
2.9	0.6	8.0	1.7	13.1	2.8	18.2	3.9	23.3	5.0	28.4	6.2
3.0	0.7	8.1	1.8	13.2	2.9	18.3	4.0	23.4	5.1	28.5	6.2
3.1	0.7	8.2	1.8	13.3	2.9	18.4	4.0	23.5	5.1	28.6	6.2
3.2	0.7	8.3	1.8	13.4	2.9	18.5	4.0	23.6	5.1	28.7	6.2
3.3	0.7	8.4	1.8	13.5	2.9	18.6	4.0	23.7	5.1	28.8	6.2
3.4	0.7	8.5	1.8	13.6	2.9	18.7	4.1	23.8	5.2	28.9	6.3
3.5	0.8	8.6	1.9	13.7	3.0	18.8	4.1	23.9	5.2	29.0	6.3
3.6	0.8	8.7	1.9	13.8	3.0	18.9	4.1	24.0	5.2	29.1	6.3
3.7	0.8	8.8	1.9	13.9	3.0	19.0	4.1	24.1	5.2	29.2	6.3
3.8	0.8	8.9	1.9	14.0	3.0	19.1	4.1	24.2	5.2	29.3	6.3
3.9	0.8	9.0	2.0	14.1	3.1	19.2	4.2	24.3	5.3	29.4	6.4
4.0	0.9	9.1	2.0	14.2	3.1	19.3	4.2	24.4	5.3	29.5	6.4
4.1	0.9	9.2	2.0	14.3	3.1	19.4	4.2	24.5	5.3	29.6	6.4
4.2	0.9	9.3	2.0	14.4	3.1	19.5	4.2	24.6	5.3	29.7	6.4
4.3	0.9	9.4	2.0	14.5	3.1	19.6	4.2	24.7	5.4	29.8	6.5
4.4	1.0	9.5	2.1	14.6	3.2	19.7	4.3	24.8	5.4	29.9	6.5
4.5	1.0	9.6	2.1	14.7	3.2	19.8	4.3	24.9	5.4	30.0	6.5
4.6	1.0	9.7	2.1	14.8	3.2	19.9	4.3	25.0	5.4	30.1	6.5
4.7	1.0	9.8	2.1	14.9	3.2	20.0	4.3	25.1	5.4	30.2	6.5
4.8	1.0	9.9	2.1	15.0	3.3	20.1	4.4	25.2	5.5	30.3	6.6
4.9	1.1	10.0	2.2	15.1	3.3	20.2	4.4	25.3	5.5	30.4	6.6
5.0	1.1	10.1	2.2	15.2	3.3	20.3	4.4	25.4	5.5	30.5	6.6

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	003 30.0	003 30.6	003 20.4
01	003 30.3	003 30.8	003 20.7
02	003 30.5	003 31.1	003 20.9
03	003 30.8	003 31.3	003 21.1
04	003 31.0	003 31.6	003 21.4
05	003 31.3	003 31.8	003 21.6
06	003 31.5	003 32.1	003 21.9
07	003 31.8	003 32.3	003 22.1
08	003 32.0	003 32.6	003 22.3
09	003 32.3	003 32.8	003 22.6
10	003 32.5	003 33.1	003 22.8
11	003 32.8	003 33.3	003 23.1
12	003 33.0	003 33.6	003 23.3
13	003 33.3	003 33.8	003 23.5
14	003 33.5	003 34.1	003 23.8
15	003 33.8	003 34.3	003 24.0
16	003 34.0	003 34.6	003 24.3
17	003 34.3	003 34.8	003 24.5
18	003 34.5	003 35.1	003 24.7
19	003 34.8	003 35.3	003 25.0
20	003 35.0	003 35.6	003 25.2
21	003 35.3	003 35.8	003 25.4
22	003 35.5	003 36.1	003 25.7
23	003 35.8	003 36.3	003 25.9
24	003 36.0	003 36.6	003 26.2
25	003 36.3	003 36.8	003 26.4
26	003 36.5	003 37.1	003 26.6
27	003 36.8	003 37.3	003 26.9
28	003 37.0	003 37.6	003 27.1
29	003 37.3	003 37.8	003 27.4
30	003 37.5	003 38.1	003 27.6
31	003 37.8	003 38.3	003 27.8
32	003 38.0	003 38.6	003 28.1
33	003 38.3	003 38.8	003 28.3
34	003 38.5	003 39.1	003 28.5
35	003 38.8	003 39.3	003 28.8
36	003 39.0	003 39.6	003 29.0
37	003 39.3	003 39.9	003 29.3
38	003 39.5	003 40.1	003 29.5
39	003 39.8	003 40.4	003 29.7
40	003 40.0	003 40.6	003 30.0
41	003 40.3	003 40.9	003 30.2
42	003 40.5	003 41.1	003 30.5
43	003 40.8	003 41.4	003 30.7
44	003 41.0	003 41.6	003 30.9
45	003 41.3	003 41.9	003 31.2
46	003 41.5	003 42.1	003 31.4
47	003 41.8	003 42.4	003 31.6
48	003 42.0	003 42.6	003 31.9
49	003 42.3	003 42.9	003 32.1
50	003 42.5	003 43.1	003 32.4
51	003 42.8	003 43.4	003 32.6
52	003 43.0	003 43.6	003 32.8
53	003 43.3	003 43.9	003 33.1
54	003 43.5	003 44.1	003 33.3
55	003 43.8	003 44.4	003 33.6
56	003 44.0	003 44.6	003 33.8
57	003 44.3	003 44.9	003 34.0
58	003 44.5	003 45.1	003 34.3
59	003 44.8	003 45.4	003 34.5

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	1.2	10.2	2.4	15.3	3.6	20.4	4.8	25.5	6.0
0.1	0.0	5.2	1.2	10.3	2.4	15.4	3.6	20.5	4.8	25.6	6.0
0.2	0.0	5.3	1.2	10.4	2.4	15.5	3.6	20.6	4.8	25.7	6.0
0.3	0.1	5.4	1.3	10.5	2.5	15.6	3.6	20.7	4.8	25.8	6.0
0.4	0.1	5.5	1.3	10.6	2.5	15.7	3.7	20.8	4.9	25.9	6.0
0.5	0.1	5.6	1.3	10.7	2.5	15.8	3.7	20.9	4.9	26.0	6.1
0.6	0.1	5.7	1.3	10.8	2.5	15.9	3.7	21.0	4.9	26.1	6.1
0.7	0.2	5.8	1.4	10.9	2.5	16.0	3.7	21.1	4.9	26.2	6.1
0.8	0.2	5.9	1.4	11.0	2.6	16.1	3.8	21.2	4.9	26.3	6.1
0.9	0.2	6.0	1.4	11.1	2.6	16.2	3.8	21.3	5.0	26.4	6.2
1.0	0.2	6.1	1.4	11.2	2.6	16.3	3.8	21.4	5.0	26.5	6.2
1.1	0.3	6.2	1.4	11.3	2.6	16.4	3.8	21.5	5.0	26.6	6.2
1.2	0.3	6.3	1.5	11.4	2.7	16.5	3.9	21.6	5.0	26.7	6.2
1.3	0.3	6.4	1.5	11.5	2.7	16.6	3.9	21.7	5.1	26.8	6.3
1.4	0.3	6.5	1.5	11.6	2.7	16.7	3.9	21.8	5.1	26.9	6.3
1.5	0.4	6.6	1.5	11.7	2.7	16.8	3.9	21.9	5.1	27.0	6.3
1.6	0.4	6.7	1.6	11.8	2.8	16.9	3.9	22.0	5.1	27.1	6.3
1.7	0.4	6.8	1.6	11.9	2.8	17.0	4.0	22.1	5.2	27.2	6.3
1.8	0.4	6.9	1.6	12.0	2.8	17.1	4.0	22.2	5.2	27.3	6.4
1.9	0.4	7.0	1.6	12.1	2.8	17.2	4.0	22.3	5.2	27.4	6.4
2.0	0.5	7.1	1.7	12.2	2.8	17.3	4.0	22.4	5.2	27.5	6.4
2.1	0.5	7.2	1.7	12.3	2.9	17.4	4.1	22.5	5.3	27.6	6.4
2.2	0.5	7.3	1.7	12.4	2.9	17.5	4.1	22.6	5.3	27.7	6.5
2.3	0.5	7.4	1.7	12.5	2.9	17.6	4.1	22.7	5.3	27.8	6.5
2.4	0.6	7.5	1.8	12.6	2.9	17.7	4.1	22.8	5.3	27.9	6.5
2.5	0.6	7.6	1.8	12.7	3.0	17.8	4.2	22.9	5.3	28.0	6.5
2.6	0.6	7.7	1.8	12.8	3.0	17.9	4.2	23.0	5.4	28.1	6.6
2.7	0.6	7.8	1.8	12.9	3.0	18.0	4.2	23.1	5.4	28.2	6.6
2.8	0.7	7.9	1.8	13.0	3.0	18.1	4.2	23.2	5.4	28.3	6.6
2.9	0.7	8.0	1.9	13.1	3.1	18.2	4.2	23.3	5.4	28.4	6.6
3.0	0.7	8.1	1.9	13.2	3.1	18.3	4.3	23.4	5.5	28.5	6.7
3.1	0.7	8.2	1.9	13.3	3.1	18.4	4.3	23.5	5.5	28.6	6.7
3.2	0.7	8.3	1.9	13.4	3.1	18.5	4.3	23.6	5.5	28.7	6.7
3.3	0.8	8.4	2.0	13.5	3.2	18.6	4.3	23.7	5.5	28.8	6.7
3.4	0.8	8.5	2.0	13.6	3.2	18.7	4.4	23.8	5.6	28.9	6.7
3.5	0.8	8.6	2.0	13.7	3.2	18.8	4.4	23.9	5.6	29.0	6.8
3.6	0.8	8.7	2.0	13.8	3.2	18.9	4.4	24.0	5.6	29.1	6.8
3.7	0.9	8.8	2.1	13.9	3.2	19.0	4.4	24.1	5.6	29.2	6.8
3.8	0.9	8.9	2.1	14.0	3.3	19.1	4.5	24.2	5.6	29.3	6.8
3.9	0.9	9.0	2.1	14.1	3.3	19.2	4.5	24.3	5.7	29.4	6.9
4.0	0.9	9.1	2.1	14.2	3.3	19.3	4.5	24.4	5.7	29.5	6.9
4.1	1.0	9.2	2.1	14.3	3.3	19.4	4.5	24.5	5.7	29.6	6.9
4.2	1.0	9.3	2.2	14.4	3.4	19.5	4.6	24.6	5.7	29.7	6.9
4.3	1.0	9.4	2.2	14.5	3.4	19.6	4.6	24.7	5.8	29.8	7.0
4.4	1.0	9.5	2.2	14.6	3.4	19.7	4.6	24.8	5.8	29.9	7.0
4.5	1.1	9.6	2.2	14.7	3.4	19.8	4.6	24.9	5.8	30.0	7.0
4.6	1.1	9.7	2.3	14.8	3.5	19.9	4.6	25.0	5.8	30.1	7.0
4.7	1.1	9.8	2.3	14.9	3.5	20.0	4.7	25.1	5.9	30.2	7.0
4.8	1.1	9.9	2.3	15.0	3.5	20.1	4.7	25.2	5.9	30.3	7.1
4.9	1.1	10.0	2.3	15.1	3.5	20.2	4.7	25.3	5.9	30.4	7.1
5.0	1.2	10.1	2.4	15.2	3.5	20.3	4.7	25.4	5.9	30.5	7.1

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	003 45.0	003 45.6	003 34.8
01	003 45.3	003 45.9	003 35.0
02	003 45.5	003 46.1	003 35.2
03	003 45.8	003 46.4	003 35.5
04	003 46.0	003 46.6	003 35.7
05	003 46.3	003 46.9	003 35.9
06	003 46.5	003 47.1	003 36.2
07	003 46.8	003 47.4	003 36.4
08	003 47.0	003 47.6	003 36.7
09	003 47.3	003 47.9	003 36.9
10	003 47.5	003 48.1	003 37.1
11	003 47.8	003 48.4	003 37.4
12	003 48.0	003 48.6	003 37.6
13	003 48.3	003 48.9	003 37.9
14	003 48.5	003 49.1	003 38.1
15	003 48.8	003 49.4	003 38.3
16	003 49.0	003 49.6	003 38.6
17	003 49.3	003 49.9	003 38.8
18	003 49.5	003 50.1	003 39.0
19	003 49.8	003 50.4	003 39.3
20	003 50.0	003 50.6	003 39.5
21	003 50.3	003 50.9	003 39.8
22	003 50.5	003 51.1	003 40.0
23	003 50.8	003 51.4	003 40.2
24	003 51.0	003 51.6	003 40.5
25	003 51.3	003 51.9	003 40.7
26	003 51.5	003 52.1	003 41.0
27	003 51.8	003 52.4	003 41.2
28	003 52.0	003 52.6	003 41.4
29	003 52.3	003 52.9	003 41.7
30	003 52.5	003 53.1	003 41.9
31	003 52.8	003 53.4	003 42.1
32	003 53.0	003 53.6	003 42.4
33	003 53.3	003 53.9	003 42.6
34	003 53.5	003 54.1	003 42.9
35	003 53.8	003 54.4	003 43.1
36	003 54.0	003 54.6	003 43.3
37	003 54.3	003 54.9	003 43.6
38	003 54.5	003 55.1	003 43.8
39	003 54.8	003 55.4	003 44.1
40	003 55.0	003 55.6	003 44.3
41	003 55.3	003 55.9	003 44.5
42	003 55.5	003 56.1	003 44.8
43	003 55.8	003 56.4	003 45.0
44	003 56.0	003 56.6	003 45.2
45	003 56.3	003 56.9	003 45.5
46	003 56.5	003 57.1	003 45.7
47	003 56.8	003 57.4	003 46.0
48	003 57.0	003 57.6	003 46.2
49	003 57.3	003 57.9	003 46.4
50	003 57.5	003 58.2	003 46.7
51	003 57.8	003 58.4	003 46.9
52	003 58.0	003 58.7	003 47.2
53	003 58.3	003 58.9	003 47.4
54	003 58.5	003 59.2	003 47.6
55	003 58.8	003 59.4	003 47.9
56	003 59.0	003 59.7	003 48.1
57	003 59.3	003 59.9	003 48.4
58	003 59.5	004 00.2	003 48.6
59	003 59.8	004 00.4	003 48.8

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	1.3	10.2	2.6	15.3	3.8	20.4	5.1	25.5	6.4
0.1	0.0	5.2	1.3	10.3	2.6	15.4	3.9	20.5	5.1	25.6	6.4
0.2	0.1	5.3	1.3	10.4	2.6	15.5	3.9	20.6	5.2	25.7	6.4
0.3	0.1	5.4	1.4	10.5	2.6	15.6	3.9	20.7	5.2	25.8	6.5
0.4	0.1	5.5	1.4	10.6	2.7	15.7	3.9	20.8	5.2	25.9	6.5
0.5	0.1	5.6	1.4	10.7	2.7	15.8	4.0	20.9	5.2	26.0	6.5
0.6	0.2	5.7	1.4	10.8	2.7	15.9	4.0	21.0	5.3	26.1	6.5
0.7	0.2	5.8	1.5	10.9	2.7	16.0	4.0	21.1	5.3	26.2	6.6
0.8	0.2	5.9	1.5	11.0	2.8	16.1	4.0	21.2	5.3	26.3	6.6
0.9	0.2	6.0	1.5	11.1	2.8	16.2	4.1	21.3	5.3	26.4	6.6
1.0	0.3	6.1	1.5	11.2	2.8	16.3	4.1	21.4	5.4	26.5	6.6
1.1	0.3	6.2	1.6	11.3	2.8	16.4	4.1	21.5	5.4	26.6	6.7
1.2	0.3	6.3	1.6	11.4	2.9	16.5	4.1	21.6	5.4	26.7	6.7
1.3	0.3	6.4	1.6	11.5	2.9	16.6	4.2	21.7	5.4	26.8	6.7
1.4	0.4	6.5	1.6	11.6	2.9	16.7	4.2	21.8	5.5	26.9	6.7
1.5	0.4	6.6	1.7	11.7	2.9	16.8	4.2	21.9	5.5	27.0	6.8
1.6	0.4	6.7	1.7	11.8	3.0	16.9	4.2	22.0	5.5	27.1	6.8
1.7	0.4	6.8	1.7	11.9	3.0	17.0	4.3	22.1	5.5	27.2	6.8
1.8	0.5	6.9	1.7	12.0	3.0	17.1	4.3	22.2	5.6	27.3	6.8
1.9	0.5	7.0	1.8	12.1	3.0	17.2	4.3	22.3	5.6	27.4	6.9
2.0	0.5	7.1	1.8	12.2	3.1	17.3	4.3	22.4	5.6	27.5	6.9
2.1	0.5	7.2	1.8	12.3	3.1	17.4	4.4	22.5	5.6	27.6	6.9
2.2	0.6	7.3	1.8	12.4	3.1	17.5	4.4	22.6	5.7	27.7	6.9
2.3	0.6	7.4	1.9	12.5	3.1	17.6	4.4	22.7	5.7	27.8	7.0
2.4	0.6	7.5	1.9	12.6	3.2	17.7	4.4	22.8	5.7	27.9	7.0
2.5	0.6	7.6	1.9	12.7	3.2	17.8	4.5	22.9	5.7	28.0	7.0
2.6	0.7	7.7	1.9	12.8	3.2	17.9	4.5	23.0	5.8	28.1	7.0
2.7	0.7	7.8	2.0	12.9	3.2	18.0	4.5	23.1	5.8	28.2	7.1
2.8	0.7	7.9	2.0	13.0	3.3	18.1	4.5	23.2	5.8	28.3	7.1
2.9	0.7	8.0	2.0	13.1	3.3	18.2	4.6	23.3	5.8	28.4	7.1
3.0	0.8	8.1	2.0	13.2	3.3	18.3	4.6	23.4	5.9	28.5	7.1
3.1	0.8	8.2	2.1	13.3	3.3	18.4	4.6	23.5	5.9	28.6	7.2
3.2	0.8	8.3	2.1	13.4	3.4	18.5	4.6	23.6	5.9	28.7	7.2
3.3	0.8	8.4	2.1	13.5	3.4	18.6	4.7	23.7	5.9	28.8	7.2
3.4	0.9	8.5	2.1	13.6	3.4	18.7	4.7	23.8	6.0	28.9	7.2
3.5	0.9	8.6	2.2	13.7	3.4	18.8	4.7	23.9	6.0	29.0	7.3
3.6	0.9	8.7	2.2	13.8	3.5	18.9	4.7	24.0	6.0	29.1	7.3
3.7	0.9	8.8	2.2	13.9	3.5	19.0	4.8	24.1	6.0	29.2	7.3
3.8	1.0	8.9	2.2	14.0	3.5	19.1	4.8	24.2	6.1	29.3	7.3
3.9	1.0	9.0	2.3	14.1	3.5	19.2	4.8	24.3	6.1	29.4	7.4
4.0	1.0	9.1	2.3	14.2	3.6	19.3	4.8	24.4	6.1	29.5	7.4
4.1	1.0	9.2	2.3	14.3	3.6	19.4	4.9	24.5	6.1	29.6	7.4
4.2	1.1	9.3	2.3	14.4	3.6	19.5	4.9	24.6	6.2	29.7	7.4
4.3	1.1	9.4	2.4	14.5	3.6	19.6	4.9	24.7	6.2	29.8	7.5
4.4	1.1	9.5	2.4	14.6	3.7	19.7	4.9	24.8	6.2	29.9	7.5
4.5	1.1	9.6	2.4	14.7	3.7	19.8	5.0	24.9	6.2	30.0	7.5
4.6	1.2	9.7	2.4	14.8	3.7	19.9	5.0	25.0	6.3	30.1	7.5
4.7	1.2	9.8	2.5	14.9	3.7	20.0	5.0	25.1	6.3	30.2	7.6
4.8	1.2	9.9	2.5	15.0	3.8	20.1	5.0	25.2	6.3	30.3	7.6
4.9	1.2	10.0	2.5	15.1	3.8	20.2	5.1	25.3	6.3	30.4	7.6
5.0	1.3	10.1	2.5	15.2	3.8	20.3	5.1	25.4	6.4	30.5	7.6

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	004 00.0	004 00.7	003 49.1
01	004 00.3	004 00.9	003 49.3
02	004 00.5	004 01.2	003 49.5
03	004 00.8	004 01.4	003 49.8
04	004 01.0	004 01.7	003 50.0
05	004 01.3	004 01.9	003 50.3
06	004 01.5	004 02.2	003 50.5
07	004 01.8	004 02.4	003 50.7
08	004 02.0	004 02.7	003 51.0
09	004 02.3	004 02.9	003 51.2
10	004 02.5	004 03.2	003 51.5
11	004 02.8	004 03.4	003 51.7
12	004 03.0	004 03.7	003 51.9
13	004 03.3	004 03.9	003 52.2
14	004 03.5	004 04.2	003 52.4
15	004 03.8	004 04.4	003 52.6
16	004 04.0	004 04.7	003 52.9
17	004 04.3	004 04.9	003 53.1
18	004 04.5	004 05.2	003 53.4
19	004 04.8	004 05.4	003 53.6
20	004 05.0	004 05.7	003 53.8
21	004 05.3	004 05.9	003 54.1
22	004 05.5	004 06.2	003 54.3
23	004 05.8	004 06.4	003 54.6
24	004 06.0	004 06.7	003 54.8
25	004 06.3	004 06.9	003 55.0
26	004 06.5	004 07.2	003 55.3
27	004 06.8	004 07.4	003 55.5
28	004 07.0	004 07.7	003 55.7
29	004 07.3	004 07.9	003 56.0
30	004 07.5	004 08.2	003 56.2
31	004 07.8	004 08.4	003 56.5
32	004 08.0	004 08.7	003 56.7
33	004 08.3	004 08.9	003 56.9
34	004 08.5	004 09.2	003 57.2
35	004 08.8	004 09.4	003 57.4
36	004 09.0	004 09.7	003 57.7
37	004 09.3	004 09.9	003 57.9
38	004 09.5	004 10.2	003 58.1
39	004 09.8	004 10.4	003 58.4
40	004 10.0	004 10.7	003 58.6
41	004 10.3	004 10.9	003 58.8
42	004 10.5	004 11.2	003 59.1
43	004 10.8	004 11.4	003 59.3
44	004 11.0	004 11.7	003 59.6
45	004 11.3	004 11.9	003 59.8
46	004 11.5	004 12.2	004 00.0
47	004 11.8	004 12.4	004 00.3
48	004 12.0	004 12.7	004 00.5
49	004 12.3	004 12.9	004 00.8
50	004 12.5	004 13.2	004 01.0
51	004 12.8	004 13.4	004 01.2
52	004 13.0	004 13.7	004 01.5
53	004 13.3	004 13.9	004 01.7
54	004 13.5	004 14.2	004 02.0
55	004 13.8	004 14.4	004 02.2
56	004 14.0	004 14.7	004 02.4
57	004 14.3	004 14.9	004 02.7
58	004 14.5	004 15.2	004 02.9
59	004 14.8	004 15.4	004 03.1

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	1.4	10.2	2.7	15.3	4.1	20.4	5.4	25.5	6.8
0.1	0.0	5.2	1.4	10.3	2.7	15.4	4.1	20.5	5.5	25.6	6.8
0.2	0.1	5.3	1.4	10.4	2.8	15.5	4.1	20.6	5.5	25.7	6.9
0.3	0.1	5.4	1.4	10.5	2.8	15.6	4.2	20.7	5.5	25.8	6.9
0.4	0.1	5.5	1.5	10.6	2.8	15.7	4.2	20.8	5.5	25.9	6.9
0.5	0.1	5.6	1.5	10.7	2.9	15.8	4.2	20.9	5.6	26.0	6.9
0.6	0.2	5.7	1.5	10.8	2.9	15.9	4.2	21.0	5.6	26.1	7.0
0.7	0.2	5.8	1.5	10.9	2.9	16.0	4.3	21.1	5.6	26.2	7.0
0.8	0.2	5.9	1.6	11.0	2.9	16.1	4.3	21.2	5.7	26.3	7.0
0.9	0.2	6.0	1.6	11.1	3.0	16.2	4.3	21.3	5.7	26.4	7.0
1.0	0.3	6.1	1.6	11.2	3.0	16.3	4.3	21.4	5.7	26.5	7.1
1.1	0.3	6.2	1.7	11.3	3.0	16.4	4.4	21.5	5.7	26.6	7.1
1.2	0.3	6.3	1.7	11.4	3.0	16.5	4.4	21.6	5.8	26.7	7.1
1.3	0.3	6.4	1.7	11.5	3.1	16.6	4.4	21.7	5.8	26.8	7.1
1.4	0.4	6.5	1.7	11.6	3.1	16.7	4.5	21.8	5.8	26.9	7.2
1.5	0.4	6.6	1.8	11.7	3.1	16.8	4.5	21.9	5.8	27.0	7.2
1.6	0.4	6.7	1.8	11.8	3.1	16.9	4.5	22.0	5.9	27.1	7.2
1.7	0.5	6.8	1.8	11.9	3.2	17.0	4.5	22.1	5.9	27.2	7.3
1.8	0.5	6.9	1.8	12.0	3.2	17.1	4.6	22.2	5.9	27.3	7.3
1.9	0.5	7.0	1.9	12.1	3.2	17.2	4.6	22.3	5.9	27.4	7.3
2.0	0.5	7.1	1.9	12.2	3.3	17.3	4.6	22.4	6.0	27.5	7.3
2.1	0.6	7.2	1.9	12.3	3.3	17.4	4.6	22.5	6.0	27.6	7.4
2.2	0.6	7.3	1.9	12.4	3.3	17.5	4.7	22.6	6.0	27.7	7.4
2.3	0.6	7.4	2.0	12.5	3.3	17.6	4.7	22.7	6.1	27.8	7.4
2.4	0.6	7.5	2.0	12.6	3.4	17.7	4.7	22.8	6.1	27.9	7.4
2.5	0.7	7.6	2.0	12.7	3.4	17.8	4.7	22.9	6.1	28.0	7.5
2.6	0.7	7.7	2.1	12.8	3.4	17.9	4.8	23.0	6.1	28.1	7.5
2.7	0.7	7.8	2.1	12.9	3.4	18.0	4.8	23.1	6.2	28.2	7.5
2.8	0.7	7.9	2.1	13.0	3.5	18.1	4.8	23.2	6.2	28.3	7.5
2.9	0.8	8.0	2.1	13.1	3.5	18.2	4.9	23.3	6.2	28.4	7.6
3.0	0.8	8.1	2.2	13.2	3.5	18.3	4.9	23.4	6.2	28.5	7.6
3.1	0.8	8.2	2.2	13.3	3.5	18.4	4.9	23.5	6.3	28.6	7.6
3.2	0.9	8.3	2.2	13.4	3.6	18.5	4.9	23.6	6.3	28.7	7.7
3.3	0.9	8.4	2.2	13.5	3.6	18.6	5.0	23.7	6.3	28.8	7.7
3.4	0.9	8.5	2.3	13.6	3.6	18.7	5.0	23.8	6.3	28.9	7.7
3.5	0.9	8.6	2.3	13.7	3.7	18.8	5.0	23.9	6.4	29.0	7.7
3.6	1.0	8.7	2.3	13.8	3.7	18.9	5.0	24.0	6.4	29.1	7.8
3.7	1.0	8.8	2.3	13.9	3.7	19.0	5.1	24.1	6.4	29.2	7.8
3.8	1.0	8.9	2.4	14.0	3.7	19.1	5.1	24.2	6.5	29.3	7.8
3.9	1.0	9.0	2.4	14.1	3.8	19.2	5.1	24.3	6.5	29.4	7.8
4.0	1.1	9.1	2.4	14.2	3.8	19.3	5.1	24.4	6.5	29.5	7.9
4.1	1.1	9.2	2.5	14.3	3.8	19.4	5.2	24.5	6.5	29.6	7.9
4.2	1.1	9.3	2.5	14.4	3.8	19.5	5.2	24.6	6.6	29.7	7.9
4.3	1.1	9.4	2.5	14.5	3.9	19.6	5.2	24.7	6.6	29.8	7.9
4.4	1.2	9.5	2.5	14.6	3.9	19.7	5.3	24.8	6.6	29.9	8.0
4.5	1.2	9.6	2.6	14.7	3.9	19.8	5.3	24.9	6.6	30.0	8.0
4.6	1.2	9.7	2.6	14.8	3.9	19.9	5.3	25.0	6.7	30.1	8.0
4.7	1.3	9.8	2.6	14.9	4.0	20.0	5.3	25.1	6.7	30.2	8.1
4.8	1.3	9.9	2.6	15.0	4.0	20.1	5.4	25.2	6.7	30.3	8.1
4.9	1.3	10.0	2.7	15.1	4.0	20.2	5.4	25.3	6.7	30.4	8.1
5.0	1.3	10.1	2.7	15.2	4.1	20.3	5.4	25.4	6.8	30.5	8.1

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	004 15.0	004 15.7	004 03.4
01	004 15.3	004 15.9	004 03.6
02	004 15.5	004 16.2	004 03.9
03	004 15.8	004 16.5	004 04.1
04	004 16.0	004 16.7	004 04.3
05	004 16.3	004 17.0	004 04.6
06	004 16.5	004 17.2	004 04.8
07	004 16.8	004 17.5	004 05.1
08	004 17.0	004 17.7	004 05.3
09	004 17.3	004 18.0	004 05.5
10	004 17.5	004 18.2	004 05.8
11	004 17.8	004 18.5	004 06.0
12	004 18.0	004 18.7	004 06.2
13	004 18.3	004 19.0	004 06.5
14	004 18.5	004 19.2	004 06.7
15	004 18.8	004 19.5	004 07.0
16	004 19.0	004 19.7	004 07.2
17	004 19.3	004 20.0	004 07.4
18	004 19.5	004 20.2	004 07.7
19	004 19.8	004 20.5	004 07.9
20	004 20.0	004 20.7	004 08.2
21	004 20.3	004 21.0	004 08.4
22	004 20.5	004 21.2	004 08.6
23	004 20.8	004 21.5	004 08.9
24	004 21.0	004 21.7	004 09.1
25	004 21.3	004 22.0	004 09.3
26	004 21.5	004 22.2	004 09.6
27	004 21.8	004 22.5	004 09.8
28	004 22.0	004 22.7	004 10.1
29	004 22.3	004 23.0	004 10.3
30	004 22.5	004 23.2	004 10.5
31	004 22.8	004 23.5	004 10.8
32	004 23.0	004 23.7	004 11.0
33	004 23.3	004 24.0	004 11.3
34	004 23.5	004 24.2	004 11.5
35	004 23.8	004 24.5	004 11.7
36	004 24.0	004 24.7	004 12.0
37	004 24.3	004 25.0	004 12.2
38	004 24.5	004 25.2	004 12.5
39	004 24.8	004 25.5	004 12.7
40	004 25.0	004 25.7	004 12.9
41	004 25.3	004 26.0	004 13.2
42	004 25.5	004 26.2	004 13.4
43	004 25.8	004 26.5	004 13.6
44	004 26.0	004 26.7	004 13.9
45	004 26.3	004 27.0	004 14.1
46	004 26.5	004 27.2	004 14.4
47	004 26.8	004 27.5	004 14.6
48	004 27.0	004 27.7	004 14.8
49	004 27.3	004 28.0	004 15.1
50	004 27.5	004 28.2	004 15.3
51	004 27.8	004 28.5	004 15.6
52	004 28.0	004 28.7	004 15.8
53	004 28.3	004 29.0	004 16.0
54	004 28.5	004 29.2	004 16.3
55	004 28.8	004 29.5	004 16.5
56	004 29.0	004 29.7	004 16.7
57	004 29.3	004 30.0	004 17.0
58	004 29.5	004 30.2	004 17.2
59	004 29.8	004 30.5	004 17.5

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	1.4	10.2	2.9	15.3	4.3	20.4	5.8	25.5	7.2
0.1	0.0	5.2	1.5	10.3	2.9	15.4	4.4	20.5	5.8	25.6	7.3
0.2	0.1	5.3	1.5	10.4	2.9	15.5	4.4	20.6	5.8	25.7	7.3
0.3	0.1	5.4	1.5	10.5	3.0	15.6	4.4	20.7	5.9	25.8	7.3
0.4	0.1	5.5	1.6	10.6	3.0	15.7	4.4	20.8	5.9	25.9	7.3
0.5	0.1	5.6	1.6	10.7	3.0	15.8	4.5	20.9	5.9	26.0	7.4
0.6	0.2	5.7	1.6	10.8	3.1	15.9	4.5	21.0	6.0	26.1	7.4
0.7	0.2	5.8	1.6	10.9	3.1	16.0	4.5	21.1	6.0	26.2	7.4
0.8	0.2	5.9	1.7	11.0	3.1	16.1	4.6	21.2	6.0	26.3	7.5
0.9	0.3	6.0	1.7	11.1	3.1	16.2	4.6	21.3	6.0	26.4	7.5
1.0	0.3	6.1	1.7	11.2	3.2	16.3	4.6	21.4	6.1	26.5	7.5
1.1	0.3	6.2	1.8	11.3	3.2	16.4	4.6	21.5	6.1	26.6	7.5
1.2	0.3	6.3	1.8	11.4	3.2	16.5	4.7	21.6	6.1	26.7	7.6
1.3	0.4	6.4	1.8	11.5	3.3	16.6	4.7	21.7	6.1	26.8	7.6
1.4	0.4	6.5	1.8	11.6	3.3	16.7	4.7	21.8	6.2	26.9	7.6
1.5	0.4	6.6	1.9	11.7	3.3	16.8	4.8	21.9	6.2	27.0	7.7
1.6	0.5	6.7	1.9	11.8	3.3	16.9	4.8	22.0	6.2	27.1	7.7
1.7	0.5	6.8	1.9	11.9	3.4	17.0	4.8	22.1	6.3	27.2	7.7
1.8	0.5	6.9	2.0	12.0	3.4	17.1	4.8	22.2	6.3	27.3	7.7
1.9	0.5	7.0	2.0	12.1	3.4	17.2	4.9	22.3	6.3	27.4	7.8
2.0	0.6	7.1	2.0	12.2	3.5	17.3	4.9	22.4	6.3	27.5	7.8
2.1	0.6	7.2	2.0	12.3	3.5	17.4	4.9	22.5	6.4	27.6	7.8
2.2	0.6	7.3	2.1	12.4	3.5	17.5	5.0	22.6	6.4	27.7	7.8
2.3	0.7	7.4	2.1	12.5	3.5	17.6	5.0	22.7	6.4	27.8	7.9
2.4	0.7	7.5	2.1	12.6	3.6	17.7	5.0	22.8	6.5	27.9	7.9
2.5	0.7	7.6	2.2	12.7	3.6	17.8	5.0	22.9	6.5	28.0	7.9
2.6	0.7	7.7	2.2	12.8	3.6	17.9	5.1	23.0	6.5	28.1	8.0
2.7	0.8	7.8	2.2	12.9	3.7	18.0	5.1	23.1	6.5	28.2	8.0
2.8	0.8	7.9	2.2	13.0	3.7	18.1	5.1	23.2	6.6	28.3	8.0
2.9	0.8	8.0	2.3	13.1	3.7	18.2	5.2	23.3	6.6	28.4	8.0
3.0	0.9	8.1	2.3	13.2	3.7	18.3	5.2	23.4	6.6	28.5	8.1
3.1	0.9	8.2	2.3	13.3	3.8	18.4	5.2	23.5	6.7	28.6	8.1
3.2	0.9	8.3	2.4	13.4	3.8	18.5	5.2	23.6	6.7	28.7	8.1
3.3	0.9	8.4	2.4	13.5	3.8	18.6	5.3	23.7	6.7	28.8	8.2
3.4	1.0	8.5	2.4	13.6	3.9	18.7	5.3	23.8	6.7	28.9	8.2
3.5	1.0	8.6	2.4	13.7	3.9	18.8	5.3	23.9	6.8	29.0	8.2
3.6	1.0	8.7	2.5	13.8	3.9	18.9	5.4	24.0	6.8	29.1	8.2
3.7	1.0	8.8	2.5	13.9	3.9	19.0	5.4	24.1	6.8	29.2	8.3
3.8	1.1	8.9	2.5	14.0	4.0	19.1	5.4	24.2	6.9	29.3	8.3
3.9	1.1	9.0	2.6	14.1	4.0	19.2	5.4	24.3	6.9	29.4	8.3
4.0	1.1	9.1	2.6	14.2	4.0	19.3	5.5	24.4	6.9	29.5	8.4
4.1	1.2	9.2	2.6	14.3	4.1	19.4	5.5	24.5	6.9	29.6	8.4
4.2	1.2	9.3	2.6	14.4	4.1	19.5	5.5	24.6	7.0	29.7	8.4
4.3	1.2	9.4	2.7	14.5	4.1	19.6	5.6	24.7	7.0	29.8	8.4
4.4	1.2	9.5	2.7	14.6	4.1	19.7	5.6	24.8	7.0	29.9	8.5
4.5	1.3	9.6	2.7	14.7	4.2	19.8	5.6	24.9	7.1	30.0	8.5
4.6	1.3	9.7	2.7	14.8	4.2	19.9	5.6	25.0	7.1	30.1	8.5
4.7	1.3	9.8	2.8	14.9	4.2	20.0	5.7	25.1	7.1	30.2	8.6
4.8	1.4	9.9	2.8	15.0	4.3	20.1	5.7	25.2	7.1	30.3	8.6
4.9	1.4	10.0	2.8	15.1	4.3	20.2	5.7	25.3	7.2	30.4	8.6
5.0	1.4	10.1	2.9	15.2	4.3	20.3	5.8	25.4	7.2	30.5	8.6

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	004 30.0	004 30.7	004 17.7
01	004 30.3	004 31.0	004 17.9
02	004 30.5	004 31.2	004 18.2
03	004 30.8	004 31.5	004 18.4
04	004 31.0	004 31.7	004 18.7
05	004 31.3	004 32.0	004 18.9
06	004 31.5	004 32.2	004 19.1
07	004 31.8	004 32.5	004 19.4
08	004 32.0	004 32.7	004 19.6
09	004 32.3	004 33.0	004 19.8
10	004 32.5	004 33.2	004 20.1
11	004 32.8	004 33.5	004 20.3
12	004 33.0	004 33.7	004 20.6
13	004 33.3	004 34.0	004 20.8
14	004 33.5	004 34.2	004 21.0
15	004 33.8	004 34.5	004 21.3
16	004 34.0	004 34.8	004 21.5
17	004 34.3	004 35.0	004 21.8
18	004 34.5	004 35.3	004 22.0
19	004 34.8	004 35.5	004 22.2
20	004 35.0	004 35.8	004 22.5
21	004 35.3	004 36.0	004 22.7
22	004 35.5	004 36.3	004 22.9
23	004 35.8	004 36.5	004 23.2
24	004 36.0	004 36.8	004 23.4
25	004 36.3	004 37.0	004 23.7
26	004 36.5	004 37.3	004 23.9
27	004 36.8	004 37.5	004 24.1
28	004 37.0	004 37.8	004 24.4
29	004 37.3	004 38.0	004 24.6
30	004 37.5	004 38.3	004 24.9
31	004 37.8	004 38.5	004 25.1
32	004 38.0	004 38.8	004 25.3
33	004 38.3	004 39.0	004 25.6
34	004 38.5	004 39.3	004 25.8
35	004 38.8	004 39.5	004 26.1
36	004 39.0	004 39.8	004 26.3
37	004 39.3	004 40.0	004 26.5
38	004 39.5	004 40.3	004 26.8
39	004 39.8	004 40.5	004 27.0
40	004 40.0	004 40.8	004 27.2
41	004 40.3	004 41.0	004 27.5
42	004 40.5	004 41.3	004 27.7
43	004 40.8	004 41.5	004 28.0
44	004 41.0	004 41.8	004 28.2
45	004 41.3	004 42.0	004 28.4
46	004 41.5	004 42.3	004 28.7
47	004 41.8	004 42.5	004 28.9
48	004 42.0	004 42.8	004 29.2
49	004 42.3	004 43.0	004 29.4
50	004 42.5	004 43.3	004 29.6
51	004 42.8	004 43.5	004 29.9
52	004 43.0	004 43.8	004 30.1
53	004 43.3	004 44.0	004 30.3
54	004 43.5	004 44.3	004 30.6
55	004 43.8	004 44.5	004 30.8
56	004 44.0	004 44.8	004 31.1
57	004 44.3	004 45.0	004 31.3
58	004 44.5	004 45.3	004 31.5
59	004 44.8	004 45.5	004 31.8

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	1.5	10.2	3.1	15.3	4.6	20.4	6.1	25.5	7.7
0.1	0.0	5.2	1.6	10.3	3.1	15.4	4.6	20.5	6.2	25.6	7.7
0.2	0.1	5.3	1.6	10.4	3.1	15.5	4.7	20.6	6.2	25.7	7.7
0.3	0.1	5.4	1.6	10.5	3.2	15.6	4.7	20.7	6.2	25.8	7.7
0.4	0.1	5.5	1.7	10.6	3.2	15.7	4.7	20.8	6.2	25.9	7.8
0.5	0.2	5.6	1.7	10.7	3.2	15.8	4.7	20.9	6.3	26.0	7.8
0.6	0.2	5.7	1.7	10.8	3.2	15.9	4.8	21.0	6.3	26.1	7.8
0.7	0.2	5.8	1.7	10.9	3.3	16.0	4.8	21.1	6.3	26.2	7.9
0.8	0.2	5.9	1.8	11.0	3.3	16.1	4.8	21.2	6.4	26.3	7.9
0.9	0.3	6.0	1.8	11.1	3.3	16.2	4.9	21.3	6.4	26.4	7.9
1.0	0.3	6.1	1.8	11.2	3.4	16.3	4.9	21.4	6.4	26.5	8.0
1.1	0.3	6.2	1.9	11.3	3.4	16.4	4.9	21.5	6.5	26.6	8.0
1.2	0.4	6.3	1.9	11.4	3.4	16.5	5.0	21.6	6.5	26.7	8.0
1.3	0.4	6.4	1.9	11.5	3.5	16.6	5.0	21.7	6.5	26.8	8.0
1.4	0.4	6.5	2.0	11.6	3.5	16.7	5.0	21.8	6.5	26.9	8.1
1.5	0.5	6.6	2.0	11.7	3.5	16.8	5.0	21.9	6.6	27.0	8.1
1.6	0.5	6.7	2.0	11.8	3.5	16.9	5.1	22.0	6.6	27.1	8.1
1.7	0.5	6.8	2.0	11.9	3.6	17.0	5.1	22.1	6.6	27.2	8.2
1.8	0.5	6.9	2.1	12.0	3.6	17.1	5.1	22.2	6.7	27.3	8.2
1.9	0.6	7.0	2.1	12.1	3.6	17.2	5.2	22.3	6.7	27.4	8.2
2.0	0.6	7.1	2.1	12.2	3.7	17.3	5.2	22.4	6.7	27.5	8.3
2.1	0.6	7.2	2.2	12.3	3.7	17.4	5.2	22.5	6.8	27.6	8.3
2.2	0.7	7.3	2.2	12.4	3.7	17.5	5.3	22.6	6.8	27.7	8.3
2.3	0.7	7.4	2.2	12.5	3.8	17.6	5.3	22.7	6.8	27.8	8.3
2.4	0.7	7.5	2.3	12.6	3.8	17.7	5.3	22.8	6.8	27.9	8.4
2.5	0.8	7.6	2.3	12.7	3.8	17.8	5.3	22.9	6.9	28.0	8.4
2.6	0.8	7.7	2.3	12.8	3.8	17.9	5.4	23.0	6.9	28.1	8.4
2.7	0.8	7.8	2.3	12.9	3.9	18.0	5.4	23.1	6.9	28.2	8.5
2.8	0.8	7.9	2.4	13.0	3.9	18.1	5.4	23.2	7.0	28.3	8.5
2.9	0.9	8.0	2.4	13.1	3.9	18.2	5.5	23.3	7.0	28.4	8.5
3.0	0.9	8.1	2.4	13.2	4.0	18.3	5.5	23.4	7.0	28.5	8.6
3.1	0.9	8.2	2.5	13.3	4.0	18.4	5.5	23.5	7.1	28.6	8.6
3.2	1.0	8.3	2.5	13.4	4.0	18.5	5.6	23.6	7.1	28.7	8.6
3.3	1.0	8.4	2.5	13.5	4.1	18.6	5.6	23.7	7.1	28.8	8.6
3.4	1.0	8.5	2.6	13.6	4.1	18.7	5.6	23.8	7.1	28.9	8.7
3.5	1.1	8.6	2.6	13.7	4.1	18.8	5.6	23.9	7.2	29.0	8.7
3.6	1.1	8.7	2.6	13.8	4.1	18.9	5.7	24.0	7.2	29.1	8.7
3.7	1.1	8.8	2.6	13.9	4.2	19.0	5.7	24.1	7.2	29.2	8.8
3.8	1.1	8.9	2.7	14.0	4.2	19.1	5.7	24.2	7.3	29.3	8.8
3.9	1.2	9.0	2.7	14.1	4.2	19.2	5.8	24.3	7.3	29.4	8.8
4.0	1.2	9.1	2.7	14.2	4.3	19.3	5.8	24.4	7.3	29.5	8.9
4.1	1.2	9.2	2.8	14.3	4.3	19.4	5.8	24.5	7.4	29.6	8.9
4.2	1.3	9.3	2.8	14.4	4.3	19.5	5.9	24.6	7.4	29.7	8.9
4.3	1.3	9.4	2.8	14.5	4.4	19.6	5.9	24.7	7.4	29.8	8.9
4.4	1.3	9.5	2.9	14.6	4.4	19.7	5.9	24.8	7.4	29.9	9.0
4.5	1.4	9.6	2.9	14.7	4.4	19.8	5.9	24.9	7.5	30.0	9.0
4.6	1.4	9.7	2.9	14.8	4.4	19.9	6.0	25.0	7.5	30.1	9.0
4.7	1.4	9.8	2.9	14.9	4.5	20.0	6.0	25.1	7.5	30.2	9.1
4.8	1.4	9.9	3.0	15.0	4.5	20.1	6.0	25.2	7.6	30.3	9.1
4.9	1.5	10.0	3.0	15.1	4.5	20.2	6.1	25.3	7.6	30.4	9.1
5.0	1.5	10.1	3.0	15.2	4.6	20.3	6.1	25.4	7.6	30.5	9.2

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	004 45.0	004 45.8	004 32.0
01	004 45.3	004 46.0	004 32.3
02	004 45.5	004 46.3	004 32.5
03	004 45.8	004 46.5	004 32.7
04	004 46.0	004 46.8	004 33.0
05	004 46.3	004 47.0	004 33.2
06	004 46.5	004 47.3	004 33.4
07	004 46.8	004 47.5	004 33.7
08	004 47.0	004 47.8	004 33.9
09	004 47.3	004 48.0	004 34.2
10	004 47.5	004 48.3	004 34.4
11	004 47.8	004 48.5	004 34.6
12	004 48.0	004 48.8	004 34.9
13	004 48.3	004 49.0	004 35.1
14	004 48.5	004 49.3	004 35.4
15	004 48.8	004 49.5	004 35.6
16	004 49.0	004 49.8	004 35.8
17	004 49.3	004 50.0	004 36.1
18	004 49.5	004 50.3	004 36.3
19	004 49.8	004 50.5	004 36.6
20	004 50.0	004 50.8	004 36.8
21	004 50.3	004 51.0	004 37.0
22	004 50.5	004 51.3	004 37.3
23	004 50.8	004 51.5	004 37.5
24	004 51.0	004 51.8	004 37.7
25	004 51.3	004 52.0	004 38.0
26	004 51.5	004 52.3	004 38.2
27	004 51.8	004 52.5	004 38.5
28	004 52.0	004 52.8	004 38.7
29	004 52.3	004 53.1	004 38.9
30	004 52.5	004 53.3	004 39.2
31	004 52.8	004 53.6	004 39.4
32	004 53.0	004 53.8	004 39.7
33	004 53.3	004 54.1	004 39.9
34	004 53.5	004 54.3	004 40.1
35	004 53.8	004 54.6	004 40.4
36	004 54.0	004 54.8	004 40.6
37	004 54.3	004 55.1	004 40.8
38	004 54.5	004 55.3	004 41.1
39	004 54.8	004 55.6	004 41.3
40	004 55.0	004 55.8	004 41.6
41	004 55.3	004 56.1	004 41.8
42	004 55.5	004 56.3	004 42.0
43	004 55.8	004 56.6	004 42.3
44	004 56.0	004 56.8	004 42.5
45	004 56.3	004 57.1	004 42.8
46	004 56.5	004 57.3	004 43.0
47	004 56.8	004 57.6	004 43.2
48	004 57.0	004 57.8	004 43.5
49	004 57.3	004 58.1	004 43.7
50	004 57.5	004 58.3	004 43.9
51	004 57.8	004 58.6	004 44.2
52	004 58.0	004 58.8	004 44.4
53	004 58.3	004 59.1	004 44.7
54	004 58.5	004 59.3	004 44.9
55	004 58.8	004 59.6	004 45.1
56	004 59.0	004 59.8	004 45.4
57	004 59.3	005 00.1	004 45.6
58	004 59.5	005 00.3	004 45.9
59	004 59.8	005 00.6	004 46.1

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	1.6	10.2	3.2	15.3	4.8	20.4	6.5	25.5	8.1
0.1	0.0	5.2	1.6	10.3	3.3	15.4	4.9	20.5	6.5	25.6	8.1
0.2	0.1	5.3	1.7	10.4	3.3	15.5	4.9	20.6	6.5	25.7	8.1
0.3	0.1	5.4	1.7	10.5	3.3	15.6	4.9	20.7	6.6	25.8	8.2
0.4	0.1	5.5	1.7	10.6	3.4	15.7	5.0	20.8	6.6	25.9	8.2
0.5	0.2	5.6	1.8	10.7	3.4	15.8	5.0	20.9	6.6	26.0	8.2
0.6	0.2	5.7	1.8	10.8	3.4	15.9	5.0	21.0	6.7	26.1	8.3
0.7	0.2	5.8	1.8	10.9	3.5	16.0	5.1	21.1	6.7	26.2	8.3
0.8	0.3	5.9	1.9	11.0	3.5	16.1	5.1	21.2	6.7	26.3	8.3
0.9	0.3	6.0	1.9	11.1	3.5	16.2	5.1	21.3	6.7	26.4	8.4
1.0	0.3	6.1	1.9	11.2	3.5	16.3	5.2	21.4	6.8	26.5	8.4
1.1	0.3	6.2	2.0	11.3	3.6	16.4	5.2	21.5	6.8	26.6	8.4
1.2	0.4	6.3	2.0	11.4	3.6	16.5	5.2	21.6	6.8	26.7	8.5
1.3	0.4	6.4	2.0	11.5	3.6	16.6	5.3	21.7	6.9	26.8	8.5
1.4	0.4	6.5	2.1	11.6	3.7	16.7	5.3	21.8	6.9	26.9	8.5
1.5	0.5	6.6	2.1	11.7	3.7	16.8	5.3	21.9	6.9	27.0	8.6
1.6	0.5	6.7	2.1	11.8	3.7	16.9	5.4	22.0	7.0	27.1	8.6
1.7	0.5	6.8	2.2	11.9	3.8	17.0	5.4	22.1	7.0	27.2	8.6
1.8	0.6	6.9	2.2	12.0	3.8	17.1	5.4	22.2	7.0	27.3	8.6
1.9	0.6	7.0	2.2	12.1	3.8	17.2	5.4	22.3	7.1	27.4	8.7
2.0	0.6	7.1	2.2	12.2	3.9	17.3	5.5	22.4	7.1	27.5	8.7
2.1	0.7	7.2	2.3	12.3	3.9	17.4	5.5	22.5	7.1	27.6	8.7
2.2	0.7	7.3	2.3	12.4	3.9	17.5	5.5	22.6	7.2	27.7	8.8
2.3	0.7	7.4	2.3	12.5	4.0	17.6	5.6	22.7	7.2	27.8	8.8
2.4	0.8	7.5	2.4	12.6	4.0	17.7	5.6	22.8	7.2	27.9	8.8
2.5	0.8	7.6	2.4	12.7	4.0	17.8	5.6	22.9	7.3	28.0	8.9
2.6	0.8	7.7	2.4	12.8	4.1	17.9	5.7	23.0	7.3	28.1	8.9
2.7	0.9	7.8	2.5	12.9	4.1	18.0	5.7	23.1	7.3	28.2	8.9
2.8	0.9	7.9	2.5	13.0	4.1	18.1	5.7	23.2	7.3	28.3	9.0
2.9	0.9	8.0	2.5	13.1	4.1	18.2	5.8	23.3	7.4	28.4	9.0
3.0	1.0	8.1	2.6	13.2	4.2	18.3	5.8	23.4	7.4	28.5	9.0
3.1	1.0	8.2	2.6	13.3	4.2	18.4	5.8	23.5	7.4	28.6	9.1
3.2	1.0	8.3	2.6	13.4	4.2	18.5	5.9	23.6	7.5	28.7	9.1
3.3	1.0	8.4	2.7	13.5	4.3	18.6	5.9	23.7	7.5	28.8	9.1
3.4	1.1	8.5	2.7	13.6	4.3	18.7	5.9	23.8	7.5	28.9	9.2
3.5	1.1	8.6	2.7	13.7	4.3	18.8	6.0	23.9	7.6	29.0	9.2
3.6	1.1	8.7	2.8	13.8	4.4	18.9	6.0	24.0	7.6	29.1	9.2
3.7	1.2	8.8	2.8	13.9	4.4	19.0	6.0	24.1	7.6	29.2	9.2
3.8	1.2	8.9	2.8	14.0	4.4	19.1	6.0	24.2	7.7	29.3	9.3
3.9	1.2	9.0	2.9	14.1	4.5	19.2	6.1	24.3	7.7	29.4	9.3
4.0	1.3	9.1	2.9	14.2	4.5	19.3	6.1	24.4	7.7	29.5	9.3
4.1	1.3	9.2	2.9	14.3	4.5	19.4	6.1	24.5	7.8	29.6	9.4
4.2	1.3	9.3	2.9	14.4	4.6	19.5	6.2	24.6	7.8	29.7	9.4
4.3	1.4	9.4	3.0	14.5	4.6	19.6	6.2	24.7	7.8	29.8	9.4
4.4	1.4	9.5	3.0	14.6	4.6	19.7	6.2	24.8	7.9	29.9	9.5
4.5	1.4	9.6	3.0	14.7	4.7	19.8	6.3	24.9	7.9	30.0	9.5
4.6	1.5	9.7	3.1	14.8	4.7	19.9	6.3	25.0	7.9	30.1	9.5
4.7	1.5	9.8	3.1	14.9	4.7	20.0	6.3	25.1	7.9	30.2	9.6
4.8	1.5	9.9	3.1	15.0	4.8	20.1	6.4	25.2	8.0	30.3	9.6
4.9	1.6	10.0	3.2	15.1	4.8	20.2	6.4	25.3	8.0	30.4	9.6
5.0	1.6	10.1	3.2	15.2	4.8	20.3	6.4	25.4	8.0	30.5	9.7

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 20

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	005 00.0	005 00.8	004 46.3
01	005 00.3	005 01.1	004 46.6
02	005 00.5	005 01.3	004 46.8
03	005 00.8	005 01.6	004 47.0
04	005 01.0	005 01.8	004 47.3
05	005 01.3	005 02.1	004 47.5
06	005 01.5	005 02.3	004 47.8
07	005 01.8	005 02.6	004 48.0
08	005 02.0	005 02.8	004 48.2
09	005 02.3	005 03.1	004 48.5
10	005 02.5	005 03.3	004 48.7
11	005 02.8	005 03.6	004 49.0
12	005 03.0	005 03.8	004 49.2
13	005 03.3	005 04.1	004 49.4
14	005 03.5	005 04.3	004 49.7
15	005 03.8	005 04.6	004 49.9
16	005 04.0	005 04.8	004 50.2
17	005 04.3	005 05.1	004 50.4
18	005 04.5	005 05.3	004 50.6
19	005 04.8	005 05.6	004 50.9
20	005 05.0	005 05.8	004 51.1
21	005 05.3	005 06.1	004 51.3
22	005 05.5	005 06.3	004 51.6
23	005 05.8	005 06.6	004 51.8
24	005 06.0	005 06.8	004 52.1
25	005 06.3	005 07.1	004 52.3
26	005 06.5	005 07.3	004 52.5
27	005 06.8	005 07.6	004 52.8
28	005 07.0	005 07.8	004 53.0
29	005 07.3	005 08.1	004 53.3
30	005 07.5	005 08.3	004 53.5
31	005 07.8	005 08.6	004 53.7
32	005 08.0	005 08.8	004 54.0
33	005 08.3	005 09.1	004 54.2
34	005 08.5	005 09.3	004 54.4
35	005 08.8	005 09.6	004 54.7
36	005 09.0	005 09.8	004 54.9
37	005 09.3	005 10.1	004 55.2
38	005 09.5	005 10.3	004 55.4
39	005 09.8	005 10.6	004 55.6
40	005 10.0	005 10.8	004 55.9
41	005 10.3	005 11.1	004 56.1
42	005 10.5	005 11.4	004 56.4
43	005 10.8	005 11.6	004 56.6
44	005 11.0	005 11.9	004 56.8
45	005 11.3	005 12.1	004 57.1
46	005 11.5	005 12.4	004 57.3
47	005 11.8	005 12.6	004 57.5
48	005 12.0	005 12.9	004 57.8
49	005 12.3	005 13.1	004 58.0
50	005 12.5	005 13.4	004 58.3
51	005 12.8	005 13.6	004 58.5
52	005 13.0	005 13.9	004 58.7
53	005 13.3	005 14.1	004 59.0
54	005 13.5	005 14.4	004 59.2
55	005 13.8	005 14.6	004 59.5
56	005 14.0	005 14.9	004 59.7
57	005 14.3	005 15.1	004 59.9
58	005 14.5	005 15.4	005 00.2
59	005 14.8	005 15.6	005 00.4

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	1.7	10.2	3.4	15.3	5.1	20.4	6.8	25.5	8.5
0.1	0.0	5.2	1.7	10.3	3.4	15.4	5.1	20.5	6.8	25.6	8.5
0.2	0.1	5.3	1.8	10.4	3.5	15.5	5.2	20.6	6.9	25.7	8.6
0.3	0.1	5.4	1.8	10.5	3.5	15.6	5.2	20.7	6.9	25.8	8.6
0.4	0.1	5.5	1.8	10.6	3.5	15.7	5.2	20.8	6.9	25.9	8.6
0.5	0.2	5.6	1.9	10.7	3.6	15.8	5.3	20.9	7.0	26.0	8.7
0.6	0.2	5.7	1.9	10.8	3.6	15.9	5.3	21.0	7.0	26.1	8.7
0.7	0.2	5.8	1.9	10.9	3.6	16.0	5.3	21.1	7.0	26.2	8.7
0.8	0.3	5.9	2.0	11.0	3.7	16.1	5.4	21.2	7.1	26.3	8.8
0.9	0.3	6.0	2.0	11.1	3.7	16.2	5.4	21.3	7.1	26.4	8.8
1.0	0.3	6.1	2.0	11.2	3.7	16.3	5.4	21.4	7.1	26.5	8.8
1.1	0.4	6.2	2.1	11.3	3.8	16.4	5.5	21.5	7.2	26.6	8.9
1.2	0.4	6.3	2.1	11.4	3.8	16.5	5.5	21.6	7.2	26.7	8.9
1.3	0.4	6.4	2.1	11.5	3.8	16.6	5.5	21.7	7.2	26.8	8.9
1.4	0.5	6.5	2.2	11.6	3.9	16.7	5.6	21.8	7.3	26.9	9.0
1.5	0.5	6.6	2.2	11.7	3.9	16.8	5.6	21.9	7.3	27.0	9.0
1.6	0.5	6.7	2.2	11.8	3.9	16.9	5.6	22.0	7.3	27.1	9.0
1.7	0.6	6.8	2.3	11.9	4.0	17.0	5.7	22.1	7.4	27.2	9.1
1.8	0.6	6.9	2.3	12.0	4.0	17.1	5.7	22.2	7.4	27.3	9.1
1.9	0.6	7.0	2.3	12.1	4.0	17.2	5.7	22.3	7.4	27.4	9.1
2.0	0.7	7.1	2.4	12.2	4.1	17.3	5.8	22.4	7.5	27.5	9.2
2.1	0.7	7.2	2.4	12.3	4.1	17.4	5.8	22.5	7.5	27.6	9.2
2.2	0.7	7.3	2.4	12.4	4.1	17.5	5.8	22.6	7.5	27.7	9.2
2.3	0.8	7.4	2.5	12.5	4.2	17.6	5.9	22.7	7.6	27.8	9.3
2.4	0.8	7.5	2.5	12.6	4.2	17.7	5.9	22.8	7.6	27.9	9.3
2.5	0.8	7.6	2.5	12.7	4.2	17.8	5.9	22.9	7.6	28.0	9.3
2.6	0.9	7.7	2.6	12.8	4.3	17.9	6.0	23.0	7.7	28.1	9.4
2.7	0.9	7.8	2.6	12.9	4.3	18.0	6.0	23.1	7.7	28.2	9.4
2.8	0.9	7.9	2.6	13.0	4.3	18.1	6.0	23.2	7.7	28.3	9.4
2.9	1.0	8.0	2.7	13.1	4.4	18.2	6.1	23.3	7.8	28.4	9.5
3.0	1.0	8.1	2.7	13.2	4.4	18.3	6.1	23.4	7.8	28.5	9.5
3.1	1.0	8.2	2.7	13.3	4.4	18.4	6.1	23.5	7.8	28.6	9.5
3.2	1.1	8.3	2.8	13.4	4.5	18.5	6.2	23.6	7.9	28.7	9.6
3.3	1.1	8.4	2.8	13.5	4.5	18.6	6.2	23.7	7.9	28.8	9.6
3.4	1.1	8.5	2.8	13.6	4.5	18.7	6.2	23.8	7.9	28.9	9.6
3.5	1.2	8.6	2.9	13.7	4.6	18.8	6.3	23.9	8.0	29.0	9.7
3.6	1.2	8.7	2.9	13.8	4.6	18.9	6.3	24.0	8.0	29.1	9.7
3.7	1.2	8.8	2.9	13.9	4.6	19.0	6.3	24.1	8.0	29.2	9.7
3.8	1.3	8.9	3.0	14.0	4.7	19.1	6.4	24.2	8.1	29.3	9.8
3.9	1.3	9.0	3.0	14.1	4.7	19.2	6.4	24.3	8.1	29.4	9.8
4.0	1.3	9.1	3.0	14.2	4.7	19.3	6.4	24.4	8.1	29.5	9.8
4.1	1.4	9.2	3.1	14.3	4.8	19.4	6.5	24.5	8.2	29.6	9.9
4.2	1.4	9.3	3.1	14.4	4.8	19.5	6.5	24.6	8.2	29.7	9.9
4.3	1.4	9.4	3.1	14.5	4.8	19.6	6.5	24.7	8.2	29.8	9.9
4.4	1.5	9.5	3.2	14.6	4.9	19.7	6.6	24.8	8.3	29.9	10.0
4.5	1.5	9.6	3.2	14.7	4.9	19.8	6.6	24.9	8.3	30.0	10.0
4.6	1.5	9.7	3.2	14.8	4.9	19.9	6.6	25.0	8.3	30.1	10.0
4.7	1.6	9.8	3.3	14.9	5.0	20.0	6.7	25.1	8.4	30.2	10.1
4.8	1.6	9.9	3.3	15.0	5.0	20.1	6.7	25.2	8.4	30.3	10.1
4.9	1.6	10.0	3.3	15.1	5.0	20.2	6.7	25.3	8.4	30.4	10.1
5.0	1.7	10.1	3.4	15.2	5.1	20.3	6.8	25.4	8.5	30.5	10.2

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	005 15.0	005 15.9	005 00.7
01	005 15.3	005 16.1	005 00.9
02	005 15.5	005 16.4	005 01.1
03	005 15.8	005 16.6	005 01.4
04	005 16.0	005 16.9	005 01.6
05	005 16.3	005 17.1	005 01.8
06	005 16.5	005 17.4	005 02.1
07	005 16.8	005 17.6	005 02.3
08	005 17.0	005 17.9	005 02.6
09	005 17.3	005 18.1	005 02.8
10	005 17.5	005 18.4	005 03.0
11	005 17.8	005 18.6	005 03.3
12	005 18.0	005 18.9	005 03.5
13	005 18.3	005 19.1	005 03.8
14	005 18.5	005 19.4	005 04.0
15	005 18.8	005 19.6	005 04.2
16	005 19.0	005 19.9	005 04.5
17	005 19.3	005 20.1	005 04.7
18	005 19.5	005 20.4	005 04.9
19	005 19.8	005 20.6	005 05.2
20	005 20.0	005 20.9	005 05.4
21	005 20.3	005 21.1	005 05.7
22	005 20.5	005 21.4	005 05.9
23	005 20.8	005 21.6	005 06.1
24	005 21.0	005 21.9	005 06.4
25	005 21.3	005 22.1	005 06.6
26	005 21.5	005 22.4	005 06.9
27	005 21.8	005 22.6	005 07.1
28	005 22.0	005 22.9	005 07.3
29	005 22.3	005 23.1	005 07.6
30	005 22.5	005 23.4	005 07.8
31	005 22.8	005 23.6	005 08.0
32	005 23.0	005 23.9	005 08.3
33	005 23.3	005 24.1	005 08.5
34	005 23.5	005 24.4	005 08.8
35	005 23.8	005 24.6	005 09.0
36	005 24.0	005 24.9	005 09.2
37	005 24.3	005 25.1	005 09.5
38	005 24.5	005 25.4	005 09.7
39	005 24.8	005 25.6	005 10.0
40	005 25.0	005 25.9	005 10.2
41	005 25.3	005 26.1	005 10.4
42	005 25.5	005 26.4	005 10.7
43	005 25.8	005 26.6	005 10.9
44	005 26.0	005 26.9	005 11.1
45	005 26.3	005 27.1	005 11.4
46	005 26.5	005 27.4	005 11.6
47	005 26.8	005 27.6	005 11.9
48	005 27.0	005 27.9	005 12.1
49	005 27.3	005 28.1	005 12.3
50	005 27.5	005 28.4	005 12.6
51	005 27.8	005 28.6	005 12.8
52	005 28.0	005 28.9	005 13.1
53	005 28.3	005 29.1	005 13.3
54	005 28.5	005 29.4	005 13.5
55	005 28.8	005 29.7	005 13.8
56	005 29.0	005 29.9	005 14.0
57	005 29.3	005 30.2	005 14.3
58	005 29.5	005 30.4	005 14.5
59	005 29.8	005 30.7	005 14.7

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	1.8	10.2	3.6	15.3	5.4	20.4	7.1	25.5	8.9
0.1	0.0	5.2	1.8	10.3	3.6	15.4	5.4	20.5	7.2	25.6	9.0
0.2	0.1	5.3	1.9	10.4	3.6	15.5	5.4	20.6	7.2	25.7	9.0
0.3	0.1	5.4	1.9	10.5	3.7	15.6	5.5	20.7	7.2	25.8	9.0
0.4	0.1	5.5	1.9	10.6	3.7	15.7	5.5	20.8	7.3	25.9	9.1
0.5	0.2	5.6	2.0	10.7	3.7	15.8	5.5	20.9	7.3	26.0	9.1
0.6	0.2	5.7	2.0	10.8	3.8	15.9	5.6	21.0	7.4	26.1	9.1
0.7	0.2	5.8	2.0	10.9	3.8	16.0	5.6	21.1	7.4	26.2	9.2
0.8	0.3	5.9	2.1	11.0	3.9	16.1	5.6	21.2	7.4	26.3	9.2
0.9	0.3	6.0	2.1	11.1	3.9	16.2	5.7	21.3	7.5	26.4	9.2
1.0	0.4	6.1	2.1	11.2	3.9	16.3	5.7	21.4	7.5	26.5	9.3
1.1	0.4	6.2	2.2	11.3	4.0	16.4	5.7	21.5	7.5	26.6	9.3
1.2	0.4	6.3	2.2	11.4	4.0	16.5	5.8	21.6	7.6	26.7	9.3
1.3	0.5	6.4	2.2	11.5	4.0	16.6	5.8	21.7	7.6	26.8	9.4
1.4	0.5	6.5	2.3	11.6	4.1	16.7	5.8	21.8	7.6	26.9	9.4
1.5	0.5	6.6	2.3	11.7	4.1	16.8	5.9	21.9	7.7	27.0	9.5
1.6	0.6	6.7	2.3	11.8	4.1	16.9	5.9	22.0	7.7	27.1	9.5
1.7	0.6	6.8	2.4	11.9	4.2	17.0	6.0	22.1	7.7	27.2	9.5
1.8	0.6	6.9	2.4	12.0	4.2	17.1	6.0	22.2	7.8	27.3	9.6
1.9	0.7	7.0	2.5	12.1	4.2	17.2	6.0	22.3	7.8	27.4	9.6
2.0	0.7	7.1	2.5	12.2	4.3	17.3	6.1	22.4	7.8	27.5	9.6
2.1	0.7	7.2	2.5	12.3	4.3	17.4	6.1	22.5	7.9	27.6	9.7
2.2	0.8	7.3	2.6	12.4	4.3	17.5	6.1	22.6	7.9	27.7	9.7
2.3	0.8	7.4	2.6	12.5	4.4	17.6	6.2	22.7	7.9	27.8	9.7
2.4	0.8	7.5	2.6	12.6	4.4	17.7	6.2	22.8	8.0	27.9	9.8
2.5	0.9	7.6	2.7	12.7	4.4	17.8	6.2	22.9	8.0	28.0	9.8
2.6	0.9	7.7	2.7	12.8	4.5	17.9	6.3	23.0	8.1	28.1	9.8
2.7	0.9	7.8	2.7	12.9	4.5	18.0	6.3	23.1	8.1	28.2	9.9
2.8	1.0	7.9	2.8	13.0	4.6	18.1	6.3	23.2	8.1	28.3	9.9
2.9	1.0	8.0	2.8	13.1	4.6	18.2	6.4	23.3	8.2	28.4	9.9
3.0	1.1	8.1	2.8	13.2	4.6	18.3	6.4	23.4	8.2	28.5	10.0
3.1	1.1	8.2	2.9	13.3	4.7	18.4	6.4	23.5	8.2	28.6	10.0
3.2	1.1	8.3	2.9	13.4	4.7	18.5	6.5	23.6	8.3	28.7	10.0
3.3	1.2	8.4	2.9	13.5	4.7	18.6	6.5	23.7	8.3	28.8	10.1
3.4	1.2	8.5	3.0	13.6	4.8	18.7	6.5	23.8	8.3	28.9	10.1
3.5	1.2	8.6	3.0	13.7	4.8	18.8	6.6	23.9	8.4	29.0	10.2
3.6	1.3	8.7	3.0	13.8	4.8	18.9	6.6	24.0	8.4	29.1	10.2
3.7	1.3	8.8	3.1	13.9	4.9	19.0	6.7	24.1	8.4	29.2	10.2
3.8	1.3	8.9	3.1	14.0	4.9	19.1	6.7	24.2	8.5	29.3	10.3
3.9	1.4	9.0	3.2	14.1	4.9	19.2	6.7	24.3	8.5	29.4	10.3
4.0	1.4	9.1	3.2	14.2	5.0	19.3	6.8	24.4	8.5	29.5	10.3
4.1	1.4	9.2	3.2	14.3	5.0	19.4	6.8	24.5	8.6	29.6	10.4
4.2	1.5	9.3	3.3	14.4	5.0	19.5	6.8	24.6	8.6	29.7	10.4
4.3	1.5	9.4	3.3	14.5	5.1	19.6	6.9	24.7	8.6	29.8	10.4
4.4	1.5	9.5	3.3	14.6	5.1	19.7	6.9	24.8	8.7	29.9	10.5
4.5	1.6	9.6	3.4	14.7	5.1	19.8	6.9	24.9	8.7	30.0	10.5
4.6	1.6	9.7	3.4	14.8	5.2	19.9	7.0	25.0	8.8	30.1	10.5
4.7	1.6	9.8	3.4	14.9	5.2	20.0	7.0	25.1	8.8	30.2	10.6
4.8	1.7	9.9	3.5	15.0	5.3	20.1	7.0	25.2	8.8	30.3	10.6
4.9	1.7	10.0	3.5	15.1	5.3	20.2	7.1	25.3	8.9	30.4	10.6
5.0	1.8	10.1	3.5	15.2	5.3	20.3	7.1	25.4	8.9	30.5	10.7

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	005 30.0	005 30.9	005 15.0
01	005 30.3	005 31.2	005 15.2
02	005 30.5	005 31.4	005 15.4
03	005 30.8	005 31.7	005 15.7
04	005 31.0	005 31.9	005 15.9
05	005 31.3	005 32.2	005 16.2
06	005 31.5	005 32.4	005 16.4
07	005 31.8	005 32.7	005 16.6
08	005 32.0	005 32.9	005 16.9
09	005 32.3	005 33.2	005 17.1
10	005 32.5	005 33.4	005 17.4
11	005 32.8	005 33.7	005 17.6
12	005 33.0	005 33.9	005 17.8
13	005 33.3	005 34.2	005 18.1
14	005 33.5	005 34.4	005 18.3
15	005 33.8	005 34.7	005 18.5
16	005 34.0	005 34.9	005 18.8
17	005 34.3	005 35.2	005 19.0
18	005 34.5	005 35.4	005 19.3
19	005 34.8	005 35.7	005 19.5
20	005 35.0	005 35.9	005 19.7
21	005 35.3	005 36.2	005 20.0
22	005 35.5	005 36.4	005 20.2
23	005 35.8	005 36.7	005 20.5
24	005 36.0	005 36.9	005 20.7
25	005 36.3	005 37.2	005 20.9
26	005 36.5	005 37.4	005 21.2
27	005 36.8	005 37.7	005 21.4
28	005 37.0	005 37.9	005 21.6
29	005 37.3	005 38.2	005 21.9
30	005 37.5	005 38.4	005 22.1
31	005 37.8	005 38.7	005 22.4
32	005 38.0	005 38.9	005 22.6
33	005 38.3	005 39.2	005 22.8
34	005 38.5	005 39.4	005 23.1
35	005 38.8	005 39.7	005 23.3
36	005 39.0	005 39.9	005 23.6
37	005 39.3	005 40.2	005 23.8
38	005 39.5	005 40.4	005 24.0
39	005 39.8	005 40.7	005 24.3
40	005 40.0	005 40.9	005 24.5
41	005 40.3	005 41.2	005 24.7
42	005 40.5	005 41.4	005 25.0
43	005 40.8	005 41.7	005 25.2
44	005 41.0	005 41.9	005 25.5
45	005 41.3	005 42.2	005 25.7
46	005 41.5	005 42.4	005 25.9
47	005 41.8	005 42.7	005 26.2
48	005 42.0	005 42.9	005 26.4
49	005 42.3	005 43.2	005 26.7
50	005 42.5	005 43.4	005 26.9
51	005 42.8	005 43.7	005 27.1
52	005 43.0	005 43.9	005 27.4
53	005 43.3	005 44.2	005 27.6
54	005 43.5	005 44.4	005 27.9
55	005 43.8	005 44.7	005 28.1
56	005 44.0	005 44.9	005 28.3
57	005 44.3	005 45.2	005 28.6
58	005 44.5	005 45.4	005 28.8
59	005 44.8	005 45.7	005 29.0

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	1.9	10.2	3.7	15.3	5.6	20.4	7.5	25.5	9.4
0.1	0.0	5.2	1.9	10.3	3.8	15.4	5.6	20.5	7.5	25.6	9.4
0.2	0.1	5.3	1.9	10.4	3.8	15.5	5.7	20.6	7.6	25.7	9.4
0.3	0.1	5.4	2.0	10.5	3.9	15.6	5.7	20.7	7.6	25.8	9.5
0.4	0.1	5.5	2.0	10.6	3.9	15.7	5.8	20.8	7.6	25.9	9.5
0.5	0.2	5.6	2.1	10.7	3.9	15.8	5.8	20.9	7.7	26.0	9.5
0.6	0.2	5.7	2.1	10.8	4.0	15.9	5.8	21.0	7.7	26.1	9.6
0.7	0.3	5.8	2.1	10.9	4.0	16.0	5.9	21.1	7.7	26.2	9.6
0.8	0.3	5.9	2.2	11.0	4.0	16.1	5.9	21.2	7.8	26.3	9.6
0.9	0.3	6.0	2.2	11.1	4.1	16.2	5.9	21.3	7.8	26.4	9.7
1.0	0.4	6.1	2.2	11.2	4.1	16.3	6.0	21.4	7.8	26.5	9.7
1.1	0.4	6.2	2.3	11.3	4.1	16.4	6.0	21.5	7.9	26.6	9.8
1.2	0.4	6.3	2.3	11.4	4.2	16.5	6.1	21.6	7.9	26.7	9.8
1.3	0.5	6.4	2.3	11.5	4.2	16.6	6.1	21.7	8.0	26.8	9.8
1.4	0.5	6.5	2.4	11.6	4.3	16.7	6.1	21.8	8.0	26.9	9.9
1.5	0.6	6.6	2.4	11.7	4.3	16.8	6.2	21.9	8.0	27.0	9.9
1.6	0.6	6.7	2.5	11.8	4.3	16.9	6.2	22.0	8.1	27.1	9.9
1.7	0.6	6.8	2.5	11.9	4.4	17.0	6.2	22.1	8.1	27.2	10.0
1.8	0.7	6.9	2.5	12.0	4.4	17.1	6.3	22.2	8.1	27.3	10.0
1.9	0.7	7.0	2.6	12.1	4.4	17.2	6.3	22.3	8.2	27.4	10.0
2.0	0.7	7.1	2.6	12.2	4.5	17.3	6.3	22.4	8.2	27.5	10.1
2.1	0.8	7.2	2.6	12.3	4.5	17.4	6.4	22.5	8.3	27.6	10.1
2.2	0.8	7.3	2.7	12.4	4.5	17.5	6.4	22.6	8.3	27.7	10.2
2.3	0.8	7.4	2.7	12.5	4.6	17.6	6.5	22.7	8.3	27.8	10.2
2.4	0.9	7.5	2.8	12.6	4.6	17.7	6.5	22.8	8.4	27.9	10.2
2.5	0.9	7.6	2.8	12.7	4.7	17.8	6.5	22.9	8.4	28.0	10.3
2.6	1.0	7.7	2.8	12.8	4.7	17.9	6.6	23.0	8.4	28.1	10.3
2.7	1.0	7.8	2.9	12.9	4.7	18.0	6.6	23.1	8.5	28.2	10.3
2.8	1.0	7.9	2.9	13.0	4.8	18.1	6.6	23.2	8.5	28.3	10.4
2.9	1.1	8.0	2.9	13.1	4.8	18.2	6.7	23.3	8.5	28.4	10.4
3.0	1.1	8.1	3.0	13.2	4.8	18.3	6.7	23.4	8.6	28.5	10.5
3.1	1.1	8.2	3.0	13.3	4.9	18.4	6.7	23.5	8.6	28.6	10.5
3.2	1.2	8.3	3.0	13.4	4.9	18.5	6.8	23.6	8.7	28.7	10.5
3.3	1.2	8.4	3.1	13.5	5.0	18.6	6.8	23.7	8.7	28.8	10.6
3.4	1.2	8.5	3.1	13.6	5.0	18.7	6.9	23.8	8.7	28.9	10.6
3.5	1.3	8.6	3.2	13.7	5.0	18.8	6.9	23.9	8.8	29.0	10.6
3.6	1.3	8.7	3.2	13.8	5.1	18.9	6.9	24.0	8.8	29.1	10.7
3.7	1.4	8.8	3.2	13.9	5.1	19.0	7.0	24.1	8.8	29.2	10.7
3.8	1.4	8.9	3.3	14.0	5.1	19.1	7.0	24.2	8.9	29.3	10.7
3.9	1.4	9.0	3.3	14.1	5.2	19.2	7.0	24.3	8.9	29.4	10.8
4.0	1.5	9.1	3.3	14.2	5.2	19.3	7.1	24.4	8.9	29.5	10.8
4.1	1.5	9.2	3.4	14.3	5.2	19.4	7.1	24.5	9.0	29.6	10.9
4.2	1.5	9.3	3.4	14.4	5.3	19.5	7.2	24.6	9.0	29.7	10.9
4.3	1.6	9.4	3.4	14.5	5.3	19.6	7.2	24.7	9.1	29.8	10.9
4.4	1.6	9.5	3.5	14.6	5.4	19.7	7.2	24.8	9.1	29.9	11.0
4.5	1.7	9.6	3.5	14.7	5.4	19.8	7.3	24.9	9.1	30.0	11.0
4.6	1.7	9.7	3.6	14.8	5.4	19.9	7.3	25.0	9.2	30.1	11.0
4.7	1.7	9.8	3.6	14.9	5.5	20.0	7.3	25.1	9.2	30.2	11.1
4.8	1.8	9.9	3.6	15.0	5.5	20.1	7.4	25.2	9.2	30.3	11.1
4.9	1.8	10.0	3.7	15.1	5.5	20.2	7.4	25.3	9.3	30.4	11.1
5.0	1.8	10.1	3.7	15.2	5.6	20.3	7.4	25.4	9.3	30.5	11.2

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 23

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	005 45.0	005 45.9	005 29.3
01	005 45.3	005 46.2	005 29.5
02	005 45.5	005 46.4	005 29.8
03	005 45.8	005 46.7	005 30.0
04	005 46.0	005 46.9	005 30.2
05	005 46.3	005 47.2	005 30.5
06	005 46.5	005 47.4	005 30.7
07	005 46.8	005 47.7	005 31.0
08	005 47.0	005 48.0	005 31.2
09	005 47.3	005 48.2	005 31.4
10	005 47.5	005 48.5	005 31.7
11	005 47.8	005 48.7	005 31.9
12	005 48.0	005 49.0	005 32.1
13	005 48.3	005 49.2	005 32.4
14	005 48.5	005 49.5	005 32.6
15	005 48.8	005 49.7	005 32.9
16	005 49.0	005 50.0	005 33.1
17	005 49.3	005 50.2	005 33.3
18	005 49.5	005 50.5	005 33.6
19	005 49.8	005 50.7	005 33.8
20	005 50.0	005 51.0	005 34.1
21	005 50.3	005 51.2	005 34.3
22	005 50.5	005 51.5	005 34.5
23	005 50.8	005 51.7	005 34.8
24	005 51.0	005 52.0	005 35.0
25	005 51.3	005 52.2	005 35.2
26	005 51.5	005 52.5	005 35.5
27	005 51.8	005 52.7	005 35.7
28	005 52.0	005 53.0	005 36.0
29	005 52.3	005 53.2	005 36.2
30	005 52.5	005 53.5	005 36.4
31	005 52.8	005 53.7	005 36.7
32	005 53.0	005 54.0	005 36.9
33	005 53.3	005 54.2	005 37.2
34	005 53.5	005 54.5	005 37.4
35	005 53.8	005 54.7	005 37.6
36	005 54.0	005 55.0	005 37.9
37	005 54.3	005 55.2	005 38.1
38	005 54.5	005 55.5	005 38.4
39	005 54.8	005 55.7	005 38.6
40	005 55.0	005 56.0	005 38.8
41	005 55.3	005 56.2	005 39.1
42	005 55.5	005 56.5	005 39.3
43	005 55.8	005 56.7	005 39.5
44	005 56.0	005 57.0	005 39.8
45	005 56.3	005 57.2	005 40.0
46	005 56.5	005 57.5	005 40.3
47	005 56.8	005 57.7	005 40.5
48	005 57.0	005 58.0	005 40.7
49	005 57.3	005 58.2	005 41.0
50	005 57.5	005 58.5	005 41.2
51	005 57.8	005 58.7	005 41.5
52	005 58.0	005 59.0	005 41.7
53	005 58.3	005 59.2	005 41.9
54	005 58.5	005 59.5	005 42.2
55	005 58.8	005 59.7	005 42.4
56	005 59.0	006 00.0	005 42.6
57	005 59.3	006 00.2	005 42.9
58	005 59.5	006 00.5	005 43.1
59	005 59.8	006 00.7	005 43.4

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	2.0	10.2	3.9	15.3	5.9	20.4	7.8	25.5	9.8
0.1	0.0	5.2	2.0	10.3	3.9	15.4	5.9	20.5	7.9	25.6	9.8
0.2	0.1	5.3	2.0	10.4	4.0	15.5	5.9	20.6	7.9	25.7	9.9
0.3	0.1	5.4	2.1	10.5	4.0	15.6	6.0	20.7	7.9	25.8	9.9
0.4	0.2	5.5	2.1	10.6	4.1	15.7	6.0	20.8	8.0	25.9	9.9
0.5	0.2	5.6	2.1	10.7	4.1	15.8	6.1	20.9	8.0	26.0	10.0
0.6	0.2	5.7	2.2	10.8	4.1	15.9	6.1	21.0	8.1	26.1	10.0
0.7	0.3	5.8	2.2	10.9	4.2	16.0	6.1	21.1	8.1	26.2	10.0
0.8	0.3	5.9	2.3	11.0	4.2	16.1	6.2	21.2	8.1	26.3	10.1
0.9	0.3	6.0	2.3	11.1	4.3	16.2	6.2	21.3	8.2	26.4	10.1
1.0	0.4	6.1	2.3	11.2	4.3	16.3	6.2	21.4	8.2	26.5	10.2
1.1	0.4	6.2	2.4	11.3	4.3	16.4	6.3	21.5	8.2	26.6	10.2
1.2	0.5	6.3	2.4	11.4	4.4	16.5	6.3	21.6	8.3	26.7	10.2
1.3	0.5	6.4	2.5	11.5	4.4	16.6	6.4	21.7	8.3	26.8	10.3
1.4	0.5	6.5	2.5	11.6	4.4	16.7	6.4	21.8	8.4	26.9	10.3
1.5	0.6	6.6	2.5	11.7	4.5	16.8	6.4	21.9	8.4	27.0	10.4
1.6	0.6	6.7	2.6	11.8	4.5	16.9	6.5	22.0	8.4	27.1	10.4
1.7	0.7	6.8	2.6	11.9	4.6	17.0	6.5	22.1	8.5	27.2	10.4
1.8	0.7	6.9	2.6	12.0	4.6	17.1	6.6	22.2	8.5	27.3	10.5
1.9	0.7	7.0	2.7	12.1	4.6	17.2	6.6	22.3	8.5	27.4	10.5
2.0	0.8	7.1	2.7	12.2	4.7	17.3	6.6	22.4	8.6	27.5	10.5
2.1	0.8	7.2	2.8	12.3	4.7	17.4	6.7	22.5	8.6	27.6	10.6
2.2	0.8	7.3	2.8	12.4	4.8	17.5	6.7	22.6	8.7	27.7	10.6
2.3	0.9	7.4	2.8	12.5	4.8	17.6	6.7	22.7	8.7	27.8	10.7
2.4	0.9	7.5	2.9	12.6	4.8	17.7	6.8	22.8	8.7	27.9	10.7
2.5	1.0	7.6	2.9	12.7	4.9	17.8	6.8	22.9	8.8	28.0	10.7
2.6	1.0	7.7	3.0	12.8	4.9	17.9	6.9	23.0	8.8	28.1	10.8
2.7	1.0	7.8	3.0	12.9	4.9	18.0	6.9	23.1	8.9	28.2	10.8
2.8	1.1	7.9	3.0	13.0	5.0	18.1	6.9	23.2	8.9	28.3	10.8
2.9	1.1	8.0	3.1	13.1	5.0	18.2	7.0	23.3	8.9	28.4	10.9
3.0	1.2	8.1	3.1	13.2	5.1	18.3	7.0	23.4	9.0	28.5	10.9
3.1	1.2	8.2	3.1	13.3	5.1	18.4	7.1	23.5	9.0	28.6	11.0
3.2	1.2	8.3	3.2	13.4	5.1	18.5	7.1	23.6	9.0	28.7	11.0
3.3	1.3	8.4	3.2	13.5	5.2	18.6	7.1	23.7	9.1	28.8	11.0
3.4	1.3	8.5	3.3	13.6	5.2	18.7	7.2	23.8	9.1	28.9	11.1
3.5	1.3	8.6	3.3	13.7	5.3	18.8	7.2	23.9	9.2	29.0	11.1
3.6	1.4	8.7	3.3	13.8	5.3	18.9	7.2	24.0	9.2	29.1	11.2
3.7	1.4	8.8	3.4	13.9	5.3	19.0	7.3	24.1	9.2	29.2	11.2
3.8	1.5	8.9	3.4	14.0	5.4	19.1	7.3	24.2	9.3	29.3	11.2
3.9	1.5	9.0	3.5	14.1	5.4	19.2	7.4	24.3	9.3	29.4	11.3
4.0	1.5	9.1	3.5	14.2	5.4	19.3	7.4	24.4	9.4	29.5	11.3
4.1	1.6	9.2	3.5	14.3	5.5	19.4	7.4	24.5	9.4	29.6	11.3
4.2	1.6	9.3	3.6	14.4	5.5	19.5	7.5	24.6	9.4	29.7	11.4
4.3	1.6	9.4	3.6	14.5	5.6	19.6	7.5	24.7	9.5	29.8	11.4
4.4	1.7	9.5	3.6	14.6	5.6	19.7	7.6	24.8	9.5	29.9	11.5
4.5	1.7	9.6	3.7	14.7	5.6	19.8	7.6	24.9	9.5	30.0	11.5
4.6	1.8	9.7	3.7	14.8	5.7	19.9	7.6	25.0	9.6	30.1	11.5
4.7	1.8	9.8	3.8	14.9	5.7	20.0	7.7	25.1	9.6	30.2	11.6
4.8	1.8	9.9	3.8	15.0	5.8	20.1	7.7	25.2	9.7	30.3	11.6
4.9	1.9	10.0	3.8	15.1	5.8	20.2	7.7	25.3	9.7	30.4	11.7
5.0	1.9	10.1	3.9	15.2	5.8	20.3	7.8	25.4	9.7	30.5	11.7

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 24

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	006 00.0	006 01.0	005 43.6
01	006 00.3	006 01.2	005 43.8
02	006 00.5	006 01.5	005 44.1
03	006 00.8	006 01.7	005 44.3
04	006 01.0	006 02.0	005 44.6
05	006 01.3	006 02.2	005 44.8
06	006 01.5	006 02.5	005 45.0
07	006 01.8	006 02.7	005 45.3
08	006 02.0	006 03.0	005 45.5
09	006 02.3	006 03.2	005 45.7
10	006 02.5	006 03.5	005 46.0
11	006 02.8	006 03.7	005 46.2
12	006 03.0	006 04.0	005 46.5
13	006 03.3	006 04.2	005 46.7
14	006 03.5	006 04.5	005 46.9
15	006 03.8	006 04.7	005 47.2
16	006 04.0	006 05.0	005 47.4
17	006 04.3	006 05.2	005 47.7
18	006 04.5	006 05.5	005 47.9
19	006 04.8	006 05.7	005 48.1
20	006 05.0	006 06.0	005 48.4
21	006 05.3	006 06.3	005 48.6
22	006 05.5	006 06.5	005 48.8
23	006 05.8	006 06.8	005 49.1
24	006 06.0	006 07.0	005 49.3
25	006 06.3	006 07.3	005 49.6
26	006 06.5	006 07.5	005 49.8
27	006 06.8	006 07.8	005 50.0
28	006 07.0	006 08.0	005 50.3
29	006 07.3	006 08.3	005 50.5
30	006 07.5	006 08.5	005 50.8
31	006 07.8	006 08.8	005 51.0
32	006 08.0	006 09.0	005 51.2
33	006 08.3	006 09.3	005 51.5
34	006 08.5	006 09.5	005 51.7
35	006 08.8	006 09.8	005 52.0
36	006 09.0	006 10.0	005 52.2
37	006 09.3	006 10.3	005 52.4
38	006 09.5	006 10.5	005 52.7
39	006 09.8	006 10.8	005 52.9
40	006 10.0	006 11.0	005 53.1
41	006 10.3	006 11.3	005 53.4
42	006 10.5	006 11.5	005 53.6
43	006 10.8	006 11.8	005 53.9
44	006 11.0	006 12.0	005 54.1
45	006 11.3	006 12.3	005 54.3
46	006 11.5	006 12.5	005 54.6
47	006 11.8	006 12.8	005 54.8
48	006 12.0	006 13.0	005 55.1
49	006 12.3	006 13.3	005 55.3
50	006 12.5	006 13.5	005 55.5
51	006 12.8	006 13.8	005 55.8
52	006 13.0	006 14.0	005 56.0
53	006 13.3	006 14.3	005 56.2
54	006 13.5	006 14.5	005 56.5
55	006 13.8	006 14.8	005 56.7
56	006 14.0	006 15.0	005 57.0
57	006 14.3	006 15.3	005 57.2
58	006 14.5	006 15.5	005 57.4
59	006 14.8	006 15.8	005 57.7

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	2.0	10.2	4.1	15.3	6.1	20.4	8.2	25.5	10.2
0.1	0.0	5.2	2.1	10.3	4.1	15.4	6.2	20.5	8.2	25.6	10.2
0.2	0.1	5.3	2.1	10.4	4.2	15.5	6.2	20.6	8.2	25.7	10.3
0.3	0.1	5.4	2.2	10.5	4.2	15.6	6.2	20.7	8.3	25.8	10.3
0.4	0.2	5.5	2.2	10.6	4.2	15.7	6.3	20.8	8.3	25.9	10.4
0.5	0.2	5.6	2.2	10.7	4.3	15.8	6.3	20.9	8.4	26.0	10.4
0.6	0.2	5.7	2.3	10.8	4.3	15.9	6.4	21.0	8.4	26.1	10.4
0.7	0.3	5.8	2.3	10.9	4.4	16.0	6.4	21.1	8.4	26.2	10.5
0.8	0.3	5.9	2.4	11.0	4.4	16.1	6.4	21.2	8.5	26.3	10.5
0.9	0.4	6.0	2.4	11.1	4.4	16.2	6.5	21.3	8.5	26.4	10.6
1.0	0.4	6.1	2.4	11.2	4.5	16.3	6.5	21.4	8.6	26.5	10.6
1.1	0.4	6.2	2.5	11.3	4.5	16.4	6.6	21.5	8.6	26.6	10.6
1.2	0.5	6.3	2.5	11.4	4.6	16.5	6.6	21.6	8.6	26.7	10.7
1.3	0.5	6.4	2.6	11.5	4.6	16.6	6.6	21.7	8.7	26.8	10.7
1.4	0.6	6.5	2.6	11.6	4.6	16.7	6.7	21.8	8.7	26.9	10.8
1.5	0.6	6.6	2.6	11.7	4.7	16.8	6.7	21.9	8.8	27.0	10.8
1.6	0.6	6.7	2.7	11.8	4.7	16.9	6.8	22.0	8.8	27.1	10.8
1.7	0.7	6.8	2.7	11.9	4.8	17.0	6.8	22.1	8.8	27.2	10.9
1.8	0.7	6.9	2.8	12.0	4.8	17.1	6.8	22.2	8.9	27.3	10.9
1.9	0.8	7.0	2.8	12.1	4.8	17.2	6.9	22.3	8.9	27.4	11.0
2.0	0.8	7.1	2.8	12.2	4.9	17.3	6.9	22.4	9.0	27.5	11.0
2.1	0.8	7.2	2.9	12.3	4.9	17.4	7.0	22.5	9.0	27.6	11.0
2.2	0.9	7.3	2.9	12.4	5.0	17.5	7.0	22.6	9.0	27.7	11.1
2.3	0.9	7.4	3.0	12.5	5.0	17.6	7.0	22.7	9.1	27.8	11.1
2.4	1.0	7.5	3.0	12.6	5.0	17.7	7.1	22.8	9.1	27.9	11.2
2.5	1.0	7.6	3.0	12.7	5.1	17.8	7.1	22.9	9.2	28.0	11.2
2.6	1.0	7.7	3.1	12.8	5.1	17.9	7.2	23.0	9.2	28.1	11.2
2.7	1.1	7.8	3.1	12.9	5.2	18.0	7.2	23.1	9.2	28.2	11.3
2.8	1.1	7.9	3.2	13.0	5.2	18.1	7.2	23.2	9.3	28.3	11.3
2.9	1.2	8.0	3.2	13.1	5.2	18.2	7.3	23.3	9.3	28.4	11.4
3.0	1.2	8.1	3.2	13.2	5.3	18.3	7.3	23.4	9.4	28.5	11.4
3.1	1.2	8.2	3.3	13.3	5.3	18.4	7.4	23.5	9.4	28.6	11.4
3.2	1.3	8.3	3.3	13.4	5.4	18.5	7.4	23.6	9.4	28.7	11.5
3.3	1.3	8.4	3.4	13.5	5.4	18.6	7.4	23.7	9.5	28.8	11.5
3.4	1.4	8.5	3.4	13.6	5.4	18.7	7.5	23.8	9.5	28.9	11.6
3.5	1.4	8.6	3.4	13.7	5.5	18.8	7.5	23.9	9.6	29.0	11.6
3.6	1.4	8.7	3.5	13.8	5.5	18.9	7.6	24.0	9.6	29.1	11.6
3.7	1.5	8.8	3.5	13.9	5.6	19.0	7.6	24.1	9.6	29.2	11.7
3.8	1.5	8.9	3.6	14.0	5.6	19.1	7.6	24.2	9.7	29.3	11.7
3.9	1.6	9.0	3.6	14.1	5.6	19.2	7.7	24.3	9.7	29.4	11.8
4.0	1.6	9.1	3.6	14.2	5.7	19.3	7.7	24.4	9.8	29.5	11.8
4.1	1.6	9.2	3.7	14.3	5.7	19.4	7.8	24.5	9.8	29.6	11.8
4.2	1.7	9.3	3.7	14.4	5.8	19.5	7.8	24.6	9.8	29.7	11.9
4.3	1.7	9.4	3.8	14.5	5.8	19.6	7.8	24.7	9.9	29.8	11.9
4.4	1.8	9.5	3.8	14.6	5.8	19.7	7.9	24.8	9.9	29.9	12.0
4.5	1.8	9.6	3.8	14.7	5.9	19.8	7.9	24.9	10.0	30.0	12.0
4.6	1.8	9.7	3.9	14.8	5.9	19.9	8.0	25.0	10.0	30.1	12.0
4.7	1.9	9.8	3.9	14.9	6.0	20.0	8.0	25.1	10.0	30.2	12.1
4.8	1.9	9.9	4.0	15.0	6.0	20.1	8.0	25.2	10.1	30.3	12.1
4.9	2.0	10.0	4.0	15.1	6.0	20.2	8.1	25.3	10.1	30.4	12.2
5.0	2.0	10.1	4.0	15.2	6.1	20.3	8.1	25.4	10.2	30.5	12.2

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 25

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	006 15.0	006 16.0	005 57.9
01	006 15.3	006 16.3	005 58.2
02	006 15.5	006 16.5	005 58.4
03	006 15.8	006 16.8	005 58.6
04	006 16.0	006 17.0	005 58.9
05	006 16.3	006 17.3	005 59.1
06	006 16.5	006 17.5	005 59.3
07	006 16.8	006 17.8	005 59.6
08	006 17.0	006 18.0	005 59.8
09	006 17.3	006 18.3	006 00.1
10	006 17.5	006 18.5	006 00.3
11	006 17.8	006 18.8	006 00.5
12	006 18.0	006 19.0	006 00.8
13	006 18.3	006 19.3	006 01.0
14	006 18.5	006 19.5	006 01.3
15	006 18.8	006 19.8	006 01.5
16	006 19.0	006 20.0	006 01.7
17	006 19.3	006 20.3	006 02.0
18	006 19.5	006 20.5	006 02.2
19	006 19.8	006 20.8	006 02.5
20	006 20.0	006 21.0	006 02.7
21	006 20.3	006 21.3	006 02.9
22	006 20.5	006 21.5	006 03.2
23	006 20.8	006 21.8	006 03.4
24	006 21.0	006 22.0	006 03.6
25	006 21.3	006 22.3	006 03.9
26	006 21.5	006 22.5	006 04.1
27	006 21.8	006 22.8	006 04.4
28	006 22.0	006 23.0	006 04.6
29	006 22.3	006 23.3	006 04.8
30	006 22.5	006 23.5	006 05.1
31	006 22.8	006 23.8	006 05.3
32	006 23.0	006 24.0	006 05.6
33	006 23.3	006 24.3	006 05.8
34	006 23.5	006 24.5	006 06.0
35	006 23.8	006 24.8	006 06.3
36	006 24.0	006 25.1	006 06.5
37	006 24.3	006 25.3	006 06.7
38	006 24.5	006 25.6	006 07.0
39	006 24.8	006 25.8	006 07.2
40	006 25.0	006 26.1	006 07.5
41	006 25.3	006 26.3	006 07.7
42	006 25.5	006 26.6	006 07.9
43	006 25.8	006 26.8	006 08.2
44	006 26.0	006 27.1	006 08.4
45	006 26.3	006 27.3	006 08.7
46	006 26.5	006 27.6	006 08.9
47	006 26.8	006 27.8	006 09.1
48	006 27.0	006 28.1	006 09.4
49	006 27.3	006 28.3	006 09.6
50	006 27.5	006 28.6	006 09.8
51	006 27.8	006 28.8	006 10.1
52	006 28.0	006 29.1	006 10.3
53	006 28.3	006 29.3	006 10.6
54	006 28.5	006 29.6	006 10.8
55	006 28.8	006 29.8	006 11.0
56	006 29.0	006 30.1	006 11.3
57	006 29.3	006 30.3	006 11.5
58	006 29.5	006 30.6	006 11.8
59	006 29.8	006 30.8	006 12.0

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	2.1	10.2	4.3	15.3	6.4	20.4	8.5	25.5	10.6
0.1	0.0	5.2	2.2	10.3	4.3	15.4	6.4	20.5	8.5	25.6	10.7
0.2	0.1	5.3	2.2	10.4	4.3	15.5	6.5	20.6	8.6	25.7	10.7
0.3	0.1	5.4	2.3	10.5	4.4	15.6	6.5	20.7	8.6	25.8	10.8
0.4	0.2	5.5	2.3	10.6	4.4	15.7	6.5	20.8	8.7	25.9	10.8
0.5	0.2	5.6	2.3	10.7	4.5	15.8	6.6	20.9	8.7	26.0	10.8
0.6	0.3	5.7	2.4	10.8	4.5	15.9	6.6	21.0	8.8	26.1	10.9
0.7	0.3	5.8	2.4	10.9	4.5	16.0	6.7	21.1	8.8	26.2	10.9
0.8	0.3	5.9	2.5	11.0	4.6	16.1	6.7	21.2	8.8	26.3	11.0
0.9	0.4	6.0	2.5	11.1	4.6	16.2	6.8	21.3	8.9	26.4	11.0
1.0	0.4	6.1	2.5	11.2	4.7	16.3	6.8	21.4	8.9	26.5	11.0
1.1	0.5	6.2	2.6	11.3	4.7	16.4	6.8	21.5	9.0	26.6	11.1
1.2	0.5	6.3	2.6	11.4	4.8	16.5	6.9	21.6	9.0	26.7	11.1
1.3	0.5	6.4	2.7	11.5	4.8	16.6	6.9	21.7	9.0	26.8	11.2
1.4	0.6	6.5	2.7	11.6	4.8	16.7	7.0	21.8	9.1	26.9	11.2
1.5	0.6	6.6	2.8	11.7	4.9	16.8	7.0	21.9	9.1	27.0	11.3
1.6	0.7	6.7	2.8	11.8	4.9	16.9	7.0	22.0	9.2	27.1	11.3
1.7	0.7	6.8	2.8	11.9	5.0	17.0	7.1	22.1	9.2	27.2	11.3
1.8	0.8	6.9	2.9	12.0	5.0	17.1	7.1	22.2	9.3	27.3	11.4
1.9	0.8	7.0	2.9	12.1	5.0	17.2	7.2	22.3	9.3	27.4	11.4
2.0	0.8	7.1	3.0	12.2	5.1	17.3	7.2	22.4	9.3	27.5	11.5
2.1	0.9	7.2	3.0	12.3	5.1	17.4	7.3	22.5	9.4	27.6	11.5
2.2	0.9	7.3	3.0	12.4	5.2	17.5	7.3	22.6	9.4	27.7	11.5
2.3	1.0	7.4	3.1	12.5	5.2	17.6	7.3	22.7	9.5	27.8	11.6
2.4	1.0	7.5	3.1	12.6	5.3	17.7	7.4	22.8	9.5	27.9	11.6
2.5	1.0	7.6	3.2	12.7	5.3	17.8	7.4	22.9	9.5	28.0	11.7
2.6	1.1	7.7	3.2	12.8	5.3	17.9	7.5	23.0	9.6	28.1	11.7
2.7	1.1	7.8	3.3	12.9	5.4	18.0	7.5	23.1	9.6	28.2	11.8
2.8	1.2	7.9	3.3	13.0	5.4	18.1	7.5	23.2	9.7	28.3	11.8
2.9	1.2	8.0	3.3	13.1	5.5	18.2	7.6	23.3	9.7	28.4	11.8
3.0	1.3	8.1	3.4	13.2	5.5	18.3	7.6	23.4	9.8	28.5	11.9
3.1	1.3	8.2	3.4	13.3	5.5	18.4	7.7	23.5	9.8	28.6	11.9
3.2	1.3	8.3	3.5	13.4	5.6	18.5	7.7	23.6	9.8	28.7	12.0
3.3	1.4	8.4	3.5	13.5	5.6	18.6	7.8	23.7	9.9	28.8	12.0
3.4	1.4	8.5	3.5	13.6	5.7	18.7	7.8	23.8	9.9	28.9	12.0
3.5	1.5	8.6	3.6	13.7	5.7	18.8	7.8	23.9	10.0	29.0	12.1
3.6	1.5	8.7	3.6	13.8	5.8	18.9	7.9	24.0	10.0	29.1	12.1
3.7	1.5	8.8	3.7	13.9	5.8	19.0	7.9	24.1	10.0	29.2	12.2
3.8	1.6	8.9	3.7	14.0	5.8	19.1	8.0	24.2	10.1	29.3	12.2
3.9	1.6	9.0	3.8	14.1	5.9	19.2	8.0	24.3	10.1	29.4	12.3
4.0	1.7	9.1	3.8	14.2	5.9	19.3	8.0	24.4	10.2	29.5	12.3
4.1	1.7	9.2	3.8	14.3	6.0	19.4	8.1	24.5	10.2	29.6	12.3
4.2	1.8	9.3	3.9	14.4	6.0	19.5	8.1	24.6	10.3	29.7	12.4
4.3	1.8	9.4	3.9	14.5	6.0	19.6	8.2	24.7	10.3	29.8	12.4
4.4	1.8	9.5	4.0	14.6	6.1	19.7	8.2	24.8	10.3	29.9	12.5
4.5	1.9	9.6	4.0	14.7	6.1	19.8	8.3	24.9	10.4	30.0	12.5
4.6	1.9	9.7	4.0	14.8	6.2	19.9	8.3	25.0	10.4	30.1	12.5
4.7	2.0	9.8	4.1	14.9	6.2	20.0	8.3	25.1	10.5	30.2	12.6
4.8	2.0	9.9	4.1	15.0	6.3	20.1	8.4	25.2	10.5	30.3	12.6
4.9	2.0	10.0	4.2	15.1	6.3	20.2	8.4	25.3	10.5	30.4	12.7
5.0	2.1	10.1	4.2	15.2	6.3	20.3	8.5	25.4	10.6	30.5	12.7

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 26

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	006 30.0	006 31.1	006 12.2
01	006 30.3	006 31.3	006 12.5
02	006 30.5	006 31.6	006 12.7
03	006 30.8	006 31.8	006 12.9
04	006 31.0	006 32.1	006 13.2
05	006 31.3	006 32.3	006 13.4
06	006 31.5	006 32.6	006 13.7
07	006 31.8	006 32.8	006 13.9
08	006 32.0	006 33.1	006 14.1
09	006 32.3	006 33.3	006 14.4
10	006 32.5	006 33.6	006 14.6
11	006 32.8	006 33.8	006 14.9
12	006 33.0	006 34.1	006 15.1
13	006 33.3	006 34.3	006 15.3
14	006 33.5	006 34.6	006 15.6
15	006 33.8	006 34.8	006 15.8
16	006 34.0	006 35.1	006 16.1
17	006 34.3	006 35.3	006 16.3
18	006 34.5	006 35.6	006 16.5
19	006 34.8	006 35.8	006 16.8
20	006 35.0	006 36.1	006 17.0
21	006 35.3	006 36.3	006 17.2
22	006 35.5	006 36.6	006 17.5
23	006 35.8	006 36.8	006 17.7
24	006 36.0	006 37.1	006 18.0
25	006 36.3	006 37.3	006 18.2
26	006 36.5	006 37.6	006 18.4
27	006 36.8	006 37.8	006 18.7
28	006 37.0	006 38.1	006 18.9
29	006 37.3	006 38.3	006 19.2
30	006 37.5	006 38.6	006 19.4
31	006 37.8	006 38.8	006 19.6
32	006 38.0	006 39.1	006 19.9
33	006 38.3	006 39.3	006 20.1
34	006 38.5	006 39.6	006 20.3
35	006 38.8	006 39.8	006 20.6
36	006 39.0	006 40.1	006 20.8
37	006 39.3	006 40.3	006 21.1
38	006 39.5	006 40.6	006 21.3
39	006 39.8	006 40.8	006 21.5
40	006 40.0	006 41.1	006 21.8
41	006 40.3	006 41.3	006 22.0
42	006 40.5	006 41.6	006 22.3
43	006 40.8	006 41.8	006 22.5
44	006 41.0	006 42.1	006 22.7
45	006 41.3	006 42.3	006 23.0
46	006 41.5	006 42.6	006 23.2
47	006 41.8	006 42.8	006 23.4
48	006 42.0	006 43.1	006 23.7
49	006 42.3	006 43.4	006 23.9
50	006 42.5	006 43.6	006 24.2
51	006 42.8	006 43.9	006 24.4
52	006 43.0	006 44.1	006 24.6
53	006 43.3	006 44.4	006 24.9
54	006 43.5	006 44.6	006 25.1
55	006 43.8	006 44.9	006 25.4
56	006 44.0	006 45.1	006 25.6
57	006 44.3	006 45.4	006 25.8
58	006 44.5	006 45.6	006 26.1
59	006 44.8	006 45.9	006 26.3

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	2.2	10.2	4.4	15.3	6.6	20.4	8.8	25.5	11.1
0.1	0.0	5.2	2.3	10.3	4.5	15.4	6.7	20.5	8.9	25.6	11.1
0.2	0.1	5.3	2.3	10.4	4.5	15.5	6.7	20.6	8.9	25.7	11.1
0.3	0.1	5.4	2.3	10.5	4.6	15.6	6.8	20.7	9.0	25.8	11.2
0.4	0.2	5.5	2.4	10.6	4.6	15.7	6.8	20.8	9.0	25.9	11.2
0.5	0.2	5.6	2.4	10.7	4.6	15.8	6.8	20.9	9.1	26.0	11.3
0.6	0.3	5.7	2.5	10.8	4.7	15.9	6.9	21.0	9.1	26.1	11.3
0.7	0.3	5.8	2.5	10.9	4.7	16.0	6.9	21.1	9.1	26.2	11.4
0.8	0.3	5.9	2.6	11.0	4.8	16.1	7.0	21.2	9.2	26.3	11.4
0.9	0.4	6.0	2.6	11.1	4.8	16.2	7.0	21.3	9.2	26.4	11.4
1.0	0.4	6.1	2.6	11.2	4.9	16.3	7.1	21.4	9.3	26.5	11.5
1.1	0.5	6.2	2.7	11.3	4.9	16.4	7.1	21.5	9.3	26.6	11.5
1.2	0.5	6.3	2.7	11.4	4.9	16.5	7.2	21.6	9.4	26.7	11.6
1.3	0.6	6.4	2.8	11.5	5.0	16.6	7.2	21.7	9.4	26.8	11.6
1.4	0.6	6.5	2.8	11.6	5.0	16.7	7.2	21.8	9.4	26.9	11.7
1.5	0.7	6.6	2.9	11.7	5.1	16.8	7.3	21.9	9.5	27.0	11.7
1.6	0.7	6.7	2.9	11.8	5.1	16.9	7.3	22.0	9.5	27.1	11.7
1.7	0.7	6.8	2.9	11.9	5.2	17.0	7.4	22.1	9.6	27.2	11.8
1.8	0.8	6.9	3.0	12.0	5.2	17.1	7.4	22.2	9.6	27.3	11.8
1.9	0.8	7.0	3.0	12.1	5.2	17.2	7.5	22.3	9.7	27.4	11.9
2.0	0.9	7.1	3.1	12.2	5.3	17.3	7.5	22.4	9.7	27.5	11.9
2.1	0.9	7.2	3.1	12.3	5.3	17.4	7.5	22.5	9.8	27.6	12.0
2.2	1.0	7.3	3.2	12.4	5.4	17.5	7.6	22.6	9.8	27.7	12.0
2.3	1.0	7.4	3.2	12.5	5.4	17.6	7.6	22.7	9.8	27.8	12.0
2.4	1.0	7.5	3.3	12.6	5.5	17.7	7.7	22.8	9.9	27.9	12.1
2.5	1.1	7.6	3.3	12.7	5.5	17.8	7.7	22.9	9.9	28.0	12.1
2.6	1.1	7.7	3.3	12.8	5.5	17.9	7.8	23.0	10.0	28.1	12.2
2.7	1.2	7.8	3.4	12.9	5.6	18.0	7.8	23.1	10.0	28.2	12.2
2.8	1.2	7.9	3.4	13.0	5.6	18.1	7.8	23.2	10.1	28.3	12.3
2.9	1.3	8.0	3.5	13.1	5.7	18.2	7.9	23.3	10.1	28.4	12.3
3.0	1.3	8.1	3.5	13.2	5.7	18.3	7.9	23.4	10.1	28.5	12.4
3.1	1.3	8.2	3.6	13.3	5.8	18.4	8.0	23.5	10.2	28.6	12.4
3.2	1.4	8.3	3.6	13.4	5.8	18.5	8.0	23.6	10.2	28.7	12.4
3.3	1.4	8.4	3.6	13.5	5.9	18.6	8.1	23.7	10.3	28.8	12.5
3.4	1.5	8.5	3.7	13.6	5.9	18.7	8.1	23.8	10.3	28.9	12.5
3.5	1.5	8.6	3.7	13.7	5.9	18.8	8.1	23.9	10.4	29.0	12.6
3.6	1.6	8.7	3.8	13.8	6.0	18.9	8.2	24.0	10.4	29.1	12.6
3.7	1.6	8.8	3.8	13.9	6.0	19.0	8.2	24.1	10.4	29.2	12.7
3.8	1.6	8.9	3.9	14.0	6.1	19.1	8.3	24.2	10.5	29.3	12.7
3.9	1.7	9.0	3.9	14.1	6.1	19.2	8.3	24.3	10.5	29.4	12.7
4.0	1.7	9.1	3.9	14.2	6.2	19.3	8.4	24.4	10.6	29.5	12.8
4.1	1.8	9.2	4.0	14.3	6.2	19.4	8.4	24.5	10.6	29.6	12.8
4.2	1.8	9.3	4.0	14.4	6.2	19.5	8.5	24.6	10.7	29.7	12.9
4.3	1.9	9.4	4.1	14.5	6.3	19.6	8.5	24.7	10.7	29.8	12.9
4.4	1.9	9.5	4.1	14.6	6.3	19.7	8.5	24.8	10.7	29.9	13.0
4.5	2.0	9.6	4.2	14.7	6.4	19.8	8.6	24.9	10.8	30.0	13.0
4.6	2.0	9.7	4.2	14.8	6.4	19.9	8.6	25.0	10.8	30.1	13.0
4.7	2.0	9.8	4.2	14.9	6.5	20.0	8.7	25.1	10.9	30.2	13.1
4.8	2.1	9.9	4.3	15.0	6.5	20.1	8.7	25.2	10.9	30.3	13.1
4.9	2.1	10.0	4.3	15.1	6.5	20.2	8.8	25.3	11.0	30.4	13.2
5.0	2.2	10.1	4.4	15.2	6.6	20.3	8.8	25.4	11.0	30.5	13.2

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 27

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	006 45.0	006 46.1	006 26.6
01	006 45.3	006 46.4	006 26.8
02	006 45.5	006 46.6	006 27.0
03	006 45.8	006 46.9	006 27.3
04	006 46.0	006 47.1	006 27.5
05	006 46.3	006 47.4	006 27.7
06	006 46.5	006 47.6	006 28.0
07	006 46.8	006 47.9	006 28.2
08	006 47.0	006 48.1	006 28.5
09	006 47.3	006 48.4	006 28.7
10	006 47.5	006 48.6	006 28.9
11	006 47.8	006 48.9	006 29.2
12	006 48.0	006 49.1	006 29.4
13	006 48.3	006 49.4	006 29.7
14	006 48.5	006 49.6	006 29.9
15	006 48.8	006 49.9	006 30.1
16	006 49.0	006 50.1	006 30.4
17	006 49.3	006 50.4	006 30.6
18	006 49.5	006 50.6	006 30.8
19	006 49.8	006 50.9	006 31.1
20	006 50.0	006 51.1	006 31.3
21	006 50.3	006 51.4	006 31.6
22	006 50.5	006 51.6	006 31.8
23	006 50.8	006 51.9	006 32.0
24	006 51.0	006 52.1	006 32.3
25	006 51.3	006 52.4	006 32.5
26	006 51.5	006 52.6	006 32.8
27	006 51.8	006 52.9	006 33.0
28	006 52.0	006 53.1	006 33.2
29	006 52.3	006 53.4	006 33.5
30	006 52.5	006 53.6	006 33.7
31	006 52.8	006 53.9	006 33.9
32	006 53.0	006 54.1	006 34.2
33	006 53.3	006 54.4	006 34.4
34	006 53.5	006 54.6	006 34.7
35	006 53.8	006 54.9	006 34.9
36	006 54.0	006 55.1	006 35.1
37	006 54.3	006 55.4	006 35.4
38	006 54.5	006 55.6	006 35.6
39	006 54.8	006 55.9	006 35.9
40	006 55.0	006 56.1	006 36.1
41	006 55.3	006 56.4	006 36.3
42	006 55.5	006 56.6	006 36.6
43	006 55.8	006 56.9	006 36.8
44	006 56.0	006 57.1	006 37.0
45	006 56.3	006 57.4	006 37.3
46	006 56.5	006 57.6	006 37.5
47	006 56.8	006 57.9	006 37.8
48	006 57.0	006 58.1	006 38.0
49	006 57.3	006 58.4	006 38.2
50	006 57.5	006 58.6	006 38.5
51	006 57.8	006 58.9	006 38.7
52	006 58.0	006 59.1	006 39.0
53	006 58.3	006 59.4	006 39.2
54	006 58.5	006 59.6	006 39.4
55	006 58.8	006 59.9	006 39.7
56	006 59.0	007 00.1	006 39.9
57	006 59.3	007 00.4	006 40.2
58	006 59.5	007 00.6	006 40.4
59	006 59.8	007 00.9	006 40.6

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	2.3	10.2	4.6	15.3	6.9	20.4	9.2	25.5	11.5
0.1	0.0	5.2	2.3	10.3	4.6	15.4	6.9	20.5	9.2	25.6	11.5
0.2	0.1	5.3	2.4	10.4	4.7	15.5	7.0	20.6	9.3	25.7	11.6
0.3	0.1	5.4	2.4	10.5	4.7	15.6	7.0	20.7	9.3	25.8	11.6
0.4	0.2	5.5	2.5	10.6	4.8	15.7	7.1	20.8	9.4	25.9	11.7
0.5	0.2	5.6	2.5	10.7	4.8	15.8	7.1	20.9	9.4	26.0	11.7
0.6	0.3	5.7	2.6	10.8	4.9	15.9	7.2	21.0	9.5	26.1	11.7
0.7	0.3	5.8	2.6	10.9	4.9	16.0	7.2	21.1	9.5	26.2	11.8
0.8	0.4	5.9	2.7	11.0	5.0	16.1	7.2	21.2	9.5	26.3	11.8
0.9	0.4	6.0	2.7	11.1	5.0	16.2	7.3	21.3	9.6	26.4	11.9
1.0	0.5	6.1	2.7	11.2	5.0	16.3	7.3	21.4	9.6	26.5	11.9
1.1	0.5	6.2	2.8	11.3	5.1	16.4	7.4	21.5	9.7	26.6	12.0
1.2	0.5	6.3	2.8	11.4	5.1	16.5	7.4	21.6	9.7	26.7	12.0
1.3	0.6	6.4	2.9	11.5	5.2	16.6	7.5	21.7	9.8	26.8	12.1
1.4	0.6	6.5	2.9	11.6	5.2	16.7	7.5	21.8	9.8	26.9	12.1
1.5	0.7	6.6	3.0	11.7	5.3	16.8	7.6	21.9	9.9	27.0	12.2
1.6	0.7	6.7	3.0	11.8	5.3	16.9	7.6	22.0	9.9	27.1	12.2
1.7	0.8	6.8	3.1	11.9	5.4	17.0	7.7	22.1	9.9	27.2	12.2
1.8	0.8	6.9	3.1	12.0	5.4	17.1	7.7	22.2	10.0	27.3	12.3
1.9	0.9	7.0	3.2	12.1	5.4	17.2	7.7	22.3	10.0	27.4	12.3
2.0	0.9	7.1	3.2	12.2	5.5	17.3	7.8	22.4	10.1	27.5	12.4
2.1	0.9	7.2	3.2	12.3	5.5	17.4	7.8	22.5	10.1	27.6	12.4
2.2	1.0	7.3	3.3	12.4	5.6	17.5	7.9	22.6	10.2	27.7	12.5
2.3	1.0	7.4	3.3	12.5	5.6	17.6	7.9	22.7	10.2	27.8	12.5
2.4	1.1	7.5	3.4	12.6	5.7	17.7	8.0	22.8	10.3	27.9	12.6
2.5	1.1	7.6	3.4	12.7	5.7	17.8	8.0	22.9	10.3	28.0	12.6
2.6	1.2	7.7	3.5	12.8	5.8	17.9	8.1	23.0	10.4	28.1	12.6
2.7	1.2	7.8	3.5	12.9	5.8	18.0	8.1	23.1	10.4	28.2	12.7
2.8	1.3	7.9	3.6	13.0	5.9	18.1	8.1	23.2	10.4	28.3	12.7
2.9	1.3	8.0	3.6	13.1	5.9	18.2	8.2	23.3	10.5	28.4	12.8
3.0	1.4	8.1	3.6	13.2	5.9	18.3	8.2	23.4	10.5	28.5	12.8
3.1	1.4	8.2	3.7	13.3	6.0	18.4	8.3	23.5	10.6	28.6	12.9
3.2	1.4	8.3	3.7	13.4	6.0	18.5	8.3	23.6	10.6	28.7	12.9
3.3	1.5	8.4	3.8	13.5	6.1	18.6	8.4	23.7	10.7	28.8	13.0
3.4	1.5	8.5	3.8	13.6	6.1	18.7	8.4	23.8	10.7	28.9	13.0
3.5	1.6	8.6	3.9	13.7	6.2	18.8	8.5	23.9	10.8	29.0	13.1
3.6	1.6	8.7	3.9	13.8	6.2	18.9	8.5	24.0	10.8	29.1	13.1
3.7	1.7	8.8	4.0	13.9	6.3	19.0	8.6	24.1	10.8	29.2	13.1
3.8	1.7	8.9	4.0	14.0	6.3	19.1	8.6	24.2	10.9	29.3	13.2
3.9	1.8	9.0	4.1	14.1	6.3	19.2	8.6	24.3	10.9	29.4	13.2
4.0	1.8	9.1	4.1	14.2	6.4	19.3	8.7	24.4	11.0	29.5	13.3
4.1	1.8	9.2	4.1	14.3	6.4	19.4	8.7	24.5	11.0	29.6	13.3
4.2	1.9	9.3	4.2	14.4	6.5	19.5	8.8	24.6	11.1	29.7	13.4
4.3	1.9	9.4	4.2	14.5	6.5	19.6	8.8	24.7	11.1	29.8	13.4
4.4	2.0	9.5	4.3	14.6	6.6	19.7	8.9	24.8	11.2	29.9	13.5
4.5	2.0	9.6	4.3	14.7	6.6	19.8	8.9	24.9	11.2	30.0	13.5
4.6	2.1	9.7	4.4	14.8	6.7	19.9	9.0	25.0	11.3	30.1	13.5
4.7	2.1	9.8	4.4	14.9	6.7	20.0	9.0	25.1	11.3	30.2	13.6
4.8	2.2	9.9	4.5	15.0	6.8	20.1	9.0	25.2	11.3	30.3	13.6
4.9	2.2	10.0	4.5	15.1	6.8	20.2	9.1	25.3	11.4	30.4	13.7
5.0	2.3	10.1	4.5	15.2	6.8	20.3	9.1	25.4	11.4	30.5	13.7

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	007 00.0	007 01.1	006 40.9
01	007 00.3	007 01.4	006 41.1
02	007 00.5	007 01.7	006 41.3
03	007 00.8	007 01.9	006 41.6
04	007 01.0	007 02.2	006 41.8
05	007 01.3	007 02.4	006 42.1
06	007 01.5	007 02.7	006 42.3
07	007 01.8	007 02.9	006 42.5
08	007 02.0	007 03.2	006 42.8
09	007 02.3	007 03.4	006 43.0
10	007 02.5	007 03.7	006 43.3
11	007 02.8	007 03.9	006 43.5
12	007 03.0	007 04.2	006 43.7
13	007 03.3	007 04.4	006 44.0
14	007 03.5	007 04.7	006 44.2
15	007 03.8	007 04.9	006 44.4
16	007 04.0	007 05.2	006 44.7
17	007 04.3	007 05.4	006 44.9
18	007 04.5	007 05.7	006 45.2
19	007 04.8	007 05.9	006 45.4
20	007 05.0	007 06.2	006 45.6
21	007 05.3	007 06.4	006 45.9
22	007 05.5	007 06.7	006 46.1
23	007 05.8	007 06.9	006 46.4
24	007 06.0	007 07.2	006 46.6
25	007 06.3	007 07.4	006 46.8
26	007 06.5	007 07.7	006 47.1
27	007 06.8	007 07.9	006 47.3
28	007 07.0	007 08.2	006 47.5
29	007 07.3	007 08.4	006 47.8
30	007 07.5	007 08.7	006 48.0
31	007 07.8	007 08.9	006 48.3
32	007 08.0	007 09.2	006 48.5
33	007 08.3	007 09.4	006 48.7
34	007 08.5	007 09.7	006 49.0
35	007 08.8	007 09.9	006 49.2
36	007 09.0	007 10.2	006 49.5
37	007 09.3	007 10.4	006 49.7
38	007 09.5	007 10.7	006 49.9
39	007 09.8	007 10.9	006 50.2
40	007 10.0	007 11.2	006 50.4
41	007 10.3	007 11.4	006 50.6
42	007 10.5	007 11.7	006 50.9
43	007 10.8	007 11.9	006 51.1
44	007 11.0	007 12.2	006 51.4
45	007 11.3	007 12.4	006 51.6
46	007 11.5	007 12.7	006 51.8
47	007 11.8	007 12.9	006 52.1
48	007 12.0	007 13.2	006 52.3
49	007 12.3	007 13.4	006 52.6
50	007 12.5	007 13.7	006 52.8
51	007 12.8	007 13.9	006 53.0
52	007 13.0	007 14.2	006 53.3
53	007 13.3	007 14.4	006 53.5
54	007 13.5	007 14.7	006 53.8
55	007 13.8	007 14.9	006 54.0
56	007 14.0	007 15.2	006 54.2
57	007 14.3	007 15.4	006 54.5
58	007 14.5	007 15.7	006 54.7
59	007 14.8	007 15.9	006 54.9

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	2.4	10.2	4.8	15.3	7.1	20.4	9.5	25.5	11.9
0.1	0.0	5.2	2.4	10.3	4.8	15.4	7.2	20.5	9.6	25.6	11.9
0.2	0.1	5.3	2.5	10.4	4.9	15.5	7.2	20.6	9.6	25.7	12.0
0.3	0.1	5.4	2.5	10.5	4.9	15.6	7.3	20.7	9.7	25.8	12.0
0.4	0.2	5.5	2.6	10.6	4.9	15.7	7.3	20.8	9.7	25.9	12.1
0.5	0.2	5.6	2.6	10.7	5.0	15.8	7.4	20.9	9.8	26.0	12.1
0.6	0.3	5.7	2.7	10.8	5.0	15.9	7.4	21.0	9.8	26.1	12.2
0.7	0.3	5.8	2.7	10.9	5.1	16.0	7.5	21.1	9.8	26.2	12.2
0.8	0.4	5.9	2.8	11.0	5.1	16.1	7.5	21.2	9.9	26.3	12.3
0.9	0.4	6.0	2.8	11.1	5.2	16.2	7.6	21.3	9.9	26.4	12.3
1.0	0.5	6.1	2.8	11.2	5.2	16.3	7.6	21.4	10.0	26.5	12.4
1.1	0.5	6.2	2.9	11.3	5.3	16.4	7.7	21.5	10.0	26.6	12.4
1.2	0.6	6.3	2.9	11.4	5.3	16.5	7.7	21.6	10.1	26.7	12.5
1.3	0.6	6.4	3.0	11.5	5.4	16.6	7.7	21.7	10.1	26.8	12.5
1.4	0.7	6.5	3.0	11.6	5.4	16.7	7.8	21.8	10.2	26.9	12.6
1.5	0.7	6.6	3.1	11.7	5.5	16.8	7.8	21.9	10.2	27.0	12.6
1.6	0.7	6.7	3.1	11.8	5.5	16.9	7.9	22.0	10.3	27.1	12.6
1.7	0.8	6.8	3.2	11.9	5.6	17.0	7.9	22.1	10.3	27.2	12.7
1.8	0.8	6.9	3.2	12.0	5.6	17.1	8.0	22.2	10.4	27.3	12.7
1.9	0.9	7.0	3.3	12.1	5.6	17.2	8.0	22.3	10.4	27.4	12.8
2.0	0.9	7.1	3.3	12.2	5.7	17.3	8.1	22.4	10.5	27.5	12.8
2.1	1.0	7.2	3.4	12.3	5.7	17.4	8.1	22.5	10.5	27.6	12.9
2.2	1.0	7.3	3.4	12.4	5.8	17.5	8.2	22.6	10.5	27.7	12.9
2.3	1.1	7.4	3.5	12.5	5.8	17.6	8.2	22.7	10.6	27.8	13.0
2.4	1.1	7.5	3.5	12.6	5.9	17.7	8.3	22.8	10.6	27.9	13.0
2.5	1.2	7.6	3.5	12.7	5.9	17.8	8.3	22.9	10.7	28.0	13.1
2.6	1.2	7.7	3.6	12.8	6.0	17.9	8.4	23.0	10.7	28.1	13.1
2.7	1.3	7.8	3.6	12.9	6.0	18.0	8.4	23.1	10.8	28.2	13.2
2.8	1.3	7.9	3.7	13.0	6.1	18.1	8.4	23.2	10.8	28.3	13.2
2.9	1.4	8.0	3.7	13.1	6.1	18.2	8.5	23.3	10.9	28.4	13.3
3.0	1.4	8.1	3.8	13.2	6.2	18.3	8.5	23.4	10.9	28.5	13.3
3.1	1.4	8.2	3.8	13.3	6.2	18.4	8.6	23.5	11.0	28.6	13.3
3.2	1.5	8.3	3.9	13.4	6.3	18.5	8.6	23.6	11.0	28.7	13.4
3.3	1.5	8.4	3.9	13.5	6.3	18.6	8.7	23.7	11.1	28.8	13.4
3.4	1.6	8.5	4.0	13.6	6.3	18.7	8.7	23.8	11.1	28.9	13.5
3.5	1.6	8.6	4.0	13.7	6.4	18.8	8.8	23.9	11.2	29.0	13.5
3.6	1.7	8.7	4.1	13.8	6.4	18.9	8.8	24.0	11.2	29.1	13.6
3.7	1.7	8.8	4.1	13.9	6.5	19.0	8.9	24.1	11.2	29.2	13.6
3.8	1.8	8.9	4.2	14.0	6.5	19.1	8.9	24.2	11.3	29.3	13.7
3.9	1.8	9.0	4.2	14.1	6.6	19.2	9.0	24.3	11.3	29.4	13.7
4.0	1.9	9.1	4.2	14.2	6.6	19.3	9.0	24.4	11.4	29.5	13.8
4.1	1.9	9.2	4.3	14.3	6.7	19.4	9.1	24.5	11.4	29.6	13.8
4.2	2.0	9.3	4.3	14.4	6.7	19.5	9.1	24.6	11.5	29.7	13.9
4.3	2.0	9.4	4.4	14.5	6.8	19.6	9.1	24.7	11.5	29.8	13.9
4.4	2.1	9.5	4.4	14.6	6.8	19.7	9.2	24.8	11.6	29.9	14.0
4.5	2.1	9.6	4.5	14.7	6.9	19.8	9.2	24.9	11.6	30.0	14.0
4.6	2.1	9.7	4.5	14.8	6.9	19.9	9.3	25.0	11.7	30.1	14.0
4.7	2.2	9.8	4.6	14.9	7.0	20.0	9.3	25.1	11.7	30.2	14.1
4.8	2.2	9.9	4.6	15.0	7.0	20.1	9.4	25.2	11.8	30.3	14.1
4.9	2.3	10.0	4.7	15.1	7.0	20.2	9.4	25.3	11.8	30.4	14.2
5.0	2.3	10.1	4.7	15.2	7.1	20.3	9.5	25.4	11.9	30.5	14.2

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	007 15.0	007 16.2	006 55.2
01	007 15.3	007 16.4	006 55.4
02	007 15.5	007 16.7	006 55.7
03	007 15.8	007 16.9	006 55.9
04	007 16.0	007 17.2	006 56.1
05	007 16.3	007 17.4	006 56.4
06	007 16.5	007 17.7	006 56.6
07	007 16.8	007 17.9	006 56.9
08	007 17.0	007 18.2	006 57.1
09	007 17.3	007 18.4	006 57.3
10	007 17.5	007 18.7	006 57.6
11	007 17.8	007 18.9	006 57.8
12	007 18.0	007 19.2	006 58.0
13	007 18.3	007 19.4	006 58.3
14	007 18.5	007 19.7	006 58.5
15	007 18.8	007 20.0	006 58.8
16	007 19.0	007 20.2	006 59.0
17	007 19.3	007 20.5	006 59.2
18	007 19.5	007 20.7	006 59.5
19	007 19.8	007 21.0	006 59.7
20	007 20.0	007 21.2	007 00.0
21	007 20.3	007 21.5	007 00.2
22	007 20.5	007 21.7	007 00.4
23	007 20.8	007 22.0	007 00.7
24	007 21.0	007 22.2	007 00.9
25	007 21.3	007 22.5	007 01.1
26	007 21.5	007 22.7	007 01.4
27	007 21.8	007 23.0	007 01.6
28	007 22.0	007 23.2	007 01.9
29	007 22.3	007 23.5	007 02.1
30	007 22.5	007 23.7	007 02.3
31	007 22.8	007 24.0	007 02.6
32	007 23.0	007 24.2	007 02.8
33	007 23.3	007 24.5	007 03.1
34	007 23.5	007 24.7	007 03.3
35	007 23.8	007 25.0	007 03.5
36	007 24.0	007 25.2	007 03.8
37	007 24.3	007 25.5	007 04.0
38	007 24.5	007 25.7	007 04.3
39	007 24.8	007 26.0	007 04.5
40	007 25.0	007 26.2	007 04.7
41	007 25.3	007 26.5	007 05.0
42	007 25.5	007 26.7	007 05.2
43	007 25.8	007 27.0	007 05.4
44	007 26.0	007 27.2	007 05.7
45	007 26.3	007 27.5	007 05.9
46	007 26.5	007 27.7	007 06.2
47	007 26.8	007 28.0	007 06.4
48	007 27.0	007 28.2	007 06.6
49	007 27.3	007 28.5	007 06.9
50	007 27.5	007 28.7	007 07.1
51	007 27.8	007 29.0	007 07.4
52	007 28.0	007 29.2	007 07.6
53	007 28.3	007 29.5	007 07.8
54	007 28.5	007 29.7	007 08.1
55	007 28.8	007 30.0	007 08.3
56	007 29.0	007 30.2	007 08.5
57	007 29.3	007 30.5	007 08.8
58	007 29.5	007 30.7	007 09.0
59	007 29.8	007 31.0	007 09.3

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	2.5	10.2	4.9	15.3	7.4	20.4	9.9	25.5	12.3
0.1	0.0	5.2	2.5	10.3	5.0	15.4	7.4	20.5	9.9	25.6	12.4
0.2	0.1	5.3	2.6	10.4	5.0	15.5	7.5	20.6	10.0	25.7	12.4
0.3	0.1	5.4	2.6	10.5	5.1	15.6	7.5	20.7	10.0	25.8	12.5
0.4	0.2	5.5	2.7	10.6	5.1	15.7	7.6	20.8	10.1	25.9	12.5
0.5	0.2	5.6	2.7	10.7	5.2	15.8	7.6	20.9	10.1	26.0	12.6
0.6	0.3	5.7	2.8	10.8	5.2	15.9	7.7	21.0	10.2	26.1	12.6
0.7	0.3	5.8	2.8	10.9	5.3	16.0	7.7	21.1	10.2	26.2	12.7
0.8	0.4	5.9	2.9	11.0	5.3	16.1	7.8	21.2	10.2	26.3	12.7
0.9	0.4	6.0	2.9	11.1	5.4	16.2	7.8	21.3	10.3	26.4	12.8
1.0	0.5	6.1	2.9	11.2	5.4	16.3	7.9	21.4	10.3	26.5	12.8
1.1	0.5	6.2	3.0	11.3	5.5	16.4	7.9	21.5	10.4	26.6	12.9
1.2	0.6	6.3	3.0	11.4	5.5	16.5	8.0	21.6	10.4	26.7	12.9
1.3	0.6	6.4	3.1	11.5	5.6	16.6	8.0	21.7	10.5	26.8	13.0
1.4	0.7	6.5	3.1	11.6	5.6	16.7	8.1	21.8	10.5	26.9	13.0
1.5	0.7	6.6	3.2	11.7	5.7	16.8	8.1	21.9	10.6	27.0	13.1
1.6	0.8	6.7	3.2	11.8	5.7	16.9	8.2	22.0	10.6	27.1	13.1
1.7	0.8	6.8	3.3	11.9	5.8	17.0	8.2	22.1	10.7	27.2	13.1
1.8	0.9	6.9	3.3	12.0	5.8	17.1	8.3	22.2	10.7	27.3	13.2
1.9	0.9	7.0	3.4	12.1	5.8	17.2	8.3	22.3	10.8	27.4	13.2
2.0	1.0	7.1	3.4	12.2	5.9	17.3	8.4	22.4	10.8	27.5	13.3
2.1	1.0	7.2	3.5	12.3	5.9	17.4	8.4	22.5	10.9	27.6	13.3
2.2	1.1	7.3	3.5	12.4	6.0	17.5	8.5	22.6	10.9	27.7	13.4
2.3	1.1	7.4	3.6	12.5	6.0	17.6	8.5	22.7	11.0	27.8	13.4
2.4	1.2	7.5	3.6	12.6	6.1	17.7	8.6	22.8	11.0	27.9	13.5
2.5	1.2	7.6	3.7	12.7	6.1	17.8	8.6	22.9	11.1	28.0	13.5
2.6	1.3	7.7	3.7	12.8	6.2	17.9	8.7	23.0	11.1	28.1	13.6
2.7	1.3	7.8	3.8	12.9	6.2	18.0	8.7	23.1	11.2	28.2	13.6
2.8	1.4	7.9	3.8	13.0	6.3	18.1	8.7	23.2	11.2	28.3	13.7
2.9	1.4	8.0	3.9	13.1	6.3	18.2	8.8	23.3	11.3	28.4	13.7
3.0	1.5	8.1	3.9	13.2	6.4	18.3	8.8	23.4	11.3	28.5	13.8
3.1	1.5	8.2	4.0	13.3	6.4	18.4	8.9	23.5	11.4	28.6	13.8
3.2	1.5	8.3	4.0	13.4	6.5	18.5	8.9	23.6	11.4	28.7	13.9
3.3	1.6	8.4	4.1	13.5	6.5	18.6	9.0	23.7	11.5	28.8	13.9
3.4	1.6	8.5	4.1	13.6	6.6	18.7	9.0	23.8	11.5	28.9	14.0
3.5	1.7	8.6	4.2	13.7	6.6	18.8	9.1	23.9	11.6	29.0	14.0
3.6	1.7	8.7	4.2	13.8	6.7	18.9	9.1	24.0	11.6	29.1	14.1
3.7	1.8	8.8	4.3	13.9	6.7	19.0	9.2	24.1	11.6	29.2	14.1
3.8	1.8	8.9	4.3	14.0	6.8	19.1	9.2	24.2	11.7	29.3	14.2
3.9	1.9	9.0	4.4	14.1	6.8	19.2	9.3	24.3	11.7	29.4	14.2
4.0	1.9	9.1	4.4	14.2	6.9	19.3	9.3	24.4	11.8	29.5	14.3
4.1	2.0	9.2	4.4	14.3	6.9	19.4	9.4	24.5	11.8	29.6	14.3
4.2	2.0	9.3	4.5	14.4	7.0	19.5	9.4	24.6	11.9	29.7	14.4
4.3	2.1	9.4	4.5	14.5	7.0	19.6	9.5	24.7	11.9	29.8	14.4
4.4	2.1	9.5	4.6	14.6	7.1	19.7	9.5	24.8	12.0	29.9	14.5
4.5	2.2	9.6	4.6	14.7	7.1	19.8	9.6	24.9	12.0	30.0	14.5
4.6	2.2	9.7	4.7	14.8	7.2	19.9	9.6	25.0	12.1	30.1	14.5
4.7	2.3	9.8	4.7	14.9	7.2	20.0	9.7	25.1	12.1	30.2	14.6
4.8	2.3	9.9	4.8	15.0	7.3	20.1	9.7	25.2	12.2	30.3	14.6
4.9	2.4	10.0	4.8	15.1	7.3	20.2	9.8	25.3	12.2	30.4	14.7
5.0	2.4	10.1	4.9	15.2	7.3	20.3	9.8	25.4	12.3	30.5	14.7

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 30

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	007 30.0	007 31.2	007 09.5
01	007 30.3	007 31.5	007 09.7
02	007 30.5	007 31.7	007 10.0
03	007 30.8	007 32.0	007 10.2
04	007 31.0	007 32.2	007 10.5
05	007 31.3	007 32.5	007 10.7
06	007 31.5	007 32.7	007 10.9
07	007 31.8	007 33.0	007 11.2
08	007 32.0	007 33.2	007 11.4
09	007 32.3	007 33.5	007 11.6
10	007 32.5	007 33.7	007 11.9
11	007 32.8	007 34.0	007 12.1
12	007 33.0	007 34.2	007 12.4
13	007 33.3	007 34.5	007 12.6
14	007 33.5	007 34.7	007 12.8
15	007 33.8	007 35.0	007 13.1
16	007 34.0	007 35.2	007 13.3
17	007 34.3	007 35.5	007 13.6
18	007 34.5	007 35.7	007 13.8
19	007 34.8	007 36.0	007 14.0
20	007 35.0	007 36.2	007 14.3
21	007 35.3	007 36.5	007 14.5
22	007 35.5	007 36.7	007 14.7
23	007 35.8	007 37.0	007 15.0
24	007 36.0	007 37.2	007 15.2
25	007 36.3	007 37.5	007 15.5
26	007 36.5	007 37.7	007 15.7
27	007 36.8	007 38.0	007 15.9
28	007 37.0	007 38.3	007 16.2
29	007 37.3	007 38.5	007 16.4
30	007 37.5	007 38.8	007 16.7
31	007 37.8	007 39.0	007 16.9
32	007 38.0	007 39.3	007 17.1
33	007 38.3	007 39.5	007 17.4
34	007 38.5	007 39.8	007 17.6
35	007 38.8	007 40.0	007 17.9
36	007 39.0	007 40.3	007 18.1
37	007 39.3	007 40.5	007 18.3
38	007 39.5	007 40.8	007 18.6
39	007 39.8	007 41.0	007 18.8
40	007 40.0	007 41.3	007 19.0
41	007 40.3	007 41.5	007 19.3
42	007 40.5	007 41.8	007 19.5
43	007 40.8	007 42.0	007 19.8
44	007 41.0	007 42.3	007 20.0
45	007 41.3	007 42.5	007 20.2
46	007 41.5	007 42.8	007 20.5
47	007 41.8	007 43.0	007 20.7
48	007 42.0	007 43.3	007 21.0
49	007 42.3	007 43.5	007 21.2
50	007 42.5	007 43.8	007 21.4
51	007 42.8	007 44.0	007 21.7
52	007 43.0	007 44.3	007 21.9
53	007 43.3	007 44.5	007 22.1
54	007 43.5	007 44.8	007 22.4
55	007 43.8	007 45.0	007 22.6
56	007 44.0	007 45.3	007 22.9
57	007 44.3	007 45.5	007 23.1
58	007 44.5	007 45.8	007 23.3
59	007 44.8	007 46.0	007 23.6

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	2.6	10.2	5.1	15.3	7.7	20.4	10.2	25.5	12.8
0.1	0.1	5.2	2.6	10.3	5.2	15.4	7.7	20.5	10.3	25.6	12.8
0.2	0.1	5.3	2.7	10.4	5.2	15.5	7.8	20.6	10.3	25.7	12.9
0.3	0.2	5.4	2.7	10.5	5.3	15.6	7.8	20.7	10.4	25.8	12.9
0.4	0.2	5.5	2.8	10.6	5.3	15.7	7.9	20.8	10.4	25.9	13.0
0.5	0.3	5.6	2.8	10.7	5.4	15.8	7.9	20.9	10.5	26.0	13.0
0.6	0.3	5.7	2.9	10.8	5.4	15.9	8.0	21.0	10.5	26.1	13.1
0.7	0.4	5.8	2.9	10.9	5.5	16.0	8.0	21.1	10.6	26.2	13.1
0.8	0.4	5.9	3.0	11.0	5.5	16.1	8.1	21.2	10.6	26.3	13.2
0.9	0.5	6.0	3.0	11.1	5.6	16.2	8.1	21.3	10.7	26.4	13.2
1.0	0.5	6.1	3.1	11.2	5.6	16.3	8.2	21.4	10.7	26.5	13.3
1.1	0.6	6.2	3.1	11.3	5.7	16.4	8.2	21.5	10.8	26.6	13.3
1.2	0.6	6.3	3.2	11.4	5.7	16.5	8.3	21.6	10.8	26.7	13.4
1.3	0.7	6.4	3.2	11.5	5.8	16.6	8.3	21.7	10.9	26.8	13.4
1.4	0.7	6.5	3.3	11.6	5.8	16.7	8.4	21.8	10.9	26.9	13.5
1.5	0.8	6.6	3.3	11.7	5.9	16.8	8.4	21.9	11.0	27.0	13.5
1.6	0.8	6.7	3.4	11.8	5.9	16.9	8.5	22.0	11.0	27.1	13.6
1.7	0.9	6.8	3.4	11.9	6.0	17.0	8.5	22.1	11.1	27.2	13.6
1.8	0.9	6.9	3.5	12.0	6.0	17.1	8.6	22.2	11.1	27.3	13.7
1.9	1.0	7.0	3.5	12.1	6.1	17.2	8.6	22.3	11.2	27.4	13.7
2.0	1.0	7.1	3.6	12.2	6.1	17.3	8.7	22.4	11.2	27.5	13.8
2.1	1.1	7.2	3.6	12.3	6.2	17.4	8.7	22.5	11.3	27.6	13.8
2.2	1.1	7.3	3.7	12.4	6.2	17.5	8.8	22.6	11.3	27.7	13.9
2.3	1.2	7.4	3.7	12.5	6.3	17.6	8.8	22.7	11.4	27.8	13.9
2.4	1.2	7.5	3.8	12.6	6.3	17.7	8.9	22.8	11.4	27.9	14.0
2.5	1.3	7.6	3.8	12.7	6.4	17.8	8.9	22.9	11.5	28.0	14.0
2.6	1.3	7.7	3.9	12.8	6.4	17.9	9.0	23.0	11.5	28.1	14.1
2.7	1.4	7.8	3.9	12.9	6.5	18.0	9.0	23.1	11.6	28.2	14.1
2.8	1.4	7.9	4.0	13.0	6.5	18.1	9.1	23.2	11.6	28.3	14.2
2.9	1.5	8.0	4.0	13.1	6.6	18.2	9.1	23.3	11.7	28.4	14.2
3.0	1.5	8.1	4.1	13.2	6.6	18.3	9.2	23.4	11.7	28.5	14.3
3.1	1.6	8.2	4.1	13.3	6.7	18.4	9.2	23.5	11.8	28.6	14.3
3.2	1.6	8.3	4.2	13.4	6.7	18.5	9.3	23.6	11.8	28.7	14.4
3.3	1.7	8.4	4.2	13.5	6.8	18.6	9.3	23.7	11.9	28.8	14.4
3.4	1.7	8.5	4.3	13.6	6.8	18.7	9.4	23.8	11.9	28.9	14.5
3.5	1.8	8.6	4.3	13.7	6.9	18.8	9.4	23.9	12.0	29.0	14.5
3.6	1.8	8.7	4.4	13.8	6.9	18.9	9.5	24.0	12.0	29.1	14.6
3.7	1.9	8.8	4.4	13.9	7.0	19.0	9.5	24.1	12.1	29.2	14.6
3.8	1.9	8.9	4.5	14.0	7.0	19.1	9.6	24.2	12.1	29.3	14.7
3.9	2.0	9.0	4.5	14.1	7.1	19.2	9.6	24.3	12.2	29.4	14.7
4.0	2.0	9.1	4.6	14.2	7.1	19.3	9.7	24.4	12.2	29.5	14.8
4.1	2.1	9.2	4.6	14.3	7.2	19.4	9.7	24.5	12.3	29.6	14.8
4.2	2.1	9.3	4.7	14.4	7.2	19.5	9.8	24.6	12.3	29.7	14.9
4.3	2.2	9.4	4.7	14.5	7.3	19.6	9.8	24.7	12.4	29.8	14.9
4.4	2.2	9.5	4.8	14.6	7.3	19.7	9.9	24.8	12.4	29.9	15.0
4.5	2.3	9.6	4.8	14.7	7.4	19.8	9.9	24.9	12.5	30.0	15.0
4.6	2.3	9.7	4.9	14.8	7.4	19.9	10.0	25.0	12.5	30.1	15.1
4.7	2.4	9.8	4.9	14.9	7.5	20.0	10.0	25.1	12.6	30.2	15.1
4.8	2.4	9.9	5.0	15.0	7.5	20.1	10.1	25.2	12.6	30.3	15.2
4.9	2.5	10.0	5.0	15.1	7.6	20.2	10.1	25.3	12.7	30.4	15.2
5.0	2.5	10.1	5.1	15.2	7.6	20.3	10.2	25.4	12.7	30.5	15.3

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 31

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	007 45.0	007 46.3	007 23.8
01	007 45.3	007 46.5	007 24.1
02	007 45.5	007 46.8	007 24.3
03	007 45.8	007 47.0	007 24.5
04	007 46.0	007 47.3	007 24.8
05	007 46.3	007 47.5	007 25.0
06	007 46.5	007 47.8	007 25.2
07	007 46.8	007 48.0	007 25.5
08	007 47.0	007 48.3	007 25.7
09	007 47.3	007 48.5	007 26.0
10	007 47.5	007 48.8	007 26.2
11	007 47.8	007 49.0	007 26.4
12	007 48.0	007 49.3	007 26.7
13	007 48.3	007 49.5	007 26.9
14	007 48.5	007 49.8	007 27.2
15	007 48.8	007 50.0	007 27.4
16	007 49.0	007 50.3	007 27.6
17	007 49.3	007 50.5	007 27.9
18	007 49.5	007 50.8	007 28.1
19	007 49.8	007 51.0	007 28.4
20	007 50.0	007 51.3	007 28.6
21	007 50.3	007 51.5	007 28.8
22	007 50.5	007 51.8	007 29.1
23	007 50.8	007 52.0	007 29.3
24	007 51.0	007 52.3	007 29.5
25	007 51.3	007 52.5	007 29.8
26	007 51.5	007 52.8	007 30.0
27	007 51.8	007 53.0	007 30.3
28	007 52.0	007 53.3	007 30.5
29	007 52.3	007 53.5	007 30.7
30	007 52.5	007 53.8	007 31.0
31	007 52.8	007 54.0	007 31.2
32	007 53.0	007 54.3	007 31.5
33	007 53.3	007 54.5	007 31.7
34	007 53.5	007 54.8	007 31.9
35	007 53.8	007 55.0	007 32.2
36	007 54.0	007 55.3	007 32.4
37	007 54.3	007 55.5	007 32.6
38	007 54.5	007 55.8	007 32.9
39	007 54.8	007 56.0	007 33.1
40	007 55.0	007 56.3	007 33.4
41	007 55.3	007 56.6	007 33.6
42	007 55.5	007 56.8	007 33.8
43	007 55.8	007 57.1	007 34.1
44	007 56.0	007 57.3	007 34.3
45	007 56.3	007 57.6	007 34.6
46	007 56.5	007 57.8	007 34.8
47	007 56.8	007 58.1	007 35.0
48	007 57.0	007 58.3	007 35.3
49	007 57.3	007 58.6	007 35.5
50	007 57.5	007 58.8	007 35.7
51	007 57.8	007 59.1	007 36.0
52	007 58.0	007 59.3	007 36.2
53	007 58.3	007 59.6	007 36.5
54	007 58.5	007 59.8	007 36.7
55	007 58.8	008 00.1	007 36.9
56	007 59.0	008 00.3	007 37.2
57	007 59.3	008 00.6	007 37.4
58	007 59.5	008 00.8	007 37.7
59	007 59.8	008 01.1	007 37.9

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	2.6	10.2	5.3	15.3	7.9	20.4	10.5	25.5	13.2
0.1	0.1	5.2	2.7	10.3	5.3	15.4	8.0	20.5	10.6	25.6	13.2
0.2	0.1	5.3	2.7	10.4	5.4	15.5	8.0	20.6	10.6	25.7	13.3
0.3	0.2	5.4	2.8	10.5	5.4	15.6	8.1	20.7	10.7	25.8	13.3
0.4	0.2	5.5	2.8	10.6	5.5	15.7	8.1	20.8	10.7	25.9	13.4
0.5	0.3	5.6	2.9	10.7	5.5	15.8	8.2	20.9	10.8	26.0	13.4
0.6	0.3	5.7	2.9	10.8	5.6	15.9	8.2	21.0	10.9	26.1	13.5
0.7	0.4	5.8	3.0	10.9	5.6	16.0	8.3	21.1	10.9	26.2	13.5
0.8	0.4	5.9	3.0	11.0	5.7	16.1	8.3	21.2	11.0	26.3	13.6
0.9	0.5	6.0	3.1	11.1	5.7	16.2	8.4	21.3	11.0	26.4	13.6
1.0	0.5	6.1	3.2	11.2	5.8	16.3	8.4	21.4	11.1	26.5	13.7
1.1	0.6	6.2	3.2	11.3	5.8	16.4	8.5	21.5	11.1	26.6	13.7
1.2	0.6	6.3	3.3	11.4	5.9	16.5	8.5	21.6	11.2	26.7	13.8
1.3	0.7	6.4	3.3	11.5	5.9	16.6	8.6	21.7	11.2	26.8	13.8
1.4	0.7	6.5	3.4	11.6	6.0	16.7	8.6	21.8	11.3	26.9	13.9
1.5	0.8	6.6	3.4	11.7	6.0	16.8	8.7	21.9	11.3	27.0	14.0
1.6	0.8	6.7	3.5	11.8	6.1	16.9	8.7	22.0	11.4	27.1	14.0
1.7	0.9	6.8	3.5	11.9	6.1	17.0	8.8	22.1	11.4	27.2	14.1
1.8	0.9	6.9	3.6	12.0	6.2	17.1	8.8	22.2	11.5	27.3	14.1
1.9	1.0	7.0	3.6	12.1	6.3	17.2	8.9	22.3	11.5	27.4	14.2
2.0	1.0	7.1	3.7	12.2	6.3	17.3	8.9	22.4	11.6	27.5	14.2
2.1	1.1	7.2	3.7	12.3	6.4	17.4	9.0	22.5	11.6	27.6	14.3
2.2	1.1	7.3	3.8	12.4	6.4	17.5	9.0	22.6	11.7	27.7	14.3
2.3	1.2	7.4	3.8	12.5	6.5	17.6	9.1	22.7	11.7	27.8	14.4
2.4	1.2	7.5	3.9	12.6	6.5	17.7	9.1	22.8	11.8	27.9	14.4
2.5	1.3	7.6	3.9	12.7	6.6	17.8	9.2	22.9	11.8	28.0	14.5
2.6	1.3	7.7	4.0	12.8	6.6	17.9	9.2	23.0	11.9	28.1	14.5
2.7	1.4	7.8	4.0	12.9	6.7	18.0	9.3	23.1	11.9	28.2	14.6
2.8	1.4	7.9	4.1	13.0	6.7	18.1	9.4	23.2	12.0	28.3	14.6
2.9	1.5	8.0	4.1	13.1	6.8	18.2	9.4	23.3	12.0	28.4	14.7
3.0	1.6	8.1	4.2	13.2	6.8	18.3	9.5	23.4	12.1	28.5	14.7
3.1	1.6	8.2	4.2	13.3	6.9	18.4	9.5	23.5	12.1	28.6	14.8
3.2	1.7	8.3	4.3	13.4	6.9	18.5	9.6	23.6	12.2	28.7	14.8
3.3	1.7	8.4	4.3	13.5	7.0	18.6	9.6	23.7	12.2	28.8	14.9
3.4	1.8	8.5	4.4	13.6	7.0	18.7	9.7	23.8	12.3	28.9	14.9
3.5	1.8	8.6	4.4	13.7	7.1	18.8	9.7	23.9	12.3	29.0	15.0
3.6	1.9	8.7	4.5	13.8	7.1	18.9	9.8	24.0	12.4	29.1	15.0
3.7	1.9	8.8	4.5	13.9	7.2	19.0	9.8	24.1	12.5	29.2	15.1
3.8	2.0	8.9	4.6	14.0	7.2	19.1	9.9	24.2	12.5	29.3	15.1
3.9	2.0	9.0	4.7	14.1	7.3	19.2	9.9	24.3	12.6	29.4	15.2
4.0	2.1	9.1	4.7	14.2	7.3	19.3	10.0	24.4	12.6	29.5	15.2
4.1	2.1	9.2	4.8	14.3	7.4	19.4	10.0	24.5	12.7	29.6	15.3
4.2	2.2	9.3	4.8	14.4	7.4	19.5	10.1	24.6	12.7	29.7	15.3
4.3	2.2	9.4	4.9	14.5	7.5	19.6	10.1	24.7	12.8	29.8	15.4
4.4	2.3	9.5	4.9	14.6	7.5	19.7	10.2	24.8	12.8	29.9	15.4
4.5	2.3	9.6	5.0	14.7	7.6	19.8	10.2	24.9	12.9	30.0	15.5
4.6	2.4	9.7	5.0	14.8	7.6	19.9	10.3	25.0	12.9	30.1	15.6
4.7	2.4	9.8	5.1	14.9	7.7	20.0	10.3	25.1	13.0	30.2	15.6
4.8	2.5	9.9	5.1	15.0	7.8	20.1	10.4	25.2	13.0	30.3	15.7
4.9	2.5	10.0	5.2	15.1	7.8	20.2	10.4	25.3	13.1	30.4	15.7
5.0	2.6	10.1	5.2	15.2	7.9	20.3	10.5	25.4	13.1	30.5	15.8

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 32

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	008 00.0	008 01.3	007 38.1
01	008 00.3	008 01.6	007 38.4
02	008 00.5	008 01.8	007 38.6
03	008 00.8	008 02.1	007 38.8
04	008 01.0	008 02.3	007 39.1
05	008 01.3	008 02.6	007 39.3
06	008 01.5	008 02.8	007 39.6
07	008 01.8	008 03.1	007 39.8
08	008 02.0	008 03.3	007 40.0
09	008 02.3	008 03.6	007 40.3
10	008 02.5	008 03.8	007 40.5
11	008 02.8	008 04.1	007 40.8
12	008 03.0	008 04.3	007 41.0
13	008 03.3	008 04.6	007 41.2
14	008 03.5	008 04.8	007 41.5
15	008 03.8	008 05.1	007 41.7
16	008 04.0	008 05.3	007 42.0
17	008 04.3	008 05.6	007 42.2
18	008 04.5	008 05.8	007 42.4
19	008 04.8	008 06.1	007 42.7
20	008 05.0	008 06.3	007 42.9
21	008 05.3	008 06.6	007 43.1
22	008 05.5	008 06.8	007 43.4
23	008 05.8	008 07.1	007 43.6
24	008 06.0	008 07.3	007 43.9
25	008 06.3	008 07.6	007 44.1
26	008 06.5	008 07.8	007 44.3
27	008 06.8	008 08.1	007 44.6
28	008 07.0	008 08.3	007 44.8
29	008 07.3	008 08.6	007 45.1
30	008 07.5	008 08.8	007 45.3
31	008 07.8	008 09.1	007 45.5
32	008 08.0	008 09.3	007 45.8
33	008 08.3	008 09.6	007 46.0
34	008 08.5	008 09.8	007 46.2
35	008 08.8	008 10.1	007 46.5
36	008 09.0	008 10.3	007 46.7
37	008 09.3	008 10.6	007 47.0
38	008 09.5	008 10.8	007 47.2
39	008 09.8	008 11.1	007 47.4
40	008 10.0	008 11.3	007 47.7
41	008 10.3	008 11.6	007 47.9
42	008 10.5	008 11.8	007 48.2
43	008 10.8	008 12.1	007 48.4
44	008 11.0	008 12.3	007 48.6
45	008 11.3	008 12.6	007 48.9
46	008 11.5	008 12.8	007 49.1
47	008 11.8	008 13.1	007 49.3
48	008 12.0	008 13.3	007 49.6
49	008 12.3	008 13.6	007 49.8
50	008 12.5	008 13.8	007 50.1
51	008 12.8	008 14.1	007 50.3
52	008 13.0	008 14.3	007 50.5
53	008 13.3	008 14.6	007 50.8
54	008 13.5	008 14.9	007 51.0
55	008 13.8	008 15.1	007 51.3
56	008 14.0	008 15.4	007 51.5
57	008 14.3	008 15.6	007 51.7
58	008 14.5	008 15.9	007 52.0
59	008 14.8	008 16.1	007 52.2

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	2.7	10.2	5.4	15.3	8.2	20.4	10.9	25.5	13.6
0.1	0.1	5.2	2.8	10.3	5.5	15.4	8.2	20.5	10.9	25.6	13.7
0.2	0.1	5.3	2.8	10.4	5.5	15.5	8.3	20.6	11.0	25.7	13.7
0.3	0.2	5.4	2.9	10.5	5.6	15.6	8.3	20.7	11.0	25.8	13.8
0.4	0.2	5.5	2.9	10.6	5.7	15.7	8.4	20.8	11.1	25.9	13.8
0.5	0.3	5.6	3.0	10.7	5.7	15.8	8.4	20.9	11.1	26.0	13.9
0.6	0.3	5.7	3.0	10.8	5.8	15.9	8.5	21.0	11.2	26.1	13.9
0.7	0.4	5.8	3.1	10.9	5.8	16.0	8.5	21.1	11.3	26.2	14.0
0.8	0.4	5.9	3.1	11.0	5.9	16.1	8.6	21.2	11.3	26.3	14.0
0.9	0.5	6.0	3.2	11.1	5.9	16.2	8.6	21.3	11.4	26.4	14.1
1.0	0.5	6.1	3.3	11.2	6.0	16.3	8.7	21.4	11.4	26.5	14.1
1.1	0.6	6.2	3.3	11.3	6.0	16.4	8.7	21.5	11.5	26.6	14.2
1.2	0.6	6.3	3.4	11.4	6.1	16.5	8.8	21.6	11.5	26.7	14.2
1.3	0.7	6.4	3.4	11.5	6.1	16.6	8.9	21.7	11.6	26.8	14.3
1.4	0.7	6.5	3.5	11.6	6.2	16.7	8.9	21.8	11.6	26.9	14.3
1.5	0.8	6.6	3.5	11.7	6.2	16.8	9.0	21.9	11.7	27.0	14.4
1.6	0.9	6.7	3.6	11.8	6.3	16.9	9.0	22.0	11.7	27.1	14.5
1.7	0.9	6.8	3.6	11.9	6.3	17.0	9.1	22.1	11.8	27.2	14.5
1.8	1.0	6.9	3.7	12.0	6.4	17.1	9.1	22.2	11.8	27.3	14.6
1.9	1.0	7.0	3.7	12.1	6.5	17.2	9.2	22.3	11.9	27.4	14.6
2.0	1.1	7.1	3.8	12.2	6.5	17.3	9.2	22.4	11.9	27.5	14.7
2.1	1.1	7.2	3.8	12.3	6.6	17.4	9.3	22.5	12.0	27.6	14.7
2.2	1.2	7.3	3.9	12.4	6.6	17.5	9.3	22.6	12.1	27.7	14.8
2.3	1.2	7.4	3.9	12.5	6.7	17.6	9.4	22.7	12.1	27.8	14.8
2.4	1.3	7.5	4.0	12.6	6.7	17.7	9.4	22.8	12.2	27.9	14.9
2.5	1.3	7.6	4.1	12.7	6.8	17.8	9.5	22.9	12.2	28.0	14.9
2.6	1.4	7.7	4.1	12.8	6.8	17.9	9.5	23.0	12.3	28.1	15.0
2.7	1.4	7.8	4.2	12.9	6.9	18.0	9.6	23.1	12.3	28.2	15.0
2.8	1.5	7.9	4.2	13.0	6.9	18.1	9.7	23.2	12.4	28.3	15.1
2.9	1.5	8.0	4.3	13.1	7.0	18.2	9.7	23.3	12.4	28.4	15.1
3.0	1.6	8.1	4.3	13.2	7.0	18.3	9.8	23.4	12.5	28.5	15.2
3.1	1.7	8.2	4.4	13.3	7.1	18.4	9.8	23.5	12.5	28.6	15.3
3.2	1.7	8.3	4.4	13.4	7.1	18.5	9.9	23.6	12.6	28.7	15.3
3.3	1.8	8.4	4.5	13.5	7.2	18.6	9.9	23.7	12.6	28.8	15.4
3.4	1.8	8.5	4.5	13.6	7.3	18.7	10.0	23.8	12.7	28.9	15.4
3.5	1.9	8.6	4.6	13.7	7.3	18.8	10.0	23.9	12.7	29.0	15.5
3.6	1.9	8.7	4.6	13.8	7.4	18.9	10.1	24.0	12.8	29.1	15.5
3.7	2.0	8.8	4.7	13.9	7.4	19.0	10.1	24.1	12.9	29.2	15.6
3.8	2.0	8.9	4.7	14.0	7.5	19.1	10.2	24.2	12.9	29.3	15.6
3.9	2.1	9.0	4.8	14.1	7.5	19.2	10.2	24.3	13.0	29.4	15.7
4.0	2.1	9.1	4.9	14.2	7.6	19.3	10.3	24.4	13.0	29.5	15.7
4.1	2.2	9.2	4.9	14.3	7.6	19.4	10.3	24.5	13.1	29.6	15.8
4.2	2.2	9.3	5.0	14.4	7.7	19.5	10.4	24.6	13.1	29.7	15.8
4.3	2.3	9.4	5.0	14.5	7.7	19.6	10.5	24.7	13.2	29.8	15.9
4.4	2.3	9.5	5.1	14.6	7.8	19.7	10.5	24.8	13.2	29.9	15.9
4.5	2.4	9.6	5.1	14.7	7.8	19.8	10.6	24.9	13.3	30.0	16.0
4.6	2.5	9.7	5.2	14.8	7.9	19.9	10.6	25.0	13.3	30.1	16.1
4.7	2.5	9.8	5.2	14.9	7.9	20.0	10.7	25.1	13.4	30.2	16.1
4.8	2.6	9.9	5.3	15.0	8.0	20.1	10.7	25.2	13.4	30.3	16.2
4.9	2.6	10.0	5.3	15.1	8.1	20.2	10.8	25.3	13.5	30.4	16.2
5.0	2.7	10.1	5.4	15.2	8.1	20.3	10.8	25.4	13.5	30.5	16.3

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 33

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	008 15.0	008 16.4	007 52.5
01	008 15.3	008 16.6	007 52.7
02	008 15.5	008 16.9	007 52.9
03	008 15.8	008 17.1	007 53.2
04	008 16.0	008 17.4	007 53.4
05	008 16.3	008 17.6	007 53.6
06	008 16.5	008 17.9	007 53.9
07	008 16.8	008 18.1	007 54.1
08	008 17.0	008 18.4	007 54.4
09	008 17.3	008 18.6	007 54.6
10	008 17.5	008 18.9	007 54.8
11	008 17.8	008 19.1	007 55.1
12	008 18.0	008 19.4	007 55.3
13	008 18.3	008 19.6	007 55.6
14	008 18.5	008 19.9	007 55.8
15	008 18.8	008 20.1	007 56.0
16	008 19.0	008 20.4	007 56.3
17	008 19.3	008 20.6	007 56.5
18	008 19.5	008 20.9	007 56.7
19	008 19.8	008 21.1	007 57.0
20	008 20.0	008 21.4	007 57.2
21	008 20.3	008 21.6	007 57.5
22	008 20.5	008 21.9	007 57.7
23	008 20.8	008 22.1	007 57.9
24	008 21.0	008 22.4	007 58.2
25	008 21.3	008 22.6	007 58.4
26	008 21.5	008 22.9	007 58.7
27	008 21.8	008 23.1	007 58.9
28	008 22.0	008 23.4	007 59.1
29	008 22.3	008 23.6	007 59.4
30	008 22.5	008 23.9	007 59.6
31	008 22.8	008 24.1	007 59.8
32	008 23.0	008 24.4	008 00.1
33	008 23.3	008 24.6	008 00.3
34	008 23.5	008 24.9	008 00.6
35	008 23.8	008 25.1	008 00.8
36	008 24.0	008 25.4	008 01.0
37	008 24.3	008 25.6	008 01.3
38	008 24.5	008 25.9	008 01.5
39	008 24.8	008 26.1	008 01.8
40	008 25.0	008 26.4	008 02.0
41	008 25.3	008 26.6	008 02.2
42	008 25.5	008 26.9	008 02.5
43	008 25.8	008 27.1	008 02.7
44	008 26.0	008 27.4	008 02.9
45	008 26.3	008 27.6	008 03.2
46	008 26.5	008 27.9	008 03.4
47	008 26.8	008 28.1	008 03.7
48	008 27.0	008 28.4	008 03.9
49	008 27.3	008 28.6	008 04.1
50	008 27.5	008 28.9	008 04.4
51	008 27.8	008 29.1	008 04.6
52	008 28.0	008 29.4	008 04.9
53	008 28.3	008 29.6	008 05.1
54	008 28.5	008 29.9	008 05.3
55	008 28.8	008 30.1	008 05.6
56	008 29.0	008 30.4	008 05.8
57	008 29.3	008 30.6	008 06.1
58	008 29.5	008 30.9	008 06.3
59	008 29.8	008 31.1	008 06.5

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	2.8	10.2	5.6	15.3	8.4	20.4	11.2	25.5	14.0
0.1	0.1	5.2	2.9	10.3	5.7	15.4	8.5	20.5	11.3	25.6	14.1
0.2	0.1	5.3	2.9	10.4	5.7	15.5	8.5	20.6	11.3	25.7	14.1
0.3	0.2	5.4	3.0	10.5	5.8	15.6	8.6	20.7	11.4	25.8	14.2
0.4	0.2	5.5	3.0	10.6	5.8	15.7	8.6	20.8	11.4	25.9	14.2
0.5	0.3	5.6	3.1	10.7	5.9	15.8	8.7	20.9	11.5	26.0	14.3
0.6	0.3	5.7	3.1	10.8	5.9	15.9	8.7	21.0	11.6	26.1	14.4
0.7	0.4	5.8	3.2	10.9	6.0	16.0	8.8	21.1	11.6	26.2	14.4
0.8	0.4	5.9	3.2	11.0	6.1	16.1	8.9	21.2	11.7	26.3	14.5
0.9	0.5	6.0	3.3	11.1	6.1	16.2	8.9	21.3	11.7	26.4	14.5
1.0	0.6	6.1	3.4	11.2	6.2	16.3	9.0	21.4	11.8	26.5	14.6
1.1	0.6	6.2	3.4	11.3	6.2	16.4	9.0	21.5	11.8	26.6	14.6
1.2	0.7	6.3	3.5	11.4	6.3	16.5	9.1	21.6	11.9	26.7	14.7
1.3	0.7	6.4	3.5	11.5	6.3	16.6	9.1	21.7	11.9	26.8	14.7
1.4	0.8	6.5	3.6	11.6	6.4	16.7	9.2	21.8	12.0	26.9	14.8
1.5	0.8	6.6	3.6	11.7	6.4	16.8	9.2	21.9	12.0	27.0	14.9
1.6	0.9	6.7	3.7	11.8	6.5	16.9	9.3	22.0	12.1	27.1	14.9
1.7	0.9	6.8	3.7	11.9	6.5	17.0	9.4	22.1	12.2	27.2	15.0
1.8	1.0	6.9	3.8	12.0	6.6	17.1	9.4	22.2	12.2	27.3	15.0
1.9	1.0	7.0	3.9	12.1	6.7	17.2	9.5	22.3	12.3	27.4	15.1
2.0	1.1	7.1	3.9	12.2	6.7	17.3	9.5	22.4	12.3	27.5	15.1
2.1	1.2	7.2	4.0	12.3	6.8	17.4	9.6	22.5	12.4	27.6	15.2
2.2	1.2	7.3	4.0	12.4	6.8	17.5	9.6	22.6	12.4	27.7	15.2
2.3	1.3	7.4	4.1	12.5	6.9	17.6	9.7	22.7	12.5	27.8	15.3
2.4	1.3	7.5	4.1	12.6	6.9	17.7	9.7	22.8	12.5	27.9	15.3
2.5	1.4	7.6	4.2	12.7	7.0	17.8	9.8	22.9	12.6	28.0	15.4
2.6	1.4	7.7	4.2	12.8	7.0	17.9	9.8	23.0	12.7	28.1	15.5
2.7	1.5	7.8	4.3	12.9	7.1	18.0	9.9	23.1	12.7	28.2	15.5
2.8	1.5	7.9	4.3	13.0	7.2	18.1	10.0	23.2	12.8	28.3	15.6
2.9	1.6	8.0	4.4	13.1	7.2	18.2	10.0	23.3	12.8	28.4	15.6
3.0	1.7	8.1	4.5	13.2	7.3	18.3	10.1	23.4	12.9	28.5	15.7
3.1	1.7	8.2	4.5	13.3	7.3	18.4	10.1	23.5	12.9	28.6	15.7
3.2	1.8	8.3	4.6	13.4	7.4	18.5	10.2	23.6	13.0	28.7	15.8
3.3	1.8	8.4	4.6	13.5	7.4	18.6	10.2	23.7	13.0	28.8	15.8
3.4	1.9	8.5	4.7	13.6	7.5	18.7	10.3	23.8	13.1	28.9	15.9
3.5	1.9	8.6	4.7	13.7	7.5	18.8	10.3	23.9	13.1	29.0	16.0
3.6	2.0	8.7	4.8	13.8	7.6	18.9	10.4	24.0	13.2	29.1	16.0
3.7	2.0	8.8	4.8	13.9	7.6	19.0	10.5	24.1	13.3	29.2	16.1
3.8	2.1	8.9	4.9	14.0	7.7	19.1	10.5	24.2	13.3	29.3	16.1
3.9	2.1	9.0	5.0	14.1	7.8	19.2	10.6	24.3	13.4	29.4	16.2
4.0	2.2	9.1	5.0	14.2	7.8	19.3	10.6	24.4	13.4	29.5	16.2
4.1	2.3	9.2	5.1	14.3	7.9	19.4	10.7	24.5	13.5	29.6	16.3
4.2	2.3	9.3	5.1	14.4	7.9	19.5	10.7	24.6	13.5	29.7	16.3
4.3	2.4	9.4	5.2	14.5	8.0	19.6	10.8	24.7	13.6	29.8	16.4
4.4	2.4	9.5	5.2	14.6	8.0	19.7	10.8	24.8	13.6	29.9	16.4
4.5	2.5	9.6	5.3	14.7	8.1	19.8	10.9	24.9	13.7	30.0	16.5
4.6	2.5	9.7	5.3	14.8	8.1	19.9	10.9	25.0	13.8	30.1	16.6
4.7	2.6	9.8	5.4	14.9	8.2	20.0	11.0	25.1	13.8	30.2	16.6
4.8	2.6	9.9	5.4	15.0	8.3	20.1	11.1	25.2	13.9	30.3	16.7
4.9	2.7	10.0	5.5	15.1	8.3	20.2	11.1	25.3	13.9	30.4	16.7
5.0	2.8	10.1	5.6	15.2	8.4	20.3	11.2	25.4	14.0	30.5	16.8

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 34

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	008 30.0	008 31.4	008 06.8
01	008 30.3	008 31.6	008 07.0
02	008 30.5	008 31.9	008 07.2
03	008 30.8	008 32.1	008 07.5
04	008 31.0	008 32.4	008 07.7
05	008 31.3	008 32.6	008 08.0
06	008 31.5	008 32.9	008 08.2
07	008 31.8	008 33.2	008 08.4
08	008 32.0	008 33.4	008 08.7
09	008 32.3	008 33.7	008 08.9
10	008 32.5	008 33.9	008 09.2
11	008 32.8	008 34.2	008 09.4
12	008 33.0	008 34.4	008 09.6
13	008 33.3	008 34.7	008 09.9
14	008 33.5	008 34.9	008 10.1
15	008 33.8	008 35.2	008 10.3
16	008 34.0	008 35.4	008 10.6
17	008 34.3	008 35.7	008 10.8
18	008 34.5	008 35.9	008 11.1
19	008 34.8	008 36.2	008 11.3
20	008 35.0	008 36.4	008 11.5
21	008 35.3	008 36.7	008 11.8
22	008 35.5	008 36.9	008 12.0
23	008 35.8	008 37.2	008 12.3
24	008 36.0	008 37.4	008 12.5
25	008 36.3	008 37.7	008 12.7
26	008 36.5	008 37.9	008 13.0
27	008 36.8	008 38.2	008 13.2
28	008 37.0	008 38.4	008 13.4
29	008 37.3	008 38.7	008 13.7
30	008 37.5	008 38.9	008 13.9
31	008 37.8	008 39.2	008 14.2
32	008 38.0	008 39.4	008 14.4
33	008 38.3	008 39.7	008 14.6
34	008 38.5	008 39.9	008 14.9
35	008 38.8	008 40.2	008 15.1
36	008 39.0	008 40.4	008 15.4
37	008 39.3	008 40.7	008 15.6
38	008 39.5	008 40.9	008 15.8
39	008 39.8	008 41.2	008 16.1
40	008 40.0	008 41.4	008 16.3
41	008 40.3	008 41.7	008 16.5
42	008 40.5	008 41.9	008 16.8
43	008 40.8	008 42.2	008 17.0
44	008 41.0	008 42.4	008 17.3
45	008 41.3	008 42.7	008 17.5
46	008 41.5	008 42.9	008 17.7
47	008 41.8	008 43.2	008 18.0
48	008 42.0	008 43.4	008 18.2
49	008 42.3	008 43.7	008 18.5
50	008 42.5	008 43.9	008 18.7
51	008 42.8	008 44.2	008 18.9
52	008 43.0	008 44.4	008 19.2
53	008 43.3	008 44.7	008 19.4
54	008 43.5	008 44.9	008 19.7
55	008 43.8	008 45.2	008 19.9
56	008 44.0	008 45.4	008 20.1
57	008 44.3	008 45.7	008 20.4
58	008 44.5	008 45.9	008 20.6
59	008 44.8	008 46.2	008 20.8

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	2.9	10.2	5.8	15.3	8.7	20.4	11.6	25.5	14.5
0.1	0.1	5.2	2.9	10.3	5.8	15.4	8.7	20.5	11.6	25.6	14.5
0.2	0.1	5.3	3.0	10.4	5.9	15.5	8.8	20.6	11.7	25.7	14.6
0.3	0.2	5.4	3.1	10.5	6.0	15.6	8.8	20.7	11.7	25.8	14.6
0.4	0.2	5.5	3.1	10.6	6.0	15.7	8.9	20.8	11.8	25.9	14.7
0.5	0.3	5.6	3.2	10.7	6.1	15.8	9.0	20.9	11.8	26.0	14.7
0.6	0.3	5.7	3.2	10.8	6.1	15.9	9.0	21.0	11.9	26.1	14.8
0.7	0.4	5.8	3.3	10.9	6.2	16.0	9.1	21.1	12.0	26.2	14.8
0.8	0.5	5.9	3.3	11.0	6.2	16.1	9.1	21.2	12.0	26.3	14.9
0.9	0.5	6.0	3.4	11.1	6.3	16.2	9.2	21.3	12.1	26.4	15.0
1.0	0.6	6.1	3.5	11.2	6.3	16.3	9.2	21.4	12.1	26.5	15.0
1.1	0.6	6.2	3.5	11.3	6.4	16.4	9.3	21.5	12.2	26.6	15.1
1.2	0.7	6.3	3.6	11.4	6.5	16.5	9.4	21.6	12.2	26.7	15.1
1.3	0.7	6.4	3.6	11.5	6.5	16.6	9.4	21.7	12.3	26.8	15.2
1.4	0.8	6.5	3.7	11.6	6.6	16.7	9.5	21.8	12.4	26.9	15.2
1.5	0.9	6.6	3.7	11.7	6.6	16.8	9.5	21.9	12.4	27.0	15.3
1.6	0.9	6.7	3.8	11.8	6.7	16.9	9.6	22.0	12.5	27.1	15.4
1.7	1.0	6.8	3.9	11.9	6.7	17.0	9.6	22.1	12.5	27.2	15.4
1.8	1.0	6.9	3.9	12.0	6.8	17.1	9.7	22.2	12.6	27.3	15.5
1.9	1.1	7.0	4.0	12.1	6.9	17.2	9.7	22.3	12.6	27.4	15.5
2.0	1.1	7.1	4.0	12.2	6.9	17.3	9.8	22.4	12.7	27.5	15.6
2.1	1.2	7.2	4.1	12.3	7.0	17.4	9.9	22.5	12.8	27.6	15.6
2.2	1.2	7.3	4.1	12.4	7.0	17.5	9.9	22.6	12.8	27.7	15.7
2.3	1.3	7.4	4.2	12.5	7.1	17.6	10.0	22.7	12.9	27.8	15.8
2.4	1.4	7.5	4.3	12.6	7.1	17.7	10.0	22.8	12.9	27.9	15.8
2.5	1.4	7.6	4.3	12.7	7.2	17.8	10.1	22.9	13.0	28.0	15.9
2.6	1.5	7.7	4.4	12.8	7.3	17.9	10.1	23.0	13.0	28.1	15.9
2.7	1.5	7.8	4.4	12.9	7.3	18.0	10.2	23.1	13.1	28.2	16.0
2.8	1.6	7.9	4.5	13.0	7.4	18.1	10.3	23.2	13.1	28.3	16.0
2.9	1.6	8.0	4.5	13.1	7.4	18.2	10.3	23.3	13.2	28.4	16.1
3.0	1.7	8.1	4.6	13.2	7.5	18.3	10.4	23.4	13.3	28.5	16.2
3.1	1.8	8.2	4.6	13.3	7.5	18.4	10.4	23.5	13.3	28.6	16.2
3.2	1.8	8.3	4.7	13.4	7.6	18.5	10.5	23.6	13.4	28.7	16.3
3.3	1.9	8.4	4.8	13.5	7.7	18.6	10.5	23.7	13.4	28.8	16.3
3.4	1.9	8.5	4.8	13.6	7.7	18.7	10.6	23.8	13.5	28.9	16.4
3.5	2.0	8.6	4.9	13.7	7.8	18.8	10.7	23.9	13.5	29.0	16.4
3.6	2.0	8.7	4.9	13.8	7.8	18.9	10.7	24.0	13.6	29.1	16.5
3.7	2.1	8.8	5.0	13.9	7.9	19.0	10.8	24.1	13.7	29.2	16.5
3.8	2.2	8.9	5.0	14.0	7.9	19.1	10.8	24.2	13.7	29.3	16.6
3.9	2.2	9.0	5.1	14.1	8.0	19.2	10.9	24.3	13.8	29.4	16.7
4.0	2.3	9.1	5.2	14.2	8.0	19.3	10.9	24.4	13.8	29.5	16.7
4.1	2.3	9.2	5.2	14.3	8.1	19.4	11.0	24.5	13.9	29.6	16.8
4.2	2.4	9.3	5.3	14.4	8.2	19.5	11.1	24.6	13.9	29.7	16.8
4.3	2.4	9.4	5.3	14.5	8.2	19.6	11.1	24.7	14.0	29.8	16.9
4.4	2.5	9.5	5.4	14.6	8.3	19.7	11.2	24.8	14.1	29.9	16.9
4.5	2.6	9.6	5.4	14.7	8.3	19.8	11.2	24.9	14.1	30.0	17.0
4.6	2.6	9.7	5.5	14.8	8.4	19.9	11.3	25.0	14.2	30.1	17.1
4.7	2.7	9.8	5.6	14.9	8.4	20.0	11.3	25.1	14.2	30.2	17.1
4.8	2.7	9.9	5.6	15.0	8.5	20.1	11.4	25.2	14.3	30.3	17.2
4.9	2.8	10.0	5.7	15.1	8.6	20.2	11.4	25.3	14.3	30.4	17.2
5.0	2.8	10.1	5.7	15.2	8.6	20.3	11.5	25.4	14.4	30.5	17.3

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 35

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	008 45.0	008 46.4	008 21.1
01	008 45.3	008 46.7	008 21.3
02	008 45.5	008 46.9	008 21.6
03	008 45.8	008 47.2	008 21.8
04	008 46.0	008 47.4	008 22.0
05	008 46.3	008 47.7	008 22.3
06	008 46.5	008 47.9	008 22.5
07	008 46.8	008 48.2	008 22.8
08	008 47.0	008 48.4	008 23.0
09	008 47.3	008 48.7	008 23.2
10	008 47.5	008 48.9	008 23.5
11	008 47.8	008 49.2	008 23.7
12	008 48.0	008 49.4	008 23.9
13	008 48.3	008 49.7	008 24.2
14	008 48.5	008 49.9	008 24.4
15	008 48.8	008 50.2	008 24.7
16	008 49.0	008 50.4	008 24.9
17	008 49.3	008 50.7	008 25.1
18	008 49.5	008 50.9	008 25.4
19	008 49.8	008 51.2	008 25.6
20	008 50.0	008 51.5	008 25.9
21	008 50.3	008 51.7	008 26.1
22	008 50.5	008 52.0	008 26.3
23	008 50.8	008 52.2	008 26.6
24	008 51.0	008 52.5	008 26.8
25	008 51.3	008 52.7	008 27.0
26	008 51.5	008 53.0	008 27.3
27	008 51.8	008 53.2	008 27.5
28	008 52.0	008 53.5	008 27.8
29	008 52.3	008 53.7	008 28.0
30	008 52.5	008 54.0	008 28.2
31	008 52.8	008 54.2	008 28.5
32	008 53.0	008 54.5	008 28.7
33	008 53.3	008 54.7	008 29.0
34	008 53.5	008 55.0	008 29.2
35	008 53.8	008 55.2	008 29.4
36	008 54.0	008 55.5	008 29.7
37	008 54.3	008 55.7	008 29.9
38	008 54.5	008 56.0	008 30.2
39	008 54.8	008 56.2	008 30.4
40	008 55.0	008 56.5	008 30.6
41	008 55.3	008 56.7	008 30.9
42	008 55.5	008 57.0	008 31.1
43	008 55.8	008 57.2	008 31.3
44	008 56.0	008 57.5	008 31.6
45	008 56.3	008 57.7	008 31.8
46	008 56.5	008 58.0	008 32.1
47	008 56.8	008 58.2	008 32.3
48	008 57.0	008 58.5	008 32.5
49	008 57.3	008 58.7	008 32.8
50	008 57.5	008 59.0	008 33.0
51	008 57.8	008 59.2	008 33.3
52	008 58.0	008 59.5	008 33.5
53	008 58.3	008 59.7	008 33.7
54	008 58.5	009 00.0	008 34.0
55	008 58.8	009 00.2	008 34.2
56	008 59.0	009 00.5	008 34.4
57	008 59.3	009 00.7	008 34.7
58	008 59.5	009 01.0	008 34.9
59	008 59.8	009 01.2	008 35.2

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	3.0	10.2	6.0	15.3	8.9	20.4	11.9	25.5	14.9
0.1	0.1	5.2	3.0	10.3	6.0	15.4	9.0	20.5	12.0	25.6	14.9
0.2	0.1	5.3	3.1	10.4	6.1	15.5	9.0	20.6	12.0	25.7	15.0
0.3	0.2	5.4	3.2	10.5	6.1	15.6	9.1	20.7	12.1	25.8	15.1
0.4	0.2	5.5	3.2	10.6	6.2	15.7	9.2	20.8	12.1	25.9	15.1
0.5	0.3	5.6	3.3	10.7	6.2	15.8	9.2	20.9	12.2	26.0	15.2
0.6	0.4	5.7	3.3	10.8	6.3	15.9	9.3	21.0	12.3	26.1	15.2
0.7	0.4	5.8	3.4	10.9	6.4	16.0	9.3	21.1	12.3	26.2	15.3
0.8	0.5	5.9	3.4	11.0	6.4	16.1	9.4	21.2	12.4	26.3	15.3
0.9	0.5	6.0	3.5	11.1	6.5	16.2	9.5	21.3	12.4	26.4	15.4
1.0	0.6	6.1	3.6	11.2	6.5	16.3	9.5	21.4	12.5	26.5	15.5
1.1	0.6	6.2	3.6	11.3	6.6	16.4	9.6	21.5	12.5	26.6	15.5
1.2	0.7	6.3	3.7	11.4	6.7	16.5	9.6	21.6	12.6	26.7	15.6
1.3	0.8	6.4	3.7	11.5	6.7	16.6	9.7	21.7	12.7	26.8	15.6
1.4	0.8	6.5	3.8	11.6	6.8	16.7	9.7	21.8	12.7	26.9	15.7
1.5	0.9	6.6	3.9	11.7	6.8	16.8	9.8	21.9	12.8	27.0	15.8
1.6	0.9	6.7	3.9	11.8	6.9	16.9	9.9	22.0	12.8	27.1	15.8
1.7	1.0	6.8	4.0	11.9	6.9	17.0	9.9	22.1	12.9	27.2	15.9
1.8	1.1	6.9	4.0	12.0	7.0	17.1	10.0	22.2	13.0	27.3	15.9
1.9	1.1	7.0	4.1	12.1	7.1	17.2	10.0	22.3	13.0	27.4	16.0
2.0	1.2	7.1	4.1	12.2	7.1	17.3	10.1	22.4	13.1	27.5	16.0
2.1	1.2	7.2	4.2	12.3	7.2	17.4	10.2	22.5	13.1	27.6	16.1
2.2	1.3	7.3	4.3	12.4	7.2	17.5	10.2	22.6	13.2	27.7	16.2
2.3	1.3	7.4	4.3	12.5	7.3	17.6	10.3	22.7	13.2	27.8	16.2
2.4	1.4	7.5	4.4	12.6	7.4	17.7	10.3	22.8	13.3	27.9	16.3
2.5	1.5	7.6	4.4	12.7	7.4	17.8	10.4	22.9	13.4	28.0	16.3
2.6	1.5	7.7	4.5	12.8	7.5	17.9	10.4	23.0	13.4	28.1	16.4
2.7	1.6	7.8	4.6	12.9	7.5	18.0	10.5	23.1	13.5	28.2	16.5
2.8	1.6	7.9	4.6	13.0	7.6	18.1	10.6	23.2	13.5	28.3	16.5
2.9	1.7	8.0	4.7	13.1	7.6	18.2	10.6	23.3	13.6	28.4	16.6
3.0	1.8	8.1	4.7	13.2	7.7	18.3	10.7	23.4	13.7	28.5	16.6
3.1	1.8	8.2	4.8	13.3	7.8	18.4	10.7	23.5	13.7	28.6	16.7
3.2	1.9	8.3	4.8	13.4	7.8	18.5	10.8	23.6	13.8	28.7	16.7
3.3	1.9	8.4	4.9	13.5	7.9	18.6	10.9	23.7	13.8	28.8	16.8
3.4	2.0	8.5	5.0	13.6	7.9	18.7	10.9	23.8	13.9	28.9	16.9
3.5	2.0	8.6	5.0	13.7	8.0	18.8	11.0	23.9	13.9	29.0	16.9
3.6	2.1	8.7	5.1	13.8	8.1	18.9	11.0	24.0	14.0	29.1	17.0
3.7	2.2	8.8	5.1	13.9	8.1	19.0	11.1	24.1	14.1	29.2	17.0
3.8	2.2	8.9	5.2	14.0	8.2	19.1	11.1	24.2	14.1	29.3	17.1
3.9	2.3	9.0	5.3	14.1	8.2	19.2	11.2	24.3	14.2	29.4	17.2
4.0	2.3	9.1	5.3	14.2	8.3	19.3	11.3	24.4	14.2	29.5	17.2
4.1	2.4	9.2	5.4	14.3	8.3	19.4	11.3	24.5	14.3	29.6	17.3
4.2	2.5	9.3	5.4	14.4	8.4	19.5	11.4	24.6	14.4	29.7	17.3
4.3	2.5	9.4	5.5	14.5	8.5	19.6	11.4	24.7	14.4	29.8	17.4
4.4	2.6	9.5	5.5	14.6	8.5	19.7	11.5	24.8	14.5	29.9	17.4
4.5	2.6	9.6	5.6	14.7	8.6	19.8	11.6	24.9	14.5	30.0	17.5
4.6	2.7	9.7	5.7	14.8	8.6	19.9	11.6	25.0	14.6	30.1	17.6
4.7	2.7	9.8	5.7	14.9	8.7	20.0	11.7	25.1	14.6	30.2	17.6
4.8	2.8	9.9	5.8	15.0	8.8	20.1	11.7	25.2	14.7	30.3	17.7
4.9	2.9	10.0	5.8	15.1	8.8	20.2	11.8	25.3	14.8	30.4	17.7
5.0	2.9	10.1	5.9	15.2	8.9	20.3	11.8	25.4	14.8	30.5	17.8

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	009 00.0	009 01.5	008 35.4
01	009 00.3	009 01.7	008 35.6
02	009 00.5	009 02.0	008 35.9
03	009 00.8	009 02.2	008 36.1
04	009 01.0	009 02.5	008 36.4
05	009 01.3	009 02.7	008 36.6
06	009 01.5	009 03.0	008 36.8
07	009 01.8	009 03.2	008 37.1
08	009 02.0	009 03.5	008 37.3
09	009 02.3	009 03.7	008 37.5
10	009 02.5	009 04.0	008 37.8
11	009 02.8	009 04.2	008 38.0
12	009 03.0	009 04.5	008 38.3
13	009 03.3	009 04.7	008 38.5
14	009 03.5	009 05.0	008 38.7
15	009 03.8	009 05.2	008 39.0
16	009 04.0	009 05.5	008 39.2
17	009 04.3	009 05.7	008 39.5
18	009 04.5	009 06.0	008 39.7
19	009 04.8	009 06.2	008 39.9
20	009 05.0	009 06.5	008 40.2
21	009 05.3	009 06.7	008 40.4
22	009 05.5	009 07.0	008 40.6
23	009 05.8	009 07.2	008 40.9
24	009 06.0	009 07.5	008 41.1
25	009 06.3	009 07.7	008 41.4
26	009 06.5	009 08.0	008 41.6
27	009 06.8	009 08.2	008 41.8
28	009 07.0	009 08.5	008 42.1
29	009 07.3	009 08.7	008 42.3
30	009 07.5	009 09.0	008 42.6
31	009 07.8	009 09.2	008 42.8
32	009 08.0	009 09.5	008 43.0
33	009 08.3	009 09.8	008 43.3
34	009 08.5	009 10.0	008 43.5
35	009 08.8	009 10.3	008 43.8
36	009 09.0	009 10.5	008 44.0
37	009 09.3	009 10.8	008 44.2
38	009 09.5	009 11.0	008 44.5
39	009 09.8	009 11.3	008 44.7
40	009 10.0	009 11.5	008 44.9
41	009 10.3	009 11.8	008 45.2
42	009 10.5	009 12.0	008 45.4
43	009 10.8	009 12.3	008 45.7
44	009 11.0	009 12.5	008 45.9
45	009 11.3	009 12.8	008 46.1
46	009 11.5	009 13.0	008 46.4
47	009 11.8	009 13.3	008 46.6
48	009 12.0	009 13.5	008 46.9
49	009 12.3	009 13.8	008 47.1
50	009 12.5	009 14.0	008 47.3
51	009 12.8	009 14.3	008 47.6
52	009 13.0	009 14.5	008 47.8
53	009 13.3	009 14.8	008 48.0
54	009 13.5	009 15.0	008 48.3
55	009 13.8	009 15.3	008 48.5
56	009 14.0	009 15.5	008 48.8
57	009 14.3	009 15.8	008 49.0
58	009 14.5	009 16.0	008 49.2
59	009 14.8	009 16.3	008 49.5

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	3.1	10.2	6.1	15.3	9.2	20.4	12.2	25.5	15.3
0.1	0.1	5.2	3.1	10.3	6.2	15.4	9.2	20.5	12.3	25.6	15.4
0.2	0.1	5.3	3.2	10.4	6.2	15.5	9.3	20.6	12.4	25.7	15.4
0.3	0.2	5.4	3.2	10.5	6.3	15.6	9.4	20.7	12.4	25.8	15.5
0.4	0.2	5.5	3.3	10.6	6.4	15.7	9.4	20.8	12.5	25.9	15.5
0.5	0.3	5.6	3.4	10.7	6.4	15.8	9.5	20.9	12.5	26.0	15.6
0.6	0.4	5.7	3.4	10.8	6.5	15.9	9.5	21.0	12.6	26.1	15.7
0.7	0.4	5.8	3.5	10.9	6.5	16.0	9.6	21.1	12.7	26.2	15.7
0.8	0.5	5.9	3.5	11.0	6.6	16.1	9.7	21.2	12.7	26.3	15.8
0.9	0.5	6.0	3.6	11.1	6.7	16.2	9.7	21.3	12.8	26.4	15.8
1.0	0.6	6.1	3.7	11.2	6.7	16.3	9.8	21.4	12.8	26.5	15.9
1.1	0.7	6.2	3.7	11.3	6.8	16.4	9.8	21.5	12.9	26.6	16.0
1.2	0.7	6.3	3.8	11.4	6.8	16.5	9.9	21.6	13.0	26.7	16.0
1.3	0.8	6.4	3.8	11.5	6.9	16.6	10.0	21.7	13.0	26.8	16.1
1.4	0.8	6.5	3.9	11.6	7.0	16.7	10.0	21.8	13.1	26.9	16.1
1.5	0.9	6.6	4.0	11.7	7.0	16.8	10.1	21.9	13.1	27.0	16.2
1.6	1.0	6.7	4.0	11.8	7.1	16.9	10.1	22.0	13.2	27.1	16.3
1.7	1.0	6.8	4.1	11.9	7.1	17.0	10.2	22.1	13.3	27.2	16.3
1.8	1.1	6.9	4.1	12.0	7.2	17.1	10.3	22.2	13.3	27.3	16.4
1.9	1.1	7.0	4.2	12.1	7.3	17.2	10.3	22.3	13.4	27.4	16.4
2.0	1.2	7.1	4.3	12.2	7.3	17.3	10.4	22.4	13.4	27.5	16.5
2.1	1.3	7.2	4.3	12.3	7.4	17.4	10.4	22.5	13.5	27.6	16.6
2.2	1.3	7.3	4.4	12.4	7.4	17.5	10.5	22.6	13.6	27.7	16.6
2.3	1.4	7.4	4.4	12.5	7.5	17.6	10.6	22.7	13.6	27.8	16.7
2.4	1.4	7.5	4.5	12.6	7.6	17.7	10.6	22.8	13.7	27.9	16.7
2.5	1.5	7.6	4.6	12.7	7.6	17.8	10.7	22.9	13.7	28.0	16.8
2.6	1.6	7.7	4.6	12.8	7.7	17.9	10.7	23.0	13.8	28.1	16.9
2.7	1.6	7.8	4.7	12.9	7.7	18.0	10.8	23.1	13.9	28.2	16.9
2.8	1.7	7.9	4.7	13.0	7.8	18.1	10.9	23.2	13.9	28.3	17.0
2.9	1.7	8.0	4.8	13.1	7.9	18.2	10.9	23.3	14.0	28.4	17.0
3.0	1.8	8.1	4.9	13.2	7.9	18.3	11.0	23.4	14.0	28.5	17.1
3.1	1.9	8.2	4.9	13.3	8.0	18.4	11.0	23.5	14.1	28.6	17.2
3.2	1.9	8.3	5.0	13.4	8.0	18.5	11.1	23.6	14.2	28.7	17.2
3.3	2.0	8.4	5.0	13.5	8.1	18.6	11.2	23.7	14.2	28.8	17.3
3.4	2.0	8.5	5.1	13.6	8.2	18.7	11.2	23.8	14.3	28.9	17.3
3.5	2.1	8.6	5.2	13.7	8.2	18.8	11.3	23.9	14.3	29.0	17.4
3.6	2.2	8.7	5.2	13.8	8.3	18.9	11.3	24.0	14.4	29.1	17.5
3.7	2.2	8.8	5.3	13.9	8.3	19.0	11.4	24.1	14.5	29.2	17.5
3.8	2.3	8.9	5.3	14.0	8.4	19.1	11.5	24.2	14.5	29.3	17.6
3.9	2.3	9.0	5.4	14.1	8.5	19.2	11.5	24.3	14.6	29.4	17.6
4.0	2.4	9.1	5.5	14.2	8.5	19.3	11.6	24.4	14.6	29.5	17.7
4.1	2.5	9.2	5.5	14.3	8.6	19.4	11.6	24.5	14.7	29.6	17.8
4.2	2.5	9.3	5.6	14.4	8.6	19.5	11.7	24.6	14.8	29.7	17.8
4.3	2.6	9.4	5.6	14.5	8.7	19.6	11.8	24.7	14.8	29.8	17.9
4.4	2.6	9.5	5.7	14.6	8.8	19.7	11.8	24.8	14.9	29.9	17.9
4.5	2.7	9.6	5.8	14.7	8.8	19.8	11.9	24.9	14.9	30.0	18.0
4.6	2.8	9.7	5.8	14.8	8.9	19.9	11.9	25.0	15.0	30.1	18.1
4.7	2.8	9.8	5.9	14.9	8.9	20.0	12.0	25.1	15.1	30.2	18.1
4.8	2.9	9.9	5.9	15.0	9.0	20.1	12.1	25.2	15.1	30.3	18.2
4.9	2.9	10.0	6.0	15.1	9.1	20.2	12.1	25.3	15.2	30.4	18.2
5.0	3.0	10.1	6.1	15.2	9.1	20.3	12.2	25.4	15.2	30.5	18.3

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	009 15.0	009 16.5	008 49.7
01	009 15.3	009 16.8	008 50.0
02	009 15.5	009 17.0	008 50.2
03	009 15.8	009 17.3	008 50.4
04	009 16.0	009 17.5	008 50.7
05	009 16.3	009 17.8	008 50.9
06	009 16.5	009 18.0	008 51.1
07	009 16.8	009 18.3	008 51.4
08	009 17.0	009 18.5	008 51.6
09	009 17.3	009 18.8	008 51.9
10	009 17.5	009 19.0	008 52.1
11	009 17.8	009 19.3	008 52.3
12	009 18.0	009 19.5	008 52.6
13	009 18.3	009 19.8	008 52.8
14	009 18.5	009 20.0	008 53.1
15	009 18.8	009 20.3	008 53.3
16	009 19.0	009 20.5	008 53.5
17	009 19.3	009 20.8	008 53.8
18	009 19.5	009 21.0	008 54.0
19	009 19.8	009 21.3	008 54.3
20	009 20.0	009 21.5	008 54.5
21	009 20.3	009 21.8	008 54.7
22	009 20.5	009 22.0	008 55.0
23	009 20.8	009 22.3	008 55.2
24	009 21.0	009 22.5	008 55.4
25	009 21.3	009 22.8	008 55.7
26	009 21.5	009 23.0	008 55.9
27	009 21.8	009 23.3	008 56.2
28	009 22.0	009 23.5	008 56.4
29	009 22.3	009 23.8	008 56.6
30	009 22.5	009 24.0	008 56.9
31	009 22.8	009 24.3	008 57.1
32	009 23.0	009 24.5	008 57.4
33	009 23.3	009 24.8	008 57.6
34	009 23.5	009 25.0	008 57.8
35	009 23.8	009 25.3	008 58.1
36	009 24.0	009 25.5	008 58.3
37	009 24.3	009 25.8	008 58.5
38	009 24.5	009 26.0	008 58.8
39	009 24.8	009 26.3	008 59.0
40	009 25.0	009 26.5	008 59.3
41	009 25.3	009 26.8	008 59.5
42	009 25.5	009 27.0	008 59.7
43	009 25.8	009 27.3	009 00.0
44	009 26.0	009 27.5	009 00.2
45	009 26.3	009 27.8	009 00.5
46	009 26.5	009 28.1	009 00.7
47	009 26.8	009 28.3	009 00.9
48	009 27.0	009 28.6	009 01.2
49	009 27.3	009 28.8	009 01.4
50	009 27.5	009 29.1	009 01.6
51	009 27.8	009 29.3	009 01.9
52	009 28.0	009 29.6	009 02.1
53	009 28.3	009 29.8	009 02.4
54	009 28.5	009 30.1	009 02.6
55	009 28.8	009 30.3	009 02.8
56	009 29.0	009 30.6	009 03.1
57	009 29.3	009 30.8	009 03.3
58	009 29.5	009 31.1	009 03.6
59	009 29.8	009 31.3	009 03.8

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	3.1	10.2	6.3	15.3	9.4	20.4	12.6	25.5	15.7
0.1	0.1	5.2	3.2	10.3	6.4	15.4	9.5	20.5	12.6	25.6	15.8
0.2	0.1	5.3	3.3	10.4	6.4	15.5	9.6	20.6	12.7	25.7	15.8
0.3	0.2	5.4	3.3	10.5	6.5	15.6	9.6	20.7	12.8	25.8	15.9
0.4	0.2	5.5	3.4	10.6	6.5	15.7	9.7	20.8	12.8	25.9	16.0
0.5	0.3	5.6	3.5	10.7	6.6	15.8	9.7	20.9	12.9	26.0	16.0
0.6	0.4	5.7	3.5	10.8	6.7	15.9	9.8	21.0	13.0	26.1	16.1
0.7	0.4	5.8	3.6	10.9	6.7	16.0	9.9	21.1	13.0	26.2	16.2
0.8	0.5	5.9	3.6	11.0	6.8	16.1	9.9	21.2	13.1	26.3	16.2
0.9	0.6	6.0	3.7	11.1	6.8	16.2	10.0	21.3	13.1	26.4	16.3
1.0	0.6	6.1	3.8	11.2	6.9	16.3	10.1	21.4	13.2	26.5	16.3
1.1	0.7	6.2	3.8	11.3	7.0	16.4	10.1	21.5	13.3	26.6	16.4
1.2	0.7	6.3	3.9	11.4	7.0	16.5	10.2	21.6	13.3	26.7	16.5
1.3	0.8	6.4	3.9	11.5	7.1	16.6	10.2	21.7	13.4	26.8	16.5
1.4	0.9	6.5	4.0	11.6	7.2	16.7	10.3	21.8	13.4	26.9	16.6
1.5	0.9	6.6	4.1	11.7	7.2	16.8	10.4	21.9	13.5	27.0	16.7
1.6	1.0	6.7	4.1	11.8	7.3	16.9	10.4	22.0	13.6	27.1	16.7
1.7	1.0	6.8	4.2	11.9	7.3	17.0	10.5	22.1	13.6	27.2	16.8
1.8	1.1	6.9	4.3	12.0	7.4	17.1	10.5	22.2	13.7	27.3	16.8
1.9	1.2	7.0	4.3	12.1	7.5	17.2	10.6	22.3	13.8	27.4	16.9
2.0	1.2	7.1	4.4	12.2	7.5	17.3	10.7	22.4	13.8	27.5	17.0
2.1	1.3	7.2	4.4	12.3	7.6	17.4	10.7	22.5	13.9	27.6	17.0
2.2	1.4	7.3	4.5	12.4	7.6	17.5	10.8	22.6	13.9	27.7	17.1
2.3	1.4	7.4	4.6	12.5	7.7	17.6	10.9	22.7	14.0	27.8	17.1
2.4	1.5	7.5	4.6	12.6	7.8	17.7	10.9	22.8	14.1	27.9	17.2
2.5	1.5	7.6	4.7	12.7	7.8	17.8	11.0	22.9	14.1	28.0	17.3
2.6	1.6	7.7	4.7	12.8	7.9	17.9	11.0	23.0	14.2	28.1	17.3
2.7	1.7	7.8	4.8	12.9	8.0	18.0	11.1	23.1	14.2	28.2	17.4
2.8	1.7	7.9	4.9	13.0	8.0	18.1	11.2	23.2	14.3	28.3	17.5
2.9	1.8	8.0	4.9	13.1	8.1	18.2	11.2	23.3	14.4	28.4	17.5
3.0	1.9	8.1	5.0	13.2	8.1	18.3	11.3	23.4	14.4	28.5	17.6
3.1	1.9	8.2	5.1	13.3	8.2	18.4	11.3	23.5	14.5	28.6	17.6
3.2	2.0	8.3	5.1	13.4	8.3	18.5	11.4	23.6	14.6	28.7	17.7
3.3	2.0	8.4	5.2	13.5	8.3	18.6	11.5	23.7	14.6	28.8	17.8
3.4	2.1	8.5	5.2	13.6	8.4	18.7	11.5	23.8	14.7	28.9	17.8
3.5	2.2	8.6	5.3	13.7	8.4	18.8	11.6	23.9	14.7	29.0	17.9
3.6	2.2	8.7	5.4	13.8	8.5	18.9	11.7	24.0	14.8	29.1	17.9
3.7	2.3	8.8	5.4	13.9	8.6	19.0	11.7	24.1	14.9	29.2	18.0
3.8	2.3	8.9	5.5	14.0	8.6	19.1	11.8	24.2	14.9	29.3	18.1
3.9	2.4	9.0	5.6	14.1	8.7	19.2	11.8	24.3	15.0	29.4	18.1
4.0	2.5	9.1	5.6	14.2	8.8	19.3	11.9	24.4	15.0	29.5	18.2
4.1	2.5	9.2	5.7	14.3	8.8	19.4	12.0	24.5	15.1	29.6	18.3
4.2	2.6	9.3	5.7	14.4	8.9	19.5	12.0	24.6	15.2	29.7	18.3
4.3	2.7	9.4	5.8	14.5	8.9	19.6	12.1	24.7	15.2	29.8	18.4
4.4	2.7	9.5	5.9	14.6	9.0	19.7	12.1	24.8	15.3	29.9	18.4
4.5	2.8	9.6	5.9	14.7	9.1	19.8	12.2	24.9	15.4	30.0	18.5
4.6	2.8	9.7	6.0	14.8	9.1	19.9	12.3	25.0	15.4	30.1	18.6
4.7	2.9	9.8	6.0	14.9	9.2	20.0	12.3	25.1	15.5	30.2	18.6
4.8	3.0	9.9	6.1	15.0	9.3	20.1	12.4	25.2	15.5	30.3	18.7
4.9	3.0	10.0	6.2	15.1	9.3	20.2	12.5	25.3	15.6	30.4	18.7
5.0	3.1	10.1	6.2	15.2	9.4	20.3	12.5	25.4	15.7	30.5	18.8

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 38

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	009 30.0	009 31.6	009 04.0
01	009 30.3	009 31.8	009 04.3
02	009 30.5	009 32.1	009 04.5
03	009 30.8	009 32.3	009 04.7
04	009 31.0	009 32.6	009 05.0
05	009 31.3	009 32.8	009 05.2
06	009 31.5	009 33.1	009 05.5
07	009 31.8	009 33.3	009 05.7
08	009 32.0	009 33.6	009 05.9
09	009 32.3	009 33.8	009 06.2
10	009 32.5	009 34.1	009 06.4
11	009 32.8	009 34.3	009 06.7
12	009 33.0	009 34.6	009 06.9
13	009 33.3	009 34.8	009 07.1
14	009 33.5	009 35.1	009 07.4
15	009 33.8	009 35.3	009 07.6
16	009 34.0	009 35.6	009 07.9
17	009 34.3	009 35.8	009 08.1
18	009 34.5	009 36.1	009 08.3
19	009 34.8	009 36.3	009 08.6
20	009 35.0	009 36.6	009 08.8
21	009 35.3	009 36.8	009 09.0
22	009 35.5	009 37.1	009 09.3
23	009 35.8	009 37.3	009 09.5
24	009 36.0	009 37.6	009 09.8
25	009 36.3	009 37.8	009 10.0
26	009 36.5	009 38.1	009 10.2
27	009 36.8	009 38.3	009 10.5
28	009 37.0	009 38.6	009 10.7
29	009 37.3	009 38.8	009 11.0
30	009 37.5	009 39.1	009 11.2
31	009 37.8	009 39.3	009 11.4
32	009 38.0	009 39.6	009 11.7
33	009 38.3	009 39.8	009 11.9
34	009 38.5	009 40.1	009 12.1
35	009 38.8	009 40.3	009 12.4
36	009 39.0	009 40.6	009 12.6
37	009 39.3	009 40.8	009 12.9
38	009 39.5	009 41.1	009 13.1
39	009 39.8	009 41.3	009 13.3
40	009 40.0	009 41.6	009 13.6
41	009 40.3	009 41.8	009 13.8
42	009 40.5	009 42.1	009 14.1
43	009 40.8	009 42.3	009 14.3
44	009 41.0	009 42.6	009 14.5
45	009 41.3	009 42.8	009 14.8
46	009 41.5	009 43.1	009 15.0
47	009 41.8	009 43.3	009 15.2
48	009 42.0	009 43.6	009 15.5
49	009 42.3	009 43.8	009 15.7
50	009 42.5	009 44.1	009 16.0
51	009 42.8	009 44.3	009 16.2
52	009 43.0	009 44.6	009 16.4
53	009 43.3	009 44.8	009 16.7
54	009 43.5	009 45.1	009 16.9
55	009 43.8	009 45.3	009 17.2
56	009 44.0	009 45.6	009 17.4
57	009 44.3	009 45.8	009 17.6
58	009 44.5	009 46.1	009 17.9
59	009 44.8	009 46.4	009 18.1

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	3.2	10.2	6.5	15.3	9.7	20.4	12.9	25.5	16.2
0.1	0.1	5.2	3.3	10.3	6.5	15.4	9.8	20.5	13.0	25.6	16.2
0.2	0.1	5.3	3.4	10.4	6.6	15.5	9.8	20.6	13.0	25.7	16.3
0.3	0.2	5.4	3.4	10.5	6.7	15.6	9.9	20.7	13.1	25.8	16.3
0.4	0.3	5.5	3.5	10.6	6.7	15.7	9.9	20.8	13.2	25.9	16.4
0.5	0.3	5.6	3.5	10.7	6.8	15.8	10.0	20.9	13.2	26.0	16.5
0.6	0.4	5.7	3.6	10.8	6.8	15.9	10.1	21.0	13.3	26.1	16.5
0.7	0.4	5.8	3.7	10.9	6.9	16.0	10.1	21.1	13.4	26.2	16.6
0.8	0.5	5.9	3.7	11.0	7.0	16.1	10.2	21.2	13.4	26.3	16.7
0.9	0.6	6.0	3.8	11.1	7.0	16.2	10.3	21.3	13.5	26.4	16.7
1.0	0.6	6.1	3.9	11.2	7.1	16.3	10.3	21.4	13.6	26.5	16.8
1.1	0.7	6.2	3.9	11.3	7.2	16.4	10.4	21.5	13.6	26.6	16.8
1.2	0.8	6.3	4.0	11.4	7.2	16.5	10.5	21.6	13.7	26.7	16.9
1.3	0.8	6.4	4.1	11.5	7.3	16.6	10.5	21.7	13.7	26.8	17.0
1.4	0.9	6.5	4.1	11.6	7.3	16.7	10.6	21.8	13.8	26.9	17.0
1.5	1.0	6.6	4.2	11.7	7.4	16.8	10.6	21.9	13.9	27.0	17.1
1.6	1.0	6.7	4.2	11.8	7.5	16.9	10.7	22.0	13.9	27.1	17.2
1.7	1.1	6.8	4.3	11.9	7.5	17.0	10.8	22.1	14.0	27.2	17.2
1.8	1.1	6.9	4.4	12.0	7.6	17.1	10.8	22.2	14.1	27.3	17.3
1.9	1.2	7.0	4.4	12.1	7.7	17.2	10.9	22.3	14.1	27.4	17.4
2.0	1.3	7.1	4.5	12.2	7.7	17.3	11.0	22.4	14.2	27.5	17.4
2.1	1.3	7.2	4.6	12.3	7.8	17.4	11.0	22.5	14.3	27.6	17.5
2.2	1.4	7.3	4.6	12.4	7.9	17.5	11.1	22.6	14.3	27.7	17.5
2.3	1.5	7.4	4.7	12.5	7.9	17.6	11.1	22.7	14.4	27.8	17.6
2.4	1.5	7.5	4.8	12.6	8.0	17.7	11.2	22.8	14.4	27.9	17.7
2.5	1.6	7.6	4.8	12.7	8.0	17.8	11.3	22.9	14.5	28.0	17.7
2.6	1.6	7.7	4.9	12.8	8.1	17.9	11.3	23.0	14.6	28.1	17.8
2.7	1.7	7.8	4.9	12.9	8.2	18.0	11.4	23.1	14.6	28.2	17.9
2.8	1.8	7.9	5.0	13.0	8.2	18.1	11.5	23.2	14.7	28.3	17.9
2.9	1.8	8.0	5.1	13.1	8.3	18.2	11.5	23.3	14.8	28.4	18.0
3.0	1.9	8.1	5.1	13.2	8.4	18.3	11.6	23.4	14.8	28.5	18.1
3.1	2.0	8.2	5.2	13.3	8.4	18.4	11.7	23.5	14.9	28.6	18.1
3.2	2.0	8.3	5.3	13.4	8.5	18.5	11.7	23.6	14.9	28.7	18.2
3.3	2.1	8.4	5.3	13.5	8.6	18.6	11.8	23.7	15.0	28.8	18.2
3.4	2.2	8.5	5.4	13.6	8.6	18.7	11.8	23.8	15.1	28.9	18.3
3.5	2.2	8.6	5.4	13.7	8.7	18.8	11.9	23.9	15.1	29.0	18.4
3.6	2.3	8.7	5.5	13.8	8.7	18.9	12.0	24.0	15.2	29.1	18.4
3.7	2.3	8.8	5.6	13.9	8.8	19.0	12.0	24.1	15.3	29.2	18.5
3.8	2.4	8.9	5.6	14.0	8.9	19.1	12.1	24.2	15.3	29.3	18.6
3.9	2.5	9.0	5.7	14.1	8.9	19.2	12.2	24.3	15.4	29.4	18.6
4.0	2.5	9.1	5.8	14.2	9.0	19.3	12.2	24.4	15.5	29.5	18.7
4.1	2.6	9.2	5.8	14.3	9.1	19.4	12.3	24.5	15.5	29.6	18.7
4.2	2.7	9.3	5.9	14.4	9.1	19.5	12.4	24.6	15.6	29.7	18.8
4.3	2.7	9.4	6.0	14.5	9.2	19.6	12.4	24.7	15.6	29.8	18.9
4.4	2.8	9.5	6.0	14.6	9.2	19.7	12.5	24.8	15.7	29.9	18.9
4.5	2.9	9.6	6.1	14.7	9.3	19.8	12.5	24.9	15.8	30.0	19.0
4.6	2.9	9.7	6.1	14.8	9.4	19.9	12.6	25.0	15.8	30.1	19.1
4.7	3.0	9.8	6.2	14.9	9.4	20.0	12.7	25.1	15.9	30.2	19.1
4.8	3.0	9.9	6.3	15.0	9.5	20.1	12.7	25.2	16.0	30.3	19.2
4.9	3.1	10.0	6.3	15.1	9.6	20.2	12.8	25.3	16.0	30.4	19.3
5.0	3.2	10.1	6.4	15.2	9.6	20.3	12.9	25.4	16.1	30.5	19.3

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	009 45.0	009 46.6	009 18.4
01	009 45.3	009 46.9	009 18.6
02	009 45.5	009 47.1	009 18.8
03	009 45.8	009 47.4	009 19.1
04	009 46.0	009 47.6	009 19.3
05	009 46.3	009 47.9	009 19.5
06	009 46.5	009 48.1	009 19.8
07	009 46.8	009 48.4	009 20.0
08	009 47.0	009 48.6	009 20.3
09	009 47.3	009 48.9	009 20.5
10	009 47.5	009 49.1	009 20.7
11	009 47.8	009 49.4	009 21.0
12	009 48.0	009 49.6	009 21.2
13	009 48.3	009 49.9	009 21.5
14	009 48.5	009 50.1	009 21.7
15	009 48.8	009 50.4	009 21.9
16	009 49.0	009 50.6	009 22.2
17	009 49.3	009 50.9	009 22.4
18	009 49.5	009 51.1	009 22.6
19	009 49.8	009 51.4	009 22.9
20	009 50.0	009 51.6	009 23.1
21	009 50.3	009 51.9	009 23.4
22	009 50.5	009 52.1	009 23.6
23	009 50.8	009 52.4	009 23.8
24	009 51.0	009 52.6	009 24.1
25	009 51.3	009 52.9	009 24.3
26	009 51.5	009 53.1	009 24.6
27	009 51.8	009 53.4	009 24.8
28	009 52.0	009 53.6	009 25.0
29	009 52.3	009 53.9	009 25.3
30	009 52.5	009 54.1	009 25.5
31	009 52.8	009 54.4	009 25.7
32	009 53.0	009 54.6	009 26.0
33	009 53.3	009 54.9	009 26.2
34	009 53.5	009 55.1	009 26.5
35	009 53.8	009 55.4	009 26.7
36	009 54.0	009 55.6	009 26.9
37	009 54.3	009 55.9	009 27.2
38	009 54.5	009 56.1	009 27.4
39	009 54.8	009 56.4	009 27.7
40	009 55.0	009 56.6	009 27.9
41	009 55.3	009 56.9	009 28.1
42	009 55.5	009 57.1	009 28.4
43	009 55.8	009 57.4	009 28.6
44	009 56.0	009 57.6	009 28.8
45	009 56.3	009 57.9	009 29.1
46	009 56.5	009 58.1	009 29.3
47	009 56.8	009 58.4	009 29.6
48	009 57.0	009 58.6	009 29.8
49	009 57.3	009 58.9	009 30.0
50	009 57.5	009 59.1	009 30.3
51	009 57.8	009 59.4	009 30.5
52	009 58.0	009 59.6	009 30.8
53	009 58.3	009 59.9	009 31.0
54	009 58.5	010 00.1	009 31.2
55	009 58.8	010 00.4	009 31.5
56	009 59.0	010 00.6	009 31.7
57	009 59.3	010 00.9	009 32.0
58	009 59.5	010 01.1	009 32.2
59	009 59.8	010 01.4	009 32.4

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	3.3	10.2	6.6	15.3	9.9	20.4	13.3	25.5	16.6
0.1	0.1	5.2	3.4	10.3	6.7	15.4	10.0	20.5	13.3	25.6	16.6
0.2	0.1	5.3	3.4	10.4	6.8	15.5	10.1	20.6	13.4	25.7	16.7
0.3	0.2	5.4	3.5	10.5	6.8	15.6	10.1	20.7	13.5	25.8	16.8
0.4	0.3	5.5	3.6	10.6	6.9	15.7	10.2	20.8	13.5	25.9	16.8
0.5	0.3	5.6	3.6	10.7	7.0	15.8	10.3	20.9	13.6	26.0	16.9
0.6	0.4	5.7	3.7	10.8	7.0	15.9	10.3	21.0	13.7	26.1	17.0
0.7	0.5	5.8	3.8	10.9	7.1	16.0	10.4	21.1	13.7	26.2	17.0
0.8	0.5	5.9	3.8	11.0	7.2	16.1	10.5	21.2	13.8	26.3	17.1
0.9	0.6	6.0	3.9	11.1	7.2	16.2	10.5	21.3	13.8	26.4	17.2
1.0	0.7	6.1	4.0	11.2	7.3	16.3	10.6	21.4	13.9	26.5	17.2
1.1	0.7	6.2	4.0	11.3	7.3	16.4	10.7	21.5	14.0	26.6	17.3
1.2	0.8	6.3	4.1	11.4	7.4	16.5	10.7	21.6	14.0	26.7	17.4
1.3	0.8	6.4	4.2	11.5	7.5	16.6	10.8	21.7	14.1	26.8	17.4
1.4	0.9	6.5	4.2	11.6	7.5	16.7	10.9	21.8	14.2	26.9	17.5
1.5	1.0	6.6	4.3	11.7	7.6	16.8	10.9	21.9	14.2	27.0	17.6
1.6	1.0	6.7	4.4	11.8	7.7	16.9	11.0	22.0	14.3	27.1	17.6
1.7	1.1	6.8	4.4	11.9	7.7	17.0	11.1	22.1	14.4	27.2	17.7
1.8	1.2	6.9	4.5	12.0	7.8	17.1	11.1	22.2	14.4	27.3	17.7
1.9	1.2	7.0	4.6	12.1	7.9	17.2	11.2	22.3	14.5	27.4	17.8
2.0	1.3	7.1	4.6	12.2	7.9	17.3	11.2	22.4	14.6	27.5	17.9
2.1	1.4	7.2	4.7	12.3	8.0	17.4	11.3	22.5	14.6	27.6	17.9
2.2	1.4	7.3	4.7	12.4	8.1	17.5	11.4	22.6	14.7	27.7	18.0
2.3	1.5	7.4	4.8	12.5	8.1	17.6	11.4	22.7	14.8	27.8	18.1
2.4	1.6	7.5	4.9	12.6	8.2	17.7	11.5	22.8	14.8	27.9	18.1
2.5	1.6	7.6	4.9	12.7	8.3	17.8	11.6	22.9	14.9	28.0	18.2
2.6	1.7	7.7	5.0	12.8	8.3	17.9	11.6	23.0	15.0	28.1	18.3
2.7	1.8	7.8	5.1	12.9	8.4	18.0	11.7	23.1	15.0	28.2	18.3
2.8	1.8	7.9	5.1	13.0	8.5	18.1	11.8	23.2	15.1	28.3	18.4
2.9	1.9	8.0	5.2	13.1	8.5	18.2	11.8	23.3	15.1	28.4	18.5
3.0	2.0	8.1	5.3	13.2	8.6	18.3	11.9	23.4	15.2	28.5	18.5
3.1	2.0	8.2	5.3	13.3	8.6	18.4	12.0	23.5	15.3	28.6	18.6
3.2	2.1	8.3	5.4	13.4	8.7	18.5	12.0	23.6	15.3	28.7	18.7
3.3	2.1	8.4	5.5	13.5	8.8	18.6	12.1	23.7	15.4	28.8	18.7
3.4	2.2	8.5	5.5	13.6	8.8	18.7	12.2	23.8	15.5	28.9	18.8
3.5	2.3	8.6	5.6	13.7	8.9	18.8	12.2	23.9	15.5	29.0	18.9
3.6	2.3	8.7	5.7	13.8	9.0	18.9	12.3	24.0	15.6	29.1	18.9
3.7	2.4	8.8	5.7	13.9	9.0	19.0	12.4	24.1	15.7	29.2	19.0
3.8	2.5	8.9	5.8	14.0	9.1	19.1	12.4	24.2	15.7	29.3	19.0
3.9	2.5	9.0	5.9	14.1	9.2	19.2	12.5	24.3	15.8	29.4	19.1
4.0	2.6	9.1	5.9	14.2	9.2	19.3	12.5	24.4	15.9	29.5	19.2
4.1	2.7	9.2	6.0	14.3	9.3	19.4	12.6	24.5	15.9	29.6	19.2
4.2	2.7	9.3	6.0	14.4	9.4	19.5	12.7	24.6	16.0	29.7	19.3
4.3	2.8	9.4	6.1	14.5	9.4	19.6	12.7	24.7	16.1	29.8	19.4
4.4	2.9	9.5	6.2	14.6	9.5	19.7	12.8	24.8	16.1	29.9	19.4
4.5	2.9	9.6	6.2	14.7	9.6	19.8	12.9	24.9	16.2	30.0	19.5
4.6	3.0	9.7	6.3	14.8	9.6	19.9	12.9	25.0	16.3	30.1	19.6
4.7	3.1	9.8	6.4	14.9	9.7	20.0	13.0	25.1	16.3	30.2	19.6
4.8	3.1	9.9	6.4	15.0	9.8	20.1	13.1	25.2	16.4	30.3	19.7
4.9	3.2	10.0	6.5	15.1	9.8	20.2	13.1	25.3	16.4	30.4	19.8
5.0	3.3	10.1	6.6	15.2	9.9	20.3	13.2	25.4	16.5	30.5	19.8

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 40

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	010 00.0	010 01.6	009 32.7
01	010 00.3	010 01.9	009 32.9
02	010 00.5	010 02.1	009 33.1
03	010 00.8	010 02.4	009 33.4
04	010 01.0	010 02.6	009 33.6
05	010 01.3	010 02.9	009 33.9
06	010 01.5	010 03.1	009 34.1
07	010 01.8	010 03.4	009 34.3
08	010 02.0	010 03.6	009 34.6
09	010 02.3	010 03.9	009 34.8
10	010 02.5	010 04.1	009 35.1
11	010 02.8	010 04.4	009 35.3
12	010 03.0	010 04.7	009 35.5
13	010 03.3	010 04.9	009 35.8
14	010 03.5	010 05.2	009 36.0
15	010 03.8	010 05.4	009 36.2
16	010 04.0	010 05.7	009 36.5
17	010 04.3	010 05.9	009 36.7
18	010 04.5	010 06.2	009 37.0
19	010 04.8	010 06.4	009 37.2
20	010 05.0	010 06.7	009 37.4
21	010 05.3	010 06.9	009 37.7
22	010 05.5	010 07.2	009 37.9
23	010 05.8	010 07.4	009 38.2
24	010 06.0	010 07.7	009 38.4
25	010 06.3	010 07.9	009 38.6
26	010 06.5	010 08.2	009 38.9
27	010 06.8	010 08.4	009 39.1
28	010 07.0	010 08.7	009 39.3
29	010 07.3	010 08.9	009 39.6
30	010 07.5	010 09.2	009 39.8
31	010 07.8	010 09.4	009 40.1
32	010 08.0	010 09.7	009 40.3
33	010 08.3	010 09.9	009 40.5
34	010 08.5	010 10.2	009 40.8
35	010 08.8	010 10.4	009 41.0
36	010 09.0	010 10.7	009 41.3
37	010 09.3	010 10.9	009 41.5
38	010 09.5	010 11.2	009 41.7
39	010 09.8	010 11.4	009 42.0
40	010 10.0	010 11.7	009 42.2
41	010 10.3	010 11.9	009 42.4
42	010 10.5	010 12.2	009 42.7
43	010 10.8	010 12.4	009 42.9
44	010 11.0	010 12.7	009 43.2
45	010 11.3	010 12.9	009 43.4
46	010 11.5	010 13.2	009 43.6
47	010 11.8	010 13.4	009 43.9
48	010 12.0	010 13.7	009 44.1
49	010 12.3	010 13.9	009 44.4
50	010 12.5	010 14.2	009 44.6
51	010 12.8	010 14.4	009 44.8
52	010 13.0	010 14.7	009 45.1
53	010 13.3	010 14.9	009 45.3
54	010 13.5	010 15.2	009 45.6
55	010 13.8	010 15.4	009 45.8
56	010 14.0	010 15.7	009 46.0
57	010 14.3	010 15.9	009 46.3
58	010 14.5	010 16.2	009 46.5
59	010 14.8	010 16.4	009 46.7

v/d RATE ’/h | WHOLE-MINUTE CORRECTION ’

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	3.4	10.2	6.8	15.3	10.2	20.4	13.6	25.5	17.0
0.1	0.1	5.2	3.5	10.3	6.9	15.4	10.3	20.5	13.7	25.6	17.1
0.2	0.1	5.3	3.5	10.4	6.9	15.5	10.3	20.6	13.7	25.7	17.1
0.3	0.2	5.4	3.6	10.5	7.0	15.6	10.4	20.7	13.8	25.8	17.2
0.4	0.3	5.5	3.7	10.6	7.1	15.7	10.5	20.8	13.9	25.9	17.3
0.5	0.3	5.6	3.7	10.7	7.1	15.8	10.5	20.9	13.9	26.0	17.3
0.6	0.4	5.7	3.8	10.8	7.2	15.9	10.6	21.0	14.0	26.1	17.4
0.7	0.5	5.8	3.9	10.9	7.3	16.0	10.7	21.1	14.1	26.2	17.5
0.8	0.5	5.9	3.9	11.0	7.3	16.1	10.7	21.2	14.1	26.3	17.5
0.9	0.6	6.0	4.0	11.1	7.4	16.2	10.8	21.3	14.2	26.4	17.6
1.0	0.7	6.1	4.1	11.2	7.5	16.3	10.9	21.4	14.3	26.5	17.7
1.1	0.7	6.2	4.1	11.3	7.5	16.4	10.9	21.5	14.3	26.6	17.7
1.2	0.8	6.3	4.2	11.4	7.6	16.5	11.0	21.6	14.4	26.7	17.8
1.3	0.9	6.4	4.3	11.5	7.7	16.6	11.1	21.7	14.5	26.8	17.9
1.4	0.9	6.5	4.3	11.6	7.7	16.7	11.1	21.8	14.5	26.9	17.9
1.5	1.0	6.6	4.4	11.7	7.8	16.8	11.2	21.9	14.6	27.0	18.0
1.6	1.1	6.7	4.5	11.8	7.9	16.9	11.3	22.0	14.7	27.1	18.1
1.7	1.1	6.8	4.5	11.9	7.9	17.0	11.3	22.1	14.7	27.2	18.1
1.8	1.2	6.9	4.6	12.0	8.0	17.1	11.4	22.2	14.8	27.3	18.2
1.9	1.3	7.0	4.7	12.1	8.1	17.2	11.5	22.3	14.9	27.4	18.3
2.0	1.3	7.1	4.7	12.2	8.1	17.3	11.5	22.4	14.9	27.5	18.3
2.1	1.4	7.2	4.8	12.3	8.2	17.4	11.6	22.5	15.0	27.6	18.4
2.2	1.5	7.3	4.9	12.4	8.3	17.5	11.7	22.6	15.1	27.7	18.5
2.3	1.5	7.4	4.9	12.5	8.3	17.6	11.7	22.7	15.1	27.8	18.5
2.4	1.6	7.5	5.0	12.6	8.4	17.7	11.8	22.8	15.2	27.9	18.6
2.5	1.7	7.6	5.1	12.7	8.5	17.8	11.9	22.9	15.3	28.0	18.7
2.6	1.7	7.7	5.1	12.8	8.5	17.9	11.9	23.0	15.3	28.1	18.7
2.7	1.8	7.8	5.2	12.9	8.6	18.0	12.0	23.1	15.4	28.2	18.8
2.8	1.9	7.9	5.3	13.0	8.7	18.1	12.1	23.2	15.5	28.3	18.9
2.9	1.9	8.0	5.3	13.1	8.7	18.2	12.1	23.3	15.5	28.4	18.9
3.0	2.0	8.1	5.4	13.2	8.8	18.3	12.2	23.4	15.6	28.5	19.0
3.1	2.1	8.2	5.5	13.3	8.9	18.4	12.3	23.5	15.7	28.6	19.1
3.2	2.1	8.3	5.5	13.4	8.9	18.5	12.3	23.6	15.7	28.7	19.1
3.3	2.2	8.4	5.6	13.5	9.0	18.6	12.4	23.7	15.8	28.8	19.2
3.4	2.3	8.5	5.7	13.6	9.1	18.7	12.5	23.8	15.9	28.9	19.3
3.5	2.3	8.6	5.7	13.7	9.1	18.8	12.5	23.9	15.9	29.0	19.3
3.6	2.4	8.7	5.8	13.8	9.2	18.9	12.6	24.0	16.0	29.1	19.4
3.7	2.5	8.8	5.9	13.9	9.3	19.0	12.7	24.1	16.1	29.2	19.5
3.8	2.5	8.9	5.9	14.0	9.3	19.1	12.7	24.2	16.1	29.3	19.5
3.9	2.6	9.0	6.0	14.1	9.4	19.2	12.8	24.3	16.2	29.4	19.6
4.0	2.7	9.1	6.1	14.2	9.5	19.3	12.9	24.4	16.3	29.5	19.7
4.1	2.7	9.2	6.1	14.3	9.5	19.4	12.9	24.5	16.3	29.6	19.7
4.2	2.8	9.3	6.2	14.4	9.6	19.5	13.0	24.6	16.4	29.7	19.8
4.3	2.9	9.4	6.3	14.5	9.7	19.6	13.1	24.7	16.5	29.8	19.9
4.4	2.9	9.5	6.3	14.6	9.7	19.7	13.1	24.8	16.5	29.9	19.9
4.5	3.0	9.6	6.4	14.7	9.8	19.8	13.2	24.9	16.6	30.0	20.0
4.6	3.1	9.7	6.5	14.8	9.9	19.9	13.3	25.0	16.7	30.1	20.1
4.7	3.1	9.8	6.5	14.9	9.9	20.0	13.3	25.1	16.7	30.2	20.1
4.8	3.2	9.9	6.6	15.0	10.0	20.1	13.4	25.2	16.8	30.3	20.2
4.9	3.3	10.0	6.7	15.1	10.1	20.2	13.5	25.3	16.9	30.4	20.3
5.0	3.3	10.1	6.7	15.2	10.1	20.3	13.5	25.4	16.9	30.5	20.3

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1’, then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4’/h: 1.4’ + 0.0’ = +1.4’.

GHA 123 45.6 + 008 44.0 + 1.4’ = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1’; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 41

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	010 15.0	010 16.7	009 47.0
01	010 15.3	010 16.9	009 47.2
02	010 15.5	010 17.2	009 47.5
03	010 15.8	010 17.4	009 47.7
04	010 16.0	010 17.7	009 47.9
05	010 16.3	010 17.9	009 48.2
06	010 16.5	010 18.2	009 48.4
07	010 16.8	010 18.4	009 48.7
08	010 17.0	010 18.7	009 48.9
09	010 17.3	010 18.9	009 49.1
10	010 17.5	010 19.2	009 49.4
11	010 17.8	010 19.4	009 49.6
12	010 18.0	010 19.7	009 49.8
13	010 18.3	010 19.9	009 50.1
14	010 18.5	010 20.2	009 50.3
15	010 18.8	010 20.4	009 50.6
16	010 19.0	010 20.7	009 50.8
17	010 19.3	010 20.9	009 51.0
18	010 19.5	010 21.2	009 51.3
19	010 19.8	010 21.4	009 51.5
20	010 20.0	010 21.7	009 51.8
21	010 20.3	010 21.9	009 52.0
22	010 20.5	010 22.2	009 52.2
23	010 20.8	010 22.4	009 52.5
24	010 21.0	010 22.7	009 52.7
25	010 21.3	010 23.0	009 52.9
26	010 21.5	010 23.2	009 53.2
27	010 21.8	010 23.5	009 53.4
28	010 22.0	010 23.7	009 53.7
29	010 22.3	010 24.0	009 53.9
30	010 22.5	010 24.2	009 54.1
31	010 22.8	010 24.5	009 54.4
32	010 23.0	010 24.7	009 54.6
33	010 23.3	010 25.0	009 54.9
34	010 23.5	010 25.2	009 55.1
35	010 23.8	010 25.5	009 55.3
36	010 24.0	010 25.7	009 55.6
37	010 24.3	010 26.0	009 55.8
38	010 24.5	010 26.2	009 56.1
39	010 24.8	010 26.5	009 56.3
40	010 25.0	010 26.7	009 56.5
41	010 25.3	010 27.0	009 56.8
42	010 25.5	010 27.2	009 57.0
43	010 25.8	010 27.5	009 57.2
44	010 26.0	010 27.7	009 57.5
45	010 26.3	010 28.0	009 57.7
46	010 26.5	010 28.2	009 58.0
47	010 26.8	010 28.5	009 58.2
48	010 27.0	010 28.7	009 58.4
49	010 27.3	010 29.0	009 58.7
50	010 27.5	010 29.2	009 58.9
51	010 27.8	010 29.5	009 59.2
52	010 28.0	010 29.7	009 59.4
53	010 28.3	010 30.0	009 59.6
54	010 28.5	010 30.2	009 59.9
55	010 28.8	010 30.5	010 00.1
56	010 29.0	010 30.7	010 00.3
57	010 29.3	010 31.0	010 00.6
58	010 29.5	010 31.2	010 00.8
59	010 29.8	010 31.5	010 01.1

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	3.5	10.2	7.0	15.3	10.5	20.4	13.9	25.5	17.4
0.1	0.1	5.2	3.6	10.3	7.0	15.4	10.5	20.5	14.0	25.6	17.5
0.2	0.1	5.3	3.6	10.4	7.1	15.5	10.6	20.6	14.1	25.7	17.6
0.3	0.2	5.4	3.7	10.5	7.2	15.6	10.7	20.7	14.1	25.8	17.6
0.4	0.3	5.5	3.8	10.6	7.2	15.7	10.7	20.8	14.2	25.9	17.7
0.5	0.3	5.6	3.8	10.7	7.3	15.8	10.8	20.9	14.3	26.0	17.8
0.6	0.4	5.7	3.9	10.8	7.4	15.9	10.9	21.0	14.4	26.1	17.8
0.7	0.5	5.8	4.0	10.9	7.4	16.0	10.9	21.1	14.4	26.2	17.9
0.8	0.5	5.9	4.0	11.0	7.5	16.1	11.0	21.2	14.5	26.3	18.0
0.9	0.6	6.0	4.1	11.1	7.6	16.2	11.1	21.3	14.6	26.4	18.0
1.0	0.7	6.1	4.2	11.2	7.7	16.3	11.1	21.4	14.6	26.5	18.1
1.1	0.8	6.2	4.2	11.3	7.7	16.4	11.2	21.5	14.7	26.6	18.2
1.2	0.8	6.3	4.3	11.4	7.8	16.5	11.3	21.6	14.8	26.7	18.2
1.3	0.9	6.4	4.4	11.5	7.9	16.6	11.3	21.7	14.8	26.8	18.3
1.4	1.0	6.5	4.4	11.6	7.9	16.7	11.4	21.8	14.9	26.9	18.4
1.5	1.0	6.6	4.5	11.7	8.0	16.8	11.5	21.9	15.0	27.0	18.5
1.6	1.1	6.7	4.6	11.8	8.1	16.9	11.5	22.0	15.0	27.1	18.5
1.7	1.2	6.8	4.6	11.9	8.1	17.0	11.6	22.1	15.1	27.2	18.6
1.8	1.2	6.9	4.7	12.0	8.2	17.1	11.7	22.2	15.2	27.3	18.7
1.9	1.3	7.0	4.8	12.1	8.3	17.2	11.8	22.3	15.2	27.4	18.7
2.0	1.4	7.1	4.9	12.2	8.3	17.3	11.8	22.4	15.3	27.5	18.8
2.1	1.4	7.2	4.9	12.3	8.4	17.4	11.9	22.5	15.4	27.6	18.9
2.2	1.5	7.3	5.0	12.4	8.5	17.5	12.0	22.6	15.4	27.7	18.9
2.3	1.6	7.4	5.1	12.5	8.5	17.6	12.0	22.7	15.5	27.8	19.0
2.4	1.6	7.5	5.1	12.6	8.6	17.7	12.1	22.8	15.6	27.9	19.1
2.5	1.7	7.6	5.2	12.7	8.7	17.8	12.2	22.9	15.6	28.0	19.1
2.6	1.8	7.7	5.3	12.8	8.7	17.9	12.2	23.0	15.7	28.1	19.2
2.7	1.8	7.8	5.3	12.9	8.8	18.0	12.3	23.1	15.8	28.2	19.3
2.8	1.9	7.9	5.4	13.0	8.9	18.1	12.4	23.2	15.9	28.3	19.3
2.9	2.0	8.0	5.5	13.1	9.0	18.2	12.4	23.3	15.9	28.4	19.4
3.0	2.1	8.1	5.5	13.2	9.0	18.3	12.5	23.4	16.0	28.5	19.5
3.1	2.1	8.2	5.6	13.3	9.1	18.4	12.6	23.5	16.1	28.6	19.5
3.2	2.2	8.3	5.7	13.4	9.2	18.5	12.6	23.6	16.1	28.7	19.6
3.3	2.3	8.4	5.7	13.5	9.2	18.6	12.7	23.7	16.2	28.8	19.7
3.4	2.3	8.5	5.8	13.6	9.3	18.7	12.8	23.8	16.3	28.9	19.7
3.5	2.4	8.6	5.9	13.7	9.4	18.8	12.8	23.9	16.3	29.0	19.8
3.6	2.5	8.7	5.9	13.8	9.4	18.9	12.9	24.0	16.4	29.1	19.9
3.7	2.5	8.8	6.0	13.9	9.5	19.0	13.0	24.1	16.5	29.2	20.0
3.8	2.6	8.9	6.1	14.0	9.6	19.1	13.1	24.2	16.5	29.3	20.0
3.9	2.7	9.0	6.2	14.1	9.6	19.2	13.1	24.3	16.6	29.4	20.1
4.0	2.7	9.1	6.2	14.2	9.7	19.3	13.2	24.4	16.7	29.5	20.2
4.1	2.8	9.2	6.3	14.3	9.8	19.4	13.3	24.5	16.7	29.6	20.2
4.2	2.9	9.3	6.4	14.4	9.8	19.5	13.3	24.6	16.8	29.7	20.3
4.3	2.9	9.4	6.4	14.5	9.9	19.6	13.4	24.7	16.9	29.8	20.4
4.4	3.0	9.5	6.5	14.6	10.0	19.7	13.5	24.8	16.9	29.9	20.4
4.5	3.1	9.6	6.6	14.7	10.0	19.8	13.5	24.9	17.0	30.0	20.5
4.6	3.1	9.7	6.6	14.8	10.1	19.9	13.6	25.0	17.1	30.1	20.6
4.7	3.2	9.8	6.7	14.9	10.2	20.0	13.7	25.1	17.2	30.2	20.6
4.8	3.3	9.9	6.8	15.0	10.3	20.1	13.7	25.2	17.2	30.3	20.7
4.9	3.3	10.0	6.8	15.1	10.3	20.2	13.8	25.3	17.3	30.4	20.8
5.0	3.4	10.1	6.9	15.2	10.4	20.3	13.9	25.4	17.4	30.5	20.8

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 42

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	010 30.0	010 31.7	010 01.3
01	010 30.3	010 32.0	010 01.5
02	010 30.5	010 32.2	010 01.8
03	010 30.8	010 32.5	010 02.0
04	010 31.0	010 32.7	010 02.3
05	010 31.3	010 33.0	010 02.5
06	010 31.5	010 33.2	010 02.7
07	010 31.8	010 33.5	010 03.0
08	010 32.0	010 33.7	010 03.2
09	010 32.3	010 34.0	010 03.4
10	010 32.5	010 34.2	010 03.7
11	010 32.8	010 34.5	010 03.9
12	010 33.0	010 34.7	010 04.2
13	010 33.3	010 35.0	010 04.4
14	010 33.5	010 35.2	010 04.6
15	010 33.8	010 35.5	010 04.9
16	010 34.0	010 35.7	010 05.1
17	010 34.3	010 36.0	010 05.4
18	010 34.5	010 36.2	010 05.6
19	010 34.8	010 36.5	010 05.8
20	010 35.0	010 36.7	010 06.1
21	010 35.3	010 37.0	010 06.3
22	010 35.5	010 37.2	010 06.5
23	010 35.8	010 37.5	010 06.8
24	010 36.0	010 37.7	010 07.0
25	010 36.3	010 38.0	010 07.3
26	010 36.5	010 38.2	010 07.5
27	010 36.8	010 38.5	010 07.7
28	010 37.0	010 38.7	010 08.0
29	010 37.3	010 39.0	010 08.2
30	010 37.5	010 39.2	010 08.5
31	010 37.8	010 39.5	010 08.7
32	010 38.0	010 39.7	010 08.9
33	010 38.3	010 40.0	010 09.2
34	010 38.5	010 40.2	010 09.4
35	010 38.8	010 40.5	010 09.7
36	010 39.0	010 40.7	010 09.9
37	010 39.3	010 41.0	010 10.1
38	010 39.5	010 41.3	010 10.4
39	010 39.8	010 41.5	010 10.6
40	010 40.0	010 41.8	010 10.8
41	010 40.3	010 42.0	010 11.1
42	010 40.5	010 42.3	010 11.3
43	010 40.8	010 42.5	010 11.6
44	010 41.0	010 42.8	010 11.8
45	010 41.3	010 43.0	010 12.0
46	010 41.5	010 43.3	010 12.3
47	010 41.8	010 43.5	010 12.5
48	010 42.0	010 43.8	010 12.8
49	010 42.3	010 44.0	010 13.0
50	010 42.5	010 44.3	010 13.2
51	010 42.8	010 44.5	010 13.5
52	010 43.0	010 44.8	010 13.7
53	010 43.3	010 45.0	010 13.9
54	010 43.5	010 45.3	010 14.2
55	010 43.8	010 45.5	010 14.4
56	010 44.0	010 45.8	010 14.7
57	010 44.3	010 46.0	010 14.9
58	010 44.5	010 46.3	010 15.1
59	010 44.8	010 46.5	010 15.4

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	3.6	10.2	7.1	15.3	10.7	20.4	14.3	25.5	17.9
0.1	0.1	5.2	3.6	10.3	7.2	15.4	10.8	20.5	14.4	25.6	17.9
0.2	0.1	5.3	3.7	10.4	7.3	15.5	10.9	20.6	14.4	25.7	18.0
0.3	0.2	5.4	3.8	10.5	7.4	15.6	10.9	20.7	14.5	25.8	18.1
0.4	0.3	5.5	3.9	10.6	7.4	15.7	11.0	20.8	14.6	25.9	18.1
0.5	0.4	5.6	3.9	10.7	7.5	15.8	11.1	20.9	14.6	26.0	18.2
0.6	0.4	5.7	4.0	10.8	7.6	15.9	11.1	21.0	14.7	26.1	18.3
0.7	0.5	5.8	4.1	10.9	7.6	16.0	11.2	21.1	14.8	26.2	18.3
0.8	0.6	5.9	4.1	11.0	7.7	16.1	11.3	21.2	14.8	26.3	18.4
0.9	0.6	6.0	4.2	11.1	7.8	16.2	11.3	21.3	14.9	26.4	18.5
1.0	0.7	6.1	4.3	11.2	7.8	16.3	11.4	21.4	15.0	26.5	18.6
1.1	0.8	6.2	4.3	11.3	7.9	16.4	11.5	21.5	15.1	26.6	18.6
1.2	0.8	6.3	4.4	11.4	8.0	16.5	11.6	21.6	15.1	26.7	18.7
1.3	0.9	6.4	4.5	11.5	8.1	16.6	11.6	21.7	15.2	26.8	18.8
1.4	1.0	6.5	4.6	11.6	8.1	16.7	11.7	21.8	15.3	26.9	18.8
1.5	1.1	6.6	4.6	11.7	8.2	16.8	11.8	21.9	15.3	27.0	18.9
1.6	1.1	6.7	4.7	11.8	8.3	16.9	11.8	22.0	15.4	27.1	19.0
1.7	1.2	6.8	4.8	11.9	8.3	17.0	11.9	22.1	15.5	27.2	19.0
1.8	1.3	6.9	4.8	12.0	8.4	17.1	12.0	22.2	15.5	27.3	19.1
1.9	1.3	7.0	4.9	12.1	8.5	17.2	12.0	22.3	15.6	27.4	19.2
2.0	1.4	7.1	5.0	12.2	8.5	17.3	12.1	22.4	15.7	27.5	19.3
2.1	1.5	7.2	5.0	12.3	8.6	17.4	12.2	22.5	15.8	27.6	19.3
2.2	1.5	7.3	5.1	12.4	8.7	17.5	12.3	22.6	15.8	27.7	19.4
2.3	1.6	7.4	5.2	12.5	8.8	17.6	12.3	22.7	15.9	27.8	19.5
2.4	1.7	7.5	5.3	12.6	8.8	17.7	12.4	22.8	16.0	27.9	19.5
2.5	1.8	7.6	5.3	12.7	8.9	17.8	12.5	22.9	16.0	28.0	19.6
2.6	1.8	7.7	5.4	12.8	9.0	17.9	12.5	23.0	16.1	28.1	19.7
2.7	1.9	7.8	5.5	12.9	9.0	18.0	12.6	23.1	16.2	28.2	19.7
2.8	2.0	7.9	5.5	13.0	9.1	18.1	12.7	23.2	16.2	28.3	19.8
2.9	2.0	8.0	5.6	13.1	9.2	18.2	12.7	23.3	16.3	28.4	19.9
3.0	2.1	8.1	5.7	13.2	9.2	18.3	12.8	23.4	16.4	28.5	20.0
3.1	2.2	8.2	5.7	13.3	9.3	18.4	12.9	23.5	16.5	28.6	20.0
3.2	2.2	8.3	5.8	13.4	9.4	18.5	13.0	23.6	16.5	28.7	20.1
3.3	2.3	8.4	5.9	13.5	9.5	18.6	13.0	23.7	16.6	28.8	20.2
3.4	2.4	8.5	6.0	13.6	9.5	18.7	13.1	23.8	16.7	28.9	20.2
3.5	2.5	8.6	6.0	13.7	9.6	18.8	13.2	23.9	16.7	29.0	20.3
3.6	2.5	8.7	6.1	13.8	9.7	18.9	13.2	24.0	16.8	29.1	20.4
3.7	2.6	8.8	6.2	13.9	9.7	19.0	13.3	24.1	16.9	29.2	20.4
3.8	2.7	8.9	6.2	14.0	9.8	19.1	13.4	24.2	16.9	29.3	20.5
3.9	2.7	9.0	6.3	14.1	9.9	19.2	13.4	24.3	17.0	29.4	20.6
4.0	2.8	9.1	6.4	14.2	9.9	19.3	13.5	24.4	17.1	29.5	20.7
4.1	2.9	9.2	6.4	14.3	10.0	19.4	13.6	24.5	17.2	29.6	20.7
4.2	2.9	9.3	6.5	14.4	10.1	19.5	13.7	24.6	17.2	29.7	20.8
4.3	3.0	9.4	6.6	14.5	10.2	19.6	13.7	24.7	17.3	29.8	20.9
4.4	3.1	9.5	6.7	14.6	10.2	19.7	13.8	24.8	17.4	29.9	20.9
4.5	3.2	9.6	6.7	14.7	10.3	19.8	13.9	24.9	17.4	30.0	21.0
4.6	3.2	9.7	6.8	14.8	10.4	19.9	13.9	25.0	17.5	30.1	21.1
4.7	3.3	9.8	6.9	14.9	10.4	20.0	14.0	25.1	17.6	30.2	21.1
4.8	3.4	9.9	6.9	15.0	10.5	20.1	14.1	25.2	17.6	30.3	21.2
4.9	3.4	10.0	7.0	15.1	10.6	20.2	14.1	25.3	17.7	30.4	21.3
5.0	3.5	10.1	7.1	15.2	10.6	20.3	14.2	25.4	17.8	30.5	21.4

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 43

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	010 45.0	010 46.8	010 15.6
01	010 45.3	010 47.0	010 15.9
02	010 45.5	010 47.3	010 16.1
03	010 45.8	010 47.5	010 16.3
04	010 46.0	010 47.8	010 16.6
05	010 46.3	010 48.0	010 16.8
06	010 46.5	010 48.3	010 17.0
07	010 46.8	010 48.5	010 17.3
08	010 47.0	010 48.8	010 17.5
09	010 47.3	010 49.0	010 17.8
10	010 47.5	010 49.3	010 18.0
11	010 47.8	010 49.5	010 18.2
12	010 48.0	010 49.8	010 18.5
13	010 48.3	010 50.0	010 18.7
14	010 48.5	010 50.3	010 19.0
15	010 48.8	010 50.5	010 19.2
16	010 49.0	010 50.8	010 19.4
17	010 49.3	010 51.0	010 19.7
18	010 49.5	010 51.3	010 19.9
19	010 49.8	010 51.5	010 20.2
20	010 50.0	010 51.8	010 20.4
21	010 50.3	010 52.0	010 20.6
22	010 50.5	010 52.3	010 20.9
23	010 50.8	010 52.5	010 21.1
24	010 51.0	010 52.8	010 21.3
25	010 51.3	010 53.0	010 21.6
26	010 51.5	010 53.3	010 21.8
27	010 51.8	010 53.5	010 22.1
28	010 52.0	010 53.8	010 22.3
29	010 52.3	010 54.0	010 22.5
30	010 52.5	010 54.3	010 22.8
31	010 52.8	010 54.5	010 23.0
32	010 53.0	010 54.8	010 23.3
33	010 53.3	010 55.0	010 23.5
34	010 53.5	010 55.3	010 23.7
35	010 53.8	010 55.5	010 24.0
36	010 54.0	010 55.8	010 24.2
37	010 54.3	010 56.0	010 24.4
38	010 54.5	010 56.3	010 24.7
39	010 54.8	010 56.5	010 24.9
40	010 55.0	010 56.8	010 25.2
41	010 55.3	010 57.0	010 25.4
42	010 55.5	010 57.3	010 25.6
43	010 55.8	010 57.5	010 25.9
44	010 56.0	010 57.8	010 26.1
45	010 56.3	010 58.0	010 26.4
46	010 56.5	010 58.3	010 26.6
47	010 56.8	010 58.5	010 26.8
48	010 57.0	010 58.8	010 27.1
49	010 57.3	010 59.0	010 27.3
50	010 57.5	010 59.3	010 27.5
51	010 57.8	010 59.6	010 27.8
52	010 58.0	010 59.8	010 28.0
53	010 58.3	011 00.1	010 28.3
54	010 58.5	011 00.3	010 28.5
55	010 58.8	011 00.6	010 28.7
56	010 59.0	011 00.8	010 29.0
57	010 59.3	011 01.1	010 29.2
58	010 59.5	011 01.3	010 29.5
59	010 59.8	011 01.6	010 29.7

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	3.7	10.2	7.3	15.3	11.0	20.4	14.6	25.5	18.3
0.1	0.1	5.2	3.7	10.3	7.4	15.4	11.0	20.5	14.7	25.6	18.3
0.2	0.1	5.3	3.8	10.4	7.5	15.5	11.1	20.6	14.8	25.7	18.4
0.3	0.2	5.4	3.9	10.5	7.5	15.6	11.2	20.7	14.8	25.8	18.5
0.4	0.3	5.5	3.9	10.6	7.6	15.7	11.3	20.8	14.9	25.9	18.6
0.5	0.4	5.6	4.0	10.7	7.7	15.8	11.3	20.9	15.0	26.0	18.6
0.6	0.4	5.7	4.1	10.8	7.7	15.9	11.4	21.0	15.1	26.1	18.7
0.7	0.5	5.8	4.2	10.9	7.8	16.0	11.5	21.1	15.1	26.2	18.8
0.8	0.6	5.9	4.2	11.0	7.9	16.1	11.5	21.2	15.2	26.3	18.8
0.9	0.6	6.0	4.3	11.1	8.0	16.2	11.6	21.3	15.3	26.4	18.9
1.0	0.7	6.1	4.4	11.2	8.0	16.3	11.7	21.4	15.3	26.5	19.0
1.1	0.8	6.2	4.4	11.3	8.1	16.4	11.8	21.5	15.4	26.6	19.1
1.2	0.9	6.3	4.5	11.4	8.2	16.5	11.8	21.6	15.5	26.7	19.1
1.3	0.9	6.4	4.6	11.5	8.2	16.6	11.9	21.7	15.6	26.8	19.2
1.4	1.0	6.5	4.7	11.6	8.3	16.7	12.0	21.8	15.6	26.9	19.3
1.5	1.1	6.6	4.7	11.7	8.4	16.8	12.0	21.9	15.7	27.0	19.4
1.6	1.1	6.7	4.8	11.8	8.5	16.9	12.1	22.0	15.8	27.1	19.4
1.7	1.2	6.8	4.9	11.9	8.5	17.0	12.2	22.1	15.8	27.2	19.5
1.8	1.3	6.9	4.9	12.0	8.6	17.1	12.3	22.2	15.9	27.3	19.6
1.9	1.4	7.0	5.0	12.1	8.7	17.2	12.3	22.3	16.0	27.4	19.6
2.0	1.4	7.1	5.1	12.2	8.7	17.3	12.4	22.4	16.1	27.5	19.7
2.1	1.5	7.2	5.2	12.3	8.8	17.4	12.5	22.5	16.1	27.6	19.8
2.2	1.6	7.3	5.2	12.4	8.9	17.5	12.5	22.6	16.2	27.7	19.9
2.3	1.6	7.4	5.3	12.5	9.0	17.6	12.6	22.7	16.3	27.8	19.9
2.4	1.7	7.5	5.4	12.6	9.0	17.7	12.7	22.8	16.3	27.9	20.0
2.5	1.8	7.6	5.4	12.7	9.1	17.8	12.8	22.9	16.4	28.0	20.1
2.6	1.9	7.7	5.5	12.8	9.2	17.9	12.8	23.0	16.5	28.1	20.1
2.7	1.9	7.8	5.6	12.9	9.2	18.0	12.9	23.1	16.6	28.2	20.2
2.8	2.0	7.9	5.7	13.0	9.3	18.1	13.0	23.2	16.6	28.3	20.3
2.9	2.1	8.0	5.7	13.1	9.4	18.2	13.0	23.3	16.7	28.4	20.4
3.0	2.2	8.1	5.8	13.2	9.5	18.3	13.1	23.4	16.8	28.5	20.4
3.1	2.2	8.2	5.9	13.3	9.5	18.4	13.2	23.5	16.8	28.6	20.5
3.2	2.3	8.3	5.9	13.4	9.6	18.5	13.3	23.6	16.9	28.7	20.6
3.3	2.4	8.4	6.0	13.5	9.7	18.6	13.3	23.7	17.0	28.8	20.6
3.4	2.4	8.5	6.1	13.6	9.7	18.7	13.4	23.8	17.1	28.9	20.7
3.5	2.5	8.6	6.2	13.7	9.8	18.8	13.5	23.9	17.1	29.0	20.8
3.6	2.6	8.7	6.2	13.8	9.9	18.9	13.5	24.0	17.2	29.1	20.9
3.7	2.7	8.8	6.3	13.9	10.0	19.0	13.6	24.1	17.3	29.2	20.9
3.8	2.7	8.9	6.4	14.0	10.0	19.1	13.7	24.2	17.3	29.3	21.0
3.9	2.8	9.0	6.5	14.1	10.1	19.2	13.8	24.3	17.4	29.4	21.1
4.0	2.9	9.1	6.5	14.2	10.2	19.3	13.8	24.4	17.5	29.5	21.1
4.1	2.9	9.2	6.6	14.3	10.2	19.4	13.9	24.5	17.6	29.6	21.2
4.2	3.0	9.3	6.7	14.4	10.3	19.5	14.0	24.6	17.6	29.7	21.3
4.3	3.1	9.4	6.7	14.5	10.4	19.6	14.0	24.7	17.7	29.8	21.4
4.4	3.2	9.5	6.8	14.6	10.5	19.7	14.1	24.8	17.8	29.9	21.4
4.5	3.2	9.6	6.9	14.7	10.5	19.8	14.2	24.9	17.8	30.0	21.5
4.6	3.3	9.7	7.0	14.8	10.6	19.9	14.3	25.0	17.9	30.1	21.6
4.7	3.4	9.8	7.0	14.9	10.7	20.0	14.3	25.1	18.0	30.2	21.6
4.8	3.4	9.9	7.1	15.0	10.8	20.1	14.4	25.2	18.1	30.3	21.7
4.9	3.5	10.0	7.2	15.1	10.8	20.2	14.5	25.3	18.1	30.4	21.8
5.0	3.6	10.1	7.2	15.2	10.9	20.3	14.5	25.4	18.2	30.5	21.9

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 44

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	011 00.0	011 01.8	010 29.9
01	011 00.3	011 02.1	010 30.2
02	011 00.5	011 02.3	010 30.4
03	011 00.8	011 02.6	010 30.6
04	011 01.0	011 02.8	010 30.9
05	011 01.3	011 03.1	010 31.1
06	011 01.5	011 03.3	010 31.4
07	011 01.8	011 03.6	010 31.6
08	011 02.0	011 03.8	010 31.8
09	011 02.3	011 04.1	010 32.1
10	011 02.5	011 04.3	010 32.3
11	011 02.8	011 04.6	010 32.6
12	011 03.0	011 04.8	010 32.8
13	011 03.3	011 05.1	010 33.0
14	011 03.5	011 05.3	010 33.3
15	011 03.8	011 05.6	010 33.5
16	011 04.0	011 05.8	010 33.8
17	011 04.3	011 06.1	010 34.0
18	011 04.5	011 06.3	010 34.2
19	011 04.8	011 06.6	010 34.5
20	011 05.0	011 06.8	010 34.7
21	011 05.3	011 07.1	010 34.9
22	011 05.5	011 07.3	010 35.2
23	011 05.8	011 07.6	010 35.4
24	011 06.0	011 07.8	010 35.7
25	011 06.3	011 08.1	010 35.9
26	011 06.5	011 08.3	010 36.1
27	011 06.8	011 08.6	010 36.4
28	011 07.0	011 08.8	010 36.6
29	011 07.3	011 09.1	010 36.9
30	011 07.5	011 09.3	010 37.1
31	011 07.8	011 09.6	010 37.3
32	011 08.0	011 09.8	010 37.6
33	011 08.3	011 10.1	010 37.8
34	011 08.5	011 10.3	010 38.0
35	011 08.8	011 10.6	010 38.3
36	011 09.0	011 10.8	010 38.5
37	011 09.3	011 11.1	010 38.8
38	011 09.5	011 11.3	010 39.0
39	011 09.8	011 11.6	010 39.2
40	011 10.0	011 11.8	010 39.5
41	011 10.3	011 12.1	010 39.7
42	011 10.5	011 12.3	010 40.0
43	011 10.8	011 12.6	010 40.2
44	011 11.0	011 12.8	010 40.4
45	011 11.3	011 13.1	010 40.7
46	011 11.5	011 13.3	010 40.9
47	011 11.8	011 13.6	010 41.1
48	011 12.0	011 13.8	010 41.4
49	011 12.3	011 14.1	010 41.6
50	011 12.5	011 14.3	010 41.9
51	011 12.8	011 14.6	010 42.1
52	011 13.0	011 14.8	010 42.3
53	011 13.3	011 15.1	010 42.6
54	011 13.5	011 15.3	010 42.8
55	011 13.8	011 15.6	010 43.1
56	011 14.0	011 15.8	010 43.3
57	011 14.3	011 16.1	010 43.5
58	011 14.5	011 16.3	010 43.8
59	011 14.8	011 16.6	010 44.0

v/d RATE ’/h | WHOLE-MINUTE CORRECTION ’

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	3.7	10.2	7.5	15.3	11.2	20.4	15.0	25.5	18.7
0.1	0.1	5.2	3.8	10.3	7.6	15.4	11.3	20.5	15.0	25.6	18.8
0.2	0.1	5.3	3.9	10.4	7.6	15.5	11.4	20.6	15.1	25.7	18.8
0.3	0.2	5.4	4.0	10.5	7.7	15.6	11.4	20.7	15.2	25.8	18.9
0.4	0.3	5.5	4.0	10.6	7.8	15.7	11.5	20.8	15.3	25.9	19.0
0.5	0.4	5.6	4.1	10.7	7.8	15.8	11.6	20.9	15.3	26.0	19.1
0.6	0.4	5.7	4.2	10.8	7.9	15.9	11.7	21.0	15.4	26.1	19.1
0.7	0.5	5.8	4.3	10.9	8.0	16.0	11.7	21.1	15.5	26.2	19.2
0.8	0.6	5.9	4.3	11.0	8.1	16.1	11.8	21.2	15.5	26.3	19.3
0.9	0.7	6.0	4.4	11.1	8.1	16.2	11.9	21.3	15.6	26.4	19.4
1.0	0.7	6.1	4.5	11.2	8.2	16.3	12.0	21.4	15.7	26.5	19.4
1.1	0.8	6.2	4.5	11.3	8.3	16.4	12.0	21.5	15.8	26.6	19.5
1.2	0.9	6.3	4.6	11.4	8.4	16.5	12.1	21.6	15.8	26.7	19.6
1.3	1.0	6.4	4.7	11.5	8.4	16.6	12.2	21.7	15.9	26.8	19.7
1.4	1.0	6.5	4.8	11.6	8.5	16.7	12.2	21.8	16.0	26.9	19.7
1.5	1.1	6.6	4.8	11.7	8.6	16.8	12.3	21.9	16.1	27.0	19.8
1.6	1.2	6.7	4.9	11.8	8.7	16.9	12.4	22.0	16.1	27.1	19.9
1.7	1.2	6.8	5.0	11.9	8.7	17.0	12.5	22.1	16.2	27.2	19.9
1.8	1.3	6.9	5.1	12.0	8.8	17.1	12.5	22.2	16.3	27.3	20.0
1.9	1.4	7.0	5.1	12.1	8.9	17.2	12.6	22.3	16.4	27.4	20.1
2.0	1.5	7.1	5.2	12.2	8.9	17.3	12.7	22.4	16.4	27.5	20.2
2.1	1.5	7.2	5.3	12.3	9.0	17.4	12.8	22.5	16.5	27.6	20.2
2.2	1.6	7.3	5.4	12.4	9.1	17.5	12.8	22.6	16.6	27.7	20.3
2.3	1.7	7.4	5.4	12.5	9.2	17.6	12.9	22.7	16.6	27.8	20.4
2.4	1.8	7.5	5.5	12.6	9.2	17.7	13.0	22.8	16.7	27.9	20.5
2.5	1.8	7.6	5.6	12.7	9.3	17.8	13.1	22.9	16.8	28.0	20.5
2.6	1.9	7.7	5.6	12.8	9.4	17.9	13.1	23.0	16.9	28.1	20.6
2.7	2.0	7.8	5.7	12.9	9.5	18.0	13.2	23.1	16.9	28.2	20.7
2.8	2.1	7.9	5.8	13.0	9.5	18.1	13.3	23.2	17.0	28.3	20.8
2.9	2.1	8.0	5.9	13.1	9.6	18.2	13.3	23.3	17.1	28.4	20.8
3.0	2.2	8.1	5.9	13.2	9.7	18.3	13.4	23.4	17.2	28.5	20.9
3.1	2.3	8.2	6.0	13.3	9.8	18.4	13.5	23.5	17.2	28.6	21.0
3.2	2.3	8.3	6.1	13.4	9.8	18.5	13.6	23.6	17.3	28.7	21.0
3.3	2.4	8.4	6.2	13.5	9.9	18.6	13.6	23.7	17.4	28.8	21.1
3.4	2.5	8.5	6.2	13.6	10.0	18.7	13.7	23.8	17.5	28.9	21.2
3.5	2.6	8.6	6.3	13.7	10.0	18.8	13.8	23.9	17.5	29.0	21.3
3.6	2.6	8.7	6.4	13.8	10.1	18.9	13.9	24.0	17.6	29.1	21.3
3.7	2.7	8.8	6.5	13.9	10.2	19.0	13.9	24.1	17.7	29.2	21.4
3.8	2.8	8.9	6.5	14.0	10.3	19.1	14.0	24.2	17.7	29.3	21.5
3.9	2.9	9.0	6.6	14.1	10.3	19.2	14.1	24.3	17.8	29.4	21.6
4.0	2.9	9.1	6.7	14.2	10.4	19.3	14.2	24.4	17.9	29.5	21.6
4.1	3.0	9.2	6.7	14.3	10.5	19.4	14.2	24.5	18.0	29.6	21.7
4.2	3.1	9.3	6.8	14.4	10.6	19.5	14.3	24.6	18.0	29.7	21.8
4.3	3.2	9.4	6.9	14.5	10.6	19.6	14.4	24.7	18.1	29.8	21.9
4.4	3.2	9.5	7.0	14.6	10.7	19.7	14.4	24.8	18.2	29.9	21.9
4.5	3.3	9.6	7.0	14.7	10.8	19.8	14.5	24.9	18.3	30.0	22.0
4.6	3.4	9.7	7.1	14.8	10.9	19.9	14.6	25.0	18.3	30.1	22.1
4.7	3.4	9.8	7.2	14.9	10.9	20.0	14.7	25.1	18.4	30.2	22.1
4.8	3.5	9.9	7.3	15.0	11.0	20.1	14.7	25.2	18.5	30.3	22.2
4.9	3.6	10.0	7.3	15.1	11.1	20.2	14.8	25.3	18.6	30.4	22.3
5.0	3.7	10.1	7.4	15.2	11.1	20.3	14.9	25.4	18.6	30.5	22.4

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1’, then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4’/h: 1.4’ + 0.0’ = +1.4’.

GHA 123 45.6 + 008 44.0 + 1.4’ = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1’; rounded components can change the last digit. Reduce final GHA modulo 360.

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	011 15.0	011 16.8	010 44.3
01	011 15.3	011 17.1	010 44.5
02	011 15.5	011 17.3	010 44.7
03	011 15.8	011 17.6	010 45.0
04	011 16.0	011 17.9	010 45.2
05	011 16.3	011 18.1	010 45.4
06	011 16.5	011 18.4	010 45.7
07	011 16.8	011 18.6	010 45.9
08	011 17.0	011 18.9	010 46.2
09	011 17.3	011 19.1	010 46.4
10	011 17.5	011 19.4	010 46.6
11	011 17.8	011 19.6	010 46.9
12	011 18.0	011 19.9	010 47.1
13	011 18.3	011 20.1	010 47.4
14	011 18.5	011 20.4	010 47.6
15	011 18.8	011 20.6	010 47.8
16	011 19.0	011 20.9	010 48.1
17	011 19.3	011 21.1	010 48.3
18	011 19.5	011 21.4	010 48.5
19	011 19.8	011 21.6	010 48.8
20	011 20.0	011 21.9	010 49.0
21	011 20.3	011 22.1	010 49.3
22	011 20.5	011 22.4	010 49.5
23	011 20.8	011 22.6	010 49.7
24	011 21.0	011 22.9	010 50.0
25	011 21.3	011 23.1	010 50.2
26	011 21.5	011 23.4	010 50.5
27	011 21.8	011 23.6	010 50.7
28	011 22.0	011 23.9	010 50.9
29	011 22.3	011 24.1	010 51.2
30	011 22.5	011 24.4	010 51.4
31	011 22.8	011 24.6	010 51.6
32	011 23.0	011 24.9	010 51.9
33	011 23.3	011 25.1	010 52.1
34	011 23.5	011 25.4	010 52.4
35	011 23.8	011 25.6	010 52.6
36	011 24.0	011 25.9	010 52.8
37	011 24.3	011 26.1	010 53.1
38	011 24.5	011 26.4	010 53.3
39	011 24.8	011 26.6	010 53.6
40	011 25.0	011 26.9	010 53.8
41	011 25.3	011 27.1	010 54.0
42	011 25.5	011 27.4	010 54.3
43	011 25.8	011 27.6	010 54.5
44	011 26.0	011 27.9	010 54.7
45	011 26.3	011 28.1	010 55.0
46	011 26.5	011 28.4	010 55.2
47	011 26.8	011 28.6	010 55.5
48	011 27.0	011 28.9	010 55.7
49	011 27.3	011 29.1	010 55.9
50	011 27.5	011 29.4	010 56.2
51	011 27.8	011 29.6	010 56.4
52	011 28.0	011 29.9	010 56.7
53	011 28.3	011 30.1	010 56.9
54	011 28.5	011 30.4	010 57.1
55	011 28.8	011 30.6	010 57.4
56	011 29.0	011 30.9	010 57.6
57	011 29.3	011 31.1	010 57.9
58	011 29.5	011 31.4	010 58.1
59	011 29.8	011 31.6	010 58.3

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	3.8	10.2	7.7	15.3	11.5	20.4	15.3	25.5	19.1
0.1	0.1	5.2	3.9	10.3	7.7	15.4	11.6	20.5	15.4	25.6	19.2
0.2	0.2	5.3	4.0	10.4	7.8	15.5	11.6	20.6	15.5	25.7	19.3
0.3	0.2	5.4	4.1	10.5	7.9	15.6	11.7	20.7	15.5	25.8	19.4
0.4	0.3	5.5	4.1	10.6	8.0	15.7	11.8	20.8	15.6	25.9	19.4
0.5	0.4	5.6	4.2	10.7	8.0	15.8	11.9	20.9	15.7	26.0	19.5
0.6	0.5	5.7	4.3	10.8	8.1	15.9	11.9	21.0	15.8	26.1	19.6
0.7	0.5	5.8	4.4	10.9	8.2	16.0	12.0	21.1	15.8	26.2	19.7
0.8	0.6	5.9	4.4	11.0	8.3	16.1	12.1	21.2	15.9	26.3	19.7
0.9	0.7	6.0	4.5	11.1	8.3	16.2	12.2	21.3	16.0	26.4	19.8
1.0	0.8	6.1	4.6	11.2	8.4	16.3	12.2	21.4	16.1	26.5	19.9
1.1	0.8	6.2	4.7	11.3	8.5	16.4	12.3	21.5	16.1	26.6	20.0
1.2	0.9	6.3	4.7	11.4	8.6	16.5	12.4	21.6	16.2	26.7	20.0
1.3	1.0	6.4	4.8	11.5	8.6	16.6	12.5	21.7	16.3	26.8	20.1
1.4	1.1	6.5	4.9	11.6	8.7	16.7	12.5	21.8	16.4	26.9	20.2
1.5	1.1	6.6	5.0	11.7	8.8	16.8	12.6	21.9	16.4	27.0	20.3
1.6	1.2	6.7	5.0	11.8	8.9	16.9	12.7	22.0	16.5	27.1	20.3
1.7	1.3	6.8	5.1	11.9	8.9	17.0	12.8	22.1	16.6	27.2	20.4
1.8	1.4	6.9	5.2	12.0	9.0	17.1	12.8	22.2	16.7	27.3	20.5
1.9	1.4	7.0	5.3	12.1	9.1	17.2	12.9	22.3	16.7	27.4	20.6
2.0	1.5	7.1	5.3	12.2	9.2	17.3	13.0	22.4	16.8	27.5	20.6
2.1	1.6	7.2	5.4	12.3	9.2	17.4	13.1	22.5	16.9	27.6	20.7
2.2	1.7	7.3	5.5	12.4	9.3	17.5	13.1	22.6	17.0	27.7	20.8
2.3	1.7	7.4	5.6	12.5	9.4	17.6	13.2	22.7	17.0	27.8	20.9
2.4	1.8	7.5	5.6	12.6	9.5	17.7	13.3	22.8	17.1	27.9	20.9
2.5	1.9	7.6	5.7	12.7	9.5	17.8	13.4	22.9	17.2	28.0	21.0
2.6	2.0	7.7	5.8	12.8	9.6	17.9	13.4	23.0	17.3	28.1	21.1
2.7	2.0	7.8	5.9	12.9	9.7	18.0	13.5	23.1	17.3	28.2	21.2
2.8	2.1	7.9	5.9	13.0	9.8	18.1	13.6	23.2	17.4	28.3	21.2
2.9	2.2	8.0	6.0	13.1	9.8	18.2	13.7	23.3	17.5	28.4	21.3
3.0	2.3	8.1	6.1	13.2	9.9	18.3	13.7	23.4	17.6	28.5	21.4
3.1	2.3	8.2	6.2	13.3	10.0	18.4	13.8	23.5	17.6	28.6	21.5
3.2	2.4	8.3	6.2	13.4	10.1	18.5	13.9	23.6	17.7	28.7	21.5
3.3	2.5	8.4	6.3	13.5	10.1	18.6	14.0	23.7	17.8	28.8	21.6
3.4	2.6	8.5	6.4	13.6	10.2	18.7	14.0	23.8	17.9	28.9	21.7
3.5	2.6	8.6	6.5	13.7	10.3	18.8	14.1	23.9	17.9	29.0	21.8
3.6	2.7	8.7	6.5	13.8	10.4	18.9	14.2	24.0	18.0	29.1	21.8
3.7	2.8	8.8	6.6	13.9	10.4	19.0	14.3	24.1	18.1	29.2	21.9
3.8	2.9	8.9	6.7	14.0	10.5	19.1	14.3	24.2	18.2	29.3	22.0
3.9	2.9	9.0	6.8	14.1	10.6	19.2	14.4	24.3	18.2	29.4	22.1
4.0	3.0	9.1	6.8	14.2	10.7	19.3	14.5	24.4	18.3	29.5	22.1
4.1	3.1	9.2	6.9	14.3	10.7	19.4	14.6	24.5	18.4	29.6	22.2
4.2	3.2	9.3	7.0	14.4	10.8	19.5	14.6	24.6	18.5	29.7	22.3
4.3	3.2	9.4	7.1	14.5	10.9	19.6	14.7	24.7	18.5	29.8	22.4
4.4	3.3	9.5	7.1	14.6	11.0	19.7	14.8	24.8	18.6	29.9	22.4
4.5	3.4	9.6	7.2	14.7	11.0	19.8	14.9	24.9	18.7	30.0	22.5
4.6	3.5	9.7	7.3	14.8	11.1	19.9	14.9	25.0	18.8	30.1	22.6
4.7	3.5	9.8	7.4	14.9	11.2	20.0	15.0	25.1	18.8	30.2	22.7
4.8	3.6	9.9	7.4	15.0	11.3	20.1	15.1	25.2	18.9	30.3	22.7
4.9	3.7	10.0	7.5	15.1	11.3	20.2	15.2	25.3	19.0	30.4	22.8
5.0	3.8	10.1	7.6	15.2	11.4	20.3	15.2	25.4	19.1	30.5	22.9

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 46

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	011 30.0	011 31.9	010 58.6
01	011 30.3	011 32.1	010 58.8
02	011 30.5	011 32.4	010 59.0
03	011 30.8	011 32.6	010 59.3
04	011 31.0	011 32.9	010 59.5
05	011 31.3	011 33.1	010 59.8
06	011 31.5	011 33.4	011 00.0
07	011 31.8	011 33.6	011 00.2
08	011 32.0	011 33.9	011 00.5
09	011 32.3	011 34.1	011 00.7
10	011 32.5	011 34.4	011 01.0
11	011 32.8	011 34.6	011 01.2
12	011 33.0	011 34.9	011 01.4
13	011 33.3	011 35.1	011 01.7
14	011 33.5	011 35.4	011 01.9
15	011 33.8	011 35.6	011 02.1
16	011 34.0	011 35.9	011 02.4
17	011 34.3	011 36.2	011 02.6
18	011 34.5	011 36.4	011 02.9
19	011 34.8	011 36.7	011 03.1
20	011 35.0	011 36.9	011 03.3
21	011 35.3	011 37.2	011 03.6
22	011 35.5	011 37.4	011 03.8
23	011 35.8	011 37.7	011 04.1
24	011 36.0	011 37.9	011 04.3
25	011 36.3	011 38.2	011 04.5
26	011 36.5	011 38.4	011 04.8
27	011 36.8	011 38.7	011 05.0
28	011 37.0	011 38.9	011 05.2
29	011 37.3	011 39.2	011 05.5
30	011 37.5	011 39.4	011 05.7
31	011 37.8	011 39.7	011 06.0
32	011 38.0	011 39.9	011 06.2
33	011 38.3	011 40.2	011 06.4
34	011 38.5	011 40.4	011 06.7
35	011 38.8	011 40.7	011 06.9
36	011 39.0	011 40.9	011 07.2
37	011 39.3	011 41.2	011 07.4
38	011 39.5	011 41.4	011 07.6
39	011 39.8	011 41.7	011 07.9
40	011 40.0	011 41.9	011 08.1
41	011 40.3	011 42.2	011 08.3
42	011 40.5	011 42.4	011 08.6
43	011 40.8	011 42.7	011 08.8
44	011 41.0	011 42.9	011 09.1
45	011 41.3	011 43.2	011 09.3
46	011 41.5	011 43.4	011 09.5
47	011 41.8	011 43.7	011 09.8
48	011 42.0	011 43.9	011 10.0
49	011 42.3	011 44.2	011 10.3
50	011 42.5	011 44.4	011 10.5
51	011 42.8	011 44.7	011 10.7
52	011 43.0	011 44.9	011 11.0
53	011 43.3	011 45.2	011 11.2
54	011 43.5	011 45.4	011 11.5
55	011 43.8	011 45.7	011 11.7
56	011 44.0	011 45.9	011 11.9
57	011 44.3	011 46.2	011 12.2
58	011 44.5	011 46.4	011 12.4
59	011 44.8	011 46.7	011 12.6

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	3.9	10.2	7.8	15.3	11.7	20.4	15.6	25.5	19.6
0.1	0.1	5.2	4.0	10.3	7.9	15.4	11.8	20.5	15.7	25.6	19.6
0.2	0.2	5.3	4.1	10.4	8.0	15.5	11.9	20.6	15.8	25.7	19.7
0.3	0.2	5.4	4.1	10.5	8.1	15.6	12.0	20.7	15.9	25.8	19.8
0.4	0.3	5.5	4.2	10.6	8.1	15.7	12.0	20.8	15.9	25.9	19.9
0.5	0.4	5.6	4.3	10.7	8.2	15.8	12.1	20.9	16.0	26.0	19.9
0.6	0.5	5.7	4.4	10.8	8.3	15.9	12.2	21.0	16.1	26.1	20.0
0.7	0.5	5.8	4.4	10.9	8.4	16.0	12.3	21.1	16.2	26.2	20.1
0.8	0.6	5.9	4.5	11.0	8.4	16.1	12.3	21.2	16.3	26.3	20.2
0.9	0.7	6.0	4.6	11.1	8.5	16.2	12.4	21.3	16.3	26.4	20.2
1.0	0.8	6.1	4.7	11.2	8.6	16.3	12.5	21.4	16.4	26.5	20.3
1.1	0.8	6.2	4.8	11.3	8.7	16.4	12.6	21.5	16.5	26.6	20.4
1.2	0.9	6.3	4.8	11.4	8.7	16.5	12.7	21.6	16.6	26.7	20.5
1.3	1.0	6.4	4.9	11.5	8.8	16.6	12.7	21.7	16.6	26.8	20.5
1.4	1.1	6.5	5.0	11.6	8.9	16.7	12.8	21.8	16.7	26.9	20.6
1.5	1.2	6.6	5.1	11.7	9.0	16.8	12.9	21.9	16.8	27.0	20.7
1.6	1.2	6.7	5.1	11.8	9.0	16.9	13.0	22.0	16.9	27.1	20.8
1.7	1.3	6.8	5.2	11.9	9.1	17.0	13.0	22.1	16.9	27.2	20.9
1.8	1.4	6.9	5.3	12.0	9.2	17.1	13.1	22.2	17.0	27.3	20.9
1.9	1.5	7.0	5.4	12.1	9.3	17.2	13.2	22.3	17.1	27.4	21.0
2.0	1.5	7.1	5.4	12.2	9.4	17.3	13.3	22.4	17.2	27.5	21.1
2.1	1.6	7.2	5.5	12.3	9.4	17.4	13.3	22.5	17.3	27.6	21.2
2.2	1.7	7.3	5.6	12.4	9.5	17.5	13.4	22.6	17.3	27.7	21.2
2.3	1.8	7.4	5.7	12.5	9.6	17.6	13.5	22.7	17.4	27.8	21.3
2.4	1.8	7.5	5.8	12.6	9.7	17.7	13.6	22.8	17.5	27.9	21.4
2.5	1.9	7.6	5.8	12.7	9.7	17.8	13.6	22.9	17.6	28.0	21.5
2.6	2.0	7.7	5.9	12.8	9.8	17.9	13.7	23.0	17.6	28.1	21.5
2.7	2.1	7.8	6.0	12.9	9.9	18.0	13.8	23.1	17.7	28.2	21.6
2.8	2.1	7.9	6.1	13.0	10.0	18.1	13.9	23.2	17.8	28.3	21.7
2.9	2.2	8.0	6.1	13.1	10.0	18.2	14.0	23.3	17.9	28.4	21.8
3.0	2.3	8.1	6.2	13.2	10.1	18.3	14.0	23.4	17.9	28.5	21.9
3.1	2.4	8.2	6.3	13.3	10.2	18.4	14.1	23.5	18.0	28.6	21.9
3.2	2.5	8.3	6.4	13.4	10.3	18.5	14.2	23.6	18.1	28.7	22.0
3.3	2.5	8.4	6.4	13.5	10.4	18.6	14.3	23.7	18.2	28.8	22.1
3.4	2.6	8.5	6.5	13.6	10.4	18.7	14.3	23.8	18.2	28.9	22.2
3.5	2.7	8.6	6.6	13.7	10.5	18.8	14.4	23.9	18.3	29.0	22.2
3.6	2.8	8.7	6.7	13.8	10.6	18.9	14.5	24.0	18.4	29.1	22.3
3.7	2.8	8.8	6.7	13.9	10.7	19.0	14.6	24.1	18.5	29.2	22.4
3.8	2.9	8.9	6.8	14.0	10.7	19.1	14.6	24.2	18.6	29.3	22.5
3.9	3.0	9.0	6.9	14.1	10.8	19.2	14.7	24.3	18.6	29.4	22.5
4.0	3.1	9.1	7.0	14.2	10.9	19.3	14.8	24.4	18.7	29.5	22.6
4.1	3.1	9.2	7.1	14.3	11.0	19.4	14.9	24.5	18.8	29.6	22.7
4.2	3.2	9.3	7.1	14.4	11.0	19.5	15.0	24.6	18.9	29.7	22.8
4.3	3.3	9.4	7.2	14.5	11.1	19.6	15.0	24.7	18.9	29.8	22.8
4.4	3.4	9.5	7.3	14.6	11.2	19.7	15.1	24.8	19.0	29.9	22.9
4.5	3.5	9.6	7.4	14.7	11.3	19.8	15.2	24.9	19.1	30.0	23.0
4.6	3.5	9.7	7.4	14.8	11.3	19.9	15.3	25.0	19.2	30.1	23.1
4.7	3.6	9.8	7.5	14.9	11.4	20.0	15.3	25.1	19.2	30.2	23.2
4.8	3.7	9.9	7.6	15.0	11.5	20.1	15.4	25.2	19.3	30.3	23.2
4.9	3.8	10.0	7.7	15.1	11.6	20.2	15.5	25.3	19.4	30.4	23.3
5.0	3.8	10.1	7.7	15.2	11.7	20.3	15.6	25.4	19.5	30.5	23.4

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 47

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	011 45.0	011 46.9	011 12.9
01	011 45.3	011 47.2	011 13.1
02	011 45.5	011 47.4	011 13.4
03	011 45.8	011 47.7	011 13.6
04	011 46.0	011 47.9	011 13.8
05	011 46.3	011 48.2	011 14.1
06	011 46.5	011 48.4	011 14.3
07	011 46.8	011 48.7	011 14.6
08	011 47.0	011 48.9	011 14.8
09	011 47.3	011 49.2	011 15.0
10	011 47.5	011 49.4	011 15.3
11	011 47.8	011 49.7	011 15.5
12	011 48.0	011 49.9	011 15.7
13	011 48.3	011 50.2	011 16.0
14	011 48.5	011 50.4	011 16.2
15	011 48.8	011 50.7	011 16.5
16	011 49.0	011 50.9	011 16.7
17	011 49.3	011 51.2	011 16.9
18	011 49.5	011 51.4	011 17.2
19	011 49.8	011 51.7	011 17.4
20	011 50.0	011 51.9	011 17.7
21	011 50.3	011 52.2	011 17.9
22	011 50.5	011 52.4	011 18.1
23	011 50.8	011 52.7	011 18.4
24	011 51.0	011 52.9	011 18.6
25	011 51.3	011 53.2	011 18.8
26	011 51.5	011 53.4	011 19.1
27	011 51.8	011 53.7	011 19.3
28	011 52.0	011 53.9	011 19.6
29	011 52.3	011 54.2	011 19.8
30	011 52.5	011 54.5	011 20.0
31	011 52.8	011 54.7	011 20.3
32	011 53.0	011 55.0	011 20.5
33	011 53.3	011 55.2	011 20.8
34	011 53.5	011 55.5	011 21.0
35	011 53.8	011 55.7	011 21.2
36	011 54.0	011 56.0	011 21.5
37	011 54.3	011 56.2	011 21.7
38	011 54.5	011 56.5	011 22.0
39	011 54.8	011 56.7	011 22.2
40	011 55.0	011 57.0	011 22.4
41	011 55.3	011 57.2	011 22.7
42	011 55.5	011 57.5	011 22.9
43	011 55.8	011 57.7	011 23.1
44	011 56.0	011 58.0	011 23.4
45	011 56.3	011 58.2	011 23.6
46	011 56.5	011 58.5	011 23.9
47	011 56.8	011 58.7	011 24.1
48	011 57.0	011 59.0	011 24.3
49	011 57.3	011 59.2	011 24.6
50	011 57.5	011 59.5	011 24.8
51	011 57.8	011 59.7	011 25.1
52	011 58.0	012 00.0	011 25.3
53	011 58.3	012 00.2	011 25.5
54	011 58.5	012 00.5	011 25.8
55	011 58.8	012 00.7	011 26.0
56	011 59.0	012 01.0	011 26.2
57	011 59.3	012 01.2	011 26.5
58	011 59.5	012 01.5	011 26.7
59	011 59.8	012 01.7	011 27.0

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	4.0	10.2	8.0	15.3	12.0	20.4	16.0	25.5	20.0
0.1	0.1	5.2	4.1	10.3	8.1	15.4	12.1	20.5	16.1	25.6	20.1
0.2	0.2	5.3	4.2	10.4	8.1	15.5	12.1	20.6	16.1	25.7	20.1
0.3	0.2	5.4	4.2	10.5	8.2	15.6	12.2	20.7	16.2	25.8	20.2
0.4	0.3	5.5	4.3	10.6	8.3	15.7	12.3	20.8	16.3	25.9	20.3
0.5	0.4	5.6	4.4	10.7	8.4	15.8	12.4	20.9	16.4	26.0	20.4
0.6	0.5	5.7	4.5	10.8	8.5	15.9	12.5	21.0	16.5	26.1	20.4
0.7	0.5	5.8	4.5	10.9	8.5	16.0	12.5	21.1	16.5	26.2	20.5
0.8	0.6	5.9	4.6	11.0	8.6	16.1	12.6	21.2	16.6	26.3	20.6
0.9	0.7	6.0	4.7	11.1	8.7	16.2	12.7	21.3	16.7	26.4	20.7
1.0	0.8	6.1	4.8	11.2	8.8	16.3	12.8	21.4	16.8	26.5	20.8
1.1	0.9	6.2	4.9	11.3	8.9	16.4	12.8	21.5	16.8	26.6	20.8
1.2	0.9	6.3	4.9	11.4	8.9	16.5	12.9	21.6	16.9	26.7	20.9
1.3	1.0	6.4	5.0	11.5	9.0	16.6	13.0	21.7	17.0	26.8	21.0
1.4	1.1	6.5	5.1	11.6	9.1	16.7	13.1	21.8	17.1	26.9	21.1
1.5	1.2	6.6	5.2	11.7	9.2	16.8	13.2	21.9	17.2	27.0	21.2
1.6	1.3	6.7	5.2	11.8	9.2	16.9	13.2	22.0	17.2	27.1	21.2
1.7	1.3	6.8	5.3	11.9	9.3	17.0	13.3	22.1	17.3	27.2	21.3
1.8	1.4	6.9	5.4	12.0	9.4	17.1	13.4	22.2	17.4	27.3	21.4
1.9	1.5	7.0	5.5	12.1	9.5	17.2	13.5	22.3	17.5	27.4	21.5
2.0	1.6	7.1	5.6	12.2	9.6	17.3	13.6	22.4	17.5	27.5	21.5
2.1	1.6	7.2	5.6	12.3	9.6	17.4	13.6	22.5	17.6	27.6	21.6
2.2	1.7	7.3	5.7	12.4	9.7	17.5	13.7	22.6	17.7	27.7	21.7
2.3	1.8	7.4	5.8	12.5	9.8	17.6	13.8	22.7	17.8	27.8	21.8
2.4	1.9	7.5	5.9	12.6	9.9	17.7	13.9	22.8	17.9	27.9	21.9
2.5	2.0	7.6	6.0	12.7	9.9	17.8	13.9	22.9	17.9	28.0	21.9
2.6	2.0	7.7	6.0	12.8	10.0	17.9	14.0	23.0	18.0	28.1	22.0
2.7	2.1	7.8	6.1	12.9	10.1	18.0	14.1	23.1	18.1	28.2	22.1
2.8	2.2	7.9	6.2	13.0	10.2	18.1	14.2	23.2	18.2	28.3	22.2
2.9	2.3	8.0	6.3	13.1	10.3	18.2	14.3	23.3	18.3	28.4	22.2
3.0	2.4	8.1	6.3	13.2	10.3	18.3	14.3	23.4	18.3	28.5	22.3
3.1	2.4	8.2	6.4	13.3	10.4	18.4	14.4	23.5	18.4	28.6	22.4
3.2	2.5	8.3	6.5	13.4	10.5	18.5	14.5	23.6	18.5	28.7	22.5
3.3	2.6	8.4	6.6	13.5	10.6	18.6	14.6	23.7	18.6	28.8	22.6
3.4	2.7	8.5	6.7	13.6	10.7	18.7	14.6	23.8	18.6	28.9	22.6
3.5	2.7	8.6	6.7	13.7	10.7	18.8	14.7	23.9	18.7	29.0	22.7
3.6	2.8	8.7	6.8	13.8	10.8	18.9	14.8	24.0	18.8	29.1	22.8
3.7	2.9	8.8	6.9	13.9	10.9	19.0	14.9	24.1	18.9	29.2	22.9
3.8	3.0	8.9	7.0	14.0	11.0	19.1	15.0	24.2	19.0	29.3	23.0
3.9	3.1	9.0	7.1	14.1	11.0	19.2	15.0	24.3	19.0	29.4	23.0
4.0	3.1	9.1	7.1	14.2	11.1	19.3	15.1	24.4	19.1	29.5	23.1
4.1	3.2	9.2	7.2	14.3	11.2	19.4	15.2	24.5	19.2	29.6	23.2
4.2	3.3	9.3	7.3	14.4	11.3	19.5	15.3	24.6	19.3	29.7	23.3
4.3	3.4	9.4	7.4	14.5	11.4	19.6	15.4	24.7	19.3	29.8	23.3
4.4	3.4	9.5	7.4	14.6	11.4	19.7	15.4	24.8	19.4	29.9	23.4
4.5	3.5	9.6	7.5	14.7	11.5	19.8	15.5	24.9	19.5	30.0	23.5
4.6	3.6	9.7	7.6	14.8	11.6	19.9	15.6	25.0	19.6	30.1	23.6
4.7	3.7	9.8	7.7	14.9	11.7	20.0	15.7	25.1	19.7	30.2	23.7
4.8	3.8	9.9	7.8	15.0	11.8	20.1	15.7	25.2	19.7	30.3	23.7
4.9	3.8	10.0	7.8	15.1	11.8	20.2	15.8	25.3	19.8	30.4	23.8
5.0	3.9	10.1	7.9	15.2	11.9	20.3	15.9	25.4	19.9	30.5	23.9

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 48

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	012 00.0	012 02.0	011 27.2
01	012 00.3	012 02.2	011 27.4
02	012 00.5	012 02.5	011 27.7
03	012 00.8	012 02.7	011 27.9
04	012 01.0	012 03.0	011 28.2
05	012 01.3	012 03.2	011 28.4
06	012 01.5	012 03.5	011 28.6
07	012 01.8	012 03.7	011 28.9
08	012 02.0	012 04.0	011 29.1
09	012 02.3	012 04.2	011 29.3
10	012 02.5	012 04.5	011 29.6
11	012 02.8	012 04.7	011 29.8
12	012 03.0	012 05.0	011 30.1
13	012 03.3	012 05.2	011 30.3
14	012 03.5	012 05.5	011 30.5
15	012 03.8	012 05.7	011 30.8
16	012 04.0	012 06.0	011 31.0
17	012 04.3	012 06.2	011 31.3
18	012 04.5	012 06.5	011 31.5
19	012 04.8	012 06.7	011 31.7
20	012 05.0	012 07.0	011 32.0
21	012 05.3	012 07.2	011 32.2
22	012 05.5	012 07.5	011 32.4
23	012 05.8	012 07.7	011 32.7
24	012 06.0	012 08.0	011 32.9
25	012 06.3	012 08.2	011 33.2
26	012 06.5	012 08.5	011 33.4
27	012 06.8	012 08.7	011 33.6
28	012 07.0	012 09.0	011 33.9
29	012 07.3	012 09.2	011 34.1
30	012 07.5	012 09.5	011 34.4
31	012 07.8	012 09.7	011 34.6
32	012 08.0	012 10.0	011 34.8
33	012 08.3	012 10.2	011 35.1
34	012 08.5	012 10.5	011 35.3
35	012 08.8	012 10.7	011 35.6
36	012 09.0	012 11.0	011 35.8
37	012 09.3	012 11.2	011 36.0
38	012 09.5	012 11.5	011 36.3
39	012 09.8	012 11.7	011 36.5
40	012 10.0	012 12.0	011 36.7
41	012 10.3	012 12.2	011 37.0
42	012 10.5	012 12.5	011 37.2
43	012 10.8	012 12.8	011 37.5
44	012 11.0	012 13.0	011 37.7
45	012 11.3	012 13.3	011 37.9
46	012 11.5	012 13.5	011 38.2
47	012 11.8	012 13.8	011 38.4
48	012 12.0	012 14.0	011 38.7
49	012 12.3	012 14.3	011 38.9
50	012 12.5	012 14.5	011 39.1
51	012 12.8	012 14.8	011 39.4
52	012 13.0	012 15.0	011 39.6
53	012 13.3	012 15.3	011 39.8
54	012 13.5	012 15.5	011 40.1
55	012 13.8	012 15.8	011 40.3
56	012 14.0	012 16.0	011 40.6
57	012 14.3	012 16.3	011 40.8
58	012 14.5	012 16.5	011 41.0
59	012 14.8	012 16.8	011 41.3

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	4.1	10.2	8.2	15.3	12.2	20.4	16.3	25.5	20.4
0.1	0.1	5.2	4.2	10.3	8.2	15.4	12.3	20.5	16.4	25.6	20.5
0.2	0.2	5.3	4.2	10.4	8.3	15.5	12.4	20.6	16.5	25.7	20.6
0.3	0.2	5.4	4.3	10.5	8.4	15.6	12.5	20.7	16.6	25.8	20.6
0.4	0.3	5.5	4.4	10.6	8.5	15.7	12.6	20.8	16.6	25.9	20.7
0.5	0.4	5.6	4.5	10.7	8.6	15.8	12.6	20.9	16.7	26.0	20.8
0.6	0.5	5.7	4.6	10.8	8.6	15.9	12.7	21.0	16.8	26.1	20.9
0.7	0.6	5.8	4.6	10.9	8.7	16.0	12.8	21.1	16.9	26.2	21.0
0.8	0.6	5.9	4.7	11.0	8.8	16.1	12.9	21.2	17.0	26.3	21.0
0.9	0.7	6.0	4.8	11.1	8.9	16.2	13.0	21.3	17.0	26.4	21.1
1.0	0.8	6.1	4.9	11.2	9.0	16.3	13.0	21.4	17.1	26.5	21.2
1.1	0.9	6.2	5.0	11.3	9.0	16.4	13.1	21.5	17.2	26.6	21.3
1.2	1.0	6.3	5.0	11.4	9.1	16.5	13.2	21.6	17.3	26.7	21.4
1.3	1.0	6.4	5.1	11.5	9.2	16.6	13.3	21.7	17.4	26.8	21.4
1.4	1.1	6.5	5.2	11.6	9.3	16.7	13.4	21.8	17.4	26.9	21.5
1.5	1.2	6.6	5.3	11.7	9.4	16.8	13.4	21.9	17.5	27.0	21.6
1.6	1.3	6.7	5.4	11.8	9.4	16.9	13.5	22.0	17.6	27.1	21.7
1.7	1.4	6.8	5.4	11.9	9.5	17.0	13.6	22.1	17.7	27.2	21.8
1.8	1.4	6.9	5.5	12.0	9.6	17.1	13.7	22.2	17.8	27.3	21.8
1.9	1.5	7.0	5.6	12.1	9.7	17.2	13.8	22.3	17.8	27.4	21.9
2.0	1.6	7.1	5.7	12.2	9.8	17.3	13.8	22.4	17.9	27.5	22.0
2.1	1.7	7.2	5.8	12.3	9.8	17.4	13.9	22.5	18.0	27.6	22.1
2.2	1.8	7.3	5.8	12.4	9.9	17.5	14.0	22.6	18.1	27.7	22.2
2.3	1.8	7.4	5.9	12.5	10.0	17.6	14.1	22.7	18.2	27.8	22.2
2.4	1.9	7.5	6.0	12.6	10.1	17.7	14.2	22.8	18.2	27.9	22.3
2.5	2.0	7.6	6.1	12.7	10.2	17.8	14.2	22.9	18.3	28.0	22.4
2.6	2.1	7.7	6.2	12.8	10.2	17.9	14.3	23.0	18.4	28.1	22.5
2.7	2.2	7.8	6.2	12.9	10.3	18.0	14.4	23.1	18.5	28.2	22.6
2.8	2.2	7.9	6.3	13.0	10.4	18.1	14.5	23.2	18.6	28.3	22.6
2.9	2.3	8.0	6.4	13.1	10.5	18.2	14.6	23.3	18.6	28.4	22.7
3.0	2.4	8.1	6.5	13.2	10.6	18.3	14.6	23.4	18.7	28.5	22.8
3.1	2.5	8.2	6.6	13.3	10.6	18.4	14.7	23.5	18.8	28.6	22.9
3.2	2.6	8.3	6.6	13.4	10.7	18.5	14.8	23.6	18.9	28.7	23.0
3.3	2.6	8.4	6.7	13.5	10.8	18.6	14.9	23.7	19.0	28.8	23.0
3.4	2.7	8.5	6.8	13.6	10.9	18.7	15.0	23.8	19.0	28.9	23.1
3.5	2.8	8.6	6.9	13.7	11.0	18.8	15.0	23.9	19.1	29.0	23.2
3.6	2.9	8.7	7.0	13.8	11.0	18.9	15.1	24.0	19.2	29.1	23.3
3.7	3.0	8.8	7.0	13.9	11.1	19.0	15.2	24.1	19.3	29.2	23.4
3.8	3.0	8.9	7.1	14.0	11.2	19.1	15.3	24.2	19.4	29.3	23.4
3.9	3.1	9.0	7.2	14.1	11.3	19.2	15.4	24.3	19.4	29.4	23.5
4.0	3.2	9.1	7.3	14.2	11.4	19.3	15.4	24.4	19.5	29.5	23.6
4.1	3.3	9.2	7.4	14.3	11.4	19.4	15.5	24.5	19.6	29.6	23.7
4.2	3.4	9.3	7.4	14.4	11.5	19.5	15.6	24.6	19.7	29.7	23.8
4.3	3.4	9.4	7.5	14.5	11.6	19.6	15.7	24.7	19.8	29.8	23.8
4.4	3.5	9.5	7.6	14.6	11.7	19.7	15.8	24.8	19.8	29.9	23.9
4.5	3.6	9.6	7.7	14.7	11.8	19.8	15.8	24.9	19.9	30.0	24.0
4.6	3.7	9.7	7.8	14.8	11.8	19.9	15.9	25.0	20.0	30.1	24.1
4.7	3.8	9.8	7.8	14.9	11.9	20.0	16.0	25.1	20.1	30.2	24.2
4.8	3.8	9.9	7.9	15.0	12.0	20.1	16.1	25.2	20.2	30.3	24.2
4.9	3.9	10.0	8.0	15.1	12.1	20.2	16.2	25.3	20.2	30.4	24.3
5.0	4.0	10.1	8.1	15.2	12.2	20.3	16.2	25.4	20.3	30.5	24.4

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	012 15.0	012 17.0	011 41.5
01	012 15.3	012 17.3	011 41.8
02	012 15.5	012 17.5	011 42.0
03	012 15.8	012 17.8	011 42.2
04	012 16.0	012 18.0	011 42.5
05	012 16.3	012 18.3	011 42.7
06	012 16.5	012 18.5	011 42.9
07	012 16.8	012 18.8	011 43.2
08	012 17.0	012 19.0	011 43.4
09	012 17.3	012 19.3	011 43.7
10	012 17.5	012 19.5	011 43.9
11	012 17.8	012 19.8	011 44.1
12	012 18.0	012 20.0	011 44.4
13	012 18.3	012 20.3	011 44.6
14	012 18.5	012 20.5	011 44.9
15	012 18.8	012 20.8	011 45.1
16	012 19.0	012 21.0	011 45.3
17	012 19.3	012 21.3	011 45.6
18	012 19.5	012 21.5	011 45.8
19	012 19.8	012 21.8	011 46.1
20	012 20.0	012 22.0	011 46.3
21	012 20.3	012 22.3	011 46.5
22	012 20.5	012 22.5	011 46.8
23	012 20.8	012 22.8	011 47.0
24	012 21.0	012 23.0	011 47.2
25	012 21.3	012 23.3	011 47.5
26	012 21.5	012 23.5	011 47.7
27	012 21.8	012 23.8	011 48.0
28	012 22.0	012 24.0	011 48.2
29	012 22.3	012 24.3	011 48.4
30	012 22.5	012 24.5	011 48.7
31	012 22.8	012 24.8	011 48.9
32	012 23.0	012 25.0	011 49.2
33	012 23.3	012 25.3	011 49.4
34	012 23.5	012 25.5	011 49.6
35	012 23.8	012 25.8	011 49.9
36	012 24.0	012 26.0	011 50.1
37	012 24.3	012 26.3	011 50.3
38	012 24.5	012 26.5	011 50.6
39	012 24.8	012 26.8	011 50.8
40	012 25.0	012 27.0	011 51.1
41	012 25.3	012 27.3	011 51.3
42	012 25.5	012 27.5	011 51.5
43	012 25.8	012 27.8	011 51.8
44	012 26.0	012 28.0	011 52.0
45	012 26.3	012 28.3	011 52.3
46	012 26.5	012 28.5	011 52.5
47	012 26.8	012 28.8	011 52.7
48	012 27.0	012 29.0	011 53.0
49	012 27.3	012 29.3	011 53.2
50	012 27.5	012 29.5	011 53.4
51	012 27.8	012 29.8	011 53.7
52	012 28.0	012 30.0	011 53.9
53	012 28.3	012 30.3	011 54.2
54	012 28.5	012 30.5	011 54.4
55	012 28.8	012 30.8	011 54.6
56	012 29.0	012 31.1	011 54.9
57	012 29.3	012 31.3	011 55.1
58	012 29.5	012 31.6	011 55.4
59	012 29.8	012 31.8	011 55.6

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	4.2	10.2	8.3	15.3	12.5	20.4	16.7	25.5	20.8
0.1	0.1	5.2	4.2	10.3	8.4	15.4	12.6	20.5	16.7	25.6	20.9
0.2	0.2	5.3	4.3	10.4	8.5	15.5	12.7	20.6	16.8	25.7	21.0
0.3	0.2	5.4	4.4	10.5	8.6	15.6	12.7	20.7	16.9	25.8	21.1
0.4	0.3	5.5	4.5	10.6	8.7	15.7	12.8	20.8	17.0	25.9	21.2
0.5	0.4	5.6	4.6	10.7	8.7	15.8	12.9	20.9	17.1	26.0	21.2
0.6	0.5	5.7	4.7	10.8	8.8	15.9	13.0	21.0	17.2	26.1	21.3
0.7	0.6	5.8	4.7	10.9	8.9	16.0	13.1	21.1	17.2	26.2	21.4
0.8	0.7	5.9	4.8	11.0	9.0	16.1	13.1	21.2	17.3	26.3	21.5
0.9	0.7	6.0	4.9	11.1	9.1	16.2	13.2	21.3	17.4	26.4	21.6
1.0	0.8	6.1	5.0	11.2	9.1	16.3	13.3	21.4	17.5	26.5	21.6
1.1	0.9	6.2	5.1	11.3	9.2	16.4	13.4	21.5	17.6	26.6	21.7
1.2	1.0	6.3	5.1	11.4	9.3	16.5	13.5	21.6	17.6	26.7	21.8
1.3	1.1	6.4	5.2	11.5	9.4	16.6	13.6	21.7	17.7	26.8	21.9
1.4	1.1	6.5	5.3	11.6	9.5	16.7	13.6	21.8	17.8	26.9	22.0
1.5	1.2	6.6	5.4	11.7	9.6	16.8	13.7	21.9	17.9	27.0	22.1
1.6	1.3	6.7	5.5	11.8	9.6	16.9	13.8	22.0	18.0	27.1	22.1
1.7	1.4	6.8	5.6	11.9	9.7	17.0	13.9	22.1	18.0	27.2	22.2
1.8	1.5	6.9	5.6	12.0	9.8	17.1	14.0	22.2	18.1	27.3	22.3
1.9	1.6	7.0	5.7	12.1	9.9	17.2	14.0	22.3	18.2	27.4	22.4
2.0	1.6	7.1	5.8	12.2	10.0	17.3	14.1	22.4	18.3	27.5	22.5
2.1	1.7	7.2	5.9	12.3	10.0	17.4	14.2	22.5	18.4	27.6	22.5
2.2	1.8	7.3	6.0	12.4	10.1	17.5	14.3	22.6	18.5	27.7	22.6
2.3	1.9	7.4	6.0	12.5	10.2	17.6	14.4	22.7	18.5	27.8	22.7
2.4	2.0	7.5	6.1	12.6	10.3	17.7	14.5	22.8	18.6	27.9	22.8
2.5	2.0	7.6	6.2	12.7	10.4	17.8	14.5	22.9	18.7	28.0	22.9
2.6	2.1	7.7	6.3	12.8	10.5	17.9	14.6	23.0	18.8	28.1	22.9
2.7	2.2	7.8	6.4	12.9	10.5	18.0	14.7	23.1	18.9	28.2	23.0
2.8	2.3	7.9	6.5	13.0	10.6	18.1	14.8	23.2	18.9	28.3	23.1
2.9	2.4	8.0	6.5	13.1	10.7	18.2	14.9	23.3	19.0	28.4	23.2
3.0	2.5	8.1	6.6	13.2	10.8	18.3	14.9	23.4	19.1	28.5	23.3
3.1	2.5	8.2	6.7	13.3	10.9	18.4	15.0	23.5	19.2	28.6	23.4
3.2	2.6	8.3	6.8	13.4	10.9	18.5	15.1	23.6	19.3	28.7	23.4
3.3	2.7	8.4	6.9	13.5	11.0	18.6	15.2	23.7	19.4	28.8	23.5
3.4	2.8	8.5	6.9	13.6	11.1	18.7	15.3	23.8	19.4	28.9	23.6
3.5	2.9	8.6	7.0	13.7	11.2	18.8	15.4	23.9	19.5	29.0	23.7
3.6	2.9	8.7	7.1	13.8	11.3	18.9	15.4	24.0	19.6	29.1	23.8
3.7	3.0	8.8	7.2	13.9	11.4	19.0	15.5	24.1	19.7	29.2	23.8
3.8	3.1	8.9	7.3	14.0	11.4	19.1	15.6	24.2	19.8	29.3	23.9
3.9	3.2	9.0	7.4	14.1	11.5	19.2	15.7	24.3	19.8	29.4	24.0
4.0	3.3	9.1	7.4	14.2	11.6	19.3	15.8	24.4	19.9	29.5	24.1
4.1	3.3	9.2	7.5	14.3	11.7	19.4	15.8	24.5	20.0	29.6	24.2
4.2	3.4	9.3	7.6	14.4	11.8	19.5	15.9	24.6	20.1	29.7	24.3
4.3	3.5	9.4	7.7	14.5	11.8	19.6	16.0	24.7	20.2	29.8	24.3
4.4	3.6	9.5	7.8	14.6	11.9	19.7	16.1	24.8	20.3	29.9	24.4
4.5	3.7	9.6	7.8	14.7	12.0	19.8	16.2	24.9	20.3	30.0	24.5
4.6	3.8	9.7	7.9	14.8	12.1	19.9	16.3	25.0	20.4	30.1	24.6
4.7	3.8	9.8	8.0	14.9	12.2	20.0	16.3	25.1	20.5	30.2	24.7
4.8	3.9	9.9	8.1	15.0	12.3	20.1	16.4	25.2	20.6	30.3	24.7
4.9	4.0	10.0	8.2	15.1	12.3	20.2	16.5	25.3	20.7	30.4	24.8
5.0	4.1	10.1	8.2	15.2	12.4	20.3	16.6	25.4	20.7	30.5	24.9

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 50

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	012 30.0	012 32.1	011 55.8
01	012 30.3	012 32.3	011 56.1
02	012 30.5	012 32.6	011 56.3
03	012 30.8	012 32.8	011 56.5
04	012 31.0	012 33.1	011 56.8
05	012 31.3	012 33.3	011 57.0
06	012 31.5	012 33.6	011 57.3
07	012 31.8	012 33.8	011 57.5
08	012 32.0	012 34.1	011 57.7
09	012 32.3	012 34.3	011 58.0
10	012 32.5	012 34.6	011 58.2
11	012 32.8	012 34.8	011 58.5
12	012 33.0	012 35.1	011 58.7
13	012 33.3	012 35.3	011 58.9
14	012 33.5	012 35.6	011 59.2
15	012 33.8	012 35.8	011 59.4
16	012 34.0	012 36.1	011 59.7
17	012 34.3	012 36.3	011 59.9
18	012 34.5	012 36.6	012 00.1
19	012 34.8	012 36.8	012 00.4
20	012 35.0	012 37.1	012 00.6
21	012 35.3	012 37.3	012 00.8
22	012 35.5	012 37.6	012 01.1
23	012 35.8	012 37.8	012 01.3
24	012 36.0	012 38.1	012 01.6
25	012 36.3	012 38.3	012 01.8
26	012 36.5	012 38.6	012 02.0
27	012 36.8	012 38.8	012 02.3
28	012 37.0	012 39.1	012 02.5
29	012 37.3	012 39.3	012 02.8
30	012 37.5	012 39.6	012 03.0
31	012 37.8	012 39.8	012 03.2
32	012 38.0	012 40.1	012 03.5
33	012 38.3	012 40.3	012 03.7
34	012 38.5	012 40.6	012 03.9
35	012 38.8	012 40.8	012 04.2
36	012 39.0	012 41.1	012 04.4
37	012 39.3	012 41.3	012 04.7
38	012 39.5	012 41.6	012 04.9
39	012 39.8	012 41.8	012 05.1
40	012 40.0	012 42.1	012 05.4
41	012 40.3	012 42.3	012 05.6
42	012 40.5	012 42.6	012 05.9
43	012 40.8	012 42.8	012 06.1
44	012 41.0	012 43.1	012 06.3
45	012 41.3	012 43.3	012 06.6
46	012 41.5	012 43.6	012 06.8
47	012 41.8	012 43.8	012 07.0
48	012 42.0	012 44.1	012 07.3
49	012 42.3	012 44.3	012 07.5
50	012 42.5	012 44.6	012 07.8
51	012 42.8	012 44.8	012 08.0
52	012 43.0	012 45.1	012 08.2
53	012 43.3	012 45.3	012 08.5
54	012 43.5	012 45.6	012 08.7
55	012 43.8	012 45.8	012 09.0
56	012 44.0	012 46.1	012 09.2
57	012 44.3	012 46.3	012 09.4
58	012 44.5	012 46.6	012 09.7
59	012 44.8	012 46.8	012 09.9

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	4.3	10.2	8.5	15.3	12.8	20.4	17.0	25.5	21.3
0.1	0.1	5.2	4.3	10.3	8.6	15.4	12.8	20.5	17.1	25.6	21.3
0.2	0.2	5.3	4.4	10.4	8.7	15.5	12.9	20.6	17.2	25.7	21.4
0.3	0.3	5.4	4.5	10.5	8.8	15.6	13.0	20.7	17.3	25.8	21.5
0.4	0.3	5.5	4.6	10.6	8.8	15.7	13.1	20.8	17.3	25.9	21.6
0.5	0.4	5.6	4.7	10.7	8.9	15.8	13.2	20.9	17.4	26.0	21.7
0.6	0.5	5.7	4.8	10.8	9.0	15.9	13.3	21.0	17.5	26.1	21.8
0.7	0.6	5.8	4.8	10.9	9.1	16.0	13.3	21.1	17.6	26.2	21.8
0.8	0.7	5.9	4.9	11.0	9.2	16.1	13.4	21.2	17.7	26.3	21.9
0.9	0.8	6.0	5.0	11.1	9.3	16.2	13.5	21.3	17.8	26.4	22.0
1.0	0.8	6.1	5.1	11.2	9.3	16.3	13.6	21.4	17.8	26.5	22.1
1.1	0.9	6.2	5.2	11.3	9.4	16.4	13.7	21.5	17.9	26.6	22.2
1.2	1.0	6.3	5.3	11.4	9.5	16.5	13.8	21.6	18.0	26.7	22.3
1.3	1.1	6.4	5.3	11.5	9.6	16.6	13.8	21.7	18.1	26.8	22.3
1.4	1.2	6.5	5.4	11.6	9.7	16.7	13.9	21.8	18.2	26.9	22.4
1.5	1.3	6.6	5.5	11.7	9.8	16.8	14.0	21.9	18.3	27.0	22.5
1.6	1.3	6.7	5.6	11.8	9.8	16.9	14.1	22.0	18.3	27.1	22.6
1.7	1.4	6.8	5.7	11.9	9.9	17.0	14.2	22.1	18.4	27.2	22.7
1.8	1.5	6.9	5.8	12.0	10.0	17.1	14.3	22.2	18.5	27.3	22.8
1.9	1.6	7.0	5.8	12.1	10.1	17.2	14.3	22.3	18.6	27.4	22.8
2.0	1.7	7.1	5.9	12.2	10.2	17.3	14.4	22.4	18.7	27.5	22.9
2.1	1.8	7.2	6.0	12.3	10.3	17.4	14.5	22.5	18.8	27.6	23.0
2.2	1.8	7.3	6.1	12.4	10.3	17.5	14.6	22.6	18.8	27.7	23.1
2.3	1.9	7.4	6.2	12.5	10.4	17.6	14.7	22.7	18.9	27.8	23.2
2.4	2.0	7.5	6.3	12.6	10.5	17.7	14.8	22.8	19.0	27.9	23.3
2.5	2.1	7.6	6.3	12.7	10.6	17.8	14.8	22.9	19.1	28.0	23.3
2.6	2.2	7.7	6.4	12.8	10.7	17.9	14.9	23.0	19.2	28.1	23.4
2.7	2.3	7.8	6.5	12.9	10.8	18.0	15.0	23.1	19.3	28.2	23.5
2.8	2.3	7.9	6.6	13.0	10.8	18.1	15.1	23.2	19.3	28.3	23.6
2.9	2.4	8.0	6.7	13.1	10.9	18.2	15.2	23.3	19.4	28.4	23.7
3.0	2.5	8.1	6.8	13.2	11.0	18.3	15.3	23.4	19.5	28.5	23.8
3.1	2.6	8.2	6.8	13.3	11.1	18.4	15.3	23.5	19.6	28.6	23.8
3.2	2.7	8.3	6.9	13.4	11.2	18.5	15.4	23.6	19.7	28.7	23.9
3.3	2.8	8.4	7.0	13.5	11.3	18.6	15.5	23.7	19.8	28.8	24.0
3.4	2.8	8.5	7.1	13.6	11.3	18.7	15.6	23.8	19.8	28.9	24.1
3.5	2.9	8.6	7.2	13.7	11.4	18.8	15.7	23.9	19.9	29.0	24.2
3.6	3.0	8.7	7.3	13.8	11.5	18.9	15.8	24.0	20.0	29.1	24.3
3.7	3.1	8.8	7.3	13.9	11.6	19.0	15.8	24.1	20.1	29.2	24.3
3.8	3.2	8.9	7.4	14.0	11.7	19.1	15.9	24.2	20.2	29.3	24.4
3.9	3.3	9.0	7.5	14.1	11.8	19.2	16.0	24.3	20.3	29.4	24.5
4.0	3.3	9.1	7.6	14.2	11.8	19.3	16.1	24.4	20.3	29.5	24.6
4.1	3.4	9.2	7.7	14.3	11.9	19.4	16.2	24.5	20.4	29.6	24.7
4.2	3.5	9.3	7.8	14.4	12.0	19.5	16.3	24.6	20.5	29.7	24.8
4.3	3.6	9.4	7.8	14.5	12.1	19.6	16.3	24.7	20.6	29.8	24.8
4.4	3.7	9.5	7.9	14.6	12.2	19.7	16.4	24.8	20.7	29.9	24.9
4.5	3.8	9.6	8.0	14.7	12.3	19.8	16.5	24.9	20.8	30.0	25.0
4.6	3.8	9.7	8.1	14.8	12.3	19.9	16.6	25.0	20.8	30.1	25.1
4.7	3.9	9.8	8.2	14.9	12.4	20.0	16.7	25.1	20.9	30.2	25.2
4.8	4.0	9.9	8.3	15.0	12.5	20.1	16.8	25.2	21.0	30.3	25.3
4.9	4.1	10.0	8.3	15.1	12.6	20.2	16.8	25.3	21.1	30.4	25.3
5.0	4.2	10.1	8.4	15.2	12.7	20.3	16.9	25.4	21.2	30.5	25.4

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 51

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	012 45.0	012 47.1	012 10.2
01	012 45.3	012 47.3	012 10.4
02	012 45.5	012 47.6	012 10.6
03	012 45.8	012 47.8	012 10.9
04	012 46.0	012 48.1	012 11.1
05	012 46.3	012 48.3	012 11.3
06	012 46.5	012 48.6	012 11.6
07	012 46.8	012 48.8	012 11.8
08	012 47.0	012 49.1	012 12.1
09	012 47.3	012 49.4	012 12.3
10	012 47.5	012 49.6	012 12.5
11	012 47.8	012 49.9	012 12.8
12	012 48.0	012 50.1	012 13.0
13	012 48.3	012 50.4	012 13.3
14	012 48.5	012 50.6	012 13.5
15	012 48.8	012 50.9	012 13.7
16	012 49.0	012 51.1	012 14.0
17	012 49.3	012 51.4	012 14.2
18	012 49.5	012 51.6	012 14.4
19	012 49.8	012 51.9	012 14.7
20	012 50.0	012 52.1	012 14.9
21	012 50.3	012 52.4	012 15.2
22	012 50.5	012 52.6	012 15.4
23	012 50.8	012 52.9	012 15.6
24	012 51.0	012 53.1	012 15.9
25	012 51.3	012 53.4	012 16.1
26	012 51.5	012 53.6	012 16.4
27	012 51.8	012 53.9	012 16.6
28	012 52.0	012 54.1	012 16.8
29	012 52.3	012 54.4	012 17.1
30	012 52.5	012 54.6	012 17.3
31	012 52.8	012 54.9	012 17.5
32	012 53.0	012 55.1	012 17.8
33	012 53.3	012 55.4	012 18.0
34	012 53.5	012 55.6	012 18.3
35	012 53.8	012 55.9	012 18.5
36	012 54.0	012 56.1	012 18.7
37	012 54.3	012 56.4	012 19.0
38	012 54.5	012 56.6	012 19.2
39	012 54.8	012 56.9	012 19.5
40	012 55.0	012 57.1	012 19.7
41	012 55.3	012 57.4	012 19.9
42	012 55.5	012 57.6	012 20.2
43	012 55.8	012 57.9	012 20.4
44	012 56.0	012 58.1	012 20.6
45	012 56.3	012 58.4	012 20.9
46	012 56.5	012 58.6	012 21.1
47	012 56.8	012 58.9	012 21.4
48	012 57.0	012 59.1	012 21.6
49	012 57.3	012 59.4	012 21.8
50	012 57.5	012 59.6	012 22.1
51	012 57.8	012 59.9	012 22.3
52	012 58.0	013 00.1	012 22.6
53	012 58.3	013 00.4	012 22.8
54	012 58.5	013 00.6	012 23.0
55	012 58.8	013 00.9	012 23.3
56	012 59.0	013 01.1	012 23.5
57	012 59.3	013 01.4	012 23.8
58	012 59.5	013 01.6	012 24.0
59	012 59.8	013 01.9	012 24.2

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	4.3	10.2	8.7	15.3	13.0	20.4	17.3	25.5	21.7
0.1	0.1	5.2	4.4	10.3	8.8	15.4	13.1	20.5	17.4	25.6	21.8
0.2	0.2	5.3	4.5	10.4	8.8	15.5	13.2	20.6	17.5	25.7	21.8
0.3	0.3	5.4	4.6	10.5	8.9	15.6	13.3	20.7	17.6	25.8	21.9
0.4	0.3	5.5	4.7	10.6	9.0	15.7	13.3	20.8	17.7	25.9	22.0
0.5	0.4	5.6	4.8	10.7	9.1	15.8	13.4	20.9	17.8	26.0	22.1
0.6	0.5	5.7	4.8	10.8	9.2	15.9	13.5	21.0	17.9	26.1	22.2
0.7	0.6	5.8	4.9	10.9	9.3	16.0	13.6	21.1	17.9	26.2	22.3
0.8	0.7	5.9	5.0	11.0	9.4	16.1	13.7	21.2	18.0	26.3	22.4
0.9	0.8	6.0	5.1	11.1	9.4	16.2	13.8	21.3	18.1	26.4	22.4
1.0	0.9	6.1	5.2	11.2	9.5	16.3	13.9	21.4	18.2	26.5	22.5
1.1	0.9	6.2	5.3	11.3	9.6	16.4	13.9	21.5	18.3	26.6	22.6
1.2	1.0	6.3	5.4	11.4	9.7	16.5	14.0	21.6	18.4	26.7	22.7
1.3	1.1	6.4	5.4	11.5	9.8	16.6	14.1	21.7	18.4	26.8	22.8
1.4	1.2	6.5	5.5	11.6	9.9	16.7	14.2	21.8	18.5	26.9	22.9
1.5	1.3	6.6	5.6	11.7	9.9	16.8	14.3	21.9	18.6	27.0	23.0
1.6	1.4	6.7	5.7	11.8	10.0	16.9	14.4	22.0	18.7	27.1	23.0
1.7	1.4	6.8	5.8	11.9	10.1	17.0	14.5	22.1	18.8	27.2	23.1
1.8	1.5	6.9	5.9	12.0	10.2	17.1	14.5	22.2	18.9	27.3	23.2
1.9	1.6	7.0	6.0	12.1	10.3	17.2	14.6	22.3	19.0	27.4	23.3
2.0	1.7	7.1	6.0	12.2	10.4	17.3	14.7	22.4	19.0	27.5	23.4
2.1	1.8	7.2	6.1	12.3	10.5	17.4	14.8	22.5	19.1	27.6	23.5
2.2	1.9	7.3	6.2	12.4	10.5	17.5	14.9	22.6	19.2	27.7	23.5
2.3	2.0	7.4	6.3	12.5	10.6	17.6	15.0	22.7	19.3	27.8	23.6
2.4	2.0	7.5	6.4	12.6	10.7	17.7	15.0	22.8	19.4	27.9	23.7
2.5	2.1	7.6	6.5	12.7	10.8	17.8	15.1	22.9	19.5	28.0	23.8
2.6	2.2	7.7	6.5	12.8	10.9	17.9	15.2	23.0	19.6	28.1	23.9
2.7	2.3	7.8	6.6	12.9	11.0	18.0	15.3	23.1	19.6	28.2	24.0
2.8	2.4	7.9	6.7	13.0	11.1	18.1	15.4	23.2	19.7	28.3	24.1
2.9	2.5	8.0	6.8	13.1	11.1	18.2	15.5	23.3	19.8	28.4	24.1
3.0	2.6	8.1	6.9	13.2	11.2	18.3	15.6	23.4	19.9	28.5	24.2
3.1	2.6	8.2	7.0	13.3	11.3	18.4	15.6	23.5	20.0	28.6	24.3
3.2	2.7	8.3	7.1	13.4	11.4	18.5	15.7	23.6	20.1	28.7	24.4
3.3	2.8	8.4	7.1	13.5	11.5	18.6	15.8	23.7	20.1	28.8	24.5
3.4	2.9	8.5	7.2	13.6	11.6	18.7	15.9	23.8	20.2	28.9	24.6
3.5	3.0	8.6	7.3	13.7	11.6	18.8	16.0	23.9	20.3	29.0	24.7
3.6	3.1	8.7	7.4	13.8	11.7	18.9	16.1	24.0	20.4	29.1	24.7
3.7	3.1	8.8	7.5	13.9	11.8	19.0	16.2	24.1	20.5	29.2	24.8
3.8	3.2	8.9	7.6	14.0	11.9	19.1	16.2	24.2	20.6	29.3	24.9
3.9	3.3	9.0	7.7	14.1	12.0	19.2	16.3	24.3	20.7	29.4	25.0
4.0	3.4	9.1	7.7	14.2	12.1	19.3	16.4	24.4	20.7	29.5	25.1
4.1	3.5	9.2	7.8	14.3	12.2	19.4	16.5	24.5	20.8	29.6	25.2
4.2	3.6	9.3	7.9	14.4	12.2	19.5	16.6	24.6	20.9	29.7	25.2
4.3	3.7	9.4	8.0	14.5	12.3	19.6	16.7	24.7	21.0	29.8	25.3
4.4	3.7	9.5	8.1	14.6	12.4	19.7	16.7	24.8	21.1	29.9	25.4
4.5	3.8	9.6	8.2	14.7	12.5	19.8	16.8	24.9	21.2	30.0	25.5
4.6	3.9	9.7	8.2	14.8	12.6	19.9	16.9	25.0	21.3	30.1	25.6
4.7	4.0	9.8	8.3	14.9	12.7	20.0	17.0	25.1	21.3	30.2	25.7
4.8	4.1	9.9	8.4	15.0	12.8	20.1	17.1	25.2	21.4	30.3	25.8
4.9	4.2	10.0	8.5	15.1	12.8	20.2	17.2	25.3	21.5	30.4	25.8
5.0	4.3	10.1	8.6	15.2	12.9	20.3	17.3	25.4	21.6	30.5	25.9

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 52

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	013 00.0	013 02.1	012 24.5
01	013 00.3	013 02.4	012 24.7
02	013 00.5	013 02.6	012 24.9
03	013 00.8	013 02.9	012 25.2
04	013 01.0	013 03.1	012 25.4
05	013 01.3	013 03.4	012 25.7
06	013 01.5	013 03.6	012 25.9
07	013 01.8	013 03.9	012 26.1
08	013 02.0	013 04.1	012 26.4
09	013 02.3	013 04.4	012 26.6
10	013 02.5	013 04.6	012 26.9
11	013 02.8	013 04.9	012 27.1
12	013 03.0	013 05.1	012 27.3
13	013 03.3	013 05.4	012 27.6
14	013 03.5	013 05.6	012 27.8
15	013 03.8	013 05.9	012 28.0
16	013 04.0	013 06.1	012 28.3
17	013 04.3	013 06.4	012 28.5
18	013 04.5	013 06.6	012 28.8
19	013 04.8	013 06.9	012 29.0
20	013 05.0	013 07.1	012 29.2
21	013 05.3	013 07.4	012 29.5
22	013 05.5	013 07.7	012 29.7
23	013 05.8	013 07.9	012 30.0
24	013 06.0	013 08.2	012 30.2
25	013 06.3	013 08.4	012 30.4
26	013 06.5	013 08.7	012 30.7
27	013 06.8	013 08.9	012 30.9
28	013 07.0	013 09.2	012 31.1
29	013 07.3	013 09.4	012 31.4
30	013 07.5	013 09.7	012 31.6
31	013 07.8	013 09.9	012 31.9
32	013 08.0	013 10.2	012 32.1
33	013 08.3	013 10.4	012 32.3
34	013 08.5	013 10.7	012 32.6
35	013 08.8	013 10.9	012 32.8
36	013 09.0	013 11.2	012 33.1
37	013 09.3	013 11.4	012 33.3
38	013 09.5	013 11.7	012 33.5
39	013 09.8	013 11.9	012 33.8
40	013 10.0	013 12.2	012 34.0
41	013 10.3	013 12.4	012 34.2
42	013 10.5	013 12.7	012 34.5
43	013 10.8	013 12.9	012 34.7
44	013 11.0	013 13.2	012 35.0
45	013 11.3	013 13.4	012 35.2
46	013 11.5	013 13.7	012 35.4
47	013 11.8	013 13.9	012 35.7
48	013 12.0	013 14.2	012 35.9
49	013 12.3	013 14.4	012 36.2
50	013 12.5	013 14.7	012 36.4
51	013 12.8	013 14.9	012 36.6
52	013 13.0	013 15.2	012 36.9
53	013 13.3	013 15.4	012 37.1
54	013 13.5	013 15.7	012 37.4
55	013 13.8	013 15.9	012 37.6
56	013 14.0	013 16.2	012 37.8
57	013 14.3	013 16.4	012 38.1
58	013 14.5	013 16.7	012 38.3
59	013 14.8	013 16.9	012 38.5

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	4.4	10.2	8.8	15.3	13.3	20.4	17.7	25.5	22.1
0.1	0.1	5.2	4.5	10.3	8.9	15.4	13.3	20.5	17.8	25.6	22.2
0.2	0.2	5.3	4.6	10.4	9.0	15.5	13.4	20.6	17.9	25.7	22.3
0.3	0.3	5.4	4.7	10.5	9.1	15.6	13.5	20.7	17.9	25.8	22.4
0.4	0.3	5.5	4.8	10.6	9.2	15.7	13.6	20.8	18.0	25.9	22.4
0.5	0.4	5.6	4.9	10.7	9.3	15.8	13.7	20.9	18.1	26.0	22.5
0.6	0.5	5.7	4.9	10.8	9.4	15.9	13.8	21.0	18.2	26.1	22.6
0.7	0.6	5.8	5.0	10.9	9.4	16.0	13.9	21.1	18.3	26.2	22.7
0.8	0.7	5.9	5.1	11.0	9.5	16.1	14.0	21.2	18.4	26.3	22.8
0.9	0.8	6.0	5.2	11.1	9.6	16.2	14.0	21.3	18.5	26.4	22.9
1.0	0.9	6.1	5.3	11.2	9.7	16.3	14.1	21.4	18.5	26.5	23.0
1.1	1.0	6.2	5.4	11.3	9.8	16.4	14.2	21.5	18.6	26.6	23.1
1.2	1.0	6.3	5.5	11.4	9.9	16.5	14.3	21.6	18.7	26.7	23.1
1.3	1.1	6.4	5.5	11.5	10.0	16.6	14.4	21.7	18.8	26.8	23.2
1.4	1.2	6.5	5.6	11.6	10.1	16.7	14.5	21.8	18.9	26.9	23.3
1.5	1.3	6.6	5.7	11.7	10.1	16.8	14.6	21.9	19.0	27.0	23.4
1.6	1.4	6.7	5.8	11.8	10.2	16.9	14.6	22.0	19.1	27.1	23.5
1.7	1.5	6.8	5.9	11.9	10.3	17.0	14.7	22.1	19.2	27.2	23.6
1.8	1.6	6.9	6.0	12.0	10.4	17.1	14.8	22.2	19.2	27.3	23.7
1.9	1.6	7.0	6.1	12.1	10.5	17.2	14.9	22.3	19.3	27.4	23.7
2.0	1.7	7.1	6.2	12.2	10.6	17.3	15.0	22.4	19.4	27.5	23.8
2.1	1.8	7.2	6.2	12.3	10.7	17.4	15.1	22.5	19.5	27.6	23.9
2.2	1.9	7.3	6.3	12.4	10.7	17.5	15.2	22.6	19.6	27.7	24.0
2.3	2.0	7.4	6.4	12.5	10.8	17.6	15.3	22.7	19.7	27.8	24.1
2.4	2.1	7.5	6.5	12.6	10.9	17.7	15.3	22.8	19.8	27.9	24.2
2.5	2.2	7.6	6.6	12.7	11.0	17.8	15.4	22.9	19.8	28.0	24.3
2.6	2.3	7.7	6.7	12.8	11.1	17.9	15.5	23.0	19.9	28.1	24.4
2.7	2.3	7.8	6.8	12.9	11.2	18.0	15.6	23.1	20.0	28.2	24.4
2.8	2.4	7.9	6.8	13.0	11.3	18.1	15.7	23.2	20.1	28.3	24.5
2.9	2.5	8.0	6.9	13.1	11.4	18.2	15.8	23.3	20.2	28.4	24.6
3.0	2.6	8.1	7.0	13.2	11.4	18.3	15.9	23.4	20.3	28.5	24.7
3.1	2.7	8.2	7.1	13.3	11.5	18.4	15.9	23.5	20.4	28.6	24.8
3.2	2.8	8.3	7.2	13.4	11.6	18.5	16.0	23.6	20.5	28.7	24.9
3.3	2.9	8.4	7.3	13.5	11.7	18.6	16.1	23.7	20.5	28.8	25.0
3.4	2.9	8.5	7.4	13.6	11.8	18.7	16.2	23.8	20.6	28.9	25.0
3.5	3.0	8.6	7.5	13.7	11.9	18.8	16.3	23.9	20.7	29.0	25.1
3.6	3.1	8.7	7.5	13.8	12.0	18.9	16.4	24.0	20.8	29.1	25.2
3.7	3.2	8.8	7.6	13.9	12.0	19.0	16.5	24.1	20.9	29.2	25.3
3.8	3.3	8.9	7.7	14.0	12.1	19.1	16.6	24.2	21.0	29.3	25.4
3.9	3.4	9.0	7.8	14.1	12.2	19.2	16.6	24.3	21.1	29.4	25.5
4.0	3.5	9.1	7.9	14.2	12.3	19.3	16.7	24.4	21.1	29.5	25.6
4.1	3.6	9.2	8.0	14.3	12.4	19.4	16.8	24.5	21.2	29.6	25.7
4.2	3.6	9.3	8.1	14.4	12.5	19.5	16.9	24.6	21.3	29.7	25.7
4.3	3.7	9.4	8.1	14.5	12.6	19.6	17.0	24.7	21.4	29.8	25.8
4.4	3.8	9.5	8.2	14.6	12.7	19.7	17.1	24.8	21.5	29.9	25.9
4.5	3.9	9.6	8.3	14.7	12.7	19.8	17.2	24.9	21.6	30.0	26.0
4.6	4.0	9.7	8.4	14.8	12.8	19.9	17.2	25.0	21.7	30.1	26.1
4.7	4.1	9.8	8.5	14.9	12.9	20.0	17.3	25.1	21.8	30.2	26.2
4.8	4.2	9.9	8.6	15.0	13.0	20.1	17.4	25.2	21.8	30.3	26.3
4.9	4.2	10.0	8.7	15.1	13.1	20.2	17.5	25.3	21.9	30.4	26.3
5.0	4.3	10.1	8.8	15.2	13.2	20.3	17.6	25.4	22.0	30.5	26.4

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	013 15.0	013 17.2	012 38.8
01	013 15.3	013 17.4	012 39.0
02	013 15.5	013 17.7	012 39.3
03	013 15.8	013 17.9	012 39.5
04	013 16.0	013 18.2	012 39.7
05	013 16.3	013 18.4	012 40.0
06	013 16.5	013 18.7	012 40.2
07	013 16.8	013 18.9	012 40.5
08	013 17.0	013 19.2	012 40.7
09	013 17.3	013 19.4	012 40.9
10	013 17.5	013 19.7	012 41.2
11	013 17.8	013 19.9	012 41.4
12	013 18.0	013 20.2	012 41.6
13	013 18.3	013 20.4	012 41.9
14	013 18.5	013 20.7	012 42.1
15	013 18.8	013 20.9	012 42.4
16	013 19.0	013 21.2	012 42.6
17	013 19.3	013 21.4	012 42.8
18	013 19.5	013 21.7	012 43.1
19	013 19.8	013 21.9	012 43.3
20	013 20.0	013 22.2	012 43.6
21	013 20.3	013 22.4	012 43.8
22	013 20.5	013 22.7	012 44.0
23	013 20.8	013 22.9	012 44.3
24	013 21.0	013 23.2	012 44.5
25	013 21.3	013 23.4	012 44.7
26	013 21.5	013 23.7	012 45.0
27	013 21.8	013 23.9	012 45.2
28	013 22.0	013 24.2	012 45.5
29	013 22.3	013 24.4	012 45.7
30	013 22.5	013 24.7	012 45.9
31	013 22.8	013 24.9	012 46.2
32	013 23.0	013 25.2	012 46.4
33	013 23.3	013 25.4	012 46.7
34	013 23.5	013 25.7	012 46.9
35	013 23.8	013 26.0	012 47.1
36	013 24.0	013 26.2	012 47.4
37	013 24.3	013 26.5	012 47.6
38	013 24.5	013 26.7	012 47.9
39	013 24.8	013 27.0	012 48.1
40	013 25.0	013 27.2	012 48.3
41	013 25.3	013 27.5	012 48.6
42	013 25.5	013 27.7	012 48.8
43	013 25.8	013 28.0	012 49.0
44	013 26.0	013 28.2	012 49.3
45	013 26.3	013 28.5	012 49.5
46	013 26.5	013 28.7	012 49.8
47	013 26.8	013 29.0	012 50.0
48	013 27.0	013 29.2	012 50.2
49	013 27.3	013 29.5	012 50.5
50	013 27.5	013 29.7	012 50.7
51	013 27.8	013 30.0	012 51.0
52	013 28.0	013 30.2	012 51.2
53	013 28.3	013 30.5	012 51.4
54	013 28.5	013 30.7	012 51.7
55	013 28.8	013 31.0	012 51.9
56	013 29.0	013 31.2	012 52.1
57	013 29.3	013 31.5	012 52.4
58	013 29.5	013 31.7	012 52.6
59	013 29.8	013 32.0	012 52.9

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	4.5	10.2	9.0	15.3	13.5	20.4	18.0	25.5	22.5
0.1	0.1	5.2	4.6	10.3	9.1	15.4	13.6	20.5	18.1	25.6	22.6
0.2	0.2	5.3	4.7	10.4	9.2	15.5	13.7	20.6	18.2	25.7	22.7
0.3	0.3	5.4	4.8	10.5	9.3	15.6	13.8	20.7	18.3	25.8	22.8
0.4	0.4	5.5	4.9	10.6	9.4	15.7	13.9	20.8	18.4	25.9	22.9
0.5	0.4	5.6	4.9	10.7	9.5	15.8	14.0	20.9	18.5	26.0	23.0
0.6	0.5	5.7	5.0	10.8	9.5	15.9	14.0	21.0	18.6	26.1	23.1
0.7	0.6	5.8	5.1	10.9	9.6	16.0	14.1	21.1	18.6	26.2	23.1
0.8	0.7	5.9	5.2	11.0	9.7	16.1	14.2	21.2	18.7	26.3	23.2
0.9	0.8	6.0	5.3	11.1	9.8	16.2	14.3	21.3	18.8	26.4	23.3
1.0	0.9	6.1	5.4	11.2	9.9	16.3	14.4	21.4	18.9	26.5	23.4
1.1	1.0	6.2	5.5	11.3	10.0	16.4	14.5	21.5	19.0	26.6	23.5
1.2	1.1	6.3	5.6	11.4	10.1	16.5	14.6	21.6	19.1	26.7	23.6
1.3	1.1	6.4	5.7	11.5	10.2	16.6	14.7	21.7	19.2	26.8	23.7
1.4	1.2	6.5	5.7	11.6	10.2	16.7	14.8	21.8	19.3	26.9	23.8
1.5	1.3	6.6	5.8	11.7	10.3	16.8	14.8	21.9	19.3	27.0	23.9
1.6	1.4	6.7	5.9	11.8	10.4	16.9	14.9	22.0	19.4	27.1	23.9
1.7	1.5	6.8	6.0	11.9	10.5	17.0	15.0	22.1	19.5	27.2	24.0
1.8	1.6	6.9	6.1	12.0	10.6	17.1	15.1	22.2	19.6	27.3	24.1
1.9	1.7	7.0	6.2	12.1	10.7	17.2	15.2	22.3	19.7	27.4	24.2
2.0	1.8	7.1	6.3	12.2	10.8	17.3	15.3	22.4	19.8	27.5	24.3
2.1	1.9	7.2	6.4	12.3	10.9	17.4	15.4	22.5	19.9	27.6	24.4
2.2	1.9	7.3	6.4	12.4	11.0	17.5	15.5	22.6	20.0	27.7	24.5
2.3	2.0	7.4	6.5	12.5	11.0	17.6	15.5	22.7	20.1	27.8	24.6
2.4	2.1	7.5	6.6	12.6	11.1	17.7	15.6	22.8	20.1	27.9	24.6
2.5	2.2	7.6	6.7	12.7	11.2	17.8	15.7	22.9	20.2	28.0	24.7
2.6	2.3	7.7	6.8	12.8	11.3	17.9	15.8	23.0	20.3	28.1	24.8
2.7	2.4	7.8	6.9	12.9	11.4	18.0	15.9	23.1	20.4	28.2	24.9
2.8	2.5	7.9	7.0	13.0	11.5	18.1	16.0	23.2	20.5	28.3	25.0
2.9	2.6	8.0	7.1	13.1	11.6	18.2	16.1	23.3	20.6	28.4	25.1
3.0	2.7	8.1	7.2	13.2	11.7	18.3	16.2	23.4	20.7	28.5	25.2
3.1	2.7	8.2	7.2	13.3	11.7	18.4	16.3	23.5	20.8	28.6	25.3
3.2	2.8	8.3	7.3	13.4	11.8	18.5	16.3	23.6	20.8	28.7	25.4
3.3	2.9	8.4	7.4	13.5	11.9	18.6	16.4	23.7	20.9	28.8	25.4
3.4	3.0	8.5	7.5	13.6	12.0	18.7	16.5	23.8	21.0	28.9	25.5
3.5	3.1	8.6	7.6	13.7	12.1	18.8	16.6	23.9	21.1	29.0	25.6
3.6	3.2	8.7	7.7	13.8	12.2	18.9	16.7	24.0	21.2	29.1	25.7
3.7	3.3	8.8	7.8	13.9	12.3	19.0	16.8	24.1	21.3	29.2	25.8
3.8	3.4	8.9	7.9	14.0	12.4	19.1	16.9	24.2	21.4	29.3	25.9
3.9	3.4	9.0	8.0	14.1	12.5	19.2	17.0	24.3	21.5	29.4	26.0
4.0	3.5	9.1	8.0	14.2	12.5	19.3	17.0	24.4	21.6	29.5	26.1
4.1	3.6	9.2	8.1	14.3	12.6	19.4	17.1	24.5	21.6	29.6	26.1
4.2	3.7	9.3	8.2	14.4	12.7	19.5	17.2	24.6	21.7	29.7	26.2
4.3	3.8	9.4	8.3	14.5	12.8	19.6	17.3	24.7	21.8	29.8	26.3
4.4	3.9	9.5	8.4	14.6	12.9	19.7	17.4	24.8	21.9	29.9	26.4
4.5	4.0	9.6	8.5	14.7	13.0	19.8	17.5	24.9	22.0	30.0	26.5
4.6	4.1	9.7	8.6	14.8	13.1	19.9	17.6	25.0	22.1	30.1	26.6
4.7	4.2	9.8	8.7	14.9	13.2	20.0	17.7	25.1	22.2	30.2	26.7
4.8	4.2	9.9	8.7	15.0	13.3	20.1	17.8	25.2	22.3	30.3	26.8
4.9	4.3	10.0	8.8	15.1	13.3	20.2	17.8	25.3	22.3	30.4	26.9
5.0	4.4	10.1	8.9	15.2	13.4	20.3	17.9	25.4	22.4	30.5	26.9

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 54

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	013 30.0	013 32.2	012 53.1
01	013 30.3	013 32.5	012 53.3
02	013 30.5	013 32.7	012 53.6
03	013 30.8	013 33.0	012 53.8
04	013 31.0	013 33.2	012 54.1
05	013 31.3	013 33.5	012 54.3
06	013 31.5	013 33.7	012 54.5
07	013 31.8	013 34.0	012 54.8
08	013 32.0	013 34.2	012 55.0
09	013 32.3	013 34.5	012 55.2
10	013 32.5	013 34.7	012 55.5
11	013 32.8	013 35.0	012 55.7
12	013 33.0	013 35.2	012 56.0
13	013 33.3	013 35.5	012 56.2
14	013 33.5	013 35.7	012 56.4
15	013 33.8	013 36.0	012 56.7
16	013 34.0	013 36.2	012 56.9
17	013 34.3	013 36.5	012 57.2
18	013 34.5	013 36.7	012 57.4
19	013 34.8	013 37.0	012 57.6
20	013 35.0	013 37.2	012 57.9
21	013 35.3	013 37.5	012 58.1
22	013 35.5	013 37.7	012 58.3
23	013 35.8	013 38.0	012 58.6
24	013 36.0	013 38.2	012 58.8
25	013 36.3	013 38.5	012 59.1
26	013 36.5	013 38.7	012 59.3
27	013 36.8	013 39.0	012 59.5
28	013 37.0	013 39.2	012 59.8
29	013 37.3	013 39.5	013 00.0
30	013 37.5	013 39.7	013 00.3
31	013 37.8	013 40.0	013 00.5
32	013 38.0	013 40.2	013 00.7
33	013 38.3	013 40.5	013 01.0
34	013 38.5	013 40.7	013 01.2
35	013 38.8	013 41.0	013 01.5
36	013 39.0	013 41.2	013 01.7
37	013 39.3	013 41.5	013 01.9
38	013 39.5	013 41.7	013 02.2
39	013 39.8	013 42.0	013 02.4
40	013 40.0	013 42.2	013 02.6
41	013 40.3	013 42.5	013 02.9
42	013 40.5	013 42.7	013 03.1
43	013 40.8	013 43.0	013 03.4
44	013 41.0	013 43.2	013 03.6
45	013 41.3	013 43.5	013 03.8
46	013 41.5	013 43.7	013 04.1
47	013 41.8	013 44.0	013 04.3
48	013 42.0	013 44.3	013 04.6
49	013 42.3	013 44.5	013 04.8
50	013 42.5	013 44.8	013 05.0
51	013 42.8	013 45.0	013 05.3
52	013 43.0	013 45.3	013 05.5
53	013 43.3	013 45.5	013 05.7
54	013 43.5	013 45.8	013 06.0
55	013 43.8	013 46.0	013 06.2
56	013 44.0	013 46.3	013 06.5
57	013 44.3	013 46.5	013 06.7
58	013 44.5	013 46.8	013 06.9
59	013 44.8	013 47.0	013 07.2

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	4.6	10.2	9.2	15.3	13.8	20.4	18.4	25.5	23.0
0.1	0.1	5.2	4.7	10.3	9.3	15.4	13.9	20.5	18.5	25.6	23.0
0.2	0.2	5.3	4.8	10.4	9.4	15.5	14.0	20.6	18.5	25.7	23.1
0.3	0.3	5.4	4.9	10.5	9.5	15.6	14.0	20.7	18.6	25.8	23.2
0.4	0.4	5.5	5.0	10.6	9.5	15.7	14.1	20.8	18.7	25.9	23.3
0.5	0.5	5.6	5.0	10.7	9.6	15.8	14.2	20.9	18.8	26.0	23.4
0.6	0.5	5.7	5.1	10.8	9.7	15.9	14.3	21.0	18.9	26.1	23.5
0.7	0.6	5.8	5.2	10.9	9.8	16.0	14.4	21.1	19.0	26.2	23.6
0.8	0.7	5.9	5.3	11.0	9.9	16.1	14.5	21.2	19.1	26.3	23.7
0.9	0.8	6.0	5.4	11.1	10.0	16.2	14.6	21.3	19.2	26.4	23.8
1.0	0.9	6.1	5.5	11.2	10.1	16.3	14.7	21.4	19.3	26.5	23.9
1.1	1.0	6.2	5.6	11.3	10.2	16.4	14.8	21.5	19.4	26.6	23.9
1.2	1.1	6.3	5.7	11.4	10.3	16.5	14.9	21.6	19.4	26.7	24.0
1.3	1.2	6.4	5.8	11.5	10.4	16.6	14.9	21.7	19.5	26.8	24.1
1.4	1.3	6.5	5.9	11.6	10.4	16.7	15.0	21.8	19.6	26.9	24.2
1.5	1.4	6.6	5.9	11.7	10.5	16.8	15.1	21.9	19.7	27.0	24.3
1.6	1.4	6.7	6.0	11.8	10.6	16.9	15.2	22.0	19.8	27.1	24.4
1.7	1.5	6.8	6.1	11.9	10.7	17.0	15.3	22.1	19.9	27.2	24.5
1.8	1.6	6.9	6.2	12.0	10.8	17.1	15.4	22.2	20.0	27.3	24.6
1.9	1.7	7.0	6.3	12.1	10.9	17.2	15.5	22.3	20.1	27.4	24.7
2.0	1.8	7.1	6.4	12.2	11.0	17.3	15.6	22.4	20.2	27.5	24.8
2.1	1.9	7.2	6.5	12.3	11.1	17.4	15.7	22.5	20.3	27.6	24.8
2.2	2.0	7.3	6.6	12.4	11.2	17.5	15.8	22.6	20.3	27.7	24.9
2.3	2.1	7.4	6.7	12.5	11.3	17.6	15.8	22.7	20.4	27.8	25.0
2.4	2.2	7.5	6.8	12.6	11.3	17.7	15.9	22.8	20.5	27.9	25.1
2.5	2.3	7.6	6.8	12.7	11.4	17.8	16.0	22.9	20.6	28.0	25.2
2.6	2.3	7.7	6.9	12.8	11.5	17.9	16.1	23.0	20.7	28.1	25.3
2.7	2.4	7.8	7.0	12.9	11.6	18.0	16.2	23.1	20.8	28.2	25.4
2.8	2.5	7.9	7.1	13.0	11.7	18.1	16.3	23.2	20.9	28.3	25.5
2.9	2.6	8.0	7.2	13.1	11.8	18.2	16.4	23.3	21.0	28.4	25.6
3.0	2.7	8.1	7.3	13.2	11.9	18.3	16.5	23.4	21.1	28.5	25.7
3.1	2.8	8.2	7.4	13.3	12.0	18.4	16.6	23.5	21.2	28.6	25.7
3.2	2.9	8.3	7.5	13.4	12.1	18.5	16.7	23.6	21.2	28.7	25.8
3.3	3.0	8.4	7.6	13.5	12.2	18.6	16.7	23.7	21.3	28.8	25.9
3.4	3.1	8.5	7.7	13.6	12.2	18.7	16.8	23.8	21.4	28.9	26.0
3.5	3.2	8.6	7.7	13.7	12.3	18.8	16.9	23.9	21.5	29.0	26.1
3.6	3.2	8.7	7.8	13.8	12.4	18.9	17.0	24.0	21.6	29.1	26.2
3.7	3.3	8.8	7.9	13.9	12.5	19.0	17.1	24.1	21.7	29.2	26.3
3.8	3.4	8.9	8.0	14.0	12.6	19.1	17.2	24.2	21.8	29.3	26.4
3.9	3.5	9.0	8.1	14.1	12.7	19.2	17.3	24.3	21.9	29.4	26.5
4.0	3.6	9.1	8.2	14.2	12.8	19.3	17.4	24.4	22.0	29.5	26.6
4.1	3.7	9.2	8.3	14.3	12.9	19.4	17.5	24.5	22.1	29.6	26.6
4.2	3.8	9.3	8.4	14.4	13.0	19.5	17.6	24.6	22.1	29.7	26.7
4.3	3.9	9.4	8.5	14.5	13.1	19.6	17.6	24.7	22.2	29.8	26.8
4.4	4.0	9.5	8.6	14.6	13.1	19.7	17.7	24.8	22.3	29.9	26.9
4.5	4.1	9.6	8.6	14.7	13.2	19.8	17.8	24.9	22.4	30.0	27.0
4.6	4.1	9.7	8.7	14.8	13.3	19.9	17.9	25.0	22.5	30.1	27.1
4.7	4.2	9.8	8.8	14.9	13.4	20.0	18.0	25.1	22.6	30.2	27.2
4.8	4.3	9.9	8.9	15.0	13.5	20.1	18.1	25.2	22.7	30.3	27.3
4.9	4.4	10.0	9.0	15.1	13.6	20.2	18.2	25.3	22.8	30.4	27.4
5.0	4.5	10.1	9.1	15.2	13.7	20.3	18.3	25.4	22.9	30.5	27.5

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	013 45.0	013 47.3	013 07.4
01	013 45.3	013 47.5	013 07.7
02	013 45.5	013 47.8	013 07.9
03	013 45.8	013 48.0	013 08.1
04	013 46.0	013 48.3	013 08.4
05	013 46.3	013 48.5	013 08.6
06	013 46.5	013 48.8	013 08.8
07	013 46.8	013 49.0	013 09.1
08	013 47.0	013 49.3	013 09.3
09	013 47.3	013 49.5	013 09.6
10	013 47.5	013 49.8	013 09.8
11	013 47.8	013 50.0	013 10.0
12	013 48.0	013 50.3	013 10.3
13	013 48.3	013 50.5	013 10.5
14	013 48.5	013 50.8	013 10.8
15	013 48.8	013 51.0	013 11.0
16	013 49.0	013 51.3	013 11.2
17	013 49.3	013 51.5	013 11.5
18	013 49.5	013 51.8	013 11.7
19	013 49.8	013 52.0	013 12.0
20	013 50.0	013 52.3	013 12.2
21	013 50.3	013 52.5	013 12.4
22	013 50.5	013 52.8	013 12.7
23	013 50.8	013 53.0	013 12.9
24	013 51.0	013 53.3	013 13.1
25	013 51.3	013 53.5	013 13.4
26	013 51.5	013 53.8	013 13.6
27	013 51.8	013 54.0	013 13.9
28	013 52.0	013 54.3	013 14.1
29	013 52.3	013 54.5	013 14.3
30	013 52.5	013 54.8	013 14.6
31	013 52.8	013 55.0	013 14.8
32	013 53.0	013 55.3	013 15.1
33	013 53.3	013 55.5	013 15.3
34	013 53.5	013 55.8	013 15.5
35	013 53.8	013 56.0	013 15.8
36	013 54.0	013 56.3	013 16.0
37	013 54.3	013 56.5	013 16.2
38	013 54.5	013 56.8	013 16.5
39	013 54.8	013 57.0	013 16.7
40	013 55.0	013 57.3	013 17.0
41	013 55.3	013 57.5	013 17.2
42	013 55.5	013 57.8	013 17.4
43	013 55.8	013 58.0	013 17.7
44	013 56.0	013 58.3	013 17.9
45	013 56.3	013 58.5	013 18.2
46	013 56.5	013 58.8	013 18.4
47	013 56.8	013 59.0	013 18.6
48	013 57.0	013 59.3	013 18.9
49	013 57.3	013 59.5	013 19.1
50	013 57.5	013 59.8	013 19.3
51	013 57.8	014 00.0	013 19.6
52	013 58.0	014 00.3	013 19.8
53	013 58.3	014 00.5	013 20.1
54	013 58.5	014 00.8	013 20.3
55	013 58.8	014 01.0	013 20.5
56	013 59.0	014 01.3	013 20.8
57	013 59.3	014 01.5	013 21.0
58	013 59.5	014 01.8	013 21.3
59	013 59.8	014 02.0	013 21.5

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	4.7	10.2	9.4	15.3	14.0	20.4	18.7	25.5	23.4
0.1	0.1	5.2	4.8	10.3	9.4	15.4	14.1	20.5	18.8	25.6	23.5
0.2	0.2	5.3	4.9	10.4	9.5	15.5	14.2	20.6	18.9	25.7	23.6
0.3	0.3	5.4	5.0	10.5	9.6	15.6	14.3	20.7	19.0	25.8	23.7
0.4	0.4	5.5	5.0	10.6	9.7	15.7	14.4	20.8	19.1	25.9	23.7
0.5	0.5	5.6	5.1	10.7	9.8	15.8	14.5	20.9	19.2	26.0	23.8
0.6	0.6	5.7	5.2	10.8	9.9	15.9	14.6	21.0	19.3	26.1	23.9
0.7	0.6	5.8	5.3	10.9	10.0	16.0	14.7	21.1	19.3	26.2	24.0
0.8	0.7	5.9	5.4	11.0	10.1	16.1	14.8	21.2	19.4	26.3	24.1
0.9	0.8	6.0	5.5	11.1	10.2	16.2	14.9	21.3	19.5	26.4	24.2
1.0	0.9	6.1	5.6	11.2	10.3	16.3	14.9	21.4	19.6	26.5	24.3
1.1	1.0	6.2	5.7	11.3	10.4	16.4	15.0	21.5	19.7	26.6	24.4
1.2	1.1	6.3	5.8	11.4	10.5	16.5	15.1	21.6	19.8	26.7	24.5
1.3	1.2	6.4	5.9	11.5	10.5	16.6	15.2	21.7	19.9	26.8	24.6
1.4	1.3	6.5	6.0	11.6	10.6	16.7	15.3	21.8	20.0	26.9	24.7
1.5	1.4	6.6	6.1	11.7	10.7	16.8	15.4	21.9	20.1	27.0	24.8
1.6	1.5	6.7	6.1	11.8	10.8	16.9	15.5	22.0	20.2	27.1	24.8
1.7	1.6	6.8	6.2	11.9	10.9	17.0	15.6	22.1	20.3	27.2	24.9
1.8	1.7	6.9	6.3	12.0	11.0	17.1	15.7	22.2	20.4	27.3	25.0
1.9	1.7	7.0	6.4	12.1	11.1	17.2	15.8	22.3	20.4	27.4	25.1
2.0	1.8	7.1	6.5	12.2	11.2	17.3	15.9	22.4	20.5	27.5	25.2
2.1	1.9	7.2	6.6	12.3	11.3	17.4	16.0	22.5	20.6	27.6	25.3
2.2	2.0	7.3	6.7	12.4	11.4	17.5	16.0	22.6	20.7	27.7	25.4
2.3	2.1	7.4	6.8	12.5	11.5	17.6	16.1	22.7	20.8	27.8	25.5
2.4	2.2	7.5	6.9	12.6	11.6	17.7	16.2	22.8	20.9	27.9	25.6
2.5	2.3	7.6	7.0	12.7	11.6	17.8	16.3	22.9	21.0	28.0	25.7
2.6	2.4	7.7	7.1	12.8	11.7	17.9	16.4	23.0	21.1	28.1	25.8
2.7	2.5	7.8	7.2	12.9	11.8	18.0	16.5	23.1	21.2	28.2	25.9
2.8	2.6	7.9	7.2	13.0	11.9	18.1	16.6	23.2	21.3	28.3	25.9
2.9	2.7	8.0	7.3	13.1	12.0	18.2	16.7	23.3	21.4	28.4	26.0
3.0	2.8	8.1	7.4	13.2	12.1	18.3	16.8	23.4	21.5	28.5	26.1
3.1	2.8	8.2	7.5	13.3	12.2	18.4	16.9	23.5	21.5	28.6	26.2
3.2	2.9	8.3	7.6	13.4	12.3	18.5	17.0	23.6	21.6	28.7	26.3
3.3	3.0	8.4	7.7	13.5	12.4	18.6	17.1	23.7	21.7	28.8	26.4
3.4	3.1	8.5	7.8	13.6	12.5	18.7	17.1	23.8	21.8	28.9	26.5
3.5	3.2	8.6	7.9	13.7	12.6	18.8	17.2	23.9	21.9	29.0	26.6
3.6	3.3	8.7	8.0	13.8	12.7	18.9	17.3	24.0	22.0	29.1	26.7
3.7	3.4	8.8	8.1	13.9	12.7	19.0	17.4	24.1	22.1	29.2	26.8
3.8	3.5	8.9	8.2	14.0	12.8	19.1	17.5	24.2	22.2	29.3	26.9
3.9	3.6	9.0	8.3	14.1	12.9	19.2	17.6	24.3	22.3	29.4	27.0
4.0	3.7	9.1	8.3	14.2	13.0	19.3	17.7	24.4	22.4	29.5	27.0
4.1	3.8	9.2	8.4	14.3	13.1	19.4	17.8	24.5	22.5	29.6	27.1
4.2	3.9	9.3	8.5	14.4	13.2	19.5	17.9	24.6	22.6	29.7	27.2
4.3	3.9	9.4	8.6	14.5	13.3	19.6	18.0	24.7	22.6	29.8	27.3
4.4	4.0	9.5	8.7	14.6	13.4	19.7	18.1	24.8	22.7	29.9	27.4
4.5	4.1	9.6	8.8	14.7	13.5	19.8	18.2	24.9	22.8	30.0	27.5
4.6	4.2	9.7	8.9	14.8	13.6	19.9	18.2	25.0	22.9	30.1	27.6
4.7	4.3	9.8	9.0	14.9	13.7	20.0	18.3	25.1	23.0	30.2	27.7
4.8	4.4	9.9	9.1	15.0	13.8	20.1	18.4	25.2	23.1	30.3	27.8
4.9	4.5	10.0	9.2	15.1	13.8	20.2	18.5	25.3	23.2	30.4	27.9
5.0	4.6	10.1	9.3	15.2	13.9	20.3	18.6	25.4	23.3	30.5	28.0

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 56

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	014 00.0	014 02.3	013 21.7
01	014 00.3	014 02.6	013 22.0
02	014 00.5	014 02.8	013 22.2
03	014 00.8	014 03.1	013 22.4
04	014 01.0	014 03.3	013 22.7
05	014 01.3	014 03.6	013 22.9
06	014 01.5	014 03.8	013 23.2
07	014 01.8	014 04.1	013 23.4
08	014 02.0	014 04.3	013 23.6
09	014 02.3	014 04.6	013 23.9
10	014 02.5	014 04.8	013 24.1
11	014 02.8	014 05.1	013 24.4
12	014 03.0	014 05.3	013 24.6
13	014 03.3	014 05.6	013 24.8
14	014 03.5	014 05.8	013 25.1
15	014 03.8	014 06.1	013 25.3
16	014 04.0	014 06.3	013 25.6
17	014 04.3	014 06.6	013 25.8
18	014 04.5	014 06.8	013 26.0
19	014 04.8	014 07.1	013 26.3
20	014 05.0	014 07.3	013 26.5
21	014 05.3	014 07.6	013 26.7
22	014 05.5	014 07.8	013 27.0
23	014 05.8	014 08.1	013 27.2
24	014 06.0	014 08.3	013 27.5
25	014 06.3	014 08.6	013 27.7
26	014 06.5	014 08.8	013 27.9
27	014 06.8	014 09.1	013 28.2
28	014 07.0	014 09.3	013 28.4
29	014 07.3	014 09.6	013 28.7
30	014 07.5	014 09.8	013 28.9
31	014 07.8	014 10.1	013 29.1
32	014 08.0	014 10.3	013 29.4
33	014 08.3	014 10.6	013 29.6
34	014 08.5	014 10.8	013 29.8
35	014 08.8	014 11.1	013 30.1
36	014 09.0	014 11.3	013 30.3
37	014 09.3	014 11.6	013 30.6
38	014 09.5	014 11.8	013 30.8
39	014 09.8	014 12.1	013 31.0
40	014 10.0	014 12.3	013 31.3
41	014 10.3	014 12.6	013 31.5
42	014 10.5	014 12.8	013 31.8
43	014 10.8	014 13.1	013 32.0
44	014 11.0	014 13.3	013 32.2
45	014 11.3	014 13.6	013 32.5
46	014 11.5	014 13.8	013 32.7
47	014 11.8	014 14.1	013 32.9
48	014 12.0	014 14.3	013 33.2
49	014 12.3	014 14.6	013 33.4
50	014 12.5	014 14.8	013 33.7
51	014 12.8	014 15.1	013 33.9
52	014 13.0	014 15.3	013 34.1
53	014 13.3	014 15.6	013 34.4
54	014 13.5	014 15.8	013 34.6
55	014 13.8	014 16.1	013 34.9
56	014 14.0	014 16.3	013 35.1
57	014 14.3	014 16.6	013 35.3
58	014 14.5	014 16.8	013 35.6
59	014 14.8	014 17.1	013 35.8

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	4.8	10.2	9.5	15.3	14.3	20.4	19.0	25.5	23.8
0.1	0.1	5.2	4.9	10.3	9.6	15.4	14.4	20.5	19.1	25.6	23.9
0.2	0.2	5.3	4.9	10.4	9.7	15.5	14.5	20.6	19.2	25.7	24.0
0.3	0.3	5.4	5.0	10.5	9.8	15.6	14.6	20.7	19.3	25.8	24.1
0.4	0.4	5.5	5.1	10.6	9.9	15.7	14.7	20.8	19.4	25.9	24.2
0.5	0.5	5.6	5.2	10.7	10.0	15.8	14.7	20.9	19.5	26.0	24.3
0.6	0.6	5.7	5.3	10.8	10.1	15.9	14.8	21.0	19.6	26.1	24.4
0.7	0.7	5.8	5.4	10.9	10.2	16.0	14.9	21.1	19.7	26.2	24.5
0.8	0.7	5.9	5.5	11.0	10.3	16.1	15.0	21.2	19.8	26.3	24.5
0.9	0.8	6.0	5.6	11.1	10.4	16.2	15.1	21.3	19.9	26.4	24.6
1.0	0.9	6.1	5.7	11.2	10.5	16.3	15.2	21.4	20.0	26.5	24.7
1.1	1.0	6.2	5.8	11.3	10.5	16.4	15.3	21.5	20.1	26.6	24.8
1.2	1.1	6.3	5.9	11.4	10.6	16.5	15.4	21.6	20.2	26.7	24.9
1.3	1.2	6.4	6.0	11.5	10.7	16.6	15.5	21.7	20.3	26.8	25.0
1.4	1.3	6.5	6.1	11.6	10.8	16.7	15.6	21.8	20.3	26.9	25.1
1.5	1.4	6.6	6.2	11.7	10.9	16.8	15.7	21.9	20.4	27.0	25.2
1.6	1.5	6.7	6.3	11.8	11.0	16.9	15.8	22.0	20.5	27.1	25.3
1.7	1.6	6.8	6.3	11.9	11.1	17.0	15.9	22.1	20.6	27.2	25.4
1.8	1.7	6.9	6.4	12.0	11.2	17.1	16.0	22.2	20.7	27.3	25.5
1.9	1.8	7.0	6.5	12.1	11.3	17.2	16.1	22.3	20.8	27.4	25.6
2.0	1.9	7.1	6.6	12.2	11.4	17.3	16.1	22.4	20.9	27.5	25.7
2.1	2.0	7.2	6.7	12.3	11.5	17.4	16.2	22.5	21.0	27.6	25.8
2.2	2.1	7.3	6.8	12.4	11.6	17.5	16.3	22.6	21.1	27.7	25.9
2.3	2.1	7.4	6.9	12.5	11.7	17.6	16.4	22.7	21.2	27.8	25.9
2.4	2.2	7.5	7.0	12.6	11.8	17.7	16.5	22.8	21.3	27.9	26.0
2.5	2.3	7.6	7.1	12.7	11.9	17.8	16.6	22.9	21.4	28.0	26.1
2.6	2.4	7.7	7.2	12.8	11.9	17.9	16.7	23.0	21.5	28.1	26.2
2.7	2.5	7.8	7.3	12.9	12.0	18.0	16.8	23.1	21.6	28.2	26.3
2.8	2.6	7.9	7.4	13.0	12.1	18.1	16.9	23.2	21.7	28.3	26.4
2.9	2.7	8.0	7.5	13.1	12.2	18.2	17.0	23.3	21.7	28.4	26.5
3.0	2.8	8.1	7.6	13.2	12.3	18.3	17.1	23.4	21.8	28.5	26.6
3.1	2.9	8.2	7.7	13.3	12.4	18.4	17.2	23.5	21.9	28.6	26.7
3.2	3.0	8.3	7.7	13.4	12.5	18.5	17.3	23.6	22.0	28.7	26.8
3.3	3.1	8.4	7.8	13.5	12.6	18.6	17.4	23.7	22.1	28.8	26.9
3.4	3.2	8.5	7.9	13.6	12.7	18.7	17.5	23.8	22.2	28.9	27.0
3.5	3.3	8.6	8.0	13.7	12.8	18.8	17.5	23.9	22.3	29.0	27.1
3.6	3.4	8.7	8.1	13.8	12.9	18.9	17.6	24.0	22.4	29.1	27.2
3.7	3.5	8.8	8.2	13.9	13.0	19.0	17.7	24.1	22.5	29.2	27.3
3.8	3.5	8.9	8.3	14.0	13.1	19.1	17.8	24.2	22.6	29.3	27.3
3.9	3.6	9.0	8.4	14.1	13.2	19.2	17.9	24.3	22.7	29.4	27.4
4.0	3.7	9.1	8.5	14.2	13.3	19.3	18.0	24.4	22.8	29.5	27.5
4.1	3.8	9.2	8.6	14.3	13.3	19.4	18.1	24.5	22.9	29.6	27.6
4.2	3.9	9.3	8.7	14.4	13.4	19.5	18.2	24.6	23.0	29.7	27.7
4.3	4.0	9.4	8.8	14.5	13.5	19.6	18.3	24.7	23.1	29.8	27.8
4.4	4.1	9.5	8.9	14.6	13.6	19.7	18.4	24.8	23.1	29.9	27.9
4.5	4.2	9.6	9.0	14.7	13.7	19.8	18.5	24.9	23.2	30.0	28.0
4.6	4.3	9.7	9.1	14.8	13.8	19.9	18.6	25.0	23.3	30.1	28.1
4.7	4.4	9.8	9.1	14.9	13.9	20.0	18.7	25.1	23.4	30.2	28.2
4.8	4.5	9.9	9.2	15.0	14.0	20.1	18.8	25.2	23.5	30.3	28.3
4.9	4.6	10.0	9.3	15.1	14.1	20.2	18.9	25.3	23.6	30.4	28.4
5.0	4.7	10.1	9.4	15.2	14.2	20.3	18.9	25.4	23.7	30.5	28.5

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 57

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	014 15.0	014 17.3	013 36.1
01	014 15.3	014 17.6	013 36.3
02	014 15.5	014 17.8	013 36.5
03	014 15.8	014 18.1	013 36.8
04	014 16.0	014 18.3	013 37.0
05	014 16.3	014 18.6	013 37.2
06	014 16.5	014 18.8	013 37.5
07	014 16.8	014 19.1	013 37.7
08	014 17.0	014 19.3	013 38.0
09	014 17.3	014 19.6	013 38.2
10	014 17.5	014 19.8	013 38.4
11	014 17.8	014 20.1	013 38.7
12	014 18.0	014 20.3	013 38.9
13	014 18.3	014 20.6	013 39.2
14	014 18.5	014 20.9	013 39.4
15	014 18.8	014 21.1	013 39.6
16	014 19.0	014 21.4	013 39.9
17	014 19.3	014 21.6	013 40.1
18	014 19.5	014 21.9	013 40.3
19	014 19.8	014 22.1	013 40.6
20	014 20.0	014 22.4	013 40.8
21	014 20.3	014 22.6	013 41.1
22	014 20.5	014 22.9	013 41.3
23	014 20.8	014 23.1	013 41.5
24	014 21.0	014 23.4	013 41.8
25	014 21.3	014 23.6	013 42.0
26	014 21.5	014 23.9	013 42.3
27	014 21.8	014 24.1	013 42.5
28	014 22.0	014 24.4	013 42.7
29	014 22.3	014 24.6	013 43.0
30	014 22.5	014 24.9	013 43.2
31	014 22.8	014 25.1	013 43.4
32	014 23.0	014 25.4	013 43.7
33	014 23.3	014 25.6	013 43.9
34	014 23.5	014 25.9	013 44.2
35	014 23.8	014 26.1	013 44.4
36	014 24.0	014 26.4	013 44.6
37	014 24.3	014 26.6	013 44.9
38	014 24.5	014 26.9	013 45.1
39	014 24.8	014 27.1	013 45.4
40	014 25.0	014 27.4	013 45.6
41	014 25.3	014 27.6	013 45.8
42	014 25.5	014 27.9	013 46.1
43	014 25.8	014 28.1	013 46.3
44	014 26.0	014 28.4	013 46.5
45	014 26.3	014 28.6	013 46.8
46	014 26.5	014 28.9	013 47.0
47	014 26.8	014 29.1	013 47.3
48	014 27.0	014 29.4	013 47.5
49	014 27.3	014 29.6	013 47.7
50	014 27.5	014 29.9	013 48.0
51	014 27.8	014 30.1	013 48.2
52	014 28.0	014 30.4	013 48.5
53	014 28.3	014 30.6	013 48.7
54	014 28.5	014 30.9	013 48.9
55	014 28.8	014 31.1	013 49.2
56	014 29.0	014 31.4	013 49.4
57	014 29.3	014 31.6	013 49.7
58	014 29.5	014 31.9	013 49.9
59	014 29.8	014 32.1	013 50.1

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	4.8	10.2	9.7	15.3	14.5	20.4	19.4	25.5	24.2
0.1	0.1	5.2	4.9	10.3	9.8	15.4	14.6	20.5	19.5	25.6	24.3
0.2	0.2	5.3	5.0	10.4	9.9	15.5	14.7	20.6	19.6	25.7	24.4
0.3	0.3	5.4	5.1	10.5	10.0	15.6	14.8	20.7	19.7	25.8	24.5
0.4	0.4	5.5	5.2	10.6	10.1	15.7	14.9	20.8	19.8	25.9	24.6
0.5	0.5	5.6	5.3	10.7	10.2	15.8	15.0	20.9	19.9	26.0	24.7
0.6	0.6	5.7	5.4	10.8	10.3	15.9	15.1	21.0	20.0	26.1	24.8
0.7	0.7	5.8	5.5	10.9	10.4	16.0	15.2	21.1	20.0	26.2	24.9
0.8	0.8	5.9	5.6	11.0	10.5	16.1	15.3	21.2	20.1	26.3	25.0
0.9	0.9	6.0	5.7	11.1	10.5	16.2	15.4	21.3	20.2	26.4	25.1
1.0	1.0	6.1	5.8	11.2	10.6	16.3	15.5	21.4	20.3	26.5	25.2
1.1	1.0	6.2	5.9	11.3	10.7	16.4	15.6	21.5	20.4	26.6	25.3
1.2	1.1	6.3	6.0	11.4	10.8	16.5	15.7	21.6	20.5	26.7	25.4
1.3	1.2	6.4	6.1	11.5	10.9	16.6	15.8	21.7	20.6	26.8	25.5
1.4	1.3	6.5	6.2	11.6	11.0	16.7	15.9	21.8	20.7	26.9	25.6
1.5	1.4	6.6	6.3	11.7	11.1	16.8	16.0	21.9	20.8	27.0	25.7
1.6	1.5	6.7	6.4	11.8	11.2	16.9	16.1	22.0	20.9	27.1	25.7
1.7	1.6	6.8	6.5	11.9	11.3	17.0	16.2	22.1	21.0	27.2	25.8
1.8	1.7	6.9	6.6	12.0	11.4	17.1	16.2	22.2	21.1	27.3	25.9
1.9	1.8	7.0	6.7	12.1	11.5	17.2	16.3	22.3	21.2	27.4	26.0
2.0	1.9	7.1	6.7	12.2	11.6	17.3	16.4	22.4	21.3	27.5	26.1
2.1	2.0	7.2	6.8	12.3	11.7	17.4	16.5	22.5	21.4	27.6	26.2
2.2	2.1	7.3	6.9	12.4	11.8	17.5	16.6	22.6	21.5	27.7	26.3
2.3	2.2	7.4	7.0	12.5	11.9	17.6	16.7	22.7	21.6	27.8	26.4
2.4	2.3	7.5	7.1	12.6	12.0	17.7	16.8	22.8	21.7	27.9	26.5
2.5	2.4	7.6	7.2	12.7	12.1	17.8	16.9	22.9	21.8	28.0	26.6
2.6	2.5	7.7	7.3	12.8	12.2	17.9	17.0	23.0	21.9	28.1	26.7
2.7	2.6	7.8	7.4	12.9	12.3	18.0	17.1	23.1	21.9	28.2	26.8
2.8	2.7	7.9	7.5	13.0	12.4	18.1	17.2	23.2	22.0	28.3	26.9
2.9	2.8	8.0	7.6	13.1	12.4	18.2	17.3	23.3	22.1	28.4	27.0
3.0	2.9	8.1	7.7	13.2	12.5	18.3	17.4	23.4	22.2	28.5	27.1
3.1	2.9	8.2	7.8	13.3	12.6	18.4	17.5	23.5	22.3	28.6	27.2
3.2	3.0	8.3	7.9	13.4	12.7	18.5	17.6	23.6	22.4	28.7	27.3
3.3	3.1	8.4	8.0	13.5	12.8	18.6	17.7	23.7	22.5	28.8	27.4
3.4	3.2	8.5	8.1	13.6	12.9	18.7	17.8	23.8	22.6	28.9	27.5
3.5	3.3	8.6	8.2	13.7	13.0	18.8	17.9	23.9	22.7	29.0	27.6
3.6	3.4	8.7	8.3	13.8	13.1	18.9	18.0	24.0	22.8	29.1	27.6
3.7	3.5	8.8	8.4	13.9	13.2	19.0	18.1	24.1	22.9	29.2	27.7
3.8	3.6	8.9	8.5	14.0	13.3	19.1	18.1	24.2	23.0	29.3	27.8
3.9	3.7	9.0	8.6	14.1	13.4	19.2	18.2	24.3	23.1	29.4	27.9
4.0	3.8	9.1	8.6	14.2	13.5	19.3	18.3	24.4	23.2	29.5	28.0
4.1	3.9	9.2	8.7	14.3	13.6	19.4	18.4	24.5	23.3	29.6	28.1
4.2	4.0	9.3	8.8	14.4	13.7	19.5	18.5	24.6	23.4	29.7	28.2
4.3	4.1	9.4	8.9	14.5	13.8	19.6	18.6	24.7	23.5	29.8	28.3
4.4	4.2	9.5	9.0	14.6	13.9	19.7	18.7	24.8	23.6	29.9	28.4
4.5	4.3	9.6	9.1	14.7	14.0	19.8	18.8	24.9	23.7	30.0	28.5
4.6	4.4	9.7	9.2	14.8	14.1	19.9	18.9	25.0	23.8	30.1	28.6
4.7	4.5	9.8	9.3	14.9	14.2	20.0	19.0	25.1	23.8	30.2	28.7
4.8	4.6	9.9	9.4	15.0	14.3	20.1	19.1	25.2	23.9	30.3	28.8
4.9	4.7	10.0	9.5	15.1	14.3	20.2	19.2	25.3	24.0	30.4	28.9
5.0	4.8	10.1	9.6	15.2	14.4	20.3	19.3	25.4	24.1	30.5	29.0

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 58

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	014 30.0	014 32.4	013 50.4
01	014 30.3	014 32.6	013 50.6
02	014 30.5	014 32.9	013 50.8
03	014 30.8	014 33.1	013 51.1
04	014 31.0	014 33.4	013 51.3
05	014 31.3	014 33.6	013 51.6
06	014 31.5	014 33.9	013 51.8
07	014 31.8	014 34.1	013 52.0
08	014 32.0	014 34.4	013 52.3
09	014 32.3	014 34.6	013 52.5
10	014 32.5	014 34.9	013 52.8
11	014 32.8	014 35.1	013 53.0
12	014 33.0	014 35.4	013 53.2
13	014 33.3	014 35.6	013 53.5
14	014 33.5	014 35.9	013 53.7
15	014 33.8	014 36.1	013 53.9
16	014 34.0	014 36.4	013 54.2
17	014 34.3	014 36.6	013 54.4
18	014 34.5	014 36.9	013 54.7
19	014 34.8	014 37.1	013 54.9
20	014 35.0	014 37.4	013 55.1
21	014 35.3	014 37.6	013 55.4
22	014 35.5	014 37.9	013 55.6
23	014 35.8	014 38.1	013 55.9
24	014 36.0	014 38.4	013 56.1
25	014 36.3	014 38.6	013 56.3
26	014 36.5	014 38.9	013 56.6
27	014 36.8	014 39.2	013 56.8
28	014 37.0	014 39.4	013 57.0
29	014 37.3	014 39.7	013 57.3
30	014 37.5	014 39.9	013 57.5
31	014 37.8	014 40.2	013 57.8
32	014 38.0	014 40.4	013 58.0
33	014 38.3	014 40.7	013 58.2
34	014 38.5	014 40.9	013 58.5
35	014 38.8	014 41.2	013 58.7
36	014 39.0	014 41.4	013 59.0
37	014 39.3	014 41.7	013 59.2
38	014 39.5	014 41.9	013 59.4
39	014 39.8	014 42.2	013 59.7
40	014 40.0	014 42.4	013 59.9
41	014 40.3	014 42.7	014 00.1
42	014 40.5	014 42.9	014 00.4
43	014 40.8	014 43.2	014 00.6
44	014 41.0	014 43.4	014 00.9
45	014 41.3	014 43.7	014 01.1
46	014 41.5	014 43.9	014 01.3
47	014 41.8	014 44.2	014 01.6
48	014 42.0	014 44.4	014 01.8
49	014 42.3	014 44.7	014 02.1
50	014 42.5	014 44.9	014 02.3
51	014 42.8	014 45.2	014 02.5
52	014 43.0	014 45.4	014 02.8
53	014 43.3	014 45.7	014 03.0
54	014 43.5	014 45.9	014 03.3
55	014 43.8	014 46.2	014 03.5
56	014 44.0	014 46.4	014 03.7
57	014 44.3	014 46.7	014 04.0
58	014 44.5	014 46.9	014 04.2
59	014 44.8	014 47.2	014 04.4

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	4.9	10.2	9.9	15.3	14.8	20.4	19.7	25.5	24.7
0.1	0.1	5.2	5.0	10.3	10.0	15.4	14.9	20.5	19.8	25.6	24.7
0.2	0.2	5.3	5.1	10.4	10.1	15.5	15.0	20.6	19.9	25.7	24.8
0.3	0.3	5.4	5.2	10.5	10.2	15.6	15.1	20.7	20.0	25.8	24.9
0.4	0.4	5.5	5.3	10.6	10.2	15.7	15.2	20.8	20.1	25.9	25.0
0.5	0.5	5.6	5.4	10.7	10.3	15.8	15.3	20.9	20.2	26.0	25.1
0.6	0.6	5.7	5.5	10.8	10.4	15.9	15.4	21.0	20.3	26.1	25.2
0.7	0.7	5.8	5.6	10.9	10.5	16.0	15.5	21.1	20.4	26.2	25.3
0.8	0.8	5.9	5.7	11.0	10.6	16.1	15.6	21.2	20.5	26.3	25.4
0.9	0.9	6.0	5.8	11.1	10.7	16.2	15.7	21.3	20.6	26.4	25.5
1.0	1.0	6.1	5.9	11.2	10.8	16.3	15.8	21.4	20.7	26.5	25.6
1.1	1.1	6.2	6.0	11.3	10.9	16.4	15.9	21.5	20.8	26.6	25.7
1.2	1.2	6.3	6.1	11.4	11.0	16.5	16.0	21.6	20.9	26.7	25.8
1.3	1.3	6.4	6.2	11.5	11.1	16.6	16.0	21.7	21.0	26.8	25.9
1.4	1.4	6.5	6.3	11.6	11.2	16.7	16.1	21.8	21.1	26.9	26.0
1.5	1.5	6.6	6.4	11.7	11.3	16.8	16.2	21.9	21.2	27.0	26.1
1.6	1.5	6.7	6.5	11.8	11.4	16.9	16.3	22.0	21.3	27.1	26.2
1.7	1.6	6.8	6.6	11.9	11.5	17.0	16.4	22.1	21.4	27.2	26.3
1.8	1.7	6.9	6.7	12.0	11.6	17.1	16.5	22.2	21.5	27.3	26.4
1.9	1.8	7.0	6.8	12.1	11.7	17.2	16.6	22.3	21.6	27.4	26.5
2.0	1.9	7.1	6.9	12.2	11.8	17.3	16.7	22.4	21.7	27.5	26.6
2.1	2.0	7.2	7.0	12.3	11.9	17.4	16.8	22.5	21.8	27.6	26.7
2.2	2.1	7.3	7.1	12.4	12.0	17.5	16.9	22.6	21.8	27.7	26.8
2.3	2.2	7.4	7.2	12.5	12.1	17.6	17.0	22.7	21.9	27.8	26.9
2.4	2.3	7.5	7.3	12.6	12.2	17.7	17.1	22.8	22.0	27.9	27.0
2.5	2.4	7.6	7.3	12.7	12.3	17.8	17.2	22.9	22.1	28.0	27.1
2.6	2.5	7.7	7.4	12.8	12.4	17.9	17.3	23.0	22.2	28.1	27.2
2.7	2.6	7.8	7.5	12.9	12.5	18.0	17.4	23.1	22.3	28.2	27.3
2.8	2.7	7.9	7.6	13.0	12.6	18.1	17.5	23.2	22.4	28.3	27.4
2.9	2.8	8.0	7.7	13.1	12.7	18.2	17.6	23.3	22.5	28.4	27.5
3.0	2.9	8.1	7.8	13.2	12.8	18.3	17.7	23.4	22.6	28.5	27.6
3.1	3.0	8.2	7.9	13.3	12.9	18.4	17.8	23.5	22.7	28.6	27.6
3.2	3.1	8.3	8.0	13.4	13.0	18.5	17.9	23.6	22.8	28.7	27.7
3.3	3.2	8.4	8.1	13.5	13.1	18.6	18.0	23.7	22.9	28.8	27.8
3.4	3.3	8.5	8.2	13.6	13.1	18.7	18.1	23.8	23.0	28.9	27.9
3.5	3.4	8.6	8.3	13.7	13.2	18.8	18.2	23.9	23.1	29.0	28.0
3.6	3.5	8.7	8.4	13.8	13.3	18.9	18.3	24.0	23.2	29.1	28.1
3.7	3.6	8.8	8.5	13.9	13.4	19.0	18.4	24.1	23.3	29.2	28.2
3.8	3.7	8.9	8.6	14.0	13.5	19.1	18.5	24.2	23.4	29.3	28.3
3.9	3.8	9.0	8.7	14.1	13.6	19.2	18.6	24.3	23.5	29.4	28.4
4.0	3.9	9.1	8.8	14.2	13.7	19.3	18.7	24.4	23.6	29.5	28.5
4.1	4.0	9.2	8.9	14.3	13.8	19.4	18.8	24.5	23.7	29.6	28.6
4.2	4.1	9.3	9.0	14.4	13.9	19.5	18.9	24.6	23.8	29.7	28.7
4.3	4.2	9.4	9.1	14.5	14.0	19.6	18.9	24.7	23.9	29.8	28.8
4.4	4.3	9.5	9.2	14.6	14.1	19.7	19.0	24.8	24.0	29.9	28.9
4.5	4.4	9.6	9.3	14.7	14.2	19.8	19.1	24.9	24.1	30.0	29.0
4.6	4.4	9.7	9.4	14.8	14.3	19.9	19.2	25.0	24.2	30.1	29.1
4.7	4.5	9.8	9.5	14.9	14.4	20.0	19.3	25.1	24.3	30.2	29.2
4.8	4.6	9.9	9.6	15.0	14.5	20.1	19.4	25.2	24.4	30.3	29.3
4.9	4.7	10.0	9.7	15.1	14.6	20.2	19.5	25.3	24.5	30.4	29.4
5.0	4.8	10.1	9.8	15.2	14.7	20.3	19.6	25.4	24.6	30.5	29.5

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

INCREMENTS AND CORRECTIONS | Minute 59

GHA INCREMENT (deg min)

sec	Sun/planets	Aries	Moon
00	014 45.0	014 47.4	014 04.7
01	014 45.3	014 47.7	014 04.9
02	014 45.5	014 47.9	014 05.2
03	014 45.8	014 48.2	014 05.4
04	014 46.0	014 48.4	014 05.6
05	014 46.3	014 48.7	014 05.9
06	014 46.5	014 48.9	014 06.1
07	014 46.8	014 49.2	014 06.4
08	014 47.0	014 49.4	014 06.6
09	014 47.3	014 49.7	014 06.8
10	014 47.5	014 49.9	014 07.1
11	014 47.8	014 50.2	014 07.3
12	014 48.0	014 50.4	014 07.5
13	014 48.3	014 50.7	014 07.8
14	014 48.5	014 50.9	014 08.0
15	014 48.8	014 51.2	014 08.3
16	014 49.0	014 51.4	014 08.5
17	014 49.3	014 51.7	014 08.7
18	014 49.5	014 51.9	014 09.0
19	014 49.8	014 52.2	014 09.2
20	014 50.0	014 52.4	014 09.5
21	014 50.3	014 52.7	014 09.7
22	014 50.5	014 52.9	014 09.9
23	014 50.8	014 53.2	014 10.2
24	014 51.0	014 53.4	014 10.4
25	014 51.3	014 53.7	014 10.6
26	014 51.5	014 53.9	014 10.9
27	014 51.8	014 54.2	014 11.1
28	014 52.0	014 54.4	014 11.4
29	014 52.3	014 54.7	014 11.6
30	014 52.5	014 54.9	014 11.8
31	014 52.8	014 55.2	014 12.1
32	014 53.0	014 55.4	014 12.3
33	014 53.3	014 55.7	014 12.6
34	014 53.5	014 55.9	014 12.8
35	014 53.8	014 56.2	014 13.0
36	014 54.0	014 56.4	014 13.3
37	014 54.3	014 56.7	014 13.5
38	014 54.5	014 56.9	014 13.8
39	014 54.8	014 57.2	014 14.0
40	014 55.0	014 57.5	014 14.2
41	014 55.3	014 57.7	014 14.5
42	014 55.5	014 58.0	014 14.7
43	014 55.8	014 58.2	014 14.9
44	014 56.0	014 58.5	014 15.2
45	014 56.3	014 58.7	014 15.4
46	014 56.5	014 59.0	014 15.7
47	014 56.8	014 59.2	014 15.9
48	014 57.0	014 59.5	014 16.1
49	014 57.3	014 59.7	014 16.4
50	014 57.5	015 00.0	014 16.6
51	014 57.8	015 00.2	014 16.9
52	014 58.0	015 00.5	014 17.1
53	014 58.3	015 00.7	014 17.3
54	014 58.5	015 01.0	014 17.6
55	014 58.8	015 01.2	014 17.8
56	014 59.0	015 01.5	014 18.0
57	014 59.3	015 01.7	014 18.3
58	014 59.5	015 02.0	014 18.5
59	014 59.8	015 02.2	014 18.8

v/d RATE '/h | WHOLE-MINUTE CORRECTION '

Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr	Rate	Corr
0.0	0.0	5.1	5.0	10.2	10.0	15.3	15.0	20.4	20.1	25.5	25.1
0.1	0.1	5.2	5.1	10.3	10.1	15.4	15.1	20.5	20.2	25.6	25.2
0.2	0.2	5.3	5.2	10.4	10.2	15.5	15.2	20.6	20.3	25.7	25.3
0.3	0.3	5.4	5.3	10.5	10.3	15.6	15.3	20.7	20.4	25.8	25.4
0.4	0.4	5.5	5.4	10.6	10.4	15.7	15.4	20.8	20.5	25.9	25.5
0.5	0.5	5.6	5.5	10.7	10.5	15.8	15.5	20.9	20.6	26.0	25.6
0.6	0.6	5.7	5.6	10.8	10.6	15.9	15.6	21.0	20.7	26.1	25.7
0.7	0.7	5.8	5.7	10.9	10.7	16.0	15.7	21.1	20.7	26.2	25.8
0.8	0.8	5.9	5.8	11.0	10.8	16.1	15.8	21.2	20.8	26.3	25.9
0.9	0.9	6.0	5.9	11.1	10.9	16.2	15.9	21.3	20.9	26.4	26.0
1.0	1.0	6.1	6.0	11.2	11.0	16.3	16.0	21.4	21.0	26.5	26.1
1.1	1.1	6.2	6.1	11.3	11.1	16.4	16.1	21.5	21.1	26.6	26.2
1.2	1.2	6.3	6.2	11.4	11.2	16.5	16.2	21.6	21.2	26.7	26.3
1.3	1.3	6.4	6.3	11.5	11.3	16.6	16.3	21.7	21.3	26.8	26.4
1.4	1.4	6.5	6.4	11.6	11.4	16.7	16.4	21.8	21.4	26.9	26.5
1.5	1.5	6.6	6.5	11.7	11.5	16.8	16.5	21.9	21.5	27.0	26.6
1.6	1.6	6.7	6.6	11.8	11.6	16.9	16.6	22.0	21.6	27.1	26.6
1.7	1.7	6.8	6.7	11.9	11.7	17.0	16.7	22.1	21.7	27.2	26.7
1.8	1.8	6.9	6.8	12.0	11.8	17.1	16.8	22.2	21.8	27.3	26.8
1.9	1.9	7.0	6.9	12.1	11.9	17.2	16.9	22.3	21.9	27.4	26.9
2.0	2.0	7.1	7.0	12.2	12.0	17.3	17.0	22.4	22.0	27.5	27.0
2.1	2.1	7.2	7.1	12.3	12.1	17.4	17.1	22.5	22.1	27.6	27.1
2.2	2.2	7.3	7.2	12.4	12.2	17.5	17.2	22.6	22.2	27.7	27.2
2.3	2.3	7.4	7.3	12.5	12.3	17.6	17.3	22.7	22.3	27.8	27.3
2.4	2.4	7.5	7.4	12.6	12.4	17.7	17.4	22.8	22.4	27.9	27.4
2.5	2.5	7.6	7.5	12.7	12.5	17.8	17.5	22.9	22.5	28.0	27.5
2.6	2.6	7.7	7.6	12.8	12.6	17.9	17.6	23.0	22.6	28.1	27.6
2.7	2.7	7.8	7.7	12.9	12.7	18.0	17.7	23.1	22.7	28.2	27.7
2.8	2.8	7.9	7.8	13.0	12.8	18.1	17.8	23.2	22.8	28.3	27.8
2.9	2.9	8.0	7.9	13.1	12.9	18.2	17.9	23.3	22.9	28.4	27.9
3.0	3.0	8.1	8.0	13.2	13.0	18.3	18.0	23.4	23.0	28.5	28.0
3.1	3.0	8.2	8.1	13.3	13.1	18.4	18.1	23.5	23.1	28.6	28.1
3.2	3.1	8.3	8.2	13.4	13.2	18.5	18.2	23.6	23.2	28.7	28.2
3.3	3.2	8.4	8.3	13.5	13.3	18.6	18.3	23.7	23.3	28.8	28.3
3.4	3.3	8.5	8.4	13.6	13.4	18.7	18.4	23.8	23.4	28.9	28.4
3.5	3.4	8.6	8.5	13.7	13.5	18.8	18.5	23.9	23.5	29.0	28.5
3.6	3.5	8.7	8.6	13.8	13.6	18.9	18.6	24.0	23.6	29.1	28.6
3.7	3.6	8.8	8.7	13.9	13.7	19.0	18.7	24.1	23.7	29.2	28.7
3.8	3.7	8.9	8.8	14.0	13.8	19.1	18.8	24.2	23.8	29.3	28.8
3.9	3.8	9.0	8.9	14.1	13.9	19.2	18.9	24.3	23.9	29.4	28.9
4.0	3.9	9.1	8.9	14.2	14.0	19.3	19.0	24.4	24.0	29.5	29.0
4.1	4.0	9.2	9.0	14.3	14.1	19.4	19.1	24.5	24.1	29.6	29.1
4.2	4.1	9.3	9.1	14.4	14.2	19.5	19.2	24.6	24.2	29.7	29.2
4.3	4.2	9.4	9.2	14.5	14.3	19.6	19.3	24.7	24.3	29.8	29.3
4.4	4.3	9.5	9.3	14.6	14.4	19.7	19.4	24.8	24.4	29.9	29.4
4.5	4.4	9.6	9.4	14.7	14.5	19.8	19.5	24.9	24.5	30.0	29.5
4.6	4.5	9.7	9.5	14.8	14.6	19.9	19.6	25.0	24.6	30.1	29.6
4.7	4.6	9.8	9.6	14.9	14.7	20.0	19.7	25.1	24.7	30.2	29.7
4.8	4.7	9.9	9.7	15.0	14.8	20.1	19.8	25.2	24.8	30.3	29.8
4.9	4.8	10.0	9.8	15.1	14.8	20.2	19.9	25.3	24.9	30.4	29.9
5.0	4.9	10.1	9.9	15.2	14.9	20.3	20.0	25.4	25.0	30.5	30.0

USING THIS MINUTE PAGE

Add the GHA increment at the seconds row to the whole-hour GHA. For v or d, read the rate magnitude above and add the seconds correction at right. Interpolate that small table in rate and seconds. Round the sum to 0.1', then apply the original v/d sign. For declination omit the GHA increment.

Check: 34m56s, v +2.4'/h: 1.4' + 0.0' = +1.4'.

GHA 123 45.6 + 008 44.0 + 1.4' = 132 31.0.

SECONDS CORRECTION (arcminutes)

Add to whole-minute correction; use same rate.

Rate	0s	10s	20s	30s	40s	50s	60s
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
15.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
20.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
25.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4
30.5	0.0	0.1	0.2	0.3	0.3	0.4	0.5

Corrections in 0.1'; rounded components can change the last digit. Reduce final GHA modulo 360.

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