

Blank Page

utical Almanac Nautical Almanac Nautical Alm
nautical Almanac Nautical Alm
al Almanac Nautical Almanac Nauti
nautical Almanac Nautic
al Almanac Nautical Alm
Nautical Almanac Nautical Almanac Nautical
Nautical Almanac
nautical Almanac Nautical Almanac Nautical
nautical Almanac Nautica
al Almanac Nautical Almanac Nautical Almanac
nautical Almanac Nautic
nautical Almanac Nautic
nautical Almanac Nautical
Nautical Almanac Nautical
nautical Almanac Nautical Almanac
cal 25 Naut
ut
la
utical Almanac Nautical Alm
nautical Almanac Nautic
nautical Almanac Nautical Alm
nautical Almanac Nautic
Nautical Almanac Nautical Almanac
nautical Almanac Nautic

Nautical Almanac

2019

Blank Page

The Nautical Almanac 2019

Compiled with *NauticalAlmanac* revision V2.3 using NOVAS version C3.1
The Almanac data have been produced with the JPL Ephemerides DE405

Warning and Terms of Usage:

The following pages have been generated by a computer program. Complex computer programs often have bugs and may produce wrong data. The data in this Nautical Almanac is believed to be accurate but no warranty is given for its correctness.

Use this Nautical Almanac only for training and exercising!

Compiled by Erik De Man (mail2erik@siranah.de) on Mon Oct 29 08:56:34 2018

Introduction

This Nautical Almanac contains the Ephemerides of the Sun, the Moon, Venus, Mars, Jupiter and Saturn. It is designed for determination of Position (geographical Latitude and Longitude) from astronomical observations (Altitude of Celestial Objects).

The data compiled in this Nautical Almanac is based on calculations done with the software package "NOVAS" from the U.S. Naval Observatory (<http://aa.usno.navy.mil/AA/software>). The basic ephemerides are taken from the "DE405" files published by the Jet Propulsion Laboratory (<http://ssd.jpl.nasa.gov>).

Values for "deltaT"

For the astrodynamical calculations, the following values for "delta T" (the difference between terrestrial time realized by atomic clocks and UT defined by the irregular rotation of the Earth) have been used:

Jan : 69.2 s	Apr : 69.3 s	Jul : 69.4 s	Oct : 69.4 s
Feb : 69.3 s	May : 69.3 s	Aug : 69.4 s	Nov : 69.4 s
Mar : 69.3 s	Jun : 69.4 s	Sep : 69.4 s	Dec : 69.5 s

Interpolation of the integral-hour GHA and Dec values

This Nautical Almanac uses a slightly different approach for the interpolation of the integral-hour values of Greenwich Hour Angle and Declination, compared to the techniques used in most commercially available Almanacs.

The almanac pages in this Nautical Almanac are compiled according to the following scheme:

UT	GHA		ddGHA	Dec		dDec
	°	'	' /h	°	'	' /h
...						
13:00	176	41.8	-31.3	S 23	09.6	+01.8
14:00	191	10.5	-31.3	S 23	11.4	+01.8
15:00	205	39.2	-31.3	S 23	13.2	+01.6
16:00	220	07.9	-31.3	S 23	14.8	+01.5
...						

The values for the Greenwich Hour Angle (GHA) and Declination (Dec) are given for the integral hours of Universal Time (UT). In the columns ddGHA and dDec the increment (+) or decrement (-) for the next one hour of time for the GHA and Dec are recorded. For the Greenwich Hour Angle (GHA) this value for increment/decrement is not the complete variation since each hour angle increases with about 15° per hour. The value ddGHA is only the increment/decrement additional to this fixed increment of 15° per hour. It is important to notice that for the interpolation of the GHA values, also this fixed increment of 15° per hour must also be taken into account.

For more information please refer to the following web site: "<http://www.siranah.de/>"

Blank Page

Positions of the Celestial Objects

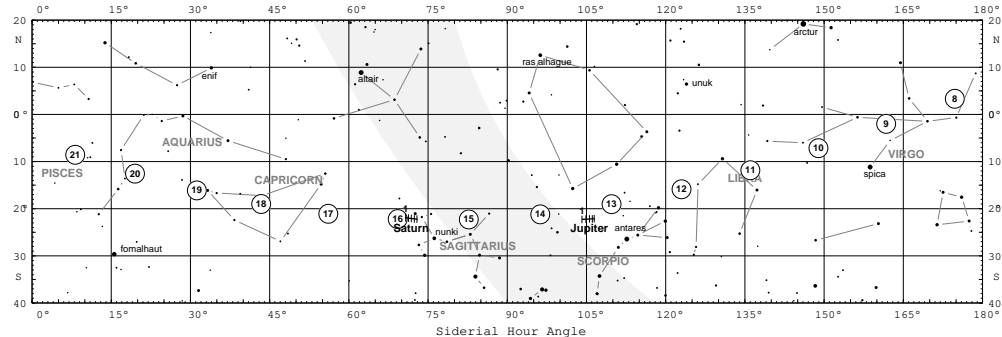
The charts on the following pages show the position of the Celestial Objects used in this Nautical Almanac relative to the stars (celestial background). The charts can be used to find the location of the planets and also for the planning of astronomical observations.

The charts are provided for each month of the year. Each chart has two parts showing a part of the celestial sphere around the ecliptic. Note that the position of the Celestial Equator (Declination = 0°) is not on the same position in the two different parts of each of the charts.

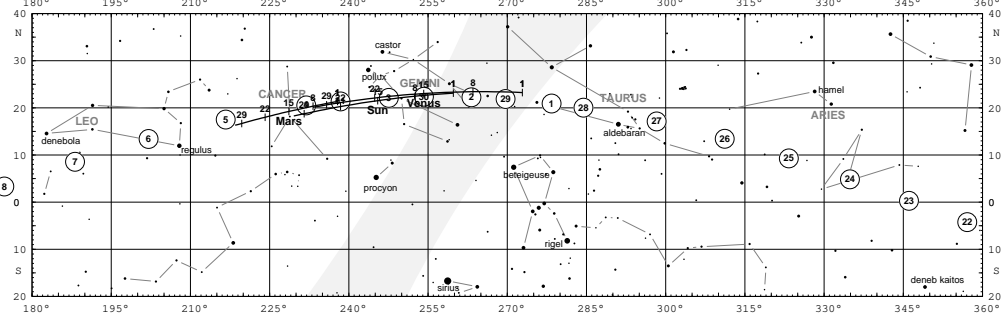
The changing position of a Celestial Object through the month is drawn as a solid line (not for the Moon). Marker tics along this line are shown to indicate the position of the Object on the 1st, 8th, 15th, 22nd and 29th day of the month (at 12:00 UT). For Jupiter and Saturn only the first day is marked since their apparent position does not change significantly over the period of one month. The position of the Moon is shown by a small circle for each individual day of the month. Notice that the circles are much larger than the apparent size of the Moon.

Blank Page

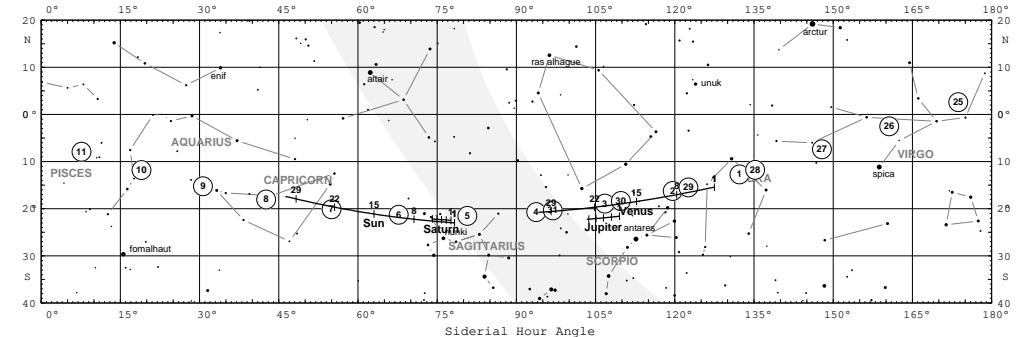
July 2019



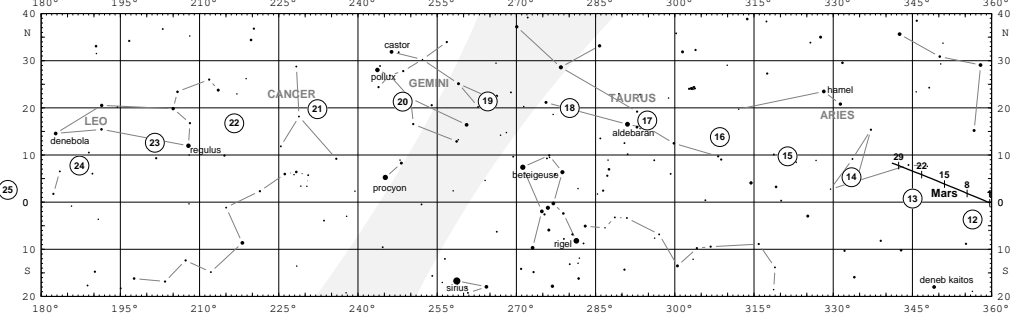
Sidereal Hour Angle



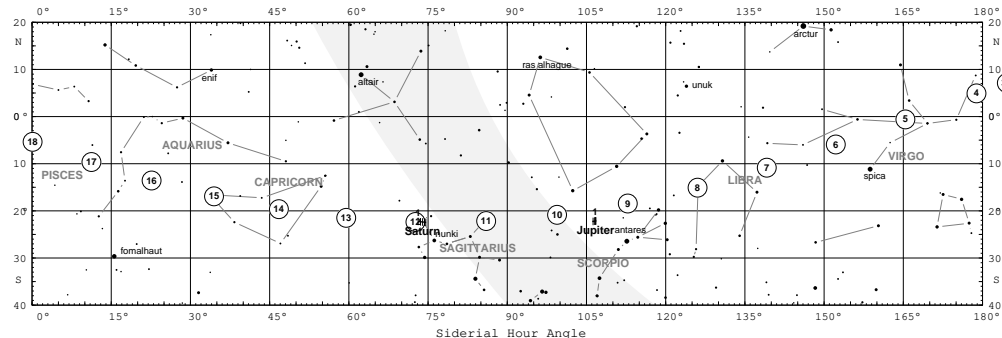
January 2019



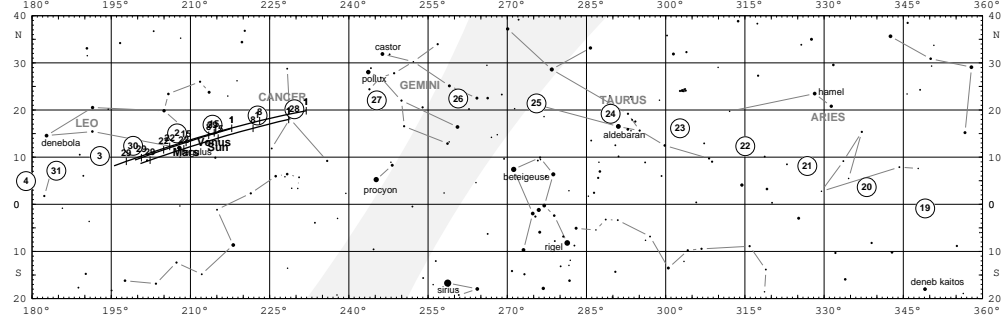
Sidereal Hour Angle



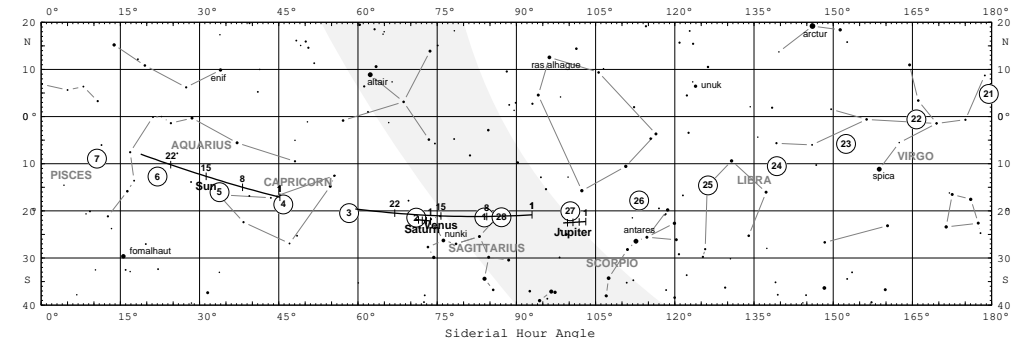
August 2019



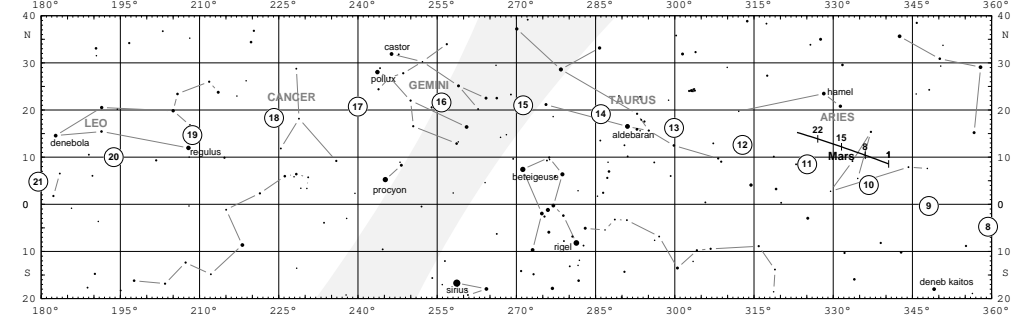
Sidereal Hour Angle



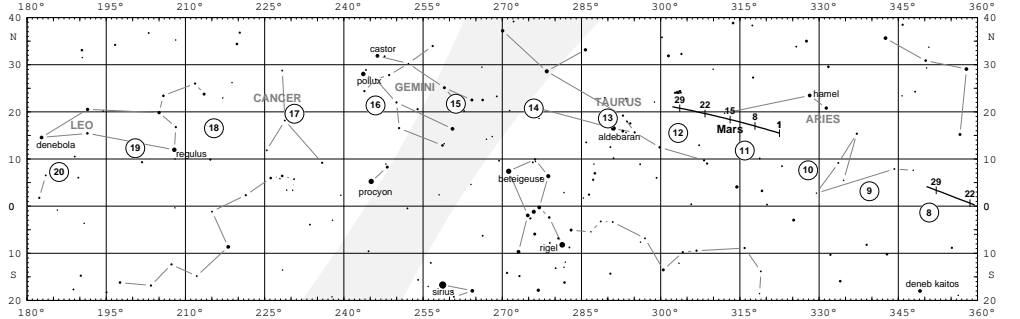
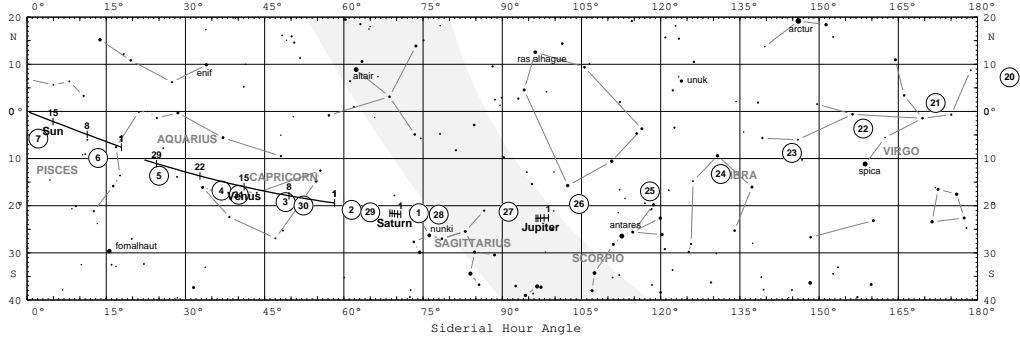
February 2019



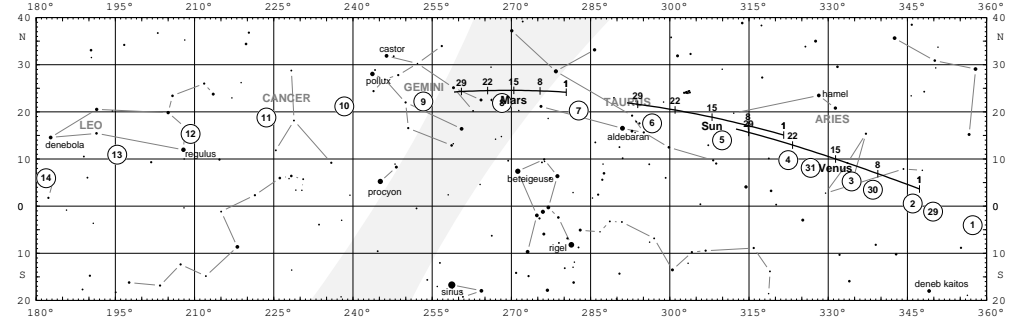
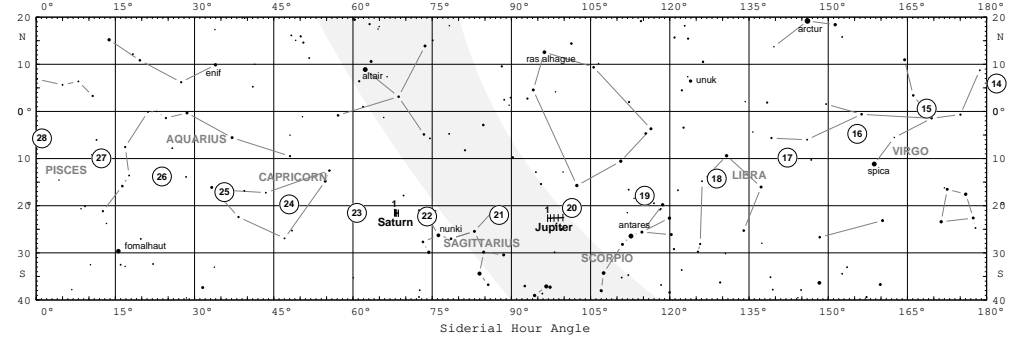
Sidereal Hour Angle



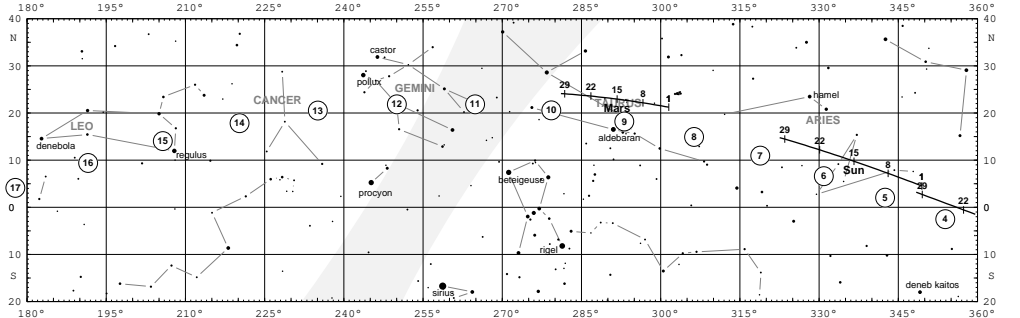
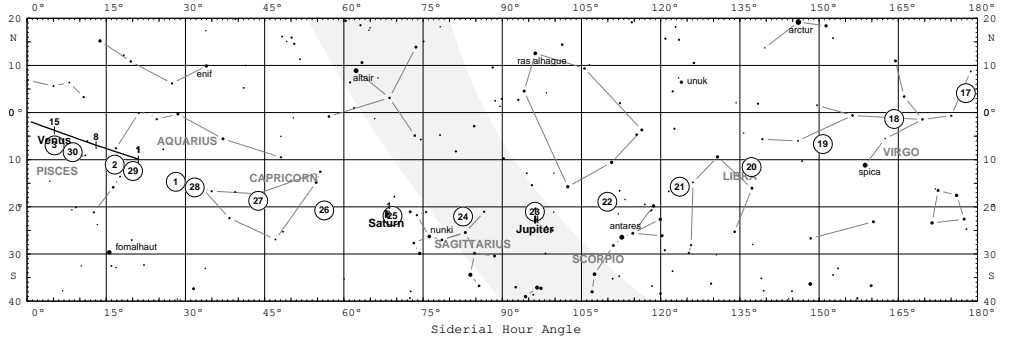
March 2019



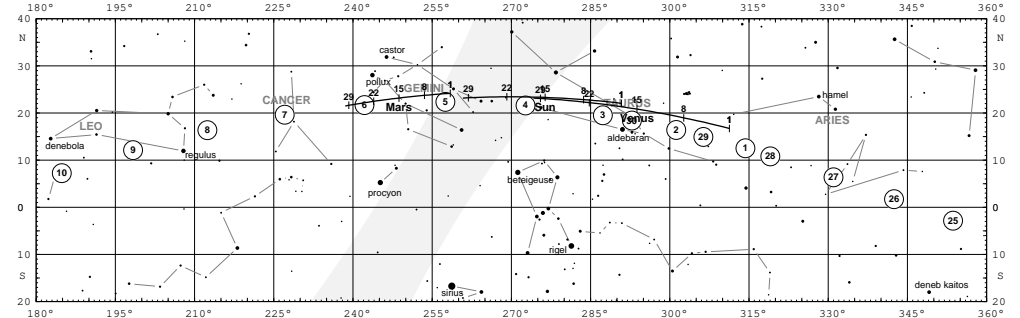
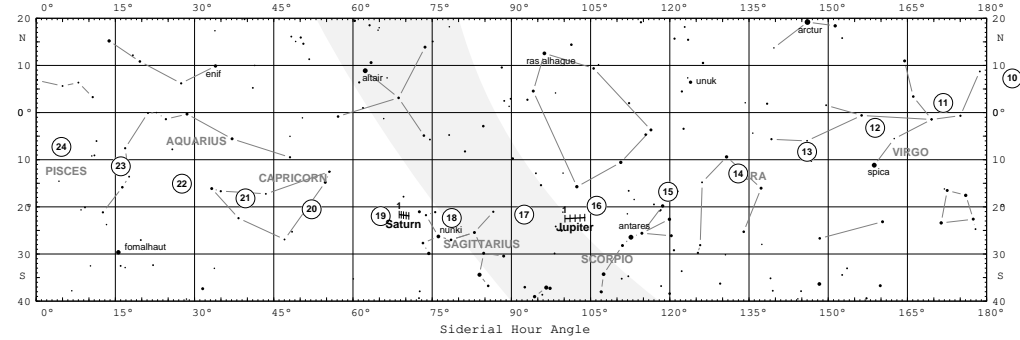
May 2019



April 2019






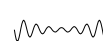




June 2019



Phases of the Moon

The following table lists the phases of the Moon through the year -9201. The table shows the day and the approximate time (in UTC) when the particular lunar phases occur. The calculations are based on the difference between the GHA of the Sun and the GHA of the Moon ($\Delta GHA = GHA_{sun} - GHA_{moon}$). The constellations "new moon", "first quarter", "full Moon" and "last quarter" are obtained when ΔGHA is equal to 0° , 90° , 180° and 270° respectively.

	 New Moon	 First Quarter	 Full Moon	 Last Quarter
January	Sun 6 01:44	Mon 14 10:33	Mon 21 05:08	Mon 28 03:30
February	Tue 4 19:55	Wed 13 05:25	Wed 19 14:05	Wed 26 17:03
March	Thu 6 12:32	Fri 14 12:10	Thu 20 22:21	Thu 28 01:56
April	Fri 5 04:29	Sat 12 13:06	Fri 19 07:49	Fri 26 11:53
May	Sun 4 19:51	Sun 11 15:00	Sun 18 19:25	Sun 26 04:52
June	Mon 3 09:17	Mon 9 22:56	Mon 17 08:23	Tue 25 06:24
July	Wed 2 19:22	Wed 9 12:24	Wed 16 21:25	Thu 25 07:16
August	Thu 1 02:21 Fri 30 08:03	Thu 8 00:31	Thu 15 10:18	Sat 23 21:46
September	Sun 28 14:51	Fri 6 07:38	Sat 14 00:17	Sun 22 03:02
October	Mon 28 00:43	Sun 5 12:58	Mon 13 16:45	Mon 21 05:01
November	Wed 26 14:02	Mon 3 22:46	Tue 12 11:16	Tue 19 10:23
December	Thu 26 05:15	Wed 3 19:59	Thu 12 04:57	Thu 18 23:48
Tidal Phase	spring 	neap 	spring 	neap 

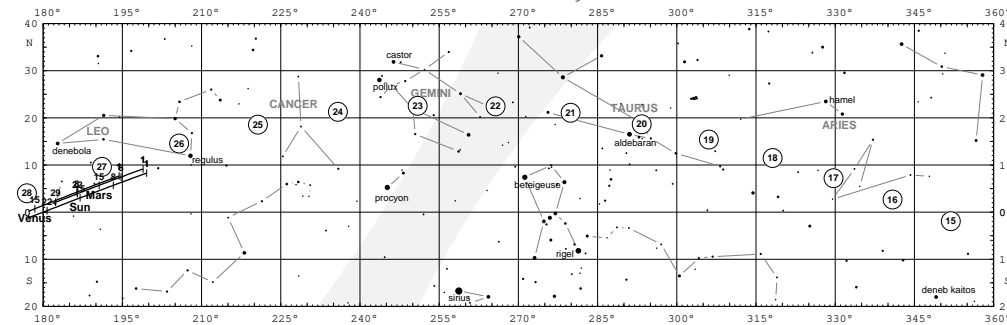
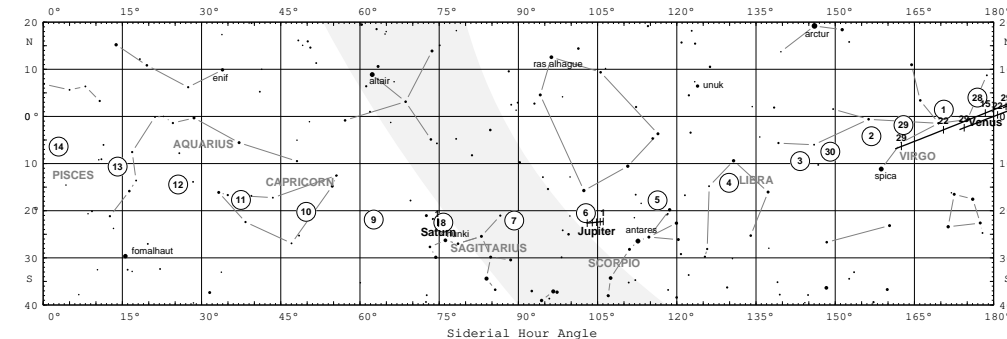
Lunar Phases and Tides

The lunar phases may be used to roughly estimate the occurrence of spring and neap tides. Spring tide occurs around new and full moon. Neap tide occurs around the first and last quarter.

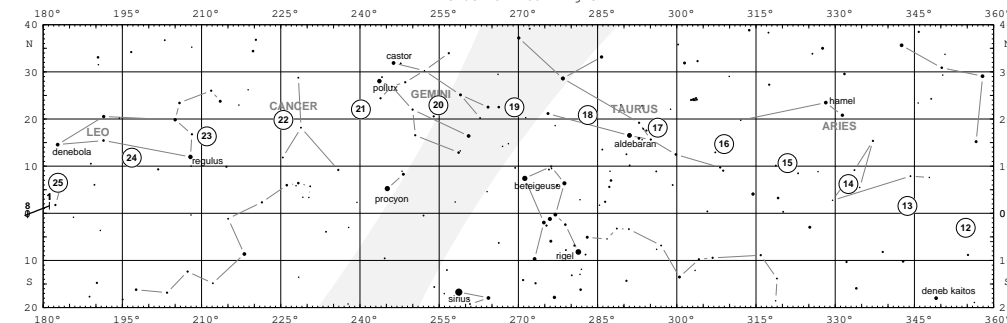
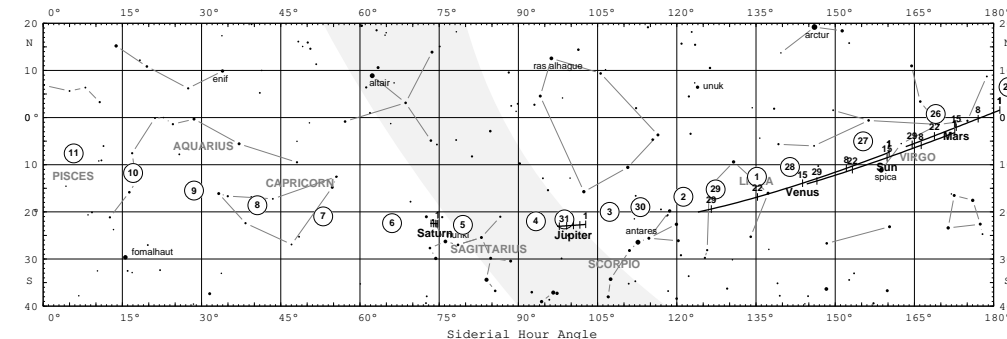
Each tidal region on Earth, has a characteristic "tidal delay" which, specifies the time difference between the occurrence of a particular lunar phase and the occurrence of the resulting tidal phase. The tidal delay can be a couple of hours for the open seas, or up to several days for branched tidal waters such as parts of the North Sea.

Reliable tidal predictions are obtained from a Tidal Almanac.

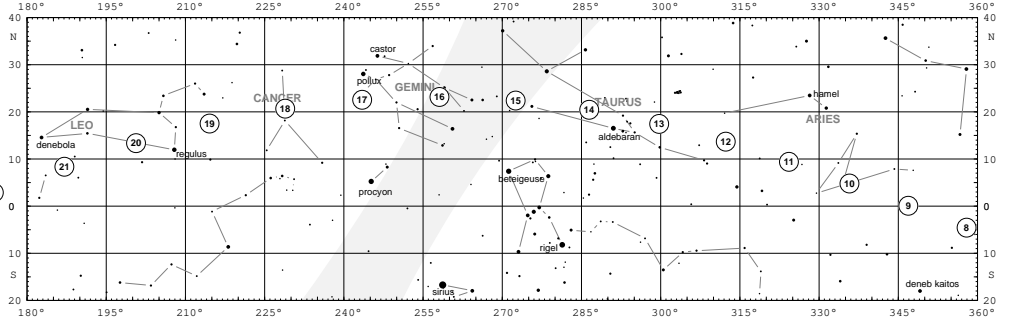
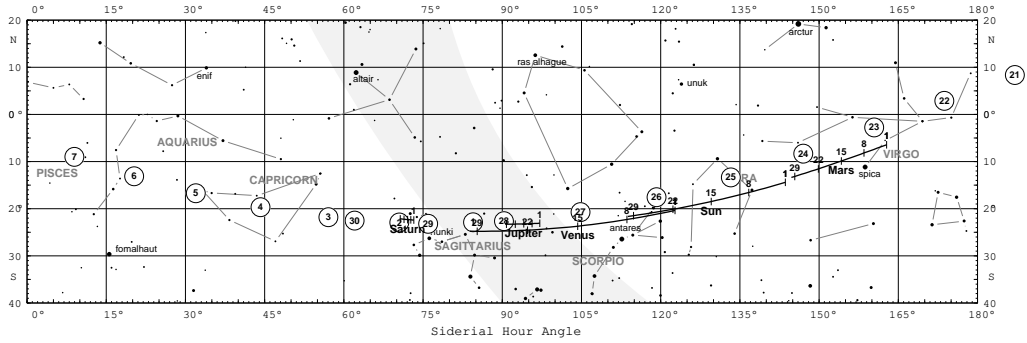
September 2019



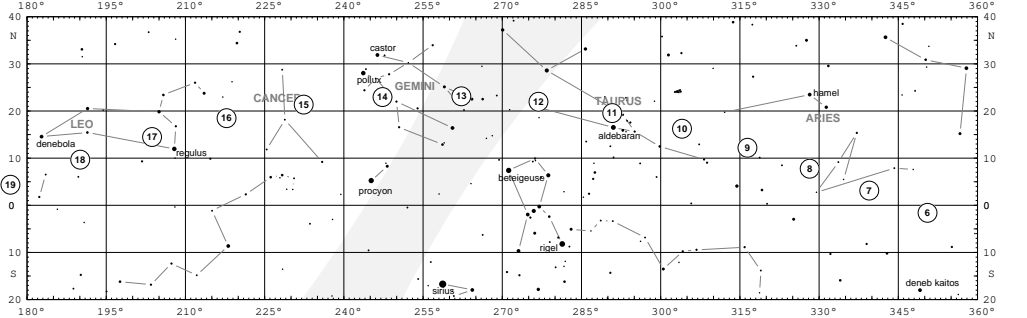
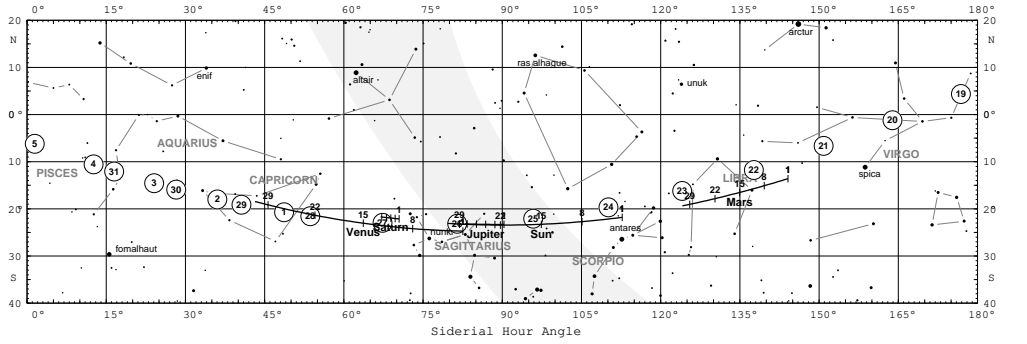
October 2019



November 2019



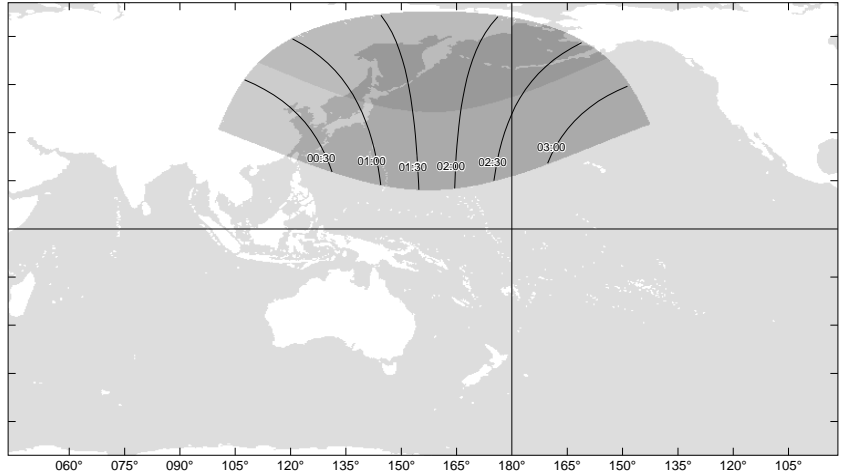
December 2019



Blank Page

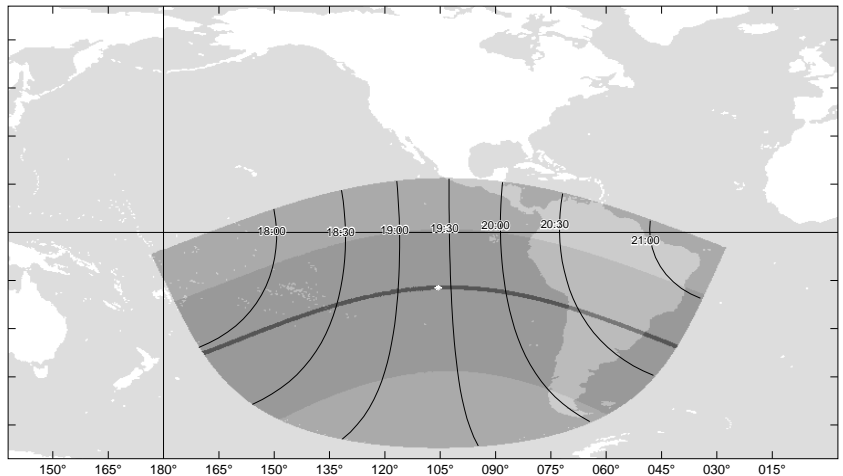
The following solar eclipses may be observed during the year 2019:

January 6 : partial solar eclipse begin [Jan 5, 23:34 UT] / end [Jan 6, 03:49 UT]



Circumstances at Moment of Greatest Eclipse	Fist Contacts (P1/U1)	Last Contacts (U4/P4)
Time: 01:42 UT	Penumbra 23:34 UT	Penumbra 03:49 UT

July 2 : total solar eclipse begin [Jul 2, 16:55 UT] / end [Jul 2, 21:51 UT]



Circumstances at Moment of Greatest Eclipse	Fist Contacts (P1/U1)	Last Contacts (U4/P4)
Time: 19:23 UT Duration (full): 2.6 min	Penumbra Umbra	Umbra Penumbra
Location: S 17.3 W 105.5 Path Width: 201 km	16:55 UT 18:01 UT	20:45 UT 21:51 UT

Lunar Eclipses

An eclipse of the Moon - or lunar eclipse - can only occur at Full Moon, and only if the Moon passes through some portion of the Earth's shadow. The Earth's shadow is composed of two concentric cone-shaped components. The outer or penumbral shadow is a region where the Earth blocks part (but not all) of the Sun's light from reaching the Moon. The inner or umbral shadow is a region where the Earth blocks all direct sunlight from reaching the Moon. Based on this, three types of lunar eclipses are distinguished:

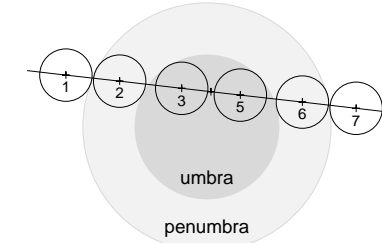
1. Penumbral Lunar Eclipse: the Moon passes through the Earth's penumbral shadow. These kind of eclipses are subtle and very difficult to observe.
2. Partial Lunar Eclipse: a part of the Moon passes through the Earth's umbral shadow.
3. Total Lunar Eclipse: the Moon passes entirely through the Earth's umbral shadow. During this phase of the eclipse the Moon will take a vibrant range of dark red and brown colors.

NOTICE: Eclipse contact times depend on the angular diameters of the Sun and Moon. The calculations in this Almanac are based on a perfect circular form for the limb of the Moon, and do not take into account effects of refraction of the sunlight in the Earth atmosphere. Since this is only an approximation of reality, contact times are accurate only within a couple of minutes.

The following lunar eclipses may be observed during the year 2019:

January 21 : a total lunar eclipse begin [Jan 21, 02:45 UTC] / end [Jan 21, 07:39 UTC]

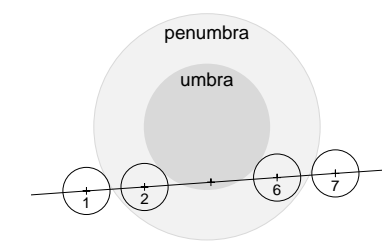
Rp = 1.315°
Ru = 0.768°
SD = 0.278°



- January 21**
- 1 - 02:45 UTC begin of penumbral eclipse (P1)
 - 2 - 03:39 UTC begin of partial eclipse (U1)
 - 3 - 04:42 UTC begin of total eclipse (U2)
 - 05:12 UTC moment of greatest eclipse
 - 5 - 05:42 UTC end of total eclips (U3)
 - 6 - 06:45 UTC end of partial eclipse (U4)
 - 7 - 07:39 UTC end of penumbral eclipse (P4)
- January 21**

July 16 : a partial lunar eclipse begin [Jul 16, 18:54 UTC] / end [Jul 17, 00:06 UTC]

Rp = 1.199°
Ru = 0.669°
SD = 0.250°



- July 16**
- 1 - 18:54 UTC begin of penumbral eclipse (P1)
 - 2 - 20:07 UTC begin of partial eclipse (U1)
 - 21:30 UTC moment of greatest eclipse
 - 6 - 22:53 UTC end of partial eclipse (U4)
 - 7 - 00:06 UTC end of penumbral eclipse (P4)
- July 17**

Solar Eclipses

An eclipse of the Sun - or solar eclipse - can only occur at New Moon, and only if the Earth passes through some portion of the Moon's shadow. Seen from the Earth, the Moon passes in front of the Sun and thus a part - or all - of the light of the Sun is eclipsed. The shadow cast by the Moon is composed of two concentric cone-shaped components. The outer or *penumbral* shadow zone is the region where the Moon blocks a part of the sunlight. The inner or *umbral* shadow zone is a region where the Moon blocks all sunlight. Based on this, three types of solar eclipses may be distinguished:

1. Total solar eclipse: occurs when the umbra of the Moon's shadow touches a region on the surface of the Earth.
2. Partial solar eclipse: occurs when the penumbra of the Moon's shadow passes over a region on the Earth's surface.
3. Annular solar eclipse: occurs when a region on the Earth's surface is in line with the umbra, but the distances are such that the tip of the umbra does not reach the Earth's surface

Because of the relative sizes of the Moon and Sun and their specific distances from the Earth, only a small part of the Earth surface is covered by the Moon shadow during a solar eclipse. Especially the path of totality is usually very narrow (a few hundreds of kilometers across). A much broader region is covered by the penumbral shadow of the Moon. However, an observer in this region will see only a partial solar eclipse.

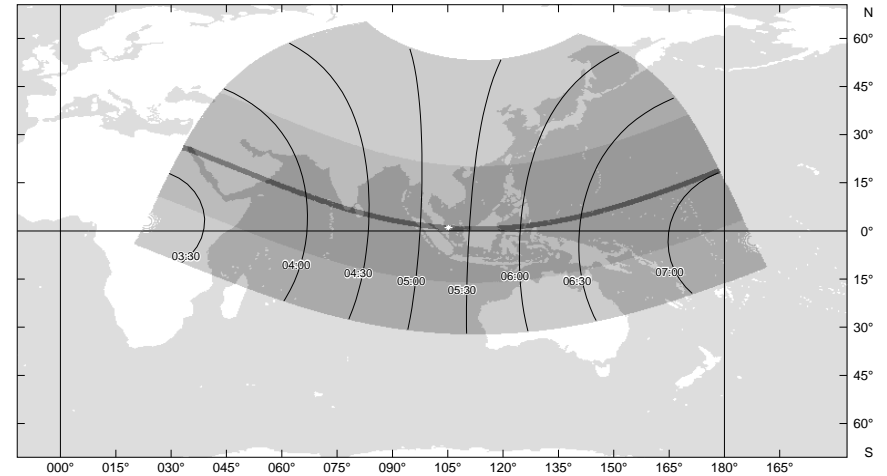
The appearance of a specific solar eclipse can be summarized conveniently by mapping the path of totality and the region covered by the penumbral shadow of the Moon for the complete duration the eclipse. The lines of constant time, included in the charts, indicate the instances of greatest eclipse.

Warning: never look directly at the Sun without proper eye protection, even during an eclipse. Even when the Sun is partially covered, your eyes can be seriously damaged by looking directly at it. Sunglasses are not an adequate eye protection for viewing the Sun.

Blank Page

Blank Page

December 26 : annular solar eclipse begin [Dec 26, 02:30 UT] / end [Dec 26, 08:06 UT]



Circumstances at Moment of Greatest Eclipse		First Contacts (P1/U1)		Last Contacts (U4/P4)	
Time:	05:17 UT	Duration (full):	3.8 min	Penumbra	Umbral
Location:	N 01.0 E 105.2	Path Width:	237 km	02:30 UT	03:34 UT
				07:01 UT	08:06 UT

Equation of Time

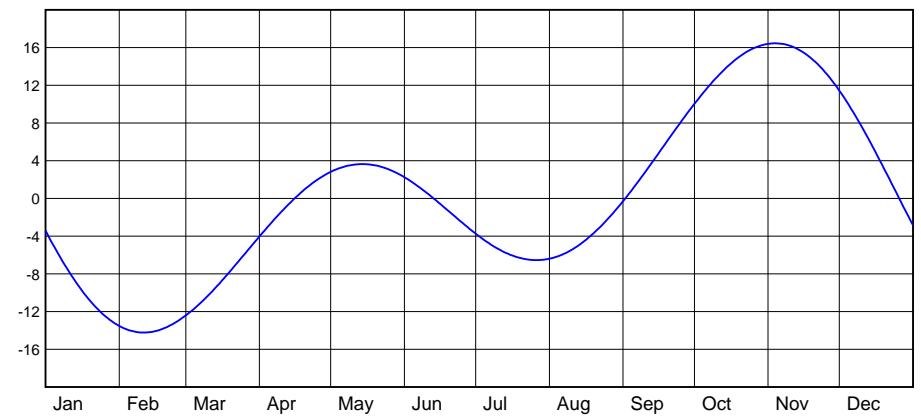
The "Equation of Time" is the difference between the Apparent Solar Time and the Mean Solar Time at the Prime Meridian of Greenwich. The value for the Equation of Time (EoT) for a specific day can be obtained from the Nautical Almanac. The section of the Sun records the "Greenwich Culmination Time" (GCT), which is the UT time at which the Geographical Position of the Sun transits the Prime Meridian of Greenwich. This is also the UT time of Local Apparent Noon for the Prime Meridian. Thus, the value for the Equation of Time is obtained from: $EoT = 12:00:00 - GCT$.

Examples:

$$\begin{array}{ll} GCT = 11:57:23 & GCT = 12:01:57 \\ EoT = 12:00:00 - 11:57:23 = +00:02:37 & EoT = 12:00:00 - 12:01:57 = -00:01:57 \end{array}$$

Notice that EoT has a sign: positive if the Sun "culminates" before 12 UT (then Apparent Time is "leading" Mean Time) and negative if the Sun "culminates" after 12 UT (then Apparent Time is "lagging" Mean Time).

The graph below shows the values for the "Equation of Time" (in Minutes) for the year 2019.



Blank Page

UT	Sun				Venus				Moon				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
00	179	04.9	-00.3	S 22 57.4	-00.2	228	21.1	+00.0	S 15 32.6	+00.6	227	17.4	-29.1	S 14 33.9	+08.8
01	194	04.6	-00.3	S 22 57.2	-00.2	243	21.1	+00.0	S 15 33.2	+00.6	241	48.3	-29.2	S 14 42.7	+08.7
02	209	04.3	-00.3	S 22 57.0	-00.3	258	21.1	+00.0	S 15 33.8	+00.6	256	19.1	-29.2	S 14 51.4	+08.6
03	224	04.0	-00.3	S 22 56.7	-00.2	273	21.1	-00.1	S 15 34.4	+00.5	270	49.9	-29.2	S 14 60.0	+08.5
04	239	03.7	-00.3	S 22 56.5	-00.2	288	21.0	+00.0	S 15 34.9	+00.6	285	20.7	-29.2	S 15 08.5	+08.5
05	254	03.4	-00.2	S 22 56.3	-00.2	303	21.0	+00.0	S 15 35.5	+00.6	299	51.5	-29.2	S 15 17.0	+08.3
06	269	03.2	-00.3	S 22 56.1	-00.2	318	21.0	-00.1	S 15 36.1	+00.6	314	22.3	-29.3	S 15 25.3	+08.3
07	284	02.9	-00.3	S 22 55.9	-00.2	333	20.9	+00.0	S 15 36.7	+00.6	328	53.0	-29.3	S 15 33.6	+08.2
08	299	02.6	-00.3	S 22 55.7	-00.3	348	20.9	+00.0	S 15 37.3	+00.5	343	23.7	-29.3	S 15 41.8	+08.1
09	314	02.3	-00.3	S 22 55.4	-00.2	3	20.9	-00.1	S 15 37.8	+00.6	357	54.4	-29.3	S 15 49.9	+08.1
10	329	02.0	-00.3	S 22 55.2	-00.2	18	20.8	+00.0	S 15 38.4	+00.6	12	25.1	-29.4	S 15 58.0	+07.9
11	344	01.7	-00.3	S 22 55.0	-00.2	33	20.8	-00.1	S 15 39.0	+00.6	26	55.7	-29.3	S 16 05.9	+07.9
12	359	01.4	-00.3	S 22 54.8	-00.3	48	20.7	+00.0	S 15 39.6	+00.6	41	26.4	-29.4	S 16 13.8	+07.8
13	14	01.1	-00.3	S 22 54.5	-00.2	63	20.7	+00.0	S 15 40.2	+00.5	55	57.0	-29.4	S 16 21.6	+07.7
14	29	00.8	-00.3	S 22 54.3	-00.2	78	20.7	-00.1	S 15 40.7	+00.6	70	27.6	-29.5	S 16 29.3	+07.6
15	44	00.5	-00.3	S 22 54.1	-00.2	93	20.6	+00.0	S 15 41.3	+00.6	84	58.1	-29.4	S 16 36.9	+07.6
16	59	00.2	-00.3	S 22 53.9	-00.3	108	20.6	-00.1	S 15 41.9	+00.6	99	28.7	-29.5	S 16 44.5	+07.4
17	73	59.9	-00.3	S 22 53.6	-00.2	123	20.5	+00.0	S 15 42.5	+00.6	113	59.2	-29.5	S 16 51.9	+07.4
18	88	59.6	-00.2	S 22 53.4	-00.2	138	20.5	+00.0	S 15 43.1	+00.5	128	29.7	-29.5	S 16 59.3	+07.2
19	103	59.4	-00.3	S 22 53.2	-00.3	153	20.5	-00.1	S 15 43.6	+00.6	143	00.2	-29.5	S 17 06.5	+07.2
20	118	59.1	-00.3	S 22 52.9	-00.2	168	20.4	+00.0	S 15 44.2	+00.6	157	30.7	-29.6	S 17 13.7	+07.1
21	133	58.8	-00.3	S 22 52.7	-00.2	183	20.4	-00.1	S 15 44.8	+00.6	172	01.1	-29.6	S 17 20.8	+07.0
22	148	58.5	-00.3	S 22 52.5	-00.3	198	20.3	+00.0	S 15 45.4	+00.5	186	31.5	-29.6	S 17 27.8	+06.9
23	163	58.2	-00.3	S 22 52.2	-00.2	213	20.3	-00.1	S 15 45.9	+00.6	201	01.9	-29.6	S 17 34.7	+06.9
	UT 02 06 10 14 18 22	SD 16°3 16°3 16°3 16°3 16°3 16°3	HP 00°1 00°1 00°1 00°1 00°1 00°1	SHA 078° 077° 077° 077° 077° 077°	Greenwich Culmination Time: 12:03	UT 02 06 10 14 18 22	SD 00°2 00°2 00°2 00°2 00°2 00°2	HP 00°2 00°2 00°2 00°2 00°2 00°2	SHA 127° 127° 127° 127° 126° 126°	Greenwich Culmination Time: 08:46	UT 02 06 10 14 18 22	SD 15°3 15°2 15°2 15°2 15°2 15°2	HP 56°0 55°9 55°9 55°8 55°7 55°6	SHA 125° 123° 121° 119° 116° 114°	Greenwich Culmination Time: 09:08

Nautical Almanac

The following pages contain the coordinates of the Geographical Position (in Greenwich Hour Angle and Declination) for each integral hour of the year for the recorded celestial objects. Each page compiles the complete Almanac data for one day of the year. The time used in this Almanac is Universal Time (UT).

NOTICE:

This Nautical Almanac uses a slightly different approach for the interpolation of the integral-hour values of Greenwich Hour Angle and Declination, compared to the techniques used in most commercially available Almanacs.

For more information please refer to the following web site: "<http://www.siranah.de/>"

Abbreviations used in the Almanac tables:

UT	Universal Time	
GHA	Greenwich Hour Angle	° [degrees]
Dec	Declination	° [degrees]
ddGHA	the increment of the GHA value for the next hour of time, additional to the "linear" increment of 15°/h	' [minutes of arc]
dDec	the increment of the Dec value for the next hour of time	' [minutes of arc]
SD	Semi-Diameter of the celestial object	' [minutes of arc]
HP	Horizontal Parallax	' [minutes of arc]
SHA	the Sideral Hour Angle of the celestial object	° [degrees]
A	the "Age" of the moon cycle, according to the following scheme:	A = 00%: new moon A = 25%: first quarter A = 50%: full moon A = 75%: last quarter

Units:

°	[degrees]
°	[degrees]
'	[minutes of arc]
'	[minutes of arc]
'	[minutes of arc]
'	[minutes of arc]
°	[degrees]
A = 00%	new moon
A = 25%	first quarter
A = 50%	full moon
A = 75%	last quarter

UT	Sun				Venus				Moon				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "			
00	179	12.0	-00.3	S 23 02.3	-00.2	228	21.5	+00.0	S 15 18.7	+00.5	238	51.3	-28.7	S 10 42.3	+10.4
01	194	11.7	-00.3	S 23 02.1	-00.2	243	21.5	+00.0	S 15 19.2	+00.6	253	22.6	-28.8	S 10 52.7	+10.3
02	209	11.4	-00.3	S 23 01.9	-00.2	258	21.5	+00.0	S 15 19.8	+00.6	267	53.8	-28.7	S 11 03.0	+10.3
03	224	11.1	-00.3	S 23 01.7	-00.2	273	21.5	+00.0	S 15 20.4	+00.6	282	25.1	-28.8	S 11 13.3	+10.3
04	239	10.8	-00.3	S 23 01.5	-00.2	288	21.5	+00.0	S 15 21.0	+00.6	296	56.3	-28.8	S 11 23.6	+10.1
05	254	10.5	-00.3	S 23 01.3	-00.2	303	21.5	-00.1	S 15 21.6	+00.5	311	27.5	-28.8	S 11 33.7	+10.1
06	269	10.2	-00.3	S 23 01.1	-00.2	318	21.4	+00.0	S 15 22.1	+00.6	325	58.7	-28.8	S 11 43.8	+10.1
07	284	09.9	-00.3	S 23 00.9	-00.2	333	21.4	+00.0	S 15 22.7	+00.6	340	29.9	-28.9	S 11 53.9	+09.9
08	299	09.6	-00.3	S 23 00.7	-00.2	348	21.4	+00.0	S 15 23.3	+00.6	355	01.0	-28.8	S 12 03.8	+09.9
09	314	09.3	-00.3	S 23 00.5	-00.2	3	21.4	+00.0	S 15 23.9	+00.6	9	32.2	-28.9	S 12 13.7	+09.9
10	329	09.0	-00.3	S 23 00.3	-00.2	18	21.4	+00.0	S 15 24.5	+00.6	24	03.3	-28.9	S 12 23.6	+09.7
11	344	08.7	-00.2	S 23 00.1	-00.2	33	21.4	+00.0	S 15 25.1	+00.5	38	34.4	-28.9	S 12 33.3	+09.7
12	359	08.5	-00.3	S 22 59.9	-00.2	48	21.4	+00.0	S 15 25.6	+00.6	53	05.5	-28.9	S 12 43.0	+09.7
13	14	08.2	-00.3	S 22 59.7	-00.2	63	21.4	-00.1	S 15 26.2	+00.6	67	36.6	-28.9	S 12 52.7	+09.5
14	29	07.9	-00.3	S 22 59.5	-00.2	78	21.3	+00.0	S 15 26.8	+00.6	82	07.7	-29.0	S 13 02.2	+09.5
15	44	07.6	-00.3	S 22 59.3	-00.2	93	21.3	+00.0	S 15 27.4	+00.6	96	38.7	-28.9	S 13 11.7	+09.5
16	59	07.3	-00.3	S 22 59.1	-00.2	108	21.3	+00.0	S 15 28.0	+00.5	111	09.8	-29.0	S 13 21.2	+09.3
17	74	07.0	-00.3	S 22 58.9	-00.2	123	21.3	+00.0	S 15 28.5	+00.6	125	40.8	-29.0	S 13 30.5	+09.3
18	89	06.7	-00.3	S 22 58.7	-00.2	138	21.3	+00.0	S 15 29.1	+00.6	140	11.8	-29.0	S 13 39.8	+09.2
19	104	06.4	-00.3	S 22 58.5	-00.2	153	21.3	-00.1	S 15 29.7	+00.6	154	42.8	-29.1	S 13 49.0	+09.1
20	119	06.1	-00.3	S 22 58.3	-00.3	168	21.2	+00.0	S 15 30.3	+00.6	169	13.7	-29.0	S 13 58.1	+09.1
21	134	05.8	-00.3	S 22 58.0	-00.2	183	21.2	+00.0	S 15 30.9	+00.6	183	44.7	-29.1	S 14 07.2	+09.0
22	149	05.5	-00.3	S 22 57.8	-00.2	198	21.2	+00.0	S 15 31.5	+00.5	198	15.6	-29.1	S 14 16.2	+08.9
23	164	05.2	-00.3	S 22 57.6	-00.2	213	21.2	-00.1	S 15 32.0	+00.6	212	46.5	-29.1	S 14 25.1	+08.8
	UT 02 06 10 14 18 22					UT 02 06 10 14 18 22									
	SD 16°3 16'3 16'3 16'3 16'3 16'3					SD 00°2 00'2 00'2 00'2 00'2 00'2									
	HP 00°1 00'1 00'1 00'1 00'1 00'1					HP 00°2 00'2 00'2 00'2 00'2 00'2									
	SHA 079° 079° 078° 078° 078° 078°					SHA 128° 128° 128° 127° 127° 127°									
	Greenwich Culmination Time: 12:03					Greenwich Culmination Time: 08:46									
UT	Mars				Jupiter				Saturn				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "			
00	100	17.9	+00.9	S 00 18.0	-00.8	210	00.8	+01.9	S 21 34.3	+00.1	178	01.9	+02.2	S 22 28.0	+00.0
01	115	18.8	+01.0	S 00 17.2	-00.7	225	02.7	+01.9	S 21 34.4	+00.1	193	04.1	+02.1	S 22 28.0	+00.0
02	130	19.8	+00.9	S 00 16.5	-00.7	240	04.6	+01.9	S 21 34.5	+00.0	208	06.2	+02.1	S 22 28.0	+00.0
03	145	20.7	+01.0	S 00 15.8	-00.7	255	06.5	+01.9	S 21 34.5	+00.1	223	08.3	+02.2	S 22 28.0	-00.1
04	160	21.7	+00.9	S 00 15.1	-00.7	270	08.4	+01.9	S 21 34.6	+00.1	238	10.5	+02.1	S 22 27.9	+00.0
05	175	22.6	+01.0	S 00 14.4	-00.8	285	10.3	+01.9	S 21 34.7	+00.0	253	12.6	+02.2	S 22 27.9	+00.0
06	190	23.6	+00.9	S 00 13.6	-00.7	300	12.2	+01.9	S 21 34.7	+00.1	268	14.8	+02.1	S 22 27.9	+00.0
07	205	24.5	+00.9	S 00 12.9	-00.7	315	14.1	+02.0	S 21 34.8	+00.1	283	16.9	+02.2	S 22 27.9	-00.1
08	220	25.4	+01.0	S 00 12.2	-00.7	330	16.1	+01.9	S 21 34.9	+00.1	298	19.1	+02.1	S 22 27.8	+00.0
09	235	26.4	+00.9	S 00 11.5	-00.7	345	18.0	+01.9	S 21 35.0	+00.0	313	21.2	+02.2	S 22 27.8	+00.0
10	250	27.3	+01.0	S 00 10.8	-00.8	0	19.9	+01.9	S 21 35.0	+00.1	328	23.4	+02.1	S 22 27.8	+00.0
11	265	28.3	+00.9	S 00 10.0	-00.7	15	21.8	+01.9	S 21 35.1	+00.1	343	25.5	+02.2	S 22 27.8	-00.1
12	280	29.2	+01.0	S 00 09.3	-00.7	30	23.7	+01.9	S 21 35.2	+00.0	358	27.7	+02.1	S 22 27.7	+00.0
13	295	30.2	+00.9	S 00 08.6	-00.7	45	25.6	+01.9	S 21 35.2	+00.1	13	29.8	+02.1	S 22 27.7	+00.0
14	310	31.1	+01.0	S 00 07.9	-00.7	60	27.5	+01.9	S 21 35.3	+00.1	28	31.9	+02.2	S 22 27.7	+00.0
15	325	32.1	+00.9	S 00 07.2	-00.8	75	29.4	+01.9	S 21 35.4	+00.1	43	34.1	+02.1	S 22 27.7	+00.0
16	340	33.0	+01.0	S 00 06.4	-00.7	90	31.3	+01.9	S 21 35.5	+00.0	58	36.2	+02.2	S 22 27.7	-00.1
17	355	34.0	+00.9	S 00 05.7	-00.7	105	33.2	+01.9	S 21 35.5	+00.1	73	38.4	+02.1	S 22 27.6	+00.0
18	10	34.9	+00.9	S 00 05.0	-00.7	120	35.1	+01.9	S 21 35.6	+00.1	88	40.5	+02.2	S 22 27.6	+00.0
19	25	35.8	+01.0	S 00 04.3	-00.7	135	37.0	+01.9	S 21 35.7	+00.0	103	42.7	+02.1	S 22 27.6	+00.0
20	40	36.8	+00.9	S 00 03.6	-00.8	150	38.9	+01.9	S 21 35.7	+00.1	118	44.8	+02.2	S 22 27.6	-00.1
21	55	37.7	+01.0	S 00 02.8	-00.7	165	40.8	+01.9	S 21 35.8	+00.1	133	47.0	+02.1	S 22 27.5	+00.0
22	70	38.7	+00.9	S 00 02.1	-00.7	180	42.7	+01.9	S 21 35.9	+00.0	148	49.1	+02.2	S 22 27.5	+00.0
23	85	39.6	+01.0	S 00 01.4	-00.7	195	44.6	+01.9	S 21 35.9	+00.1	163	51.3	+02.1	S 22 27.5	+00.0
	UT 02 06 10 14 18 22					UT 02 06 10 14 18 22									
	SD 00°1 00'1 00'1 00'1 00'1 00'1					SD 00°3 00'3 00'3 00'3 00'3 00'3									
	HP 00°1 00'1 00'1 00'1 00'1 00'1					HP 00°0 00'0 00'0 00'0 00'0 00'0									
	SHA 360° 360° 360° 360° 359° 359°					SHA 110° 110° 110° 110° 109° 109°									
	Greenwich Culmination Time: 17:17					Greenwich Culmination Time: 09:58									

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Columns include GHA, ddGHA, Dec, dDec for each celestial body.

UT 02 06 10 14 18 22
SD 16°3 16°3 16°3 16°3 16°3 16°3
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 073° 073° 073° 073° 073° 072°
Greenwich Culmination Time: 12:05

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Columns include GHA, ddGHA, Dec, dDec for each celestial body.

UT 02 06 10 14 18 22
SD 16°3 16°3 16°3 16°3 16°3 16°3
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 077° 076° 076° 076° 076° 076°
Greenwich Culmination Time: 12:04

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Columns include GHA, ddGHA, Dec, dDec for each celestial body.

UT 02 06 10 14 18 22
SD 00°3 00°3 00°3 00°3 00°3 00°3
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 109° 108° 108° 108° 108° 108°
Greenwich Culmination Time: 09:43

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Columns include GHA, ddGHA, Dec, dDec for each celestial body.

UT 02 06 10 14 18 22
SD 00°3 00°3 00°3 00°3 00°3 00°3
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 109° 109° 109° 109° 109° 109°
Greenwich Culmination Time: 09:52

UT	Sun				Venus				Moon				A: 94%	UT						
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	178	51.0	-00.3	S 22 46.2	-00.3	228	18.7	+00.0	S 16 00.4	+00.5	203	35.6	-30.1	S 19 57.1	+04.4	00				
01	193	50.7	-00.3	S 22 45.9	-00.3	243	18.7	-00.1	S 16 00.9	+00.6	218	05.5	-30.0	S 20 01.5	+04.3	01				
02	208	50.4	-00.3	S 22 45.6	-00.2	258	18.6	-00.1	S 16 01.5	+00.6	232	35.5	-30.1	S 20 05.8	+04.2	02				
03	223	50.1	-00.3	S 22 45.4	-00.3	273	18.5	-00.1	S 16 02.1	+00.6	247	05.4	-30.1	S 20 10.0	+04.2	03				
04	238	49.8	-00.3	S 22 45.1	-00.2	288	18.4	+00.0	S 16 02.7	+00.5	261	35.3	-30.1	S 20 14.2	+04.0	04				
05	253	49.5	-00.3	S 22 44.9	-00.3	303	18.4	-00.1	S 16 03.2	+00.6	276	05.2	-30.2	S 20 18.2	+03.9	05				
06	268	49.2	-00.2	S 22 44.6	-00.2	318	18.3	-00.1	S 16 03.8	+00.6	290	35.0	-30.1	S 20 22.1	+03.8	06				
07	283	49.0	-00.3	S 22 44.4	-00.3	333	18.2	-00.1	S 16 04.4	+00.6	305	04.9	-30.1	S 20 25.9	+03.7	07				
08	298	48.7	-00.3	S 22 44.1	-00.3	348	18.1	-00.1	S 16 05.0	+00.5	319	34.8	-30.2	S 20 29.6	+03.6	08				
09	313	48.4	-00.3	S 22 43.8	-00.2	3	18.0	+00.0	S 16 05.5	+00.6	334	04.6	-30.1	S 20 33.2	+03.5	09				
10	328	48.1	-00.3	S 22 43.6	-00.3	18	18.0	-00.1	S 16 06.1	+00.6	348	34.5	-30.2	S 20 36.7	+03.4	10				
11	343	47.8	-00.3	S 22 43.3	-00.2	33	17.9	-00.1	S 16 06.7	+00.6	3	04.3	-30.2	S 20 40.1	+03.3	11				
12	358	47.5	-00.2	S 22 43.1	-00.3	48	17.8	-00.1	S 16 07.3	+00.5	17	34.1	-30.2	S 20 43.4	+03.2	12				
13	14	37.3	-00.3	S 22 42.8	-00.3	63	17.7	-00.1	S 16 07.8	+00.6	32	03.9	-30.1	S 20 46.6	+03.0	13				
14	28	47.0	-00.3	S 22 42.5	-00.2	78	17.6	-00.1	S 16 08.4	+00.6	46	33.8	-30.2	S 20 49.6	+03.0	14				
15	43	46.7	-00.3	S 22 42.3	-00.3	93	17.5	+00.0	S 16 09.0	+00.5	61	03.6	-30.2	S 20 52.6	+02.9	15				
16	58	46.4	-00.3	S 22 42.0	-00.3	108	17.5	-00.1	S 16 09.5	+00.6	75	33.4	-30.2	S 20 55.5	+02.8	16				
17	73	46.1	-00.3	S 22 41.7	-00.2	123	17.4	-00.1	S 16 10.1	+00.6	90	03.2	-30.2	S 20 58.3	+02.6	17				
18	88	45.8	-00.3	S 22 41.5	-00.3	138	17.3	-00.1	S 16 10.7	+00.6	104	33.0	-30.2	S 21 00.9	+02.6	18				
19	103	45.5	-00.2	S 22 41.2	-00.3	153	17.2	-00.1	S 16 11.3	+00.5	119	02.8	-30.2	S 21 03.5	+02.4	19				
20	118	45.3	-00.3	S 22 40.9	-00.2	168	17.1	-00.1	S 16 11.8	+00.6	133	32.6	-30.2	S 21 05.9	+02.4	20				
21	133	45.0	-00.3	S 22 40.7	-00.3	183	17.0	-00.1	S 16 12.4	+00.6	148	02.4	-30.3	S 21 08.3	+02.2	21				
22	148	44.7	-00.3	S 22 40.4	-00.3	198	16.9	-00.1	S 16 13.0	+00.5	162	32.1	-30.2	S 21 10.5	+02.2	22				
23	163	44.4	-00.3	S 22 40.1	-00.2	213	16.8	-00.1	S 16 13.5	+00.6	177	01.9	-30.2	S 21 12.7	+02.0	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°3	16°3	16°3	16°3	16°3	16°3	SD	00°2	00°2	00°2	00°2	00°2	00°2	SD	15°0	15°0	15°0	15°0	14°9	14°9
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°2	00°2	00°2	00°2	00°2	00°2	HP	55°1	55°0	55°0	54°9	54°9	54°8
SHA	075°	075°	075°	075°	075°	075°	SHA	125°	125°	125°	124°	124°	124°	SHA	099°	097°	095°	093°	090°	088°
Greenwich Culmination Time: 12:04				Greenwich Culmination Time: 08:46				Greenwich Culmination Time: 10:47												

UT	Sun				Venus				Moon				A: 98%	UT						
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	178	44.1	-00.3	S 22 39.9	-00.3	228	16.7	-00.1	S 16 14.1	+00.6	191	31.7	-30.2	S 21 14.7	+01.9	00				
01	193	43.8	-00.2	S 22 39.6	-00.3	243	16.6	-00.1	S 16 14.7	+00.6	206	01.5	-30.2	S 21 16.6	+01.8	01				
02	208	43.6	-00.3	S 22 39.3	-00.3	258	16.5	-00.1	S 16 15.3	+00.5	220	31.3	-30.2	S 21 18.4	+01.7	02				
03	223	43.3	-00.3	S 22 39.0	-00.2	273	16.4	-00.1	S 16 15.8	+00.6	235	01.1	-30.2	S 21 20.1	+01.6	03				
04	238	43.0	-00.3	S 22 38.8	-00.3	288	16.3	-00.1	S 16 16.4	+00.6	249	30.9	-30.2	S 21 21.7	+01.5	04				
05	253	42.7	-00.3	S 22 38.5	-00.3	303	16.2	-00.1	S 16 17.0	+00.5	264	00.7	-30.2	S 21 23.2	+01.4	05				
06	268	42.4	-00.2	S 22 38.2	-00.3	318	16.1	-00.1	S 16 17.5	+00.6	278	30.5	-30.2	S 21 24.6	+01.3	06				
07	283	42.2	-00.3	S 22 37.9	-00.2	333	16.0	-00.1	S 16 18.1	+00.6	293	00.3	-30.1	S 21 25.9	+01.2	07				
08	298	41.9	-00.3	S 22 37.7	-00.3	348	15.9	-00.1	S 16 18.7	+00.5	307	30.2	-30.2	S 21 27.1	+01.1	08				
09	313	41.6	-00.3	S 22 37.4	-00.3	3	15.8	-00.1	S 16 19.2	+00.6	321	60.0	-30.2	S 21 28.2	+01.0	09				
10	328	41.3	-00.3	S 22 37.1	-00.3	18	15.7	-00.1	S 16 19.8	+00.6	336	29.8	-30.1	S 21 29.2	+00.8	10				
11	343	41.0	-00.2	S 22 36.8	-00.3	33	15.6	-00.1	S 16 20.4	+00.6	350	59.7	-30.2	S 21 30.0	+00.8	11				
12	358	40.8	-00.3	S 22 36.5	-00.2	48	15.5	-00.1	S 16 21.0	+00.5	5	29.5	-30.1	S 21 30.8	+00.6	12				
13	14	30.5	-00.3	S 22 36.3	-00.3	63	15.4	-00.1	S 16 21.5	+00.6	19	59.4	-30.1	S 21 31.4	+00.6	13				
14	28	40.2	-00.3	S 22 36.0	-00.3	78	15.3	-00.1	S 16 22.1	+00.6	34	29.3	-30.2	S 21 32.0	+00.4	14				
15	43	39.9	-00.3	S 22 35.7	-00.3	93	15.2	-00.1	S 16 22.7	+00.5	48	59.1	-30.1	S 21 32.4	+00.4	15				
16	58	39.6	-00.2	S 22 35.4	-00.3	108	15.1	-00.1	S 16 23.2	+00.6	63	29.0	-30.1	S 21 32.8	+00.2	16				
17	73	39.4	-00.3	S 22 35.1	-00.3	123	15.0	-00.2	S 16 23.8	+00.6	77	58.9	-30.0	S 21 33.0	+00.1	17				
18	88	39.1	-00.3	S 22 34.8	-00.3	138	14.8	-00.1	S 16 24.4	+00.5	92	28.9	-30.1	S 21 33.1	+00.1	18				
19	103	38.8	-00.3	S 22 34.5	-00.2	153	14.7	-00.1	S 16 24.9	+00.6	106	58.8	-30.1	S 21 33.2	-00.1	19				
20	118	38.5	-00.3	S 22 34.3	-00.3	168	14.6	-00.1	S 16 25.5	+00.6	121	28.7	-30.0	S 21 33.1	-00.2	20				
21	133	38.2	-00.2	S 22 34.0	-00.3	183	14.5	-00.1	S 16 26.1	+00.5	135	58.7	-30.0	S 21 32.9	-00.3	21				
22	148	38.0	-00.3	S 22 33.7	-00.3	198	14.4	-00.1	S 16 26.6	+00.6	150	28.7	-30.0	S 21 32.6	-00.4	22				
23	163	37.7	-00.3	S 22 33.4	-00.2	213	14.3	-00.2	S 16 27.2	+00.6	164	58.7	-30.0	S 21 32.2	-00.5	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°3	16°3	16°3	16°3	16°3	16°3	SD	00°2	00°2	00°2	00°2	00°2	00°2	SD	14°9	14°9	14°9	14°9	14°9	14°8
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°2	00°2	00°2	00°2	00°2	00°2	HP	54°7	54°7	54°6	54°6	54°5	54°5
SHA	074°	074°	074°	074°	074°	073°	SHA	124°	124°	124°	123°	123°	123°	SHA	086°	084°	082°	080°	077°	075°
Greenwich Culmination Time: 12:05				Greenwich Culmination Time: 08:46				Greenwich Culmination Time: 11:37												

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	101	25.8	+01.0	N 00 33.9	+00.7	212	18.2	+01.9	S 21 39.3	+00.1	180	36.4	+02.1	S 22 26.4	+00.0	00
01	116	26.8	+00.9	N 00 34.6	+00.7	227	20.1	+01.9	S 21 39.4	+00.1	195	38.5	+02.2	S 22 26.4	-00.1	01
02	131	27.7	+00.9	N 00 35.3	+00.7	242	22.0	+01.9	S 21 39.5	+00.1	210	40.7	+02.1	S 22 26.3	+00.0	02
03	146	28.6	+01.0	N 00 36.0	+00.8	257	23.9	+01.9	S 21 39.6	+00.0	225	42.8	+02.2	S 22 26.3	+00.0	03
04	161	29.6	+00.9	N 00 36.8	+00.7	272	25.8	+01.9	S 21 39.6	+00.1	240	45.0	+02.1	S 22 26.3	+00.0	04
05	176	30.5	+01.0	N 00 37.5	+00.7	287	27.7	+01.9	S 21 39.7	+00.1	255	47.1	+02.2	S 22 26.3	+00.0	05
06	191	31.5	+00.9	N 00 38.2	+00.7	302	29.6	+01.9	S 21 39.8	+00.0	270	49.3	+02.1	S 22 26.3	-00.1	06
07	206	32.4	+01.0	N 00 38.9	+00.7	317	31.5	+01.9	S 21 39.8	+00.1	285	51.4	+02.1	S 22 26.2	+00.0	07
08	221	33.4	+00.9	N 00 39.6	+00.8	332	33.4	+02.0	S 21 39.9	+00.0	300	53.5	+02.2	S 22 26.2	+00.0	08
09	236	34.3	+00.9	N 00 40.4	+00.7	347	35.4	+01.9	S 21 40.0	+00.1	315	55.7	+02.1	S 22 26.2	+00.0	09
10	251	35.2	+01.0	N 00 41.1	+00.7	2	37.3	+01.9	S 21 40.0	+00.1	330	57.8	+02.2	S 22 26.2	-00.1	10
11	266	36.2	+00.9	N 00 41.8	+00.7	17	39.2	+01.9	S 21 40.1	+00.1	345	60.0	+02.1	S 22 26.1	+00.0	11
12	281	37.1	+01.0	N 00 42.5	+00.7	32	41.1	+01.9	S 21 40.2	+00.0	1	02.1	+02.2	S 22 26.1	+00.0	12
13	296	38.1	+00.9	N 00 43.2	+00.8	47	43.0	+01								

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	178	11.7	-00.3	S 22 01.7	-00.4	227	58.7	-00.2	S 17 20.9	+00.5	134	00.5	-26.6	S 13 35.6	-08.6	00
01	193	11.4	-00.2	S 22 01.3	-00.4	242	58.5	-00.2	S 17 21.4	+00.6	148	33.9	-26.5	S 13 27.0	-08.7	01
02	208	11.2	-00.3	S 22 00.9	-00.3	257	58.3	-00.2	S 17 22.0	+00.5	163	07.4	-26.6	S 13 18.3	-08.7	02
03	223	10.9	-00.2	S 22 00.6	-00.4	272	58.1	-00.2	S 17 22.5	+00.5	177	40.8	-26.5	S 13 09.6	-08.8	03
04	238	10.7	-00.3	S 22 00.2	-00.4	287	57.9	-00.3	S 17 23.0	+00.6	192	14.3	-26.4	S 13 00.8	-08.8	04
05	253	10.4	-00.3	S 21 59.8	-00.3	302	57.6	-00.2	S 17 23.6	+00.5	206	47.9	-26.4	S 12 52.0	-08.9	05
06	268	10.1	-00.2	S 21 59.5	-00.4	317	57.4	-00.2	S 17 24.1	+00.5	221	21.5	-26.4	S 12 43.1	-08.9	06
07	283	09.9	-00.3	S 21 59.1	-00.4	332	57.2	-00.2	S 17 24.6	+00.6	235	55.1	-26.4	S 12 34.2	-09.0	07
08	298	09.6	-00.2	S 21 58.7	-00.3	347	57.0	-00.2	S 17 25.2	+00.5	250	28.7	-26.3	S 12 25.2	-09.0	08
09	313	09.4	-00.3	S 21 58.4	-00.4	2	56.8	-00.2	S 17 25.7	+00.5	265	02.4	-26.3	S 12 16.2	-09.1	09
10	328	09.1	-00.2	S 21 58.0	-00.4	17	56.6	-00.2	S 17 26.2	+00.6	279	36.1	-26.3	S 12 07.1	-09.1	10
11	343	08.9	-00.3	S 21 57.6	-00.3	32	56.4	-00.2	S 17 26.8	+00.5	294	09.8	-26.3	S 11 58.0	-09.2	11
12	358	08.6	-00.2	S 21 57.3	-00.4	47	56.2	-00.2	S 17 27.3	+00.6	308	43.5	-26.2	S 11 48.8	-09.3	12
13	13	08.4	-00.3	S 21 56.9	-00.4	62	56.0	-00.3	S 17 27.9	+00.5	323	17.3	-26.2	S 11 39.5	-09.2	13
14	28	08.1	-00.2	S 21 56.5	-00.4	77	55.7	-00.2	S 17 28.4	+00.5	337	51.1	-26.2	S 11 30.3	-09.4	14
15	43	07.9	-00.3	S 21 56.1	-00.3	92	55.5	-00.2	S 17 28.9	+00.6	352	24.9	-26.1	S 11 20.9	-09.4	15
16	58	07.6	-00.3	S 21 55.8	-00.4	107	55.3	-00.2	S 17 29.5	+00.5	6	58.8	-26.1	S 11 11.5	-09.4	16
17	73	07.3	-00.2	S 21 55.4	-00.4	122	55.1	-00.2	S 17 30.0	+00.5	21	32.7	-26.1	S 11 02.1	-09.5	17
18	88	07.1	-00.3	S 21 55.0	-00.4	137	54.9	-00.2	S 17 30.5	+00.5	36	06.6	-26.1	S 10 52.6	-09.5	18
19	103	06.8	-00.2	S 21 54.6	-00.3	152	54.7	-00.3	S 17 31.0	+00.6	50	40.5	-26.0	S 10 43.1	-09.5	19
20	118	06.6	-00.3	S 21 54.3	-00.4	167	54.4	-00.2	S 17 31.6	+00.5	65	14.5	-26.1	S 10 33.6	-09.6	20
21	133	06.3	-00.2	S 21 53.9	-00.4	182	54.2	-00.2	S 17 32.1	+00.5	79	48.4	-26.0	S 10 24.0	-09.7	21
22	148	06.1	-00.3	S 21 53.5	-00.4	197	54.0	-00.2	S 17 32.6	+00.6	94	22.4	-26.0	S 10 14.3	-09.7	22
23	163	05.8	-00.2	S 21 53.1	-00.4	212	53.8	-00.2	S 17 33.2	+00.5	108	56.4	-25.9	S 10 04.6	-09.7	23

UT 02 06 10 14 18 22
SD 16°3 16°3 16°3 16°3 16°3 16°3
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 069° 069° 069° 068° 068° 068°
Greenwich Culmination Time: 12:07

UT 02 06 10 14 18 22
SD 00°2 00°2 00°2 00°2 00°2 00°2
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 119° 118° 118° 118° 118° 118°
Greenwich Culmination Time: 08:48

UT 02 06 10 14 18 22
SD 14°7 14°7 14°7 14°7 14°7 14°8
HP 54°0 54°0 54°0 54°1 54°1 54°2
SHA 024° 022° 020° 018° 016° 016°
Greenwich Culmination Time: 15:31

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	103	40.7	+01.0	N 02 17.3	+00.7	216	54.3	+01.9	S 21 48.7	+00.1	185	45.4	+02.2	S 22 23.0	-00.1	00
01	118	41.7	+00.9	N 02 18.0	+00.7	231	56.2	+01.9	S 21 48.8	+00.0	200	47.6	+02.1	S 22 22.9	+00.0	01
02	133	42.6	+00.9	N 02 18.7	+00.7	246	58.1	+02.0	S 21 48.8	+00.1	215	49.7	+02.2	S 22 22.9	+00.0	02
03	148	43.5	+01.0	N 02 19.4	+00.7	262	00.1	+01.9	S 21 48.9	+00.1	230	51.9	+02.1	S 22 22.9	+00.0	03
04	163	44.5	+00.9	N 02 20.1	+00.7	277	02.0	+01.9	S 21 49.0	+00.0	245	54.0	+02.1	S 22 22.9	-00.1	04
05	178	45.4	+00.9	N 02 20.8	+00.8	292	03.9	+01.9	S 21 49.0	+00.1	260	56.1	+02.2	S 22 22.8	+00.0	05
06	193	46.3	+00.9	N 02 21.6	+00.7	307	05.8	+02.0	S 21 49.1	+00.1	275	58.3	+02.1	S 22 22.8	+00.0	06
07	208	47.2	+01.0	N 02 22.3	+00.7	322	07.8	+01.9	S 21 49.2	+00.0	291	00.4	+02.2	S 22 22.8	+00.0	07
08	223	48.2	+00.9	N 02 23.0	+00.7	337	09.7	+01.9	S 21 49.2	+00.1	306	02.6	+02.1	S 22 22.8	-00.1	08
09	238	49.1	+00.9	N 02 23.7	+00.7	352	11.6	+01.9	S 21 49.3	+00.0	321	04.7	+02.2	S 22 22.7	+00.0	09
10	253	50.0	+01.0	N 02 24.4	+00.7	7	13.5	+02.0	S 21 49.3	+00.1	336	06.9	+02.1	S 22 22.7	+00.0	10
11	268	51.0	+00.9	N 02 25.1	+00.7	22	15.5	+01.9	S 21 49.4	+00.1	351	09.0	+02.2	S 22 22.7	+00.0	11
12	283	51.9	+00.9	N 02 25.8	+00.8	37	17.4	+01.9	S 21 49.5	+00.0	6	11.2	+02.1	S 22 22.7	+00.0	12
13	298	52.8	+01.0	N 02 26.6	+00.7	52	19.3	+01.9	S 21 49.5	+00.1	21	13.3	+02.2	S 22 22.7	-00.1	13
14	313	53.8	+00.9	N 02 27.3	+00.7	67	21.2	+02.0	S 21 49.6	+00.0	36	15.5	+02.1	S 22 22.6	+00.0	14
15	328	54.7	+00.9	N 02 28.0	+00.7	82	23.2	+01.9	S 21 49.6	+00.1	51	17.6	+02.2	S 22 22.6	+00.0	15
16	343	55.6	+01.0	N 02 28.7	+00.7	97	25.1	+01.9	S 21 49.7	+00.1	66	19.8	+02.1	S 22 22.6	+00.0	16
17	358	56.6	+00.9	N 02 29.4	+00.7	112	27.0	+01.9	S 21 49.8	+00.0	81	21.9	+02.2	S 22 22.6	-00.1	17
18	13	57.5	+00.9	N 02 30.1	+00.8	127	28.9	+02.0	S 21 49.8	+00.1	96	24.1	+02.1	S 22 22.5	+00.0	18
19	28	58.4	+01.0	N 02 30.9	+00.7	142	30.9	+01.9	S 21 49.9	+00.0	111	26.2	+02.2	S 22 22.5	+00.0	19
20	43	59.4	+00.9	N 02 31.6	+00.7	157	32.8	+01.9	S 21 49.9	+00.1	126	28.4	+02.1	S 22 22.5	+00.0	20
21	59	00.3	+00.9	N 02 32.3	+00.7	172	34.7	+02.0	S 21 50.0	+00.1	141	30.5	+02.2	S 22 22.5	-00.1	21
22	74	01.2	+00.9	N 02 33.0	+00.7	187	36.7	+01.9	S 21 50.1	+00.0	156	32.7	+02.1	S 22 22.4	+00.0	22
23	89	02.1	+01.0	N 02 33.7	+00.7	202	38.6	+01.9	S 21 50.1	+00.1	171	34.8	+02.1	S 22 22.4	+00.0	23

UT 02 06 10 14 18 22
SD 00°1 00°1 00°1 00°1 00°1 00°1
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 354° 354° 354° 354° 354° 354°
Greenwich Culmination Time: 17:04

UT 02 06 10 14 18 22
SD 00°3 00°3 00°3 00°3 00°3 00°3
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 108° 108° 108° 108° 108° 107°
Greenwich Culmination Time: 09:31

UT 02 06 10 14 18 22
SD 00°1 00°1 00°1 00°1 00°1 00°1
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 077° 076° 076° 076° 076° 076°
Greenwich Culmination Time: 11:35

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	178	30.8	-00.3	S 22 25.9	-00.3	228	11.0	-00.1	S 16 41.3	+00.5	167	35.9	-29.4	S 20 49.0	-03.0	00
01	193	30.5	-00.3	S 22 25.6	-00.3	243	10.9	-00.1	S 16 41.8	+00.6	182	06.5	-29.3	S 20 46.0	-03.2	01
02	208	30.2	-00.2	S 22 25.3	-00.3	258	10.8	-00.2	S 16 42.4	+00.6	196	37.2	-29.3	S 20 42.8	-03.2	02
03	223	30.0	-00.3	S 22 25.0	-00.3	273	10.6	-00.1	S 16 43.0	+00.5	211	07.9	-29.2	S 20 39.6	-03.3	03
04	238	29.7	-00.3	S 22 24.7	-00.3	288	10.5	-00.2	S 16 43.5	+00.6	225	38.7	-29.2	S 20 36.3	-03.4	04
05	253	29.4	-00.3	S 22 24.4	-00.4	303	10.3	-00.1	S 16 44.1	+00.5	240	09.5	-29.2	S 20 32.9	-03.5	05
06	268	29.1	-00.2	S 22 24.0	-00.3	318	10.2	-00.2	S 16 44.6	+00.6	254	40.3	-29.2	S 20 29.4	-03.6	06
07	283	28.9	-00.3	S 22 23.7	-00.3	333	10.0	-00.1	S 16 45.2	+00.6	269	11.1	-29.1	S 20 25.8	-03.7	07
08	298	28.6	-00.3	S 22 23.4	-00.3	348	09.9	-00.2	S 16 45.8	+00.5	283	42.0	-29.1	S 20 22.1	-03.8	08
09	313	28.3	-00.2	S 22 23.1	-00.3	3	09.7	-00.1	S 16 46.3	+00.6	298	12.9	-29.0	S 20 18.3	-03.8	09
10	328	28.1	-00.3	S 22 22.8	-00.3	18	09.6	-00.1	S 16 46.9	+00.5	312	43.9	-29.0	S 20 14.5	-04.0	10
11	343	27.8	-00.3	S 22 22.5	-00.4	33	09.5	-00.2	S 16 47.4	+00.6	327	14.9	-29.0	S 20 10.5	-04.1	11
12	358	27.5	-00.3	S 22 22.1	-00.3	48	09.3	-00.1	S 16 48.0	+00.5	341	45.9	-28.9	S 20 06.4	-04.1	12
13	13	27.2	-00.2	S 22 21.8	-00.3	63	09.2	-00.2	S 16 48.5	+00.6	356	17.0	-28.9	S 20 02.3	-04.3	13
14	28	27.0	-00.3	S 22 21.5	-00.3	78	09.0	-00.2	S 16 49.1	+00.6	10	18.1	-28.9	S 19 58.0	-04.3	14
15	43	26.7	-00.3	S 22 21.2	-00.3	93	08.8	-00.1	S 16 49.7	+00.5	25	19.2	-28.8	S 19 53.7	-04.4	15
16	58	26.4	-00.2	S 22 20.9	-00.4	108	08.7	-00.2	S 16 50.2	+00.6	39	50.4	-28.8	S 19 49.3	-04.5	16
17	73	26.2	-00.3	S 22 20.5	-00.3	123	08.5	-00.1	S 16 50.8	+00.5	54	21.6	-28.7	S 19 44.8	-04.6	17
18	88	25.9	-00.3	S 22 2												

UT	Sun				Venus				Moon				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
00	178 24.3	-00.3	S 22 18.3	-00.4	228 07.4	-00.1	S 16 54.7	+00.5	156 01.3	-28.5	S 19 10.7	-05.2	00		
01	193 24.0	-00.3	S 22 17.9	-00.3	243 07.3	-00.2	S 16 55.2	+00.6	170 32.8	-28.4	S 19 05.5	-05.3	01		
02	208 23.7	-00.2	S 22 17.6	-00.3	258 07.1	-00.2	S 16 55.8	+00.5	185 04.4	-28.4	S 19 00.2	-05.3	02		
03	223 23.5	-00.3	S 22 17.3	-00.3	273 06.9	-00.1	S 16 56.3	+00.6	199 36.0	-28.3	S 18 54.9	-05.5	03		
04	238 23.2	-00.3	S 22 17.0	-00.4	288 06.8	-00.2	S 16 56.9	+00.5	214 07.7	-28.3	S 18 49.4	-05.5	04		
05	253 22.9	-00.2	S 22 16.6	-00.3	303 06.6	-00.2	S 16 57.4	+00.6	228 39.4	-28.3	S 18 43.9	-05.6	05		
06	268 22.7	-00.3	S 22 16.3	-00.3	318 06.4	-00.1	S 16 58.0	+00.5	243 11.1	-28.2	S 18 38.3	-05.8	06		
07	283 22.4	-00.3	S 22 16.0	-00.4	333 06.3	-00.2	S 16 58.5	+00.6	257 42.9	-28.2	S 18 32.5	-05.7	07		
08	298 22.1	-00.2	S 22 15.6	-00.3	348 06.1	-00.2	S 16 59.1	+00.5	272 14.7	-28.1	S 18 26.8	-05.9	08		
09	313 21.9	-00.3	S 22 15.3	-00.3	3 05.9	-00.1	S 16 59.6	+00.6	286 46.6	-28.1	S 18 20.9	-06.0	09		
10	328 21.6	-00.3	S 22 15.0	-00.4	18 05.8	-00.2	S 17 00.2	+00.5	301 18.5	-28.1	S 18 14.9	-06.0	10		
11	343 21.3	-00.2	S 22 14.6	-00.3	33 05.6	-00.2	S 17 00.7	+00.6	315 50.4	-28.0	S 18 08.9	-06.1	11		
12	358 21.1	-00.3	S 22 14.3	-00.4	48 05.4	-00.1	S 17 01.3	+00.5	330 22.4	-28.0	S 18 02.8	-06.2	12		
13	13 20.8	-00.2	S 22 13.9	-00.3	63 05.3	-00.2	S 17 01.8	+00.6	344 54.4	-27.9	S 17 56.6	-06.2	13		
14	28 20.6	-00.3	S 22 13.6	-00.3	78 05.1	-00.2	S 17 02.4	+00.5	359 26.5	-27.9	S 17 50.4	-06.4	14		
15	43 20.3	-00.3	S 22 13.3	-00.4	93 04.9	-00.2	S 17 02.9	+00.6	13 58.6	-27.8	S 17 44.0	-06.4	15		
16	58 20.0	-00.2	S 22 12.9	-00.3	108 04.7	-00.1	S 17 03.5	+00.5	28 30.8	-27.9	S 17 37.6	-06.5	16		
17	73 19.8	-00.3	S 22 12.6	-00.4	123 04.6	-00.2	S 17 04.0	+00.6	43 02.9	-27.7	S 17 31.1	-06.5	17		
18	88 19.5	-00.3	S 22 12.2	-00.3	138 04.4	-00.2	S 17 04.6	+00.6	57 35.2	-27.8	S 17 24.6	-06.7	18		
19	103 19.2	-00.2	S 22 11.9	-00.3	153 04.2	-00.2	S 17 05.1	+00.6	72 07.4	-27.6	S 17 17.9	-06.7	19		
20	118 19.0	-00.3	S 22 11.6	-00.4	168 04.0	-00.2	S 17 05.7	+00.5	86 39.8	-27.7	S 17 11.2	-06.8	20		
21	133 18.7	-00.3	S 22 11.2	-00.3	183 03.8	-00.1	S 17 06.2	+00.6	101 12.1	-27.6	S 17 04.4	-06.8	21		
22	148 18.4	-00.2	S 22 10.9	-00.4	198 03.7	-00.2	S 17 06.8	+00.5	115 44.5	-27.5	S 16 57.6	-07.0	22		
23	163 18.2	-00.3	S 22 10.5	-00.3	213 03.5	-00.2	S 17 07.3	+00.6	130 17.0	-27.6	S 16 50.6	-07.0	23		
UT 02 06 10 14 18 22	SD 16°3 16°3 16°3 16°3 16°3 16°3	SD 00°2 00°2 00°2 00°2 00°2 00°2	SD 14°7 14°7 14°7 14°7 14°7 14°7	SD 16°3 16°3 16°3 16°3 16°3 16°3	SD 00°2 00°2 00°2 00°2 00°2 00°2	SD 14°7 14°7 14°7 14°7 14°7 14°7	SD 16°3 16°3 16°3 16°3 16°3 16°3	SD 00°2 00°2 00°2 00°2 00°2 00°2	SD 14°7 14°7 14°7 14°7 14°7 14°7	SD 16°3 16°3 16°3 16°3 16°3 16°3	SD 00°2 00°2 00°2 00°2 00°2 00°2	SD 14°7 14°7 14°7 14°7 14°7 14°7	SD 16°3 16°3 16°3 16°3 16°3 16°3		
HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°0 00°0 00°0 00°0 00°0 00°0		
SHA 071° 071° 071° 071° 071° 071°	SHA 121° 121° 120° 120° 120° 120°	SHA 048° 048° 044° 042° 040° 040°	SHA 070° 070° 070° 069° 069° 069°	SHA 120° 120° 119° 119° 119° 119°	SHA 036° 034° 032° 030° 028° 026°	SHA 048° 048° 044° 042° 040° 040°	SHA 070° 070° 070° 069° 069° 069°	SHA 120° 120° 119° 119° 119° 119°	SHA 036° 034° 032° 030° 028° 026°	SHA 048° 048° 044° 042° 040° 040°	SHA 070° 070° 070° 069° 069° 069°	SHA 120° 120° 119° 119° 119° 119°	SHA 036° 034° 032° 030° 028° 026°		
Greenwich Culmination Time: 12:06				Greenwich Culmination Time: 08:47				Greenwich Culmination Time: 14:02				Greenwich Culmination Time: 12:07			

UT	Sun				Venus				Moon				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
00	178 17.9	-00.2	S 22 10.2	-00.4	228 03.3	-00.2	S 17 07.9	+00.5	144 49.4	-27.4	S 16 43.6	-07.1	00		
01	193 17.7	-00.3	S 22 09.8	-00.3	243 03.1	-00.2	S 17 08.4	+00.6	159 22.0	-27.5	S 16 36.5	-07.1	01		
02	208 17.4	-00.3	S 22 09.5	-00.4	258 02.9	-00.2	S 17 09.0	+00.5	173 54.5	-27.4	S 16 29.4	-07.2	02		
03	223 17.1	-00.2	S 22 09.1	-00.3	273 02.7	-00.1	S 17 09.5	+00.5	188 27.1	-27.4	S 16 22.2	-07.3	03		
04	238 16.9	-00.3	S 22 08.8	-00.3	288 02.6	-00.2	S 17 10.0	+00.6	202 59.7	-27.3	S 16 14.9	-07.4	04		
05	253 16.6	-00.3	S 22 08.5	-00.4	303 02.4	-00.2	S 17 10.6	+00.5	217 32.4	-27.3	S 16 07.5	-07.4	05		
06	268 16.3	-00.2	S 22 08.1	-00.3	318 02.2	-00.2	S 17 11.1	+00.6	232 05.1	-27.2	S 16 00.1	-07.5	06		
07	283 16.1	-00.3	S 22 07.8	-00.4	333 02.0	-00.2	S 17 11.7	+00.5	246 37.9	-27.2	S 15 52.6	-07.5	07		
08	298 15.8	-00.2	S 22 07.4	-00.4	348 01.8	-00.2	S 17 12.2	+00.6	261 10.7	-27.2	S 15 45.1	-07.7	08		
09	313 15.6	-00.3	S 22 07.0	-00.3	3 01.6	-00.2	S 17 12.8	+00.5	275 43.5	-27.1	S 15 37.4	-07.6	09		
10	328 15.3	-00.3	S 22 06.7	-00.4	18 01.4	-00.2	S 17 13.3	+00.6	290 16.4	-27.1	S 15 29.8	-07.8	10		
11	343 15.0	-00.2	S 22 06.3	-00.3	33 01.2	-00.2	S 17 13.9	+00.5	304 49.3	-27.0	S 15 22.0	-07.8	11		
12	358 14.8	-00.3	S 22 06.0	-00.4	48 01.0	-00.1	S 17 14.4	+00.5	319 22.3	-27.1	S 15 14.2	-07.9	12		
13	13 14.5	-00.2	S 22 05.6	-00.3	63 00.9	-00.2	S 17 14.9	+00.6	333 55.2	-26.9	S 15 06.3	-07.9	13		
14	28 14.3	-00.3	S 22 05.3	-00.4	78 00.7	-00.2	S 17 15.5	+00.5	348 28.3	-27.0	S 14 58.4	-08.1	14		
15	43 14.0	-00.3	S 22 04.9	-00.3	93 00.5	-00.2	S 17 16.0	+00.6	3 01.3	-26.9	S 14 50.3	-08.0	15		
16	58 13.7	-00.2	S 22 04.6	-00.4	108 00.3	-00.2	S 17 16.6	+00.5	17 34.4	-26.8	S 14 42.3	-08.2	16		
17	73 13.5	-00.3	S 22 04.2	-00.4	123 00.1	-00.2	S 17 17.1	+00.5	32 07.6	-26.9	S 14 34.1	-08.1	17		
18	88 13.2	-00.2	S 22 03.8	-00.3	137 59.9	-00.2	S 17 17.6	+00.6	46 40.7	-26.8	S 14 26.0	-08.3	18		
19	103 13.0	-00.3	S 22 03.5	-00.4	152 59.7	-00.2	S 17 18.2	+00.5	61 13.9	-26.7	S 14 17.7	-08.3	19		
20	118 12.7	-00.3	S 22 03.1	-00.3	167 59.5	-00.2	S 17 18.7	+00.6	75 47.2	-26.7	S 14 09.4	-08.4	20		
21	133 12.4	-00.2	S 22 02.8	-00.4	182 59.3	-00.2	S 17 19.3	+00.5	90 20.5	-26.7	S 14 01.0	-08.4	21		
22	148 12.2	-00.3	S 22 02.4	-00.4	197 59.1	-00.2	S 17 19.8	+00.5	104 53.8	-26.7	S 13 52.6	-08.5	22		
23	163 11.9	-00.2	S 22 02.0	-00.3	212 58.9	-00.2	S 17 20.3	+00.6	119 27.1	-26.6	S 13 44.1	-08.5	23		
UT 02 06 10 14 18 22	SD 16°3 16°3 16°3 16°3 16°3 16°3	SD 00°2 00°2 00°2 00°2 00°2 00°2	SD 14°7 14°7 14°7 14°7 14°7 14°7	SD 16°3 16°3 16°3 16°3 16°3 16°3	SD 00°2 00°2 00°2 00°2 00°2 00°2	SD 14°7 14°7 14°7 14°7 14°7 14°7	SD 16°3 16°3 16°3 16°3 16°3 16°3	SD 00°2 00°2 00°2 00°2 00°2 00°2	SD 14°7 14°7 14°7 14°7 14°7 14°7	SD 16°3 16°3 16°3 16°3 16°3 16°3	SD 00°2 00°2 00°2 00°2 00°2 00°2	SD 14°7 14°7 14°7 14°7 14°7 14°7	SD 16°3 16°3 16°3 16°3 16°3 16°3		
HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°0 00°0 00°0 00°0 00°0 00°0		
SHA 070° 070° 070° 069° 069° 069°	SHA 120° 120° 119° 119° 119° 119°	SHA 036° 034° 032° 030° 028° 026°	SHA 048° 048° 044° 042° 040° 040°	SHA 070° 070° 070° 069° 069° 069°	SHA 120° 120° 119° 119° 119° 119°	SHA 036° 034° 032° 030° 028° 026°	SHA 048° 048° 044° 042° 040° 040°	SHA 070° 070° 070° 069° 069° 069°	SHA 120° 120° 119° 119° 119° 119°	SHA 036° 034° 032° 030° 028° 026°	SHA 048° 048° 044° 042° 040° 040°	SHA 070° 070° 070° 069° 069° 069°	SHA 120° 120° 119° 119° 119° 119°		
Greenwich Culmination Time: 12:07				Greenwich Culmination Time: 08:47				Greenwich Culmination Time: 14:47				Greenwich Culmination Time: 14:47			

UT	Mars				Jupiter				Saturn				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	102 55.9	+00.9	N 01 42.9	+00.7	215 22.0	+01.9	S 21 45.7	+00.1	184 02.4	+02.1	S 22 24.1	+00.0	00
01	117 56.8	+01.0	N 01 43.6	+00.7	230 23.9	+02.0	S 21 45.8	+00.0	199 04.5	+02.2	S 22 24.1	+00.0	01
02	132 57.8	+00.9	N 01 44.3	+00.7	245 25.9	+01.9	S 21 45.8	+00.1	214 06.7	+02.1	S 22 24.1	+00.0	02
03	147 58.7	+00.9	N 01 45.0	+00.7	260 27.8	+01.9	S 21 45.9	+00.1	229 08.8	+02.2	S 22 24.1	-00.1	03
04	162 59.6	+01.0	N 01 45.7	+00.8	275 29.7	+01.9	S 21 46.0	+00.0	244 11.0	+02.1	S 22 24.0	+00.0	04
05	178 00.6	+00.9	N 01 46.5	+00.7	290 31.6	+01.9	S 21 46.0	+00.1	259 13.1	+02.1	S 22 24.0	+00.0	05
06	193 01.5	+01.0	N 01 47.2	+00.7	305 33.5	+02.0	S 21 46.1	+00.0	274 15.2	+02.2	S 22 24.0	+00.0	06
07	208 02.5	+00.											

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°3 16°3 16°3 16°3 16°3 16°3
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 065° 064° 064° 064° 064° 064°
Greenwich Culmination Time: 12:08

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°1 00°1 00°1 00°1 00°1 00°1
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 352° 352° 352° 352° 351°
Greenwich Culmination Time: 16:58

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°3 16°3 16°3 16°3 16°3 16°3
HP 00°2 00°2 00°2 00°2 00°2 00°2
SHA 118° 117° 117° 117° 117° 117°
Greenwich Culmination Time: 12:07

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°3 00°3 00°3 00°3 00°3 00°3
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 107° 107° 107° 107° 107°
Greenwich Culmination Time: 09:28

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	177	59.6	-00.2	S 21 43.4	-00.4	227	47.9	-00.2	S 17 46.3	+00.5	113	12.0	-25.7	S 05 49.7	-10.6	00				
01	192	59.4	-00.3	S 21 43.0	-00.4	242	47.7	-00.2	S 17 46.8	+00.5	127	46.3	-25.6	S 05 39.1	-10.7	01				
02	207	59.1	-00.2	S 21 42.6	-00.4	257	47.5	-00.3	S 17 47.3	+00.6	142	20.7	-25.7	S 05 28.4	-10.7	02				
03	222	58.9	-00.2	S 21 42.2	-00.4	272	47.2	-00.2	S 17 47.9	+00.5	156	55.0	-25.6	S 05 17.7	-10.7	03				
04	237	58.7	-00.3	S 21 41.8	-00.4	287	47.0	-00.3	S 17 48.4	+00.5	171	29.4	-25.7	S 05 07.0	-10.7	04				
05	252	58.4	-00.2	S 21 41.4	-00.4	302	46.7	-00.2	S 17 48.9	+00.5	186	03.7	-25.6	S 04 56.3	-10.8	05				
06	267	58.2	-00.3	S 21 41.0	-00.4	317	46.5	-00.3	S 17 49.4	+00.5	200	38.1	-25.7	S 04 45.5	-10.8	06				
07	282	57.9	-00.2	S 21 40.6	-00.5	332	46.2	-00.2	S 17 49.9	+00.6	215	12.4	-25.6	S 04 34.7	-10.8	07				
08	297	57.7	-00.3	S 21 40.1	-00.4	347	46.0	-00.3	S 17 50.5	+00.5	229	46.8	-25.7	S 04 23.9	-10.8	08				
09	312	57.4	-00.2	S 21 39.7	-00.4	2 45.7	-00.2	S 17 51.0	+00.5	244	21.1	-25.7	S 04 13.1	-10.9	09					
10	327	57.2	-00.2	S 21 39.3	-00.4	17 45.5	-00.3	S 17 51.5	+00.5	258	55.4	-25.6	S 04 02.2	-10.9	10					
11	342	57.0	-00.3	S 21 38.9	-00.4	32 45.2	-00.2	S 17 52.0	+00.5	273	29.8	-25.7	S 03 51.3	-10.9	11					
12	357	56.7	-00.2	S 21 38.5	-00.4	47 45.0	-00.3	S 17 52.5	+00.5	288	04.1	-25.7	S 03 40.4	-10.9	12					
13	12	56.5	-00.3	S 21 38.1	-00.4	62 44.7	-00.2	S 17 53.0	+00.5	302	38.4	-25.7	S 03 29.5	-11.0	13					
14	27	56.2	-00.2	S 21 37.7	-00.4	77 44.5	-00.3	S 17 53.5	+00.6	317	12.7	-25.7	S 03 18.5	-11.0	14					
15	42	56.0	-00.2	S 21 37.3	-00.4	92 44.2	-00.2	S 17 54.1	+00.5	331	47.0	-25.7	S 03 07.5	-10.9	15					
16	57	55.8	-00.3	S 21 36.9	-00.4	107 44.0	-00.3	S 17 54.6	+00.5	346	21.3	-25.7	S 02 56.6	-11.1	16					
17	72	55.5	-00.2	S 21 36.5	-00.4	122 43.7	-00.3	S 17 55.1	+00.5	0 55.6	-25.8	S 02 45.5	-11.0	17						
18	87	55.3	-00.3	S 21 36.1	-00.5	137 43.4	-00.2	S 17 55.6	+00.5	15 29.8	-25.7	S 02 34.5	-11.0	18						
19	102	55.0	-00.2	S 21 35.6	-00.4	152 43.2	-00.3	S 17 56.1	+00.5	30 04.1	-25.8	S 02 23.5	-11.1	19						
20	117	54.8	-00.2	S 21 35.2	-00.4	167 42.9	-00.2	S 17 56.6	+00.5	44 38.3	-25.8	S 02 12.4	-11.1	20						
21	132	54.6	-00.3	S 21 34.8	-00.4	182 42.7	-00.3	S 17 57.1	+00.5	59 12.5	-25.7	S 02 01.3	-11.1	21						
22	147	54.3	-00.2	S 21 34.4	-00.4	197 42.4	-00.3	S 17 57.6	+00.6	73 46.8	-25.8	S 01 50.2	-11.1	22						
23	162	54.1	-00.3	S 21 34.0	-00.4	212 42.1	-00.2	S 17 58.2	+00.5	88 21.0	-25.9	S 01 39.1	-11.1	23						
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°3	16°3	16°3	16°3	16°3	16°3	SD	00°2	00°2	00°2	00°2	00°2	00°2	SD	14°9	14°9	14°9	14°9	14°9	15°0
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°2	00°2	00°2	00°2	00°2	00°2	HP	54°5	54°6	54°7	54°7	54°8	54°9
SHA	067°	067°	066°	066°	066°	066°	SHA	117°	116°	116°	116°	116°	116°	SHA	001°	359°	357°	355°	354°	352°
Greenwich Culmination Time: 12:08																				

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	177	53.8	-00.2	S 21 33.6	-00.4	227	41.9	-00.3	S 17 58.7	+00.5	102	55.1	-25.8	S 01 28.0	-11.2	00				
01	192	53.6	-00.2	S 21 33.2	-00.5	242	41.6	-00.3	S 17 59.2	+00.5	117	29.3	-25.9	S 01 16.8	-11.1	01				
02	207	53.4	-00.3	S 21 32.7	-00.4	257	41.3	-00.2	S 17 59.7	+00.5	132	03.4	-25.8	S 01 05.7	-11.2	02				
03	222	53.1	-00.2	S 21 32.3	-00.4	272	41.1	-00.3	S 18 00.2	+00.5	146	37.6	-25.9	S 00 54.5	-11.2	03				
04	237	52.9	-00.2	S 21 31.9	-00.4	287	40.8	-00.2	S 18 00.7	+00.5	161	11.7	-25.9	S 00 43.3	-11.2	04				
05	252	52.7	-00.3	S 21 31.5	-00.4	302	40.6	-00.3	S 18 01.2	+00.5	175	45.8	-26.0	S 00 32.1	-11.2	05				
06	267	52.4	-00.2	S 21 31.1	-00.5	317	40.3	-00.3	S 18 01.7	+00.5	190	19.8	-25.9	S 00 20.9	-11.2	06				
07	282	52.2	-00.2	S 21 30.6	-00.4	332	40.0	-00.3	S 18 02.2	+00.5	204	53.9	-26.0	S 00 09.7	-11.3	07				
08	297	52.0	-00.3	S 21 30.2	-00.4	347	39.7	-00.2	S 18 02.7	+00.5	219	27.9	-26.0	N 00 01.6	+11.2	08				
09	312	51.7	-00.2	S 21 29.8	-00.4	2 39.5	-00.3	S 18 03.2	+00.5	234	01.9	-26.1	N 00 12.8	+11.3	09					
10	327	51.5	-00.3	S 21 29.4	-00.5	17 39.2	-00.3	S 18 03.7	+00.6	248	35.8	-26.0	N 00 24.1	+11.2	10					
11	342	51.2	-00.2	S 21 28.9	-00.4	32 38.9	-00.2	S 18 04.3	+00.5	263	09.8	-26.1	N 00 35.3	+11.3	11					
12	357	51.0	-00.2	S 21 28.5	-00.4	47 38.7	-00.3	S 18 04.8	+00.5	277	43.7	-26.2	N 00 46.6	+11.3	12					
13	12	50.8	-00.3	S 21 28.1	-00.4	62 38.4	-00.3	S 18 05.3	+00.5	292	17.5	-26.1	N 00 57.9	+11.2	13					
14	27	50.5	-00.2	S 21 27.7	-00.5	77 38.1	-00.3	S 18 05.8	+00.5	306	51.4	-26.2	N 01 09.1	+11.3	14					
15	42	50.3	-00.2	S 21 27.2	-00.4	92 37.8	-00.2	S 18 06.3	+00.5	321	25.2	-26.2	N 01 20.4	+11.3	15					
16	57	50.1	-00.3	S 21 26.8	-00.4	107 37.6	-00.3	S 18 06.8	+00.5	335	59.0	-26.2	N 01 31.7	+11.3	16					
17	72	49.8	-00.2	S 21 26.4	-00.4	122 37.3	-00.3	S 18 07.3	+00.5	350	32.8	-26.3	N 01 43.0	+11.3	17					
18	87	49.6	-00.2	S 21 26.0	-00.5	137 37.0	-00.3	S 18 07.8	+00.5	5 06.5	-26.3	N 01 54.3	+11.3	18						
19	102	49.4	-00.3	S 21 25.5	-00.4	152 36.7	-00.2	S 18 08.3	+00.5	19 40.2	-26.4	N 02 05.6	+11.3	19						
20	117	49.1	-00.2	S 21 25.1	-00.4	167 36.5	-00.3	S 18 08.8	+00.5	34 13.8	-26.4	N 02 16.9	+11.3	20						
21	132	48.9	-00.2	S 21 24.7	-00.5	182 36.2	-00.3	S 18 09.3	+00.5	48 47.4	-26.4	N 02 28.2	+11.3	21						
22	147	48.7	-00.3	S 21 24.2	-00.4	197 35.9	-00.3	S 18 09.8	+00.5	63 21.0	-26.4	N 02 39.5	+11.3	22						
23	162	48.4	-00.2	S 21 23.8	-00.4	212 35.6	-00.3	S 18 10.3	+00.5	77 54.6	-26.5	N 02 50.8	+11.3	23						
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°3	16°3	16°3	16°3	16°3	16°3	SD	00°2	00°2	00°2	00°2	00°2	00°2	SD	15°0	15°0	15°0	15°1	15°1	15°1
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°2	00°2	00°2	00°2	00°2	00°2	HP	00°1	00°1	00°1	00°1	00°1	00°1
SHA	066°	066°	065°	065°	065°	065°	SHA	115°	115°	115°	115°	115°	115°	SHA	350°	348°	346°	344°	342°	340°
Greenwich Culmination Time: 12:08																				

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	104	25.4	+00.9	N 02 51.6	+00.7	218	26.8	+01.9	S 21 51.6	+00.1	187	28.5	+02.1	S 22 21.8	+00.0	00
01	119	26.3	+00.9	N 02 52.3	+00.7	233	28.7	+02.0	S 21 51.7	+00.1	202	30.6	+02.2	S 22 21.8	-00.1	01
02	134	27.2	+01.0	N 02 53.0	+00.7	248	30.7	+01.9	S 21 51.8	+00.1	217	32.8	+02.1	S 22 21.7	+00.0	02
03	149	28.2	+00.9	N 02 53.7	+00.7	263	32.6	+01.9	S 21 51.8	+00.1	232	34.9	+02.2	S 22 21.7	+00.0	03
04	164	29.1	+00.9	N 02 54.4	+00.7	278	34.5	+01.9	S 21 51.9	+00.0	247	37.1	+02.1	S 22 21.7	+00.0	04
05	179	30.0	+01.0	N 02 55.1	+00.7	293	36.4	+02.0	S 21 51.9	+00.1	262	39.2	+02.2	S 22 21.7	-00.1	05
06	194	31.0	+00.9	N 02 55.8	+00.8	308	38.4	+01.9	S 21 52.0	+00.1	277	41.4	+02.1	S 22 21.6	+00.0	06
07	209	31.9	+00.9	N 02 56.6	+00.7	323	40.3	+01.9	S 21 52.1	+00.0	292	43.5	+02.2	S 22 21.6	+00.0	07
08	224	32.8	+01.0	N 02 57.3	+00.7	338	42.2	+02.0	S 21 52.1	+00.1	307	45.7	+02.1	S 22 21.6	+00.0	08
09	239	33.8	+00.9	N 02 58.0	+00.7	353	44.2	+01.9	S 21 52.2	+00.0	322	47.8	+02.2	S 22 21.6	-00.1	09
10	254	34.7	+00.9	N 02 58.7	+00.7	8 46.1	+01.9	S 21 52.2	+00.1	337	50.0	+02.1	S 22 21.5	+00.0	10	
11	269	35.6	+00.9	N 02 59.4	+00.7	23 48.0	+02.0	S 21 52.3	+00.0	352	52.1	+02.2	S 22 21.5	+00.0	11	
12	284	36.5	+01.0	N 03 00.1	+00.7	38 50.0	+01.9	S 21 52.3	+00.1	7 54.3	+02.1	S 22 21.5	+00.0	12		
13	299	37.5	+00.9	N 03 00.8	+00.7	53 51.9	+01.9	S 21 52.4	+00.1	22 56.4	+02.2	S 22 21.5	-00.1	13		
14	314	38.4	+00.9	N 03 01.5	+00.8	68 53.8	+02.0	S 21 52.5	+00.0	37 58.6	+02.1	S 22 21.4	+00.0			

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°3 16°3 16°3 16°3 16°3 16°3
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 060° 060° 060° 060° 060° 059°
Greenwich Culmination Time: 12:10

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°3 16°3 16°3 16°3 16°3 16°3
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 063° 063° 063° 063° 063° 063°
Greenwich Culmination Time: 12:09

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°1 00°1 00°1 00°1 00°1 00°1
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 349° 349° 349° 349° 349° 349°
Greenwich Culmination Time: 16:52

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°3 00°3 00°3 00°3 00°3 00°3
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 107° 107° 107° 106° 106° 106°
Greenwich Culmination Time: 09:15

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	177	37.5	-00.3	S 21 01.7	-00.4	227	20.9	-00.3	S 18 34.2	+00.5	70	10.6	-29.7	N 11 48.6	+10.3	00				
01	192	37.2	-00.2	S 21 01.3	-00.5	242	20.6	-00.3	S 18 34.7	+00.4	84	40.9	-29.7	N 11 58.9	+10.2	01				
02	207	37.0	-00.2	S 21 00.8	-00.5	257	20.3	-00.3	S 18 35.1	+00.5	99	11.2	-29.8	N 12 09.1	+10.2	02				
03	222	36.8	-00.2	S 21 00.3	-00.5	272	20.0	-00.4	S 18 35.6	+00.5	113	41.4	-29.8	N 12 19.3	+10.1	03				
04	237	36.6	-00.2	S 20 59.8	-00.4	287	19.6	-00.3	S 18 36.1	+00.5	128	11.6	-30.0	N 12 29.4	+10.1	04				
05	252	36.4	-00.2	S 20 59.4	-00.5	302	19.3	-00.3	S 18 36.6	+00.4	142	41.6	-30.1	N 12 39.5	+10.0	05				
06	267	36.2	-00.3	S 20 58.9	-00.5	317	19.0	-00.3	S 18 37.0	+00.5	157	11.5	-30.1	N 12 49.5	+09.9	06				
07	282	35.9	-00.2	S 20 58.4	-00.4	332	18.7	-00.4	S 18 37.5	+00.5	171	41.4	-30.3	N 12 59.4	+09.9	07				
08	297	35.7	-00.2	S 20 58.0	-00.5	347	18.3	-00.3	S 18 38.0	+00.4	186	11.1	-30.3	N 13 09.3	+09.9	08				
09	312	35.5	-00.2	S 20 57.5	-00.5	2 18.0	-00.3	S 18 38.4	+00.5	200	40.8	-30.4	N 13 19.2	+09.8	09					
10	327	35.3	-00.2	S 20 57.0	-00.5	17 17.7	-00.3	S 18 38.9	+00.5	215	10.4	-30.5	N 13 29.0	+09.7	10					
11	342	35.1	-00.2	S 20 56.5	-00.4	32 17.4	-00.4	S 18 39.4	+00.5	229	39.9	-30.6	N 13 38.7	+09.7	11					
12	357	34.9	-00.2	S 20 56.1	-00.5	47 17.0	-00.3	S 18 39.9	+00.4	244	09.3	-30.8	N 13 48.4	+09.6	12					
13	12	34.7	-00.3	S 20 55.6	-00.5	62 16.7	-00.3	S 18 40.3	+00.5	258	38.5	-30.8	N 13 58.0	+09.6	13					
14	27	34.4	-00.2	S 20 55.1	-00.5	77 16.4	-00.4	S 18 40.8	+00.5	273	07.7	-30.9	N 14 07.6	+09.5	14					
15	42	34.2	-00.2	S 20 54.6	-00.5	92 16.0	-00.3	S 18 41.3	+00.5	287	36.8	-30.9	N 14 17.1	+09.4	15					
16	57	34.0	-00.2	S 20 54.1	-00.4	107 15.7	-00.3	S 18 41.7	+00.5	302	05.9	-31.1	N 14 26.5	+09.4	16					
17	72	33.8	-00.2	S 20 53.7	-00.5	122 15.4	-00.4	S 18 42.2	+00.5	316	34.8	-31.2	N 14 35.9	+09.3	17					
18	87	33.6	-00.2	S 20 53.2	-00.5	137 15.0	-00.3	S 18 42.7	+00.4	331	03.6	-31.3	N 14 45.2	+09.2	18					
19	102	33.4	-00.2	S 20 52.7	-00.5	152 14.7	-00.3	S 18 43.1	+00.5	345	32.3	-31.4	N 14 54.4	+09.2	19					
20	117	33.2	-00.2	S 20 52.2	-00.5	167 14.4	-00.4	S 18 43.6	+00.5	0 00.9	-31.5	N 15 03.6	+09.1	20						
21	132	33.0	-00.3	S 20 51.7	-00.4	182 14.0	-00.3	S 18 44.1	+00.4	14 29.4	-31.6	N 15 12.7	+09.0	21						
22	147	32.7	-00.2	S 20 51.3	-00.5	197 13.7	-00.3	S 18 44.5	+00.5	28 57.8	-31.6	N 15 21.7	+09.0	22						
23	162	32.5	-00.2	S 20 50.8	-00.5	212 13.4	-00.4	S 18 45.0	+00.4	43 26.2	-31.8	N 15 30.7	+08.8	23						
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°3	16°3	16°3	16°3	16°3	16°3	SD	00°2	00°2	00°2	00°2	00°2	00°2	SD	15°6	15°7	15°7	15°7	15°8	15°8
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°2	00°2	00°2	00°2	00°2	00°2	HP	57°3	57°5	57°6	57°8	58°0	58°1
SHA	062°	062°	062°	062°	062°	062°	SHA	112°	112°	112°	112°	111°	111°	SHA	314°	312°	310°	307°	305°	303°
Greenwich Culmination Time: 12:09						Greenwich Culmination Time: 08:50						Greenwich Culmination Time: 19:59								

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	177	32.3	-00.2	S 20 50.3	-00.5	227	13.0	-00.3	S 18 45.4	+00.5	57	54.4	-31.9	N 15 39.5	+08.8	00				
01	192	32.1	-00.2	S 20 49.8	-00.5	242	12.7	-00.3	S 18 45.9	+00.5	72	22.5	-32.0	N 15 48.3	+08.8	01				
02	207	31.9	-00.2	S 20 49.3	-00.5	257	12.4	-00.4	S 18 46.4	+00.4	86	50.5	-32.1	N 15 57.1	+08.6	02				
03	222	31.7	-00.2	S 20 48.8	-00.5	272	12.0	-00.3	S 18 46.8	+00.5	101	18.4	-32.1	N 16 05.7	+08.6	03				
04	237	31.5	-00.2	S 20 48.3	-00.4	287	11.7	-00.4	S 18 47.3	+00.5	115	46.3	-32.3	N 16 14.3	+08.5	04				
05	252	31.3	-00.2	S 20 47.9	-00.5	302	11.3	-00.3	S 18 47.8	+00.4	130	14.0	-32.4	N 16 22.8	+08.4	05				
06	267	31.1	-00.2	S 20 47.4	-00.5	317	11.0	-00.3	S 18 48.2	+00.5	144	41.6	-32.5	N 16 31.2	+08.3	06				
07	282	30.9	-00.2	S 20 46.9	-00.5	332	10.7	-00.4	S 18 48.7	+00.4	159	09.1	-32.6	N 16 39.5	+08.2	07				
08	297	30.7	-00.2	S 20 46.4	-00.5	347	10.3	-00.3	S 18 49.1	+00.5	173	36.5	-32.7	N 16 47.7	+08.2	08				
09	312	30.5	-00.3	S 20 45.9	-00.5	2 10.0	-00.4	S 18 49.6	+00.4	188	03.8	-32.8	N 16 55.9	+08.0	09					
10	327	30.2	-00.2	S 20 45.4	-00.5	17 09.6	-00.3	S 18 50.0	+00.5	202	31.0	-32.9	N 17 03.9	+08.0	10					
11	342	30.0	-00.2	S 20 44.9	-00.5	32 09.3	-00.4	S 18 50.5	+00.5	216	58.1	-33.0	N 17 11.9	+07.8	11					
12	357	29.8	-00.2	S 20 44.4	-00.5	47 08.9	-00.3	S 18 51.0	+00.4	231	25.1	-33.1	N 17 19.7	+07.8	12					
13	12	29.6	-00.2	S 20 43.9	-00.5	62 08.6	-00.4	S 18 51.4	+00.5	245	52.0	-33.2	N 17 27.5	+07.7	13					
14	27	29.4	-00.2	S 20 43.4	-00.5	77 08.2	-00.3	S 18 51.9	+00.4	260	18.8	-33.3	N 17 35.2	+07.6	14					
15	42	29.2	-00.2	S 20 42.9	-00.4	92 07.9	-00.4	S 18 52.3	+00.5	274	45.5	-33.4	N 17 42.8	+07.5	15					
16	57	29.0	-00.2	S 20 42.5	-00.5	107 07.5	-00.3	S 18 52.8	+00.4	289	12.1	-33.5	N 17 50.3	+07.4	16					
17	72	28.8	-00.2	S 20 42.0	-00.5	122 07.2	-00.4	S 18 53.2	+00.5	303	38.6	-33.6	N 17 57.7	+07.3	17					
18	87	28.6	-00.2	S 20 41.5	-00.5	137 06.8	-00.3	S 18 53.7	+00.4	318	05.0	-33.7	N 18 05.0	+07.2	18					
19	102	28.4	-00.2	S 20 41.0	-00.5	152 06.5	-00.4	S 18 54.1	+00.5	332	31.3	-33.8	N 18 12.2	+07.1	19					
20	117	28.2	-00.2	S 20 40.5	-00.5	167 06.1	-00.3	S 18 54.6	+00.4	346	57.5	-34.0	N 18 19.3	+07.0	20					
21	132	28.0	-00.2	S 20 40.0	-00.5	182 05.8	-00.4	S 18 55.0	+00.5	1 23.5	-34.0	N 18 26.3	+06.8	21						
22	147	27.8	-00.2	S 20 39.5	-00.5	197 05.4	-00.3	S 18 55.5	+00.4	15 49.5	-34.1	N 18 33.1	+06.8	22						
23	162	27.6	-00.2	S 20 39.0	-00.5	212 05.1	-00.4	S 18 55.9	+00.5	30 15.4	-34.2	N 18 39.9	+06.7	23						
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°3	16°3	16°3	16°3	16°3	16°3	SD	00°2	00°2	00°2	00°2	00°2	00°2	SD	15°9	15°9	16°0	16°0	16°1	16°1
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°2	00°2	00°2	00°2	00°2	00°2	HP	58°3	58°5	58°6	58°8	58°9	59°1
SHA	061°	061°	061°	061°	060°	060°	SHA	111°	111°	111°	110°	110°	110°	SHA	301°	298°	296°	294°	291°	289°
Greenwich Culmination Time: 12:10						Greenwich Culmination Time: 08:51						Greenwich Culmination Time: 20:54								

UT	Sun				Venus				Moon				UT										
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec											
00	177	09.5	-00.2	S 19 47.3	-00.6	226	27.4	-00.4	S 19 36.7	+00.4	345	26.4	-36.9	N 18 23.4	-07.7								
01	192	09.3	-00.2	S 19 46.7	-00.5	241	27.0	-00.4	S 19 37.1	+00.4	359	49.5	-36.8	N 18 15.7	-07.7								
02	207	09.1	-00.2	S 19 46.2	-00.6	256	26.6	-00.5	S 19 37.5	+00.4	14	12.7	-36.8	N 18 08.0	-07.9								
03	222	08.9	-00.1	S 19 45.6	-00.6	271	26.1	-00.4	S 19 37.9	+00.4	28	35.9	-36.7	N 18 00.1	-08.0								
04	237	08.8	-00.2	S 19 45.0	-00.5	286	25.7	-00.4	S 19 38.3	+00.4	42	59.2	-36.7	N 17 52.1	-08.2								
05	252	08.6	-00.2	S 19 44.5	-00.6	301	25.3	-00.4	S 19 38.7	+00.4	57	22.5	-36.5	N 17 43.9	-08.2								
06	267	08.4	-00.1	S 19 43.9	-00.6	316	24.9	-00.5	S 19 39.1	+00.4	71	46.0	-36.5	N 17 35.7	-08.4								
07	282	08.3	-00.2	S 19 43.3	-00.5	331	24.4	-00.4	S 19 39.5	+00.3	86	09.5	-36.5	N 17 27.3	-08.6								
08	297	08.1	-00.2	S 19 42.8	-00.6	346	24.0	-00.4	S 19 39.8	+00.4	100	33.0	-36.3	N 17 18.7	-08.6								
09	312	07.9	-00.1	S 19 42.2	-00.6	1 23.6	-00.5	S 19 40.2	+00.4	114	56.7	-36.3	N 17 10.1	-08.8									
10	327	07.8	-00.2	S 19 41.6	-00.5	16	23.1	-00.4	S 19 40.6	+00.4	129	20.4	-36.3	N 17 01.3	-08.9								
11	342	07.6	-00.2	S 19 41.1	-00.6	31	22.7	-00.4	S 19 41.0	+00.4	143	44.1	-36.1	N 16 52.4	-09.0								
12	357	07.4	-00.1	S 19 40.5	-00.6	46	22.3	-00.4	S 19 41.4	+00.4	158	08.0	-36.1	N 16 43.4	-09.1								
13	12	07.3	-00.2	S 19 39.9	-00.5	61	21.9	-00.5	S 19 41.8	+00.3	172	31.9	-36.0	N 16 34.3	-09.2								
14	27	07.1	-00.2	S 19 39.4	-00.6	76	21.4	-00.4	S 19 42.1	+00.4	186	55.9	-35.9	N 16 25.1	-09.4								
15	42	06.9	-00.1	S 19 38.8	-00.6	91	21.0	-00.4	S 19 42.5	+00.4	201	20.0	-35.9	N 16 15.7	-09.4								
16	57	06.8	-00.2	S 19 38.2	-00.6	106	20.6	-00.5	S 19 42.9	+00.4	215	44.1	-35.7	N 16 06.3	-09.6								
17	72	06.6	-00.2	S 19 37.6	-00.5	121	20.1	-00.4	S 19 43.3	+00.4	230	08.4	-35.7	N 15 56.7	-09.7								
18	87	06.4	-00.1	S 19 37.1	-00.6	136	19.7	-00.4	S 19 43.7	+00.3	244	32.7	-35.6	N 15 47.0	-09.7								
19	102	06.3	-00.2	S 19 36.5	-00.6	151	19.3	-00.5	S 19 44.0	+00.4	258	57.1	-35.6	N 15 37.3	-09.9								
20	117	06.1	-00.2	S 19 35.9	-00.6	166	18.8	-00.4	S 19 44.4	+00.4	273	21.5	-35.4	N 15 27.4	-10.0								
21	132	05.9	-00.1	S 19 35.3	-00.6	181	18.4	-00.4	S 19 44.8	+00.4	287	46.1	-35.4	N 15 17.4	-10.1								
22	147	05.8	-00.2	S 19 34.7	-00.5	196	18.0	-00.5	S 19 45.2	+00.3	302	10.7	-35.3	N 15 07.3	-10.2								
23	162	05.6	-00.2	S 19 34.2	-00.6	211	17.5	-00.4	S 19 45.5	+00.4	316	35.4	-35.2	N 14 57.1	-10.3								
UT 02 06 10 14 18 22	SD 16°3 16°3 16°3 16°3 16°3 16°3	SD 00°2 00°2 00°2 00°2 00°2 00°2	SD 16°7 16°7 16°7 16°7 16°7 16°7	SD 16°3 16°3 16°3 16°3 16°3 16°3	SD 00°2 00°2 00°2 00°2 00°2 00°2	SD 16°7 16°7 16°7 16°7 16°7 16°7	SD 16°3 16°3 16°3 16°3 16°3 16°3	SD 00°2 00°2 00°2 00°2 00°2 00°2	SD 16°4 16°4 16°4 16°4 16°4 16°4	SD 00°1 00°1 00°1 00°1 00°1 00°1	SD 16°3 16°3 16°3 16°3 16°3 16°3	SD 00°2 00°2 00°2 00°2 00°2 00°2	SD 16°4 16°4 16°4 16°4 16°4 16°4	SD 00°1 00°1 00°1 00°1 00°1 00°1	SD 16°5 16°5 16°5 16°5 16°5 16°5								
HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°2 00°2 00°2 00°2 00°2 00°2	HP 61°3 61°3 61°3 61°3 61°3 61°3	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 60°1 60°1 60°1 60°1 60°1 60°1	HP 00°2 00°2 00°2 00°2 00°2 00°2	HP 61°3 61°3 61°3 61°3 61°3 61°3	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 59°9 59°9 59°9 59°9 59°9 59°9	HP 109°1 109°1 108°1 108°1 108°1 108°1	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 109°1 109°1 108°1 108°1 108°1 108°1	HP 00°2 00°2 00°2 00°2 00°2 00°2	HP 60°1 60°1 60°1 60°1 60°1 60°1	HP 271°1 269°3 266°6 263°6 261°1 258°8									
SHA 056° 056° 056° 055° 055° 055°	SHA 105° 105° 105° 105° 105° 104°	SHA 213° 213° 218° 215° 213° 211°	SHA 059° 059° 059° 059° 058° 058°	SHA 109° 109° 108° 108° 108° 108°	SHA 056° 056° 056° 055° 055° 055°	SHA 105° 105° 105° 105° 105° 104°	SHA 059° 059° 059° 059° 058° 058°	SHA 109° 109° 108° 108° 108° 108°	SHA 271° 269° 266° 263° 261° 258°														
Greenwich Culmination Time: 12:11				Greenwich Culmination Time: 08:54				Greenwich Culmination Time: 01:00				Greenwich Culmination Time: 12:10				Greenwich Culmination Time: 08:52				Greenwich Culmination Time: 22:54			

UT	Sun				Venus				Moon				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
00	177	22.6	-00.2	S 20 26.2	-00.5	226	56.0	-00.4	S 19 07.0	+00.4	30	31.6	-36.5	N 20 50.2	+03.5
01	192	22.4	-00.2	S 20 25.7	-00.5	241	55.6	-00.3	S 19 07.4	+00.5	44	55.1	-36.6	N 20 53.7	+03.3
02	207	22.2	-00.2	S 20 25.2	-00.5	256	55.3	-00.4	S 19 07.9	+00.4	59	18.5	-36.6	N 20 57.0	+03.3
03	222	22.0	-00.2	S 20 24.7	-00.5	271	54.9	-00.4	S 19 08.3	+00.4	73	41.9	-36.7	N 21 00.3	+03.0
04	237	21.8	-00.1	S 20 24.2	-00.5	286	54.5	-00.4	S 19 08.7	+00.5	88	05.2	-36.8	N 21 03.3	+02.9
05	252	21.7	-00.2	S 20 23.7	-00.6	301	54.1	-00.3	S 19 09.2	+00.4	102	28.4	-36.8	N 21 06.2	+02.8
06	267	21.5	-00.2	S 20 23.1	-00.6	316	53.8	-00.4	S 19 09.6	+00.4	116	51.6	-36.9	N 21 09.0	+02.6
07	282	21.3	-00.2	S 20 22.6	-00.5	331	53.4	-00.4	S 19 10.0	+00.5	131	14.7	-37.0	N 21 11.6	+02.5
08	297	21.1	-00.2	S 20 22.1	-00.5	346	53.0	-00.4	S 19 10.5	+00.4	145	37.7	-37.0	N 21 14.1	+02.3
09	312	20.9	-00.2	S 20 21.6	-00.6	1 52.6	-00.3	S 19 10.9	+00.4	160	00.7	-37.1	N 21 16.4	+02.2	
10	327	20.7	-00.2	S 20 21.0	-00.5	16	52.3	-00.4	S 19 11.3	+00.5	174	23.6	-37.2	N 21 18.6	+02.0
11	342	20.5	-00.2	S 20 20.5	-00.5	31	51.9	-00.4	S 19 11.8	+00.4	188	46.4	-37.2	N 21 20.6	+01.8
12	357	20.3	-00.2	S 20 20.0	-00.5	46	51.5	-00.4	S 19 12.2	+00.4	203	09.2	-37.3	N 21 22.4	+01.7
13	12	20.1	-00.2	S 20 19.5	-00.6	61	51.1	-00.4	S 19 12.6	+00.4	217	31.9	-37.4	N 21 24.1	+01.6
14	27	19.9	-00.2	S 20 18.9	-00.5	76	50.7	-00.4	S 19 13.0	+00.5	231	54.5	-37.3	N 21 25.7	+01.4
15	42	19.7	-00.1	S 20 18.4	-00.5	91	50.3	-00.3	S 19 13.5	+00.4	246	17.2	-37.5	N 21 27.1	+01.2
16	57	19.6	-00.2	S 20 17.9	-00.5	106	50.0	-00.4	S 19 13.9	+00.4	260	39.7	-37.5	N 21 28.3	+01.1
17	72	19.4	-00.2	S 20 17.4	-00.6	121	49.6	-00.4	S 19 14.3	+00.5	275	02.2	-37.5	N 21 29.4	+01.0
18	87	19.2	-00.2	S 20 16.8	-00.5	136	49.2	-00.4	S 19 14.8	+00.5	289	24.7	-37.6	N 21 30.4	+00.7
19	102	19.0	-00.2	S 20 16.3	-00.5	151	48.8	-00.4	S 19 15.2	+00.4	303	47.1	-37.6	N 21 31.1	+00.6
20	117	18.8	-00.2	S 20 15.8	-00.6	166	48.4	-00.4	S 19 15.6	+00.4	318	09.5	-37.7	N 21 31.7	+00.5
21	132	18.6	-00.2	S 20 15.2	-00.5	181	48.0	-00.4	S 19 16.0	+00.4	332	31.8	-37.7	N 21 32.2	+00.3
22	147	18.4	-00.2	S 20 14.7	-00.5	196	47.6	-00.3	S 19 16.4	+00.5	346	54.1	-37.7	N 21 32.5	+00.1
23	162	18.2	-00.2	S 20 14.2	-00.6	211	47.3	-00.4	S 19 16.9	+00.4	1 16.4	-37.8	N 21 32.6	+00.0	
UT 02 06 10 14 18 22	SD 16°3 16°3 16°3 16°3 16°3 16°3	SD 00°2 00°2 00°2 00°2 00°2 00°2	SD 16°7 16°7 16°7 16°7 16°7 16°7	SD 16°3 16°3 16°3 16°3 16°3 16°3	SD 00°2 00°2 00°2 00°2 00°2 00°2	SD 16°7 16°7 16°7 16°7 16°7 16°7	SD 16°3 16°3 16°3 16°3 16°3 16°3	SD 00°2 00°2 00°2 00°2 00°2 00°2	SD 16°4 16°4 16°4 16°4 16°4 16°4	SD 00°1 00°1 00°1 00°1 00°1 00°1	SD 16°3 16°3 16°3 16°3 16°3 16°3	SD 00°2 00°2 00°2 00°2 00°2 00°2	SD 16°4 16°4 16°4 16°4 16°4 16°4	SD 00°1 00°1 00°1 00°1 00°1 00°1	SD 16°5 16°5 16°5 16°5 16°5 16°5
HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°2 00°2 00°2 00°2 00°2 00°2	HP 61°3 61°3 61°3 61°3 61°3 61°3	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 60°1 60°1 60°1 60°1 60°1 60°1	HP 00°2 00°2 00°2 00°2 00°2 00°2	HP 61°3 61°3 61°3 61°3 61°3 61°3	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 59°9 59°9 59°9 59°9 59°9 59°9	HP 109°1 109°1 108°1 108°1 108°1 108°1	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 109°1 109°1 108°1 108°1 108°1 108°1	HP 00°2 00°2 00°2 00°2 00°2 00°2	HP 60°1 60°1 60°1 60°1 60°1 60°1	HP 271°1 269°3 266°6 263°6 261°1 258°8	
SHA 056° 056° 056° 055° 055° 055°	SHA 105° 105° 105° 105° 105° 104°	SHA 213° 213° 218° 215° 213° 211°	SHA 059° 059° 059° 059° 058° 058°	SHA 109° 109° 108° 108° 108° 108°	SHA 056° 056° 056° 055° 055° 055°	SHA 105° 105° 105° 105° 105° 104°	SHA 059° 059° 059° 059° 058° 058°	SHA 109° 109° 108° 108° 108° 108°	SHA 271° 269° 266° 263° 261° 258°						

UT	Mars				Jupiter				Saturn				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
00	108	06.4	+00.9	N 05 41.0	+00.7	226	13.6	+01.9	S 22 04.7	+00.0	196	04.9	+02.2	S 22 15.5	+00.0
01	123	07.3	+01.0	N 05 41.7	+00.7	241	15.5	+02.0	S 22 04.7	+00.1	211	07.1	+02.2	S 22 15.5	+00.0
02	138	08.3	+00.9	N 05 42.4	+00.7	256	17.5	+02.0	S 22 04.8	+00.0	226	09.3	+02.1	S 22 15.5	-00.1
03	153	09.2	+00.9	N 05 43.1	+00.7	271	19.5	+01.9	S 22 04.8	+00.1	241	11.4	+02.2	S 22 15.4	+00.0
04	168	10.1	+00.9	N 05 43.8	+00.7	286	21.4	+02.0	S 22 04.9	+00.0	256	13.6	+02.1	S 22 15.4	+00.0
05	183	11.0	+00.9	N 05 44.5	+00.7	301	23.4	+01.9	S 22 04.9	+00.1	271	15.7	+02.2	S 22 15.4	+00.0

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°3 16°3 16°3 16°3 16°3 16°3
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 058° 058° 058° 058° 057° 057°
Greenwich Culmination Time: 12:10

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°1 00°1 00°1 00°1 00°1 00°1
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 348° 348° 348° 348° 348° 348°
Greenwich Culmination Time: 16:49

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°3 16°3 16°3 16°3 16°3 16°3
HP 00°2 00°2 00°2 00°2 00°2 00°2
SHA 106° 106° 106° 106° 105° 105°
Greenwich Culmination Time: 08:53

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°1 00°1 00°1 00°1 00°1 00°1
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 348° 348° 347° 347° 347° 347°
Greenwich Culmination Time: 16:48

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 052° 052° 051° 051° 051° 051°
Greenwich Culmination Time: 12:12

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°1 00°1 00°1 00°1 00°1 00°1
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 345° 344° 344° 344° 344° 344°
Greenwich Culmination Time: 16:40

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°3 16°3 16°3 16°3 16°3 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 055° 055° 055° 054° 054° 054°
Greenwich Culmination Time: 12:11

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°1 00°1 00°1 00°1 00°1 00°1
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 346° 346° 346° 346° 346° 346°
Greenwich Culmination Time: 16:45

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	177	01.6	-00.1	S 19 19.5	-00.6	226	06.4	-00.5	S 19 54.7	+00.3	317	19.7	-33.2	N 10 15.3	-12.2	00
01	192	01.5	-00.2	S 19 18.9	-00.6	241	05.9	-00.4	S 19 55.0	+00.4	331	46.5	-33.1	N 10 03.1	-12.2	01
02	207	01.3	-00.1	S 19 18.3	-00.6	256	05.5	-00.5	S 19 55.4	+00.3	346	13.4	-33.0	N 09 50.9	-12.2	02
03	222	01.2	-00.2	S 19 17.7	-00.6	271	05.0	-00.4	S 19 55.7	+00.4	0	40.4	-32.9	N 09 38.7	-12.3	03
04	237	01.0	-00.2	S 19 17.1	-00.6	286	04.6	-00.5	S 19 56.1	+00.3	15	07.5	-32.9	N 09 26.4	-12.4	04
05	252	00.8	-00.1	S 19 16.5	-00.6	301	04.1	-00.4	S 19 56.4	+00.4	29	34.6	-32.8	N 09 14.0	-12.4	05
06	267	00.7	-00.2	S 19 15.9	-00.6	316	03.7	-00.5	S 19 56.8	+00.3	44	01.8	-32.7	N 09 01.6	-12.4	06
07	282	00.5	-00.1	S 19 15.3	-00.6	331	03.2	-00.5	S 19 57.1	+00.4	58	29.1	-32.6	N 08 49.2	-12.5	07
08	297	00.4	-00.2	S 19 14.7	-00.6	346	02.7	-00.4	S 19 57.5	+00.3	72	56.5	-32.6	N 08 36.7	-12.5	08
09	312	00.2	-00.1	S 19 14.1	-00.6	1	02.3	-00.5	S 19 57.8	+00.4	87	23.9	-32.4	N 08 24.2	-12.6	09
10	327	00.1	-00.2	S 19 13.5	-00.6	16	01.8	-00.4	S 19 58.2	+00.3	101	51.5	-32.4	N 08 11.6	-12.6	10
11	341	59.9	-00.1	S 19 12.9	-00.6	31	01.4	-00.5	S 19 58.5	+00.4	116	19.1	-32.4	N 07 59.0	-12.6	11
12	356	59.8	-00.2	S 19 12.3	-00.6	46	00.9	-00.5	S 19 58.9	+00.3	130	46.7	-32.2	N 07 46.4	-12.6	12
13	11	59.6	-00.1	S 19 11.7	-00.6	61	00.4	-00.4	S 19 59.2	+00.4	145	14.5	-32.2	N 07 33.8	-12.7	13
14	26	59.5	-00.2	S 19 11.1	-00.6	75	60.0	-00.5	S 19 59.6	+00.3	159	42.3	-32.1	N 07 21.1	-12.8	14
15	41	59.3	-00.1	S 19 10.5	-00.6	90	59.5	-00.4	S 19 59.9	+00.4	174	10.2	-32.1	N 07 08.3	-12.7	15
16	56	59.2	-00.2	S 19 09.9	-00.6	105	59.1	-00.5	S 20 00.3	+00.3	188	38.1	-32.0	N 06 55.6	-12.8	16
17	71	59.0	-00.1	S 19 09.3	-00.6	120	58.6	-00.5	S 20 00.6	+00.4	203	06.1	-31.9	N 06 42.8	-12.8	17
18	86	58.9	-00.2	S 19 08.7	-00.6	135	58.1	-00.4	S 20 01.0	+00.3	217	34.2	-31.8	N 06 30.0	-12.8	18
19	101	58.7	-00.1	S 19 08.1	-00.6	150	57.7	-00.5	S 20 01.3	+00.4	232	02.4	-31.8	N 06 17.2	-12.9	19
20	116	58.6	-00.2	S 19 07.5	-00.6	165	57.2	-00.5	S 20 01.7	+00.3	246	30.6	-31.7	N 06 04.3	-12.8	20
21	131	58.4	-00.1	S 19 06.9	-00.6	180	56.7	-00.4	S 20 02.0	+00.3	260	58.9	-31.6	N 05 51.5	-12.9	21
22	146	58.3	-00.2	S 19 06.3	-00.6	195	56.3	-00.5	S 20 02.3	+00.4	275	27.3	-31.6	N 05 38.6	-12.9	22
23	161	58.1	-00.1	S 19 05.7	-00.6	210	55.8	-00.5	S 20 02.7	+00.3	289	55.7	-31.5	N 05 25.7	-13.0	23

UT 02 06 10 14 18 22	SD 16°2 16°2 16°2 16°2 16°2 16°2	UT 02 06 10 14 18 22	SD 00°2 00°2 00°2 00°2 00°2 00°2	UT 02 06 10 14 18 22	SD 16°5 16°5 16°4 16°4 16°4 16°3
HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 60°5 60°4 60°3 60°2 60°1 59°9	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 054° 054° 054° 053° 053° 053°	SHA 103° 103° 103° 102° 102° 102°	SHA 103° 103° 103° 102° 102° 102°	SHA 193° 191° 188° 186° 184° 182°	SHA 103° 102° 101° 101° 101° 101°	SHA 053° 053° 053° 052° 052° 052°
Greenwich Culmination Time: 12:12	Greenwich Culmination Time: 08:55	Greenwich Culmination Time: 08:55	Greenwich Culmination Time: 02:57	Greenwich Culmination Time: 12:12	Greenwich Culmination Time: 08:56

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	108	50.2	+00.9	N 06 14.4	+00.7	227	47.9	+01.9	S 22 07.0	+00.1	197	48.5	+02.2	S 22 14.2	+00.0	00
01	123	51.1	+00.9	N 06 15.1	+00.7	242	49.8	+02.0	S 22 07.1	+00.0	212	50.7	+02.1	S 22 14.2	+00.0	01
02	138	52.0	+00.9	N 06 15.8	+00.7	257	51.8	+02.0	S 22 07.1	+00.0	227	52.8	+02.2	S 22 14.2	-00.1	02
03	153	52.9	+00.9	N 06 16.5	+00.7	272	53.8	+01.9	S 22 07.1	+00.1	242	55.0	+02.1	S 22 14.1	+00.0	03
04	168	53.8	+00.9	N 06 17.2	+00.7	287	55.7	+02.0	S 22 07.2	+00.0	257	57.1	+02.2	S 22 14.1	+00.0	04
05	183	54.7	+00.9	N 06 17.9	+00.6	302	57.7	+02.0	S 22 07.2	+00.1	272	59.3	+02.1	S 22 14.1	+00.0	05
06	198	55.6	+00.9	N 06 18.5	+00.7	317	59.7	+01.9	S 22 07.3	+00.0	288	01.4	+02.2	S 22 14.1	-00.1	06
07	213	56.5	+00.9	N 06 19.2	+00.7	333	01.6	+02.0	S 22 07.3	+00.1	303	03.6	+02.2	S 22 14.0	+00.0	07
08	228	57.4	+00.9	N 06 19.9	+00.7	348	03.6	+02.0	S 22 07.4	+00.0	318	05.8	+02.1	S 22 14.0	+00.0	08
09	243	58.3	+00.9	N 06 20.6	+00.7	3	05.6	+02.0	S 22 07.4	+00.1	333	07.9	+02.2	S 22 14.0	-00.1	09
10	258	59.2	+01.0	N 06 21.3	+00.7	18	07.6	+01.9	S 22 07.5	+00.0	348	10.1	+02.1	S 22 13.9	+00.0	10
11	274	00.2	+00.9	N 06 22.0	+00.7	33	09.5	+02.0	S 22 07.5	+00.1	3	12.2	+02.2	S 22 13.9	+00.0	11
12	289	01.1	+00.9	N 06 22.7	+00.7	48	11.5	+02.0	S 22 07.6	+00.0	18	14.4	+02.2	S 22 13.9	+00.0	12
13	304	02.0	+00.9	N 06 23.4	+00.7	63	13.5	+01.9	S 22 07.6	+00.1	33	16.6	+02.1	S 22 13.9	-00.1	13
14	319	02.9	+00.9	N 06 24.1	+00.7	78	15.4	+02.0	S 22 07.7	+00.0	48	18.7	+02.2	S 22 13.8	+00.0	14
15	334	03.8	+00.9	N 06 24.8	+00.7	93	17.4	+02.0	S 22 07.7	+00.1	63	20.9	+02.1	S 22 13.8	+00.0	15
16	349	04.7	+00.9	N 06 25.5	+00.7	108	19.4	+01.9	S 22 07.8	+00.0	78	23.0	+02.2	S 22 13.8	+00.0	16
17	4	05.6	+00.9	N 06 26.2	+00.6	123	21.3	+02.0	S 22 07.8	+00.1	93	25.2	+02.2	S 22 13.8	-00.1	17
18	19	06.5	+00.9	N 06 26.8	+00.6	138	23.3	+02.0	S 22 07.9	+00.0	108	27.4	+02.1	S 22 13.7	+00.0	18
19	34	07.4	+00.9	N 06 27.5	+00.7	153	25.3	+02.0	S 22 07.9	+00.0	123	29.5	+02.2	S 22 13.7	+00.0	19
20	49	08.3	+00.9	N 06 28.2	+00.7	168	27.3	+01.9	S 22 07.9	+00.1	138	31.7	+02.1	S 22 13.7	-00.1	20
21	64	09.2	+00.9	N 06 28.9	+00.7	183	29.2	+02.0	S 22 08.0	+00.0	153	33.8	+02.2	S 22 13.6	+00.0	21
22	79	10.1	+01.0	N 06 29.6	+00.7	198	31.2	+02.0	S 22 08.0	+00.1	168	36.0	+02.2	S 22 13.6	+00.0	22
23	94	11.1	+00.9	N 06 30.3	+00.7	213	33.2	+01.9	S 22 08.1	+00.0	183	38.2	+02.1	S 22 13.6	+00.0	23

UT 02 06 10 14 18 22	SD 00°1 00°1 00°1 00°1 00°1 00°1	UT 02 06 10 14 18 22	SD 00°3 00°3 00°3 00°3 00°3 00°3	UT 02 06 10 14 18 22	SD 00°1 00°1 00°1 00°1 00°1 00°1
HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 346° 346° 346° 345° 345° 345°	SHA 105° 105° 105° 105° 105° 105°	SHA 105° 105° 105° 105° 105° 105°	SHA 075° 075° 075° 075° 075° 075°	SHA 105° 105° 104° 104° 104° 104°	SHA 075° 075° 075° 075° 075° 075°
Greenwich Culmination Time: 16:43	Greenwich Culmination Time: 08:47	Greenwich Culmination Time: 08:47	Greenwich Culmination Time: 10:47	Greenwich Culmination Time: 16:42	Greenwich Culmination Time: 10:43

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	176	58.0	-00.2	S 19 05.1	-00.6	225	55.3	-00.4	S 20 03.0	+00.4	304	24.2	-31.4	N 05 12.7	-12.9	00
01	191	57.8	-00.1	S 19 04.5	-00.7	240	54.9	-00.5	S 20 03.4	+00.3	318	52.8	-31.4	N 04 59.8	-13.0	01
02	206	57.7	-00.2	S 19 03.8	-00.6	255	54.4	-00.5	S 20 03.7	+00.3	333	21.4	-31.3	N 04 46.8	-12.9	02
03	221	57.5	-00.1	S 19 03.2	-00.6	270	53.9	-00.5	S 20 04.0	+00.4	347	50.1	-31.3	N 04 33.9	-13.0	03
04	236	57.4	-00.1	S 19 02.6	-00.6	285	53.4	-00.4	S 20 04.4	+00.3	2	18.8	-31.2	N 04 20.9	-13.0	04
05	251	57.3	-00.2	S 19 02.0	-00.6	300	53.0	-00.5	S 20 04.7	+00.3	16	47.6	-31.1	N 04 07.9	-13.0	05
06	266	57.1	-00.1	S 19 01.4	-00.6	315	52.5	-00.5	S 20 05.0	+00.4	31	16.5	-31.1	N 03 54.9	-13.0	06
07	281	57.0	-00.2	S 19 00.8	-00.6	330	52.0	-00.4	S 20 05.4	+00.3	45	45.4	-31.0	N 03 41.9	-13.0	07
08	296	56.8	-00.1	S 19 00.2	-00.6	345	51.6	-00.5	S 20 05.7	+00.3	60	14.4	-30.9	N 03 28.9	-13.0	08
09	311	56.7	-00.2	S 18 59.6	-00.7	0	51.1	-00.5	S 20 06.0	+00.4	74	43.5	-31.0	N 03 15.9	-13.0	09
10	326	56.5	-00.1	S 18 58.9	-00.6	15	50.6	-00.5	S 20 06.4	+00.3	89	12.5	-30.8	N 03 02.9	-13.0	10
11	341	56.4	-00.2	S 18 58.3	-00.6	30	50.1	-00.4	S 20 06.7	+00.3	103	41.7	-30.8	N 02 49.9	-13.0	11
12	356	56.2	-00.1	S 18 57.7	-00.6	45	49.7	-00.5	S 20 07.0	+00.4	118	10.9	-30.7	N 02 36.9	-13.0	12
13	11	56.1	-00.1	S 18 57.1	-00.6	60	49.2	-00.5	S 20 0							

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	176	42.8	-00.1	S 17 47.7	-00.7	224	55.0	-00.5	S 20 38.2	+00.2	245	07.7	-29.5	S 17 01.7	+07.2	00				
01	191	42.7	-00.1	S 17 47.0	-00.6	239	54.5	-00.6	S 20 38.4	+00.3	259	38.2	-29.5	S 17 08.9	+07.1	01				
02	206	42.6	-00.1	S 17 46.4	-00.7	254	53.9	-00.5	S 20 38.7	+00.2	274	08.7	-29.5	S 17 16.0	+07.1	02				
03	221	42.5	-00.2	S 17 45.7	-00.7	269	53.4	-00.5	S 20 38.9	+00.2	288	39.2	-29.5	S 17 23.1	+06.9	03				
04	236	42.3	-00.1	S 17 45.0	-00.7	284	52.9	-00.6	S 20 39.1	+00.3	303	09.7	-29.5	S 17 30.0	+06.9	04				
05	251	42.2	-00.1	S 17 44.3	-00.7	299	52.3	-00.5	S 20 39.4	+00.2	317	40.2	-29.5	S 17 36.9	+06.8	05				
06	266	42.1	-00.1	S 17 43.6	-00.6	314	51.8	-00.5	S 20 39.6	+00.3	332	10.7	-29.5	S 17 43.7	+06.7	06				
07	281	42.0	-00.1	S 17 43.0	-00.7	329	51.3	-00.6	S 20 39.9	+00.2	346	41.2	-29.6	S 17 50.4	+06.6	07				
08	296	41.9	-00.1	S 17 42.3	-00.7	344	50.7	-00.5	S 20 40.1	+00.2	1	11.6	-29.6	S 17 57.0	+06.5	08				
09	311	41.8	-00.1	S 17 41.6	-00.7	359	50.2	-00.6	S 20 40.3	+00.3	15	42.0	-29.6	S 18 03.5	+06.4	09				
10	326	41.7	-00.1	S 17 40.9	-00.7	14	49.6	-00.5	S 20 40.6	+00.2	30	12.4	-29.6	S 18 09.9	+06.3	10				
11	341	41.6	-00.1	S 17 40.2	-00.7	29	49.1	-00.5	S 20 40.8	+00.2	44	42.8	-29.6	S 18 16.2	+06.2	11				
12	356	41.5	-00.1	S 17 39.5	-00.6	44	48.6	-00.6	S 20 41.0	+00.3	59	13.2	-29.6	S 18 22.4	+06.1	12				
13	11	41.4	-00.1	S 17 38.9	-00.7	59	48.0	-00.5	S 20 41.3	+00.2	73	43.6	-29.6	S 18 28.5	+06.0	13				
14	26	41.3	-00.1	S 17 38.2	-00.7	74	47.5	-00.6	S 20 41.5	+00.2	88	14.0	-29.7	S 18 34.5	+06.0	14				
15	41	41.2	-00.1	S 17 37.5	-00.7	89	46.9	-00.5	S 20 41.7	+00.3	102	44.3	-29.6	S 18 40.5	+05.8	15				
16	56	41.1	-00.1	S 17 36.8	-00.7	104	46.4	-00.6	S 20 42.0	+00.2	117	14.7	-29.7	S 18 46.3	+05.8	16				
17	71	41.0	-00.1	S 17 36.1	-00.7	119	45.8	-00.5	S 20 42.2	+00.2	131	45.0	-29.7	S 18 52.1	+05.6	17				
18	86	40.9	-00.1	S 17 35.4	-00.7	134	45.3	-00.5	S 20 42.4	+00.3	146	15.3	-29.7	S 18 57.7	+05.6	18				
19	101	40.8	-00.1	S 17 34.7	-00.7	149	44.8	-00.6	S 20 42.7	+00.2	160	45.6	-29.7	S 19 03.3	+05.4	19				
20	116	40.7	-00.1	S 17 34.0	-00.7	164	44.2	-00.5	S 20 42.9	+00.2	175	15.9	-29.7	S 19 08.7	+05.4	20				
21	131	40.6	-00.1	S 17 33.3	-00.6	179	43.7	-00.6	S 20 43.1	+00.2	189	46.2	-29.8	S 19 14.1	+05.2	21				
22	146	40.5	-00.1	S 17 32.7	-00.7	194	43.1	-00.5	S 20 43.3	+00.3	204	16.4	-29.7	S 19 19.3	+05.2	22				
23	161	40.4	-00.1	S 17 32.0	-00.7	209	42.6	-00.6	S 20 43.6	+00.2	218	46.7	-29.8	S 19 24.5	+05.0	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°2	16°2	16°2	16°2	16°2	16°2	SD	00°2	00°2	00°2	00°2	00°2	00°2	SD	15°2	15°2	15°1	15°1	15°1	15°1
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°2	00°2	00°2	00°2	00°2	00°2	HP	55°7	55°6	55°5	55°4	55°3	55°2
SHA	048°	048°	047°	047°	047°	047°	SHA	096°	096°	095°	095°	095°	095°	SHA	115°	113°	111°	109°	107°	104°
Greenwich Culmination Time: 12:13				Greenwich Culmination Time: 09:00				Greenwich Culmination Time: 07:55												

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	176	51.3	-00.1	S 18 35.1	-00.6	225	32.2	-00.5	S 20 18.4	+00.3	280	11.2	-29.4	S 05 00.8	+12.1	00				
01	191	51.2	-00.1	S 18 34.5	-00.6	240	31.7	-00.5	S 20 18.7	+00.3	294	41.8	-29.4	S 05 12.9	+12.1	01				
02	206	51.1	-00.2	S 18 33.9	-00.7	255	31.2	-00.5	S 20 19.0	+00.3	309	12.4	-29.4	S 05 25.0	+12.1	02				
03	221	50.9	-00.1	S 18 33.2	-00.6	270	30.7	-00.5	S 20 19.3	+00.3	323	43.0	-29.3	S 05 37.1	+12.0	03				
04	236	50.8	-00.1	S 18 32.6	-00.7	285	30.2	-00.5	S 20 19.6	+00.3	338	13.7	-29.3	S 05 49.1	+12.0	04				
05	251	50.7	-00.2	S 18 31.9	-00.6	300	29.7	-00.5	S 20 19.9	+00.3	352	44.4	-29.3	S 06 01.1	+12.0	05				
06	266	50.5	-00.1	S 18 31.3	-00.6	315	29.2	-00.5	S 20 20.2	+00.3	7	15.1	-29.3	S 06 13.1	+11.9	06				
07	281	50.4	-00.1	S 18 30.7	-00.7	330	28.7	-00.5	S 20 20.5	+00.3	21	45.8	-29.3	S 06 25.0	+11.8	07				
08	296	50.3	-00.2	S 18 30.0	-00.6	345	28.2	-00.5	S 20 20.8	+00.3	36	16.5	-29.2	S 06 36.8	+11.8	08				
09	311	50.1	-00.1	S 18 29.4	-00.7	0	27.7	-00.5	S 20 21.1	+00.3	50	47.3	-29.3	S 06 48.6	+11.7	09				
10	326	50.0	-00.1	S 18 28.7	-00.6	15	27.2	-00.5	S 20 21.4	+00.3	65	18.0	-29.2	S 07 00.3	+11.7	10				
11	341	49.9	-00.1	S 18 28.1	-00.7	30	26.7	-00.5	S 20 21.7	+00.3	79	48.8	-29.2	S 07 12.0	+11.7	11				
12	356	49.8	-00.2	S 18 27.4	-00.6	45	26.2	-00.5	S 20 22.0	+00.3	94	19.6	-29.2	S 07 23.7	+11.6	12				
13	11	49.6	-00.1	S 18 26.8	-00.7	60	25.7	-00.5	S 20 22.3	+00.3	108	50.4	-29.2	S 07 35.3	+11.5	13				
14	26	49.5	-00.1	S 18 26.1	-00.6	75	25.2	-00.5	S 20 22.6	+00.3	123	21.2	-29.2	S 07 46.8	+11.5	14				
15	41	49.4	-00.1	S 18 25.5	-00.6	90	24.7	-00.5	S 20 22.9	+00.3	137	52.0	-29.2	S 07 58.3	+11.4	15				
16	56	49.3	-00.2	S 18 24.9	-00.7	105	24.2	-00.6	S 20 23.2	+00.3	152	22.8	-29.1	S 08 09.7	+11.4	16				
17	71	49.1	-00.1	S 18 24.2	-00.6	120	23.6	-00.5	S 20 23.5	+00.3	166	53.7	-29.2	S 08 21.1	+11.3	17				
18	86	49.0	-00.1	S 18 23.6	-00.7	135	23.1	-00.5	S 20 23.8	+00.2	181	24.5	-29.1	S 08 32.4	+11.3	18				
19	101	48.9	-00.1	S 18 22.9	-00.6	150	22.6	-00.5	S 20 24.0	+00.3	195	55.4	-29.2	S 08 43.7	+11.2	19				
20	116	48.8	-00.2	S 18 22.3	-00.7	165	22.1	-00.5	S 20 24.3	+00.3	210	26.2	-29.1	S 08 54.9	+11.1	20				
21	131	48.6	-00.1	S 18 21.6	-00.6	180	21.6	-00.5	S 20 24.6	+00.3	224	57.1	-29.1	S 09 06.0	+11.1	21				
22	146	48.5	-00.1	S 18 21.0	-00.7	195	21.1	-00.5	S 20 24.9	+00.3	239	28.0	-29.1	S 09 17.1	+11.1	22				
23	161	48.4	-00.1	S 18 20.3	-00.6	210	20.6	-00.5	S 20 25.2	+00.3	253	58.9	-29.1	S 09 28.2	+10.9	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°2	16°2	16°2	16°2	16°2	16°2	SD	00°2	00°2	00°2	00°2	00°2	00°2	SD	15°8	15°8	15°7	15°7	15°7	15°6
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°2	00°2	00°2	00°2	00°2	00°2	HP	58°0	57°9	57°7	57°6	57°5	57°3
SHA	051°	051°	050°	050°	050°	050°	SHA	099°	099°	099°	099°	099°	098°	SHA	153°	151°	149°	147°	145°	143°
Greenwich Culmination Time: 12:12				Greenwich Culmination Time: 08:58				Greenwich Culmination Time: 05:30												

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	111	00.2	+00.9	N 07 53.1	+00.7	232	32.9	+01.9	S 22 13.4	+00.0	202	59.9	+02.1	S 22 10.2	+00.0	00
01	126	01.1	+00.9	N 07 53.8	+00.6	247	34.8	+02.0	S 22 13.4	+00.1	218	02.0	+02.2	S 22 10.2	+00.0	01
02	141	02.0	+00.9	N 07 54.4	+00.7	262	36.8	+02.0	S 22 13.5	+00.0	233	04.2	+02.2	S 22 10.2	-00.1	02
03	156	02.9	+00.9	N 07 55.1	+00.7	277	38.8	+02.0	S 22 13.5	+00.0	248	06.4	+02.1	S 22 10.1	+00.0	03
04	171	03.8	+00.9	N 07 55.8	+00.7	292	40.8	+02.0	S 22 13.5	+00.1	263	08.5	+02.2	S 22 10.1	+00.0	04
05	186	04.7	+00.9	N 07 56.5	+00.7	307	42.8	+02.0	S 22 13.6	+00.0	278	10.7	+02.2	S 22 10.1	+00.0	05
06	201	05.6	+00.9	N 07 57.2	+00.6	322	44.8	+02.0	S 22 13.6	+00.1	293	12.9	+02.1	S 22 10.1	-00.1	06
07	216	06.5	+00.9	N 07 57.8	+00.7	337	46.8	+02.0	S 22 13.7	+00.0	308	15.0	+02.2	S 22 10.0	+00.0	07
08	231	07.4	+00.9	N 07 58.5	+00.7	352	48.8	+02.0	S 22 13.7	+00.0	323	17.2	+02.2	S 22 10.0	+00.0	08
09	246	08.3	+00.9	N 07 59.2	+00.7	7	50.8	+02.0	S 22 13.7	+00.1	338	19.4	+02.1	S 22 10.0	-00.1	09
10	261	09.2	+00.9	N 07 59.9	+00.6	22	52.8	+02.0	S 22 13.8	+00.0	353	21.5	+02.2	S 22 09.9	+00.0	10
11	276	10.1	+00.9	N 08 00.5	+00.7	37	54.8	+02.0	S 22 13.8	+00.1	8	23.7	+02.2	S 22 09.9	+00.0	11
12	291	11.0	+00.9	N 08 01.2	+00.7	52	56.8	+01.9	S 22 13.9	+00.0	23	25.9	+02.1	S 22 09.9	+00.0	12
13	30															

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 050° 050° 049° 049° 049° 049°
Greenwich Culmination Time: 12:12

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 049° 049° 048° 048° 048° 048°
Greenwich Culmination Time: 12:13

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°3 00°3 00°3 00°3 00°3 00°3
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 104° 104° 104° 104° 104° 104°
Greenwich Culmination Time: 08:35

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°3 00°3 00°3 00°3 00°3 00°3
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 104° 104° 104° 104° 104° 104°
Greenwich Culmination Time: 08:31

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 044° 043° 043° 043° 043° 043°
Greenwich Culmination Time: 12:13

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°1 00°1 00°1 00°1 00°1 00°1
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 339° 339° 339° 339° 339° 339°
Greenwich Culmination Time: 16:29

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 047° 046° 046° 046° 046° 046°
Greenwich Culmination Time: 12:13

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°1 00°1 00°1 00°1 00°1 00°1
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 341° 341° 341° 341° 341° 341°
Greenwich Culmination Time: 16:33

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for Sun, Venus, Moon, and UT. Rows 00-23 showing celestial coordinates and times.

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 046° 045° 045° 045° 045° 045°
Greenwich Culmination Time: 12:13

Table with columns for Mars, Jupiter, Saturn, and UT. Rows 00-23 showing celestial coordinates and times.

UT 02 06 10 14 18 22
SD 00°1 00°1 00°1 00°1 00°1 00°1
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 341° 341° 341° 340° 340° 340°
Greenwich Culmination Time: 16:32

Table with columns for Sun, Venus, Moon, and UT. Rows 00-23 showing celestial coordinates and times.

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 045° 044° 044° 044° 044° 044°
Greenwich Culmination Time: 12:13

Table with columns for Mars, Jupiter, Saturn, and UT. Rows 00-23 showing celestial coordinates and times.

UT 02 06 10 14 18 22
SD 00°1 00°1 00°1 00°1 00°1 00°1
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 340° 340° 340° 340° 340° 340°
Greenwich Culmination Time: 16:30

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 040° 039° 039° 039° 039° 039°
Greenwich Culmination Time: 12:14

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 337° 337° 337° 337° 337° 336°
Greenwich Culmination Time: 16:23

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 043° 042° 042° 042° 042° 042°
Greenwich Culmination Time: 12:13

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 00°1 00°1 00°1 00°1 00°1 00°1
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 339° 339° 339° 339° 338° 338°
Greenwich Culmination Time: 16:27

Table with columns for UT, Sun, Venus, Moon, and UT. Each planet section includes GHA, ddGHA, Dec, and dDec values for each hour of the day.

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 042° 041° 041° 041° 041° 041°
Greenwich Culmination Time: 12:13

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Each planet section includes GHA, ddGHA, Dec, and dDec values for each hour of the day.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 338° 338° 338° 338° 338° 338°
Greenwich Culmination Time: 16:26

Table with columns for UT, Sun, Venus, Moon, and UT. Each planet section includes GHA, ddGHA, Dec, and dDec values for each hour of the day.

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 041° 041° 040° 040° 040° 040°
Greenwich Culmination Time: 12:14

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Each planet section includes GHA, ddGHA, Dec, and dDec values for each hour of the day.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 338° 337° 337° 337° 337° 337°
Greenwich Culmination Time: 16:25

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

UT	Sun				Venus				Moon				UT																																																																
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec																																																																	
00	176 26.7	-00.1	S 14 11.2	-00.8	222 04.3	-00.6	S 21 11.6	+00.0	111 43.6	-26.7	N 06 18.0	+11.0	00																																																																
01	191 26.6	+00.0	S 14 10.4	-00.8	237 03.7	-00.7	S 21 11.6	+00.0	126 16.9	-26.9	N 06 29.0	+10.9	01																																																																
02	206 26.6	+00.0	S 14 09.6	-00.8	252 03.0	-00.6	S 21 11.6	-00.1	140 50.0	-26.8	N 06 39.9	+10.9	02																																																																
03	221 26.6	+00.0	S 14 08.8	-00.8	267 02.4	+00.6	S 21 11.5	+00.0	155 23.2	-27.0	N 06 50.8	+10.9	03																																																																
04	236 26.6	+00.0	S 14 08.0	-00.8	282 01.8	-00.7	S 21 11.5	+00.0	169 56.2	-26.9	N 07 01.7	+10.9	04																																																																
05	251 26.6	+00.0	S 14 07.2	-00.9	297 01.1	-00.6	S 21 11.5	+00.0	184 29.3	-27.1	N 07 12.6	+10.9	05																																																																
06	266 26.6	+00.0	S 14 06.3	-00.8	312 00.5	-00.6	S 21 11.5	-00.1	199 02.2	-27.0	N 07 23.5	+10.8	06																																																																
07	281 26.6	+00.0	S 14 05.5	-00.8	326 59.9	-00.7	S 21 11.4	+00.0	213 35.2	-27.2	N 07 34.3	+10.8	07																																																																
08	296 26.6	+00.0	S 14 04.7	-00.8	341 59.2	-00.6	S 21 11.4	+00.0	228 08.0	-27.1	N 07 45.1	+10.8	08																																																																
09	311 26.6	+00.0	S 14 03.9	-00.8	356 58.6	-00.7	S 21 11.4	+00.0	242 40.9	-27.3	N 07 55.9	+10.8	09																																																																
10	326 26.6	+00.0	S 14 03.1	-00.9	11 57.9	-00.6	S 21 11.4	-00.1	257 13.6	-27.2	N 08 06.7	+10.7	10																																																																
11	341 26.6	+00.0	S 14 02.2	-00.8	26 57.3	-00.6	S 21 11.3	+00.0	271 46.4	-27.4	N 08 17.4	+10.8	11																																																																
12	356 26.6	+00.0	S 14 01.4	-00.8	41 56.7	-00.7	S 21 11.3	+00.0	286 19.0	-27.4	N 08 28.2	+10.6	12																																																																
13	11 26.6	+00.0	S 14 00.6	-00.8	56 56.0	-00.6	S 21 11.3	-00.1	300 51.6	-27.4	N 08 38.8	+10.7	13																																																																
14	26 26.6	+00.0	S 13 59.8	-00.9	71 55.4	-00.7	S 21 11.2	+00.0	315 24.2	-27.6	N 08 49.5	+10.6	14																																																																
15	41 26.6	+00.0	S 13 58.9	-00.8	86 54.7	-00.6	S 21 11.2	+00.0	329 56.6	-27.5	N 09 00.1	+10.6	15																																																																
16	56 26.6	+00.0	S 13 58.1	-00.8	101 54.1	-00.6	S 21 11.2	-00.1	344 29.1	-27.7	N 09 10.7	+10.6	16																																																																
17	71 26.6	+00.0	S 13 57.3	-00.8	116 53.5	-00.7	S 21 11.1	+00.0	359 01.4	-27.7	N 09 21.3	+10.5	17																																																																
18	86 26.6	+00.0	S 13 56.5	-00.9	131 52.8	-00.6	S 21 11.1	+00.0	13 33.7	-27.7	N 09 31.8	+10.5	18																																																																
19	101 26.6	+00.0	S 13 55.6	-00.8	146 52.2	-00.7	S 21 11.1	-00.1	28 06.0	-27.8	N 09 42.3	+10.5	19																																																																
20	116 26.6	+00.0	S 13 54.8	-00.8	161 51.5	-00.6	S 21 11.0	+00.0	42 38.2	-27.9	N 09 52.8	+10.5	20																																																																
21	131 26.6	+00.0	S 13 54.0	-00.8	176 50.9	-00.6	S 21 11.0	-00.1	57 10.3	-28.0	N 10 03.3	+10.4	21																																																																
22	146 26.6	+00.0	S 13 53.2	-00.9	191 50.3	-00.7	S 21 10.9	+00.0	71 42.3	-28.0	N 10 13.7	+10.3	22																																																																
23	161 26.6	+00.0	S 13 52.3	-00.8	206 49.6	-00.6	S 21 10.9	+00.0	86 14.3	-28.1	N 10 24.0	+10.4	23																																																																
UT	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	UT																																																																
SD	16°2 16'2 16°2 16'2 16°2 16'2	SD	00°1 00'1 00°1 00'1 00°1 00'1	SD	00°1 00'1 00°1 00'1 00°1 00'1	SD	15°1 15'2 15°2 15'2 15°3 15'3	SD	55°6 55'7 55°8 55'9 56°0 56°1	SD	16°2 16'2 16°2 16'2 16°2 16'2	SD	00°2 00'2 00°2 00'2 00°2 00'2	SD	14°8 14'8 14°8 14'8 14°8 14'8																																																														
HP	00°1 00'1 00°1 00'1 00°1 00'1	HP	00°2 00'2 00°2 00'2 00°2 00'2	HP	00°2 00'2 00°2 00'2 00°2 00'2	HP	00°0 00'0 00°0 00'0 00°0 00'0	HP	00°1 00'1 00°1 00'1 00°1 00'1	HP	00°0 00'0 00°0 00'0 00°0 00'0	HP	00°2 00'2 00°2 00'2 00°2 00'2	HP	00°0 00'0 00°0 00'0 00°0 00'0	HP	00°3 00'3 00°3 00'3 00°3 00'3																																																												
SHA	036° 035° 035° 035° 035° 035°	SHA	081° 081° 081° 081° 080° 080°	SHA	081° 081° 081° 081° 080° 080°	SHA	330° 328° 326° 324° 322° 320°	SHA	039° 038° 038° 038° 038° 038°	SHA	039° 038° 038° 038° 038° 038°	SHA	085° 085° 085° 084° 084° 084°	SHA	004° 002° 000° 358° 357° 355°	SHA	004° 002° 000° 358° 357° 355°																																																												
Greenwich Culmination Time: 12:14													Greenwich Culmination Time: 09:12													Greenwich Culmination Time: 17:04													Greenwich Culmination Time: 12:14													Greenwich Culmination Time: 09:09													Greenwich Culmination Time: 14:54												

UT	Sun				Venus				Moon				UT																																																																
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec																																																																	
00	176 28.0	-00.1	S 15 09.0	-00.8	222 49.5	-00.6	S 21 10.5	+00.0	142 45.3	-25.6	S 06 53.1	-10.4	00																																																																
01	191 27.9	+00.0	S 15 08.2	-00.8	237 48.9	-00.6	S 21 10.5	+00.1	157 19.7	-25.7	S 06 42.7	-10.5	01																																																																
02	206 27.9	+00.0	S 15 07.4	-00.7	252 48.3	-00.6	S 21 10.6	+00.0	171 54.0	-25.6	S 06 32.2	-10.5	02																																																																
03	221 27.9	-00.1	S 15 06.7	-00.8	267 47.7	-00.6	S 21 10.6	+00.1	186 28.4	-25.6	S 06 21.7	-10.5	03																																																																
04	236 27.8	+00.0	S 15 05.9	-00.8	282 47.1	-00.7	S 21 10.7	+00.0	201 02.8	-25.6	S 06 11.2	-10.6	04																																																																
05	251 27.8	+00.0	S 15 05.1	-00.8	297 46.4	-00.6	S 21 10.7	+00.1	215 37.2	-25.7	S 06 00.6	-10.6	05																																																																
06	266 27.8	+00.0	S 15 04.3	-00.8	312 45.8	-00.6	S 21 10.8	+00.0	230 11.5	-25.5	S 05 50.0	-10.6	06																																																																
07	281 27.8	-00.1	S 15 03.5	-00.8	327 45.2	-00.6	S 21 10.8	+00.1	244 46.0	-25.6	S 05 39.4	-10.7	07																																																																
08	296 27.7	+00.0	S 15 02.7	-00.8	342 44.6	-00.6	S 21 10.9	+00.0	259 20.4	-25.6	S 05 28.7	-10.6	08																																																																
09	311 27.7	+00.0	S 15 01.9	-00.8	357 44.0	-00.7	S 21 10.9	+00.0	273 54.8	-25.6	S 05 18.1	-10.7	09																																																																
10	326 27.7	-00.1	S 15 01.1	-00.8	12 43.3	-00.6	S 21 10.9	+00.1	288 29.2	-25.6	S 05 07.4	-10.8	10																																																																
11	341 27.6	+00.0	S 15 00.3	-00.8	27 42.7	-00.6	S 21 11.0	+00.0	303 03.6	-25.5	S 04 56.6	-10.7	11																																																																
12	356 27.6	+00.0	S 14 59.5	-00.7	42 42.1	-00.6	S 21 11.0	+00.1	317 38.1	-25.6	S 04 45.9	-10.8	12																																																																
13	11 27.6	+00.0	S 14 58.8	-00.8	57 41.5	-00.7	S 21 11.1	+00.0	332 12.5	-25.5	S 04 35.1	-10.8	13																																																																
14	26 27.6	-00.1	S 14 58.0	-00.8	72 40.8	-00.6	S 21 11.1	+00.0	346 07.0	-25.6	S 04 24.3	-10.8	14																																																																
15	41 27.5	+00.0	S 14 57.2	-00.8	87 40.2	-00.6	S 21 11.1	+00.1	1 21.4	-25.5	S 04 13.5	-10.8	15																																																																
16	56 27.5	+00.0	S 14 56.4	-00.8	102 39.6	-00.6	S 21 11.2	+00.0	15 55.9	-25.6	S 04 02.7	-10.9	16																																																																
17	71 27.5	+00.0	S 14 55.6	-00.8	117 39.0	-00.6	S 21 11.2	+00.0	30 30.3	-25.5	S 03 51.8	-10.9	17																																																																
18	86 27.5	-00.1	S 14 54.8	-00.8	132 38.4	-00.7	S 21 11.2	+00.1	45 04.8	-25.6	S 03 40.9	-10.8	18																																																																
19	101 27.4	+00.0	S 14 54.0	-00.8	147 37.7	-00.6	S 21 11.3	+00.0	59 39.2	-25.5	S 03 30.1	-11.0	19																																																																
20	116 27.4	+00.0	S 14 53.2	-00.8	162 37.1	-00.6	S 21 11.3	+00.0	74 13.7	-25.6	S 03 19.1	-10.9	20																																																																
21	131 27.4	+00.0	S 14 52.4	-00.8	177 36.5	-00.6	S 21 11.3	+00.1	88 48.1	-25.6	S 03 08.2	-10.9	21																																																																
22	146 27.4	+00.0	S 14 51.6	-00.8	192 35.9	-00.7	S 21 11.4	+00.0	103 22.5	-25.5	S 02 57.3	-11.0	22																																																																
23	161 27.4	-00.1	S 14 50.8	-00.8	207 35.2	-00.6	S 21 11.4	+00.0	117 57.0	-25.6	S 02 46.3	-11.0	23																																																																
UT	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	UT																																																																
SD	16°2 16'2 16°2 16'2 16°2 16'2	SD	00°2 00'2 00°2 00'2 00°2 00'2	SD	00°2 00'2 00°2 00'2 00°2 00'2	SD	15°1 15'2 15°2 15'2 15°3 15'3	SD	55°6 55'7 55°8 55'9 56°0 56°1	SD	16°2 16'2 16°2 16'2 16°2 16'2	SD	00°2 00'2 00°2 00'2 00°2 00'2	SD	14°8 14'8 14°8 14'8 14°8 14'8																																																														
HP	00°1 00'1 00°1 00'1 00°1 00'1	HP	00°2 00'2 00°2 00'2 00°2 00'2	HP	00°2 00'2 00°2 00'2 00°2 00'2	HP	00°0 00'0 00°0 00'0 00°0 00'0	HP	00°1 00'1 00°1 00'1 00°1 00'1	HP	00°0 00'0 00°0 00'0 00°0 00'0	HP	00°2 00'2 00°2 00'2 00°2 00'2	HP	00°0 00'0 00°0 00'0 00°0 00'0	HP	00°3 00'3 00°3 00'3 00°3 00'3																																																												
SHA	039° 038° 038° 038° 038° 038°	SHA	085° 085° 085° 084° 084° 084°	SHA	085° 085° 085° 084° 084° 084°	SHA	330° 328° 326° 324° 322° 320°	SHA	039° 038° 038° 038° 038° 038°	SHA	039° 038° 038° 038° 038° 038°	SHA	085° 085° 085° 084° 084° 084°	SHA	004° 002° 000° 358° 357° 355°	SHA	004° 002° 000° 358° 357° 355°																																																												
Greenwich Culmination Time: 12:14													Greenwich Culmination Time: 09:09													Greenwich Culmination Time: 14:54													Greenwich Culmination Time: 12:14													Greenwich Culmination Time: 09:09													Greenwich Culmination Time: 14:54												

UT	Mars				Jupiter				Saturn				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	115 14.4	+00.9	N 11 03.0	+00.6	242 13.8	+02.1	S 22 23.7	+00.0	213 26.7	+02.2	S 22 02.0	+00.0	00
01	130 15.3	+00.9	N 11 03.6	+00.6	257 15.9	+02.0	S 22 23.7	+00.0	228 28.9	+02.2	S 22 02.0	+00.0	01
02	145 16.2	+00.8	N 11 04.2	+00.7	272 17.9	+02.0	S 22 23.7	+00.1	243 31.1	+02.1	S 22 02.0	+00.0	02
03	160 17.0	+00.9	N 11 04.9	+00.6	287 19.9	+02.1	S 22 23.8	+00.0	258 33.2	+02.2	S 22 02.0	-00.1	03
04	175 17.9	+00.9	N 11 05.5	+00.7	302 22.0	+02.0	S 22 23.8	+00.0	273 35.4	+02.2	S 22 01.9	+00.0	04
05	190 18.8	+00.8	N 11 06.2	+00.6	317 24.0	+02.1	S 22 23.8	+00.1	288 37.6	+02.2	S 22 01.9	+00.0	05
06	205 19.6	+00.9	N 11 06.8	+00.6	332 26.1	+02.0	S 22 23.9	+00.0	303 39.8	+02.2	S 22 01.9	-00.1	06
07	220 20.5	+00.9	N 11 07.4	+00.7	347 28.1	+02.1	S 22 23.9	+00.0	318 42.0	+02.2	S 22 01.8	+00.0	07
08	235 21.4	+00.8	N 11 08.1	+00.6	2 30.2	+02.0	S 22						

UT	Sun				Venus				Moon				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
00	176 27.3	+00.0	S 14 50.0	-00.8	222 34.6	-00.6	S 21 11.4	+00.0	132 31.4	-25.5	S 02 35.3	-11.0	00		
01	191 27.3	+00.0	S 14 49.2	-00.8	237 34.0	-00.6	S 21 11.4	+00.1	147 05.9	-25.6	S 02 24.3	-11.0	01		
02	206 27.3	+00.0	S 14 48.4	-00.8	252 33.4	-00.7	S 21 11.5	+00.0	161 40.3	-25.6	S 02 13.3	-11.0	02		
03	221 27.3	-00.1	S 14 47.6	-00.8	267 32.7	-00.6	S 21 11.5	+00.0	176 14.7	-25.6	S 02 02.3	-11.1	03		
04	236 27.2	+00.0	S 14 46.8	-00.8	282 32.1	-00.6	S 21 11.5	+00.0	190 49.1	-25.6	S 01 51.2	-11.0	04		
05	251 27.2	+00.0	S 14 46.0	-00.8	297 31.5	-00.6	S 21 11.5	+00.1	205 23.5	-25.6	S 01 40.2	-11.1	05		
06	266 27.2	+00.0	S 14 45.2	-00.8	312 30.9	-00.7	S 21 11.6	+00.0	219 57.9	-25.6	S 01 29.1	-11.1	06		
07	281 27.2	+00.0	S 14 44.4	-00.8	327 30.2	-00.6	S 21 11.6	+00.0	234 32.3	-25.6	S 01 18.0	-11.0	07		
08	296 27.2	-00.1	S 14 43.6	-00.8	342 29.6	-00.6	S 21 11.6	+00.0	249 06.7	-25.7	S 01 07.0	-11.1	08		
09	311 27.1	+00.0	S 14 42.8	-00.8	357 29.0	-00.7	S 21 11.6	+00.0	263 41.0	-25.6	S 00 55.9	-11.2	09		
10	326 27.1	+00.0	S 14 42.0	-00.8	12 28.3	-00.6	S 21 11.6	+00.1	278 15.4	-25.7	S 00 44.7	-11.1	10		
11	341 27.1	+00.0	S 14 41.2	-00.8	27 27.7	-00.6	S 21 11.7	+00.0	292 49.7	-25.6	S 00 33.6	-11.1	11		
12	356 27.1	+00.0	S 14 40.4	-00.8	42 27.1	-00.6	S 21 11.7	+00.0	307 24.1	-25.7	S 00 22.5	-11.1	12		
13	11 27.1	-00.1	S 14 39.6	-00.8	57 26.5	-00.7	S 21 11.7	+00.0	321 58.4	-25.7	S 00 11.4	-11.2	13		
14	26 27.0	+00.0	S 14 38.8	-00.8	72 25.8	-00.6	S 21 11.7	+00.0	336 32.7	-25.7	S 00 00.2	-11.1	14		
15	41 27.0	+00.0	S 14 38.0	-00.8	87 25.2	-00.6	S 21 11.7	+00.0	351 07.0	-25.8	N 00 10.9	+11.2	15		
16	56 27.0	+00.0	S 14 37.2	-00.8	102 24.6	-00.7	S 21 11.7	+00.0	5 41.2	-25.7	N 00 22.1	+11.1	16		
17	71 27.0	+00.0	S 14 36.4	-00.8	117 23.9	-00.6	S 21 11.7	+00.1	20 15.5	-25.8	N 00 33.2	+11.2	17		
18	86 27.0	+00.0	S 14 35.6	-00.8	132 23.3	-00.6	S 21 11.8	+00.0	34 49.7	-25.8	N 00 44.4	+11.2	18		
19	101 27.0	+00.0	S 14 34.8	-00.8	147 22.7	-00.6	S 21 11.8	+00.0	49 23.9	-25.8	N 00 55.6	+11.1	19		
20	116 27.0	-00.1	S 14 34.0	-00.8	162 22.1	-00.7	S 21 11.8	+00.0	63 58.1	-25.8	N 01 06.7	+11.2	20		
21	131 26.9	+00.0	S 14 33.2	-00.8	177 21.4	-00.6	S 21 11.8	+00.0	78 32.3	-25.9	N 01 17.9	+11.2	21		
22	146 26.9	+00.0	S 14 32.4	-00.8	192 20.8	-00.6	S 21 11.8	+00.0	93 06.4	-25.9	N 01 29.1	+11.2	22		
23	161 26.9	+00.0	S 14 31.6	-00.9	207 20.2	-00.7	S 21 11.8	+00.0	107 40.5	-25.9	N 01 40.3	+11.1	23		
UT 02 06 10 14 18 22	SD 16°2 16°2 16°2 16°2 16°2 16°2	SD 00°1 00°1 00°1 00°1 00°1 00°1	SD 00°1 00°1 00°1 00°1 00°1 00°1	SD 00°1 00°1 00°1 00°1 00°1 00°1	SD 14°9 14°9 14°9 14°9 14°9 14°9	SD 14°9 14°9 14°9 14°9 14°9 14°9	SD 14°9 14°9 14°9 14°9 14°9 14°9	SD 14°9 14°9 14°9 14°9 14°9 14°9	SD 16°2 16°2 16°2 16°2 16°2 16°2	SD 00°1 00°1 00°1 00°1 00°1 00°1	SD 00°1 00°1 00°1 00°1 00°1 00°1	SD 00°1 00°1 00°1 00°1 00°1 00°1	SD 15°0 15°0 15°0 15°1 15°1 15°1		
HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 54°6 54°6 54°7 54°8 54°8 54°9	HP 54°6 54°6 54°7 54°8 54°8 54°9	HP 54°6 54°6 54°7 54°8 54°8 54°9	HP 54°6 54°6 54°7 54°8 54°8 54°9	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 55°0 55°1 55°2 55°3 55°3 55°4		
SHA 038° 037° 037° 037° 037° 037°	SHA 038° 037° 037° 037° 037° 037°	SHA 084° 083° 083° 083° 083° 083°	SHA 084° 083° 083° 083° 083° 083°	SHA 084° 083° 083° 083° 083° 083°	SHA 353° 351° 349° 347° 345° 343°	SHA 353° 351° 349° 347° 345° 343°	SHA 353° 351° 349° 347° 345° 343°	SHA 353° 351° 349° 347° 345° 343°	SHA 037° 036° 036° 036° 036° 036°	SHA 082° 082° 082° 082° 082° 081°	SHA 082° 082° 082° 082° 082° 081°	SHA 082° 082° 082° 082° 082° 081°	SHA 342° 340° 338° 336° 334° 332°		
Greenwich Culmination Time: 12:14				Greenwich Culmination Time: 09:10				Greenwich Culmination Time: 15:36				Greenwich Culmination Time: 12:14			

UT	Sun				Venus				Moon				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
00	176 26.9	+00.0	S 14 30.7	-00.8	222 19.5	-00.6	S 21 11.8	+00.0	122 14.6	-25.9	N 01 51.4	+11.2	00		
01	191 26.9	+00.0	S 14 29.9	-00.8	237 18.9	-00.6	S 21 11.8	+00.0	136 48.7	-25.9	N 02 02.6	+11.2	01		
02	206 26.9	+00.0	S 14 29.1	-00.8	252 18.3	-00.7	S 21 11.8	+00.0	151 22.8	-26.0	N 02 13.8	+11.2	02		
03	221 26.9	-00.1	S 14 28.3	-00.8	267 17.6	-00.6	S 21 11.8	+00.0	165 56.8	-26.0	N 02 25.0	+11.1	03		
04	236 26.8	+00.0	S 14 27.5	-00.8	282 17.0	-00.6	S 21 11.8	+00.0	180 30.8	-26.1	N 02 36.1	+11.2	04		
05	251 26.8	+00.0	S 14 26.7	-00.8	297 16.4	-00.7	S 21 11.8	+00.0	195 04.7	-26.0	N 02 47.3	+11.2	05		
06	266 26.8	+00.0	S 14 25.9	-00.8	312 15.7	-00.6	S 21 11.8	+00.0	209 38.7	-26.1	N 02 58.5	+11.1	06		
07	281 26.8	+00.0	S 14 25.1	-00.8	327 15.1	-00.6	S 21 11.8	+00.0	224 12.6	-26.1	N 03 09.6	+11.2	07		
08	296 26.8	+00.0	S 14 24.3	-00.8	342 14.5	-00.7	S 21 11.8	+00.0	238 46.5	-26.2	N 03 20.8	+11.1	08		
09	311 26.8	+00.0	S 14 23.5	-00.8	357 13.8	-00.6	S 21 11.8	+00.0	253 20.3	-26.2	N 03 31.9	+11.2	09		
10	326 26.8	+00.0	S 14 22.7	-00.9	12 13.2	-00.6	S 21 11.8	+00.0	267 54.1	-26.2	N 03 43.1	+11.1	10		
11	341 26.8	-00.1	S 14 21.8	-00.8	27 12.6	-00.7	S 21 11.8	+00.0	282 27.9	-26.2	N 03 54.2	+11.1	11		
12	356 26.7	+00.0	S 14 21.0	-00.8	42 11.9	-00.6	S 21 11.8	+00.0	297 01.7	-26.3	N 04 05.3	+11.2	12		
13	11 26.7	+00.0	S 14 20.2	-00.8	57 11.3	-00.6	S 21 11.8	+00.0	311 35.4	-26.3	N 04 16.5	+11.1	13		
14	26 26.7	+00.0	S 14 19.4	-00.8	72 10.7	-00.7	S 21 11.8	-00.1	326 09.1	-26.4	N 04 27.6	+11.1	14		
15	41 26.7	+00.0	S 14 18.6	-00.8	87 10.0	-00.6	S 21 11.7	+00.0	340 42.7	-26.4	N 04 38.7	+11.1	15		
16	56 26.7	+00.0	S 14 17.8	-00.8	102 09.4	-00.6	S 21 11.7	+00.0	355 16.3	-26.4	N 04 49.8	+11.0	16		
17	71 26.7	+00.0	S 14 17.0	-00.9	117 08.8	-00.7	S 21 11.7	+00.0	9 49.9	-26.5	N 05 00.8	+11.1	17		
18	86 26.7	+00.0	S 14 16.1	-00.8	132 08.1	-00.6	S 21 11.7	+00.0	24 23.4	-26.5	N 05 11.9	+11.1	18		
19	101 26.7	+00.0	S 14 15.3	-00.8	147 07.5	-00.6	S 21 11.7	+00.0	38 56.9	-26.6	N 05 23.0	+11.0	19		
20	116 26.7	+00.0	S 14 14.5	-00.8	162 06.9	-00.7	S 21 11.7	+00.0	53 30.3	-26.6	N 05 34.0	+11.0	20		
21	131 26.7	+00.0	S 14 13.7	-00.8	177 06.2	-00.6	S 21 11.7	-00.1	68 03.7	-26.6	N 05 45.0	+11.0	21		
22	146 26.7	+00.0	S 14 12.9	-00.8	192 05.6	-00.6	S 21 11.6	+00.0	82 37.1	-26.7	N 05 56.0	+11.0	22		
23	161 26.7	+00.0	S 14 12.1	-00.9	207 05.0	-00.7	S 21 11.6	+00.0	97 10.4	-26.8	N 06 07.0	+11.0	23		
UT 02 06 10 14 18 22	SD 16°2 16°2 16°2 16°2 16°2 16°2	SD 00°1 00°1 00°1 00°1 00°1 00°1	SD 00°1 00°1 00°1 00°1 00°1 00°1	SD 00°1 00°1 00°1 00°1 00°1 00°1	SD 15°0 15°0 15°0 15°1 15°1 15°1	SD 15°0 15°0 15°0 15°1 15°1 15°1	SD 15°0 15°0 15°0 15°1 15°1 15°1	SD 15°0 15°0 15°0 15°1 15°1 15°1	SD 16°2 16°2 16°2 16°2 16°2 16°2	SD 00°1 00°1 00°1 00°1 00°1 00°1	SD 00°1 00°1 00°1 00°1 00°1 00°1	SD 00°1 00°1 00°1 00°1 00°1 00°1	SD 15°0 15°0 15°0 15°1 15°1 15°1		
HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 54°6 54°6 54°7 54°8 54°8 54°9	HP 54°6 54°6 54°7 54°8 54°8 54°9	HP 54°6 54°6 54°7 54°8 54°8 54°9	HP 54°6 54°6 54°7 54°8 54°8 54°9	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 55°0 55°1 55°2 55°3 55°3 55°4		
SHA 037° 036° 036° 036° 036° 036°	SHA 037° 036° 036° 036° 036° 036°	SHA 082° 082° 082° 082° 082° 081°	SHA 082° 082° 082° 082° 082° 081°	SHA 082° 082° 082° 082° 082° 081°	SHA 353° 351° 349° 347° 345° 343°	SHA 353° 351° 349° 347° 345° 343°	SHA 353° 351° 349° 347° 345° 343°	SHA 353° 351° 349° 347° 345° 343°	SHA 037° 036° 036° 036° 036° 036°	SHA 082° 082° 082° 082° 082° 081°	SHA 082° 082° 082° 082° 082° 081°	SHA 082° 082° 082° 082° 082° 081°	SHA 342° 340° 338° 336° 334° 332°		
Greenwich Culmination Time: 12:14				Greenwich Culmination Time: 09:11				Greenwich Culmination Time: 16:19				Greenwich Culmination Time: 12:14			

UT	Mars				Jupiter				Saturn				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	114 32.7	+00.8	N 10 32.1	+00.7	240 35.9	+02.0	S 22 22.2	+00.0	211 41.8	+02.1	S 22 03.4	+00.0	00
01	129 33.5	+00.9	N 10 32.8	+00.6	255 37.9	+02.0	S 22 22.2	+00.0	226 43.9	+02.2	S 22 03.4	+00.0	01
02	144 34.4	+00.9	N 10 33.4	+00.7	270 39.9	+02.1	S 22 22.2	+00.1	241 46.1	+02.2	S 22 03.4	-00.1	02
03	159 35.3	+00.8	N 10 34.1	+00.6	285 42.0	+02.0	S 22 22.3	+00.0	256 48.3	+02.2	S 22 03.3	+00.0	03
04	174 36.1	+00.9	N 10 34.7	+00.7	300 44.0	+02.0	S 22 22.3	+00.0	271 50.5	+02.2	S 22 03.3	+00.0	04
05	189 37.0	+00.9	N 10 35.4	+00.6	315 46.0	+02.1	S 22 22.3	+00.1	286 52.7	+02.2	S 22 03.3	-00.1	05
06	204 37.9	+00.9	N 10 36.0	+00.6	330 48.1	+02.0	S 22 22.4	+00.0	301 54.9	+02.2	S 22 03.2	+00.0	06
07	219 38.8												

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23 show celestial data for each planet.

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 032° 032° 031° 031° 031° 031°
Greenwich Culmination Time: 12:14

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23 show celestial data for each planet.

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 035° 034° 034° 034° 034° 034°
Greenwich Culmination Time: 12:14

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23 show celestial data for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 332° 332° 332° 332° 331° 331°
Greenwich Culmination Time: 16:12

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23 show celestial data for each planet.

UT 02 06 10 14 18 22
SD 00°3 00°3 00°3 00°3 00°3 00°3
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 101° 101° 101° 101° 101° 101°
Greenwich Culmination Time: 07:46

UT	Sun				Venus				Moon				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	176 26.8	+00.0	S 13 31.6	-00.9	221 33.5	-00.6	S 21 09.5	+00.0	89 10.4	-30.0	N 14 28.6	+09.1	00
01	191 26.8	+00.0	S 13 30.7	-00.8	236 32.9	-00.6	S 21 09.5	-00.1	103 40.4	-30.1	N 14 37.7	+09.0	01
02	206 26.8	+00.0	S 13 29.9	-00.9	251 32.3	-00.7	S 21 09.4	-00.1	118 10.3	-30.1	N 14 46.7	+09.0	02
03	221 26.8	+00.0	S 13 29.0	-00.8	266 31.6	-00.6	S 21 09.3	+00.0	132 40.2	-30.3	N 14 55.7	+08.9	03
04	236 26.8	+00.0	S 13 28.2	-00.8	281 31.0	-00.7	S 21 09.3	-00.1	147 09.9	-30.3	N 15 04.6	+08.8	04
05	251 26.8	+00.0	S 13 27.4	-00.9	296 30.3	-00.6	S 21 09.2	-00.1	161 39.6	-30.4	N 15 13.4	+08.7	05
06	266 26.8	+00.1	S 13 26.5	-00.8	311 29.7	-00.7	S 21 09.1	-00.1	176 09.2	-30.6	N 15 22.1	+08.7	06
07	281 26.9	+00.0	S 13 25.7	-00.9	326 29.0	-00.6	S 21 09.0	+00.0	190 38.6	-30.6	N 15 30.8	+08.6	07
08	296 26.9	+00.0	S 13 24.8	-00.8	341 28.4	-00.7	S 21 09.0	-00.1	205 08.0	-30.6	N 15 39.4	+08.6	08
09	311 26.9	+00.0	S 13 24.0	-00.8	356 27.7	-00.6	S 21 08.9	-00.1	219 37.4	-30.8	N 15 48.0	+08.4	09
10	326 26.9	+00.0	S 13 23.2	-00.9	11 27.1	-00.7	S 21 08.8	-00.1	234 06.6	-30.9	N 15 56.4	+08.4	10
11	341 26.9	+00.0	S 13 22.3	-00.8	26 26.4	-00.6	S 21 08.7	+00.0	248 35.7	-31.0	N 16 04.8	+08.4	11
12	356 26.9	+00.0	S 13 21.5	-00.9	41 25.8	-00.7	S 21 08.7	-00.1	263 04.7	-31.0	N 16 13.2	+08.2	12
13	11 26.9	+00.1	S 13 20.6	-00.8	56 25.1	-00.6	S 21 08.6	-00.1	277 33.7	-31.1	N 16 21.4	+08.2	13
14	26 27.0	+00.0	S 13 19.8	-00.8	71 24.5	-00.6	S 21 08.5	-00.1	292 02.6	-31.3	N 16 29.6	+08.1	14
15	41 27.0	+00.0	S 13 19.0	-00.9	86 23.9	-00.7	S 21 08.4	-00.1	306 31.3	-31.3	N 16 37.7	+08.0	15
16	56 27.0	+00.0	S 13 18.1	-00.8	101 23.2	-00.6	S 21 08.3	+00.0	320 60.0	-31.4	N 16 45.7	+07.9	16
17	71 27.0	+00.0	S 13 17.3	-00.9	116 22.6	-00.7	S 21 08.3	-00.1	335 28.6	-31.5	N 16 53.6	+07.8	17
18	86 27.0	+00.0	S 13 16.4	-00.8	131 21.9	-00.6	S 21 08.2	-00.1	349 57.1	-31.6	N 17 01.4	+07.8	18
19	101 27.0	+00.0	S 13 15.6	-00.9	146 21.3	-00.7	S 21 08.1	-00.1	4 25.5	-31.7	N 17 09.2	+07.7	19
20	116 27.0	+00.1	S 13 14.7	-00.8	161 20.6	-00.6	S 21 08.0	-00.1	18 53.8	-31.8	N 17 16.9	+07.5	20
21	131 27.1	+00.0	S 13 13.9	-00.8	176 20.0	-00.7	S 21 07.9	-00.1	33 22.0	-31.9	N 17 24.4	+07.5	21
22	146 27.1	+00.0	S 13 13.1	-00.9	191 19.3	-00.6	S 21 07.8	-00.1	47 50.1	-32.0	N 17 31.9	+07.4	22
23	161 27.1	+00.0	S 13 12.2	-00.8	206 18.7	-00.7	S 21 07.7	-00.1	62 18.1	-32.1	N 17 39.3	+07.4	23

UT 02 06 10 14 18 22 SD 16°2 16°2 16°2 16°2 16°2 16°2 HP 00°1 00°1 00°1 00°1 00°1 00°1 SHA 034° 033° 033° 033° 033° 033° Greenwich Culmination Time: 12:14	UT 02 06 10 14 18 22 SD 00°1 00°1 00°1 00°1 00°1 00°1 HP 00°2 00°2 00°2 00°2 00°2 00°2 SHA 079° 079° 078° 078° 078° 078° Greenwich Culmination Time: 09:14	UT 02 06 10 14 18 22 SD 15°5 15°6 15°6 15°7 15°7 15°7 HP 57°1 57°2 57°3 57°5 57°6 57°8 SHA 305° 303° 301° 299° 296° 294° Greenwich Culmination Time: 18:41
--	--	--

UT	Mars				Jupiter				Saturn				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	115 56.0	+00.8	N 11 33.4	+00.7	243 52.2	+02.1	S 22 25.1	+00.0	215 11.8	+02.2	S 22 00.7	-00.1	00
01	130 56.8	+00.9	N 11 34.1	+00.6	258 54.3	+02.1	S 22 25.1	+00.1	230 14.0	+02.2	S 22 00.6	+00.0	01
02	145 57.7	+00.9	N 11 34.7	+00.6	273 56.4	+02.0	S 22 25.2	+00.0	245 16.2	+02.2	S 22 00.6	+00.0	02
03	160 58.6	+00.8	N 11 35.3	+00.7	288 58.4	+02.1	S 22 25.2	+00.0	260 18.4	+02.2	S 22 00.6	+00.0	03
04	175 59.4	+00.9	N 11 36.0	+00.6	304 00.5	+02.0	S 22 25.2	+00.0	275 20.6	+02.2	S 22 00.6	-00.1	04
05	191 00.3	+00.9	N 11 36.6	+00.6	319 02.5	+02.1	S 22 25.2	+00.1	290 22.8	+02.1	S 22 00.5	+00.0	05
06	206 01.2	+00.8	N 11 37.2	+00.7	334 04.6	+02.0	S 22 25.3	+00.0	305 24.9	+02.2	S 22 00.5	+00.0	06
07	221 02.0	+00.9	N 11 37.9	+00.6	349 06.6	+02.1	S 22 25.3	+00.0	320 27.1	+02.2	S 22 00.5	-00.1	07
08	236 02.9	+00.8	N 11 38.5	+00.6	4 08.7	+02.1	S 22 25.3	+00.1	335 29.3	+02.2	S 22 00.4	+00.0	08
09	251 03.7	+00.9	N 11 39.1	+00.6	19 10.8	+02.0	S 22 25.4	+00.0	350 31.5	+02.2	S 22 00.4	+00.0	09
10	266 04.6	+00.9	N 11 39.7	+00.7	34 12.8	+02.1	S 22 25.4	+00.0	5 33.7	+02.2	S 22 00.4	+00.0	10
11	281 05.5	+00.8	N 11 40.4	+00.6	49 14.9	+02.0	S 22 25.4	+00.0	20 35.9	+02.2	S 22 00.4	-00.1	11
12	296 06.3	+00.9	N 11 41.0	+00.6	64 16.9	+02.1	S 22 25.4	+00.1	35 38.1	+02.2	S 22 00.3	+00.0	12
13	311 07.2	+00.9	N 11 41.6	+00.7	79 19.0	+02.1	S 22 25.5	+00.0	50 40.3	+02.2	S 22 00.3	+00.0	13
14	326 08.1	+00.8	N 11 42.3	+00.6	94 21.1	+02.0	S 22 25.5	+00.0	65 42.5	+02.2	S 22 00.3	-00.1	14
15	341 08.9	+00.9	N 11 42.9	+00.6	109 23.1	+02.1	S 22 25.5	+00.0	80 44.7	+02.2	S 22 00.2	+00.0	15
16	356 09.8	+00.8	N 11 43.5	+00.7	124 25.2	+02.0	S 22 25.6	+00.0	95 46.9	+02.2	S 22 00.2	+00.0	16
17	11 10.6	+00.9	N 11 44.2	+00.6	139 27.2	+02.1	S 22 25.6	+00.0	110 49.1	+02.2	S 22 00.2	+00.0	17
18	26 11.5	+00.9	N 11 44.8	+00.6	154 29.3	+02.1	S 22 25.6	+00.0	125 51.3	+02.2	S 22 00.2	-00.1	18
19	41 12.4	+00.8	N 11 45.4	+00.6	169 31.4	+02.0	S 22 25.6	+00.1	140 53.5	+02.1	S 22 00.1	+00.0	19
20	56 13.2	+00.9	N 11 46.0	+00.7	184 33.4	+02.1	S 22 25.7	+00.0	155 55.6	+02.2	S 22 00.1	+00.0	20
21	71 14.1	+00.8	N 11 46.7	+00.6	199 35.5	+02.0	S 22 25.7	+00.0	170 57.8	+02.2	S 22 00.1	-00.1	21
22	86 14.9	+00.9	N 11 47.3	+00.6	214 37.5	+02.1	S 22 25.7	+00.1	186 00.0	+02.2	S 22 00.0	+00.0	22
23	101 15.8	+00.9	N 11 47.9	+00.6	229 39.6	+02.1	S 22 25.8	+00.0	201 02.2	+02.2	S 22 00.0	+00.0	23

UT 02 06 10 14 18 22 SD 00°0 00°0 00°0 00°0 00°0 00°0 HP 00°1 00°1 00°1 00°1 00°1 00°1 SHA 333° 333° 333° 333° 333° 333° Greenwich Culmination Time: 16:15	UT 02 06 10 14 18 22 SD 00°3 00°3 00°3 00°3 00°3 00°3 HP 00°0 00°0 00°0 00°0 00°0 00°0 SHA 101° 101° 101° 101° 101° 101° Greenwich Culmination Time: 07:43	UT 02 06 10 14 18 22 SD 00°1 00°1 00°1 00°1 00°1 00°1 HP 00°0 00°0 00°0 00°0 00°0 00°0 SHA 072° 072° 072° 072° 072° 072° Greenwich Culmination Time: 09:37
--	--	--

UT	Sun				Venus				Moon				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	176 27.1	+00.0	S 13 11.4	-00.9	221 18.0	-00.6	S 21 07.6	+00.0	76 46.0	-32.1	N 17 46.7	+07.2	00
01	191 27.1	+00.1	S 13 10.5	-00.8	236 17.4	-00.7	S 21 07.6	-00.1	91 13.9	-32.3	N 17 53.9	+07.1	01
02	206 27.2	+00.0	S 13 09.7	-00.9	251 16.7	-00.6	S 21 07.5	-00.1	105 41.6	-32.4	N 18 01.0	+07.1	02
03	221 27.2	+00.0	S 13 08.8	-00.8	266 16.1	-00.7	S 21 07.4	-00.1	120 09.2	-32.4	N 18 08.1	+06.9	03
04	236 27.2	+00.0	S 13 08.0	-00.9	281 15.4	-00.6	S 21 07.3	-00.1	134 36.8	-32.6	N 18 15.0	+06.9	04
05	251 27.2	+00.0	S 13 07.1	-00.8	296 14.8	-00.7	S 21 07.2	-00.1	149 04.2	-32.6	N 18 21.9	+06.7	05
06	266 27.2	+00.1	S 13 06.3	-00.9	311 14.1	-00.6	S 21 07.1	-00.1	163 31.6	-32.7	N 18 28.6	+06.7	06
07	281 27.3	+00.0	S 13 05.4	-00.8	326 13.5	-00.7	S 21 07.0	-00.1	177 58.9	-32.9	N 18 35.3	+06.5	07
08	296 27.3	+00.0	S 13 04.6	-00.9	341 12.8	-00.6	S 21 06.9	-00.1	192 26.0	-32.9	N 18 41.8	+06.5	08
09	311 27.3	+00.0	S 13 03.7	-00.8	356 12.2	-00.7	S 21 06.8	-00.1	206 53.1	-33.0	N 18 48.3	+06.3	09
10	326 27.3	+00.0	S 13 02.9	-00.9	11 11.5	-00.6	S 21 06.7	-00.1	221 20.1	-33.1	N 18 54.6	+06.3	10
11	341 27.3	+00.1	S 13 02.0	-00.8	26 10.9	-00.7	S 21 06.6	-00.1	235 47.0	-33.2	N 19 00.9	+06.1	11
12	356 27.4	+00.0	S 13 01.2	-00.9	41 10.2	-00.6	S 21 06.5	-00.1	250 13.8	-33.3	N 19 07.0	+06.1	12
13	11 27.4	+00.0	S 13 00.3	-00.8	56 09.6	-00.7	S 21 06.4	-00.1	264 40.5	-33.4	N 19 13.1	+05.9	13
14	26 27.4	+00.0	S 12 59.5	-00.9	71 08.9	-00.6	S 21 06.3	-00.1	279 07.1	-33.5	N 19 19.0	+05.8	14
15	41 27.4	+00.1	S 12 58.6	-00.8	86 08.3	-00.7	S 21 06.2	-00.1	293 33.6	-33.6	N 19 24.8	+05.7	15
16	56 27.5	+00.0	S 12 57.8	-00.9	101 07.6	-00.6	S 21 06.1	-00.1	308 00.0	-33.7	N 19 30.5	+05.6	16
17	71 27.5	+00.0	S 12 56.9	-00.8	116 07.0	-00.7	S 21 06.0	-00.1	322 26.3	-33.7	N 19 36.1	+05.5	17
18	86 27.5	+00.0	S 12 56.1	-00.9	131 06.3	-00.6	S 21 05.9	-00.2	336 52.6	-33.9	N 19 41.6	+05.4	18
19	101 27.5	+00.1	S 12 55.2	-00.8	146 05.7	-00.7	S 21 05.7	-00.1	351 18.7	-33.9	N 19 47.0	+05.2	19
20	116 27.6	+00.0	S 12 54.4	-00.9	161 05.0	-00.6	S 21 05.6	-00.1	5 44.8	-34.1	N 19 52.2	+05.2	20
21	131 27.6	+00.0	S 12 53.5	-00.8	176 04.4	-00.7	S 21 05.5	-00.1	20 10.7	-34.1	N 19 57.4	+05.0	21
22	146 27.6	+00.0	S 12 52.7	-00.9	191 03.7	-00.6	S 21 05.4	-00.1	34 36.6	-34.2	N 20 02.4	+04.9	22

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 028° 028° 027° 027° 027° 027°
Greenwich Culmination Time: 12:13

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 329° 329° 329° 329° 329° 329°
Greenwich Culmination Time: 16:07

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 031° 031° 030° 030° 030° 030°
Greenwich Culmination Time: 12:14

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 331° 331° 331° 331° 331° 331°
Greenwich Culmination Time: 16:11

UT	Sun				Venus				Moon				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	176 29.3	+00.0	S 12 09.6	-00.9	220 31.0	-00.6	S 20 58.5	-00.1	34 36.7	-37.3	N 21 19.9	-02.3	00
01	191 29.3	+00.1	S 12 08.7	-00.9	235 30.4	-00.7	S 20 58.4	-00.2	48 59.4	-37.2	N 21 17.6	-02.4	01
02	206 29.4	+00.0	S 12 07.8	-00.9	250 29.7	-00.7	S 20 58.2	-00.2	63 22.2	-37.3	N 21 15.2	-02.6	02
03	221 29.4	+00.1	S 12 06.9	-00.9	265 29.0	-00.6	S 20 58.0	-00.1	77 44.9	-37.3	N 21 12.6	-02.7	03
04	236 29.5	+00.0	S 12 06.1	-00.9	280 28.4	-00.7	S 20 57.9	-00.2	92 07.6	-37.4	N 21 09.9	-02.9	04
05	251 29.5	+00.0	S 12 05.2	-00.9	295 27.7	-00.6	S 20 57.7	-00.2	106 30.2	-37.3	N 21 07.0	-03.1	05
06	266 29.5	+00.1	S 12 04.3	-00.8	310 27.1	-00.7	S 20 57.5	-00.1	120 52.9	-37.3	N 21 03.9	-03.2	06
07	281 29.6	+00.0	S 12 03.5	-00.9	325 26.4	-00.6	S 20 57.4	-00.2	135 15.6	-37.4	N 21 00.7	-03.4	07
08	296 29.6	+00.1	S 12 02.6	-00.9	340 25.8	-00.7	S 20 57.2	-00.2	149 38.2	-37.4	N 20 57.3	-03.5	08
09	311 29.7	+00.0	S 12 01.7	-00.9	355 25.1	-00.7	S 20 57.0	-00.2	164 00.8	-37.3	N 20 53.8	-03.7	09
10	326 29.7	+00.1	S 12 00.8	-00.8	10 24.4	-00.6	S 20 56.8	-00.1	178 23.5	-37.4	N 20 50.1	-03.9	10
11	341 29.8	+00.0	S 11 60.0	-00.9	25 23.8	-00.7	S 20 56.7	-00.2	192 46.1	-37.4	N 20 46.2	-04.0	11
12	356 29.8	+00.1	S 11 59.1	-00.9	40 23.1	-00.6	S 20 56.5	-00.2	207 08.7	-37.3	N 20 42.2	-04.2	12
13	11 29.9	+00.0	S 11 58.2	-00.9	55 22.5	-00.7	S 20 56.3	-00.2	221 31.4	-37.4	N 20 38.0	-04.3	13
14	26 29.9	+00.0	S 11 57.3	-00.8	70 21.8	-00.6	S 20 56.1	-00.1	235 54.0	-37.4	N 20 33.7	-04.5	14
15	41 29.9	+00.1	S 11 56.5	-00.9	85 21.2	-00.7	S 20 56.0	-00.2	250 16.6	-37.3	N 20 29.2	-04.6	15
16	56 30.0	+00.0	S 11 55.6	-00.9	100 20.5	-00.7	S 20 55.8	-00.2	264 39.3	-37.4	N 20 24.6	-04.8	16
17	71 30.0	+00.1	S 11 54.7	-00.9	115 19.8	-00.6	S 20 55.6	-00.2	279 01.9	-37.3	N 20 19.8	-04.9	17
18	86 30.1	+00.0	S 11 53.8	-00.8	130 19.2	-00.7	S 20 55.4	-00.2	293 24.6	-37.3	N 20 14.9	-05.1	18
19	101 30.1	+00.1	S 11 53.0	-00.9	145 18.5	-00.6	S 20 55.2	-00.1	307 47.3	-37.3	N 20 09.8	-05.3	19
20	116 30.2	+00.0	S 11 52.1	-00.9	160 17.9	-00.7	S 20 55.1	-00.2	322 10.0	-37.3	N 20 04.5	-05.4	20
21	131 30.2	+00.1	S 11 51.2	-00.9	175 17.2	-00.6	S 20 54.9	-00.2	336 32.7	-37.3	N 19 59.1	-05.5	21
22	146 30.3	+00.0	S 11 50.3	-00.9	190 16.6	-00.7	S 20 54.7	-00.2	350 55.4	-37.3	N 19 53.6	-05.7	22
23	161 30.3	+00.1	S 11 49.4	-00.8	205 15.9	-00.7	S 20 54.5	-00.2	5 18.1	-37.2	N 19 47.9	-05.9	23

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 030° 030° 029° 029° 029° 029°
Greenwich Culmination Time: 12:14

UT 02 06 10 14 18 22
SD 00°1 00°1 00°1 00°1 00°1 00°1
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 074° 074° 073° 073° 073° 073°
Greenwich Culmination Time: 09:18

UT 02 06 10 14 18 22
SD 16°5 16°5 16°6 16°6 16°6 16°6
HP 60°6 60°7 60°8 60°9 61°0 61°1
SHA 247° 247° 241° 239° 236° 233°
Greenwich Culmination Time: 22:37

UT	Mars				Jupiter				Saturn				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	117 18.4	+00.8	N 12 33.3	+00.6	247 10.6	+02.1	S 22 27.7	+00.0	218 42.6	+02.3	S 21 57.9	+00.0	00
01	132 19.2	+00.9	N 12 33.9	+00.6	262 12.7	+02.1	S 22 27.7	+00.1	233 44.9	+02.2	S 21 57.9	+00.0	01
02	147 20.1	+00.8	N 12 34.5	+00.6	277 14.8	+02.1	S 22 27.8	+00.0	248 47.1	+02.2	S 21 57.9	+00.0	02
03	162 20.9	+00.9	N 12 35.1	+00.6	292 16.9	+02.1	S 22 27.8	+00.0	263 49.3	+02.2	S 21 57.9	+00.1	03
04	177 21.8	+00.8	N 12 35.7	+00.6	307 19.0	+02.0	S 22 27.8	+00.0	278 51.5	+02.2	S 21 57.8	+00.0	04
05	192 22.6	+00.9	N 12 36.3	+00.6	322 21.0	+02.1	S 22 27.8	+00.0	293 53.7	+02.2	S 21 57.8	+00.0	05
06	207 23.5	+00.8	N 12 36.9	+00.7	337 23.1	+02.1	S 22 27.9	+00.1	308 55.9	+02.2	S 21 57.8	+00.1	06
07	222 24.3	+00.9	N 12 37.6	+00.6	352 25.2	+02.1	S 22 27.9	+00.0	323 58.1	+02.2	S 21 57.7	+00.0	07
08	237 25.2	+00.8	N 12 38.2	+00.6	7 27.3	+02.1	S 22 27.9	+00.0	339 00.3	+02.2	S 21 57.7	+00.0	08
09	252 26.0	+00.9	N 12 38.8	+00.6	22 29.4	+02.0	S 22 27.9	+00.1	354 02.5	+02.2	S 21 57.7	+00.0	09
10	267 26.9	+00.8	N 12 39.4	+00.6	37 31.4	+02.1	S 22 28.0	+00.0	9 04.7	+02.2	S 21 57.7	+00.1	10
11	282 27.7	+00.9	N 12 40.0	+00.6	52 33.5	+02.1	S 22 28.0	+00.0	24 06.9	+02.2	S 21 57.6	+00.0	11
12	297 28.6	+00.8	N 12 40.6	+00.6	67 35.6	+02.1	S 22 28.0	+00.0	39 09.1	+02.2	S 21 57.6	+00.0	12
13	312 29.4	+00.9	N 12 41.2	+00.6	82 37.7	+02.1	S 22 28.0	+00.1	54 11.3	+02.2	S 21 57.6	+00.0	13
14	327 30.3	+00.8	N 12 41.8	+00.7	97 39.8	+02.0	S 22 28.1	+00.0	69 13.5	+02.2	S 21 57.6	+00.1	14
15	342 31.1	+00.9	N 12 42.5	+00.6	112 41.8	+02.1	S 22 28.1	+00.0	84 15.7	+02.2	S 21 57.5	+00.0	15
16	357 32.0	+00.8	N 12 43.1	+00.6	127 43.9	+02.1	S 22 28.1	+00.0	99 17.9	+02.2	S 21 57.5	+00.0	16
17	12 32.8	+00.9	N 12 43.7	+00.6	142 46.0	+02.1	S 22 28.1	+00.1	114 20.1	+02.2	S 21 57.5	+00.1	17
18	27 33.7	+00.8	N 12 44.3	+00.6	157 48.1	+02.1	S 22 28.2	+00.0	129 22.3	+02.2	S 21 57.4	+00.0	18
19	42 34.5	+00.9	N 12 44.9	+00.6	172 50.2	+02.0	S 22 28.2	+00.0	144 24.5	+02.2	S 21 57.4	+00.0	19
20	57 35.4	+00.8	N 12 45.5	+00.6	187 52.2	+02.1	S 22 28.2	+00.0	159 26.7	+02.2	S 21 57.4	+00.0	20
21	72 36.2	+00.9	N 12 46.1	+00.6	202 54.3	+02.1	S 22 28.2	+00.1	174 28.9	+02.2	S 21 57.4	+00.1	21
22	87 37.1	+00.8	N 12 46.7	+00.6	217 56.4	+02.1	S 22 28.3	+00.0	189 31.1	+02.2	S 21 57.3	+00.0	22
23	102 37.9	+00.9	N 12 47.3	+00.7	232 58.5	+02.1	S 22 28.3	+00.0	204 33.3	+02.2	S 21 57.3	+00.0	23

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 331° 330° 330° 330° 330° 330°
Greenwich Culmination Time: 16:09

UT 02 06 10 14 18 22
SD 00°3 00°3 00°3 00°3 00°3 00°3
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 100° 100° 100° 100° 100° 100°
Greenwich Culmination Time: 07:30

UT 02 06 10 14 18 22
SD 00°1 00°1 00°1 00°1 00°1 00°1
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 072° 072° 072° 072° 072° 072°
Greenwich Culmination Time: 09:23

UT	Sun				Venus				Moon				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	176 30.4	+00.0	S 11 48.6	-00.9	220 15.2	-00.6	S 20 54.3	-00.2	19 40.9	-37.2	N 19 42.0	-06.0	00
01	191 30.4	+00.1	S 11 47.7	-00.9	235 14.6	-00.7	S 20 54.1	-00.1	34 03.7	-37.2	N 19 36.0	-06.1	01
02	206 30.5	+00.0	S 11 46.8	-00.9	250 13.9	-00.6	S 20 54.0	-00.2	48 26.5	-37.2	N 19 29.9	-06.3	02
03	221 30.5	+00.1	S 11 45.9	-00.9	265 13.3	-00.7	S 20 53.8	-00.2	62 49.3	-37.1	N 19 23.6	-06.5	03
04	236 30.6	+00.0	S 11 45.0	-00.8	280 12.6	-00.7	S 20 53.6	-00.2	77 12.2	-37.1	N 19 17.1	-06.6	04
05	251 30.6	+00.1	S 11 44.2	-00.9	295 11.9	-00.6	S 20 53.4	-00.2	91 35.1	-37.1	N 19 10.5	-06.7	05
06	266 30.7	+00.0	S 11 43.3	-00.9	310 11.3	-00.7	S 20 53.2	-00.2	105 58.0	-37.1	N 19 03.8	-06.9	06
07	281 30.7	+00.1	S 11 42.4	-00.9	325 10.6	-00.6	S 20 53.0	-00.2	120 20.9	-37.0	N 18 56.9	-07.0	07
08	296 30.8	+00.0	S 11 41.5	-00.9	340 10.0	-00.7	S 20 52.8	-00.2	134 43.9	-37.0	N 18 49.9	-07.2	08
09	311 30.8	+00.1	S 11 40.6	-00.8	355 09.3	-00.6	S 20 52.6	-00.2	149 06.9	-36.9	N 18 42.7	-07.3	09
10	326 30.9	+00.0	S 11 39.8	-00.9	10 08.7	-00.7	S 20 52.4	-00.2	163 30.0	-36.9	N 18 35.4	-07.5	10
11	341 30.9	+00.1	S 11 38.9	-00.9	25 08.0	-00.7	S 20 52.2	-00.2	177 53.1	-36.9	N 18 27.9	-07.6	11
12	356 31.0	+00.0	S 11 38.0	-00.9	40 07.3	-00.6	S 20 52.0	-00.2	192 16.2	-36.8	N 18 20.3	-07.7	12
13	11 31.0	+00.1	S 11 37.1	-00.9	55 06.7	-00.7	S 20 51.8	-00.2	206 39.4	-36.8	N 18 12.6	-07.9	13
14	26 31.1	+00.0	S 11 36.2	-00.9	70 06.0	-00.6	S 20 51.6	-00.2	221 02.6	-36.7	N 18 04.7	-08.0	14
15	41 31.1	+00.1	S 11 35.3	-00.8	85 05.4	-00.7	S 20 51.4	-00.2	235 25.9	-36.7	N 17 56.7	-08.1	15
16	56 31.2	+00.1	S 11 34.5	-00.9	100 04.7	-00.7	S 20 51.2	-00.2	249 49.2	-36.7	N 17 48.6	-08.3	16
17	71 31.3	+00.0	S 11 33.6	-00.9	115 04.0	-00.6	S 20 51.0	-00.2	264 12.5	-36.6	N 17 40.3	-08.4	17
18	86 31.3	+00.1	S 11 32.7	-00.9	130 03.4	-00.7	S 20 50.8	-00.2	278 35.9	-36.5	N 17 31.9	-08.5	18
19	101 31.4	+00.0	S 11 31.8	-00.9	145 02.7	-00.6	S 20 50.6	-00.2	292 59.4	-36.5	N 17 23.4	-08.6	19
20	116 31.4	+00.1	S 11 30.9	-00.9	160 02.1	-00.7	S 20 50.4	-00.2	307 22.9	-36.5	N 17 14.8	-08.8	20
21	131 31.5	+00.0	S 11 30.0	-00.8	175 01.4	-00.6	S 20 50.2	-00.2	321 46.4	-36.4	N 17 06.0	-08.9	21
22	146 31.5	+00.1	S 11 29.2	-00.9	190 00.8	-00.7	S 20 50.0	-00.2	336 10.0	-36.3	N 16 57.1	-09.1	22

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	176	38.3	+00.1	S 10 00.9	-00.9	218	56.2	-00.7	S 20 24.7	-00.3	311	38.7	-30.8	S 03 14.9	+13.0					
01	191	38.4	+00.1	S 10 00.0	-00.9	233	55.5	-00.6	S 20 24.4	-00.4	326	07.9	-30.8	S 03 27.9	+13.0					
02	206	38.5	+00.1	S 09 59.1	-00.9	248	54.9	-00.7	S 20 24.0	-00.3	340	37.1	-30.8	S 03 40.9	+13.0					
03	221	38.6	+00.1	S 09 58.2	-00.9	263	54.2	-00.7	S 20 23.7	-00.3	355	06.3	-30.8	S 03 53.9	+12.9					
04	236	38.7	+00.1	S 09 57.3	-00.9	278	53.5	-00.6	S 20 23.4	-00.3	9	35.5	-30.7	S 04 06.8	+12.8					
05	251	38.8	+00.0	S 09 56.4	-01.0	293	52.9	-00.7	S 20 23.1	-00.3	24	04.8	-30.7	S 04 19.6	+12.8					
06	266	38.8	+00.1	S 09 55.4	-00.9	308	52.2	-00.6	S 20 22.8	-00.3	38	34.1	-30.6	S 04 32.4	+12.8					
07	281	38.9	+00.1	S 09 54.5	-00.9	323	51.6	-00.7	S 20 22.5	-00.3	53	03.5	-30.7	S 04 45.2	+12.7					
08	296	39.0	+00.1	S 09 53.6	-00.9	338	50.9	-00.6	S 20 22.2	-00.3	67	32.8	-30.6	S 04 57.9	+12.7					
09	311	39.1	+00.1	S 09 52.7	-00.9	353	50.3	-00.7	S 20 21.9	-00.4	82	02.2	-30.5	S 05 10.6	+12.7					
10	326	39.2	+00.1	S 09 51.8	-00.9	8	49.6	-00.7	S 20 21.5	-00.3	96	31.7	-30.6	S 05 23.3	+12.5					
11	341	39.3	+00.1	S 09 50.9	-01.0	23	48.9	-00.6	S 20 21.2	-00.3	111	01.1	-30.5	S 05 35.8	+12.6					
12	356	39.4	+00.0	S 09 49.9	-00.9	38	48.3	-00.7	S 20 20.9	-00.3	125	30.6	-30.6	S 05 48.4	+12.5					
13	11	39.4	+00.1	S 09 49.0	-00.9	53	47.6	-00.6	S 20 20.6	-00.3	140	00.0	-30.4	S 06 00.9	+12.4					
14	26	39.5	+00.1	S 09 48.1	-00.9	68	47.0	-00.7	S 20 20.3	-00.4	154	29.6	-30.5	S 06 13.3	+12.4					
15	41	39.6	+00.1	S 09 47.2	-00.9	83	46.3	-00.6	S 20 19.9	-00.3	168	59.1	-30.5	S 06 25.7	+12.3					
16	56	39.7	+00.1	S 09 46.3	-01.0	98	45.7	-00.7	S 20 19.6	-00.3	183	28.6	-30.4	S 06 38.0	+12.3					
17	71	39.8	+00.1	S 09 45.3	-00.9	113	45.0	-00.7	S 20 19.3	-00.3	197	58.2	-30.4	S 06 50.3	+12.3					
18	86	39.9	+00.1	S 09 44.4	-00.9	128	44.3	-00.6	S 20 19.0	-00.4	212	27.8	-30.4	S 07 02.6	+12.1					
19	101	40.0	+00.1	S 09 43.5	-00.9	143	43.7	-00.7	S 20 18.6	-00.3	226	57.4	-30.3	S 07 14.7	+12.1					
20	116	40.1	+00.0	S 09 42.6	-00.9	158	43.0	-00.6	S 20 18.3	-00.3	241	27.1	-30.4	S 07 26.8	+12.1					
21	131	40.1	+00.1	S 09 41.7	-00.9	173	42.4	-00.7	S 20 18.0	-00.3	255	56.7	-30.3	S 07 38.9	+12.0					
22	146	40.2	+00.1	S 09 40.8	-01.0	188	41.7	-00.6	S 20 17.7	-00.4	270	26.4	-30.3	S 07 50.9	+11.9					
23	161	40.3	+00.1	S 09 39.8	-00.9	203	41.1	-00.7	S 20 17.3	-00.3	284	56.1	-30.3	S 08 02.8	+11.9					
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°2	16°2	16°2	16°2	16°2	16°2	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	16°2	16°1	16°1	16°1	16°0	16°0
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	59°4	59°2	59°1	58°9	58°7	58°6
SHA	024°	024°	024°	023°	023°	023°	SHA	066°	066°	066°	066°	065°	065°	SHA	158°	156°	154°	151°	149°	147°
Greenwich Culmination Time: 12:13				Greenwich Culmination Time: 09:24				Greenwich Culmination Time: 03:20												

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	176	33.1	+00.0	S 11 06.0	-00.9	219	43.6	-00.6	S 20 44.2	-00.2	350	44.3	-34.7	N 12 26.1	-11.7					
01	191	33.1	+00.1	S 11 05.1	-00.9	234	43.0	-00.7	S 20 44.0	-00.3	5	09.6	-34.7	N 12 14.4	-11.8					
02	206	33.2	+00.1	S 11 04.2	-00.9	249	42.3	-00.7	S 20 43.7	-00.2	19	34.9	-34.6	N 12 02.6	-11.9					
03	221	33.3	+00.0	S 11 03.3	-00.9	264	41.6	-00.6	S 20 43.5	-00.2	34	00.3	-34.5	N 11 50.7	-11.9					
04	236	33.3	+00.1	S 11 02.4	-00.8	279	41.0	-00.7	S 20 43.2	-00.2	48	25.8	-34.5	N 11 38.8	-12.1					
05	251	33.4	+00.0	S 11 01.6	-00.9	294	40.3	-00.6	S 20 43.0	-00.2	62	51.3	-34.4	N 11 26.7	-12.1					
06	266	33.5	+00.0	S 11 00.7	-00.9	309	39.7	-00.7	S 20 42.8	-00.3	77	16.9	-34.3	N 11 14.6	-12.1					
07	281	33.5	+00.1	S 10 59.8	-00.9	324	39.0	-00.7	S 20 42.5	-00.2	91	42.6	-34.3	N 11 02.5	-12.3					
08	296	33.6	+00.1	S 10 58.9	-00.9	339	38.3	-00.6	S 20 42.3	-00.3	106	08.3	-34.2	N 10 50.2	-12.3					
09	311	33.7	+00.0	S 10 58.0	-00.9	354	37.7	-00.7	S 20 42.0	-00.2	120	34.1	-34.1	N 10 37.9	-12.4					
10	326	33.7	+00.1	S 10 57.1	-00.9	9	37.0	-00.6	S 20 41.8	-00.2	134	60.0	-34.1	N 10 25.5	-12.4					
11	341	33.8	+00.1	S 10 56.2	-00.9	24	36.4	-00.7	S 20 41.6	-00.3	149	25.9	-34.0	N 10 13.1	-12.5					
12	356	33.9	+00.0	S 10 55.3	-00.9	39	35.7	-00.7	S 20 41.3	-00.2	163	51.9	-33.9	N 10 00.6	-12.5					
13	11	33.9	+00.1	S 10 54.4	-00.9	54	35.0	-00.6	S 20 41.1	-00.3	178	18.0	-33.8	N 09 48.1	-12.7					
14	26	34.0	+00.1	S 10 53.5	-00.9	69	34.4	-00.7	S 20 40.8	-00.2	192	44.2	-33.8	N 09 35.4	-12.6					
15	41	34.1	+00.0	S 10 52.6	-00.9	84	33.7	-00.6	S 20 40.6	-00.3	207	10.4	-33.8	N 09 22.8	-12.7					
16	56	34.1	+00.1	S 10 51.7	-00.9	99	33.1	-00.7	S 20 40.3	-00.2	221	36.6	-33.6	N 09 10.1	-12.8					
17	71	34.2	+00.1	S 10 50.8	-00.9	114	32.4	-00.7	S 20 40.1	-00.3	236	03.0	-33.6	N 08 57.3	-12.8					
18	86	34.3	+00.0	S 10 49.9	-00.9	129	31.7	-00.6	S 20 39.8	-00.3	250	29.4	-33.6	N 08 44.5	-12.9					
19	101	34.3	+00.1	S 10 49.0	-00.9	144	31.1	-00.7	S 20 39.5	-00.2	264	55.8	-33.4	N 08 31.6	-12.9					
20	116	34.4	+00.1	S 10 48.1	-00.9	159	30.4	-00.6	S 20 39.3	-00.3	279	22.4	-33.4	N 08 18.7	-13.0					
21	131	34.5	+00.0	S 10 47.2	-00.9	174	29.8	-00.7	S 20 39.0	-00.2	293	49.0	-33.4	N 08 05.7	-13.0					
22	146	34.5	+00.1	S 10 46.3	-00.9	189	29.1	-00.6	S 20 38.8	-00.3	308	15.6	-33.2	N 07 52.7	-13.0					
23	161	34.6	+00.1	S 10 45.4	-00.9	204	28.5	-00.7	S 20 38.5	-00.2	322	42.4	-33.2	N 07 39.7	-13.1					
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°2	16°2	16°2	16°2	16°2	16°2	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	16°7	16°7	16°7	16°7	16°7	16°6
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1
SHA	027°	027°	027°	026°	026°	026°	SHA	070°	070°	070°	069°	069°	069°	SHA	200°	197°	195°	193°	190°	188°
Greenwich Culmination Time: 12:13				Greenwich Culmination Time: 09:21				Greenwich Culmination Time: 00:38												

UT	Mars				Jupiter				Saturn				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
00	119	20.1	+00.8	N 13 59.8	+00.6	252	12.2	+02.1	S 22 31.1	+00.0	224	00.7	+02.2	S 21 53.9	+00.0
01	134	20.9	+00.8	N 14 00.4	+00.6	267	14.3	+02.2	S 22 31.1	+00.0	239	02.9	+02.2	S 21 53.9	+00.0
02	149	21.7	+00.9	N 14 01.0	+00.6	282	16.5	+02.1	S 22 31.1	+00.0	254	05.1	+02.2	S 21 53.9	-00.1
03	164	22.6	+00.8	N 14 01.6	+00.6	297	18.6	+02.1	S 22 31.1	+00.1	269	07.3	+02.2	S 21 53.8	+00.0
04	179	23.4	+00.9	N 14 02.2	+00.6	312	20.7	+02.1	S 22 31.2	+00.0	284	09.5	+02.2	S 21 53.8	+00.0
05	194	24.3	+00.8	N 14 02.8	+00.6	327	22.8	+02.1	S 22 31.2	+00.0	299	11.7	+02.2	S 21 53.8	+00.0
06	209	25.1	+00.8	N 14 03.4	+00.5	342	24.9	+02.1	S 22 31.2	+00.0	314	13.9	+02.3	S 21 53.8	-00.1
07	224	25.9	+00.9	N 14 03.9	+00.6	357	27.0	+02.1	S 22 31.2	+00.0	329	16.2	+02.2	S 21 53.7	+00.0
08	239	26.8	+00.8	N 14 04.5	+00.6	12	29.1	+02.1	S 22 31.2	+00.1	344	18.4	+02.2	S 21 53.7	+00.0
09	254	27.6	+00.8	N 14 05.1	+00.6	27	31.2	+02.2	S 22 31.3	+00.0	359	20.6	+02.2	S 21 53.7	-00.1
10	269	28.4	+00.9	N 14 05.7	+00.6	42	33.4	+02.1	S 22 31.3	+00.0	14	22.8	+02.2	S 21 53.6	+00.0
11	284	29.3	+00.8	N 14 06.3	+00.6	57	35.5	+02.1	S 22 31.3	+00.0	29	25.0	+02.3	S 21 53.6	+00.0
12	299	30.1	+00.8	N 14 06.9	+00.5	72	37.6	+02.1	S 22 31.3	+00.0	44	27.3	+02.2	S 21 53.6	+00.0
13	314	30.9	+00.9	N 14 07.4	+00.6	87	39.7	+02.1	S 22 31.3	+00.0	59	29.5	+02.2	S 21 53.6	-00.1
14	329	31.8	+00.8	N 14 08.0	+00.6	102	41.8	+02.1	S 22 31.4	+00.0	74	31.7	+02.2	S 21 53.5	+00.0
15	344	32.6	+00.9	N 14 08.6	+00.6	117	43.9								

UT	Sun				Venus				Moon				UT																									
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec																										
00	176 34.7	+00.0	S 10 44.5	-00.9	219 27.8	-00.7	S 20 38.3	-00.3	337 09.2	-33.2	N 07 26.6	-13.2	00																									
01	191 34.7	+00.1	S 10 43.6	-00.9	234 27.1	-00.6	S 20 38.0	-00.3	351 36.0	-33.1	N 07 13.4	-13.1	01																									
02	206 34.8	+00.1	S 10 42.7	-00.9	249 26.5	-00.7	S 20 37.7	-00.2	6 02.9	-33.0	N 07 00.3	-13.2	02																									
03	221 34.9	+00.1	S 10 41.8	-00.9	264 25.8	-00.6	S 20 37.5	-00.3	20 29.9	-33.0	N 06 47.1	-13.2	03																									
04	236 35.0	+00.0	S 10 40.9	-00.9	279 25.2	-00.7	S 20 37.2	-00.2	34 56.9	-32.9	N 06 33.9	-13.3	04																									
05	251 35.0	+00.1	S 10 40.0	-00.9	294 24.5	-00.7	S 20 37.0	-00.3	49 24.0	-32.8	N 06 20.6	-13.3	05																									
06	266 35.1	+00.1	S 10 39.1	-00.9	309 23.8	-00.6	S 20 36.7	-00.3	63 51.2	-32.8	N 06 07.3	-13.3	06																									
07	281 35.2	+00.0	S 10 38.2	-00.9	324 23.2	-00.7	S 20 36.4	-00.2	78 18.4	-32.7	N 05 54.0	-13.3	07																									
08	296 35.2	+00.1	S 10 37.3	-00.9	339 22.5	-00.6	S 20 36.2	-00.3	92 45.7	-32.6	N 05 40.7	-13.4	08																									
09	311 35.3	+00.1	S 10 36.4	-00.9	354 21.9	-00.7	S 20 35.9	-00.3	107 13.1	-32.6	N 05 27.3	-13.4	09																									
10	326 35.4	+00.1	S 10 35.5	-00.9	9 21.2	-00.7	S 20 35.6	-00.2	121 40.5	-32.6	N 05 13.9	-13.4	10																									
11	341 35.5	+00.0	S 10 34.6	-00.9	24 20.5	-00.6	S 20 35.4	-00.3	136 07.9	-32.5	N 05 00.5	-13.4	11																									
12	356 35.5	+00.1	S 10 33.7	-00.9	39 19.9	-00.7	S 20 35.1	-00.3	150 35.4	-32.4	N 04 47.1	-13.4	12																									
13	11 35.6	+00.1	S 10 32.8	-00.9	54 19.2	-00.6	S 20 34.8	-00.3	165 03.0	-32.4	N 04 33.7	-13.5	13																									
14	26 35.7	+00.1	S 10 31.9	-01.0	69 18.6	-00.7	S 20 34.5	-00.2	179 30.6	-32.3	N 04 20.2	-13.5	14																									
15	41 35.8	+00.0	S 10 30.9	-00.9	84 17.9	-00.7	S 20 34.3	-00.3	193 58.3	-32.2	N 04 06.7	-13.4	15																									
16	56 35.8	+00.1	S 10 30.0	-00.9	99 17.2	-00.6	S 20 34.0	-00.3	208 26.1	-32.3	N 03 53.3	-13.5	16																									
17	71 35.9	+00.1	S 10 29.1	-00.9	114 16.6	-00.7	S 20 33.7	-00.3	222 53.8	-32.1	N 03 39.8	-13.5	17																									
18	86 36.0	+00.1	S 10 28.2	-00.9	129 15.9	-00.6	S 20 33.4	-00.2	237 21.7	-32.1	N 03 26.3	-13.5	18																									
19	101 36.1	+00.0	S 10 27.3	-00.9	144 15.3	-00.7	S 20 33.2	-00.3	251 49.6	-32.0	N 03 12.8	-13.5	19																									
20	116 36.1	+00.1	S 10 26.4	-00.9	159 14.6	-00.6	S 20 32.9	-00.3	266 17.6	-32.0	N 02 59.3	-13.6	20																									
21	131 36.2	+00.1	S 10 25.5	-00.9	174 14.0	-00.7	S 20 32.6	-00.3	280 45.6	-32.0	N 02 45.7	-13.5	21																									
22	146 36.3	+00.1	S 10 24.6	-00.9	189 13.3	-00.7	S 20 32.3	-00.3	295 13.6	-31.9	N 02 32.2	-13.5	22																									
23	161 36.4	+00.0	S 10 23.7	-00.9	204 12.6	-00.6	S 20 32.0	-00.2	309 41.7	-31.8	N 02 18.7	-13.5	23																									
UT	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	UT																									
SD	16°2 16'2 16°2 16'2 16°2 16'2	SD	00°1 00'1 00°1 00'1 00°1 00'1	SD	00°1 00'1 00°1 00'1 00°1 00'1	SD	00°1 00'1 00°1 00'1 00°1 00'1	SD	16°6 16'6 16°5 16'5 16°5 16'5	SD	16°2 16'2 16°2 16'2 16°2 16'2	SD	00°1 00'1 00°1 00'1 00°1 00'1	SD	16°4 16'4 16°3 16'3 16°3 16'3																							
HP	00°1 00'1 00°1 00'1 00°1 00'1	HP	00°1 00'1 00°1 00'1 00°1 00'1	HP	00°1 00'1 00°1 00'1 00°1 00'1	HP	60°9 60'8 60°7 60'6 60°5 60'4	HP	60°9 60'8 60°7 60'6 60°5 60'4	HP	00°1 00'1 00°1 00'1 00°1 00'1	HP	00°1 00'1 00°1 00'1 00°1 00'1	HP	60°1 60'1 60°0 59'8 59'7 59'5																							
SHA	026° 026° 026° 025° 025° 025°	SHA	069° 069° 068° 068° 068° 068°	SHA	069° 069° 068° 068° 068° 068°	SHA	185° 183° 181° 178° 176° 174°	SHA	025° 025° 025° 024° 024° 024°	SHA	025° 025° 025° 024° 024° 024°	SHA	067° 067° 067° 067° 067° 066°	SHA	173° 169° 167° 165° 162° 160°																							
Greenwich Culmination Time: 12:13													Greenwich Culmination Time: 09:22													Greenwich Culmination Time: 01:34												

UT	Sun				Venus				Moon				UT																									
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec																										
00	176 36.4	+00.1	S 10 22.8	-00.9	219 12.0	-00.7	S 20 31.8	-00.3	324 09.9	-31.8	N 02 05.2	-13.5	00																									
01	191 36.5	+00.1	S 10 21.9	-00.9	234 11.3	-00.6	S 20 31.5	-00.3	338 38.1	-31.8	N 01 51.7	-13.5	01																									
02	206 36.6	+00.1	S 10 21.0	-00.9	249 10.7	-00.7	S 20 31.2	-00.3	353 06.3	-31.7	N 01 38.2	-13.5	02																									
03	221 36.7	+00.0	S 10 20.1	-00.9	264 10.0	-00.7	S 20 30.9	-00.3	7 34.6	-31.6	N 01 24.7	-13.5	03																									
04	236 36.7	+00.1	S 10 19.2	-01.0	279 09.3	-00.6	S 20 30.6	-00.3	22 03.0	-31.6	N 01 11.2	-13.5	04																									
05	251 36.8	+00.1	S 10 18.2	-00.9	294 08.7	-00.7	S 20 30.3	-00.3	36 31.4	-31.6	N 00 57.7	-13.5	05																									
06	266 36.9	+00.1	S 10 17.3	-00.9	309 08.0	-00.6	S 20 30.0	-00.3	50 59.8	-31.5	N 00 44.2	-13.4	06																									
07	281 37.0	+00.1	S 10 16.4	-00.9	324 07.4	-00.7	S 20 29.7	-00.2	65 28.3	-31.5	N 00 30.8	-13.5	07																									
08	296 37.1	+00.0	S 10 15.5	-00.9	339 06.7	-00.7	S 20 29.5	-00.3	79 56.8	-31.4	N 00 17.3	-13.4	08																									
09	311 37.1	+00.1	S 10 14.6	-00.9	354 06.0	-00.6	S 20 29.2	-00.3	94 25.4	-31.4	N 00 03.9	-13.4	09																									
10	326 37.2	+00.1	S 10 13.7	-00.9	9 05.4	-00.7	S 20 28.9	-00.3	108 54.0	-31.3	S 00 09.5	+13.4	10																									
11	341 37.3	+00.1	S 10 12.8	-00.9	24 04.7	-00.6	S 20 28.6	-00.3	123 22.7	-31.3	S 00 22.9	+13.4	11																									
12	356 37.4	+00.0	S 10 11.9	-00.9	39 04.1	-00.7	S 20 28.3	-00.3	137 51.4	-31.3	S 00 36.3	+13.4	12																									
13	11 37.4	+00.1	S 10 11.0	-00.9	54 03.4	-00.6	S 20 28.0	-00.3	152 20.1	-31.2	S 00 49.7	+13.3	13																									
14	26 37.5	+00.1	S 10 10.1	-01.0	69 02.8	-00.7	S 20 27.7	-00.3	166 48.9	-31.2	S 01 03.0	+13.3	14																									
15	41 37.6	+00.1	S 10 09.1	-00.9	84 02.1	-00.7	S 20 27.4	-00.3	181 17.7	-31.1	S 01 16.3	+13.3	15																									
16	56 37.7	+00.1	S 10 08.2	-00.9	99 01.4	-00.6	S 20 27.1	-00.3	195 46.6	-31.1	S 01 29.6	+13.3	16																									
17	71 37.8	+00.1	S 10 07.3	-00.9	114 00.8	-00.7	S 20 26.8	-00.3	210 15.5	-31.1	S 01 42.9	+13.2	17																									
18	86 37.9	+00.0	S 10 06.4	-00.9	129 00.1	-00.6	S 20 26.5	-00.3	224 44.4	-31.0	S 01 56.1	+13.3	18																									
19	101 37.9	+00.1	S 10 05.5	-00.9	143 59.5	-00.7	S 20 26.2	-00.3	239 13.4	-31.0	S 02 09.4	+13.1	19																									
20	116 38.0	+00.1	S 10 04.6	-00.9	158 58.8	-00.7	S 20 25.9	-00.3	253 42.4	-31.0	S 02 22.5	+13.2	20																									
21	131 38.1	+00.1	S 10 03.7	-00.9	173 58.1	-00.6	S 20 25.6	-00.3	268 11.4	-30.9	S 02 35.7	+13.1	21																									
22	146 38.2	+00.1	S 10 02.8	-01.0	188 57.5	-00.7	S 20 25.3	-00.3	282 40.5	-30.9	S 02 48.8	+13.1	22																									
23	161 38.3	+00.0	S 10 01.8	-00.9	203 56.8	-00.6	S 20 25.0	-00.3	297 09.6	-30.9	S 03 01.9	+13.0	23																									
UT	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	02 06 10 14 18 22	UT																									
SD	16°2 16'2 16°2 16'2 16°2 16'2	SD	00°1 00'1 00°1 00'1 00°1 00'1	SD	00°1 00'1 00°1 00'1 00°1 00'1	SD	00°1 00'1 00°1 00'1 00°1 00'1	SD	16°2 16'2 16°2 16'2 16°2 16'2	SD	00°1 00'1 00°1 00'1 00°1 00'1	SD	00°1 00'1 00°1 00'1 00°1 00'1	SD	16°4 16'4 16°3 16'3 16°3 16'3																							
HP	00°1 00'1 00°1 00'1 00°1 00'1	HP	00°1 00'1 00°1 00'1 00°1 00'1	HP	00°1 00'1 00°1 00'1 00°1 00'1	HP	60°9 60'8 60°7 60'6 60°5 60'4	HP	60°9 60'8 60°7 60'6 60°5 60'4	HP	00°1 00'1 00°1 00'1 00°1 00'1	HP	00°1 00'1 00°1 00'1 00°1 00'1	HP	60°1 60'1 60°0 59'8 59'7 59'5																							
SHA	025° 025° 025° 024° 024° 024°	SHA	067° 067° 067° 067° 067° 066°	SHA	067° 067° 067° 067° 067° 066°	SHA	173° 169° 167° 165° 162° 160°	SHA	025° 025° 025° 024° 024° 024°	SHA	025° 025° 025° 024° 024° 024°	SHA	067° 067° 067° 067° 067° 066°	SHA	173° 169° 167° 165° 162° 160°																							
Greenwich Culmination Time: 12:13													Greenwich Culmination Time: 09:23													Greenwich Culmination Time: 02:28												

UT	Mars				Jupiter				Saturn				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	118 39.7	+00.9	N 13 31.4	+00.6	250 31.2	+02.1	S 22 30.0	+00.0	222 14.4	+02.2	S 21 55.3	-00.1	00
01	133 40.6	+00.8	N 13 32.0	+00.6	265 33.3	+02.1	S 22 30.0	+00.1	237 16.6	+02.2	S 21 55.2	+00.0	01
02	148 41.4	+00.9	N 13 32.6	+00.6	280 35.4	+02.1	S 22 30.1	+00.0	252 18.8	+02.2	S 21 55.2	+00.0	02
03	163 42.3	+00.8	N 13 33.2	+00.6	295 37.5	+02.1	S 22 30.1	+00.0	267 21.0	+02.3	S 21 55.2	-00.1	03
04	178 43.1	+00.9	N 13 33.8	+00.6	310 39.6	+02.1	S 22 30.1	+00.0	282 23.3	+02.2	S 21 55.1	+00.0	04
05	193 44.0	+00.8	N 13 34.4	+00.6	325 41.7	+02.1	S 22 30.1	+00.1	297 25.5	+02.2	S 21 55.1	+00.0	05
06	208 44.8	+00.8	N 13 35.0	+00.6	340 43.8	+02.1	S 22 30.2	+00.0	312 27.7	+02.2	S 21 55.1	+00.0	06
07	223 45.6	+00.9	N 13 35.6	+00.6	355 45.9	+02.1	S 22 30.2	+00.0	327 29.9	+02.2	S 21 55.1	-00.1	07
08	238 46.5	+00.8	N 13 36.2	+00.6	10 48.0	+02.1	S 22 30.2	+00.0	342 32.1	+02.2	S 21 55.0	+00.0	08
09	253 47.3	+00.9	N 13 36.8	+00.6	25 50.1	+02.1	S 22 30.2	+00.0	357 34.3	+02.2	S 21 55.0	+00.0	09
10	268 48.2	+00.8	N 13 37.4	+00.6	40 52.2	+02.1	S 22 30.2						

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	176	47.5	+00.1	S 08 32.0	-00.9	217	53.4	-00.7	S 19 50.6	-00.4	263	17.1	-30.2	S 19 03.3	+05.7	00
01	191	47.6	+00.1	S 08 31.1	-01.0	232	52.7	-00.6	S 19 50.2	-00.4	277	46.9	-30.1	S 19 09.0	+05.5	01
02	206	47.7	+00.1	S 08 30.1	-00.9	247	52.1	-00.6	S 19 49.8	-00.5	292	16.8	-30.2	S 19 14.5	+05.4	02
03	221	47.8	+00.1	S 08 29.2	-00.9	262	51.5	-00.7	S 19 49.3	-00.4	306	46.6	-30.2	S 19 19.9	+05.4	03
04	236	47.9	+00.1	S 08 28.3	-01.0	277	50.8	-00.6	S 19 48.9	-00.4	321	16.4	-30.1	S 19 25.3	+05.2	04
05	251	48.0	+00.1	S 08 27.3	-00.9	292	50.2	-00.7	S 19 48.5	-00.4	335	46.3	-30.2	S 19 30.5	+05.1	05
06	266	48.1	+00.1	S 08 26.4	-01.0	307	49.5	-00.6	S 19 48.1	-00.4	350	16.1	-30.2	S 19 35.6	+05.1	06
07	281	48.2	+00.1	S 08 25.4	-00.9	322	48.9	-00.7	S 19 47.7	-00.4	4	45.9	-30.1	S 19 40.7	+04.9	07
08	296	48.3	+00.1	S 08 24.5	-00.9	337	48.2	-00.6	S 19 47.3	-00.4	19	15.8	-30.2	S 19 45.6	+04.8	08
09	311	48.4	+00.1	S 08 23.6	-01.0	352	47.6	-00.7	S 19 46.9	-00.4	33	45.6	-30.2	S 19 50.4	+04.7	09
10	326	48.5	+00.2	S 08 22.6	-00.9	7	46.9	-00.6	S 19 46.5	-00.4	48	15.4	-30.2	S 19 55.1	+04.6	10
11	341	48.7	+00.1	S 08 21.7	-01.0	22	46.3	-00.7	S 19 46.1	-00.4	62	45.2	-30.1	S 19 59.7	+04.5	11
12	356	48.8	+00.1	S 08 20.7	-00.9	37	45.6	-00.6	S 19 45.7	-00.5	77	15.1	-30.2	S 20 04.2	+04.4	12
13	11	48.9	+00.1	S 08 19.8	-00.9	52	45.0	-00.7	S 19 45.2	-00.4	91	44.9	-30.2	S 20 08.6	+04.3	13
14	26	49.0	+00.1	S 08 18.9	-01.0	67	44.3	-00.6	S 19 44.8	-00.4	106	14.7	-30.1	S 20 12.9	+04.2	14
15	41	49.1	+00.1	S 08 17.9	-00.9	82	43.7	-00.7	S 19 44.4	-00.4	120	44.6	-30.2	S 20 17.1	+04.1	15
16	56	49.2	+00.1	S 08 17.0	-01.0	97	43.0	-00.6	S 19 44.0	-00.4	135	14.4	-30.2	S 20 21.2	+04.0	16
17	71	49.3	+00.1	S 08 16.0	-00.9	112	42.4	-00.7	S 19 43.6	-00.4	149	44.2	-30.1	S 20 25.2	+03.9	17
18	86	49.4	+00.1	S 08 15.1	-00.9	127	41.7	-00.6	S 19 43.2	-00.5	164	14.1	-30.2	S 20 29.1	+03.8	18
19	101	49.5	+00.1	S 08 14.2	-01.0	142	41.1	-00.6	S 19 42.7	-00.4	178	43.9	-30.2	S 20 32.9	+03.6	19
20	116	49.6	+00.2	S 08 13.2	-00.9	157	40.5	-00.7	S 19 42.3	-00.4	193	13.7	-30.1	S 20 36.5	+03.6	20
21	131	49.8	+00.1	S 08 12.3	-01.0	172	39.8	-00.6	S 19 41.9	-00.4	207	43.6	-30.2	S 20 40.1	+03.5	21
22	146	49.9	+00.1	S 08 11.3	-00.9	187	39.2	-00.7	S 19 41.5	-00.5	222	13.4	-30.1	S 20 43.6	+03.3	22
23	161	50.0	+00.1	S 08 10.4	-01.0	202	38.5	-00.6	S 19 41.0	-00.4	236	43.3	-30.2	S 20 46.9	+03.3	23

UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°2	16°2	16°2	16°2	16°1	16°1	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	15°2	15°2	15°1	15°1	15°1	15°0
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	55°8	55°6	55°5	55°4	55°3	55°2	HP	55°8	55°6	55°5	55°4	55°3	55°2
SHA	020°	020°	020°	020°	020°	019°	SHA	061°	061°	061°	061°	060°	060°	SHA	106°	103°	101°	099°	097°	095°

Greenwich Culmination Time: 12:12 Greenwich Culmination Time: 09:28 Greenwich Culmination Time: 06:40

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	120	39.9	+00.8	N 14 55.3	+00.6	255	36.1	+02.2	S 22 33.0	+00.0	227	33.9	+02.2	S 21 51.3	+00.0	00
01	135	40.7	+00.9	N 14 55.9	+00.5	270	38.3	+02.1	S 22 33.0	+00.0	242	36.1	+02.2	S 21 51.3	-00.1	01
02	150	41.6	+00.8	N 14 56.4	+00.6	285	40.4	+02.1	S 22 33.0	+00.0	257	38.3	+02.3	S 21 51.2	+00.0	02
03	165	42.4	+00.8	N 14 57.0	+00.6	300	42.5	+02.2	S 22 33.0	+00.0	272	40.6	+02.2	S 21 51.2	+00.0	03
04	180	43.2	+00.8	N 14 57.6	+00.5	315	44.7	+02.1	S 22 33.0	+00.1	287	42.8	+02.2	S 21 51.2	+00.0	04
05	195	44.0	+00.9	N 14 58.1	+00.6	330	46.8	+02.1	S 22 33.1	+00.0	302	45.0	+02.3	S 21 51.2	-00.1	05
06	210	44.9	+00.8	N 14 58.7	+00.6	345	48.9	+02.2	S 22 33.1	+00.0	317	47.3	+02.2	S 21 51.1	+00.0	06
07	225	45.7	+00.8	N 14 59.3	+00.5	0	51.1	+02.1	S 22 33.1	+00.0	332	49.5	+02.2	S 21 51.1	+00.0	07
08	240	46.5	+00.8	N 14 59.8	+00.6	15	53.2	+02.2	S 22 33.1	+00.0	347	51.7	+02.2	S 21 51.1	+00.0	08
09	255	47.3	+00.9	N 15 00.4	+00.6	30	55.4	+02.1	S 22 33.1	+00.0	2	53.9	+02.3	S 21 51.1	-00.1	09
10	270	48.2	+00.8	N 15 01.0	+00.5	45	57.5	+02.1	S 22 33.1	+00.1	17	56.2	+02.2	S 21 51.0	+00.0	10
11	285	49.0	+00.8	N 15 01.5	+00.6	60	59.6	+02.2	S 22 33.2	+00.0	32	58.4	+02.2	S 21 51.0	+00.0	11
12	300	49.8	+00.8	N 15 02.1	+00.5	76	01.8	+02.1	S 22 33.2	+00.0	48	00.6	+02.2	S 21 51.0	-00.1	12
13	315	50.6	+00.9	N 15 02.6	+00.6	91	03.9	+02.2	S 22 33.2	+00.0	63	02.8	+02.3	S 21 50.9	+00.0	13
14	330	51.5	+00.8	N 15 03.2	+00.6	106	06.1	+02.1	S 22 33.2	+00.0	78	05.1	+02.2	S 21 50.9	+00.0	14
15	345	52.3	+00.8	N 15 03.8	+00.5	121	08.2	+02.1	S 22 33.2	+00.1	93	07.3	+02.2	S 21 50.9	+00.0	15
16	0	53.1	+00.8	N 15 04.3	+00.6	136	10.3	+02.2	S 22 33.3	+00.0	108	09.5	+02.3	S 21 50.9	-00.1	16
17	15	53.9	+00.9	N 15 04.9	+00.6	151	12.5	+02.1	S 22 33.3	+00.0	123	11.8	+02.2	S 21 50.8	+00.0	17
18	30	54.8	+00.8	N 15 05.5	+00.5	166	14.6	+02.2	S 22 33.3	+00.0	138	14.0	+02.2	S 21 50.8	+00.0	18
19	45	55.6	+00.8	N 15 06.0	+00.6	181	16.8	+02.1	S 22 33.3	+00.0	153	16.2	+02.2	S 21 50.8	+00.0	19
20	60	56.4	+00.8	N 15 06.6	+00.6	196	18.9	+02.1	S 22 33.3	+00.0	168	18.4	+02.3	S 21 50.8	-00.1	20
21	75	57.2	+00.8	N 15 07.2	+00.5	211	21.0	+02.2	S 22 33.3	+00.1	183	20.7	+02.2	S 21 50.7	+00.0	21
22	90	58.0	+00.9	N 15 07.7	+00.6	226	23.2	+02.1	S 22 33.4	+00.0	198	22.9	+02.2	S 21 50.7	+00.0	22
23	105	58.9	+00.8	N 15 08.3	+00.6	241	25.3	+02.2	S 22 33.4	+00.0	213	25.1	+02.3	S 21 50.7	+00.0	23

UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	00°0	00°0	00°0	00°0	00°0	00°0	SD	00°3	00°3	00°3	00°3	00°3	00°3	SD	00°1	00°1	00°1	00°1	00°1	00°1
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°0	00°0	00°0	00°0	00°0	00°0	HP	00°0	00°0	00°0	00°0	00°0	00°0
SHA	324°	324°	324°	324°	324°	324°	SHA	099°	099°	099°	099°	099°	099°	SHA	071°	071°	071°	071°	071°	071°

Greenwich Culmination Time: 15:56 Greenwich Culmination Time: 06:56 Greenwich Culmination Time: 08:48

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	176	40.4	+00.1	S 09 38.9	-00.9	218	40.4	-00.7	S 20 17.0	-00.3	299	25.8	-30.3	S 08 14.7	+11.8	00
01	191	40.5	+00.1	S 09 38.0	-00.9	233	39.7	-00.6	S 20 16.7	-00.4	313	55.5	-30.3	S 08 26.5	+11.8	01
02	206	40.6	+00.1	S 09 37.1	-00.9	248	39.1	-00.7	S 20 16.3	-00.3	328	25.2	-30.3	S 08 38.3	+11.7	02
03	221	40.7	+00.1	S 09 36.2	-01.0	263	38.4	-00.6	S 20 16.0	-00.3	342	54.9	-30.2	S 08 50.0	+11.6	03
04	236	40.8	+00.1	S 09 35.2	-00.9	278	37.8	-00.7	S 20 15.7	-00.4	357	24.7	-30.2	S 09 01.6	+11.6	04
05	251	40.9	+00.1	S 09 34.3	-00.9	293	37.1	-00.6	S 20 15.3	-00.3	11	54.5	-30.3	S 09 13.2	+11.5	05
06	266	41.0	+00.0	S 09 33.4	-00.9	308	36.5	-00.7	S 20 15.0	-00.4	26	24.2	-30.2	S 09 24.7	+11.4	06
07	281	41.0	+00.1	S 09 32.5	-01.0	323	35.8	-00.6	S 20 14.6	-00.3	40	54.0	-30.2	S 09 36.1	+11.3	07
08	296	41.1	+00.1	S 09 31.5	-00.9	338	35.2	-00.7	S 20 14.3	-00.3	55	23.8	-30.1	S 09 47.4	+11.3	08
09	311	41.2	+00.1	S 09 30.6	-00.9	353	34.5	-00.7	S 20 14.0	-00.4	69	53.7	-30.2	S 09 58.7	+11.3	09
10	326	41.3	+00.1	S 09 29.7	-00.9	8	33.8	-00.6	S 20 13.6	-00.3	84	23.5	-30.2	S 10 10.0	+11.1	10
11	341	41.4	+00.1	S 09 28.8	-00.9	23	33.2	-00.7	S 20 13.3	-00.4	98	53.3	-30.1	S 10 21.1	+11.1	11
12	356	41.5	+00.1	S 09 27.9	-01.0	38	32.5	-00.6	S 20 12.9	-00.3	113	23.2	-30.2	S 10 32.2	+11.0	12
13	11	41.6	+00.1	S 09 26.9	-00.9	53	31.9	-00.7	S 20 12.6	-00.3	127	53.0	-30.1	S 10 43.2	+10.9	1

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for positions (GHA, ddGHA, Dec, dDec) and Greenwich Culmination Time.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for positions (GHA, ddGHA, Dec, dDec) and Greenwich Culmination Time.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for positions (GHA, ddGHA, Dec, dDec) and Greenwich Culmination Time.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for positions (GHA, ddGHA, Dec, dDec) and Greenwich Culmination Time.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes celestial coordinates (GHA, ddGHA, Dec, dDec) and magnitude (A: 90%).

SD 16°1 16°1 16°1 16°1 16°1 16°1
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 016° 016° 016° 016° 016° 016°
Greenwich Culmination Time: 12:11

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes celestial coordinates (GHA, ddGHA, Dec, dDec) and magnitude (A: 90%).

SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 321° 321° 321° 321° 321° 321°
Greenwich Culmination Time: 15:51

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes celestial coordinates (GHA, ddGHA, Dec, dDec) and magnitude (A: 81%).

SD 16°1 16°1 16°1 16°1 16°1 16°1
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 019° 019° 019° 019° 019° 018°
Greenwich Culmination Time: 12:12

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes celestial coordinates (GHA, ddGHA, Dec, dDec) and magnitude (A: 81%).

SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 323° 323° 323° 323° 323° 323°
Greenwich Culmination Time: 15:55

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°1 16°1 16°1 16°1 16°1 16°1
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 018° 018° 018° 018° 018° 018°
Greenwich Culmination Time: 12:12

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 323° 323° 323° 322° 322° 322°
Greenwich Culmination Time: 15:53

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°1 16°1 16°1 16°1 16°1 16°1
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 017° 017° 017° 017° 017° 017°
Greenwich Culmination Time: 12:12

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 322° 322° 322° 322° 322° 322°
Greenwich Culmination Time: 15:52

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°1 16°1 16°1 16°1 16°1 16°1
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 013° 013° 012° 012° 012° 012°
Greenwich Culmination Time: 12:11

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 319° 319° 319° 318° 318° 318°
Greenwich Culmination Time: 15:46

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°1 16°1 16°1 16°1 16°1 16°1
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 015° 015° 015° 015° 015° 015°
Greenwich Culmination Time: 12:11

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 321° 321° 321° 320° 320° 320°
Greenwich Culmination Time: 15:49

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°1 16°1 16°1 16°1 16°1 16°1
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 015° 014° 014° 014° 014° 014°
Greenwich Culmination Time: 12:11

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 320° 320° 320° 320° 320° 320°
Greenwich Culmination Time: 15:48

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°1 16°1 16°1 16°1 16°1 16°1
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 014° 013° 013° 013° 013° 013°
Greenwich Culmination Time: 12:11

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 319° 319° 319° 319° 319° 319°
Greenwich Culmination Time: 15:47

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for days 00-23 and a footer with planetary details and Greenwich Culmination Time: 12:10.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for days 00-23 and a footer with planetary details and Greenwich Culmination Time: 12:10.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for days 00-23 and a footer with planetary details and Greenwich Culmination Time: 15:43.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for days 00-23 and a footer with planetary details and Greenwich Culmination Time: 15:42.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes rows 00-23 and astronomical data for each planet.

UT 02 06 10 14 18 22
SD 16°11' 16°11' 16°11' 16°11' 16°11' 16°11'
HP 00°11' 00°11' 00°11' 00°11' 00°11' 00°11'
SHA 007° 007° 007° 007° 007° 006°
Greenwich Culmination Time: 12:09

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes rows 00-23 and astronomical data for each planet.

UT 02 06 10 14 18 22
SD 00°01' 00°01' 00°01' 00°01' 00°01' 00°01'
HP 00°01' 00°01' 00°01' 00°01' 00°01' 00°01'
SHA 315° 315° 315° 314° 314° 314°
Greenwich Culmination Time: 15:38

Table with columns for UT, Sun, Venus, Moon, and UT. Includes rows 00-23 and astronomical data for each planet.

UT 02 06 10 14 18 22
SD 16°11' 16°11' 16°11' 16°11' 16°11' 16°11'
HP 00°11' 00°11' 00°11' 00°11' 00°11' 00°11'
SHA 006° 006° 006° 006° 006° 005°
Greenwich Culmination Time: 12:09

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes rows 00-23 and astronomical data for each planet.

UT 02 06 10 14 18 22
SD 00°01' 00°01' 00°01' 00°01' 00°01' 00°01'
HP 00°01' 00°01' 00°01' 00°01' 00°01' 00°01'
SHA 314° 314° 314° 314° 314° 314°
Greenwich Culmination Time: 15:37

Table with columns for UT, Sun, Venus, Moon, and UT. It includes astronomical data for three planets and their culminations. The Sun section shows GHA, ddGHA, Dec, and dDec for UT 00-23. Venus and Moon sections follow a similar format. Culmination times are provided at the bottom of each planet's section.

Table with columns for UT, Sun, Venus, Moon, and UT. It includes astronomical data for three planets and their culminations. The Sun section shows GHA, ddGHA, Dec, and dDec for UT 00-23. Venus and Moon sections follow a similar format. Culmination times are provided at the bottom of each planet's section.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. It includes astronomical data for three planets and their culminations. The Mars section shows GHA, ddGHA, Dec, and dDec for UT 00-23. Jupiter and Saturn sections follow a similar format. Culmination times are provided at the bottom of each planet's section.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. It includes astronomical data for three planets and their culminations. The Mars section shows GHA, ddGHA, Dec, and dDec for UT 00-23. Jupiter and Saturn sections follow a similar format. Culmination times are provided at the bottom of each planet's section.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table for Sun, Venus, and Moon on 2019 March 17. Columns include UT, GHA, ddGHA, Dec, dDec for each celestial body, and UT. Rows list hourly data from 00:00 to 23:00.

Summary table for Sun, Venus, and Moon on 2019 March 17. Columns include UT, GHA, ddGHA, Dec, dDec for each body. Rows list hourly data from 00:00 to 23:00.

Table for Mars, Jupiter, and Saturn on 2019 March 17. Columns include UT, GHA, ddGHA, Dec, dDec for each celestial body, and UT. Rows list hourly data from 00:00 to 23:00.

Summary table for Mars, Jupiter, and Saturn on 2019 March 17. Columns include UT, GHA, ddGHA, Dec, dDec for each body. Rows list hourly data from 00:00 to 23:00.

Table for Sun, Venus, and Moon on 2019 March 18. Columns include UT, GHA, ddGHA, Dec, dDec for each celestial body, and UT. Rows list hourly data from 00:00 to 23:00.

Summary table for Sun, Venus, and Moon on 2019 March 18. Columns include UT, GHA, ddGHA, Dec, dDec for each body. Rows list hourly data from 00:00 to 23:00.

Table for Mars, Jupiter, and Saturn on 2019 March 18. Columns include UT, GHA, ddGHA, Dec, dDec for each celestial body, and UT. Rows list hourly data from 00:00 to 23:00.

Summary table for Mars, Jupiter, and Saturn on 2019 March 18. Columns include UT, GHA, ddGHA, Dec, dDec for each body. Rows list hourly data from 00:00 to 23:00.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for Sun, Venus, and Moon.

UT 02 06 10 14 18 22
SD 16°1 16°0 16°0 16°0 16°0 16°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 358° 358° 358° 358° 357° 357°
Greenwich Culmination Time: 12:06

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for Sun, Venus, and Moon.

UT 02 06 10 14 18 22
SD 16°1 16°1 16°1 16°1 16°1 16°1
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 001° 001° 000° 000° 000° 360°
Greenwich Culmination Time: 12:07

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for Mars, Jupiter, and Saturn.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 308° 308° 308° 308° 307°
Greenwich Culmination Time: 15:26

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for Mars, Jupiter, and Saturn.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 310° 310° 310° 310° 310° 309°
Greenwich Culmination Time: 15:29

Table with columns for UT, Sun, Venus, Moon, and UT. Each planet section includes GHA, ddGHA, Dec, and dDec values for each hour of the day.

Table with columns for UT, Sun, Venus, Moon, and UT. Each planet section includes SD, HP, and SHA values for each hour of the day.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Each planet section includes GHA, ddGHA, Dec, and dDec values for each hour of the day.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Each planet section includes SD, HP, and SHA values for each hour of the day.

Table with columns for UT, Sun, Venus, Moon, and UT. Each planet section includes GHA, ddGHA, Dec, and dDec values for each hour of the day.

Table with columns for UT, Sun, Venus, Moon, and UT. Each planet section includes SD, HP, and SHA values for each hour of the day.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Each planet section includes GHA, ddGHA, Dec, and dDec values for each hour of the day.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Each planet section includes SD, HP, and SHA values for each hour of the day.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

UT	Sun				Venus				Moon				A: 73%	UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	178	35.9	+00.1	N	02	23.8	+00.9		211	35.9	-00.5	S	12	01.8	-00.9	00
01	193	36.0	+00.2	N	02	24.7	+01.0		226	35.4	-00.4	S	12	00.9	-01.0	01
02	208	36.2	+00.2	N	02	25.7	+01.0		241	35.0	-00.5	S	11	59.9	-00.9	02
03	223	36.4	+00.2	N	02	26.7	+01.0		256	34.5	-00.4	S	11	59.0	-01.0	03
04	238	36.6	+00.2	N	02	27.7	+01.0		271	34.1	-00.5	S	11	58.0	-00.9	04
05	253	36.8	+00.2	N	02	28.7	+00.9		286	33.6	-00.4	S	11	57.1	-01.0	05
06	268	37.0	+00.2	N	02	29.6	+01.0		301	33.2	-00.5	S	11	56.1	-00.9	06
07	283	37.2	+00.2	N	02	30.6	+01.0		316	32.7	-00.4	S	11	55.2	-01.0	07
08	298	37.4	+00.2	N	02	31.6	+01.0		331	32.3	-00.5	S	11	54.2	-00.9	08
09	313	37.6	+00.1	N	02	32.6	+01.0		346	31.8	-00.4	S	11	53.3	-01.0	09
10	328	37.7	+00.2	N	02	33.6	+00.9		1	31.4	-00.5	S	11	52.3	-00.9	10
11	343	37.9	+00.2	N	02	34.5	+01.0		16	30.9	-00.4	S	11	51.4	-01.0	11
12	358	38.1	+00.2	N	02	35.5	+01.0		31	30.5	-00.5	S	11	50.4	-01.0	12
13	13	38.3	+00.2	N	02	36.5	+01.0		46	30.0	-00.4	S	11	49.4	-01.0	13
14	28	38.5	+00.2	N	02	37.5	+00.9		61	29.6	-00.5	S	11	48.5	-01.0	14
15	43	38.7	+00.2	N	02	38.4	+01.0		76	29.1	-00.4	S	11	47.5	-00.9	15
16	58	38.9	+00.2	N	02	39.4	+01.0		91	28.7	-00.5	S	11	46.6	-01.0	16
17	73	39.1	+00.2	N	02	40.4	+01.0		106	28.2	-00.4	S	11	45.6	-00.9	17
18	88	39.3	+00.1	N	02	41.4	+01.0		121	27.8	-00.5	S	11	44.7	-01.0	18
19	103	39.4	+00.2	N	02	42.4	+00.9		136	27.3	-00.4	S	11	43.7	-01.0	19
20	118	39.6	+00.2	N	02	43.3	+01.0		151	26.9	-00.5	S	11	42.7	-00.9	20
21	133	39.8	+00.2	N	02	44.3	+01.0		166	26.4	-00.4	S	11	41.8	-01.0	21
22	148	40.0	+00.2	N	02	45.3	+01.0		181	26.0	-00.5	S	11	40.8	-00.9	22
23	163	40.2	+00.2	N	02	46.3	+00.9		196	25.5	-00.4	S	11	39.9	-01.0	23
UT 02 06 10 14 18 22				UT 02 06 10 14 18 22				UT 02 06 10 14 18 22				UT 02 06 10 14 18 22				
SD 16°0 16°0 16°0 16°0 16°0 16°0				SD 00°1 00°1 00°1 00°1 00°1 00°1				SD 15°2 15°2 15°2 15°1 15°1 15°1				SD 16°0 16°0 16°0 16°0 16°0 16°0				
HP 00°1 00°1 00°1 00°1 00°1 00°1				HP 00°1 00°1 00°1 00°1 00°1 00°1				HP 55°9 55°8 55°7 55°6 55°4 55°3				HP 00°1 00°1 00°1 00°1 00°1 00°1				
SHA 354° 354° 354° 354° 354° 354°				SHA 027° 027° 027° 027° 027° 027°				SHA 097° 095° 092° 090° 088° 086°				SHA 031° 031° 030° 030° 030° 030°				
Greenwich Culmination Time: 12:05				Greenwich Culmination Time: 09:53				Greenwich Culmination Time: 05:23				Greenwich Culmination Time: 12:06				

UT	Sun				Venus				Moon				A: 62%	UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	178	22.2	+00.2	N	01	13.0	+01.0		212	09.5	-00.5	S	13	08.5	-00.9	00
01	193	22.4	+00.2	N	01	14.0	+01.0		227	09.0	-00.4	S	13	07.6	-00.9	01
02	208	22.6	+00.2	N	01	15.0	+01.0		242	08.6	-00.5	S	13	06.7	-00.9	02
03	223	22.8	+00.2	N	01	16.0	+01.0		257	08.1	-00.5	S	13	05.8	-00.9	03
04	238	23.0	+00.2	N	01	17.0	+00.9		272	07.6	-00.5	S	13	04.9	-00.9	04
05	253	23.2	+00.2	N	01	17.9	+01.0		287	07.1	-00.4	S	13	04.0	-00.9	05
06	268	23.4	+00.2	N	01	18.9	+01.0		302	06.7	-00.5	S	13	03.1	-00.9	06
07	283	23.6	+00.2	N	01	19.9	+01.0		317	06.2	-00.5	S	13	02.2	-00.9	07
08	298	23.8	+00.1	N	01	20.9	+01.0		332	05.7	-00.5	S	13	01.3	-01.0	08
09	313	23.9	+00.2	N	01	21.9	+01.0		347	05.2	-00.4	S	13	00.3	-00.9	09
10	328	24.1	+00.2	N	01	22.9	+01.0		2	04.8	-00.5	S	12	59.4	-00.9	10
11	343	24.3	+00.2	N	01	23.9	+00.9		17	04.3	-00.5	S	12	58.5	-00.9	11
12	358	24.5	+00.2	N	01	24.8	+01.0		32	03.8	-00.5	S	12	57.6	-00.9	12
13	13	24.7	+00.2	N	01	25.8	+01.0		47	03.3	-00.4	S	12	56.7	-00.9	13
14	28	24.9	+00.2	N	01	26.8	+01.0		62	02.9	-00.5	S	12	55.8	-00.9	14
15	43	25.1	+00.2	N	01	27.8	+01.0		77	02.4	-00.5	S	12	54.9	-00.9	15
16	58	25.3	+00.2	N	01	28.8	+01.0		92	01.9	-00.5	S	12	54.0	-00.9	16
17	73	25.5	+00.1	N	01	29.8	+00.9		107	01.4	-00.4	S	12	53.1	-01.0	17
18	88	25.6	+00.2	N	01	30.7	+01.0		122	01.0	-00.5	S	12	52.1	-00.9	18
19	103	25.8	+00.2	N	01	31.7	+01.0		137	00.5	-00.5	S	12	51.2	-00.9	19
20	118	26.0	+00.2	N	01	32.7	+01.0		152	00.0	-00.5	S	12	50.3	-00.9	20
21	133	26.2	+00.2	N	01	33.7	+01.0		166	59.5	-00.4	S	12	49.4	-00.9	21
22	148	26.4	+00.2	N	01	34.7	+01.0		181	59.1	-00.5	S	12	48.5	-00.9	22
23	163	26.6	+00.2	N	01	35.7	+00.9		196	58.6	-00.5	S	12	47.6	-01.0	23
UT 02 06 10 14 18 22				UT 02 06 10 14 18 22				UT 02 06 10 14 18 22				UT 02 06 10 14 18 22				
SD 16°0 16°0 16°0 16°0 16°0 16°0				SD 00°1 00°1 00°1 00°1 00°1 00°1				SD 15°2 15°2 15°2 15°1 15°1 15°1				SD 16°0 16°0 16°0 16°0 16°0 16°0				
HP 00°1 00°1 00°1 00°1 00°1 00°1				HP 00°1 00°1 00°1 00°1 00°1 00°1				HP 55°9 55°8 55°7 55°6 55°4 55°3				HP 00°1 00°1 00°1 00°1 00°1 00°1				
SHA 354° 354° 354° 354° 354° 354°				SHA 027° 027° 027° 027° 027° 027°				SHA 097° 095° 092° 090° 088° 086°				SHA 031° 031° 030° 030° 030° 030°				
Greenwich Culmination Time: 12:06				Greenwich Culmination Time: 09:51				Greenwich Culmination Time: 02:48				Greenwich Culmination Time: 02:48				

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for Sun, Venus, and Moon.

UT 02 06 10 14 18 22
SD 16°0 16°0 16°0 16°0 16°0 16°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 356° 356° 356° 356° 356° 355°
Greenwich Culmination Time: 12:06

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for Mars, Jupiter, and Saturn.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 307° 307° 306° 306° 306° 306°
Greenwich Culmination Time: 15:23

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for Sun, Venus, and Moon.

UT 02 06 10 14 18 22
SD 16°0 16°0 16°0 16°0 16°0 16°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 355° 355° 355° 355° 355° 355°
Greenwich Culmination Time: 12:05

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for Mars, Jupiter, and Saturn.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 306° 306° 306° 306° 305° 305°
Greenwich Culmination Time: 15:22

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for Sun, Venus, and Moon.

UT 02 06 10 14 18 22
SD 16°0 16°0 16°0 16°0 16°0 16°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 351° 351° 350° 350° 350° 350°
Greenwich Culmination Time: 12:04

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for Sun, Venus, and Moon.

UT 02 06 10 14 18 22
SD 16°0 16°0 16°0 16°0 16°0 16°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 353° 353° 353° 353° 353° 353°
Greenwich Culmination Time: 12:05

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for Mars, Jupiter, and Saturn.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 303° 302° 302° 302° 302° 302°
Greenwich Culmination Time: 15:16

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for Mars, Jupiter, and Saturn.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 305° 304° 304° 304° 304° 304°
Greenwich Culmination Time: 15:20

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°0 16°0 16°0 16°0 16°0 16°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 353° 352° 352° 352° 352° 352°
Greenwich Culmination Time: 12:04

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 304° 304° 304° 304° 303° 303°
Greenwich Culmination Time: 15:19

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°0 16°0 16°0 16°0 16°0 16°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 352° 352° 351° 351° 351° 351°
Greenwich Culmination Time: 12:04

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 303° 303° 303° 303° 303° 303°
Greenwich Culmination Time: 15:17

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23 showing celestial coordinates and magnitudes for each planet.

UT 02 06 10 14 18 22
SD 16°0 16°0 16°0 16°0 16°0 16°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 347° 347° 347° 347° 347° 346°
Greenwich Culmination Time: 12:03

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23 showing celestial coordinates and magnitudes for each planet.

UT 02 06 10 14 18 22
SD 16°0 16°0 16°0 16°0 16°0 16°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 350° 350° 350° 350° 349° 349°
Greenwich Culmination Time: 12:03

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23 showing celestial coordinates and magnitudes for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 300° 300° 300° 299° 299° 299°
Greenwich Culmination Time: 15:12

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23 showing celestial coordinates and magnitudes for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 302° 302° 302° 301° 301° 301°
Greenwich Culmination Time: 15:15

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for each planet.

UT 02 06 10 14 18 22
SD 16°0 16°0 16°0 16°0 16°0 16°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 349° 349° 349° 348° 348° 348°
Greenwich Culmination Time: 12:03

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for each planet.

UT 02 06 10 14 18 22
SD 16°0 16°0 16°0 16°0 16°0 16°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 348° 348° 348° 348° 347° 347°
Greenwich Culmination Time: 12:03

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 301° 301° 301° 301° 301° 301°
Greenwich Culmination Time: 15:14

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 300° 300° 300° 300° 300° 300°
Greenwich Culmination Time: 15:13

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes celestial coordinates (GHA, ddGHA, Dec, dDec) and magnitude (A: 10%).

UT 02 06 10 14 18 22
SD 16°0 16°0 16°0 16°0 16°0 16°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 343° 343° 343° 343° 343° 343°
Greenwich Culmination Time: 12:01

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes celestial coordinates (GHA, ddGHA, Dec, dDec) and magnitude (A: 10%).

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 297° 297° 297° 297° 296° 296°
Greenwich Culmination Time: 15:07

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes celestial coordinates (GHA, ddGHA, Dec, dDec) and magnitude (A: 00%).

UT 02 06 10 14 18 22
SD 16°0 16°0 16°0 16°0 16°0 16°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 346° 346° 346° 346° 345° 345°
Greenwich Culmination Time: 12:02

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes celestial coordinates (GHA, ddGHA, Dec, dDec) and magnitude (A: 10%).

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 299° 299° 299° 299° 298° 298°
Greenwich Culmination Time: 15:10

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table for April 6, Saturday, showing astronomical data for Sun, Venus, and Moon. Columns include UT, GHA, ddGHA, Dec, dDec, and A: 03%.

Table for April 7, Sunday, showing astronomical data for Sun, Venus, and Moon. Columns include UT, GHA, ddGHA, Dec, dDec, and A: 06%.

Table for April 6, Saturday, showing astronomical data for Mars, Jupiter, and Saturn. Columns include UT, GHA, ddGHA, Dec, dDec, and Greenwich Culmination Time.

Table for April 7, Sunday, showing astronomical data for Mars, Jupiter, and Saturn. Columns include UT, GHA, ddGHA, Dec, dDec, and Greenwich Culmination Time.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes SD, HP, SHA, and Greenwich Culmination Time for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes SD, HP, SHA, and Greenwich Culmination Time for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes SD, HP, SHA, and Greenwich Culmination Time for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes SD, HP, SHA, and Greenwich Culmination Time for each planet.

Table for 2019 April 10 showing astronomical data for Sun, Venus, Moon, Mars, Jupiter, and Saturn. Columns include UT, GHA, ddGHA, Dec, and dDec for each planet.

Table for 2019 April 11 showing astronomical data for Sun, Venus, Moon, Mars, Jupiter, and Saturn. Columns include UT, GHA, ddGHA, Dec, and dDec for each planet.

UT 02 06 10 14 18 22
SD 16°0' 16°0' 16°0' 16°0' 16°0' 16°0'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 342° 341° 341° 341° 341° 341°
Greenwich Culmination Time: 12:01

UT 02 06 10 14 18 22
SD 16°0' 16°0' 16°0' 16°0' 16°0' 16°0'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 341° 341° 340° 340° 340° 340°
Greenwich Culmination Time: 12:01

Table for 2019 April 10 showing astronomical data for Mars, Jupiter, and Saturn. Columns include UT, GHA, ddGHA, Dec, and dDec for each planet.

Table for 2019 April 11 showing astronomical data for Mars, Jupiter, and Saturn. Columns include UT, GHA, ddGHA, Dec, and dDec for each planet.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet and Moon. Moon A: 40%.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes SD, HP, SHA, and Greenwich Culmination Time for each planet and Moon.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet and Moon. Moon A: 28%.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet and Moon. Moon A: 28%.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes SD, HP, SHA, and Greenwich Culmination Time for each planet and Moon.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet and Moon. Moon A: 28%.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 15°9' 15°9' 15°9' 15°9' 15°9' 15°9'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 338° 338° 338° 337° 337° 337°
Greenwich Culmination Time: 12:00

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 293° 293° 293° 292° 292° 292°
Greenwich Culmination Time: 15:00

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 15°9' 15°9' 15°9' 15°9' 15°9' 15°9'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 337° 337° 337° 337° 336° 336°
Greenwich Culmination Time: 12:00

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 292° 292° 292° 292° 291° 291°
Greenwich Culmination Time: 14:59

Table for 2019 April 20 (Saturday) containing columns for Sun, Venus, Moon, and Mars. Each planet's section includes UT, GHA, ddGHA, Dec, dDec, and a 22-day UTC offset table.

Table for 2019 April 17 (Wednesday) containing columns for Sun, Venus, Moon, and Mars. Each planet's section includes UT, GHA, ddGHA, Dec, dDec, and a 22-day UTC offset table.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

UT	Sun				Venus				Moon A: 68%				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	180	25.6	+00.2	N 12 41.6	+00.9	207	24.6	-00.3	N 00 09.0	+01.1	301	04.4	-31.6	S 21 41.5	+02.4	00
01	195	25.8	+00.1	N 12 42.5	+00.8	222	24.3	-00.3	N 00 10.1	+01.2	315	32.8	-31.5	S 21 43.9	+02.3	01
02	210	25.9	+00.1	N 12 43.3	+00.8	237	24.0	-00.4	N 00 11.3	+01.2	330	01.3	-31.5	S 21 46.2	+02.2	02
03	225	26.0	+00.1	N 12 44.1	+00.8	252	23.6	-00.3	N 00 12.5	+01.1	344	29.8	-31.5	S 21 48.4	+02.0	03
04	240	26.1	+00.1	N 12 44.9	+00.9	267	23.3	-00.3	N 00 13.6	+01.2	358	58.3	-31.4	S 21 50.4	+02.0	04
05	255	26.2	+00.1	N 12 45.8	+00.8	282	23.0	-00.4	N 00 14.8	+01.2	13	26.9	-31.5	S 21 52.4	+01.8	05
06	270	26.3	+00.1	N 12 46.6	+00.8	297	22.6	-00.3	N 00 16.0	+01.1	27	55.4	-31.4	S 21 54.2	+01.7	06
07	285	26.4	+00.2	N 12 47.4	+00.8	312	22.3	-00.3	N 00 17.1	+01.2	42	24.0	-31.4	S 21 55.9	+01.6	07
08	300	26.6	+00.1	N 12 48.2	+00.9	327	22.0	-00.3	N 00 18.3	+01.2	56	52.6	-31.3	S 21 57.5	+01.5	08
09	315	26.7	+00.1	N 12 49.1	+00.8	342	21.7	-00.4	N 00 19.5	+01.1	71	21.3	-31.4	S 21 59.0	+01.3	09
10	330	26.8	+00.1	N 12 49.9	+00.8	357	21.3	-00.3	N 00 20.6	+01.2	85	49.9	-31.3	S 22 00.3	+01.3	10
11	345	26.9	+00.1	N 12 50.7	+00.8	12	21.0	-00.3	N 00 21.8	+01.2	100	18.6	-31.2	S 22 01.6	+01.1	11
12	0	27.0	+00.1	N 12 51.5	+00.9	27	20.7	-00.4	N 00 23.0	+01.1	114	47.4	-31.3	S 22 02.7	+01.0	12
13	15	27.1	+00.1	N 12 52.4	+00.8	42	20.3	-00.3	N 00 24.1	+01.2	129	16.1	-31.2	S 22 03.7	+00.9	13
14	30	27.2	+00.2	N 12 53.2	+00.8	57	20.0	-00.3	N 00 25.3	+01.2	143	44.9	-31.2	S 22 04.6	+00.8	14
15	45	27.4	+00.1	N 12 54.0	+00.8	72	19.7	-00.3	N 00 26.5	+01.2	158	13.7	-31.2	S 22 05.4	+00.6	15
16	60	27.5	+00.1	N 12 54.8	+00.9	87	19.4	-00.4	N 00 27.7	+01.1	172	42.5	-31.1	S 22 06.0	+00.6	16
17	75	27.6	+00.1	N 12 55.7	+00.8	102	19.0	-00.3	N 00 28.8	+01.2	187	11.4	-31.1	S 22 06.6	+00.4	17
18	90	27.7	+00.1	N 12 56.5	+00.8	117	18.7	-00.3	N 00 30.0	+01.2	201	40.3	-31.1	S 22 07.0	+00.3	18
19	105	27.8	+00.1	N 12 57.3	+00.8	132	18.4	-00.4	N 00 31.2	+01.1	216	09.2	-31.0	S 22 07.3	+00.2	19
20	120	27.9	+00.1	N 12 58.1	+00.8	147	18.0	-00.3	N 00 32.3	+01.2	230	38.2	-31.0	S 22 07.5	+00.1	20
21	135	28.0	+00.1	N 12 58.9	+00.9	162	17.7	-00.3	N 00 33.5	+01.2	245	07.2	-31.0	S 22 07.6	+00.0	21
22	150	28.1	+00.1	N 12 59.8	+00.9	177	17.4	-00.4	N 00 34.7	+01.1	259	36.2	-30.9	S 22 07.6	+00.1	22
23	165	28.2	+00.2	N 13 00.6	+00.8	192	17.0	-00.3	N 00 35.8	+01.2	274	05.3	-30.9	S 22 07.5	+00.3	23
UT 02 06 10 14 18 22	SD 15°9 15°9 15°9 15°9 15°9 15°9	SD 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°1 00°1 00°1 00°1 00°1 00°1	SHA 329° 328° 328° 328° 328° 328°	Greenwich Culmination Time: 11:58	UT 02 06 10 14 18 22	SD 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°1 00°1 00°1 00°1 00°1 00°1	SHA 356° 355° 355° 355° 355° 355°	Greenwich Culmination Time: 10:10	UT 02 06 10 14 18 22	SD 15°3 15°2 15°2 15°2 15°1 15°1	HP 56°0 55°9 55°7 55°6 55°5 55°4	SHA 088° 086° 084° 081° 079° 077°	Greenwich Culmination Time: 04:04	

UT	Sun				Venus				Moon A: 57%				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	180	16.8	+00.1	N 11 41.1	+00.9	207	48.4	-00.4	S 01 14.8	-01.1	339	11.2	-31.6	S 13 45.3	+10.4	00
01	195	16.9	+00.2	N 11 42.0	+00.8	222	48.0	-00.3	S 01 13.7	-01.2	353	39.6	-31.5	S 13 55.7	+10.2	01
02	210	17.1	+00.1	N 11 42.8	+00.9	237	47.7	-00.3	S 01 12.5	-01.1	8	08.1	-31.6	S 14 05.9	+10.2	02
03	225	17.2	+00.1	N 11 43.7	+00.8	252	47.4	-00.3	S 01 11.4	-01.2	22	36.5	-31.6	S 14 16.1	+10.1	03
04	240	17.3	+00.1	N 11 44.5	+00.9	267	47.1	-00.4	S 01 10.2	-01.2	37	04.9	-31.7	S 14 26.2	+10.0	04
05	255	17.4	+00.2	N 11 45.4	+00.8	282	46.7	-00.3	S 01 09.0	-01.1	51	33.2	-31.6	S 14 36.2	+09.9	05
06	270	17.6	+00.1	N 11 46.2	+00.9	297	46.4	-00.3	S 01 07.9	-01.2	66	01.6	-31.6	S 14 46.1	+09.8	06
07	285	17.7	+00.1	N 11 47.1	+00.8	312	46.1	-00.4	S 01 06.7	-01.1	80	30.0	-31.7	S 14 55.9	+09.7	07
08	300	17.8	+00.2	N 11 47.9	+00.9	327	45.7	-00.3	S 01 05.6	-01.2	94	58.3	-31.6	S 15 05.6	+09.6	08
09	315	18.0	+00.1	N 11 48.8	+00.8	342	45.4	-00.3	S 01 04.4	-01.2	109	26.7	-31.7	S 15 15.2	+09.5	09
10	330	18.1	+00.1	N 11 49.6	+00.9	357	45.1	-00.4	S 01 03.2	-01.1	123	55.0	-31.7	S 15 24.7	+09.4	10
11	345	18.2	+00.1	N 11 50.5	+00.8	12	44.7	-00.3	S 01 02.1	-01.2	138	23.3	-31.7	S 15 34.1	+09.4	11
12	0	18.3	+00.2	N 11 51.3	+00.9	27	44.4	-00.3	S 01 00.9	-01.1	152	51.6	-31.7	S 15 43.5	+09.2	12
13	15	18.5	+00.1	N 11 52.2	+00.8	42	44.1	-00.3	S 00 59.8	-01.2	167	19.9	-31.7	S 15 52.7	+09.1	13
14	30	18.6	+00.1	N 11 53.0	+00.9	57	43.8	-00.4	S 00 58.6	-01.2	181	48.2	-31.7	S 16 01.8	+09.0	14
15	45	18.7	+00.2	N 11 53.9	+00.8	72	43.4	-00.3	S 00 57.4	-01.1	196	16.5	-31.8	S 16 10.8	+08.9	15
16	60	18.9	+00.1	N 11 54.7	+00.9	87	43.1	-00.3	S 00 56.3	-01.2	210	44.7	-31.7	S 16 19.7	+08.9	16
17	75	19.0	+00.1	N 11 55.6	+00.8	102	42.8	-00.4	S 00 55.1	-01.2	225	13.0	-31.8	S 16 28.6	+08.7	17
18	90	19.1	+00.1	N 11 56.4	+00.9	117	42.4	-00.3	S 00 53.9	-01.1	239	41.2	-31.7	S 16 37.3	+08.6	18
19	105	19.2	+00.2	N 11 57.3	+00.8	132	42.1	-00.3	S 00 52.8	-01.2	254	09.5	-31.8	S 16 45.9	+08.5	19
20	120	19.4	+00.1	N 11 58.1	+00.9	147	41.8	-00.4	S 00 51.6	-01.1	268	37.7	-31.8	S 16 54.4	+08.4	20
21	135	19.5	+00.1	N 11 59.0	+00.8	162	41.4	-00.3	S 00 50.5	-01.2	283	05.9	-31.8	S 17 02.8	+08.3	21
22	150	19.6	+00.1	N 11 59.8	+00.9	177	41.1	-00.3	S 00 49.3	-01.2	297	34.1	-31.8	S 17 11.1	+08.2	22
23	165	19.7	+00.2	N 12 00.7	+00.8	192	40.8	-00.4	S 00 48.1	-01.1	312	02.3	-31.8	S 17 19.3	+08.1	23
UT 02 06 10 14 18 22	SD 15°9 15°9 15°9 15°9 15°9 15°9	SD 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°1 00°1 00°1 00°1 00°1 00°1	SHA 331° 331° 331° 331° 331° 331°	Greenwich Culmination Time: 11:58	UT 02 06 10 14 18 22	SD 00°1 00°1 00°1 00°1 00°1 00°1	HP 58°4 58°2 58°1 58°0 57°8 57°7	SHA 359° 359° 359° 358° 358° 358°	Greenwich Culmination Time: 10:08	UT 02 06 10 14 18 22	SD 15°9 15°9 15°8 15°8 15°8 15°7	HP 58°4 58°2 58°1 58°0 57°8 57°7	SHA 129° 127° 125° 122° 120° 118°	Greenwich Culmination Time: 01:26	

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA/Dec coordinates and magnitude for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA/Dec coordinates and magnitude for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA/Dec coordinates and magnitude for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA/Dec coordinates and magnitude for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA/Dec coordinates and magnitude for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA/Dec coordinates and magnitude for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA/Dec coordinates and magnitude for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA/Dec coordinates and magnitude for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT, containing astronomical data for April 26, 2019.

Table with columns for UT, Sun, Venus, Moon, and UT, containing astronomical data for April 27, 2019.

Table with columns for UT, Mars, Jupiter, Saturn, and UT, containing astronomical data for April 26, 2019.

Table with columns for UT, Mars, Jupiter, Saturn, and UT, containing astronomical data for April 27, 2019.

UT	<i>Sun</i>				<i>Venus</i>				<i>Moon</i> <small>A: 87%</small>				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	180	40.0	+00.1	N 14 36.9	+00.8	206	36.8	-00.3	N 02 57.2	+01.2	231	59.4	-26.1	S 10 27.3	-10.0	00
01	195	40.1	+00.1	N 14 37.7	+00.7	221	36.5	-00.3	N 02 58.4	+01.2	246	33.3	-26.0	S 10 17.3	-10.1	01
02	210	40.2	+00.1	N 14 38.4	+00.8	236	36.2	-00.4	N 02 59.6	+01.1	261	07.3	-26.0	S 10 07.2	-10.1	02
03	225	40.3	+00.0	N 14 39.2	+00.8	251	35.8	-00.3	N 03 00.7	+01.2	275	41.3	-26.0	S 09 57.1	-10.1	03
04	240	40.3	+00.1	N 14 40.0	+00.8	266	35.5	-00.4	N 03 01.9	+01.2	290	15.3	-25.9	S 09 47.0	-10.2	04
05	255	40.4	+00.1	N 14 40.8	+00.7	281	35.1	-00.3	N 03 03.1	+01.1	304	49.4	-26.0	S 09 36.8	-10.3	05
06	270	40.5	+00.1	N 14 41.5	+00.8	296	34.8	-00.3	N 03 04.2	+01.2	319	23.4	-25.9	S 09 26.5	-10.3	06
07	285	40.6	+00.1	N 14 42.3	+00.8	311	34.5	-00.4	N 03 05.4	+01.2	333	57.5	-25.9	S 09 16.2	-10.3	07
08	300	40.7	+00.1	N 14 43.1	+00.7	326	34.1	-00.3	N 03 06.6	+01.1	348	31.6	-25.9	S 09 05.9	-10.4	08
09	315	40.8	+00.0	N 14 43.8	+00.8	341	33.8	-00.3	N 03 07.7	+01.2	3	05.7	-25.9	S 08 55.5	-10.4	09
10	330	40.8	+00.1	N 14 44.6	+00.8	356	33.5	-00.4	N 03 08.9	+01.2	17	39.8	-25.9	S 08 45.1	-10.4	10
11	345	40.9	+00.1	N 14 45.4	+00.7	11	33.1	-00.3	N 03 10.1	+01.1	32	13.9	-25.8	S 08 34.7	-10.5	11
12	0	41.0	+00.1	N 14 46.1	+00.8	26	32.8	-00.4	N 03 11.2	+01.2	46	48.1	-25.9	S 08 24.2	-10.5	12
13	15	41.1	+00.1	N 14 46.9	+00.8	41	32.4	-00.3	N 03 12.4	+01.2	61	22.2	-25.8	S 08 13.7	-10.6	13
14	30	41.2	+00.0	N 14 47.7	+00.7	56	32.1	-00.3	N 03 13.6	+01.1	75	56.4	-25.9	S 08 03.1	-10.6	14
15	45	41.2	+00.1	N 14 48.4	+00.8	71	31.8	-00.4	N 03 14.7	+01.2	90	30.5	-25.8	S 07 52.5	-10.6	15
16	60	41.3	+00.1	N 14 49.2	+00.8	86	31.4	-00.3	N 03 15.9	+01.2	105	04.7	-25.8	S 07 41.9	-10.7	16
17	75	41.4	+00.1	N 14 50.0	+00.7	101	31.1	-00.3	N 03 17.1	+01.1	119	38.9	-25.8	S 07 31.2	-10.7	17
18	90	41.5	+00.1	N 14 50.7	+00.8	116	30.8	-00.4	N 03 18.2	+01.2	134	13.1	-25.8	S 07 20.5	-10.8	18
19	105	41.6	+00.0	N 14 51.5	+00.8	131	30.4	-00.3	N 03 19.4	+01.2	148	47.3	-25.8	S 07 09.7	-10.8	19
20	120	41.6	+00.1	N 14 52.3	+00.7	146	30.1	-00.4	N 03 20.6	+01.1	163	21.5	-25.7	S 06 58.9	-10.8	20
21	135	41.7	+00.1	N 14 53.0	+00.8	161	29.7	-00.3	N 03 21.7	+01.2	177	55.8	-25.8	S 06 48.1	-10.9	21
22	150	41.8	+00.1	N 14 53.8	+00.8	176	29.4	-00.3	N 03 22.9	+01.2	192	30.0	-25.8	S 06 37.2	-10.8	22
23	165	41.9	+00.0	N 14 54.5	+00.8	191	29.1	-00.4	N 03 24.1	+01.1	207	04.2	-25.7	S 06 26.4	-11.0	23
UT 02 06 10 14 18 22				UT 02 06 10 14 18 22				UT 02 06 10 14 18 22				UT 02 06 10 14 18 22				
SD 15°9 15°9 15°9 15°9 15°9 15°9				SD 00°1 00°1 00°1 00°1 00°1 00°1				SD 14°8 14°8 14°8 14°8 14°8 14°8				SD 15°9 15°9 15°9 15°9 15°9 15°9				
HP 00°1 00°1 00°1 00°1 00°1 00°1				HP 00°1 00°1 00°1 00°1 00°1 00°1				HP 54°3 54°3 54°4 54°4 54°5 54°5				HP 00°1 00°1 00°1 00°1 00°1 00°1				
SHA 323° 323° 323° 322° 322° 322°				SHA 349° 349° 348° 348° 348° 348°				SHA 013° 013° 010° 008° 006° 004°				SHA 322° 322° 322° 322° 321° 321°				
Greenwich Culmination Time: 11:57				Greenwich Culmination Time: 10:13				Greenwich Culmination Time: 08:47				Greenwich Culmination Time: 11:57				

UT	<i>Sun</i>				<i>Venus</i>				<i>Moon</i> <small>A: 90%</small>				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	180	41.9	+00.1	N 14 55.3	+00.8	206	28.7	-00.3	N 03 25.2	+01.2	221	38.5	-25.8	S 06 15.4	-10.9	00
01	195	42.0	+00.1	N 14 56.1	+00.7	221	28.4	-00.3	N 03 26.4	+01.2	236	12.7	-25.8	S 06 04.5	-11.0	01
02	210	42.1	+00.1	N 14 56.8	+00.8	236	28.1	-00.4	N 03 27.6	+01.1	250	46.9	-25.7	S 05 53.5	-11.0	02
03	225	42.2	+00.1	N 14 57.6	+00.7	251	27.7	-00.3	N 03 28.7	+01.2	265	21.2	-25.8	S 05 42.5	-11.0	03
04	240	42.3	+00.0	N 14 58.3	+00.8	266	27.4	-00.4	N 03 29.9	+01.1	279	55.4	-25.7	S 05 31.5	-11.1	04
05	255	42.3	+00.1	N 14 59.1	+00.8	281	27.0	-00.3	N 03 31.0	+01.2	294	29.7	-25.8	S 05 20.4	-11.1	05
06	270	42.4	+00.1	N 14 59.9	+00.7	296	26.7	-00.3	N 03 32.2	+01.2	309	03.9	-25.7	S 05 09.3	-11.1	06
07	285	42.5	+00.1	N 15 00.6	+00.8	311	26.4	-00.4	N 03 33.4	+01.1	323	38.2	-25.8	S 04 58.2	-11.2	07
08	300	42.6	+00.0	N 15 01.4	+00.7	326	26.0	-00.3	N 03 34.5	+01.2	338	12.4	-25.8	S 04 47.0	-11.2	08
09	315	42.6	+00.1	N 15 02.1	+00.8	341	25.7	-00.4	N 03 35.7	+01.2	352	46.6	-25.7	S 04 35.8	-11.2	09
10	330	42.7	+00.1	N 15 02.9	+00.8	356	25.3	-00.3	N 03 36.9	+01.1	7	20.9	-25.8	S 04 24.6	-11.2	10
11	345	42.8	+00.1	N 15 03.7	+00.7	11	25.0	-00.3	N 03 38.0	+01.2	21	55.1	-25.8	S 04 13.4	-11.3	11
12	0	42.9	+00.0	N 15 04.4	+00.8	26	24.7	-00.4	N 03 39.2	+01.2	36	29.3	-25.8	S 04 02.1	-11.3	12
13	15	42.9	+00.1	N 15 05.2	+00.7	41	24.3	-00.3	N 03 40.4	+01.1	51	03.5	-25.7	S 03 50.8	-11.3	13
14	30	43.0	+00.1	N 15 05.9	+00.8	56	24.0	-00.4	N 03 41.5	+01.2	65	37.8	-25.8	S 03 39.5	-11.3	14
15	45	43.1	+00.1	N 15 06.7	+00.7	71	23.6	-00.3	N 03 42.7	+01.2	80	12.0	-25.8	S 03 28.2	-11.3	15
16	60	43.2	+00.0	N 15 07.4	+00.8	86	23.3	-00.3	N 03 43.9	+01.1	94	46.2	-25.8	S 03 16.9	-11.4	16
17	75	43.2	+00.1	N 15 08.2	+00.7	101	23.0	-00.4	N 03 45.0	+01.2	109	20.4	-25.9	S 03 05.5	-11.4	17
18	90	43.3	+00.1	N 15 08.9	+00.8	116	22.6	-00.3	N 03 46.2	+01.1	123	54.5	-25.8	S 02 54.1	-11.4	18
19	105	43.4	+00.1	N 15 09.7	+00.8	131	22.3	-00.4	N 03 47.3	+01.2	138	28.7	-25.8	S 02 42.7	-11.5	19
20	120	43.5	+00.0	N 15 10.5	+00.7	146	21.9	-00.3	N 03 48.5	+01.2	153	02.9	-25.9	S 02 31.2	-11.4	20
21	135	43.5	+00.1	N 15 11.2	+00.8	161	21.6	-00.4	N 03 49.7	+01.2	167	37.0	-25.8	S 02 19.8	-11.5	21
22	150	43.6	+00.1	N 15 12.0	+00.7	176	21.2	-00.3	N 03 50.8	+01.2	182	11.2	-25.9	S 02 08.3	-11.5	22
23	165	43.7	+00.0	N 15 12.7	+00.8	191	20.9	-00.3	N 03 52.0	+01.2	196	45.3	-25.9	S 01 56.8	-11.5	23
UT 02 06 10 14 18 22				UT 02 06 10 14 18 22				UT 02 06 10 14 18 22				UT 02 06 10 14 18 22				
SD 15°9 15°9 15°9 15°9 15°9 15°9				SD 00°1 00°1 00°1 00°1 00°1 00°1				SD 14°9 14°9 14°9 14°9 14°9 14°9				SD 15°0 15°0 15°0 15°0 15°0 15°0				
HP 00°1 00°1 00°1 00°1 00°1 00°1				HP 00°1 00°1 00°1 00°1 00°1 00°1				HP 54°6 54°6 54°7 54°8 54°8 54°8				HP 00°0 00°0 00°0 00°0 00°0 00°0				
SHA 322° 322° 322° 322° 321° 321°				SHA 348° 348° 347° 347° 347° 347°				SHA 002° 000° 358° 358° 355° 353°				SHA 002° 000° 358° 358° 355° 353°				
Greenwich Culmination Time: 11:57				Greenwich Culmination Time: 10:14				Greenwich Culmination Time: 09:29				Greenwich Culmination Time: 09:29				

Table with columns for Sun, Venus, and Moon. Sub-headers include UT, GHA, ddGHA, Dec, dDec, and A: 05%. Data rows show celestial coordinates for each day from 00 to 23.

Table with columns for Sun, Venus, and Moon. Sub-headers include UT, GHA, ddGHA, Dec, dDec, and A: 95%. Data rows show celestial coordinates for each day from 00 to 23.

Table with columns for Mars, Jupiter, and Saturn. Sub-headers include UT, GHA, ddGHA, Dec, dDec, and A: 05%. Data rows show celestial coordinates for each day from 00 to 23.

Table with columns for Mars, Jupiter, and Saturn. Sub-headers include UT, GHA, ddGHA, Dec, dDec, and A: 95%. Data rows show celestial coordinates for each day from 00 to 23.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA/Dec coordinates and magnitude (A: 98%).

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA/Dec coordinates and magnitude (A: 98%).

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA/Dec coordinates and magnitude (A: 98%).

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA/Dec coordinates and magnitude (A: 98%).

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA/Dec coordinates and magnitude (A: 02%).

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA/Dec coordinates and magnitude (A: 02%).

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA/Dec coordinates and magnitude (A: 02%).

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA/Dec coordinates and magnitude (A: 02%).

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23 showing astronomical data for the first planet set.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 02, 06, 10, 14, 18, 22 showing specific astronomical data points.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23 showing astronomical data for the second planet set.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 02, 06, 10, 14, 18, 22 showing specific astronomical data points.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23 showing astronomical data for the first planet set.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 02, 06, 10, 14, 18, 22 showing specific astronomical data points.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23 showing astronomical data for the second planet set.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 02, 06, 10, 14, 18, 22 showing specific astronomical data points.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 02, 06, 10, 14, 18, 22. Includes SHA and Greenwich Culmination Time data.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 02, 06, 10, 14, 18, 22. Includes SHA and Greenwich Culmination Time data.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 02, 06, 10, 14, 18, 22. Includes SHA and Greenwich Culmination Time data.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 02, 06, 10, 14, 18, 22. Includes SHA and Greenwich Culmination Time data.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23 showing celestial coordinates for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23 showing SHA and Greenwich Culmination Time for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23 showing celestial coordinates for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23 showing SHA and Greenwich Culmination Time for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23 showing celestial coordinates for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23 showing SHA and Greenwich Culmination Time for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23 showing celestial coordinates for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23 showing SHA and Greenwich Culmination Time for each planet.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00 to 23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 15°8' 15°8' 15°8' 15°8' 15°8' 15°8'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 311° 311° 311° 311° 311° 311°
Greenwich Culmination Time: 11:56

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00 to 23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 15°8' 15°8' 15°8' 15°8' 15°8' 15°8'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 310° 310° 310° 310° 310° 310°
Greenwich Culmination Time: 11:56

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00 to 23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 273° 273° 273° 273° 272° 272°
Greenwich Culmination Time: 14:29

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00 to 23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 272° 272° 272° 272° 272° 272°
Greenwich Culmination Time: 14:28

Table with 10 columns: UT, Sun (GHA, ddGHA, Dec, dDec), Venus (GHA, ddGHA, Dec, dDec), Moon (GHA, ddGHA, Dec, dDec, A: 48%), UT. Rows 00-23 with astronomical data and a bottom section with a 2x4 grid of smaller tables for Mars, Jupiter, and Saturn.

Table with 10 columns: UT, Mars (GHA, ddGHA, Dec, dDec), Jupiter (GHA, ddGHA, Dec, dDec), Saturn (GHA, ddGHA, Dec, dDec), UT. Rows 00-23 with astronomical data and a bottom section with a 2x4 grid of smaller tables for Mars, Jupiter, and Saturn.

Table with 10 columns: UT, Sun (GHA, ddGHA, Dec, dDec), Venus (GHA, ddGHA, Dec, dDec), Moon (GHA, ddGHA, Dec, dDec, A: 38%), UT. Rows 00-23 with astronomical data and a bottom section with a 2x4 grid of smaller tables for Mars, Jupiter, and Saturn.

Table with 10 columns: UT, Mars (GHA, ddGHA, Dec, dDec), Jupiter (GHA, ddGHA, Dec, dDec), Saturn (GHA, ddGHA, Dec, dDec), UT. Rows 00-23 with astronomical data and a bottom section with a 2x4 grid of smaller tables for Mars, Jupiter, and Saturn.

Table for Sun, Venus, and Moon on May 16. Columns include UT, GHA, ddGHA, Dec, dDec, and A: 42%. Rows 00-23.

Table for Sun, Venus, and Moon on May 17. Columns include UT, GHA, ddGHA, Dec, dDec, and A: 45%. Rows 00-23.

Table for Mars, Jupiter, and Saturn on May 16. Columns include UT, GHA, ddGHA, Dec, dDec, and UT. Rows 00-23.

Table for Mars, Jupiter, and Saturn on May 17. Columns include UT, GHA, ddGHA, Dec, dDec, and UT. Rows 00-23.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for positions (GHA, ddGHA, Dec, dDec) and Greenwich Culmination Time.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for positions (GHA, ddGHA, Dec, dDec) and Greenwich Culmination Time.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for positions (GHA, ddGHA, Dec, dDec) and Greenwich Culmination Time.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for positions (GHA, ddGHA, Dec, dDec) and Greenwich Culmination Time.

Table for Sun, Venus, and Moon on May 20, 2019. Columns include UT, GHA, ddGHA, Dec, dDec, and UT for each planet. Includes a small table at the bottom for Mars, Jupiter, and Saturn.

Table for Sun, Venus, and Moon on May 21, 2019. Columns include UT, GHA, ddGHA, Dec, dDec, and UT for each planet. Includes a small table at the bottom for Mars, Jupiter, and Saturn.

Table for Mars, Jupiter, and Saturn on May 20, 2019. Columns include UT, GHA, ddGHA, Dec, dDec, and UT for each planet. Includes a small table at the bottom for Mars, Jupiter, and Saturn.

Table for Mars, Jupiter, and Saturn on May 21, 2019. Columns include UT, GHA, ddGHA, Dec, dDec, and UT for each planet. Includes a small table at the bottom for Mars, Jupiter, and Saturn.

Table with columns for UT, Sun, Venus, Moon, and UT. Each planet section includes GHA, ddGHA, Dec, and dDec. Includes a small table at the bottom for Mars, Jupiter, and Saturn with similar columns and a Greenwich Culmination Time.

Table with columns for UT, Sun, Venus, Moon, and UT. Each planet section includes GHA, ddGHA, Dec, and dDec. Includes a small table at the bottom for Mars, Jupiter, and Saturn with similar columns and a Greenwich Culmination Time.

UT	Sun				Venus				Moon				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	180 48.3	+00.0	N 20 40.2	+00.5	202 48.2	-00.5	N 13 33.2	+01.0	295 34.3	-29.5	S 20 43.8	-04.5	00
01	195 48.3	-00.1	N 20 40.7	+00.5	217 47.7	-00.5	N 13 34.2	+01.0	310 04.8	-29.5	S 20 39.3	-04.6	01
02	210 48.2	+00.0	N 20 41.2	+00.4	232 47.2	-00.4	N 13 35.2	+01.0	324 35.3	-29.4	S 20 34.7	-04.7	02
03	225 48.2	-00.1	N 20 41.6	+00.5	247 46.8	-00.5	N 13 36.2	+01.0	339 05.9	-29.4	S 20 30.0	-04.7	03
04	240 48.1	+00.0	N 20 42.1	+00.5	262 46.3	-00.5	N 13 37.2	+01.0	353 36.5	-29.3	S 20 25.3	-04.9	04
05	255 48.1	-00.1	N 20 42.6	+00.4	277 45.8	-00.5	N 13 38.2	+01.0	8 07.2	-29.3	S 20 20.4	-05.0	05
06	270 48.0	-00.1	N 20 43.0	+00.5	292 45.3	-00.5	N 13 39.2	+01.0	22 37.9	-29.2	S 20 15.4	-05.0	06
07	285 47.9	+00.0	N 20 43.5	+00.5	307 44.8	-00.5	N 13 40.2	+01.0	37 08.7	-29.2	S 20 10.4	-05.2	07
08	300 47.9	-00.1	N 20 44.0	+00.4	322 44.3	-00.5	N 13 41.2	+01.0	51 39.5	-29.1	S 20 05.2	-05.2	08
09	315 47.8	+00.0	N 20 44.4	+00.5	337 43.8	-00.5	N 13 42.2	+01.0	66 10.4	-29.0	S 20 00.0	-05.3	09
10	330 47.8	-00.1	N 20 44.9	+00.5	352 43.3	-00.5	N 13 43.2	+00.9	80 41.4	-29.0	S 19 54.7	-05.4	10
11	345 47.7	+00.0	N 20 45.4	+00.4	7 42.8	-00.5	N 13 44.1	+01.0	95 12.4	-29.0	S 19 49.3	-05.5	11
12	0 47.7	-00.1	N 20 45.8	+00.5	22 42.3	-00.5	N 13 45.1	+01.0	109 43.4	-28.9	S 19 43.8	-05.6	12
13	15 47.6	-00.1	N 20 46.3	+00.4	37 41.8	-00.5	N 13 46.1	+01.0	124 14.5	-28.8	S 19 38.2	-05.7	13
14	30 47.5	+00.0	N 20 46.7	+00.5	52 41.3	-00.5	N 13 47.1	+01.0	138 45.7	-28.8	S 19 32.5	-05.8	14
15	45 47.5	-00.1	N 20 47.2	+00.5	67 40.8	-00.5	N 13 48.1	+01.0	153 16.9	-28.7	S 19 26.7	-05.8	15
16	60 47.4	+00.0	N 20 47.7	+00.4	82 40.3	-00.5	N 13 49.1	+01.0	167 48.2	-28.7	S 19 20.9	-05.9	16
17	75 47.4	-00.1	N 20 48.1	+00.5	97 39.8	-00.5	N 13 50.1	+01.0	182 19.5	-28.6	S 19 15.0	-06.0	17
18	90 47.3	+00.0	N 20 48.6	+00.4	112 39.3	-00.5	N 13 51.1	+00.9	196 50.9	-28.5	S 19 09.0	-06.1	18
19	105 47.3	-00.1	N 20 49.0	+00.5	127 38.8	-00.5	N 13 52.0	+01.0	211 22.4	-28.5	S 19 02.9	-06.2	19
20	120 47.2	-00.1	N 20 49.5	+00.5	142 38.3	-00.5	N 13 53.0	+01.0	225 53.9	-28.5	S 18 56.7	-06.3	20
21	135 47.1	+00.0	N 20 50.0	+00.4	157 37.8	-00.5	N 13 54.0	+01.0	240 25.4	-28.4	S 18 50.4	-06.3	21
22	150 47.1	-00.1	N 20 50.4	+00.5	172 37.3	-00.4	N 13 55.0	+01.0	254 57.0	-28.3	S 18 44.1	-06.5	22
23	165 47.0	+00.0	N 20 50.9	+00.4	187 36.9	-00.5	N 13 56.0	+01.0	269 28.7	-28.3	S 18 37.6	-06.5	23
UT 02 06 10 14 18 22 SD 15°8' 15°8' 15°8' 15°8' 15°8' 15°8' HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1' SHA 299° 299° 299° 299° 299° 299° Greenwich Culmination Time: 11:56													
UT 02 06 10 14 18 22 SD 14°9' 14°9' 14°9' 14°9' 14°9' 14°9' HP 54°7' 54°7' 54°6' 54°6' 54°5' 54°5' SHA 053° 051° 049° 047° 045° 043° Greenwich Culmination Time: 04:26													

UT	Sun				Venus				Moon				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	180 47.0	-00.1	N 20 51.3	+00.5	202 36.4	-00.5	N 13 57.0	+00.9	284 00.4	-28.3	S 18 31.1	-06.6	00
01	195 46.9	-00.1	N 20 51.8	+00.4	217 35.9	-00.6	N 13 57.9	+01.0	298 32.1	-28.2	S 18 24.5	-06.6	01
02	210 46.8	+00.0	N 20 52.2	+00.5	232 35.3	-00.5	N 13 58.9	+01.0	313 03.9	-28.1	S 18 17.9	-06.8	02
03	225 46.8	-00.1	N 20 52.7	+00.4	247 34.8	-00.5	N 13 59.9	+01.0	327 35.8	-28.1	S 18 11.1	-06.8	03
04	240 46.7	+00.0	N 20 53.1	+00.5	262 34.3	-00.5	N 14 00.9	+01.0	342 07.7	-28.0	S 18 04.3	-06.9	04
05	255 46.7	-00.1	N 20 53.6	+00.4	277 33.8	-00.5	N 14 01.9	+00.9	356 39.7	-28.0	S 17 57.4	-07.0	05
06	270 46.6	-00.1	N 20 54.0	+00.5	292 33.3	-00.5	N 14 02.8	+01.0	11 11.7	-27.9	S 17 50.4	-07.0	06
07	285 46.5	+00.0	N 20 54.5	+00.5	307 32.8	-00.5	N 14 03.8	+01.0	25 43.8	-27.9	S 17 43.4	-07.2	07
08	300 46.5	-00.1	N 20 55.0	+00.4	322 32.3	-00.5	N 14 04.8	+01.0	40 15.9	-27.8	S 17 36.2	-07.2	08
09	315 46.4	+00.0	N 20 55.4	+00.5	337 31.8	-00.5	N 14 05.8	+00.9	54 48.1	-27.8	S 17 29.0	-07.2	09
10	330 46.4	-00.1	N 20 55.9	+00.4	352 31.3	-00.5	N 14 06.7	+01.0	69 20.3	-27.7	S 17 21.8	-07.4	10
11	345 46.3	-00.1	N 20 56.3	+00.4	7 30.8	-00.5	N 14 07.7	+01.0	83 52.6	-27.7	S 17 14.4	-07.4	11
12	0 46.2	+00.0	N 20 56.7	+00.5	22 30.3	-00.5	N 14 08.7	+01.0	98 24.9	-27.6	S 17 07.0	-07.5	12
13	15 46.2	-00.1	N 20 57.2	+00.4	37 29.8	-00.5	N 14 09.7	+00.9	112 57.3	-27.6	S 16 59.5	-07.6	13
14	30 46.1	-00.1	N 20 57.6	+00.5	52 29.3	-00.5	N 14 10.6	+01.0	127 29.7	-27.5	S 16 51.9	-07.6	14
15	45 46.0	+00.0	N 20 58.1	+00.4	67 28.8	-00.5	N 14 11.6	+01.0	142 02.2	-27.5	S 16 44.3	-07.7	15
16	60 46.0	-00.1	N 20 58.5	+00.5	82 28.3	-00.5	N 14 12.6	+01.0	156 34.7	-27.4	S 16 36.6	-07.8	16
17	75 45.9	+00.0	N 20 59.0	+00.4	97 27.8	-00.5	N 14 13.6	+00.9	171 07.3	-27.4	S 16 28.8	-07.8	17
18	90 45.9	-00.1	N 20 59.4	+00.5	112 27.3	-00.5	N 14 14.5	+01.0	185 39.9	-27.3	S 16 21.0	-07.9	18
19	105 45.8	-00.1	N 20 59.9	+00.4	127 26.8	-00.5	N 14 15.5	+01.0	200 12.6	-27.3	S 16 13.1	-08.0	19
20	120 45.7	+00.0	N 21 00.3	+00.5	142 26.3	-00.5	N 14 16.5	+01.0	214 45.3	-27.3	S 16 05.1	-08.0	20
21	135 45.7	-00.1	N 21 00.8	+00.4	157 25.8	-00.6	N 14 17.5	+00.9	229 18.0	-27.1	S 15 57.1	-08.2	21
22	150 45.6	-00.1	N 21 01.2	+00.4	172 25.2	-00.5	N 14 18.4	+01.0	243 50.9	-27.2	S 15 48.9	-08.1	22
23	165 45.5	+00.0	N 21 01.6	+00.5	187 24.7	-00.5	N 14 19.4	+01.0	258 23.7	-27.1	S 15 40.8	-08.3	23
UT 02 06 10 14 18 22 SD 15°8' 15°8' 15°8' 15°8' 15°8' 15°8' HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1' SHA 298° 298° 298° 298° 298° 298° Greenwich Culmination Time: 11:56													
UT 02 06 10 14 18 22 SD 14°8' 14°8' 14°8' 14°8' 14°8' 14°8' HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1' SHA 320° 320° 320° 320° 319° 319° Greenwich Culmination Time: 10:29													
UT 02 06 10 14 18 22 SD 14°8' 14°8' 14°8' 14°8' 14°8' 14°8' HP 54°4' 54°4' 54°3' 54°3' 54°3' 54°3' SHA 041° 039° 037° 035° 033° 031° Greenwich Culmination Time: 05:13													

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for 24 hours and Greenwich Culmination Time: 11:57.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for 24 hours and Greenwich Culmination Time: 11:57.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for 24 hours and Greenwich Culmination Time: 14:09.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for 24 hours and Greenwich Culmination Time: 14:13.

Table with columns for Sun, Venus, and Moon. Each planet section includes UT, GHA, ddGHA, Dec, and dDec. Includes a small table at the bottom for Mars, Jupiter, and Saturn with similar columns.

Table with columns for Sun, Venus, and Moon. Each planet section includes UT, GHA, ddGHA, Dec, and dDec. Includes a small table at the bottom for Mars, Jupiter, and Saturn with similar columns.

Table with columns for Mars, Jupiter, and Saturn. Each planet section includes UT, GHA, ddGHA, Dec, and dDec. Includes a small table at the bottom for Sun, Venus, and Moon with similar columns.

Table with columns for Mars, Jupiter, and Saturn. Each planet section includes UT, GHA, ddGHA, Dec, and dDec. Includes a small table at the bottom for Sun, Venus, and Moon with similar columns.

Table with columns for Sun, Venus, and Moon, including UT, GHA, ddGHA, Dec, dDec, and A: 00%. Includes data for UT 00-23 and Greenwich Culmination Time: 11:58.

Table with columns for Sun, Venus, and Moon, including UT, GHA, ddGHA, Dec, dDec, and A: 90%. Includes data for UT 00-23 and Greenwich Culmination Time: 11:57.

Table with columns for Mars, Jupiter, and Saturn, including UT, GHA, ddGHA, Dec, dDec, and UT. Includes data for UT 00-23 and Greenwich Culmination Time: 14:05.

Table with columns for Mars, Jupiter, and Saturn, including UT, GHA, ddGHA, Dec, dDec, and UT. Includes data for UT 00-23 and Greenwich Culmination Time: 14:08.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 15°8 15°8 15°8 15°8 15°8 15°8
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 291° 291° 291° 291° 291° 290°
Greenwich Culmination Time: 11:57

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 00°4 00°4 00°4 00°4 00°4 00°4
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 100° 100° 100° 100° 100° 100°
Greenwich Culmination Time: 00:42

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 15°8 15°8 15°8 15°8 15°8 15°8
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 290° 290° 290° 290° 290° 289°
Greenwich Culmination Time: 11:57

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 258° 258° 258° 258° 257°
Greenwich Culmination Time: 14:06

Table with columns for UT, Sun, Venus, Moon, and UT. Includes astronomical data for June 7, 2019, such as GHA, ddGHA, Dec, and dDec for various celestial bodies.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes astronomical data for June 4, 2019, such as GHA, ddGHA, Dec, and dDec for various celestial bodies.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes sub-headers for GHA, ddGHA, Dec, dDec and a table of values for each planet. Includes a table for Mars, Jupiter, and Saturn at the bottom.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes sub-headers for GHA, ddGHA, Dec, dDec and a table of values for each planet. Includes a table for Mars, Jupiter, and Saturn at the bottom.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes sub-headers for GHA, ddGHA, Dec, dDec and a table of values for each planet. Includes a table for Mars, Jupiter, and Saturn at the bottom.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes sub-headers for GHA, ddGHA, Dec, dDec and a table of values for each planet. Includes a table for Mars, Jupiter, and Saturn at the bottom.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes sub-headers GHA, ddGHA, Dec, dDec and A: 30%. Sub-tables for UT 02 06 10 14 18 22 and Greenwich Culmination Time: 11:59.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes sub-headers GHA, ddGHA, Dec, dDec and A: 19%. Sub-tables for UT 02 06 10 14 18 22 and Greenwich Culmination Time: 11:59.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes sub-headers GHA, ddGHA, Dec, dDec. Sub-tables for UT 02 06 10 14 18 22 and Greenwich Culmination Time: 13:55.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes sub-headers GHA, ddGHA, Dec, dDec. Sub-tables for UT 02 06 10 14 18 22 and Greenwich Culmination Time: 13:59.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for positions (GHA, ddGHA, Dec, dDec) and Greenwich Culmination Time.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for positions (GHA, ddGHA, Dec, dDec) and Greenwich Culmination Time.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for positions (GHA, ddGHA, Dec, dDec) and Greenwich Culmination Time.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for positions (GHA, ddGHA, Dec, dDec) and Greenwich Culmination Time.

Table with 5 columns: UT, Sun, Venus, Moon, UT. Rows show celestial data for each planet from UT 00 to 23.

Table with 5 columns: UT, Sun, Venus, Moon, UT. Rows show celestial data for each planet from UT 00 to 23.

UT 02 06 10 14 18 22 SD 15*7 15*7 15*7 15*7 15*7 15*7 SHP 00*1 00*1 00*1 00*1 00*1 00*1 SHA 277* 277* 276* 276* 276* 276*

UT 02 06 10 14 18 22 SD 15*8 15*8 15*8 15*8 15*8 15*8 SHP 00*1 00*1 00*1 00*1 00*1 00*1 SHA 280* 280* 280* 280* 279* 279*

Table with 5 columns: UT, Mars, Jupiter, Saturn, UT. Rows show celestial data for each planet from UT 00 to 23.

Table with 5 columns: UT, Mars, Jupiter, Saturn, UT. Rows show celestial data for each planet from UT 00 to 23.

UT 02 06 10 14 18 22 SD 00*0 00*0 00*0 00*0 00*0 00*0 SHP 00*1 00*1 00*1 00*1 00*1 00*1 SHA 249* 249* 249* 249* 249* 248*

UT 02 06 10 14 18 22 SD 00*0 00*0 00*0 00*0 00*0 00*0 SHP 00*1 00*1 00*1 00*1 00*1 00*1 SHA 251* 251* 251* 251* 251* 250*

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 279° 279° 279° 278° 278° 278°
Greenwich Culmination Time: 12:00

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 278° 278° 278° 277° 277° 277°
Greenwich Culmination Time: 12:00

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table for Sun, Venus, and Moon on June 19, 2019. Columns include UT, GHA, ddGHA, Dec, and dDec for each celestial body. Includes data for 24 hours from 00 to 23.

UT 02 06 10 14 18 22
SD 15*7 15*7 15*7 15*7 15*7 15*7
HP 00*1 00*1 00*1 00*1 00*1 00*1
SHA 273* 273* 272* 272* 272* 272*
Greenwich Culmination Time: 12:01

Table for Sun, Venus, and Moon on June 16, 2019. Columns include UT, GHA, ddGHA, Dec, and dDec for each celestial body. Includes data for 24 hours from 00 to 23.

UT 02 06 10 14 18 22
SD 15*7 15*7 15*7 15*7 15*7 15*7
HP 00*1 00*1 00*1 00*1 00*1 00*1
SHA 276* 276* 275* 275* 275* 275*
Greenwich Culmination Time: 12:00

Table for Mars, Jupiter, and Saturn on June 19, 2019. Columns include UT, GHA, ddGHA, Dec, and dDec for each celestial body. Includes data for 24 hours from 00 to 23.

UT 02 06 10 14 18 22
SD 00*0 00*0 00*0 00*0 00*0 00*0
HP 00*1 00*1 00*1 00*1 00*1 00*1
SHA 246* 246* 246* 246* 246* 246*
Greenwich Culmination Time: 13:46

Table for Mars, Jupiter, and Saturn on June 16, 2019. Columns include UT, GHA, ddGHA, Dec, and dDec for each celestial body. Includes data for 24 hours from 00 to 23.

UT 02 06 10 14 18 22
SD 00*0 00*0 00*0 00*0 00*0 00*0
HP 00*1 00*1 00*1 00*1 00*1 00*1
SHA 248* 248* 248* 248* 248* 248*
Greenwich Culmination Time: 13:49

UT	<i>Sun</i>				<i>Venus</i>				<i>Moon</i>				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	179 48.4	-00.1	N 23 21.7	+00.0	196 49.8	-00.7	N 21 09.8	+00.5	4 14.6	-31.8	S 20 49.6	+04.6	00
01	194 48.3	-00.2	N 23 21.7	+00.1	211 49.1	-00.8	N 21 10.3	+00.6	18 42.8	-31.9	S 20 54.2	+04.6	01
02	209 48.1	-00.1	N 23 21.8	+00.1	226 48.3	-00.7	N 21 10.9	+00.5	33 10.9	-31.9	S 20 58.8	+04.4	02
03	224 48.0	-00.1	N 23 21.9	+00.6	241 47.6	-00.8	N 21 11.4	+00.6	47 39.0	-31.8	S 21 03.2	+04.3	03
04	239 47.9	-00.2	N 23 22.0	+00.0	256 46.8	-00.7	N 21 12.0	+00.5	62 07.2	-31.9	S 21 07.5	+04.2	04
05	254 47.7	-00.1	N 23 22.0	+00.1	271 46.1	-00.8	N 21 12.5	+00.6	76 35.3	-31.9	S 21 11.7	+04.1	05
06	269 47.6	-00.1	N 23 22.1	+00.1	286 45.3	-00.8	N 21 13.1	+00.5	91 03.4	-31.8	S 21 15.8	+03.9	06
07	284 47.5	-00.2	N 23 22.2	+00.1	301 44.5	-00.7	N 21 13.6	+00.5	105 31.6	-31.9	S 21 19.7	+03.9	07
08	299 47.3	-00.1	N 23 22.3	+00.0	316 43.8	-00.8	N 21 14.1	+00.6	119 59.7	-31.9	S 21 23.6	+03.7	08
09	314 47.2	-00.1	N 23 22.3	+00.1	331 43.0	-00.7	N 21 14.7	+00.5	134 27.8	-31.9	S 21 27.3	+03.6	09
10	329 47.1	-00.2	N 23 22.4	+00.1	346 42.3	-00.8	N 21 15.2	+00.5	148 55.9	-31.9	S 21 30.9	+03.5	10
11	344 46.9	-00.1	N 23 22.5	+00.1	1 41.5	-00.7	N 21 15.7	+00.6	163 24.0	-31.9	S 21 34.4	+03.3	11
12	359 46.8	-00.1	N 23 22.6	+00.0	16 40.8	-00.8	N 21 16.3	+00.5	177 52.1	-31.9	S 21 37.7	+03.3	12
13	14 46.7	-00.2	N 23 22.6	+00.1	31 40.0	-00.8	N 21 16.8	+00.5	192 20.2	-31.9	S 21 41.0	+03.1	13
14	29 46.5	-00.1	N 23 22.7	+00.1	46 39.2	-00.7	N 21 17.3	+00.6	206 48.3	-31.8	S 21 44.1	+03.0	14
15	44 46.4	-00.1	N 23 22.8	+00.0	61 38.5	-00.8	N 21 17.9	+00.5	221 16.5	-31.9	S 21 47.1	+02.8	15
16	59 46.3	-00.2	N 23 22.8	+00.1	76 37.7	-00.8	N 21 18.4	+00.5	235 44.6	-31.9	S 21 49.9	+02.8	16
17	74 46.1	-00.1	N 23 22.9	+00.1	91 36.9	-00.7	N 21 18.9	+00.5	250 12.7	-31.9	S 21 52.7	+02.6	17
18	89 46.0	-00.1	N 23 23.0	+00.0	106 36.2	-00.8	N 21 19.4	+00.6	264 40.8	-31.8	S 21 55.3	+02.5	18
19	104 45.9	-00.2	N 23 23.0	+00.1	121 35.4	-00.7	N 21 20.0	+00.5	279 09.0	-31.9	S 21 57.8	+02.4	19
20	119 45.7	-00.1	N 23 23.1	+00.1	136 34.7	-00.8	N 21 20.5	+00.5	293 37.1	-31.8	S 22 00.2	+02.3	20
21	134 45.6	-00.1	N 23 23.2	+00.0	151 33.9	-00.8	N 21 21.0	+00.5	308 05.3	-31.8	S 22 02.5	+02.2	21
22	149 45.5	-00.2	N 23 23.2	+00.0	166 33.1	-00.7	N 21 21.5	+00.6	322 33.5	-31.9	S 22 04.7	+02.0	22
23	164 45.3	-00.1	N 23 23.3	+00.1	181 32.4	-00.8	N 21 22.1	+00.5	337 01.6	-31.8	S 22 06.7	+01.9	23
UT 02 06 10 14 18 22 SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7' HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1' SHA 275° 275° 274° 274° 274° 274° Greenwich Culmination Time: 12:00													

UT	<i>Sun</i>				<i>Venus</i>				<i>Moon</i>				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	179 45.2	-00.1	N 23 23.4	+00.0	196 31.6	-00.8	N 21 22.6	+00.5	351 29.8	-31.8	S 22 08.6	+01.8	00
01	194 45.1	-00.2	N 23 23.4	+00.1	211 30.8	-00.7	N 21 23.1	+00.5	5 58.0	-31.8	S 22 10.4	+01.6	01
02	209 44.9	-00.1	N 23 23.5	+00.1	226 30.1	-00.8	N 21 23.6	+00.5	20 26.2	-31.7	S 22 12.0	+01.6	02
03	224 44.8	-00.1	N 23 23.6	+00.0	241 29.3	-00.8	N 21 24.1	+00.6	34 54.5	-31.8	S 22 13.6	+01.4	03
04	239 44.7	-00.2	N 23 23.6	+00.1	256 28.5	-00.7	N 21 24.7	+00.5	49 22.7	-31.7	S 22 15.0	+01.3	04
05	254 44.5	-00.1	N 23 23.7	+00.0	271 27.8	-00.8	N 21 25.2	+00.5	63 51.0	-31.8	S 22 16.3	+01.2	05
06	269 44.4	-00.1	N 23 23.7	+00.1	286 27.0	-00.8	N 21 25.7	+00.5	78 19.2	-31.7	S 22 17.5	+01.1	06
07	284 44.3	-00.2	N 23 23.8	+00.1	301 26.2	-00.7	N 21 26.2	+00.5	92 47.5	-31.6	S 22 18.6	+00.9	07
08	299 44.1	-00.1	N 23 23.9	+00.0	316 25.5	-00.8	N 21 26.7	+00.5	107 15.9	-31.7	S 22 19.5	+00.9	08
09	314 44.0	-00.2	N 23 23.9	+00.1	331 24.7	-00.8	N 21 27.2	+00.5	121 44.2	-31.7	S 22 20.4	+00.7	09
10	329 43.8	-00.1	N 23 24.0	+00.0	346 23.9	-00.7	N 21 27.7	+00.6	136 12.5	-31.6	S 22 21.1	+00.6	10
11	344 43.7	-00.1	N 23 24.0	+00.1	1 23.2	-00.8	N 21 28.3	+00.5	150 40.9	-31.6	S 22 21.7	+00.4	11
12	359 43.6	-00.2	N 23 24.1	+00.0	16 22.4	-00.8	N 21 28.8	+00.5	165 09.3	-31.5	S 22 22.1	+00.4	12
13	14 43.4	-00.1	N 23 24.1	+00.1	31 21.6	-00.7	N 21 29.3	+00.5	179 37.8	-31.6	S 22 22.5	+00.2	13
14	29 43.3	-00.1	N 23 24.2	+00.0	46 20.9	-00.8	N 21 29.8	+00.5	194 06.2	-31.5	S 22 22.7	+00.1	14
15	44 43.2	-00.2	N 23 24.2	+00.1	61 20.1	-00.8	N 21 30.3	+00.5	208 34.7	-31.5	S 22 22.8	+00.0	15
16	59 43.0	-00.1	N 23 24.3	+00.0	76 19.3	-00.7	N 21 30.8	+00.5	223 03.2	-31.5	S 22 22.8	-00.1	16
17	74 42.9	-00.1	N 23 24.3	+00.1	91 18.6	-00.8	N 21 31.3	+00.5	237 31.7	-31.4	S 22 22.7	-00.2	17
18	89 42.8	-00.2	N 23 24.4	+00.0	106 17.8	-00.8	N 21 31.8	+00.5	252 00.3	-31.4	S 22 22.5	-00.4	18
19	104 42.6	-00.1	N 23 24.4	+00.1	121 17.0	-00.8	N 21 32.3	+00.5	266 28.9	-31.4	S 22 22.1	-00.5	19
20	119 42.5	-00.1	N 23 24.5	+00.0	136 16.2	-00.7	N 21 32.8	+00.5	280 57.5	-31.4	S 22 21.6	-00.6	20
21	134 42.4	-00.2	N 23 24.5	+00.1	151 15.5	-00.8	N 21 33.3	+00.5	295 26.1	-31.3	S 22 21.0	-00.7	21
22	149 42.4	-00.1	N 23 24.6	+00.0	166 14.7	-00.8	N 21 33.8	+00.5	309 54.8	-31.3	S 22 20.3	-00.8	22
23	164 42.1	-00.1	N 23 24.6	+00.1	181 13.9	-00.8	N 21 34.3	+00.5	324 23.5	-31.2	S 22 19.5	-00.9	23
UT 02 06 10 14 18 22 SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7' HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1' SHA 274° 274° 273° 273° 273° 273° Greenwich Culmination Time: 12:01													

UT	<i>Mars</i>				<i>Jupiter</i>				<i>Saturn</i>				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	152 38.4	+00.7	N 23 02.4	-00.3	7 13.4	+02.8	S 22 23.2	-00.1	334 38.1	+02.6	S 21 46.2	+00.0	00
01	167 39.1	+00.8	N 23 02.1	-00.2	22 16.2	+02.8	S 22 23.1	+00.0	349 40.7	+02.7	S 21 46.2	+00.1	01
02	182 39.9	+00.7	N 23 01.9	-00.2	37 19.0	+02.8	S 22 23.1	+00.0	4 43.4	+02.6	S 21 46.3	+00.0	02
03	197 40.6	+00.8	N 23 01.7	-00.3	52 21.8	+02.8	S 22 23.1	+00.0	19 46.0	+02.7	S 21 46.3	+00.0	03
04	212 41.4	+00.7	N 23 01.4	-00.2	67 24.6	+02.8	S 22 23.1	+00.0	34 48.7	+02.6	S 21 46.3	+00.0	04
05	227 42.1	+00.8	N 23 01.2	-00.3	82 27.4	+02.8	S 22 23.1	-00.1	49 51.3	+02.6	S 21 46.3	+00.1	05
06	242 42.9	+00.7	N 23 00.9	-00.2	97 30.2	+02.9	S 22 23.0	+00.0	64 53.9	+02.6	S 21 46.4	+00.0	06
07	257 43.6	+00.8	N 23 00.7	-00.3	112 33.1	+02.8	S 22 23.0	+00.0	79 56.6	+02.6	S 21 46.4	+00.0	07
08	272 44.4	+00.7	N 23 00.4	-00.2	127 35.9	+02.8	S 22 23.0	+00.0	94 59.2	+02.6	S 21 46.4	+00.0	08
09	287 45.1	+00.8	N 23 00.2	-00.2	142 38.7	+02.8	S 22 23.0	-00.1	110 01.8	+02.7	S 21 46.4	+00.1	09
10	302 45.9	+00.7	N 22 60.0	-00.3	157 41.5	+02.8	S 22 22.9	+00.0	125 04.5	+02.6	S 21 46.5	+00.0	10
11	317 46.6	+00.8	N 22 59.7	-00.2	172 44.3	+02.8	S 22 22.9	+00.0	140 07.1	+02.6	S 21 46.5	+00.0	11
12	332 47.4	+00.7	N 22 59.5	-00.3	187 47.1	+02.8	S 22 22.9	+00.0	155 09.7	+02.7	S 21 46.5	+00.0	12
13	347 48.1	+00.8	N 22 59.2	-00.2	202 49.9	+02.8	S 22 22.9	+00.0	170 12.4	+02.6	S 21 46.5	+00.1	13
14	2 48.9	+00.7	N 22 59.0	-00.3	217 52.7	+02.8	S 22 22.9	-00.1	185 15.0	+02.6	S 21 46.6	+00.0	14
15	17 49.6	+00.8	N 22 58.7	-00.2	232 55.5	+02.8	S 22 22.8	+00.0	200 17.6	+02.7	S 21 46.6	+00.0	15
16	32 50.4	+00.7	N 22 58.5	-00.2	247 58.3	+02.8	S 22 22.8	+00.0	215 20.3	+02.6	S 21 46.6	+00.0	16
17	47 51.1	+00.8	N 22 58.3	-00.3	263 01.1	+02.8	S 22 22.8	+00.0	230 22.9	+02.7	S 21 46.6	+00.1	17
18	62 51.9	+00.7	N 22 58.0	-00.2	278 03.9	+02.8	S 22 22.8	+00.0	245 25.6	+02.6	S 21 46.7	+00.0	18
19	77 52.6	+00.8	N 22 57.8	-00.3	293 06.7	+02.8	S 22 22.8	-00.1	260 28.2	+02.6	S 21 46.7		

Table with columns for UT, Sun, Venus, Moon, and UT. Each planet section includes GHA, ddGHA, Dec, and dDec values for each hour of the day.

UT 02 06 10 14 18 22 SD 15*7 15*7 15*7 15*7 15*7 15*7 HP 00*1 00*1 00*1 00*1 00*1 00*1 SHA 269* 268* 268* 268* 268* 268* Greenwich Culmination Time: 12:02

Table with columns for UT, Sun, Venus, Moon, and UT. Each planet section includes GHA, ddGHA, Dec, and dDec values for each hour of the day.

UT 02 06 10 14 18 22 SD 15*7 15*7 15*7 15*7 15*7 15*7 HP 00*1 00*1 00*1 00*1 00*1 00*1 SHA 272* 271* 271* 271* 271* 271* Greenwich Culmination Time: 12:01

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Each planet section includes GHA, ddGHA, Dec, and dDec values for each hour of the day.

UT 02 06 10 14 18 22 SD 00*0 00*0 00*0 00*0 00*0 00*0 HP 00*1 00*1 00*1 00*1 00*1 00*1 SHA 244* 243* 243* 243* 243* 243* Greenwich Culmination Time: 13:41

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Each planet section includes GHA, ddGHA, Dec, and dDec values for each hour of the day.

UT 02 06 10 14 18 22 SD 00*0 00*0 00*0 00*0 00*0 00*0 HP 00*1 00*1 00*1 00*1 00*1 00*1 SHA 246* 245* 245* 245* 245* 245* Greenwich Culmination Time: 13:45

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for RA, Dec, and magnitude for each planet across the day.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for RA, Dec, and magnitude for each planet across the day.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for RA, Dec, and magnitude for each planet across the day.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for RA, Dec, and magnitude for each planet across the day.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for RA, Dec, and magnitude for each planet from UT 00 to 23. Includes a small table at the bottom for Greenwich Culmination Time.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for RA, Dec, and magnitude for each planet from UT 00 to 23. Includes a small table at the bottom for Greenwich Culmination Time.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for RA, Dec, and magnitude for each planet from UT 00 to 23. Includes a small table at the bottom for Greenwich Culmination Time.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for RA, Dec, and magnitude for each planet from UT 00 to 23. Includes a small table at the bottom for Greenwich Culmination Time.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 266° 266° 266° 266° 266° 266°
Greenwich Culmination Time: 12:02

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 242° 242° 242° 242° 242° 242°
Greenwich Culmination Time: 13:38

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 265° 265° 265° 265° 265° 265°
Greenwich Culmination Time: 12:02

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 242° 241° 241° 241° 241° 241°
Greenwich Culmination Time: 13:37

Table for Sun, Venus, Moon (A: 94%) on July 1, 2019. Columns include UT, GHA, ddGHA, Dec, dDec for each planet, and a small table of star coordinates (SD, HP, SHA) and Greenwich Culmination Time.

Table for Mars, Jupiter, Saturn on July 1, 2019. Columns include UT, GHA, ddGHA, Dec, dDec for each planet, and a small table of star coordinates (SD, HP, SHA) and Greenwich Culmination Time.

Table for Sun, Venus, Moon (A: 84%) on June 28, 2019. Columns include UT, GHA, ddGHA, Dec, dDec for each planet, and a small table of star coordinates (SD, HP, SHA) and Greenwich Culmination Time.

Table for Mars, Jupiter, Saturn on June 28, 2019. Columns include UT, GHA, ddGHA, Dec, dDec for each planet, and a small table of star coordinates (SD, HP, SHA) and Greenwich Culmination Time.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23 showing celestial coordinates for each planet.

UT 02 06 10 14 18 22
SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 262° 262° 262° 262° 262° 261°
Greenwich Culmination Time: 12:03

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23 showing celestial coordinates for each planet.

UT 02 06 10 14 18 22
SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
SHA 239° 239° 239° 239° 239° 239°
Greenwich Culmination Time: 13:33

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23 showing celestial coordinates for each planet.

UT 02 06 10 14 18 22
SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 261° 261° 261° 261° 261° 260°
Greenwich Culmination Time: 12:03

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23 showing celestial coordinates for each planet.

UT 02 06 10 14 18 22
SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
SHA 239° 239° 239° 238° 238° 238°
Greenwich Culmination Time: 13:32

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with 5 columns: UT, Sun, Venus, Moon, UT. Rows 00-23. Includes celestial coordinates (GHA, ddGHA, Dec, dDec) and visibility (A: 10%).

UT 02 06 10 14 18 22
SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 256° 256° 256° 256° 255° 255°
Greenwich Culmination Time: 12:04

Table with 5 columns: UT, Mars, Jupiter, Saturn, UT. Rows 00-23. Includes celestial coordinates and visibility (A: 10%).

UT 02 06 10 14 18 22
SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 235° 235° 235° 235° 235° 235°
Greenwich Culmination Time: 13:26

Table with 5 columns: UT, Sun, Venus, Moon, UT. Rows 00-23. Includes celestial coordinates and visibility (A: 98%).

UT 02 06 10 14 18 22
SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 259° 259° 259° 259° 258° 258°
Greenwich Culmination Time: 12:04

Table with 5 columns: UT, Mars, Jupiter, Saturn, UT. Rows 00-23. Includes celestial coordinates and visibility (A: 10%).

UT 02 06 10 14 18 22
SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 237° 237° 237° 237° 237° 237°
Greenwich Culmination Time: 13:30

UT	Sun				Venus				Moon				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	178 58.2	-00.1	N 22 59.7	-00.2	191 34.8	-00.9	N 23 19.8	+00.1	176 08.9	-36.7	N 22 22.4	-00.4	00
01	193 58.1	-00.2	N 22 59.5	-00.2	206 33.9	-00.8	N 23 19.9	+00.1	190 32.2	-36.7	N 22 22.0	-00.5	01
02	208 57.9	-00.1	N 22 59.3	-00.2	221 33.1	-00.9	N 23 20.0	+00.1	204 55.5	-36.7	N 22 21.5	-00.7	02
03	223 57.8	-00.1	N 22 59.1	-00.2	236 32.2	-00.9	N 23 20.1	+00.2	219 18.8	-36.7	N 22 20.8	-00.8	03
04	238 57.7	-00.1	N 22 58.9	-00.2	251 31.3	-00.8	N 23 20.3	+00.1	233 42.1	-36.8	N 22 20.0	-01.0	04
05	253 57.6	-00.1	N 22 58.7	-00.1	266 30.5	-00.9	N 23 20.4	+00.1	248 05.3	-36.8	N 22 19.0	-01.2	05
06	268 57.5	-00.1	N 22 58.6	-00.2	281 29.6	-00.9	N 23 20.5	+00.1	262 28.5	-36.8	N 22 17.8	-01.3	06
07	283 57.4	-00.2	N 22 58.4	-00.2	296 28.7	-00.9	N 23 20.6	+00.1	276 51.7	-36.8	N 22 16.5	-01.5	07
08	298 57.2	-00.1	N 22 58.2	-00.2	311 27.8	-00.8	N 23 20.7	+00.1	291 14.9	-36.8	N 22 15.0	-01.7	08
09	313 57.1	-00.1	N 22 58.0	-00.2	326 27.0	-00.9	N 23 20.8	+00.1	305 38.1	-36.8	N 22 13.3	-01.8	09
10	328 57.0	-00.1	N 22 57.8	-00.2	341 26.1	-00.9	N 23 20.9	+00.1	320 01.3	-36.8	N 22 11.5	-01.9	10
11	343 56.9	-00.1	N 22 57.6	-00.2	356 25.2	-00.8	N 23 21.0	+00.1	334 24.5	-36.8	N 22 09.6	-02.1	11
12	358 56.8	-00.1	N 22 57.4	-00.2	11 24.4	-00.9	N 23 21.1	+00.1	348 47.7	-36.8	N 22 07.5	-02.3	12
13	13 56.7	-00.2	N 22 57.2	-00.3	26 23.5	-00.9	N 23 21.2	+00.2	3 10.9	-36.8	N 22 05.2	-02.4	13
14	28 56.5	-00.1	N 22 56.9	-00.2	41 22.6	-00.8	N 23 21.4	+00.1	17 34.1	-36.8	N 22 02.8	-02.6	14
15	43 56.4	-00.1	N 22 56.7	-00.2	56 21.8	-00.9	N 23 21.5	+00.1	31 57.3	-36.8	N 22 00.2	-02.8	15
16	58 56.3	-00.1	N 22 56.5	-00.2	71 20.9	-00.9	N 23 21.6	+00.1	46 20.5	-36.8	N 21 57.4	-02.9	16
17	73 56.2	-00.1	N 22 56.3	-00.2	86 20.0	-00.8	N 23 21.7	+00.1	60 43.7	-36.8	N 21 54.5	-03.0	17
18	88 56.1	-00.1	N 22 56.1	-00.2	101 19.2	-00.9	N 23 21.8	+00.1	75 06.9	-36.8	N 21 51.5	-03.3	18
19	103 56.0	-00.1	N 22 55.9	-00.2	116 18.3	-00.9	N 23 21.9	+00.1	89 30.1	-36.8	N 21 48.2	-03.3	19
20	118 55.9	-00.2	N 22 55.7	-00.2	131 17.4	-00.9	N 23 22.0	+00.1	103 53.3	-36.7	N 21 44.9	-03.6	20
21	133 55.7	-00.1	N 22 55.5	-00.2	146 16.5	-00.8	N 23 22.1	+00.1	118 16.6	-36.7	N 21 41.3	-03.6	21
22	148 55.6	-00.1	N 22 55.3	-00.2	161 15.7	-00.9	N 23 22.1	+00.1	132 39.9	-36.7	N 21 37.7	-03.9	22
23	163 55.5	-00.1	N 22 55.1	-00.2	176 14.8	-00.9	N 23 22.2	+00.1	147 03.2	-36.7	N 21 33.8	-04.0	23

UT	Mars				Jupiter				Saturn				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	157 35.8	+00.8	N 21 09.5	-00.3	25 01.9	+02.8	S 22 15.3	+00.0	351 35.2	+02.7	S 21 56.4	+00.0	00
01	172 36.6	+00.8	N 21 09.2	-00.4	40 04.7	+02.7	S 22 15.3	+00.0	6 37.9	+02.6	S 21 56.4	+00.0	01
02	187 37.4	+00.8	N 21 08.8	-00.3	55 07.4	+02.8	S 22 15.3	-00.1	21 40.5	+02.7	S 21 56.4	+00.0	02
03	202 38.2	+00.8	N 21 08.5	-00.4	70 10.2	+02.7	S 22 15.2	+00.0	36 43.2	+02.6	S 21 56.4	+00.1	03
04	217 39.0	+00.8	N 21 08.1	-00.3	85 12.9	+02.8	S 22 15.2	+00.0	51 45.8	+02.7	S 21 56.5	+00.0	04
05	232 39.8	+00.8	N 21 07.8	-00.4	100 15.7	+02.7	S 22 15.2	+00.0	66 48.5	+02.7	S 21 56.5	+00.0	05
06	247 40.6	+00.8	N 21 07.4	-00.3	115 18.4	+02.8	S 22 15.2	+00.0	81 51.2	+02.6	S 21 56.5	+00.1	06
07	262 41.4	+00.8	N 21 07.1	-00.4	130 21.2	+02.7	S 22 15.2	-00.1	96 53.8	+02.7	S 21 56.6	+00.0	07
08	277 42.2	+00.8	N 21 06.7	-00.3	145 23.9	+02.8	S 22 15.1	+00.0	111 56.5	+02.6	S 21 56.6	+00.0	08
09	292 43.0	+00.8	N 21 06.4	-00.4	160 26.7	+02.7	S 22 15.1	+00.0	126 59.1	+02.7	S 21 56.6	+00.0	09
10	307 43.8	+00.8	N 21 06.0	-00.3	175 29.4	+02.8	S 22 15.1	+00.0	142 01.8	+02.7	S 21 56.6	+00.1	10
11	322 44.6	+00.8	N 21 05.7	-00.4	190 32.2	+02.7	S 22 15.1	+00.0	157 04.5	+02.6	S 21 56.7	+00.0	11
12	337 45.4	+00.8	N 21 05.3	-00.3	205 34.9	+02.8	S 22 15.1	-00.1	172 07.1	+02.7	S 21 56.7	+00.0	12
13	352 46.2	+00.8	N 21 05.0	-00.4	220 37.7	+02.7	S 22 15.0	+00.0	187 09.8	+02.6	S 21 56.7	+00.0	13
14	7 47.0	+00.8	N 21 04.6	-00.3	235 40.4	+02.8	S 22 15.0	+00.0	202 12.4	+02.7	S 21 56.7	+00.1	14
15	22 47.8	+00.8	N 21 04.3	-00.4	250 43.2	+02.7	S 22 15.0	+00.0	217 15.1	+02.6	S 21 56.8	+00.0	15
16	37 48.6	+00.8	N 21 03.9	-00.3	265 45.9	+02.8	S 22 15.0	+00.0	232 17.7	+02.7	S 21 56.8	+00.0	16
17	52 49.4	+00.8	N 21 03.6	-00.4	280 48.7	+02.7	S 22 15.0	+00.0	247 20.4	+02.7	S 21 56.8	+00.1	17
18	67 50.2	+00.8	N 21 03.2	-00.3	295 51.4	+02.8	S 22 15.0	-00.1	262 23.1	+02.6	S 21 56.9	+00.0	18
19	82 51.0	+00.8	N 21 02.9	-00.4	310 54.2	+02.7	S 22 14.9	+00.0	277 25.7	+02.7	S 21 56.9	+00.0	19
20	97 51.8	+00.8	N 21 02.5	-00.3	325 56.9	+02.7	S 22 14.9	+00.0	292 28.4	+02.6	S 21 56.9	+00.0	20
21	112 52.6	+00.8	N 21 02.2	-00.4	340 59.6	+02.8	S 22 14.9	+00.0	307 31.0	+02.7	S 21 56.9	+00.1	21
22	127 53.4	+00.8	N 21 01.8	-00.3	356 02.4	+02.7	S 22 14.9	+00.0	322 33.7	+02.7	S 21 57.0	+00.0	22
23	142 54.2	+00.8	N 21 01.5	-00.4	11 05.1	+02.8	S 22 14.9	-00.1	337 36.4	+02.6	S 21 57.0	+00.0	23

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

UT	Sun				Venus				Moon				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	178 55.4	-00.1	N 22 54.9	-00.2	191 13.9	-00.8	N 23 22.3	+00.1	161 26.5	-36.7	N 21 29.8	-04.1	00
01	193 55.3	-00.1	N 22 54.7	-00.2	206 13.1	-00.9	N 23 22.4	+00.1	175 49.8	-36.6	N 21 25.7	-04.3	01
02	208 55.2	-00.2	N 22 54.5	-00.2	221 12.2	-00.9	N 23 22.5	+00.1	190 13.2	-36.7	N 21 21.4	-04.4	02
03	223 55.0	-00.1	N 22 54.3	-00.3	236 11.3	-00.8	N 23 22.6	+00.1	204 36.5	-36.5	N 21 17.0	-04.6	03
04	238 54.9	-00.1	N 22 54.0	-00.2	251 10.5	-00.9	N 23 22.7	+00.1	218 60.0	-36.6	N 21 12.4	-04.8	04
05	253 54.8	-00.1	N 22 53.8	-00.2	266 09.6	-00.9	N 23 22.8	+00.1	233 23.4	-36.5	N 21 07.6	-04.9	05
06	268 54.7	-00.1	N 22 53.6	-00.2	281 08.7	-00.9	N 23 22.9	+00.0	247 46.9	-36.5	N 21 02.7	-05.0	06
07	283 54.6	-00.1	N 22 53.4	-00.2	296 07.8	-00.8	N 23 22.9	+00.1	262 10.4	-36.5	N 20 57.7	-05.2	07
08	298 54.5	-00.1	N 22 53.2	-00.2	311 07.0	-00.9	N 23 23.0	+00.1	276 33.9	-36.4	N 20 52.5	-05.4	08
09	313 54.4	-00.1	N 22 53.0	-00.2	326 06.1	-00.9	N 23 23.1	+00.1	290 57.5	-36.4	N 20 47.1	-05.5	09
10	328 54.3	-00.2	N 22 52.8	-00.3	341 05.2	-00.8	N 23 23.2	+00.1	305 21.1	-36.3	N 20 41.6	-05.6	10
11	343 54.1	-00.1	N 22 52.5	-00.2	356 04.4	-00.9	N 23 23.3	+00.0	319 44.8	-36.3	N 20 36.0	-05.8	11
12	358 54.0	-00.1	N 22 52.3	-00.2	11 03.5	-00.9	N 23 23.3	+00.1	334 08.5	-36.3	N 20 30.2	-05.9	12
13	13 53.9	-00.1	N 22 52.1	-00.2	26 02.6	-00.9	N 23 23.4	+00.1	348 32.2	-36.2	N 20 24.3	-06.1	13
14	28 53.8	-00.1	N 22 51.9	-00.2	41 01.7	-00.8	N 23 23.5	+00.1	2 56.0	-36.2	N 20 18.2	-06.2	14
15	43 53.7	-00.1	N 22 51.7	-00.3	56 00.9	-00.9	N 23 23.6	+00.0	17 19.8	-36.1	N 20 12.0	-06.4	15
16	58 53.6	-00.1	N 22 51.4	-00.2	70 60.0	-00.9	N 23 23.6	+00.1	31 43.7	-36.1	N 20 05.6	-06.5	16
17	73 53.5	-00.1	N 22 51.2	-00.2	85 59.1	-00.9	N 23 23.7	+00.1	46 07.6	-36.0	N 19 59.1	-06.6	17
18	88 53.4	-00.2	N 22 51.0	-00.2	100 58.2	-00.8	N 23 23.8	+00.1	60 31.6	-36.0	N 19 52.5	-06.8	18
19	103 53.2	-00.1	N 22 50.8	-00.2	115 57.4	-00.9	N 23 23.9	+00.0	74 55.6	-35.9	N 19 45.7	-06.9	19
20	118 53.1	-00.1	N 22 50.6	-00.3	130 56.5	-00.9	N 23 23.9	+00.1	89 19.7	-35.9	N 19 38.8	-07.0	20
21	133 53.0	-00.1	N 22 50.3	-00.2	145 55.6	-00.8	N 23 24.0	+00.1	103 43.8	-35.8	N 19 31.8	-07.2	21
22	148 52.9	-00.1	N 22 50.1	-00.2	160 54.8	-00.9	N 23 24.1	+00.0	118 08.0	-35.7	N 19 24.6	-07.3	22
23	163 52.8	-00.1	N 22 49.9	-00.2	175 53.9	-00.9	N 23 24.1	+00.1	132 32.3	-35.7	N 19 17.3	-07.5	23

UT	Mars				Jupiter				Saturn				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	157 55.0	+00.8	N 21 01.1	-00.3	26 07.9	+02.7	S 22 14.8	+00.0	352 39.0	+02.7	S 21 57.0	+00.0	00
01	172 55.8	+00.8	N 21 00.8	-00.4	41 10.6	+02.8	S 22 14.8	+00.0	7 41.7	+02.6	S 21 57.0	+00.1	01
02	187 56.6	+00.8	N 21 00.4	-00.3	56 13.4								

UT	Sun				Venus				Moon				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
00	178	42.8	-00.1	N 22 24.8	-00.3	189	29.0	-00.9	N 23 24.8	-00.1	94	51.8	-30.0	N 00 38.5	-13.4
01	193	42.7	-00.1	N 22 24.5	-00.3	204	28.1	-00.8	N 23 24.7	+00.0	109	21.8	-30.0	N 00 25.1	-13.3
02	208	42.6	-00.1	N 22 24.2	-00.3	219	27.3	-00.9	N 23 24.7	-00.1	123	51.8	-29.9	N 00 11.8	-13.4
03	223	42.5	-00.1	N 22 23.9	-00.3	234	26.4	-00.9	N 23 24.6	+00.0	138	21.9	-30.0	S 00 01.6	+13.3
04	238	42.4	-00.1	N 22 23.6	-00.3	249	25.5	-00.9	N 23 24.6	-00.1	152	51.9	-29.9	S 00 14.9	+13.3
05	253	42.3	-00.1	N 22 23.3	-00.3	264	24.6	-00.8	N 23 24.5	-00.1	167	22.0	-29.8	S 00 28.2	+13.4
06	268	42.2	-00.1	N 22 23.0	-00.3	279	23.8	-00.9	N 23 24.4	+00.0	181	52.2	-29.9	S 00 41.6	+13.2
07	283	42.1	-00.1	N 22 22.7	-00.3	294	22.9	-00.9	N 23 24.4	-00.1	196	22.3	-29.8	S 00 54.8	+13.3
08	298	42.0	-00.1	N 22 22.4	-00.3	309	22.0	-00.9	N 23 24.3	+00.0	210	52.5	-29.8	S 01 08.1	+13.3
09	313	41.9	-00.1	N 22 22.1	-00.3	324	21.1	-00.8	N 23 24.3	-00.1	225	22.7	-29.8	S 01 21.4	+13.2
10	328	41.8	-00.1	N 22 21.8	-00.3	339	20.3	-00.9	N 23 24.2	-00.1	239	52.9	-29.8	S 01 34.6	+13.3
11	343	41.7	-00.1	N 22 21.5	-00.3	354	19.4	-00.9	N 23 24.1	+00.0	254	23.1	-29.7	S 01 47.9	+13.2
12	358	41.6	+00.0	N 22 21.2	-00.3	9	18.5	-00.9	N 23 24.1	-00.1	268	53.4	-29.8	S 02 01.1	+13.1
13	13	41.6	-00.1	N 22 20.9	-00.3	24	17.6	-00.8	N 23 24.0	-00.1	283	23.6	-29.7	S 02 14.2	+13.2
14	28	41.5	-00.1	N 22 20.6	-00.3	39	16.8	-00.9	N 23 23.9	+00.0	297	53.9	-29.7	S 02 27.4	+13.2
15	43	41.4	-00.1	N 22 20.3	-00.3	54	15.9	-00.9	N 23 23.9	-00.1	312	24.2	-29.7	S 02 40.6	+13.1
16	58	41.3	-00.1	N 22 20.0	-00.3	69	15.0	-00.9	N 23 23.8	-00.1	326	54.5	-29.7	S 02 53.7	+13.1
17	73	41.2	-00.1	N 22 19.7	-00.3	84	14.1	-00.8	N 23 23.7	-00.1	341	24.8	-29.7	S 03 06.8	+13.0
18	88	41.1	-00.1	N 22 19.4	-00.3	99	13.3	-00.9	N 23 23.6	+00.0	355	55.1	-29.6	S 03 19.8	+13.1
19	103	41.0	-00.1	N 22 19.1	-00.3	114	12.4	-00.9	N 23 23.6	-00.1	10	25.5	-29.7	S 03 32.9	+13.0
20	118	40.9	-00.1	N 22 18.8	-00.3	129	11.5	-00.9	N 23 23.5	-00.1	24	55.8	-29.6	S 03 45.9	+12.9
21	133	40.8	-00.1	N 22 18.5	-00.3	144	10.6	-00.8	N 23 23.4	-00.1	39	26.2	-29.6	S 03 58.8	+13.0
22	148	40.7	-00.1	N 22 18.2	-00.3	159	09.8	-00.9	N 23 23.3	+00.0	53	56.6	-29.6	S 04 11.8	+12.9
23	163	40.6	+00.0	N 22 17.9	-00.3	174	08.9	-00.9	N 23 23.3	-00.1	68	27.0	-29.7	S 04 24.7	+12.9

UT 02 06 10 14 18 22 SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7' HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1' HA 252° 252° 252° 251° 251° 251° SHA 233° 233° 233° 233° 232° 232° Greenwich Culmination Time: 12:05	UT 02 06 10 14 18 22 SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1' HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1' HA 263° 263° 263° 262° 262° 262° SHA 263° 263° 263° 262° 262° 262° Greenwich Culmination Time: 11:22	UT 02 06 10 14 18 22 SD 16°1' 16°1' 16°1' 16°1' 16°1' 16°1' HP 59°0' 58°9' 58°8' 58°7' 58°6' 58°5' HA 167° 167° 163° 163° 161° 159° 156° SHA 167° 167° 167° 167° 167° 167° Greenwich Culmination Time: 18:16
--	--	---

UT	Mars				Jupiter				Saturn				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
00	159	32.4	+00.8	N 20 17.1	-00.4	31	35.9	+02.7	S 22 12.7	+00.0	357	58.2	+02.7	S 22 00.3	+00.0
01	174	33.2	+00.9	N 20 16.7	-00.4	46	38.6	+02.7	S 22 12.7	+00.0	13	00.9	+02.7	S 22 00.3	+00.0
02	189	34.1	+00.8	N 20 16.3	-00.4	61	41.3	+02.7	S 22 12.7	-00.1	28	03.6	+02.6	S 22 00.3	+00.1
03	204	34.9	+00.8	N 20 15.9	-00.4	76	44.0	+02.8	S 22 12.6	+00.0	43	06.2	+02.7	S 22 00.4	+00.0
04	219	35.7	+00.8	N 20 15.5	-00.4	91	46.8	+02.7	S 22 12.6	+00.0	58	08.9	+02.6	S 22 00.4	+00.0
05	234	36.5	+00.9	N 20 15.1	-00.3	106	49.5	+02.7	S 22 12.6	+00.0	73	11.5	+02.7	S 22 00.4	+00.0
06	249	37.4	+00.8	N 20 14.8	-00.4	121	52.2	+02.7	S 22 12.6	+00.0	88	14.2	+02.7	S 22 00.4	+00.1
07	264	38.2	+00.8	N 20 14.4	-00.4	136	54.9	+02.7	S 22 12.6	+00.0	103	16.9	+02.6	S 22 00.5	+00.0
08	279	39.0	+00.8	N 20 14.0	-00.4	151	57.6	+02.8	S 22 12.6	-00.1	118	19.5	+02.7	S 22 00.5	+00.0
09	294	39.8	+00.8	N 20 13.6	-00.4	167	00.4	+02.7	S 22 12.5	+00.0	133	22.2	+02.7	S 22 00.5	+00.0
10	309	40.6	+00.9	N 20 13.2	-00.4	182	03.1	+02.7	S 22 12.5	+00.0	148	24.9	+02.6	S 22 00.5	+00.1
11	324	41.5	+00.8	N 20 12.8	-00.3	197	05.8	+02.7	S 22 12.5	+00.0	163	27.5	+02.7	S 22 00.6	+00.0
12	339	42.3	+00.8	N 20 12.5	-00.4	212	08.5	+02.7	S 22 12.5	+00.0	178	30.2	+02.6	S 22 00.6	+00.0
13	354	43.1	+00.8	N 20 12.1	-00.4	227	11.2	+02.7	S 22 12.5	+00.0	193	32.8	+02.7	S 22 00.6	+00.1
14	9	43.9	+00.9	N 20 11.7	-00.4	242	13.9	+02.7	S 22 12.5	-00.1	208	35.5	+02.7	S 22 00.7	+00.0
15	24	44.8	+00.8	N 20 11.3	-00.4	257	16.6	+02.8	S 22 12.4	+00.0	223	38.2	+02.6	S 22 00.7	+00.0
16	39	45.6	+00.8	N 20 10.9	-00.4	272	19.4	+02.7	S 22 12.4	+00.0	238	40.8	+02.7	S 22 00.7	+00.0
17	54	46.4	+00.8	N 20 10.5	-00.4	287	22.1	+02.7	S 22 12.4	+00.0	253	43.5	+02.6	S 22 00.7	+00.1
18	69	47.2	+00.8	N 20 10.1	-00.3	302	24.8	+02.7	S 22 12.4	+00.0	268	46.1	+02.7	S 22 00.8	+00.0
19	84	48.0	+00.9	N 20 09.8	-00.4	317	27.5	+02.7	S 22 12.4	+00.0	283	48.8	+02.7	S 22 00.8	+00.0
20	99	48.9	+00.8	N 20 09.4	-00.4	332	30.2	+02.7	S 22 12.4	-00.1	298	51.5	+02.6	S 22 00.8	+00.0
21	114	49.7	+00.8	N 20 09.0	-00.4	347	32.9	+02.8	S 22 12.3	+00.0	313	54.1	+02.7	S 22 00.8	+00.1
22	129	50.5	+00.8	N 20 08.6	-00.4	2	35.7	+02.7	S 22 12.3	+00.0	328	56.8	+02.6	S 22 00.9	+00.0
23	144	51.3	+00.9	N 20 08.2	-00.4	17	38.4	+02.7	S 22 12.3	+00.0	343	59.4	+02.7	S 22 00.9	+00.0

UT 02 06 10 14 18 22 SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0' HP 00°0' 00°1' 00°1' 00°1' 00°1' 00°1' HA 233° 233° 233° 233° 232° 232° SHA 233° 233° 233° 233° 232° 232° Greenwich Culmination Time: 13:21	UT 02 06 10 14 18 22 SD 00°4' 00°4' 00°4' 00°4' 00°4' 00°4' HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0' HA 105° 105° 105° 105° 105° 105° SHA 105° 105° 105° 105° 105° 105° Greenwich Culmination Time: 21:49	UT 02 06 10 14 18 22 SD 00°2' 00°2' 00°2' 00°2' 00°2' 00°2' HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0' HA 071° 071° 071° 071° 071° 071° SHA 071° 071° 071° 071° 071° 071° Greenwich Culmination Time: 00:08
--	--	--

UT	Sun				Venus				Moon				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
00	178	50.1	-00.1	N 22 44.0	-00.2	190	32.0	-00.8	N 23 25.4	+00.0	132	58.9	-34.1	N 15 34.8	-10.3
01	193	50.0	-00.2	N 22 43.8	-00.3	205	31.2	-00.9	N 23 25.4	+00.0	147	24.8	-33.9	N 15 24.5	-10.4
02	208	49.8	-00.1	N 22 43.5	-00.2	220	30.3	-00.9	N 23 25.4	+00.1	161	50.9	-33.9	N 15 14.1	-10.5
03	223	49.7	-00.1	N 22 43.3	-00.3	235	29.4	-00.8	N 23 25.5	+00.0	176	17.0	-33.9	N 15 03.6	-10.6
04	238	49.6	-00.1	N 22 43.0	-00.2	250	28.6	-00.9	N 23 25.5	+00.0	190	43.1	-33.7	N 14 53.0	-10.7
05	253	49.5	-00.1	N 22 42.8	-00.3	265	27.7	-00.9	N 23 25.5	+00.1	205	09.4	-33.7	N 14 42.3	-10.8
06	268	49.4	-00.1	N 22 42.5	-00.2	280	26.8	-00.9	N 23 25.6	+00.0	219	35.7	-33.6	N 14 31.5	-10.9
07	283	49.3	-00.1	N 22 42.3	-00.2	295	25.9	-00.8	N 23 25.6	+00.0	234	02.1	-33.5	N 14 20.6	-10.9
08	298	49.2	-00.1	N 22 42.1	-00.3	310	25.1	-00.9	N 23 25.6	+00.0	248	28.6	-33.5	N 14 09.7	-11.1
09	313	49.1	-00.1	N 22 41.8	-00.2	325	24.2	-00.9	N 23 25.6	+00.1	262	55.1	-33.4	N 13 58.6	-11.1
10	328	49.0	-00.1	N 22 41.6	-00.3	340	23.3	-00.9	N 23 25.7	+00.0	277	21.7	-33.3	N 13 47.5	-11.2
11	343	48.9	-00.1	N 22 41.3	-00.2	355	22.4	-00.8	N 23 25.7	+00.0	291	48.4	-33.3	N 13 36.3	-11.3
12	358	48.8	-00.1	N 22 41.1	-00.3	10	21.6	-00.9	N 23 25.7	+00.0	306	15.1	-33.1	N 13 25.0	-11.3
13	13	48.7	-00.1	N 22 40.8	-00.3	25	20.7	-00.9	N 23 25.7	+00.0	320	42.0	-33.1	N 13 13.7	-11.5
14	28	48.6	-00.1	N 22 40.5	-00.2	40	19.8	-00.9	N 23 25.7	+00.1	335	08.9	-33.1	N 13 02.2	-11.5
15	43	48.5	-00.1	N 22 40.3	-00.3	55	18.9	-00.8	N 23 25.8	+00.0	349	35.8	-32.9	N 12 50.7	-11.6
16	58	48.4	-00.1	N 22 40.0	-00.2	70	18.1	-00.9	N 23 25.8	+00.0	4	02.9	-32.9	N 12 39.1	-11.7
17	73	48.3	-00.1	N 22 39.8	-00.3	85	17.2	-00.9	N 23 25.8	+00.0	18	30.0	-32.9	N 12 27.4	-11.7
18	88	48.2	-00.1	N 22 39.5	-00.2	100	16.3	-00.9	N 23 25.8	+00.0	32	57.1	-32.		

UT	Sun				Venus				Moon				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	178 47.5	-00.1	N 22 38.0	-00.3	190 11.1	-00.9	N 23 25.9	+00.0	119 41.7	-32.4	N 11 03.9	-12.2	00
01	193 47.4	-00.1	N 22 37.7	-00.2	205 10.2	-00.9	N 23 25.9	+00.0	134 09.3	-32.3	N 10 51.7	-12.2	01
02	208 47.3	-00.1	N 22 37.5	-00.3	220 09.3	-00.9	N 23 25.9	+00.0	148 37.0	-32.2	N 10 39.5	-12.3	02
03	223 47.2	-00.1	N 22 37.2	-00.3	235 08.4	-00.9	N 23 25.9	+00.0	163 04.8	-32.1	N 10 27.2	-12.4	03
04	238 47.1	-00.1	N 22 36.9	-00.2	250 07.5	-00.8	N 23 25.9	+00.0	177 32.7	-32.1	N 10 14.8	-12.4	04
05	253 47.0	-00.1	N 22 36.7	-00.3	265 06.7	-00.9	N 23 25.9	+00.0	192 00.6	-32.0	N 10 02.4	-12.5	05
06	268 46.9	-00.1	N 22 36.4	-00.2	280 05.8	-00.9	N 23 25.9	+00.0	206 28.6	-32.0	N 09 49.9	-12.5	06
07	283 46.8	-00.1	N 22 36.2	-00.3	295 04.9	-00.9	N 23 25.9	+00.0	220 56.6	-31.9	N 09 37.4	-12.6	07
08	298 46.7	-00.1	N 22 35.9	-00.3	310 04.0	-00.8	N 23 25.9	+00.0	235 24.7	-31.8	N 09 24.8	-12.6	08
09	313 46.6	-00.1	N 22 35.6	-00.2	325 03.2	-00.9	N 23 25.9	+00.0	249 52.9	-31.8	N 09 12.2	-12.6	09
10	328 46.5	-00.1	N 22 35.4	-00.3	340 02.3	-00.9	N 23 25.9	+00.0	264 21.1	-31.7	N 08 59.6	-12.7	10
11	343 46.4	-00.1	N 22 35.1	-00.3	355 01.4	-00.9	N 23 25.9	+00.0	278 49.4	-31.6	N 08 46.9	-12.8	11
12	358 46.3	-00.1	N 22 34.8	-00.2	10 00.5	-00.8	N 23 25.8	+00.0	293 17.8	-31.6	N 08 34.1	-12.8	12
13	13 46.2	-00.1	N 22 34.6	-00.3	24 59.7	-00.9	N 23 25.8	+00.0	307 46.2	-31.6	N 08 21.3	-12.8	13
14	28 46.1	-00.1	N 22 34.3	-00.3	39 58.8	-00.9	N 23 25.8	+00.0	322 14.6	-31.4	N 08 08.5	-12.9	14
15	43 46.0	-00.1	N 22 34.0	-00.2	54 57.9	-00.9	N 23 25.8	+00.0	336 43.2	-31.4	N 07 55.6	-12.9	15
16	58 45.9	-00.1	N 22 33.8	-00.3	69 57.0	-00.8	N 23 25.8	+00.0	351 11.8	-31.4	N 07 42.7	-12.9	16
17	73 45.8	-00.1	N 22 33.5	-00.3	84 56.2	-00.9	N 23 25.8	+00.0	5 40.4	-31.3	N 07 29.8	-13.0	17
18	88 45.7	-00.1	N 22 33.2	-00.3	99 55.3	-00.9	N 23 25.8	+00.0	20 09.1	-31.2	N 07 16.8	-13.0	18
19	103 45.6	-00.1	N 22 32.9	-00.2	114 54.4	-00.9	N 23 25.8	+00.0	34 37.9	-31.2	N 07 03.8	-13.0	19
20	118 45.5	-00.1	N 22 32.7	-00.3	129 53.5	-00.8	N 23 25.7	+00.0	49 06.7	-31.2	N 06 50.8	-13.1	20
21	133 45.4	-00.1	N 22 32.4	-00.3	144 52.7	-00.9	N 23 25.7	+00.0	63 35.5	-31.1	N 06 37.7	-13.1	21
22	148 45.3	-00.1	N 22 32.1	-00.3	159 51.8	-00.9	N 23 25.7	+00.0	78 04.4	-31.0	N 06 24.6	-13.1	22
23	163 45.2	-00.1	N 22 31.8	-00.2	174 50.9	-00.9	N 23 25.7	+00.0	92 33.4	-31.0	N 06 11.5	-13.2	23
UT 02 06 10 14 18 22				UT 02 06 10 14 18 22				UT 02 06 10 14 18 22				UT 02 06 10 14 18 22	
SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'				SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'				SD 16°3' 16°3' 16°3' 16°3' 16°2' 16°2'				SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'	
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'				HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'				HP 59°9' 59°8' 59°8' 59°7' 59°6' 59°6'				HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	
SHA 254° 254° 254° 254° 253° 253°				SHA 265° 265° 265° 265° 265° 264°				SHA 194° 192° 189° 187° 185° 184°				SHA 253° 253° 253° 252° 252° 252°	
Greenwich Culmination Time: 12:04				Greenwich Culmination Time: 11:19				Greenwich Culmination Time: 16:36				Greenwich Culmination Time: 12:05	

UT	Sun				Venus				Moon				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	178 45.1	-00.1	N 22 31.6	-00.3	189 50.0	-00.8	N 23 25.7	-00.1	107 02.4	-30.9	N 05 58.3	-13.2	00
01	193 45.0	-00.1	N 22 31.3	-00.3	204 49.2	-00.9	N 23 25.6	+00.0	121 31.5	-30.9	N 05 45.1	-13.2	01
02	208 44.9	-00.1	N 22 31.0	-00.3	219 48.3	-00.9	N 23 25.6	+00.0	136 00.6	-30.8	N 05 31.9	-13.2	02
03	223 44.8	-00.1	N 22 30.7	-00.2	234 47.4	-00.9	N 23 25.6	+00.0	150 29.8	-30.8	N 05 18.7	-13.2	03
04	238 44.7	-00.1	N 22 30.5	-00.3	249 46.5	-00.8	N 23 25.6	-00.1	164 59.0	-30.8	N 05 05.5	-13.3	04
05	253 44.6	-00.1	N 22 30.2	-00.3	264 45.7	-00.9	N 23 25.5	+00.0	179 28.2	-30.7	N 04 52.2	-13.3	05
06	268 44.5	-00.1	N 22 29.9	-00.3	279 44.8	-00.9	N 23 25.5	+00.0	193 57.5	-30.6	N 04 38.9	-13.2	06
07	283 44.4	-00.1	N 22 29.6	-00.3	294 43.9	-00.9	N 23 25.5	-00.1	208 26.9	-30.6	N 04 25.7	-13.4	07
08	298 44.3	-00.1	N 22 29.3	-00.2	309 43.0	-00.8	N 23 25.4	+00.0	222 56.3	-30.6	N 04 12.3	-13.3	08
09	313 44.2	-00.1	N 22 29.1	-00.3	324 42.2	-00.9	N 23 25.4	+00.0	237 25.7	-30.5	N 03 59.0	-13.3	09
10	328 44.1	-00.1	N 22 28.8	-00.3	339 41.3	-00.9	N 23 25.4	-00.1	251 55.2	-30.5	N 03 45.7	-13.4	10
11	343 44.0	-00.1	N 22 28.5	-00.3	354 40.4	-00.9	N 23 25.3	+00.0	266 24.7	-30.4	N 03 32.3	-13.3	11
12	358 43.9	-00.1	N 22 28.2	-00.3	9 39.5	-00.8	N 23 25.3	+00.0	280 54.3	-30.4	N 03 19.0	-13.4	12
13	13 43.8	-00.1	N 22 27.9	-00.3	24 38.7	-00.9	N 23 25.3	-00.1	295 23.9	-30.4	N 03 05.6	-13.3	13
14	28 43.7	-00.1	N 22 27.6	-00.2	39 37.8	-00.9	N 23 25.2	+00.0	309 53.5	-30.3	N 02 52.3	-13.4	14
15	43 43.6	-00.1	N 22 27.4	-00.3	54 36.9	-00.9	N 23 25.2	-00.1	324 23.2	-30.3	N 02 38.9	-13.4	15
16	58 43.5	-00.1	N 22 27.1	-00.3	69 36.0	-00.9	N 23 25.1	+00.0	338 52.9	-30.3	N 02 25.5	-13.4	16
17	73 43.4	-00.1	N 22 26.8	-00.3	84 35.1	-00.8	N 23 25.1	+00.0	353 22.6	-30.2	N 02 12.1	-13.4	17
18	88 43.3	-00.1	N 22 26.5	-00.3	99 34.3	-00.9	N 23 25.1	-00.1	7 52.4	-30.2	N 01 58.7	-13.3	18
19	103 43.2	-00.1	N 22 26.2	-00.3	114 33.4	-00.9	N 23 25.0	+00.0	22 22.2	-30.1	N 01 45.4	-13.4	19
20	118 43.2	-00.1	N 22 25.9	-00.3	129 32.5	-00.9	N 23 25.0	-00.1	36 52.1	-30.1	N 01 32.0	-13.4	20
21	133 43.1	-00.1	N 22 25.6	-00.3	144 31.6	-00.8	N 23 24.9	+00.0	51 22.0	-30.1	N 01 18.6	-13.4	21
22	148 43.0	-00.1	N 22 25.3	-00.2	159 30.8	-00.9	N 23 24.9	-00.1	65 51.9	-30.1	N 01 05.2	-13.4	22
23	163 42.9	-00.1	N 22 25.1	-00.3	174 29.9	-00.9	N 23 24.8	+00.0	80 21.8	-30.0	N 00 51.8	-13.3	23
UT 02 06 10 14 18 22				UT 02 06 10 14 18 22				UT 02 06 10 14 18 22				UT 02 06 10 14 18 22	
SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'				SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'				SD 16°2' 16°2' 16°2' 16°1' 16°1' 16°1'				SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'	
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'				HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'				HP 59°4' 59°4' 59°3' 59°2' 59°1' 59°1'				HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'	
SHA 264° 264° 264° 263° 263° 263°				SHA 264° 264° 264° 263° 263° 263°				SHA 180° 178° 176° 174° 171° 169°				SHA 233° 233° 233° 233° 233° 233°	
Greenwich Culmination Time: 12:05				Greenwich Culmination Time: 11:21				Greenwich Culmination Time: 17:27				Greenwich Culmination Time: 13:22	

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

UT	<i>Sun</i>				<i>Venus</i>				<i>Moon</i> A: 38%				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	178 34.6	-00.1	N 21 53.7	-00.4	188 05.2	-00.9	N 23 14.3	-00.2	46 59.3	-30.7	S 17 33.9	+07.9	00
01	193 34.5	-00.1	N 21 53.3	-00.3	203 04.3	-00.9	N 23 14.1	-00.1	61 28.6	-30.8	S 17 41.8	+07.8	01
02	208 34.4	-00.1	N 21 53.0	-00.4	218 03.4	-00.8	N 23 14.0	-00.2	75 57.8	-30.7	S 17 49.6	+07.7	02
03	223 34.3	+00.0	N 21 52.6	-00.3	233 02.6	+00.9	N 23 13.8	-00.2	90 27.1	-30.9	S 17 57.3	+07.6	03
04	238 34.3	-00.1	N 21 52.3	-00.4	248 01.7	-00.9	N 23 13.6	-00.1	104 56.2	-30.8	S 18 04.9	+07.5	04
05	253 34.2	-00.1	N 21 51.9	-00.4	263 00.8	-00.8	N 23 13.5	-00.2	119 25.4	-30.9	S 18 12.4	+07.4	05
06	268 34.1	-00.1	N 21 51.5	-00.3	277 60.0	+00.9	N 23 13.3	-00.2	133 54.5	-30.8	S 18 19.8	+07.3	06
07	283 34.0	+00.0	N 21 51.2	-00.4	292 59.1	-00.9	N 23 13.1	-00.2	148 23.7	-30.9	S 18 27.1	+07.2	07
08	298 34.0	-00.1	N 21 50.8	-00.3	307 58.2	-00.8	N 23 12.9	-00.1	162 52.8	-31.0	S 18 34.3	+07.1	08
09	313 33.9	-00.1	N 21 50.5	-00.4	322 57.4	-00.9	N 23 12.8	-00.2	177 21.8	-30.9	S 18 41.4	+06.9	09
10	328 33.8	-00.1	N 21 50.1	-00.4	337 56.5	-00.9	N 23 12.6	-00.2	191 50.9	-31.0	S 18 48.3	+06.9	10
11	343 33.7	+00.0	N 21 49.7	-00.3	352 55.6	-00.8	N 23 12.4	-00.2	206 19.9	-31.0	S 18 55.2	+06.8	11
12	358 33.7	-00.1	N 21 49.4	-00.4	7 54.8	-00.9	N 23 12.2	-00.2	220 48.9	-31.0	S 19 02.0	+06.7	12
13	1 33.6	-00.1	N 21 49.0	-00.4	22 53.9	-00.9	N 23 12.0	-00.1	235 17.9	-31.1	S 19 08.7	+06.5	13
14	28 33.5	-00.1	N 21 48.6	-00.3	37 53.0	-00.8	N 23 11.9	-00.2	249 46.8	-31.0	S 19 15.2	+06.5	14
15	43 33.4	+00.0	N 21 48.3	-00.4	52 52.2	-00.9	N 23 11.7	-00.2	264 15.8	-31.1	S 19 21.7	+06.3	15
16	58 33.4	-00.1	N 21 47.9	-00.4	67 51.3	-00.9	N 23 11.5	-00.2	278 44.7	-31.1	S 19 28.0	+06.3	16
17	73 33.3	-00.1	N 21 47.5	-00.3	82 50.4	-00.8	N 23 11.3	-00.2	293 13.6	-31.1	S 19 34.3	+06.1	17
18	88 33.2	+00.0	N 21 47.2	-00.4	97 49.6	-00.9	N 23 11.1	-00.2	307 42.5	-31.2	S 19 40.4	+06.0	18
19	103 33.2	-00.1	N 21 46.8	-00.4	112 48.7	-00.9	N 23 10.9	-00.2	322 11.3	-31.1	S 19 46.4	+05.9	19
20	118 33.1	-00.1	N 21 46.4	-00.3	127 47.8	-00.8	N 23 10.7	-00.2	336 40.2	-31.2	S 19 52.3	+05.8	20
21	133 33.0	-00.1	N 21 46.1	-00.4	142 47.0	-00.9	N 23 10.5	-00.1	351 09.0	-31.2	S 19 58.1	+05.7	21
22	148 32.9	+00.0	N 21 45.7	-00.4	157 46.1	-00.9	N 23 10.4	-00.2	5 37.8	-31.3	S 20 03.8	+05.6	22
23	163 32.9	-00.1	N 21 45.3	-00.3	172 45.2	-00.8	N 23 10.2	-00.2	20 06.5	-31.2	S 20 09.4	+05.5	23

UT 02 06 10 14 18 22
SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 248° 248° 248° 247° 247° 247°
Greenwich Culmination Time: 12:05

UT 02 06 10 14 18 22
SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 257° 257° 257° 257° 257° 256°
Greenwich Culmination Time: 11:28

UT 02 06 10 14 18 22
SD 15°5' 15°4' 15°4' 15°4' 15°4' 15°3'
HP 56°7' 56°6' 56°5' 56°5' 56°4' 56°3'
SHA 115° 113° 111° 109° 106° 104°
Greenwich Culmination Time: 21:36

UT	<i>Mars</i>				<i>Jupiter</i>				<i>Saturn</i>				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	160 51.9	+00.8	N 19 39.3	-00.4	35 55.7	+02.7	S 22 11.2	+00.0	2 13.7	+02.6	S 22 02.9	+00.0	00
01	175 52.7	+00.8	N 19 38.9	-00.5	50 58.4	+02.7	S 22 11.2	-00.1	17 16.3	+02.7	S 22 02.9	+00.0	01
02	190 53.5	+00.9	N 19 38.4	-00.4	66 01.1	+02.7	S 22 11.1	+00.0	32 19.0	+02.7	S 22 02.9	+00.0	02
03	205 54.4	+00.8	N 19 38.0	-00.4	81 03.8	+02.7	S 22 11.1	+00.0	47 21.7	+02.6	S 22 02.9	+00.1	03
04	220 55.2	+00.8	N 19 37.6	-00.4	96 06.5	+02.7	S 22 11.1	+00.0	62 24.3	+02.7	S 22 03.0	+00.0	04
05	235 56.0	+00.9	N 19 37.2	-00.4	111 09.2	+02.7	S 22 11.1	+00.0	77 27.0	+02.6	S 22 03.0	+00.0	05
06	250 56.9	+00.8	N 19 36.8	-00.4	126 11.9	+02.7	S 22 11.1	+00.0	92 29.6	+02.7	S 22 03.0	+00.0	06
07	265 57.7	+00.9	N 19 36.4	-00.4	141 14.6	+02.7	S 22 11.1	+00.0	107 32.3	+02.7	S 22 03.0	+00.1	07
08	280 58.6	+00.8	N 19 36.0	-00.4	156 17.3	+02.7	S 22 11.1	-00.1	122 35.0	+02.6	S 22 03.1	+00.0	08
09	295 59.4	+00.8	N 19 35.6	-00.4	171 20.0	+02.7	S 22 11.0	+00.0	137 37.6	+02.7	S 22 03.1	+00.0	09
10	311 00.2	+00.9	N 19 35.2	-00.4	186 22.7	+02.7	S 22 11.0	+00.0	152 40.3	+02.6	S 22 03.1	+00.0	10
11	326 01.1	+00.8	N 19 34.8	-00.4	201 25.4	+02.6	S 22 11.0	+00.0	167 42.9	+02.7	S 22 03.1	+00.1	11
12	341 01.9	+00.8	N 19 34.4	-00.4	216 28.0	+02.7	S 22 11.0	+00.0	182 45.6	+02.7	S 22 03.2	+00.0	12
13	356 02.7	+00.9	N 19 34.0	-00.4	231 30.7	+02.7	S 22 11.0	+00.0	197 48.3	+02.6	S 22 03.2	+00.0	13
14	1 03.6	+00.8	N 19 33.6	-00.4	246 33.4	+02.7	S 22 11.0	+00.0	212 50.9	+02.7	S 22 03.2	+00.1	14
15	26 04.4	+00.8	N 19 33.2	-00.5	261 36.1	+02.7	S 22 11.0	-00.1	227 53.6	+02.6	S 22 03.3	+00.0	15
16	41 05.2	+00.9	N 19 32.7	-00.4	276 38.8	+02.7	S 22 10.9	+00.0	242 56.2	+02.7	S 22 03.3	+00.0	16
17	56 06.1	+00.8	N 19 32.3	-00.4	291 41.5	+02.7	S 22 10.9	+00.0	257 58.9	+02.7	S 22 03.3	+00.0	17
18	71 06.9	+00.9	N 19 31.9	-00.4	306 44.2	+02.7	S 22 10.9	+00.0	273 01.6	+02.6	S 22 03.3	+00.1	18
19	86 07.8	+00.8	N 19 31.5	-00.4	321 46.9	+02.7	S 22 10.9	+00.0	288 04.2	+02.7	S 22 03.4	+00.0	19
20	101 08.6	+00.8	N 19 31.1	-00.4	336 49.6	+02.7	S 22 10.9	+00.0	303 06.9	+02.6	S 22 03.4	+00.0	20
21	116 09.4	+00.9	N 19 30.7	-00.4	351 52.3	+02.6	S 22 10.9	+00.0	318 09.5	+02.7	S 22 03.4	+00.0	21
22	131 10.3	+00.8	N 19 30.3	-00.4	6 54.9	+02.7	S 22 10.9	-00.1	333 12.2	+02.7	S 22 03.4	+00.1	22
23	146 11.1	+00.8	N 19 29.9	-00.4	21 57.6	+02.7	S 22 10.8	-00.2	348 14.9	+02.6	S 22 03.5	+00.0	23

UT 02 06 10 14 18 22
SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 230° 230° 230° 230° 230°
Greenwich Culmination Time: 13:15

UT 02 06 10 14 18 22
SD 00°4' 00°4' 00°4' 00°4' 00°4' 00°4'
HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
SHA 105° 105° 105° 105° 105° 105°
Greenwich Culmination Time: 21:32

UT 02 06 10 14 18 22
SD 00°2' 00°2' 00°2' 00°2' 00°2' 00°2'
HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
SHA 072° 072° 072° 072° 072° 072°
Greenwich Culmination Time: 23:46

UT	<i>Sun</i>				<i>Venus</i>				<i>Moon</i> A: 28%				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	178 40.6	-00.1	N 22 17.6	-00.3	189 08.0	-00.9	N 23 23.2	-00.1	82 57.3	-29.6	S 04 37.6	+12.8	00
01	193 40.5	-00.1	N 22 17.3	-00.4	204 07.1	-00.8	N 23 23.1	-00.1	97 27.7	-29.6	S 04 50.4	+12.8	01
02	208 40.4	-00.1	N 22 16.9	-00.3	219 06.3	-00.9	N 23 23.0	-00.1	111 58.1	-29.6	S 05 03.2	+12.8	02
03	223 40.3	+00.1	N 22 16.6	-00.3	234 05.4	+00.9	N 23 22.9	+00.0	126 28.5	-29.5	S 05 16.0	+12.7	03
04	238 40.2	-00.1	N 22 16.3	-00.3	249 04.5	-00.9	N 23 22.9	-00.1	140 59.0	-29.6	S 05 28.7	+12.7	04
05	253 40.1	-00.1	N 22 16.0	-00.3	264 03.6	-00.8	N 23 22.8	-00.1	155 29.4	-29.6	S 05 41.4	+12.7	05
06	268 40.0	-00.1	N 22 15.7	-00.3	279 02.8	-00.9	N 23 22.7	-00.1	169 59.8	-29.6	S 05 54.1	+12.6	06
07	283 39.9	-00.1	N 22 15.4	-00.3	294 01.9	-00.9	N 23 22.6	-00.1	184 30.2	-29.6	S 06 06.7	+12.6	07
08	298 39.8	-00.1	N 22 15.1	-00.3	309 01.0	-00.9	N 23 22.5	-00.1	199 00.6	-29.6	S 06 19.3	+12.5	08
09	313 39.7	+00.0	N 22 14.8	-00.4	324 00.1	-00.8	N 23 22.4	-00.1	213 31.0	-29.6	S 06 31.8	+12.5	09
10	328 39.7	-00.1	N 22 14.4	-00.3	338 59.3	-00.9	N 23 22.3	-00.1	228 01.4	-29.6	S 06 44.3	+12.4	10
11	343 39.6	-00.1	N 22 14.1	-00.3	353 58.4	-00.9	N 23 22.2	-00.1	242 31.8	-29.6	S 06 56.7	+12.4	11
12	358 39.5	-00.1	N 22 13.8	-00.3	8 57.5	-00.9	N 23 22.1	-00.1	257 02.2	-29.5	S 07 09.1	+12.4	12
13	1 39.4	-00.1	N 22 13.5	-00.3	23 56.6	-00.8	N 23 22.0	-00.1	271 32.7	-29.6	S 07 21.5	+12.3	13
14	28 39.3	-00.1	N 22 13.2	-00.3	38 55.8	-00.9	N 23 21.9	-00.1	286 03.1	-29.7	S 07 33.8	+12.3	14
15	43 39.2	-00.1	N 22 12.9	-00.3	53 54.9	-00.9	N 23 21.8	-00.1	300 33.4	-29.6	S 07 46.1	+12.2	15
16	58 39.1	-00.1	N 22 12.6	-00.4	68 54.0	-00.9	N 23 21.7	-00.1	315 03.8	-29.6	S 07 58.3	+12.1	16
17	73 39.0	+00.0	N 22 12.2	-00.3	83 53.1	-00.8	N 23 21.6	-00.1	329 34.2	-29.6	S 08 10.4	+12.1	17
18	88 38.9	-00.1	N 22 11.9	-00.3	98 52.3	-00.9	N 23 21.5	-00.1	344 04.6	-29.6	S 08 22.5	+12.1	18
19	103 38.9	-00.1	N 22 11.6	-00.3	113 51.4	-00.9	N 23 21.4	-00.1	358 35.0	-29.7	S 08 34.6	+12.0	19
20	118 38.8	-00.1	N 22 11.3	-00.4	128 50.5	-00.9	N 23 21.3	-00.1	13 05.3	-29.6	S 08 46.6	+11.9	20
21	133 38.7	-00.1	N 22 10.9	-00.3	143 49.6	-00.8	N 23 21.2	-00.1	27 35.7	-29.7	S 08 58.5	+11.9	21
22	148 38.6	-00.1	N 22 10.6	-00.3	158 48.8	-00.9	N 23 21.1	-00.1	42 06.0	-29.7	S 09 10.4	+11.8	22

Table with columns for UT, Sun, Venus, Moon, and UT. Contains astronomical data for July 11, 2019, including GHA, ddGHA, Dec, and dDec for each celestial body.

UT 02 06 10 14 18 22 SD 15*7 15*7 15*7 15*7 15*7 15*7 HP 00*1 00*1 00*1 00*1 00*1 00*1 SHA 250* 250* 250* 249* 249* 249* Greenwich Culmination Time: 12:05

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Contains astronomical data for July 11, 2019, including GHA, ddGHA, Dec, and dDec for each celestial body.

UT 02 06 10 14 18 22 SD 00*0 00*0 00*0 00*0 00*0 00*0 HP 00*1 00*1 00*1 00*1 00*1 00*1 SHA 232* 231* 231* 231* 231* 231* Greenwich Culmination Time: 13:18

Table with columns for UT, Sun, Venus, Moon, and UT. Contains astronomical data for July 12, 2019, including GHA, ddGHA, Dec, and dDec for each celestial body.

UT 02 06 10 14 18 22 SD 15*7 15*7 15*7 15*7 15*7 15*7 HP 00*1 00*1 00*1 00*1 00*1 00*1 SHA 249* 249* 249* 248* 248* 248* Greenwich Culmination Time: 12:05

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Contains astronomical data for July 12, 2019, including GHA, ddGHA, Dec, and dDec for each celestial body.

UT 02 06 10 14 18 22 SD 00*0 00*0 00*0 00*0 00*0 00*0 HP 00*1 00*1 00*1 00*1 00*1 00*1 SHA 231* 231* 231* 230* 230* 230* Greenwich Culmination Time: 13:17

UT	Sun				Venus				Moon				UT	
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec		
00	178 28.3	-00.1	N 21 16.6	-00.4	186 42.4	-00.9	N 22 52.9	-00.3	357 09.8	-30.4	S 21 46.2	-02.9	00	
01	193 28.2	+00.0	N 21 16.2	-00.4	201 41.5	-00.8	N 22 52.6	-00.3	11 39.4	-30.4	S 21 43.3	-03.0	01	
02	208 28.2	-00.1	N 21 15.8	-00.4	216 40.7	-00.9	N 22 52.3	-00.3	26 09.0	-30.3	S 21 40.3	-03.1	02	
03	223 28.1	+00.0	N 21 15.4	-00.5	231 39.8	-00.8	N 22 52.0	-00.3	40 38.7	-30.3	S 21 37.2	-03.2	03	
04	238 28.1	-00.1	N 21 14.9	-00.4	246 39.0	-00.9	N 22 51.7	-00.3	55 08.4	-30.2	S 21 34.0	-03.3	04	
05	253 28.0	+00.0	N 21 14.5	-00.4	261 38.1	-00.9	N 22 51.4	-00.2	69 38.2	-30.2	S 21 30.7	-03.4	05	
06	268 28.0	-00.1	N 21 14.1	-00.4	276 37.2	-00.8	N 22 51.2	-00.3	84 08.0	-30.1	S 21 27.3	-03.5	06	
07	283 27.9	-00.1	N 21 13.7	-00.4	291 36.4	-00.9	N 22 50.9	-00.3	98 37.9	-30.1	S 21 23.8	-03.7	07	
08	298 27.8	+00.0	N 21 13.3	-00.5	306 35.5	-00.8	N 22 50.6	-00.3	113 07.8	-30.1	S 21 20.1	-03.7	08	
09	313 27.8	-00.1	N 21 12.8	-00.4	321 34.7	-00.9	N 22 50.3	-00.3	127 37.7	-30.0	S 21 16.4	-03.8	09	
10	328 27.7	+00.0	N 21 12.4	-00.4	336 33.8	-00.8	N 22 50.0	-00.3	142 07.7	-29.9	S 21 12.6	-03.9	10	
11	343 27.7	-00.1	N 21 12.0	-00.4	351 33.0	-00.9	N 22 49.7	-00.3	156 37.8	-29.9	S 21 08.7	-04.1	11	
12	358 27.6	+00.0	N 21 11.6	-00.5	6 32.1	-00.8	N 22 49.4	-00.3	171 07.9	-29.9	S 21 04.6	-04.1	12	
13	13 27.6	-00.1	N 21 11.1	-00.4	21 31.3	-00.9	N 22 49.1	-00.3	185 38.0	-29.8	S 21 00.5	-04.2	13	
14	28 27.5	+00.0	N 21 10.7	-00.4	36 30.4	-00.8	N 22 48.8	-00.3	200 08.2	-29.8	S 20 56.3	-04.3	14	
15	43 27.5	-00.1	N 21 10.3	-00.4	51 29.6	-00.9	N 22 48.5	-00.3	214 38.4	-29.7	S 20 52.0	-04.4	15	
16	58 27.4	+00.0	N 21 09.9	-00.5	66 28.7	-00.8	N 22 48.2	-00.3	229 08.7	-29.7	S 20 47.6	-04.6	16	
17	73 27.4	-00.1	N 21 09.4	-00.4	81 27.9	-00.9	N 22 47.9	-00.3	243 39.0	-29.6	S 20 43.0	-04.6	17	
18	88 27.3	+00.0	N 21 09.0	-00.4	96 27.0	-00.8	N 22 47.6	-00.3	258 09.4	-29.6	S 20 38.4	-04.7	18	
19	103 27.3	-00.1	N 21 08.6	-00.4	111 26.2	-00.9	N 22 47.3	-00.3	272 39.8	-29.5	S 20 33.7	-04.8	19	
20	118 27.2	+00.0	N 21 08.2	-00.5	126 25.3	-00.8	N 22 47.0	-00.3	287 10.3	-29.4	S 20 28.9	-04.9	20	
21	133 27.2	-00.1	N 21 07.7	-00.4	141 24.5	-00.9	N 22 46.7	-00.3	301 40.9	-29.5	S 20 24.0	-05.0	21	
22	148 27.1	+00.0	N 21 07.3	-00.4	156 23.6	-00.8	N 22 46.4	-00.3	316 11.4	-29.3	S 20 19.0	-05.1	22	
23	163 27.1	-00.1	N 21 06.9	-00.5	171 22.8	-00.9	N 22 46.1	-00.3	330 42.1	-29.4	S 20 13.9	-05.2	23	
UT 02 06 10 14 18 22	SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SHA 244° 244° 244° 243° 243° 243°	Greenwich Culmination Time: 12:06	UT 02 06 10 14 18 22	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SHA 252° 252° 252° 252° 251° 251° 251°	Greenwich Culmination Time: 11:33	UT 02 06 10 14 18 22	SD 15°0' 14°9' 14°9' 14°9' 14°9' 14°9'	HP 54°9' 54°8' 54°8' 54°7' 54°6' 54°6'	SHA 062° 059° 057° 055° 053° 051°	Greenwich Culmination Time: 00:11

UT	Sun				Venus				Moon				UT	
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec		
00	178 32.8	-00.1	N 21 45.0	-00.4	187 44.4	-00.9	N 23 10.0	-00.2	34 35.3	-31.2	S 20 14.9	+05.4	00	
01	193 32.7	+00.0	N 21 44.6	-00.4	202 43.5	-00.9	N 23 09.8	-00.2	49 04.1	-31.3	S 20 20.3	+05.2	01	
02	208 32.7	-00.1	N 21 44.2	-00.4	217 42.6	-00.8	N 23 09.6	-00.2	63 32.8	-31.3	S 20 25.5	+05.2	02	
03	223 32.6	-00.1	N 21 43.8	-00.3	232 41.8	-00.9	N 23 09.4	-00.2	78 01.5	-31.3	S 20 30.7	+05.0	03	
04	238 32.5	+00.0	N 21 43.5	-00.4	247 40.9	-00.9	N 23 09.2	-00.2	92 30.2	-31.3	S 20 35.7	+04.9	04	
05	253 32.5	-00.1	N 21 43.1	-00.4	262 40.0	-00.8	N 23 09.0	-00.2	106 58.9	-31.3	S 20 40.6	+04.8	05	
06	268 32.4	-00.1	N 21 42.7	-00.3	277 39.2	-00.9	N 23 08.8	-00.2	121 27.6	-31.4	S 20 45.4	+04.7	06	
07	283 32.3	-00.1	N 21 42.4	-00.4	292 38.3	-00.9	N 23 08.6	-00.2	135 56.2	-31.3	S 20 50.1	+04.6	07	
08	298 32.2	+00.0	N 21 42.0	-00.4	307 37.4	-00.8	N 23 08.4	-00.2	150 24.9	-31.4	S 20 54.7	+04.5	08	
09	313 32.2	-00.1	N 21 41.6	-00.4	322 36.6	-00.9	N 23 08.2	-00.2	164 53.5	-31.3	S 20 59.2	+04.3	09	
10	328 32.1	-00.1	N 21 41.2	-00.4	337 35.7	-00.9	N 23 08.0	-00.2	179 22.2	-31.4	S 21 03.5	+04.2	10	
11	343 32.0	+00.0	N 21 40.8	-00.3	352 34.8	-00.8	N 23 07.8	-00.3	193 50.8	-31.4	S 21 07.7	+04.2	11	
12	358 32.0	-00.1	N 21 40.5	-00.4	7 34.0	-00.9	N 23 07.5	-00.2	208 19.4	-31.4	S 21 11.9	+04.0	12	
13	13 31.9	-00.1	N 21 40.1	-00.4	22 33.1	-00.9	N 23 07.3	-00.2	222 48.0	-31.4	S 21 15.9	+03.9	13	
14	28 31.8	+00.0	N 21 39.7	-00.4	37 32.2	-00.8	N 23 07.1	-00.2	237 16.6	-31.4	S 21 19.8	+03.7	14	
15	43 31.8	-00.1	N 21 39.3	-00.4	52 31.4	-00.9	N 23 06.9	-00.2	251 45.2	-31.5	S 21 23.5	+03.7	15	
16	58 31.7	-00.1	N 21 38.9	-00.3	67 30.5	-00.9	N 23 06.7	-00.2	266 13.7	-31.4	S 21 27.2	+03.5	16	
17	73 31.6	+00.0	N 21 38.6	-00.4	82 29.6	-00.8	N 23 06.5	-00.2	280 42.3	-31.4	S 21 30.7	+03.5	17	
18	88 31.6	-00.1	N 21 38.2	-00.4	97 28.8	-00.9	N 23 06.3	-00.3	295 10.9	-31.5	S 21 34.2	+03.3	18	
19	103 31.5	-00.1	N 21 37.8	-00.4	112 27.9	-00.8	N 23 06.0	-00.2	309 39.4	-31.4	S 21 37.5	+03.2	19	
20	118 31.4	+00.0	N 21 37.4	-00.4	127 27.1	-00.9	N 23 05.8	-00.2	324 08.0	-31.5	S 21 40.7	+03.0	20	
21	133 31.4	-00.1	N 21 37.0	-00.4	142 26.2	-00.9	N 23 05.6	-00.2	338 36.5	-31.4	S 21 43.7	+03.0	21	
22	148 31.3	-00.1	N 21 36.6	-00.3	157 25.3	-00.8	N 23 05.4	-00.2	353 05.1	-31.4	S 21 46.7	+02.8	22	
23	163 31.2	+00.0	N 21 36.3	-00.2	172 24.5	-00.9	N 23 05.2	-00.3	7 33.7	-31.5	S 21 49.5	+02.8	23	
UT 02 06 10 14 18 22	SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SHA 247° 247° 247° 246° 246° 246°	Greenwich Culmination Time: 12:05	UT 02 06 10 14 18 22	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SHA 256° 256° 256° 255° 255° 255°	Greenwich Culmination Time: 11:29	UT 02 06 10 14 18 22	SD 15°3' 15°3' 15°3' 15°2' 15°2' 15°2'	HP 56°2' 56°1' 56°0' 56°0' 55°9' 55°8'	SHA 102° 100° 097° 095° 093° 091°	Greenwich Culmination Time: 22:28

UT	<i>Sun</i>				<i>Venus</i>				<i>Moon</i> <small>A: 45%</small>				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	178 31.2	-00.1	N 21 35.9	-00.4	187 23.6	-00.9	N 23 04.9	-00.2	22 02.2	-31.4	S 21 52.3	+02.6	00
01	193 31.1	-00.1	N 21 35.5	-00.4	202 22.7	-00.8	N 23 04.7	-00.2	36 30.8	-31.5	S 21 54.9	+02.5	01
02	208 31.0	+00.0	N 21 35.1	-00.4	217 21.9	-00.9	N 23 04.5	-00.2	50 59.3	-31.4	S 21 57.4	+02.3	02
03	223 31.0	-00.1	N 21 34.7	-00.4	232 21.0	-00.9	N 23 04.3	-00.3	65 27.9	-31.5	S 21 59.7	+02.3	03
04	238 30.9	-00.1	N 21 34.3	-00.4	247 20.1	-00.8	N 23 04.0	-00.2	79 56.4	-31.4	S 22 02.0	+02.1	04
05	253 30.8	+00.0	N 21 33.9	-00.4	262 19.3	-00.9	N 23 03.8	-00.2	94 25.0	-31.4	S 22 04.1	+02.0	05
06	268 30.8	-00.1	N 21 33.5	-00.3	277 18.4	-00.8	N 23 03.6	-00.2	108 53.6	-31.4	S 22 06.1	+01.9	06
07	283 30.7	+00.0	N 21 33.2	-00.4	292 17.6	-00.9	N 23 03.4	-00.3	123 22.2	-31.5	S 22 08.0	+01.8	07
08	298 30.7	-00.1	N 21 32.8	-00.4	307 16.7	-00.9	N 23 03.1	-00.2	137 50.7	-31.4	S 22 09.8	+01.7	08
09	313 30.6	-00.1	N 21 32.4	-00.4	322 15.8	-00.8	N 23 02.9	-00.2	152 19.3	-31.4	S 22 11.5	+01.5	09
10	328 30.5	+00.0	N 21 32.0	-00.4	337 15.0	-00.9	N 23 02.7	-00.3	166 47.9	-31.4	S 22 13.0	+01.5	10
11	343 30.5	-00.1	N 21 31.6	-00.4	352 14.1	-00.8	N 23 02.4	-00.2	181 16.5	-31.3	S 22 14.5	+01.3	11
12	358 30.4	-00.1	N 21 31.2	-00.4	7 13.3	-00.9	N 23 02.2	-00.3	195 45.2	-31.4	S 22 15.8	+01.2	12
13	13 30.3	+00.0	N 21 30.8	-00.4	22 12.4	-00.9	N 23 01.9	-00.2	210 13.8	-31.4	S 22 17.0	+01.1	13
14	28 30.3	-00.1	N 21 30.4	-00.4	37 11.5	-00.8	N 23 01.7	-00.2	224 42.4	-31.3	S 22 18.1	+00.9	14
15	43 30.2	-00.1	N 21 30.0	-00.4	52 10.7	-00.9	N 23 01.5	-00.3	239 11.1	-31.3	S 22 19.0	+00.9	15
16	58 30.1	+00.0	N 21 29.6	-00.4	67 09.8	-00.9	N 23 01.2	-00.2	253 39.8	-31.3	S 22 19.9	+00.7	16
17	73 30.1	-00.1	N 21 29.2	-00.4	82 08.9	-00.8	N 23 01.0	-00.3	268 08.5	-31.3	S 22 20.6	+00.6	17
18	88 30.0	+00.0	N 21 28.8	-00.4	97 08.1	-00.9	N 23 00.7	-00.2	282 37.2	-31.3	S 22 21.2	+00.5	18
19	103 30.0	-00.1	N 21 28.4	-00.4	112 07.2	-00.8	N 23 00.5	-00.3	297 05.9	-31.3	S 22 21.7	+00.4	19
20	118 29.9	-00.1	N 21 28.0	-00.4	127 06.4	-00.9	N 23 00.2	-00.2	311 34.6	-31.2	S 22 22.1	+00.2	20
21	133 29.8	+00.0	N 21 27.6	-00.4	142 05.5	-00.8	N 22 60.0	-00.3	326 03.4	-31.3	S 22 22.3	+00.2	21
22	148 29.8	-00.1	N 21 27.2	-00.4	157 04.7	-00.9	N 22 59.7	-00.2	340 32.1	-31.2	S 22 22.5	+00.0	22
23	163 29.7	+00.0	N 21 26.8	-00.4	172 03.8	-00.9	N 22 59.5	-00.3	355 00.9	-31.2	S 22 22.5	-00.1	23

UT 02 06 10 14 18 22	SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'	UT 02 06 10 14 18 22	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	UT 02 06 10 14 18 22	SD 15°2' 15°2' 15°1' 15°1' 15°1' 15°1'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 55°7' 55°6' 55°6' 55°5' 55°4' 55°3'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 55°7' 55°6' 55°6' 55°5' 55°4' 55°3'
SHA 246° 246° 246° 246° 245° 245°	SHA 255° 255° 254° 254° 254° 246°	SHA 255° 255° 254° 254° 254° 246°	SHA 088° 086° 084° 082° 079° 077°	SHA 245° 245° 245° 244° 244° 244°	SHA 245° 245° 245° 244° 244° 244°
Greenwich Culmination Time: 12:05	Greenwich Culmination Time: 11:31	Greenwich Culmination Time: 23:20	Greenwich Culmination Time: 12:06	Greenwich Culmination Time: 11:32	Greenwich Culmination Time: -1:00

UT	<i>Mars</i>				<i>Jupiter</i>				<i>Saturn</i>				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	161 32.1	+00.8	N 19 19.5	-00.4	38 04.7	+02.7	S 22 10.5	+00.0	4 21.3	+02.7	S 22 04.1	+00.1	00
01	176 32.9	+00.9	N 19 19.1	-00.4	53 07.4	+02.7	S 22 10.5	+00.0	19 24.0	+02.7	S 22 04.2	+00.0	01
02	191 33.8	+00.8	N 19 18.7	-00.4	68 10.1	+02.7	S 22 10.5	-00.1	34 26.7	+02.6	S 22 04.2	+00.0	02
03	206 34.6	+00.9	N 19 18.3	-00.4	83 12.8	+02.7	S 22 10.4	+00.0	49 29.3	+02.7	S 22 04.2	+00.0	03
04	221 35.5	+00.8	N 19 17.9	-00.4	98 15.5	+02.6	S 22 10.4	+00.0	64 32.0	+02.6	S 22 04.2	+00.1	04
05	236 36.3	+00.9	N 19 17.5	-00.5	113 18.1	+02.7	S 22 10.4	+00.0	79 34.6	+02.7	S 22 04.3	+00.0	05
06	251 37.2	+00.8	N 19 17.0	-00.4	128 20.8	+02.7	S 22 10.4	+00.0	94 37.3	+02.7	S 22 04.3	+00.0	06
07	266 38.0	+00.8	N 19 16.6	-00.4	143 23.5	+02.7	S 22 10.4	+00.0	109 40.0	+02.6	S 22 04.3	+00.0	07
08	281 38.8	+00.9	N 19 16.2	-00.4	158 26.2	+02.6	S 22 10.4	+00.0	124 42.6	+02.7	S 22 04.3	+00.1	08
09	296 39.7	+00.8	N 19 15.8	-00.4	173 28.8	+02.7	S 22 10.4	+00.0	139 45.3	+02.6	S 22 04.4	+00.0	09
10	311 40.5	+00.9	N 19 15.4	-00.4	188 31.5	+02.7	S 22 10.4	-00.1	154 47.9	+02.7	S 22 04.4	+00.0	10
11	326 41.4	+00.8	N 19 15.0	-00.5	203 34.2	+02.7	S 22 10.3	+00.0	169 50.6	+02.7	S 22 04.4	+00.0	11
12	341 42.2	+00.9	N 19 14.5	-00.4	218 36.9	+02.7	S 22 10.3	+00.0	184 53.3	+02.6	S 22 04.4	+00.1	12
13	356 43.1	+00.8	N 19 14.1	-00.4	233 39.6	+02.6	S 22 10.3	+00.0	199 55.9	+02.7	S 22 04.5	+00.0	13
14	11 43.9	+00.8	N 19 13.7	-00.4	248 42.2	+02.7	S 22 10.3	+00.0	214 58.6	+02.6	S 22 04.5	+00.0	14
15	26 44.7	+00.9	N 19 13.3	-00.4	263 44.9	+02.7	S 22 10.3	+00.0	230 01.2	+02.7	S 22 04.5	+00.1	15
16	41 45.6	+00.8	N 19 12.9	-00.5	278 47.6	+02.7	S 22 10.3	+00.0	245 03.9	+02.7	S 22 04.6	+00.0	16
17	56 46.4	+00.9	N 19 12.4	-00.4	293 50.3	+02.6	S 22 10.3	-00.1	260 06.6	+02.6	S 22 04.6	+00.0	17
18	71 47.3	+00.8	N 19 12.0	-00.4	308 52.9	+02.7	S 22 10.2	+00.0	275 09.2	+02.7	S 22 04.6	+00.0	18
19	86 48.1	+00.9	N 19 11.6	-00.4	323 55.6	+02.7	S 22 10.2	+00.0	290 11.9	+02.6	S 22 04.6	+00.1	19
20	101 49.0	+00.8	N 19 11.2	-00.4	338 58.3	+02.7	S 22 10.2	+00.0	305 14.5	+02.7	S 22 04.7	+00.0	20
21	116 49.8	+00.8	N 19 10.8	-00.5	354 01.0	+02.6	S 22 10.2	+00.0	320 17.2	+02.7	S 22 04.7	+00.0	21
22	131 50.6	+00.9	N 19 10.3	-00.4	9 03.6	+02.7	S 22 10.2	+00.0	335 19.9	+02.6	S 22 04.7	+00.0	22
23	146 51.5	+00.8	N 19 09.9	-00.4	24 06.3	+02.7	S 22 10.2	+00.0	350 22.5	+02.7	S 22 04.7	+00.1	23

UT 02 06 10 14 18 22	SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'	UT 02 06 10 14 18 22	SD 00°4' 00°4' 00°4' 00°4' 00°4' 00°4'	UT 02 06 10 14 18 22	SD 00°2' 00°2' 00°2' 00°2' 00°2' 00°2'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'	HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'	HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
SHA 229° 229° 229° 229° 228° 228°	SHA 106° 106° 106° 106° 106° 106°	SHA 106° 106° 106° 106° 106° 106°	SHA 072° 072° 072° 072° 072° 072°	SHA 228° 228° 228° 228° 228° 228°	SHA 106° 106° 106° 106° 106° 106°
Greenwich Culmination Time: 13:13	Greenwich Culmination Time: 21:23	Greenwich Culmination Time: 23:38	Greenwich Culmination Time: 13:11	Greenwich Culmination Time: 21:19	Greenwich Culmination Time: 23:34

UT	<i>Sun</i>				<i>Venus</i>				<i>Moon</i> <small>A: 48%</small>				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	178 29.7	-00.1	N 21 26.4	-00.4	187 02.9	-00.8	N 22 59.2	-00.2	9 29.7	-31.1	S 22 22.4	-00.2	00
01	193 29.6	-00.1	N 21 26.0	-00.4	202 02.1	-00.9	N 22 59.0	-00.3	23 58.6	-31.2	S 22 22.2	-00.3	01
02	208 29.5	+00.0	N 21 25.6	-00.4	217 01.2	-00.8	N 22 58.7	-00.2	38 27.4	-31.1	S 22 21.9	-00.5	02
03	223 29.5	-00.1	N 21 25.2	-00.4	232 00.4	-00.9	N 22 58.5	-00.3	52 56.3	-31.1	S 22 21.4	-00.5	03
04	238 29.4	+00.0	N 21 24.8	-00.4	246 59.5	-00.9	N 22 58.2	-00.2	67 25.2	-31.0	S 22 20.9	-00.7	04
05	253 29.4	-00.1	N 21 24.4	-00.4	261 58.6	-00.8	N 22 58.0	-00.3	81 54.2	-31.1	S 22 20.2	-00.8	05
06	268 29.3	-00.1	N 21 24.0	-00.4	276 57.8	-00.9	N 22 57.7	-00.2	96 23.1	-31.0	S 22 19.4	-00.9	06
07	283 29.2	+00.0	N 21 23.6	-00.4	291 56.9	-00.8	N 22 57.5	-00.3	110 52.1	-31.0	S 22 18.5	-01.0	07
08	298 29.2	-00.1	N 21 23.2	-00.4	306 56.1	-00.9	N 22 57.2	-00.3	125 21.1	-30.9	S 22 17.5	-01.1	08
09	313 29.1	+00.0	N 21 22.8	-00.4	321 55.2	-00.8	N 22 56.9	-00.2	139 50.2	-30.9	S 22 16.4	-01.2	09
10	328 29.1	-00.1	N 21 22.4	-00.4	336 54.4	-00.9	N 22 56.7	-00.3	154 19.2	-30.9	S 22 15.2	-01.4	10
11	343 29.0	+00.0	N 21 22.0	-00.4	351 53.5	-00.9	N 22 56.4	-00.3	168 48.3	-30.8	S 22 13.8	-01.5	11
12	358 29.0	-00.1	N 21 21.6	-00.4	6 52.6	-00.8	N 22 56.1	-00.2	183 17.5	-30.9	S 22 12.3	-01.5	12
13	13 28.9	-00.1	N 21 21.2	-00.5	21 51.8	-00.9	N 22 55.9	-00.3	197 46.6	-30.8	S 22 10.8	-01.7	13
14	28 28.8	+00.0	N 21 20.7	-00.4	36 50.9	-00.8	N 22 55.6	-00.3	212 15.8	-30.7	S 22 09.1	-01.8	14
15	43 28.8	-00.1	N 21 20.3	-00.4	51 50.1	-00.9	N 22 55.3	-00.2	226 45.1	-30.8	S 22 07.3	-01.9	15
16	58 28.7	+00.0	N 21 19.9	-00.4	66 49.2	-00.8	N 22 55.1	-00.3	241 14.3	-30.7	S 22 05.4	-02.0	16
17	73 28.7	-00.1	N 21 19.5	-00.4	81 48.4	-00.9	N 22 54.8	-00.3	255 43.6	-30.6	S 22 03.4	-02.2	17

UT	<i>Sun</i>				<i>Venus</i>				<i>Moon</i> A: 64%				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
00	178 24.1	-00.1	N 20 33.8	-00.5	185 21.4	-00.9	N 22 20.6	-00.4	312 16.5	-25.8	S 10 37.5	-10.0	00		
01	193 24.0	+00.0	N 20 33.3	-00.5	200 20.5	-00.8	N 22 20.2	-00.3	326 50.7	-25.8	S 10 27.5	-10.1	01		
02	208 24.0	+00.0	N 20 32.8	-00.5	215 19.7	-00.8	N 22 19.9	-00.4	341 24.9	-25.7	S 10 17.4	-10.1	02		
03	223 24.0	+00.0	N 20 32.3	-00.4	230 18.9	-00.8	N 22 19.5	-00.4	355 59.2	-25.7	S 10 07.3	-10.2	03		
04	238 24.0	-00.1	N 20 31.9	-00.5	245 18.1	-00.9	N 22 19.1	-00.4	10 33.5	-25.7	S 09 57.1	-10.2	04		
05	253 23.9	+00.0	N 20 31.4	-00.5	260 17.2	-00.8	N 22 18.7	-00.4	25 07.8	-25.7	S 09 46.9	-10.2	05		
06	268 23.9	+00.0	N 20 30.9	-00.5	275 16.4	-00.8	N 22 18.3	-00.4	39 42.1	-25.6	S 09 36.7	-10.3	06		
07	283 23.9	-00.1	N 20 30.4	-00.4	290 15.6	-00.9	N 22 17.9	-00.4	54 16.5	-25.6	S 09 26.4	-10.3	07		
08	298 23.8	+00.0	N 20 30.0	-00.5	305 14.7	-00.8	N 22 17.5	-00.4	68 50.9	-25.6	S 09 16.1	-10.3	08		
09	313 23.8	+00.0	N 20 29.5	-00.5	320 13.9	-00.8	N 22 17.1	-00.4	83 25.3	-25.5	S 09 05.8	-10.4	09		
10	328 23.8	-00.1	N 20 29.0	-00.5	335 13.1	-00.9	N 22 16.7	-00.4	97 59.8	-25.6	S 08 55.4	-10.4	10		
11	343 23.7	+00.0	N 20 28.5	-00.5	350 12.2	-00.8	N 22 16.3	-00.4	112 34.2	-25.5	S 08 45.0	-10.5	11		
12	358 23.7	+00.0	N 20 28.0	-00.5	5 11.4	-00.8	N 22 15.9	-00.4	127 08.7	-25.4	S 08 34.5	-10.5	12		
13	13 23.7	+00.0	N 20 27.5	-00.4	20 10.6	-00.8	N 22 15.5	-00.4	141 43.3	-25.5	S 08 24.0	-10.5	13		
14	28 23.7	-00.1	N 20 27.1	-00.5	35 09.8	-00.9	N 22 15.1	-00.5	156 17.8	-25.4	S 08 13.5	-10.6	14		
15	43 23.6	+00.0	N 20 26.6	-00.5	50 08.9	-00.8	N 22 14.6	-00.4	170 52.4	-25.4	S 08 02.9	-10.5	15		
16	58 23.6	+00.0	N 20 26.1	-00.5	65 08.1	-00.8	N 22 14.2	-00.4	185 27.0	-25.4	S 07 52.4	-10.7	16		
17	73 23.6	-00.1	N 20 25.6	-00.5	80 07.3	-00.8	N 22 13.8	-00.4	200 01.6	-25.3	S 07 41.7	-10.6	17		
18	88 23.5	+00.0	N 20 25.1	-00.5	95 06.5	-00.9	N 22 13.4	-00.4	214 36.3	-25.4	S 07 31.1	-10.7	18		
19	103 23.5	+00.0	N 20 24.6	-00.5	110 05.6	-00.8	N 22 13.0	-00.4	229 10.9	-25.3	S 07 20.4	-10.7	19		
20	118 23.5	+00.0	N 20 24.1	-00.4	125 04.8	-00.8	N 22 12.6	-00.4	243 45.6	-25.3	S 07 09.7	-10.7	20		
21	133 23.5	-00.1	N 20 23.7	-00.5	140 04.0	-00.9	N 22 12.2	-00.4	258 20.3	-25.2	S 06 59.0	-10.8	21		
22	148 23.4	+00.0	N 20 23.2	-00.5	155 03.1	-00.8	N 22 11.8	-00.5	272 55.1	-25.3	S 06 48.2	-10.8	22		
23	163 23.4	+00.0	N 20 22.7	-00.5	170 02.3	-00.8	N 22 11.3	-00.4	287 29.8	-25.2	S 06 37.4	-10.8	23		
UT 02 06 10 14 18 22	SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SD 14°7' 14°7' 14°7' 14°7' 14°7' 14°7'	SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SD 14°9' 14°8' 14°8' 14°8' 14°8' 14°8'							
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 54°1' 54°1' 54°1' 54°1' 54°1' 54°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 54°5' 54°5' 54°4' 54°4' 54°3' 54°3'								
SHA 240° 240° 240° 239° 239° 239°	SHA 247° 247° 246° 246° 246° 246°	SHA 247° 247° 246° 246° 246° 246°	SHA 013° 011° 009° 007° 005° 004°	SHA 243° 243° 243° 242° 242° 242°	SHA 251° 251° 250° 250° 250° 250°	SHA 251° 251° 250° 250° 250° 250°	SHA 049° 047° 044° 042° 040° 038°								
Greenwich Culmination Time: 12:06				Greenwich Culmination Time: 11:39				Greenwich Culmination Time: 03:16				Greenwich Culmination Time: 12:06			

UT	<i>Sun</i>				<i>Venus</i>				<i>Moon</i> A: 55%				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
00	178 27.0	+00.0	N 21 06.4	-00.4	186 21.9	-00.8	N 22 45.8	-00.3	345 12.7	-29.2	S 20 08.7	-05.2	00		
01	193 27.0	-00.1	N 21 06.0	-00.4	201 21.1	-00.9	N 22 45.5	-00.3	359 43.5	-29.2	S 20 03.5	-05.4	01		
02	208 26.9	+00.0	N 21 05.6	-00.5	216 20.2	-00.8	N 22 45.2	-00.3	14 14.3	-29.2	S 19 58.1	-05.5	02		
03	223 26.9	-00.1	N 21 05.1	-00.4	231 19.4	-00.9	N 22 44.9	-00.3	28 45.1	-29.1	S 19 52.6	-05.5	03		
04	238 26.8	+00.0	N 21 04.7	-00.4	246 18.5	-00.8	N 22 44.6	-00.3	43 16.0	-29.1	S 19 47.1	-05.7	04		
05	253 26.8	-00.1	N 21 04.3	-00.5	261 17.7	-00.9	N 22 44.3	-00.4	57 46.9	-29.0	S 19 41.4	-05.7	05		
06	268 26.7	+00.0	N 21 03.8	-00.4	276 16.8	-00.8	N 22 43.9	-00.4	72 17.9	-29.0	S 19 35.7	-05.8	06		
07	283 26.7	-00.1	N 21 03.4	-00.4	291 16.0	-00.9	N 22 43.6	-00.3	86 49.0	-28.9	S 19 29.9	-05.9	07		
08	298 26.6	+00.0	N 21 03.0	-00.5	306 15.1	-00.8	N 22 43.3	-00.3	101 20.1	-28.9	S 19 24.0	-06.0	08		
09	313 26.6	-00.1	N 21 02.5	-00.4	321 14.3	-00.9	N 22 43.0	-00.3	115 51.2	-28.8	S 19 18.0	-06.1	09		
10	328 26.5	+00.0	N 21 02.1	-00.5	336 13.4	-00.8	N 22 42.7	-00.3	130 22.4	-28.7	S 19 11.9	-06.1	10		
11	343 26.5	+00.0	N 21 01.6	-00.4	351 12.6	-00.9	N 22 42.4	-00.4	144 53.7	-28.7	S 19 05.8	-06.3	11		
12	358 26.5	-00.1	N 21 01.2	-00.4	6 11.7	-00.8	N 22 42.0	-00.3	159 25.0	-28.6	S 18 59.5	-06.3	12		
13	13 26.4	+00.0	N 21 00.8	-00.5	21 10.9	-00.9	N 22 41.7	-00.3	173 56.4	-28.6	S 18 53.2	-06.4	13		
14	28 26.4	-00.1	N 21 00.3	-00.4	36 10.0	-00.8	N 22 41.4	-00.3	188 27.8	-28.5	S 18 46.8	-06.5	14		
15	43 26.3	+00.0	N 20 59.9	-00.5	51 09.2	-00.8	N 22 41.1	-00.4	202 59.3	-28.5	S 18 40.3	-06.6	15		
16	58 26.3	-00.1	N 20 59.4	-00.4	66 08.4	-00.9	N 22 40.7	-00.3	217 30.8	-28.4	S 18 33.7	-06.6	16		
17	73 26.2	+00.0	N 20 59.0	-00.4	81 07.5	-00.8	N 22 40.4	-00.3	232 02.4	-28.4	S 18 27.1	-06.8	17		
18	88 26.2	-00.1	N 20 58.6	-00.5	96 06.7	-00.9	N 22 40.1	-00.4	246 34.0	-28.3	S 18 20.3	-06.8	18		
19	103 26.1	+00.0	N 20 58.1	-00.4	111 05.8	-00.8	N 22 39.7	-00.3	261 05.7	-28.2	S 18 13.5	-06.9	19		
20	118 26.1	-00.1	N 20 57.7	-00.5	126 05.0	-00.9	N 22 39.4	-00.3	275 37.5	-28.2	S 18 06.6	-06.9	20		
21	133 26.0	+00.0	N 20 57.2	-00.4	141 04.1	-00.8	N 22 39.1	-00.3	290 09.3	-28.2	S 17 59.7	-07.1	21		
22	148 26.0	+00.0	N 20 56.8	-00.5	156 03.3	-00.9	N 22 38.8	-00.4	304 41.1	-28.1	S 17 52.6	-07.1	22		
23	163 26.0	-00.1	N 20 56.3	-00.4	171 02.4	-00.8	N 22 38.4	-00.3	319 13.0	-28.0	S 17 45.5	-07.2	23		
UT 02 06 10 14 18 22	SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SD 14°9' 14°8' 14°8' 14°8' 14°8' 14°8'	SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SD 14°9' 14°8' 14°8' 14°8' 14°8' 14°8'							
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 54°1' 54°1' 54°1' 54°1' 54°1' 54°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 54°5' 54°5' 54°4' 54°4' 54°3' 54°3'								
SHA 243° 243° 243° 242° 242° 242°	SHA 251° 251° 250° 250° 250° 250°	SHA 251° 251° 250° 250° 250° 250°	SHA 013° 011° 009° 007° 005° 004°	SHA 243° 243° 243° 242° 242° 242°	SHA 251° 251° 250° 250° 250° 250°	SHA 251° 251° 250° 250° 250° 250°	SHA 049° 047° 044° 042° 040° 038°								
Greenwich Culmination Time: 12:06				Greenwich Culmination Time: 11:35				Greenwich Culmination Time: 01:01				Greenwich Culmination Time: 12:06			

UT	<i>Mars</i>				<i>Jupiter</i>				<i>Saturn</i>				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	163 34.7	+00.9	N 18 17.3	-00.4	44 27.8	+02.6	S 22 08.8	+00.0	10 44.0	+02.7	S 22 07.9	+00.0	00
01	178 35.6	+00.9	N 18 16.9	-00.5	59 30.4	+02.6	S 22 08.8	+00.0	25 46.7	+02.6	S 22 07.9	+00.0	01
02	193 36.5	+00.8	N 18 16.4	-00.4	74 33.0	+02.7	S 22 08.8	+00.0	40 49.3	+02.7	S 22 07.9	+00.1	02
03	208 37.3	+00.9	N 18 16.0	-00.5	89 35.7	+02.6	S 22 08.8	+00.0	55 52.0	+02.6	S 22 08.0	+00.0	03
04	223 38.2	+00.9	N 18 15.5	-00.4	104 38.3	+02.6	S 22 08.8	-00.1	70 54.6	+02.7	S 22 08.0	+00.0	04
05	238 39.1	+00.8	N 18 15.1	-00.5	119 40.9	+02.7	S 22 08.7	+00.0	85 57.3	+02.6	S 22 08.0	+00.0	05
06	253 39.9	+00.9	N 18 14.6	-00.4	134 43.6	+02.6	S 22 08.7	+00.0	100 59.9	+02.6	S 22 08.0	+00.1	06
07	268 40.8	+00.8	N 18 14.2	-00.5	149 46.2	+02.7	S 22 08.7	+00.0	116 02.6	+02.7	S 22 08.1	+00.0	07
08	283 41.6	+00.9	N 18 13.7	-00.4	164 48.9	+02.6	S 22 08.7	+00.0	131 05.3	+02.6	S 22 08.1	+00.0	08
09	298 42.5	+00.9	N 18 13.3	-00.5	179 51.5	+02.6	S 22 08.7	+00.0	146 07.9	+02.7	S 22 08.1	+00.0	09
10	313 43.4	+00.8	N 18 12.8	-00.4	194 54.1	+02.7	S 22 08.7	+00.0	161 10.6	+02.6	S 22 08.1	+00.1	10
11	328 44.2	+00.9	N 18 12.4	-00.5	209 56.8	+02.6	S 22 08.7	+00.0	176 13.2	+02.7	S 22 08.2	+00.0	11
12	343 45.1	+00.9	N 18 11.9	-00.4	224 59.4	+02.6	S 22 08.7	+00.0	191 15.9	+02.6	S 22 08.2	+00.0	12
13	358 46.0	+00.8	N 18 11.5	-00.5	240 02.0	+02.7	S 22 08.7	+00.0	206 18.5	+02.7	S 22 08.2	+00.0	13
14	13 4												

Table with columns for UT, Sun, Venus, Moon, and UT. Includes sub-headers for GHA, ddGHA, Dec, dDec and a table of coordinates for each planet. Includes a table for UT 02-22 with sub-headers 06, 10, 14, 18, 22 and data for SD, HP, and SHA. Includes Greenwich Culmination Time: 12:06 for Sun, 11:36 for Venus, and 01:48 for Moon.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes sub-headers for GHA, ddGHA, Dec, dDec and a table of coordinates for each planet. Includes a table for UT 02-22 with sub-headers 06, 10, 14, 18, 22 and data for SD, HP, and SHA. Includes Greenwich Culmination Time: 12:06 for Sun, 11:37 for Venus, and 02:33 for Moon.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes sub-headers for GHA, ddGHA, Dec, dDec and a table of coordinates for each planet. Includes a table for UT 02-22 with sub-headers 06, 10, 14, 18, 22 and data for SD, HP, and SHA. Includes Greenwich Culmination Time: 13:07 for Mars, 21:06 for Jupiter, and 23:21 for Saturn.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes sub-headers for GHA, ddGHA, Dec, dDec and a table of coordinates for each planet. Includes a table for UT 02-22 with sub-headers 06, 10, 14, 18, 22 and data for SD, HP, and SHA. Includes Greenwich Culmination Time: 13:06 for Mars, 21:02 for Jupiter, and 23:17 for Saturn.

Table with columns for UT, Sun, Venus, Moon, and UT. Each planet section includes GHA, ddGHA, Dec, and dDec values for each UT hour from 00 to 23.

UT 02 06 10 14 18 22
SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 236° 236° 236° 235° 235° 235°
Greenwich Culmination Time: 12:06

Table with columns for UT, Sun, Venus, Moon, and UT. Each planet section includes GHA, ddGHA, Dec, and dDec values for each UT hour from 00 to 23.

UT 02 06 10 14 18 22
SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 239° 239° 239° 238° 238° 238°
Greenwich Culmination Time: 12:06

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Each planet section includes GHA, ddGHA, Dec, and dDec values for each UT hour from 00 to 23.

UT 02 06 10 14 18 22
SD 00°4' 00°4' 00°4' 00°4' 00°4' 00°4'
HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
SHA 123° 222° 222° 222° 222° 222°
Greenwich Culmination Time: 12:59

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Each planet section includes GHA, ddGHA, Dec, and dDec values for each UT hour from 00 to 23.

UT 02 06 10 14 18 22
SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 224° 224° 224° 224° 224° 224°
Greenwich Culmination Time: 13:03

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for Sun, Venus, and Moon.

UT 02 06 10 14 18 22
SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 238° 238° 238° 237° 237° 237°
Greenwich Culmination Time: 12:06

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for Sun, Venus, and Moon.

UT 02 06 10 14 18 22
SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 237° 237° 237° 236° 236° 236°
Greenwich Culmination Time: 12:06

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for Mars, Jupiter, and Saturn.

UT 02 06 10 14 18 22
SD 00°4' 00°4' 00°4' 00°4' 00°4' 00°4'
HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
SHA 106° 106° 106° 106° 106° 106°
Greenwich Culmination Time: 20:50

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for Mars, Jupiter, and Saturn.

UT 02 06 10 14 18 22
SD 00°4' 00°4' 00°4' 00°4' 00°4' 00°4'
HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
SHA 106° 106° 106° 106° 106° 106°
Greenwich Culmination Time: 20:45

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 15°8' 15°8' 15°8' 15°8' 15°8' 15°8'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 232° 232° 232° 231° 231° 231°
Greenwich Culmination Time: 12:06

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 15°7' 15°7' 15°7' 15°7' 15°7' 15°7'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 235° 235° 235° 234° 234° 234°
Greenwich Culmination Time: 12:06

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 00°4' 00°4' 00°4' 00°4' 00°4' 00°4'
HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
SHA 106° 106° 106° 106° 106° 106°
Greenwich Culmination Time: 20:25

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 00°4' 00°4' 00°4' 00°4' 00°4' 00°4'
HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
SHA 106° 106° 106° 106° 106° 106°
Greenwich Culmination Time: 20:37

Table with columns: UT, Sun, Venus, Moon (A: 82%), UT. Rows for dates 00-23 and sub-rows for UT 02, 06, 10, 14, 18, 22. Includes data for GHA, ddGHA, Dec, dDec and Greenwich Culmination Time.

Table with columns: UT, Sun, Venus, Moon (A: 85%), UT. Rows for dates 00-23 and sub-rows for UT 02, 06, 10, 14, 18, 22. Includes data for GHA, ddGHA, Dec, dDec and Greenwich Culmination Time.

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	178	25.0	+00.0	N 17 53.2	-00.6	181	36.1	-00.8	N 19 42.7	-00.7	165	18.6	-35.7	N 17 04.7	-09.6	00				
01	193	25.0	+00.1	N 17 52.6	-00.7	196	35.3	-00.7	N 19 42.0	-00.7	179	42.9	-35.6	N 16 55.1	-09.7	01				
02	208	25.1	+00.0	N 17 51.9	-00.6	211	34.6	-00.7	N 19 41.3	-00.7	194	07.3	-35.5	N 16 45.4	-09.9	02				
03	223	25.1	+00.1	N 17 51.3	-00.6	226	33.9	-00.7	N 19 40.6	-00.7	208	31.8	-35.5	N 16 35.5	-10.0	03				
04	238	25.2	+00.0	N 17 50.7	-00.7	241	33.2	-00.8	N 19 39.9	-00.7	222	56.3	-35.4	N 16 25.5	-10.1	04				
05	253	25.2	+00.1	N 17 50.0	-00.6	256	32.4	-00.7	N 19 39.2	-00.7	237	20.9	-35.3	N 16 15.4	-10.2	05				
06	268	25.3	+00.0	N 17 49.4	-00.7	271	31.7	-00.7	N 19 38.5	-00.7	251	45.6	-35.3	N 16 05.2	-10.3	06				
07	283	25.3	+00.0	N 17 48.7	-00.6	286	31.0	-00.7	N 19 37.8	-00.7	266	10.3	-35.2	N 15 54.9	-10.4	07				
08	298	25.3	+00.1	N 17 48.1	-00.6	301	30.3	-00.7	N 19 37.1	-00.7	280	35.1	-35.1	N 15 44.5	-10.5	08				
09	313	25.4	+00.0	N 17 47.5	-00.7	316	29.6	-00.8	N 19 36.4	-00.7	294	60.0	-35.1	N 15 34.0	-10.7	09				
10	328	25.4	+00.1	N 17 46.8	-00.6	331	28.8	-00.7	N 19 35.7	-00.8	309	24.9	-35.0	N 15 23.3	-10.7	10				
11	343	25.5	+00.0	N 17 46.2	-00.7	346	28.1	-00.7	N 19 34.9	-00.7	323	49.9	-34.9	N 15 12.6	-10.8	11				
12	358	25.5	+00.1	N 17 45.5	-00.6	1	27.4	-00.7	N 19 34.2	-00.7	338	15.0	-34.9	N 15 01.8	-11.0	12				
13	12	25.6	+00.0	N 17 44.9	-00.6	16	26.7	-00.7	N 19 33.5	-00.7	352	40.1	-34.8	N 14 50.8	-11.0	13				
14	28	25.6	+00.0	N 17 44.3	-00.7	31	26.0	-00.8	N 19 32.8	-00.7	7	05.3	-34.7	N 14 39.8	-11.1	14				
15	43	25.6	+00.1	N 17 43.6	-00.6	46	25.2	-00.7	N 19 32.1	-00.7	21	30.6	-34.7	N 14 28.7	-11.3	15				
16	58	25.7	+00.0	N 17 43.0	-00.7	61	24.5	-00.7	N 19 31.4	-00.7	35	55.9	-34.6	N 14 17.4	-11.3	16				
17	73	25.7	+00.1	N 17 42.3	-00.6	76	23.8	-00.7	N 19 30.7	-00.7	50	21.3	-34.5	N 14 06.1	-11.4	17				
18	88	25.8	+00.0	N 17 41.7	-00.7	91	23.1	-00.7	N 19 30.0	-00.8	64	46.8	-34.5	N 13 54.7	-11.5	18				
19	103	25.8	+00.1	N 17 41.0	-00.6	106	22.4	-00.7	N 19 29.2	-00.7	79	12.3	-34.3	N 13 43.2	-11.6	19				
20	118	25.9	+00.0	N 17 40.4	-00.6	121	21.7	-00.8	N 19 28.5	-00.7	93	38.0	-34.4	N 13 31.6	-11.7	20				
21	133	25.9	+00.1	N 17 39.8	-00.7	136	20.9	-00.7	N 19 27.8	-00.7	108	03.6	-34.2	N 13 19.9	-11.8	21				
22	148	26.0	+00.0	N 17 39.1	-00.6	151	20.2	-00.7	N 19 27.1	-00.7	122	29.4	-34.2	N 13 08.1	-11.8	22				
23	163	26.0	+00.1	N 17 38.5	-00.7	166	19.5	-00.7	N 19 26.4	-00.7	136	55.2	-34.1	N 12 56.3	-12.0	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	15°8	15°8	15°8	15°8	15°8	15°8	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	16°6	16°6	16°6	16°6	16°6	16°6
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	61°0	61°0	61°0	61°0	61°0	61°0
SHA	228°	228°	228°	228°	227°	227°	SHA	231°	231°	231°	231°	230°	230°	SHA	214°	214°	209°	206°	204°	204°
Greenwich Culmination Time: 12:06			Greenwich Culmination Time: 11:54			Greenwich Culmination Time: 13:30						Greenwich Culmination Time: 12:06			Greenwich Culmination Time: 11:50			Greenwich Culmination Time: 10:27		

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	178	22.8	+00.0	N 18 37.6	-00.6	182	29.4	-00.8	N 20 30.4	-00.7	209	22.4	-36.2	N 22 17.7	+01.2	00				
01	193	22.8	+00.0	N 18 37.0	-00.6	197	28.6	-00.7	N 20 29.7	-00.6	223	46.2	-36.3	N 22 18.9	+01.1	01				
02	208	22.8	+00.1	N 18 36.4	-00.6	212	27.9	-00.8	N 20 29.1	-00.6	238	09.9	-36.4	N 22 20.0	+00.8	02				
03	223	22.9	+00.0	N 18 35.8	-00.6	227	27.1	-00.7	N 20 28.5	-00.6	252	33.5	-36.4	N 22 20.8	+00.8	03				
04	238	22.9	+00.0	N 18 35.2	-00.6	242	26.4	-00.8	N 20 27.9	-00.7	266	57.1	-36.5	N 22 21.6	+00.5	04				
05	253	22.9	+00.0	N 18 34.6	-00.6	257	25.6	-00.7	N 20 27.2	-00.6	281	20.6	-36.5	N 22 22.1	+00.5	05				
06	268	22.9	+00.1	N 18 34.0	-00.6	272	24.9	-00.8	N 20 26.6	-00.6	295	44.1	-36.6	N 22 22.6	+00.2	06				
07	283	23.0	+00.0	N 18 33.4	-00.6	287	24.1	-00.7	N 20 26.0	-00.7	310	07.5	-36.6	N 22 22.8	+00.1	07				
08	298	23.0	+00.0	N 18 32.8	-00.6	302	23.4	-00.8	N 20 25.3	-00.6	324	30.9	-36.7	N 22 22.9	+00.0	08				
09	313	23.0	+00.0	N 18 32.2	-00.6	317	22.6	-00.7	N 20 24.7	-00.6	338	54.2	-36.7	N 22 22.9	-00.2	09				
10	328	23.0	+00.0	N 18 31.6	-00.6	332	21.9	-00.8	N 20 24.1	-00.7	353	17.5	-36.8	N 22 22.7	-00.4	10				
11	343	23.0	+00.1	N 18 31.0	-00.6	347	21.1	-00.8	N 20 23.4	-00.6	7	40.7	-36.7	N 22 22.3	-00.5	11				
12	358	23.1	+00.0	N 18 30.4	-00.6	2	20.3	-00.7	N 20 22.8	-00.7	22	04.0	-36.9	N 22 21.8	-00.7	12				
13	12	23.1	+00.0	N 18 29.8	-00.6	17	19.6	-00.8	N 20 22.1	-00.6	36	27.1	-36.8	N 22 21.1	-00.9	13				
14	28	23.1	+00.0	N 18 29.2	-00.6	32	18.8	-00.7	N 20 21.5	-00.6	50	50.3	-36.9	N 22 20.2	-01.0	14				
15	43	23.1	+00.1	N 18 28.6	-00.6	47	18.1	-00.8	N 20 20.9	-00.7	65	13.4	-36.9	N 22 19.2	-01.1	15				
16	58	23.2	+00.0	N 18 28.0	-00.6	62	17.3	-00.7	N 20 20.2	-00.6	79	36.5	-37.0	N 22 18.1	-01.4	16				
17	73	23.2	+00.0	N 18 27.4	-00.6	77	16.6	-00.7	N 20 19.6	-00.7	93	59.5	-37.0	N 22 16.7	-01.4	17				
18	88	23.2	+00.1	N 18 26.8	-00.7	92	15.9	-00.8	N 20 18.9	-00.6	108	22.5	-37.0	N 22 15.3	-01.7	18				
19	103	23.3	+00.0	N 18 26.1	-00.6	107	15.1	-00.7	N 20 18.3	-00.7	122	45.5	-37.0	N 22 13.6	-01.8	19				
20	118	23.3	+00.0	N 18 25.5	-00.6	122	14.4	-00.8	N 20 17.6	-00.6	137	08.5	-37.1	N 22 11.8	-02.0	20				
21	133	23.3	+00.0	N 18 24.9	-00.6	137	13.6	-00.7	N 20 17.0	-00.6	151	31.4	-37.0	N 22 09.8	-02.1	21				
22	148	23.3	+00.1	N 18 24.3	-00.6	152	12.9	-00.8	N 20 16.4	-00.7	165	54.4	-37.1	N 22 07.7	-02.3	22				
23	163	23.4	+00.0	N 18 23.7	-00.6	167	12.1	-00.7	N 20 15.7	-00.6	180	17.3	-37.1	N 22 05.4	-02.4	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	15°8	15°8	15°8	15°8	15°8	15°8	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	16°2	16°3	16°3	16°3	16°4	16°4
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	59°5	59°7	59°8	59°9	60°0	60°2
SHA	235°	235°	235°	234°	234°	234°	SHA	235°	235°	235°	234°	234°	234°	SHA	261°	258°	256°	253°	250°	248°
Greenwich Culmination Time: 12:06			Greenwich Culmination Time: 11:50			Greenwich Culmination Time: 10:27						Greenwich Culmination Time: 12:06			Greenwich Culmination Time: 11:50			Greenwich Culmination Time: 10:27		

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	167	48.4	+00.9	N 16 00.0	-00.5	56	54.3	+02.6	S 22 07.3	+00.0	23	26.1	+02.6	S 22 14.8	+00.0	00
01	182	49.3	+00.9	N 15 59.5	-00.5	71	56.9	+02.5	S 22 07.3	+00.0	38	28.7	+02.7	S 22 14.8	+00.1	01
02	197	50.2	+00.9	N 15 59.0	-00.5	86	59.4	+02.6	S 22 07.3	+00.0	53	31.4	+02.6	S 22 14.9	+00.0	02
03	212	51.1	+00.9	N 15 58.5	-00.5	102	02.0	+02.5	S 22 07.3	+00.0	68	34.0	+02.6	S 22 14.9	+00.0	03
04	227	52.0	+00.9	N 15 58.0	-00.5	117	04.5	+02.6	S 22 07.3	+00.0	83	36.6	+02.7	S 22 14.9	+00.0	04
05	242	52.9	+00.9	N 15 57.5	-00.5	132	07.1	+02.5	S 22 07.3	+00.0	98	39.3	+02.6	S 22 14.9	+00.0	05
06	257	53.8	+00.9	N 15 57.0	-00.5	147	09.6	+02.6	S 22 07.3	+00.0	113	41.9	+02.6	S 22 15.0	+00.1	06
07	272	54.7	+00.9	N 15 56.5	-00.5	162	12.2	+02.5	S 22 07.3	+00.0	128	44.6	+02.6	S 22 15.0	+00.0	07
08	287	55.6	+00.9	N 15 56.0	-00.5	177	14.7	+02.5	S 22 07.3	+00.0	143	47.2	+02.6	S 22 15.0	+00.0	08
09	302	56.5	+00.9	N 15 55.5	-00.5	192	17.2	+02.6	S 22 07.3	+00.0	158	49.8	+02.7	S 22 15.0	+00.0	09
10	317	57.4	+00.9	N 15 55.0	-00.5	207	19.8	+02.5	S 22 07.3	+00.0	173	52.5	+02.6	S 22 15.0	+00.1	10
11	332	58.3	+00.9	N 15 54.5	-00.5	222	22.3	+02.6	S 22 07.3	+00.0	188	55.1	+02.6	S 22 15.1	+00.0	11
12	347	59.2	+00.9	N 15 54.0	-00.6	237	24.9	+02.5	S 22 07.3	+00.0	203	57.7	+02.7	S 22 15.1	+00.0	12
13	3	00.1	+00.9	N 15 53.4	-00.5	25										

Table with columns for UT, Sun, Venus, Moon, and UT. Includes astronomical data for July 31, 2019, such as GHA, ddGHA, Dec, dDec, and A: 97%.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes astronomical data for August 1, 2019, such as GHA, ddGHA, Dec, dDec, and A: 01%.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes astronomical data for July 31, 2019, such as GHA, ddGHA, Dec, dDec, and Greenwich Culmination Time.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes astronomical data for August 1, 2019, such as GHA, ddGHA, Dec, dDec, and Greenwich Culmination Time.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

UT	Sun				Venus				Moon				UT										
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec											
00	178 30.1	+00.1	N 16 49.9	-00.6	180 28.6	-00.7	N 18 31.3	-00.8	113 00.4	-30.4	S 03 17.8	+13.4	00										
01	193 30.2	+00.0	N 16 49.3	-00.7	195 27.9	-00.7	N 18 30.5	-00.8	127 30.0	-30.4	S 03 31.2	+13.3	01										
02	208 30.2	+00.1	N 16 48.6	-00.7	210 27.2	-00.7	N 18 29.7	-00.8	141 59.6	-30.4	S 03 44.5	+13.3	02										
03	223 30.3	+00.1	N 16 47.9	-00.7	225 26.5	-00.7	N 18 28.9	-00.8	156 29.2	-30.4	S 03 57.8	+13.3	03										
04	238 30.4	+00.0	N 16 47.2	-00.7	240 25.8	-00.6	N 18 28.1	-00.8	170 58.8	-30.4	S 04 11.1	+13.2	04										
05	253 30.4	+00.1	N 16 46.5	-00.7	255 25.2	-00.7	N 18 27.3	-00.8	185 28.4	-30.3	S 04 24.3	+13.2	05										
06	268 30.5	+00.1	N 16 45.8	-00.6	270 24.5	-00.7	N 18 26.5	-00.8	199 58.1	-30.4	S 04 37.5	+13.2	06										
07	283 30.6	+00.0	N 16 45.2	-00.7	285 23.8	-00.7	N 18 25.7	-00.8	214 27.7	-30.3	S 04 50.7	+13.1	07										
08	298 30.6	+00.1	N 16 44.5	-00.7	300 23.1	-00.6	N 18 24.9	-00.8	228 57.4	-30.3	S 05 03.8	+13.1	08										
09	313 30.7	+00.1	N 16 43.8	-00.7	315 22.5	-00.7	N 18 24.1	-00.8	243 27.1	-30.3	S 05 16.9	+13.0	09										
10	328 30.8	+00.0	N 16 43.1	-00.7	330 21.8	-00.7	N 18 23.3	-00.8	257 56.8	-30.2	S 05 29.9	+13.0	10										
11	343 30.8	+00.1	N 16 42.4	-00.7	345 21.1	-00.7	N 18 22.5	-00.8	272 26.6	-30.3	S 05 42.9	+12.9	11										
12	358 30.9	+00.1	N 16 41.7	-00.7	0 20.4	-00.6	N 18 21.7	-00.8	286 56.3	-30.2	S 05 55.8	+12.9	12										
13	13 31.0	+00.1	N 16 41.0	-00.6	15 19.8	-00.7	N 18 20.9	-00.8	301 26.1	-30.3	S 06 08.7	+12.9	13										
14	28 31.1	+00.0	N 16 40.4	-00.7	30 19.1	-00.7	N 18 20.1	-00.8	315 55.8	-30.2	S 06 21.6	+12.7	14										
15	43 31.1	+00.1	N 16 39.7	-00.7	45 18.4	-00.7	N 18 19.3	-00.8	330 25.6	-30.2	S 06 34.3	+12.8	15										
16	58 31.2	+00.1	N 16 39.0	-00.7	60 17.7	-00.6	N 18 18.5	-00.8	344 55.4	-30.2	S 06 47.1	+12.7	16										
17	73 31.3	+00.0	N 16 38.3	-00.7	75 17.1	-00.7	N 18 17.7	-00.8	359 25.2	-30.2	S 06 59.8	+12.6	17										
18	88 31.3	+00.1	N 16 37.6	-00.7	90 16.4	-00.7	N 18 16.9	-00.8	13 55.0	-30.2	S 07 12.4	+12.6	18										
19	103 31.4	+00.1	N 16 36.9	-00.7	105 15.7	-00.7	N 18 16.1	-00.8	28 24.8	-30.2	S 07 25.0	+12.6	19										
20	118 31.5	+00.0	N 16 36.2	-00.7	120 15.0	-00.6	N 18 15.3	-00.8	42 54.6	-30.2	S 07 37.6	+12.4	20										
21	133 31.5	+00.1	N 16 35.5	-00.7	135 14.4	-00.7	N 18 14.5	-00.8	57 24.4	-30.2	S 07 50.0	+12.5	21										
22	148 31.6	+00.1	N 16 34.8	-00.7	150 13.7	-00.7	N 18 13.7	-00.8	71 54.2	-30.1	S 08 02.5	+12.3	22										
23	163 31.7	+00.1	N 16 34.1	-00.7	165 13.0	-00.6	N 18 12.9	-00.8	86 24.1	-30.2	S 08 14.8	+12.3	23										
UT	02 06 10 14 18 22	UT	02 06 10 14 18 22	UT	02 06 10 14 18 22	UT	02 06 10 14 18 22	SD	15°8' 15°8' 15°8' 15°8' 15°8' 15°8'	SD	00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SD	16°1' 16°1' 16°1' 16°0' 16°0' 16°0'	SD	15°8' 15°8' 15°8' 15°8' 15°8' 15°8'								
HP	00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP	00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP	00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP	59°3' 59°1' 59°0' 58°9' 58°7' 58°6'	HP	00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP	60°9' 60°8' 60°8' 60°7' 60°7' 60°6'												
SHA	224° 224° 224° 224° 224° 224°	SHA	226° 226° 226° 226° 225° 225°	SHA	158° 155° 153° 151° 149° 147°	SHA	227° 227° 227° 227° 226° 226°	SHA	230° 230° 229° 229° 229° 229°	SHA	199° 196° 194° 192° 189° 187°												
Greenwich Culmination Time: 12:05				Greenwich Culmination Time: 11:58				Greenwich Culmination Time: 17:02				Greenwich Culmination Time: 12:06				Greenwich Culmination Time: 11:55				Greenwich Culmination Time: 14:26			

UT	Sun				Venus				Moon				UT										
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec											
00	178 26.1	+00.0	N 17 37.8	-00.6	181 18.8	-00.7	N 19 25.7	-00.8	151 21.1	-34.0	N 12 44.3	-12.0	00										
01	193 26.1	+00.0	N 17 37.2	-00.7	196 18.1	-00.7	N 19 24.9	-00.7	165 47.1	-34.0	N 12 32.3	-12.1	01										
02	208 26.1	+00.1	N 17 36.5	-00.6	211 17.4	-00.7	N 19 24.2	-00.7	180 13.1	-33.9	N 12 20.2	-12.1	02										
03	223 26.2	+00.0	N 17 35.9	-00.7	226 16.7	-00.8	N 19 23.5	-00.7	194 39.2	-33.8	N 12 08.1	-12.3	03										
04	238 26.2	+00.1	N 17 35.2	-00.6	241 15.9	-00.7	N 19 22.8	-00.8	209 05.4	-33.8	N 11 55.8	-12.3	04										
05	253 26.3	+00.0	N 17 34.6	-00.7	256 15.2	-00.7	N 19 22.0	-00.7	223 31.6	-33.6	N 11 43.5	-12.3	05										
06	268 26.3	+00.1	N 17 33.9	-00.6	271 14.5	-00.7	N 19 21.3	-00.7	237 58.0	-33.7	N 11 31.2	-12.5	06										
07	283 26.4	+00.0	N 17 33.3	-00.7	286 13.8	-00.7	N 19 20.6	-00.7	252 24.3	-33.5	N 11 18.7	-12.5	07										
08	298 26.4	+00.1	N 17 32.6	-00.6	301 13.1	-00.7	N 19 19.9	-00.8	266 50.8	-33.5	N 11 06.2	-12.6	08										
09	313 26.5	+00.0	N 17 32.0	-00.7	316 12.4	-00.7	N 19 19.1	-00.7	281 17.3	-33.4	N 11 03.6	-12.7	09										
10	328 26.5	+00.1	N 17 31.3	-00.6	331 11.7	-00.7	N 19 18.4	-00.7	295 43.9	-33.3	N 11 00.9	-12.7	10										
11	343 26.6	+00.0	N 17 30.7	-00.7	346 11.0	-00.7	N 19 17.7	-00.8	310 10.6	-33.3	N 10 28.2	-12.7	11										
12	358 26.6	+00.1	N 17 30.0	-00.6	1 10.3	-00.8	N 19 16.9	-00.7	324 37.3	-33.2	N 10 15.5	-12.9	12										
13	13 26.7	+00.0	N 17 29.4	-00.7	16 09.5	-00.7	N 19 16.2	-00.7	339 04.1	-33.2	N 10 02.6	-12.8	13										
14	28 26.7	+00.1	N 17 28.7	-00.7	31 08.8	-00.7	N 19 15.5	-00.8	353 30.9	-33.1	N 09 49.8	-13.0	14										
15	43 26.8	+00.0	N 17 28.0	-00.6	46 08.1	-00.7	N 19 14.7	-00.7	7 57.8	-33.0	N 09 36.8	-13.0	15										
16	58 26.8	+00.1	N 17 27.4	-00.7	61 07.4	-00.7	N 19 14.0	-00.7	22 24.8	-32.9	N 09 23.8	-13.0	16										
17	73 26.9	+00.0	N 17 26.7	-00.6	76 06.7	-00.7	N 19 13.3	-00.8	36 51.9	-32.9	N 09 10.8	-13.1	17										
18	88 26.9	+00.1	N 17 26.1	-00.7	91 06.0	-00.7	N 19 12.5	-00.7	51 19.0	-32.8	N 08 57.7	-13.2	18										
19	103 27.0	+00.0	N 17 25.4	-00.6	106 05.3	-00.7	N 19 11.8	-00.8	65 46.2	-32.8	N 08 44.5	-13.1	19										
20	118 27.0	+00.1	N 17 24.8	-00.7	121 04.6	-00.7	N 19 11.0	-00.7	80 13.4	-32.7	N 08 31.4	-13.3	20										
21	133 27.1	+00.0	N 17 24.1	-00.6	136 03.9	-00.7	N 19 10.3	-00.7	94 40.7	-32.6	N 08 18.1	-13.3	21										
22	148 27.1	+00.1	N 17 23.5	-00.7	151 03.2	-00.7	N 19 09.6	-00.8	109 08.1	-32.6	N 08 04.8	-13.3	22										
23	163 27.2	+00.0	N 17 22.8	-00.7	166 02.5	-00.7	N 19 08.8	-00.7	123 35.5	-32.5	N 07 51.5	-13.3	23										
UT	02 06 10 14 18 22	UT	02 06 10 14 18 22	UT	02 06 10 14 18 22	UT	02 06 10 14 18 22	SD	15°8' 15°8' 15°8' 15°8' 15°8' 15°8'	SD	00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SD	16°6' 16°6' 16°6' 16°6' 16°6' 16°5'	SD	15°8' 15°8' 15°8' 15°8' 15°8' 15°8'								
HP	00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP	00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP	00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP	60°9' 60°8' 60°8' 60°7' 60°7' 60°6'	HP	00°0' 00°0' 00°0' 00°0' 00°0' 00°0'	HP	00°0' 00°0' 00°0' 00°0' 00°0' 00°0'	HP	00°0' 00°0' 00°0' 00°0' 00°0' 00°0'										
SHA	227° 227° 227° 227° 226° 226°	SHA	230° 230° 229° 229° 229° 229°	SHA	199° 196° 194° 192° 189° 187°	SHA	230° 230° 229° 229° 229° 229°	SHA	199° 196° 194° 192° 189° 187°	SHA	199° 196° 194° 192° 189° 187°	SHA	199° 196° 194° 192° 189° 187°										
Greenwich Culmination Time: 12:06				Greenwich Culmination Time: 11:55				Greenwich Culmination Time: 14:26				Greenwich Culmination Time: 12:06				Greenwich Culmination Time: 11:55				Greenwich Culmination Time: 14:26			

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

UT	Sun				Venus				Moon				UT	
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec		
00	178 27.2	+00.1	N 17 22.1	-00.6	181 01.8	-00.7	N 19 08.1	-00.8	138 03.0	-32.4	N 07 38.2	-13.4	00	
01	193 27.3	+00.1	N 17 21.5	-00.7	196 01.1	-00.7	N 19 07.3	-00.7	152 30.6	-32.4	N 07 24.8	-13.5	01	
02	208 27.4	+00.0	N 17 20.8	-00.6	211 00.4	-00.7	N 19 06.6	-00.8	166 58.2	-32.3	N 07 11.3	-13.4	02	
03	223 27.4	+00.1	N 17 20.2	-00.7	225 59.7	-00.7	N 19 05.8	-00.7	181 25.9	-32.3	N 06 57.9	-13.5	03	
04	238 27.5	+00.0	N 17 19.5	-00.7	240 59.0	-00.7	N 19 05.1	-00.8	195 53.6	-32.2	N 06 44.4	-13.5	04	
05	253 27.5	+00.1	N 17 18.8	-00.6	255 58.3	-00.7	N 19 04.3	-00.7	210 21.4	-32.2	N 06 30.9	-13.6	05	
06	268 27.6	+00.0	N 17 18.2	-00.7	270 57.6	-00.7	N 19 03.6	-00.8	224 49.2	-32.0	N 06 17.3	-13.6	06	
07	283 27.6	+00.1	N 17 17.5	-00.7	285 56.9	-00.7	N 19 02.8	-00.7	239 17.2	-32.1	N 06 03.7	-13.6	07	
08	298 27.7	+00.0	N 17 16.8	-00.6	300 56.2	-00.7	N 19 02.1	-00.8	253 45.1	-32.0	N 05 50.1	-13.6	08	
09	313 27.7	+00.1	N 17 16.2	-00.7	315 55.5	-00.7	N 19 01.3	-00.7	268 13.1	-31.9	N 05 36.5	-13.7	09	
10	328 27.8	+00.0	N 17 15.5	-00.6	330 54.8	-00.7	N 19 00.6	-00.8	282 41.2	-31.9	N 05 22.8	-13.7	10	
11	343 27.8	+00.1	N 17 14.9	-00.7	345 54.1	-00.7	N 18 59.8	-00.7	297 09.3	-31.8	N 05 09.1	-13.7	11	
12	358 27.9	+00.1	N 17 14.2	-00.7	0 53.4	-00.7	N 18 59.1	-00.8	311 37.5	-31.8	N 04 55.4	-13.7	12	
13	13 28.0	+00.0	N 17 13.5	-00.6	15 52.7	-00.7	N 18 58.3	-00.6	326 05.7	-31.7	N 04 41.7	-13.7	13	
14	28 28.0	+00.1	N 17 12.9	-00.7	30 52.0	-00.7	N 18 57.6	-00.8	340 34.0	-31.6	N 04 28.0	-13.7	14	
15	43 28.1	+00.0	N 17 12.2	-00.7	45 51.3	-00.7	N 18 56.8	-00.8	355 02.4	-31.6	N 04 14.3	-13.8	15	
16	58 28.1	+00.1	N 17 11.5	-00.6	60 50.6	-00.7	N 18 56.0	-00.7	9 30.8	-31.6	N 04 00.5	-13.8	16	
17	73 28.2	+00.0	N 17 10.9	-00.7	75 49.9	-00.7	N 18 55.3	-00.8	23 59.2	-31.5	N 03 46.7	-13.8	17	
18	88 28.2	+00.1	N 17 10.2	-00.7	90 49.2	-00.7	N 18 54.5	-00.7	38 27.7	-31.5	N 03 32.9	-13.7	18	
19	103 28.3	+00.1	N 17 09.5	-00.6	105 48.5	-00.7	N 18 53.8	-00.8	52 56.2	-31.4	N 03 19.2	-13.8	19	
20	118 28.4	+00.0	N 17 08.9	-00.7	120 47.8	-00.7	N 18 53.0	-00.8	67 24.8	-31.4	N 03 05.4	-13.8	20	
21	133 28.4	+00.1	N 17 08.2	-00.7	135 47.1	-00.7	N 18 52.2	-00.7	81 53.4	-31.3	N 02 51.6	-13.8	21	
22	148 28.5	+00.0	N 17 07.5	-00.6	150 46.4	-00.7	N 18 51.5	-00.8	96 22.1	-31.3	N 02 37.8	-13.8	22	
23	163 28.5	+00.1	N 17 06.9	-00.7	165 45.7	-00.7	N 18 50.7	-00.8	110 50.8	-31.3	N 02 24.0	-13.9	23	
UT 02 06 10 14 18 22	SD 15°8' 15°8' 15°8' 15°8' 15°8' 15°8'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SHA 226° 226° 226° 226° 225° 225°	Greenwich Culmination Time: 12:06	UT 02 06 10 14 18 22	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SHA 229° 228° 228° 228° 228° 228°	Greenwich Culmination Time: 11:56	UT 02 06 10 14 18 22	SD 16°5' 16°5' 16°4' 16°4' 16°4' 16°4'	HP 60°5' 60°5' 60°4' 60°3' 60°2' 60°1'	SHA 185° 182° 180° 178° 175° 173°	Greenwich Culmination Time: 15:20

UT	Sun				Venus				Moon				UT	
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec		
00	178 28.6	+00.1	N 17 06.2	-00.7	180 45.0	-00.7	N 18 49.9	-00.7	125 19.5	-31.2	N 02 10.1	-13.8	00	
01	193 28.7	+00.0	N 17 05.5	-00.7	195 44.3	-00.6	N 18 49.2	-00.8	139 48.3	-31.1	N 01 56.3	-13.8	01	
02	208 28.7	+00.1	N 17 04.8	-00.6	210 43.7	-00.7	N 18 48.4	-00.8	154 17.2	-31.1	N 01 42.5	-13.8	02	
03	223 28.8	+00.0	N 17 04.2	-00.7	225 43.0	-00.7	N 18 47.6	-00.8	168 46.1	-31.1	N 01 28.7	-13.8	03	
04	238 28.8	+00.1	N 17 03.5	-00.7	240 42.3	-00.7	N 18 46.9	-00.8	183 15.0	-31.1	N 01 14.9	-13.7	04	
05	253 28.9	+00.1	N 17 02.8	-00.7	255 41.6	-00.7	N 18 46.1	-00.8	197 43.9	-31.0	N 01 01.2	-13.8	05	
06	268 29.0	+00.0	N 17 02.1	-00.6	270 40.9	-00.7	N 18 45.3	-00.8	212 12.9	-30.9	N 00 47.4	-13.8	06	
07	283 29.0	+00.1	N 17 01.5	-00.7	285 40.2	-00.7	N 18 44.5	-00.7	226 42.0	-31.0	N 00 33.6	-13.8	07	
08	298 29.1	+00.0	N 17 00.8	-00.7	300 39.5	-00.7	N 18 43.8	-00.8	241 11.0	-30.9	N 00 19.8	-13.7	08	
09	313 29.1	+00.1	N 17 00.1	-00.7	315 38.8	-00.7	N 18 43.0	-00.8	255 40.1	-30.8	N 00 06.1	-13.8	09	
10	328 29.2	+00.1	N 16 59.4	-00.6	330 38.1	-00.6	N 18 42.2	-00.8	270 09.3	-30.8	N 00 07.7	+13.7	10	
11	343 29.3	+00.0	N 16 58.8	-00.7	345 37.5	-00.7	N 18 41.4	-00.7	284 38.5	-30.8	N 00 21.4	+13.7	11	
12	358 29.3	+00.1	N 16 58.1	-00.7	0 36.8	-00.7	N 18 40.7	-00.8	299 07.7	-30.8	N 00 35.1	+13.7	12	
13	13 29.4	+00.1	N 16 57.4	-00.7	15 36.1	-00.7	N 18 39.9	-00.8	313 36.9	-30.7	N 00 48.8	+13.6	13	
14	28 29.5	+00.0	N 16 56.7	-00.6	30 35.4	-00.7	N 18 39.1	-00.8	328 06.2	-30.7	N 01 02.4	+13.7	14	
15	43 29.5	+00.1	N 16 56.1	-00.7	45 34.7	-00.7	N 18 38.3	-00.8	342 35.5	-30.7	N 01 16.1	+13.6	15	
16	58 29.6	+00.0	N 16 55.4	-00.7	60 34.0	-00.7	N 18 37.6	-00.8	357 04.8	-30.6	N 01 29.7	+13.6	16	
17	73 29.6	+00.1	N 16 54.7	-00.7	75 33.3	-00.6	N 18 36.8	-00.8	11 34.2	-30.6	N 01 43.3	+13.6	17	
18	88 29.7	+00.1	N 16 54.0	-00.6	90 32.7	-00.7	N 18 36.0	-00.8	26 03.6	-30.6	N 01 56.9	+13.6	18	
19	103 29.8	+00.0	N 16 53.4	-00.7	105 32.0	-00.7	N 18 35.2	-00.8	40 33.0	-30.6	N 02 10.5	+13.5	19	
20	118 29.8	+00.1	N 16 52.7	-00.7	120 31.3	-00.7	N 18 34.4	-00.8	55 02.4	-30.5	N 02 24.0	+13.5	20	
21	133 29.9	+00.1	N 16 52.0	-00.7	135 30.6	-00.7	N 18 33.6	-00.8	69 31.9	-30.5	N 02 37.5	+13.5	21	
22	148 30.0	+00.0	N 16 51.3	-00.7	150 29.9	-00.7	N 18 32.8	-00.7	84 01.4	-30.5	N 02 51.0	+13.4	22	
23	163 30.0	+00.1	N 16 50.6	-00.7	165 29.2	-00.6	N 18 32.1	-00.8	98 30.9	-30.5	N 03 04.4	+13.4	23	
UT 02 06 10 14 18 22	SD 15°8' 15°8' 15°8' 15°8' 15°8' 15°8'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SHA 225° 225° 225° 225° 224° 224°	Greenwich Culmination Time: 12:06	UT 02 06 10 14 18 22	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SHA 227° 227° 227° 227° 227° 226°	Greenwich Culmination Time: 11:57	UT 02 06 10 14 18 22	SD 16°3' 16°3' 16°3' 16°2' 16°2' 16°2'	HP 60°0' 59°9' 59°7' 59°6' 59°5' 59°4'	SHA 171° 169° 166° 164° 162° 161°	Greenwich Culmination Time: 16:12

UT	Mars				Jupiter				Saturn				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	168 31.7	+00.9	N 15 35.6	-00.5	58 56.1	+02.5	S 22 07.3	+00.0	25 32.5	+02.6	S 22 15.9	+00.0	00
01	183 32.6	+00.9	N 15 35.1	-00.5	73 58.6	+02.5	S 22 07.3	+00.0	40 35.1	+02.6	S 22 15.9	+00.0	01
02	198 33.5	+01.0	N 15 34.6	-00.5	89 01.1	+02.6	S 22 07.3	+00.0	55 37.7	+02.7	S 22 15.9	+00.1	02
03	213 34.5	+00.9	N 15 34.1	-00.5	104 03.7	+02.5	S 22 07.3	+00.0	70 40.4	+02.6	S 22 16.0	+00.0	03
04	228 35.4	+00.9	N 15 33.6	-00.6	119 06.2	+02.5	S 22 07.3	+00.0	85 43.0	+02.6	S 22 16.0	+00.0	04
05	243 36.3	+00.9	N 15 33.0	-00.5	134 08.7	+02.6	S 22 07.3	+00.0	100 45.6	+02.7	S 22 16.0	+00.0	05
06	258 37.2	+00.9	N 15 32.5	-00.5	149 11.3	+02.5	S 22 07.3	+00.0	115 48.3	+02.6	S 22 16.0	+00.0	06
07	273 38.1	+00.9	N 15 32.0	-00.5	164 13.8	+02.5	S 22 07.3	+00.0	130 50.9	+02.6	S 22 16.0	+00.1	07
08	288 39.0	+00.9	N 15 31.5	-00.5	179 16.3	+02.5	S 22 07.3	+00.0	145 53.5	+02.7	S 22 16.1	+00.0	08
09	303 39.9	+00.9	N 15 31.0	-00.5	194 18.8	+02.6	S 22 07.3	+00.0	160 56.2	+02.6	S 22 16.1	+00.0	09
10	318 40.8	+00.9	N 15 30.5	-00.5	209 21.4	+02.5	S 22 07.3	+00.0	175 58.8	+02.6	S 22 16.1	+00.0	10
11	333 41.7	+00.9	N 15 30.0	-00.6	224 23.9	+02.5	S 22 07.3	+00.0	191 01.4	+02.6	S 22 16.1	+00.1	11
12	348 42.6	+00.9	N 15 29.4	-00.5	239 26.4	+02.5	S 22 07.3	+00.0	206 04.0	+02.7	S 22 16.2	+00.0	12
13	3 43.5	+00.9	N 15 28.9	-00.5	254 28.9	+02.5	S 22 07.3	+00.0	221 06.7	+02.6	S 22 16.2	+00.0	13
14	18 44.4	+00.9	N 15 28.4	-00.5	269 31.4	+02.6	S 22 07.3	+00.0	236 09.3	+02.6	S 22 16.2	+00.0	14
15	33 45.3	+00.9	N 15 27.9	-00.5	284 34.0	+02.5	S 22 07.3	+00.0	251 11.9	+02.7	S 22 16.2	+00.0	15
16	48 46.2	+00.9	N 15 27.4	-00.5	299 36.5	+02.5	S 22 07.3	+00.0	266 14.6	+02.6	S 22 16.2	+00.1	16
17	63 47.1	+01.0	N 15 26.9	-00.6	314 39.0	+02.5	S 22 07.3	+00.0	281 17.2	+02.6	S 22 16.3	+00.0	17
18	78 48.1	+00.9	N 15 26.3	-00.5	329 41.5	+02.6	S 22 07.3	+00.0	296 19.8	+02.7	S 22 16.3	+00.0	18
19	93 49.0	+00.9	N 15 25.8	-00.5	344 44.1	+02.5	S 22 07.3	+00.0	311 22.5	+02.6	S 22 16.3	+00.0	19
20	108 49.9	+00.9	N 15 25.3	-00.5	359 46.6	+02.5	S 22 07.3	+00.0	326 25.1	+02.6	S 22 16.3	+00.1	20
21	123 50.8	+00.9	N 15 24.8	-00.5	14 49.1	+02.5	S 22 07.3	+00.0	341 27.7	+02.6	S 22 16.4	+00.0	21
22	138 51.7	+00.9	N 15 24.3	-00.5	29 51.6	+02.5	S 22 07.3	+00.0	356 30.3	+02.7	S 22 16.4	+00.0	22

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for positions (GHA, ddGHA, Dec, dDec) and Greenwich Culmination Time: 12:05.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for positions (GHA, ddGHA, Dec, dDec) and Greenwich Culmination Time: 11:59.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for positions (GHA, ddGHA, Dec, dDec) and Greenwich Culmination Time: 12:36.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for positions (GHA, ddGHA, Dec, dDec) and Greenwich Culmination Time: 12:40.

UT	<i>Sun</i>				<i>Venus</i>				<i>Moon</i> A: 26%				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	178 33.6	+00.1	N 16 16.7	-00.7	179 56.4	-00.6	N 17 52.4	-00.8	88 49.1	-30.2	S 13 02.7	+10.6	00
01	193 33.7	+00.0	N 16 16.0	-00.7	194 55.8	-00.7	N 17 51.6	-00.9	103 18.9	-30.3	S 13 13.3	+10.4	01
02	208 33.7	+00.1	N 16 15.3	-00.7	209 55.1	-00.6	N 17 50.7	-00.8	117 48.6	-30.3	S 13 23.7	+10.4	02
03	223 33.8	+00.1	N 16 14.6	-00.7	224 54.5	-00.7	N 17 49.9	-00.8	132 18.3	-30.4	S 13 34.1	+10.3	03
04	238 33.9	+00.1	N 16 13.9	-00.8	239 53.8	-00.7	N 17 49.1	-00.9	146 47.9	-30.3	S 13 44.4	+10.3	04
05	253 34.0	+00.1	N 16 13.1	-00.7	254 53.1	-00.6	N 17 48.2	-00.8	161 17.6	-30.3	S 13 54.7	+10.1	05
06	268 34.1	+00.0	N 16 12.4	-00.7	269 52.5	-00.7	N 17 47.4	-00.9	175 47.3	-30.4	S 14 04.8	+10.1	06
07	283 34.1	+00.1	N 16 11.7	-00.7	284 51.8	-00.6	N 17 46.5	-00.8	190 16.9	-30.4	S 14 14.9	+10.0	07
08	298 34.2	+00.1	N 16 11.0	-00.7	299 51.2	-00.7	N 17 45.7	-00.8	204 46.5	-30.4	S 14 24.9	+09.8	08
09	313 34.3	+00.1	N 16 10.3	-00.7	314 50.5	-00.6	N 17 44.9	-00.9	219 16.1	-30.3	S 14 34.7	+09.8	09
10	328 34.4	+00.1	N 16 09.6	-00.7	329 49.9	-00.7	N 17 44.0	-00.9	233 45.8	-30.5	S 14 44.5	+09.8	10
11	343 34.5	+00.0	N 16 08.9	-00.7	344 49.2	-00.6	N 17 43.2	-00.8	248 15.3	-30.4	S 14 54.3	+09.6	11
12	358 34.5	+00.1	N 16 08.2	-00.7	359 48.6	-00.7	N 17 42.4	-00.9	262 44.9	-30.4	S 15 03.9	+09.5	12
13	13 34.6	+00.1	N 16 07.5	-00.7	14 47.9	-00.6	N 17 41.5	-00.8	277 14.5	-30.5	S 15 13.4	+09.5	13
14	28 34.7	+00.1	N 16 06.8	-00.7	29 47.3	-00.7	N 17 40.7	-00.9	291 44.0	-30.5	S 15 22.9	+09.3	14
15	43 34.8	+00.1	N 16 06.1	-00.8	44 46.6	-00.6	N 17 39.8	-00.8	306 13.5	-30.4	S 15 32.2	+09.3	15
16	58 34.9	+00.1	N 16 05.3	-00.7	59 46.0	-00.7	N 17 39.0	-00.9	320 43.1	-30.5	S 15 41.5	+09.2	16
17	73 35.0	+00.0	N 16 04.6	-00.7	74 45.3	-00.6	N 17 38.1	-00.8	335 12.6	-30.6	S 15 50.7	+09.0	17
18	88 35.0	+00.1	N 16 03.9	-00.7	89 44.7	-00.7	N 17 37.3	-00.9	349 42.0	-30.5	S 15 59.7	+09.0	18
19	103 35.1	+00.1	N 16 03.2	-00.7	104 44.0	-00.6	N 17 36.4	-00.8	4 11.5	-30.5	S 16 08.7	+08.9	19
20	118 35.2	+00.1	N 16 02.5	-00.7	119 43.4	-00.7	N 17 35.6	-00.9	18 41.0	-30.6	S 16 17.6	+08.8	20
21	133 35.3	+00.1	N 16 01.8	-00.7	134 42.7	-00.6	N 17 34.7	-00.8	33 10.4	-30.6	S 16 26.4	+08.7	21
22	148 35.4	+00.1	N 16 01.1	-00.7	149 42.1	-00.7	N 17 33.9	-00.9	47 39.8	-30.6	S 16 35.1	+08.6	22
23	163 35.5	+00.0	N 16 00.4	-00.8	164 41.4	-00.6	N 17 33.0	-00.8	62 09.2	-30.6	S 16 43.7	+08.5	23
UT	02 06 10 14 18 22	SD 15°8' 15°8' 15°8' 15°8' 15°8' 15°8'	UT	02 06 10 14 18 22	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	UT	02 06 10 14 18 22	SD 15°7' 15°7' 15°7' 15°6' 15°6' 15°6'					
HP	00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP	00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP	57°7' 57°6' 57°4' 57°3' 57°2' 57°1'	HP	00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP	00°1' 00°1' 00°1' 00°1' 00°1' 00°1'				
SHA	222° 222° 222° 222° 222° 221°	SHA	224° 223° 223° 223° 223° 223°	SHA	132° 129° 127° 125° 123° 121°	SHA	221° 221° 221° 221° 221° 221°	SHA	222° 222° 222° 222° 222° 221°				
Greenwich Culmination Time: 12:05		Greenwich Culmination Time: 12:00		Greenwich Culmination Time: 18:42		Greenwich Culmination Time: 12:05		Greenwich Culmination Time: 19:33					

UT	<i>Sun</i>				<i>Venus</i>				<i>Moon</i> A: 30%				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	178 35.5	+00.1	N 15 59.6	-00.7	179 40.8	-00.7	N 17 32.2	-00.9	76 38.6	-30.6	S 16 52.2	+08.5	00
01	193 35.6	+00.1	N 15 58.9	-00.7	194 40.1	-00.6	N 17 31.3	-00.8	91 08.0	-30.7	S 17 00.7	+08.3	01
02	208 35.7	+00.1	N 15 58.2	-00.7	209 39.5	-00.7	N 17 30.5	-00.9	105 37.3	-30.6	S 17 09.0	+08.2	02
03	223 35.8	+00.1	N 15 57.5	-00.7	224 38.8	-00.6	N 17 29.6	-00.8	120 06.7	-30.7	S 17 17.2	+08.1	03
04	238 35.9	+00.1	N 15 56.8	-00.7	239 38.2	-00.7	N 17 28.8	-00.9	134 36.0	-30.7	S 17 25.3	+08.0	04
05	253 36.0	+00.1	N 15 56.1	-00.8	254 37.5	-00.6	N 17 27.9	-00.8	149 05.3	-30.7	S 17 33.3	+08.0	05
06	268 36.1	+00.0	N 15 55.3	-00.7	269 36.9	-00.6	N 17 27.1	-00.9	163 34.6	-30.8	S 17 41.3	+07.8	06
07	283 36.1	+00.1	N 15 54.6	-00.7	284 36.3	-00.7	N 17 26.2	-00.9	178 03.8	-30.7	S 17 49.1	+07.7	07
08	298 36.2	+00.1	N 15 53.9	-00.7	299 35.6	-00.6	N 17 25.3	-00.8	192 33.1	-30.8	S 17 56.8	+07.6	08
09	313 36.3	+00.1	N 15 53.2	-00.7	314 35.0	-00.7	N 17 24.5	-00.9	207 02.3	-30.7	S 18 04.4	+07.5	09
10	328 36.4	+00.1	N 15 52.5	-00.8	329 34.3	-00.6	N 17 23.6	-00.8	221 31.6	-30.8	S 18 11.9	+07.5	10
11	343 36.5	+00.1	N 15 51.7	-00.7	344 33.7	-00.7	N 17 22.8	-00.9	236 00.8	-30.8	S 18 19.4	+07.3	11
12	358 36.6	+00.1	N 15 51.0	-00.7	359 33.0	-00.6	N 17 21.9	-00.9	250 30.0	-30.9	S 18 26.7	+07.2	12
13	13 36.7	+00.1	N 15 50.3	-00.7	14 32.4	-00.6	N 17 21.0	-00.8	264 59.1	-30.8	S 18 33.9	+07.1	13
14	28 36.8	+00.1	N 15 49.6	-00.7	29 31.8	-00.7	N 17 20.2	-00.9	279 28.3	-30.9	S 18 41.0	+07.0	14
15	43 36.9	+00.0	N 15 48.9	-00.8	44 31.1	-00.6	N 17 19.3	-00.9	293 57.4	-30.8	S 18 48.0	+06.9	15
16	58 36.9	+00.1	N 15 48.1	-00.7	59 30.5	-00.7	N 17 18.4	-00.8	308 26.6	-30.9	S 18 54.9	+06.8	16
17	73 37.0	+00.1	N 15 47.4	-00.7	74 29.8	-00.6	N 17 17.6	-00.9	322 55.7	-30.9	S 19 01.7	+06.6	17
18	88 37.1	+00.1	N 15 46.7	-00.7	89 29.2	-00.6	N 17 16.7	-00.9	337 24.8	-30.9	S 19 08.3	+06.6	18
19	103 37.2	+00.1	N 15 46.0	-00.7	104 28.6	-00.7	N 17 15.8	-00.8	351 53.9	-31.0	S 19 14.9	+06.5	19
20	118 37.3	+00.1	N 15 45.3	-00.8	119 27.9	-00.6	N 17 15.0	-00.9	6 22.9	-30.9	S 19 21.4	+06.3	20
21	133 37.4	+00.1	N 15 44.5	-00.7	134 27.3	-00.6	N 17 14.1	-00.9	20 52.0	-31.0	S 19 27.7	+06.3	21
22	148 37.5	+00.1	N 15 43.8	-00.7	149 26.7	-00.7	N 17 13.2	-00.8	35 21.0	-30.9	S 19 34.0	+06.1	22
23	163 37.6	+00.1	N 15 43.1	-00.7	164 26.0	-00.6	N 17 12.4	-00.9	49 50.1	-31.0	S 19 40.1	+06.1	23
UT	02 06 10 14 18 22	SD 15°8' 15°8' 15°8' 15°8' 15°8' 15°8'	UT	02 06 10 14 18 22	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	UT	02 06 10 14 18 22	SD 15°5' 15°5' 15°5' 15°4' 15°4' 15°4'					
HP	00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP	00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP	57°7' 57°6' 57°4' 57°3' 57°2' 57°1'	HP	00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP	00°0' 00°0' 00°0' 00°0' 00°0' 00°0'				
SHA	221° 221° 221° 221° 221° 221°	SHA	222° 222° 222° 222° 222° 221°	SHA	118° 116° 114° 112° 109° 107°	SHA	222° 222° 222° 222° 222° 221°	SHA	118° 116° 114° 112° 109° 107°				
Greenwich Culmination Time: 12:05		Greenwich Culmination Time: 12:01		Greenwich Culmination Time: 12:05		Greenwich Culmination Time: 12:01		Greenwich Culmination Time: 19:33					

UT	<i>Mars</i>				<i>Jupiter</i>				<i>Saturn</i>				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	169 59.2	+01.0	N 14 45.6	-00.5	62 57.2	+02.5	S 22 07.6	+00.0	29 44.5	+02.7	S 22 17.9	+00.1	00
01	185 00.2	+00.9	N 14 45.1	-00.6	77 59.7	+02.5	S 22 07.6	+00.0	44 47.2	+02.6	S 22 18.0	+00.0	01
02	200 01.1	+00.9	N 14 44.5	-00.5	93 02.2	+02.5	S 22 07.6	+00.0	59 49.8	+02.6	S 22 18.0	+00.0	02
03	215 02.0	+00.9	N 14 44.0	-00.5	108 04.7	+02.5	S 22 07.6	+00.0	74 52.4	+02.6	S 22 18.0	+00.0	03
04	230 02.9	+00.9	N 14 43.5	-00.5	123 07.2	+02.5	S 22 07.6	+00.0	89 55.0	+02.6	S 22 18.0	+00.0	04
05	245 03.8	+00.9	N 14 43.0	-00.6	138 09.7	+02.4	S 22 07.6	+00.0	104 57.6	+02.7	S 22 18.0	+00.1	05
06	260 04.7	+01.0	N 14 42.4	-00.5	153 12.1	+02.5	S 22 07.6	+00.0	120 00.3	+02.6	S 22 18.1	+00.0	06
07	275 05.7	+00.9	N 14 41.9	-00.5	168 14.6	+02.5	S 22 07.6	+00.0	135 02.9	+02.6	S 22 18.1	+00.0	07
08	290 06.6	+00.9	N 14 41.4	-00.6	183 17.1	+02.5	S 22 07.6	+00.0	150 05.5	+02.6	S 22 18.1	+00.0	08
09	305 07.5	+00.9	N 14 40.8	-00.5	198 19.6	+02.5	S 22 07.6	+00.0	165 08.1	+02.6	S 22 18.1	+00.0	09
10	320 08.4	+00.9	N 14 40.3	-00.5	213 22.1	+02.5	S 22 07.6	+00.0	180 10.7	+02.7	S 22 18.1	+00.1	10
11	335 09.3	+01.0	N 14 39.8	-00.6	228 24.6	+02.5	S 22 07.6	+00.0	195 13.4	+02.6	S 22 18.2	+00.0	11
12	350 10.3	+00.9	N 14 39.2	-00.5	243 27.1	+02.5	S 22 07.6	+00.0	210 16.0	+02.6	S 22 18.2	+00.0	12
13	5 11.2	+00.9	N 14 38.7	-00.5	258 29.6	+02.5	S 22 07.6	+00.0	225 18.6	+02.6	S 22 18.2	+00.0	13
14	20 12.1	+00.9	N 14 38.2	-00.6	273 32.1	+02.5	S 22 07.6	+00.0	240 21.2	+02.6	S 22 18.2	+00.0	14
15	35 13.0	+00.9	N 14 37.6	-00.5	288 34.6	+02.5	S 22 07.6	+00.0	255 23.8	+02.7	S 22 18.2	+00.1	15
16	50 13.9	+00.9	N 14 37.1	-00.5	303 37.1	+02.4	S 22 07.6	+00.0	270 26.5	+02.6	S 22 18.3	+00.0	16
17	65 14.8	+01.0	N 14 36.6	-00.5	318 39.5	+02.5	S 22 07.6	+00.0	285 29.1	+02.6	S 22 18.3	+00.0	17
18	80 15.8	+00.9	N 14 36.1	-00.6	333 42.0	+02.5	S 22 07.6	+00.1	300 31.7				

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for days 00 to 23 and Greenwich Culmination Time: 12:04.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for days 00 to 23 and Greenwich Culmination Time: 12:05.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for days 00 to 23 and Greenwich Culmination Time: 12:30.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for days 00 to 23 and Greenwich Culmination Time: 12:34.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 15°8 15°8 15°8 15°8 15°8 15°8
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 218° 218° 218° 218° 218° 218°
Greenwich Culmination Time: 12:05

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 15°8 15°8 15°8 15°8 15°8 15°8
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 218° 217° 217° 217° 217° 217°
Greenwich Culmination Time: 12:04

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 211° 211° 211° 211° 211° 211°
Greenwich Culmination Time: 12:33

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 211° 210° 210° 210° 210° 210°
Greenwich Culmination Time: 12:31

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. It contains astronomical data for August 18, 2019, including Right Ascension (GHA, ddGHA), Declination (Dec, dDec), and magnitude (A: 58%).

UT 02 06 10 14 18 22
SD 15°8 15°8 15°8 15°8 15°8 15°8
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 213° 213° 213° 212° 212° 212°
Greenwich Culmination Time: 12:03

Table with columns for UT, Sun, Venus, Moon, and UT. It contains astronomical data for August 15, 2019, including Right Ascension (GHA, ddGHA), Declination (Dec, dDec), and magnitude (A: 50%).

UT 02 06 10 14 18 22
SD 15°8 15°8 15°8 15°8 15°8 15°8
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 216° 215° 215° 215° 215° 215°
Greenwich Culmination Time: 12:04

Table with columns for UT, Mars, Jupiter, Saturn, and UT. It contains astronomical data for August 18, 2019, including Right Ascension (GHA, ddGHA), Declination (Dec, dDec), and magnitude (A).

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 208° 207° 207° 207° 207° 207°
Greenwich Culmination Time: 12:24

Table with columns for UT, Mars, Jupiter, Saturn, and UT. It contains astronomical data for August 15, 2019, including Right Ascension (GHA, ddGHA), Declination (Dec, dDec), and magnitude (A).

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 209° 209° 209° 209° 209° 209°
Greenwich Culmination Time: 12:28

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 15°8' 15°8' 15°8' 15°8' 15°8' 15°8'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 215° 215° 214° 214° 214° 214°
Greenwich Culmination Time: 12:04

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 15°8' 15°8' 15°8' 15°8' 15°8' 15°8'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 213° 212° 212° 212° 212° 212°
Greenwich Culmination Time: 12:09

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 209° 209° 209° 208° 208°
Greenwich Culmination Time: 12:27

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 208° 208° 208° 208° 208°
Greenwich Culmination Time: 12:25

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Each planet section includes GHA, ddGHA, Dec, and dDec values for days 00 through 23.

UT 02 06 10 14 18 22
SD 15°8' 15°8' 15°8' 15°8' 15°8' 15°8'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 209° 209° 209° 209° 209° 208°
Greenwich Culmination Time: 12:02

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Each planet section includes GHA, ddGHA, Dec, and dDec values for days 00 through 23.

UT 02 06 10 14 18 22
SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 205° 205° 205° 205° 205° 205°
Greenwich Culmination Time: 12:18

Table with columns for UT, Sun, Venus, Moon, and UT. Each planet section includes GHA, ddGHA, Dec, and dDec values for days 00 through 23.

UT 02 06 10 14 18 22
SD 15°8' 15°8' 15°8' 15°8' 15°8' 15°8'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 210° 210° 210° 210° 209° 209°
Greenwich Culmination Time: 12:03

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Each planet section includes GHA, ddGHA, Dec, and dDec values for days 00 through 23.

UT 02 06 10 14 18 22
SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 207° 207° 207° 207° 207° 206°
Greenwich Culmination Time: 12:22

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 15°8' 15°8' 15°8' 15°8' 15°8' 15°8'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 211° 211° 211° 211° 211° 211°
Greenwich Culmination Time: 12:03

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 15°8' 15°8' 15°8' 15°8' 15°8' 15°8'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 210° 210° 210° 210° 210° 209°
Greenwich Culmination Time: 12:03

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 206° 206° 206° 206° 206° 206°
Greenwich Culmination Time: 12:21

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 206° 206° 206° 205° 205° 205°
Greenwich Culmination Time: 12:19

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for days 00-23 and a small table at the bottom with columns 02, 06, 10, 14, 18, 22.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for days 00-23 and a small table at the bottom with columns 02, 06, 10, 14, 18, 22.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for days 00-23 and a small table at the bottom with columns 02, 06, 10, 14, 18, 22.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for days 00-23 and a small table at the bottom with columns 02, 06, 10, 14, 18, 22.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	179	21.6	+00.1	N 11 16.4	-00.9	176	17.7	-00.5	N 11 36.7	-01.1	268	13.7	-30.5	N 17 45.4	+07.8	00
01	194	21.7	+00.2	N 11 15.5	-00.8	191	17.2	-00.5	N 11 35.6	-01.1	282	43.2	-30.6	N 17 53.2	+07.7	01
02	209	21.9	+00.2	N 11 14.7	-00.9	206	16.7	-00.5	N 11 34.5	-01.1	297	12.6	-30.6	N 18 00.9	+07.6	02
03	224	22.1	+00.1	N 11 13.8	-00.8	221	16.2	-00.5	N 11 33.4	-01.1	311	42.0	-30.7	N 18 08.5	+07.5	03
04	239	22.2	+00.2	N 11 13.0	-00.9	236	15.7	-00.4	N 11 32.3	-01.1	326	11.3	-30.9	N 18 16.0	+07.5	04
05	254	22.4	+00.2	N 11 12.1	-00.8	251	15.3	-00.5	N 11 31.2	-01.1	340	40.4	-30.9	N 18 23.5	+07.3	05
06	269	22.6	+00.1	N 11 11.3	-00.9	266	14.8	-00.5	N 11 30.1	-01.1	355	09.5	-31.0	N 18 30.8	+07.3	06
07	284	22.7	+00.2	N 11 10.4	-00.9	281	14.3	-00.5	N 11 29.0	-01.1	9	38.5	-31.1	N 18 38.1	+07.1	07
08	299	22.9	+00.2	N 11 09.5	-00.8	296	13.8	-00.5	N 11 27.9	-01.1	24	07.4	-31.2	N 18 45.2	+07.1	08
09	314	23.1	+00.1	N 11 08.7	-00.9	311	13.3	-00.5	N 11 26.8	-01.1	38	36.2	-31.3	N 18 52.3	+07.0	09
10	329	23.2	+00.2	N 11 07.8	-00.8	326	12.8	-00.5	N 11 25.7	-01.1	53	04.9	-31.4	N 18 59.3	+06.9	10
11	344	23.4	+00.2	N 11 07.0	-00.9	341	12.3	-00.4	N 11 24.6	-01.2	67	33.5	-31.4	N 19 06.2	+06.8	11
12	359	23.6	+00.1	N 11 06.1	-00.8	356	11.9	-00.5	N 11 23.4	-01.1	82	02.1	-31.6	N 19 13.0	+06.7	12
13	14	23.7	+00.2	N 11 05.3	-00.9	11	11.4	-00.5	N 11 22.3	-01.1	96	30.5	-31.6	N 19 19.7	+06.6	13
14	29	23.9	+00.2	N 11 04.4	-00.8	26	10.9	-00.5	N 11 21.2	-01.1	110	58.9	-31.8	N 19 26.3	+06.5	14
15	44	24.1	+00.1	N 11 03.6	-00.9	41	10.4	-00.5	N 11 20.1	-01.1	125	27.1	-31.8	N 19 32.8	+06.4	15
16	59	24.2	+00.2	N 11 02.7	-00.8	56	09.9	-00.4	N 11 19.0	-01.1	139	55.3	-31.9	N 19 39.2	+06.3	16
17	74	24.4	+00.2	N 11 01.9	-00.9	71	09.5	-00.5	N 11 17.9	-01.1	154	23.4	-32.0	N 19 45.5	+06.2	17
18	89	24.6	+00.1	N 11 01.0	-00.9	86	09.0	-00.5	N 11 16.8	-01.1	168	51.4	-32.2	N 19 51.7	+06.1	18
19	104	24.7	+00.2	N 11 00.1	-00.8	101	08.5	-00.5	N 11 15.7	-01.2	183	19.2	-32.2	N 19 57.8	+06.0	19
20	119	24.9	+00.2	N 10 59.3	-00.9	116	08.0	-00.5	N 11 14.5	-01.1	197	47.0	-32.3	N 20 03.8	+05.9	20
21	134	25.1	+00.1	N 10 58.4	-00.8	131	07.5	-00.4	N 11 13.4	-01.1	212	14.7	-32.3	N 20 09.7	+05.8	21
22	149	25.2	+00.2	N 10 57.6	-00.9	146	07.1	-00.5	N 11 12.3	-01.1	226	42.4	-32.5	N 20 15.5	+05.7	22
23	164	25.4	+00.2	N 10 56.7	-00.8	161	06.6	-00.5	N 11 11.2	-01.1	241	09.9	-32.6	N 20 21.2	+05.6	23

UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	15°8	15°8	15°8	15°8	15°8	15°8	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	15°4	15°5	15°5	15°6	15°6	15°7
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	56°7	56°8	57°0	57°1	57°3	57°4
SHA	207°	207°	207°	207°	207°	207°	SHA	204°	204°	204°	204°	203°	203°	SHA	295°	293°	291°	288°	286°	284°

Greenwich Culmination Time: 12:02 Greenwich Culmination Time: 12:15 Greenwich Culmination Time: 06:20

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	175	59.6	+00.9	N 11 11.5	-00.6	78	29.8	+02.4	S 22 12.0	+00.0	46	21.4	+02.6	S 22 24.8	+00.0	00
01	191	00.5	+01.0	N 11 10.9	-00.5	93	32.2	+02.3	S 22 12.0	+00.0	61	24.0	+02.6	S 22 24.8	+00.0	01
02	206	01.5	+00.9	N 11 10.4	-00.6	108	34.5	+02.4	S 22 12.0	+00.1	76	26.6	+02.5	S 22 24.8	+00.0	02
03	221	02.4	+01.0	N 11 09.8	-00.6	123	36.9	+02.4	S 22 12.1	+00.0	91	29.1	+02.6	S 22 24.8	+00.0	03
04	236	03.4	+00.9	N 11 09.2	-00.6	138	39.3	+02.3	S 22 12.1	+00.0	106	31.7	+02.6	S 22 24.8	+00.0	04
05	251	04.3	+01.0	N 11 08.6	-00.6	153	41.6	+02.4	S 22 12.1	+00.0	121	34.3	+02.5	S 22 24.8	+00.1	05
06	266	05.3	+01.0	N 11 08.0	-00.6	168	44.0	+02.3	S 22 12.1	+00.0	136	36.8	+02.6	S 22 24.9	+00.0	06
07	281	06.3	+00.9	N 11 07.4	-00.5	183	46.3	+02.4	S 22 12.1	+00.1	151	39.4	+02.6	S 22 24.9	+00.0	07
08	296	07.2	+01.0	N 11 06.9	-00.6	198	48.7	+02.4	S 22 12.2	+00.0	166	42.0	+02.5	S 22 24.9	+00.0	08
09	311	08.2	+00.9	N 11 06.3	-00.6	213	51.1	+02.3	S 22 12.2	+00.0	181	44.5	+02.6	S 22 24.9	+00.0	09
10	326	09.1	+01.0	N 11 05.7	-00.6	228	53.4	+02.4	S 22 12.2	+00.0	196	47.1	+02.6	S 22 24.9	+00.0	10
11	341	10.1	+00.9	N 11 05.1	-00.6	243	55.8	+02.3	S 22 12.2	+00.0	211	49.7	+02.5	S 22 24.9	+00.0	11
12	356	11.0	+01.0	N 11 04.5	-00.6	258	58.1	+02.4	S 22 12.2	+00.0	226	52.2	+02.6	S 22 24.9	+00.1	12
13	11	12.0	+01.0	N 11 03.9	-00.5	274	00.5	+02.4	S 22 12.2	+00.1	241	54.8	+02.6	S 22 25.0	+00.0	13
14	26	13.0	+00.9	N 11 03.4	-00.6	289	02.9	+02.3	S 22 12.3	+00.0	256	57.4	+02.5	S 22 25.0	+00.0	14
15	41	13.9	+01.0	N 11 02.8	-00.6	304	05.2	+02.4	S 22 12.3	+00.0	271	59.9	+02.6	S 22 25.0	+00.0	15
16	56	14.9	+00.9	N 11 02.2	-00.6	319	07.6	+02.3	S 22 12.3	+00.0	287	02.5	+02.6	S 22 25.0	+00.0	16
17	71	15.8	+01.0	N 11 01.6	-00.6	334	09.9	+02.4	S 22 12.3	+00.0	302	05.1	+02.5	S 22 25.0	+00.0	17
18	86	16.8	+00.9	N 11 01.0	-00.6	349	12.3	+02.3	S 22 12.3	+00.1	317	07.6	+02.6	S 22 25.0	+00.0	18
19	101	17.7	+01.0	N 11 00.4	-00.6	4	14.6	+02.4	S 22 12.4	+00.0	332	10.2	+02.6	S 22 25.0	+00.1	19
20	116	18.7	+01.0	N 10 59.8	-00.5	19	17.0	+02.4	S 22 12.4	+00.0	347	12.8	+02.5	S 22 25.1	+00.0	20
21	131	19.7	+00.9	N 10 59.3	-00.6	34	19.4	+02.3	S 22 12.4	+00.0	2	15.3	+02.6	S 22 25.1	+00.0	21
22	146	20.6	+01.0	N 10 58.7	-00.6	49	21.7	+02.4	S 22 12.4	+00.0	17	17.9	+02.6	S 22 25.1	+00.0	22
23	161	21.6	+00.9	N 10 58.1	-00.6	64	24.1	+02.3	S 22 12.4	+00.1	32	20.5	+02.5	S 22 25.1	+00.0	23

UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	00°0	00°0	00°0	00°0	00°0	00°0	SD	00°0	00°3	00°3	00°3	00°3	00°3	SD	00°1	00°1	00°1	00°1	00°1	00°1
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°0	00°0	00°0	00°0	00°0	00°0	HP	00°0	00°0	00°0	00°0	00°0	00°0
SHA	204°	204°	204°	204°	204°	203°	SHA	107°	107°	106°	106°	106°	106°	SHA	074°	074°	074°	074°	074°	074°

Greenwich Culmination Time: 12:15 Greenwich Culmination Time: 18:43 Greenwich Culmination Time: 20:51

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	179	25.6	+00.2	N 10 55.9	-00.9	176	06.1	-00.5	N 11 10.1	-01.1	255	37.3	-32.6	N 20 26.8	+05.4	00
01	194	25.8	+00.1	N 10 55.0	-00.9	191	05.6	-00.5	N 11 09.0	-01.2	270	04.7	-32.8	N 20 32.2	+05.4	01
02	209	25.9	+00.2	N 10 54.1	-00.8	206	05.1	-00.4	N 11 07.8	-01.1	284	31.9	-32.8	N 20 37.6	+05.2	02
03	224	26.1	+00.2	N 10 53.3	-00.9	221	04.7	-00.5	N 11 06.7	-01.1	298	59.1	-32.9	N 20 42.8	+05.2	03
04	239	26.3	+00.1	N 10 52.4	-00.8	236	04.2	-00.5	N 11 05.6	-01.1	313	26.2	-33.1	N 20 48.0	+05.0	04
05	254	26.4	+00.2	N 10 51.6	-00.9	251	03.7	-00.5	N 11 04.5	-01.1	327	53.1	-33.1	N 20 53.0	+04.9	05
06	269	26.6	+00.2	N 10 50.7	-00.9	266	03.2	-00.4	N 11 03.4	-01.2	342	20.0	-33.2	N 20 57.9	+04.8	06
07	284	26.8	+00.1	N 10 49.8	-00.8	281	02.8	-00.5	N 11 02.2	-01.1	356	46.8	-33.2	N 21 02.7	+04.6	07
08	299	26.9	+00.2	N 10 49.0	-00.9	296	02.3	-00.5	N 11 01.1	-01.1	11	13.6	-33.4	N 21 07.3	+04.6	08
09	314	27.1	+00.2	N 10 48.1	-00.8	311	01.8	-00.5	N 10 60.0	-01.1	25	40.2	-33.5	N 21 11.9	+04.4	09
10	329	27.3	+00.2	N 10 47.3	-00.9	326	01.3	-00.4	N 10 58.9	-01.2	40	06.7	-33.5	N 21 16.3	+04.3	10
11	344	27.5	+00.1	N 10 46.4	-00.9	341	00.9	-00.5	N 10 57.7	-01.1	54	33.2	-33.6	N 21 20.6	+04.2	11
12	359	27.6	+00.2	N 10 45.5	-00.8	356	00.4	-00.5	N 10 56.6	-01.1	68	59.6	-33.8	N 21 24.8	+04.1	12
13	14	27.8	+00.2	N 10 44.7	-00.9	10	59.9	-00.5	N 10 55.5	-01.1	83	25.8	-33.8	N 21 28.9		

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for each planet.

UT 02 06 10 14 18 22
SD 15°8 15°8 15°8 15°8 15°8 15°8
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 202° 202° 202° 201° 201° 201°
Greenwich Culmination Time: 12:00

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 200° 200° 200° 200° 200° 200°
Greenwich Culmination Time: 12:06

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for each planet.

UT 02 06 10 14 18 22
SD 15°8 15°8 15°8 15°8 15°8 15°8
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 205° 204° 204° 204° 204° 204°
Greenwich Culmination Time: 12:01

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes celestial coordinates and magnitudes for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 202° 202° 202° 202° 202° 202°
Greenwich Culmination Time: 12:10

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	179	38.2	+00.2	N 09 53.3	-00.9	175	32.6	-00.5	N 09 48.3	-01.2	213	24.3	-36.7	N 21 17.8	-04.8	00				
01	194	38.4	+00.2	N 09 52.4	-00.9	190	32.1	-00.4	N 09 47.1	-01.1	227	47.6	-36.6	N 21 13.0	-04.9	01				
02	209	38.6	+00.2	N 09 51.5	-00.8	205	31.7	-00.5	N 09 46.0	-01.2	242	11.0	-36.7	N 21 08.1	-05.1	02				
03	224	38.8	+00.2	N 09 50.7	-00.9	220	31.2	-00.4	N 09 44.8	-01.1	256	34.3	-36.6	N 21 03.0	-05.2	03				
04	239	39.0	+00.1	N 09 49.8	-00.9	235	30.8	-00.5	N 09 43.7	-01.2	270	57.7	-36.6	N 20 57.8	-05.4	04				
05	254	39.1	+00.2	N 09 48.9	-00.9	250	30.3	-00.4	N 09 42.5	-01.1	285	21.1	-36.7	N 20 52.4	-05.6	05				
06	269	39.3	+00.2	N 09 48.0	-00.9	265	29.9	-00.5	N 09 41.4	-01.2	299	44.4	-36.6	N 20 46.8	-05.7	06				
07	284	39.5	+00.2	N 09 47.1	-00.9	280	29.4	-00.4	N 09 40.2	-01.1	314	07.8	-36.6	N 20 41.1	-05.8	07				
08	299	39.7	+00.2	N 09 46.2	-00.8	295	29.0	-00.5	N 09 39.1	-01.2	328	31.2	-36.6	N 20 35.3	-06.0	08				
09	314	39.9	+00.2	N 09 45.4	-00.9	310	28.5	-00.4	N 09 37.9	-01.2	342	54.6	-36.6	N 20 29.3	-06.2	09				
10	329	40.1	+00.1	N 09 44.5	-00.9	325	28.1	-00.5	N 09 36.7	-01.1	357	18.0	-36.6	N 20 23.1	-06.3	10				
11	344	40.2	+00.2	N 09 43.6	-00.9	340	27.6	-00.4	N 09 35.6	-01.2	1	41.4	-36.5	N 20 16.8	-06.5	11				
12	359	40.4	+00.2	N 09 42.7	-00.9	355	27.2	-00.5	N 09 34.4	-01.1	26	04.9	-36.6	N 20 10.3	-06.6	12				
13	14	40.6	+00.2	N 09 41.8	-00.8	10	26.7	-00.4	N 09 33.3	-01.2	40	28.3	-36.5	N 20 03.7	-06.8	13				
14	29	40.8	+00.2	N 09 41.0	-00.9	25	26.3	-00.5	N 09 32.1	-01.2	54	51.8	-36.5	N 19 56.9	-06.9	14				
15	44	41.0	+00.2	N 09 40.1	-00.9	40	25.8	-00.4	N 09 30.9	-01.1	69	15.3	-36.5	N 19 50.0	-07.0	15				
16	59	41.2	+00.1	N 09 39.2	-00.9	55	25.4	-00.5	N 09 29.8	-01.2	83	38.8	-36.4	N 19 43.0	-07.3	16				
17	74	41.3	+00.2	N 09 38.3	-00.9	70	24.9	-00.4	N 09 28.6	-01.1	98	02.4	-36.5	N 19 35.7	-07.3	17				
18	89	41.5	+00.2	N 09 37.4	-00.9	85	24.5	-00.5	N 09 27.5	-01.2	112	25.9	-36.4	N 19 28.4	-07.5	18				
19	104	41.7	+00.2	N 09 36.5	-00.8	100	24.0	-00.4	N 09 26.3	-01.2	126	49.5	-36.3	N 19 20.9	-07.6	19				
20	119	41.9	+00.2	N 09 35.7	-00.9	115	23.6	-00.5	N 09 25.1	-01.1	141	13.2	-36.4	N 19 13.3	-07.8	20				
21	134	42.1	+00.2	N 09 34.8	-00.9	130	23.1	-00.4	N 09 24.0	-01.2	155	36.8	-36.3	N 19 05.5	-08.0	21				
22	149	42.3	+00.2	N 09 33.9	-00.9	145	22.7	-00.5	N 09 22.8	-01.2	170	00.5	-36.3	N 18 57.5	-08.0	22				
23	164	42.5	+00.1	N 09 33.0	-00.9	160	22.2	-00.4	N 09 21.6	-01.1	184	24.2	-36.3	N 18 49.5	-08.2	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	15°8	15°8	15°8	15°8	15°8	15°8	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	16°4	16°5	16°5	16°5	16°6	16°6
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	60°3	60°4	60°6	60°7	60°8	60°9
SHA	204°	203°	203°	203°	203°	203°	SHA	200°	199°	199°	199°	199°	199°	SHA	236°	234°	231°	228°	226°	223°
Greenwich Culmination Time: 12:01				Greenwich Culmination Time: 12:18				Greenwich Culmination Time: 10:11												

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	179	42.6	+00.2	N 09 32.1	-00.9	175	21.8	-00.5	N 09 20.5	-01.2	198	47.9	-36.2	N 18 41.3	-08.4	00				
01	194	42.8	+00.2	N 09 31.2	-00.9	190	21.3	-00.4	N 09 19.3	-01.1	213	11.7	-36.2	N 18 32.9	-08.5	01				
02	209	43.0	+00.2	N 09 30.3	-00.8	205	20.9	-00.4	N 09 18.2	-01.2	227	35.5	-36.2	N 18 24.4	-08.6	02				
03	224	43.2	+00.2	N 09 29.5	-00.9	220	20.5	-00.5	N 09 17.0	-01.2	241	59.3	-36.1	N 18 15.8	-08.8	03				
04	239	43.4	+00.2	N 09 28.6	-00.9	235	20.0	-00.4	N 09 15.8	-01.1	256	23.2	-36.1	N 18 07.0	-08.8	04				
05	254	43.6	+00.2	N 09 27.7	-00.9	250	19.6	-00.5	N 09 14.7	-01.2	270	47.1	-36.0	N 17 58.2	-09.1	05				
06	269	43.8	+00.1	N 09 26.8	-00.9	265	19.1	-00.4	N 09 13.5	-01.2	285	11.1	-36.0	N 17 49.1	-09.1	06				
07	284	43.9	+00.2	N 09 25.9	-00.9	280	18.7	-00.5	N 09 12.3	-01.1	299	35.1	-36.0	N 17 40.0	-09.3	07				
08	299	44.1	+00.2	N 09 25.0	-00.9	295	18.2	-00.4	N 09 11.2	-01.2	313	59.1	-35.9	N 17 30.7	-09.4	08				
09	314	44.3	+00.2	N 09 24.1	-00.9	310	17.8	-00.4	N 09 10.0	-01.2	328	23.2	-35.9	N 17 21.3	-09.6	09				
10	329	44.5	+00.2	N 09 23.2	-00.8	325	17.4	-00.5	N 09 08.8	-01.1	342	47.3	-35.8	N 17 11.7	-09.6	10				
11	344	44.7	+00.2	N 09 22.4	-00.9	340	16.9	-00.4	N 09 07.7	-01.2	357	11.5	-35.8	N 17 02.1	-09.8	11				
12	359	44.9	+00.2	N 09 21.5	-00.9	355	16.5	-00.5	N 09 06.5	-01.2	11	35.7	-35.7	N 16 52.3	-10.0	12				
13	14	45.1	+00.1	N 09 20.6	-00.9	10	16.0	-00.4	N 09 05.3	-01.2	25	60.0	-35.7	N 16 42.3	-10.0	13				
14	29	45.2	+00.2	N 09 19.7	-00.9	25	15.6	-00.5	N 09 04.1	-01.1	40	24.3	-35.7	N 16 32.3	-10.2	14				
15	44	45.4	+00.2	N 09 18.8	-00.9	40	15.1	-00.4	N 09 03.0	-01.2	54	48.6	-35.6	N 16 22.1	-10.3	15				
16	59	45.6	+00.2	N 09 17.9	-00.9	55	14.7	-00.4	N 09 01.8	-01.2	69	13.0	-35.5	N 16 11.8	-10.4	16				
17	74	45.8	+00.2	N 09 17.0	-00.9	70	14.3	-00.5	N 09 00.6	-01.1	83	37.5	-35.5	N 16 01.4	-10.5	17				
18	89	46.0	+00.2	N 09 16.1	-00.9	85	13.8	-00.4	N 08 59.5	-01.2	98	12.0	-35.5	N 15 50.9	-10.6	18				
19	104	46.2	+00.2	N 09 15.2	-00.9	100	13.4	-00.5	N 08 58.3	-01.2	112	26.5	-35.4	N 15 40.3	-10.8	19				
20	119	46.4	+00.2	N 09 14.3	-00.8	115	12.9	-00.4	N 08 57.1	-01.2	126	51.1	-35.3	N 15 29.5	-10.8	20				
21	134	46.6	+00.1	N 09 13.5	-00.9	130	12.5	-00.4	N 08 55.9	-01.1	141	15.8	-35.3	N 15 18.7	-11.0	21				
22	149	46.7	+00.2	N 09 12.6	-00.9	145	12.1	-00.5	N 08 54.8	-01.2	155	40.5	-35.3	N 15 07.7	-11.1	22				
23	164	46.9	+00.2	N 09 11.7	-00.9	160	11.6	-00.4	N 08 53.6	-01.2	170	05.2	-35.2	N 14 56.6	-11.1	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	15°8	15°8	15°8	15°8	15°8	15°8	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	16°6	16°6	16°6	16°7	16°7	16°7
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	61°0	61°0	61°1	61°2	61°2	61°3
SHA	203°	203°	202°	202°	202°	202°	SHA	198°	198°	198°	198°	198°	197°	SHA	221°	218°	215°	213°	210°	208°
Greenwich Culmination Time: 12:01				Greenwich Culmination Time: 12:18				Greenwich Culmination Time: 12:01				Greenwich Culmination Time: 12:18				Greenwich Culmination Time: 11:11				

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 15°9' 15°9' 15°9' 15°9' 15°9' 15°9'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 198° 198° 198° 198° 198° 197°
Greenwich Culmination Time: 11:59

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
SHA 198° 198° 198° 198° 197°
Greenwich Culmination Time: 11:59

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 15°8' 15°8' 15°8' 15°8' 15°8' 15°8'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
SHA 201° 201° 201° 200° 200° 200°
Greenwich Culmination Time: 12:00

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
SHA 200° 200° 200° 199° 199° 199°
Greenwich Culmination Time: 12:04

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 15°8 15°8 15°8 15°8 15°8 15°8
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 200° 200° 200° 200° 199° 199°
Greenwich Culmination Time: 12:00

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 199° 199° 199° 199° 199° 199°
Greenwich Culmination Time: 12:02

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 15°8 15°8 15°8 15°9 15°9 15°9
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 199° 199° 199° 199° 198° 198°
Greenwich Culmination Time: 11:59

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA, Dec, and magnitude data for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 199° 198° 198° 198° 198° 198°
Greenwich Culmination Time: 12:01

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

UT	Sun				Venus				Moon				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
00	180	25.8	+00.2	N 06 15.3	-00.9	173	52.1	-00.4	N 05 00.2	-01.3	81	46.9	-31.5	S 21 26.3	+03.9
01	195	26.0	+00.2	N 06 14.4	-00.9	188	51.7	-00.4	N 04 58.9	-01.2	96	15.4	-31.4	S 21 30.2	+03.8
02	210	26.2	+00.3	N 06 13.5	-01.0	203	51.3	-00.4	N 04 57.7	-01.2	110	44.0	-31.5	S 21 34.0	+03.7
03	225	26.5	+00.2	N 06 12.5	-00.9	218	50.9	-00.4	N 04 56.5	-01.3	125	12.5	-31.4	S 21 37.7	+03.5
04	240	26.7	+00.2	N 06 11.6	-00.9	233	50.5	-00.3	N 04 55.2	-01.2	139	41.1	-31.5	S 21 41.2	+03.4
05	255	26.9	+00.2	N 06 10.7	-01.0	248	50.2	-00.4	N 04 54.0	-01.3	154	09.6	-31.4	S 21 44.6	+03.3
06	270	27.1	+00.2	N 06 09.7	-00.9	263	49.8	-00.4	N 04 52.7	-01.2	168	38.2	-31.4	S 21 47.9	+03.2
07	285	27.3	+00.2	N 06 08.8	-00.9	278	49.4	-00.4	N 04 51.5	-01.2	183	06.8	-31.4	S 21 51.1	+03.1
08	300	27.5	+00.2	N 06 07.9	-01.0	293	49.0	-00.4	N 04 50.3	-01.3	197	35.4	-31.5	S 21 54.2	+02.9
09	315	27.7	+00.2	N 06 06.9	-00.9	308	48.6	-00.4	N 04 49.0	-01.2	212	03.9	-31.4	S 21 57.1	+02.9
10	330	27.9	+00.3	N 06 06.0	-00.9	323	48.2	-00.4	N 04 47.8	-01.3	226	32.5	-31.3	S 21 60.0	+02.7
11	345	28.2	+00.2	N 06 05.1	-01.0	338	47.8	-00.4	N 04 46.5	-01.2	241	01.2	-31.4	S 22 02.7	+02.6
12	0	28.4	+00.2	N 06 04.1	-00.9	353	47.4	-00.3	N 04 45.3	-01.2	255	29.8	-31.4	S 22 05.3	+02.4
13	15	28.6	+00.2	N 06 03.2	-00.9	8	47.1	-00.4	N 04 44.1	-01.3	269	58.4	-31.3	S 22 07.7	+02.4
14	30	28.8	+00.2	N 06 02.3	-01.0	23	46.7	-00.4	N 04 42.8	-01.2	284	27.1	-31.3	S 22 10.1	+02.2
15	45	29.0	+00.2	N 06 01.3	-00.9	38	46.3	-00.4	N 04 41.6	-01.3	298	55.8	-31.4	S 22 12.3	+02.2
16	60	29.2	+00.2	N 06 00.4	-00.9	53	45.9	-00.4	N 04 40.3	-01.2	313	24.4	-31.3	S 22 14.5	+02.0
17	75	29.4	+00.3	N 05 59.5	-01.0	68	45.5	-00.4	N 04 39.1	-01.3	327	53.1	-31.2	S 22 16.5	+01.8
18	90	29.7	+00.2	N 05 58.5	-00.9	83	45.1	-00.4	N 04 37.8	-01.2	342	21.9	-31.3	S 22 18.3	+01.8
19	105	29.9	+00.2	N 05 57.6	-01.0	98	44.7	-00.4	N 04 36.6	-01.2	356	50.6	-31.3	S 22 20.1	+01.6
20	120	30.1	+00.2	N 05 56.6	-00.9	113	44.3	-00.3	N 04 35.4	-01.3	11	19.3	-31.2	S 22 21.7	+01.6
21	135	30.3	+00.2	N 05 55.7	-00.9	128	44.0	-00.4	N 04 34.1	-01.2	25	48.1	-31.2	S 22 23.3	+01.4
22	150	30.5	+00.2	N 05 54.8	-01.0	143	43.6	-00.4	N 04 32.9	-01.3	40	16.9	-31.2	S 22 24.7	+01.3
23	165	30.7	+00.2	N 05 53.8	-00.9	158	43.2	-00.4	N 04 31.6	-01.2	54	45.7	-31.2	S 22 26.0	+01.1
UT 02 06 10 14 18 22	SD 15°9' 15°9' 15°9' 15°9' 15°9' 15°9'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SD 15°3' 15°3' 15°2' 15°2' 15°2' 15°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 56°2' 56°0' 55°9' 55°8' 55°7' 55°6'	SHA 095° 097° 097° 097° 197° 197°	SHA 188° 188° 188° 187° 187° 187°	Greenwich Culmination Time: 11:58	Greenwich Culmination Time: 12:24	Greenwich Culmination Time: 19:13					

UT	Sun				Venus				Moon				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
00	180	10.8	+00.2	N 07 22.0	-00.9	174	20.7	-00.4	N 06 28.7	-01.2	119	26.9	-31.3	S 11 53.2	+11.4
01	195	11.0	+00.2	N 07 21.1	-00.9	189	20.3	-00.4	N 06 27.5	-01.2	133	55.6	-31.2	S 12 04.6	+11.4
02	210	11.2	+00.2	N 07 20.2	-00.9	204	19.9	-00.4	N 06 26.3	-01.3	148	24.4	-31.2	S 12 16.0	+11.4
03	225	11.4	+00.2	N 07 19.3	-00.9	219	19.5	-00.4	N 06 25.0	-01.2	162	53.2	-31.2	S 12 27.4	+11.2
04	240	11.6	+00.2	N 07 18.4	-01.0	234	19.1	-00.4	N 06 23.8	-01.2	177	22.0	-31.2	S 12 38.6	+11.2
05	255	11.8	+00.2	N 07 17.4	-00.9	249	18.7	-00.4	N 06 22.6	-01.2	191	50.8	-31.2	S 12 49.8	+11.0
06	270	12.0	+00.2	N 07 16.5	-00.9	264	18.3	-00.4	N 06 21.4	-01.2	206	19.6	-31.3	S 13 00.8	+11.0
07	285	12.2	+00.2	N 07 15.6	-00.9	279	17.9	-00.4	N 06 20.2	-01.3	220	48.3	-31.2	S 13 11.8	+10.9
08	300	12.4	+00.2	N 07 14.7	-00.9	294	17.5	-00.4	N 06 18.9	-01.2	235	17.1	-31.2	S 13 22.7	+10.8
09	315	12.6	+00.2	N 07 13.8	-01.0	309	17.1	-00.4	N 06 17.7	-01.2	249	45.9	-31.3	S 13 33.5	+10.7
10	330	12.8	+00.2	N 07 12.8	-00.9	324	16.7	-00.4	N 06 16.5	-01.2	264	14.6	-31.2	S 13 44.2	+10.6
11	345	13.0	+00.2	N 07 11.9	-00.9	339	16.3	-00.4	N 06 15.3	-01.3	278	43.4	-31.2	S 13 54.8	+10.6
12	0	13.2	+00.3	N 07 11.0	-00.9	354	15.9	-00.4	N 06 14.0	-01.2	293	12.2	-31.3	S 14 05.4	+10.4
13	15	13.5	+00.2	N 07 10.1	-00.9	9	15.5	-00.4	N 06 12.8	-01.2	307	40.9	-31.3	S 14 15.8	+10.3
14	30	13.7	+00.2	N 07 09.2	-01.0	24	15.1	-00.5	N 06 11.6	-01.2	322	09.6	-31.2	S 14 26.1	+10.3
15	45	13.9	+00.2	N 07 08.2	-00.9	39	14.6	-00.4	N 06 10.4	-01.2	336	38.4	-31.3	S 14 36.4	+10.2
16	60	14.1	+00.2	N 07 07.3	-00.9	54	14.2	-00.4	N 06 09.2	-01.3	351	07.1	-31.3	S 14 46.6	+10.0
17	75	14.3	+00.2	N 07 06.4	-00.9	69	13.8	-00.4	N 06 07.9	-01.2	5	35.8	-31.3	S 14 56.6	+10.0
18	90	14.5	+00.2	N 07 05.5	-01.0	84	13.4	-00.4	N 06 06.7	-01.2	20	04.5	-31.2	S 15 06.6	+09.8
19	105	14.7	+00.2	N 07 04.5	-00.9	99	13.0	-00.4	N 06 05.5	-01.2	34	33.3	-31.3	S 15 16.4	+09.8
20	120	14.9	+00.2	N 07 03.6	-00.9	114	12.6	-00.4	N 06 04.3	-01.3	49	02.0	-31.3	S 15 26.2	+09.7
21	135	15.1	+00.2	N 07 02.7	-00.9	129	12.2	-00.4	N 06 03.0	-01.2	63	30.7	-31.3	S 15 35.9	+09.6
22	150	15.3	+00.2	N 07 01.8	-01.0	144	11.8	-00.4	N 06 01.8	-01.2	77	59.4	-31.4	S 15 45.5	+09.4
23	165	15.5	+00.2	N 07 00.8	-00.9	159	11.4	-00.4	N 06 00.6	-01.2	92	28.0	-31.3	S 15 54.9	+09.4
UT 02 06 10 14 18 22	SD 15°9' 15°9' 15°9' 15°9' 15°9' 15°9'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SD 15°3' 15°3' 15°2' 15°2' 15°2' 15°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 56°2' 56°0' 55°9' 55°8' 55°7' 55°6'	SHA 095° 097° 097° 097° 197° 197°	SHA 191° 191° 191° 191° 191° 190°	Greenwich Culmination Time: 11:59	Greenwich Culmination Time: 12:22	Greenwich Culmination Time: 16:36					

UT	Mars				Jupiter				Saturn				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
00	181	25.3	+01.0	N 07 49.3	-00.6	91	25.2	+02.3	S 22 19.9	+00.0	60	35.4	+02.5	S 22 28.8	+00.0
01	196	26.3	+00.9	N 07 48.7	-00.6	106	27.5	+02.2	S 22 19.9	+00.0	75	37.9	+02.5	S 22 28.8	+00.0
02	211	27.2	+01.0	N 07 48.1	-00.6	121	29.7	+02.3	S 22 19.9	+00.0	90	40.4	+02.5	S 22 28.8	+00.0
03	226	28.2	+01.0	N 07 47.5	-00.6	136	32.0	+02.2	S 22 19.9	+00.0	105	42.9	+02.5	S 22 28.8	+00.0
04	241	29.2	+01.0	N 07 46.9	-00.7	151	34.2	+02.3	S 22 20.0	+00.0	120	45.4	+02.5	S 22 28.8	+00.0
05	256	30.2	+01.0	N 07 46.2	-00.6	166	36.5	+02.2	S 22 20.0	+00.0	135	47.9	+02.5	S 22 28.8	+00.0
06	271	31.2	+00.9	N 07 45.6	-00.6	181	38.7	+02.3	S 22 20.0	+00.1	150	50.4	+02.6	S 22 28.8	+00.0
07	286	32.1	+01.0	N 07 45.0	-00.6	196	41.0	+02.3	S 22 20.1	+00.0	165	53.0	+02.5	S 22 28.8	+00.1
08	301	33.1	+01.0	N 07 44.4	-00.6	211	43.3	+02.2	S 22 20.1	+00.0	180	55.5	+02.5	S 22 28.9	+00.0
09	316	34.1	+01.0	N 07 43.8	-00.7	226	45.5	+02.3	S 22 20.1	+00.0	195	58.0	+02.5	S 22 28.9	+00.0
10	331	35.1	+01.0	N 07 43.1	-00.6	241	47.8	+02.2	S 22 20.1	+00.1	211	00.5	+02.5	S 22 28.9	+00.0
11	346	36.1	+00.9	N 07 42.5	-00.6	256	50.0	+02.3	S 22 20.2	+00.0	226	03.0	+02.5	S 22 28.9	+00.0
12	1	37.0	+01.0	N 07 41.9	-00.6	271	52.3	+02.2	S 22 20.2	+00.0	241	05.5	+02.5	S 22 28.9	+00.0
13	16	38.0	+01.0	N 07 41.3	-00.6	286	54.5	+02.3	S 22 20.2	+00.1	256	08.0	+02.5	S 22 28.9	+00.0
14	31	39.0	+01.0	N 07 40.7	-00.6	301	56.8	+02.2	S 22 20.3	+00.0	271	10.5	+02.5	S 22 28.9	+00.0
15	46	40.0	+01.0	N 07 40.1	-00.7	316	59.0	+02.3	S 22 20.3	+00.0	286	13.0	+02.5	S 22 28.9	+00.0
16	61	41.0	+01.0	N 07 39.4	-00.6	332	01.3	+02.2	S 22 20.3	+00.0	301	15.5	+02.6	S 22 28.9	+00.0
17	76	42.0	+00.9	N 07 38.8	-00.6	347	03.5	+02.3	S 22 20.3	+00.1	316	18.1	+02.5	S 22 28.9	+00.0
18	91	42.9	+01.0	N 07 38.2	-00.6	2	05.8	+02.2	S 22 20.4	+00.0	331	20.6	+02.5	S 22 28.9	+00.1
19	106	43.9	+01.0	N 07 37.6	-00.6	17	08.0	+02.2	S 22 20.4	+00.0	346	23.1	+02.5	S 22 29.0	+00.0
20	121	44.9	+01.0	N 07 37.0	-00.7	32	10.2	+02.3	S 22 20.4	+00.1	1	25.6	+02.5	S 22 29.0	+00.0
21	136	45.9	+01.0	N 07 36.3	-00.6	47	12.5	+02.2	S 22 20.5	+00.0	16	28.1	+02.5	S 22 29.0	+00.0

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes SD, HP, SHA, and Greenwich Culmination Time for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes SD, HP, SHA, and Greenwich Culmination Time for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes SD, HP, SHA, and Greenwich Culmination Time for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes SD, HP, SHA, and Greenwich Culmination Time for each planet.

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	180	46.6	+00.2	N 04 45.0	-00.9	173	15.4	-00.3	N 03 00.2	-01.3	33	18.1	-28.3	S 19 04.7	-06.4	00				
01	195	46.8	+00.2	N 04 44.1	-01.0	188	15.1	-00.4	N 02 58.9	-01.2	47	49.8	-28.3	S 18 58.3	-06.5	01				
02	210	47.0	+00.3	N 04 43.1	-00.9	203	14.7	-00.4	N 02 57.7	-01.3	62	21.5	-28.3	S 18 51.8	-06.5	02				
03	225	47.3	+00.2	N 04 42.2	-01.0	218	14.3	-00.4	N 02 56.4	-01.2	76	53.2	-28.2	S 18 45.3	-06.6	03				
04	240	47.5	+00.2	N 04 41.2	-00.9	233	13.9	-00.3	N 02 55.2	-01.3	91	25.0	-28.1	S 18 38.7	-06.7	04				
05	255	47.7	+00.2	N 04 40.3	-01.0	248	13.6	-00.4	N 02 53.9	-01.3	105	56.9	-28.2	S 18 32.0	-06.8	05				
06	270	47.9	+00.2	N 04 39.3	-00.9	263	13.2	-00.4	N 02 52.6	-01.2	120	28.7	-28.0	S 18 25.2	-06.9	06				
07	285	48.1	+00.3	N 04 38.4	-01.0	278	12.8	-00.4	N 02 51.4	-01.3	135	00.7	-28.0	S 18 18.3	-06.9	07				
08	300	48.4	+00.2	N 04 37.4	-00.9	293	12.4	-00.3	N 02 50.1	-01.2	149	32.7	-28.0	S 18 11.4	-07.1	08				
09	315	48.6	+00.2	N 04 36.5	-01.0	308	12.1	-00.4	N 02 48.9	-01.3	164	04.7	-27.9	S 18 04.3	-07.1	09				
10	330	48.8	+00.2	N 04 35.5	-00.9	323	11.7	-00.4	N 02 47.6	-01.3	178	36.8	-27.9	S 17 57.2	-07.1	10				
11	345	49.0	+00.2	N 04 34.6	-01.0	338	11.3	-00.4	N 02 46.3	-01.2	193	08.9	-27.8	S 17 50.1	-07.3	11				
12	0	49.2	+00.3	N 04 33.6	-00.9	353	10.9	-00.3	N 02 45.1	-01.3	207	41.1	-27.8	S 17 42.8	-07.3	12				
13	15	49.5	+00.2	N 04 32.7	-01.0	8	10.6	-00.4	N 02 43.8	-01.2	222	13.3	-27.7	S 17 35.5	-07.4	13				
14	30	49.7	+00.2	N 04 31.7	-00.9	23	10.2	-00.4	N 02 42.6	-01.3	236	45.6	-27.7	S 17 28.1	-07.5	14				
15	45	49.9	+00.2	N 04 30.8	-01.0	38	09.8	-00.4	N 02 41.3	-01.3	251	17.9	-27.6	S 17 20.6	-07.5	15				
16	60	50.1	+00.3	N 04 29.8	-00.9	53	09.4	-00.3	N 02 40.0	-01.2	265	50.3	-27.6	S 17 13.1	-07.7	16				
17	75	50.4	+00.2	N 04 28.9	-01.0	68	09.1	-00.4	N 02 38.8	-01.3	280	22.7	-27.5	S 17 05.4	-07.7	17				
18	90	50.6	+00.2	N 04 27.9	-00.9	83	08.7	-00.4	N 02 37.5	-01.2	294	55.2	-27.5	S 16 57.7	-07.7	18				
19	105	50.8	+00.2	N 04 27.0	-01.0	98	08.3	-00.3	N 02 36.3	-01.3	309	27.7	-27.5	S 16 50.0	-07.9	19				
20	120	51.0	+00.2	N 04 26.0	-00.9	113	08.0	-00.4	N 02 35.0	-01.3	324	00.2	-27.4	S 16 42.1	-07.9	20				
21	135	51.2	+00.3	N 04 25.1	-01.0	128	07.6	-00.4	N 02 33.7	-01.2	338	32.8	-27.3	S 16 34.2	-08.0	21				
22	150	51.5	+00.2	N 04 24.1	-00.9	143	07.2	-00.4	N 02 32.5	-01.3	353	05.5	-27.3	S 16 26.2	-08.0	22				
23	165	51.7	+00.2	N 04 23.2	-01.0	158	06.8	-00.3	N 02 31.2	-01.3	7	38.2	-27.3	S 16 18.2	-08.1	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	15°9	15°9	15°9	15°9	15°9	15°9	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	14°8	14°8	14°8	14°7	14°7	14°7
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	54°2	54°2	54°1	54°1	54°1	54°1
SHA	191°	191°	191°	191°	190°	190°	SHA	183°	183°	183°	183°	183°	182°	SHA	043°	041°	038°	036°	034°	031°
Greenwich Culmination Time: 11:56				Greenwich Culmination Time: 12:27				Greenwich Culmination Time: 22:28												

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	180	30.9	+00.3	N 05 52.9	-00.9	173	42.8	-00.4	N 04 30.4	-01.3	69	14.5	-31.1	S 22 27.1	+01.1	00				
01	195	31.2	+00.2	N 05 52.0	-01.0	188	42.4	-00.4	N 04 29.1	-01.2	83	43.4	-31.2	S 22 28.2	+00.9	01				
02	210	31.4	+00.2	N 05 51.0	-00.9	203	42.0	-00.4	N 04 27.9	-01.3	98	12.2	-31.1	S 22 29.1	+00.9	02				
03	225	31.6	+00.2	N 05 50.1	-01.0	218	41.6	-00.3	N 04 26.6	-01.2	112	41.1	-31.1	S 22 30.0	+00.7	03				
04	240	31.8	+00.2	N 05 49.1	-00.9	233	41.3	-00.4	N 04 25.4	-01.3	127	10.0	-31.0	S 22 30.7	+00.6	04				
05	255	32.0	+00.2	N 05 48.2	-00.9	248	40.9	-00.4	N 04 24.1	-01.2	141	39.0	-31.1	S 22 31.3	+00.4	05				
06	270	32.2	+00.2	N 05 47.3	-01.0	263	40.5	-00.4	N 04 22.9	-01.2	156	07.9	-31.0	S 22 31.7	+00.4	06				
07	285	32.4	+00.3	N 05 46.3	-00.9	278	40.1	-00.4	N 04 21.7	-01.3	170	36.9	-31.0	S 22 32.1	+00.2	07				
08	300	32.7	+00.2	N 05 45.4	-00.9	293	39.7	-00.4	N 04 20.4	-01.2	185	05.9	-31.0	S 22 32.3	+00.2	08				
09	315	32.9	+00.2	N 05 44.5	-01.0	308	39.3	-00.3	N 04 19.2	-01.3	199	34.9	-30.9	S 22 32.5	+00.0	09				
10	330	33.1	+00.2	N 05 43.5	-00.9	323	39.0	-00.4	N 04 17.9	-01.2	214	04.0	-30.9	S 22 32.5	+00.1	10				
11	345	33.3	+00.2	N 05 42.6	-01.0	338	38.6	-00.4	N 04 16.7	-01.3	228	33.1	-30.9	S 22 32.4	-00.2	11				
12	0	33.5	+00.2	N 05 41.6	-00.9	353	38.2	-00.4	N 04 15.4	-01.2	243	02.2	-30.9	S 22 32.2	-00.4	12				
13	15	33.7	+00.3	N 05 40.7	-00.9	8	37.8	-00.4	N 04 14.2	-01.3	257	31.3	-30.8	S 22 31.8	-00.4	13				
14	30	34.0	+00.2	N 05 39.8	-01.0	23	37.4	-00.4	N 04 12.9	-01.2	272	00.5	-30.8	S 22 31.4	-00.6	14				
15	45	34.2	+00.2	N 05 38.8	-00.9	38	37.0	-00.3	N 04 11.7	-01.3	286	29.7	-30.8	S 22 30.8	-00.7	15				
16	60	34.4	+00.2	N 05 37.9	-01.0	53	36.7	-00.4	N 04 10.4	-01.2	300	58.9	-30.7	S 22 30.1	-00.7	16				
17	75	34.6	+00.2	N 05 36.9	-00.9	68	36.3	-00.4	N 04 09.2	-01.3	315	28.2	-30.7	S 22 29.4	-00.9	17				
18	90	34.8	+00.2	N 05 36.0	-00.9	83	35.9	-00.4	N 04 07.9	-01.2	329	57.5	-30.7	S 22 28.5	-01.0	18				
19	105	35.0	+00.3	N 05 35.1	-01.0	98	35.5	-00.4	N 04 06.7	-01.3	344	26.8	-30.6	S 22 27.5	-01.2	19				
20	120	35.3	+00.2	N 05 34.1	-00.9	113	35.1	-00.4	N 04 05.4	-01.2	358	56.2	-30.7	S 22 26.3	-01.2	20				
21	135	35.5	+00.2	N 05 33.2	-01.0	128	34.7	-00.3	N 04 04.2	-01.3	13	25.5	-30.5	S 22 25.1	-01.4	21				
22	150	35.7	+00.2	N 05 32.2	-00.9	143	34.4	-00.4	N 04 02.9	-01.2	27	55.0	-30.6	S 22 23.7	-01.4	22				
23	165	35.9	+00.2	N 05 31.3	-00.9	158	34.0	-00.4	N 04 01.7	-01.3	42	24.4	-30.5	S 22 22.3	-01.6	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	15°9	15°9	15°9	15°9	15°9	15°9	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	15°1	15°1	15°1	15°0	15°0	15°0
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	55°5	55°4	55°3	55°2	55°1	55°0
SHA	194°	194°	193°	193°	193°	193°	SHA	187°	187°	186°	186°	186°	186°	SHA	081°	079°	077°	075°	072°	070°
Greenwich Culmination Time: 11:57				Greenwich Culmination Time: 12:25				Greenwich Culmination Time: 20:04												

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	182	59.7	+00.9	N 06 49.6	-00.6	95	00.2	+02.2	S 22 22.7	+00.0	64	35.8	+02.5	S 22 29.6	+00.0	00
01	198	00.6	+01.0	N 06 49.0	-00.6	110	02.4	+02.2	S 22 22.7	+00.0	79	38.3	+02.5	S 22 29.6	+00.0	01
02	213	01.6	+01.0	N 06 48.4	-00.6	125	04.6	+02.3	S 22 22.7	+00.1	94	40.8	+02.5	S 22 29.6	+00.0	02
03	228	02.6	+01.0	N 06 47.8	-00.7	140	06.9	+02.2	S 22 22.8	+00.0	109	43.3	+02.5	S 22 29.6	+00.0	03
04	243	03.6	+01.0	N 06 47.1	-00.6	155	09.1	+02.2	S 22 22.8	+00.0	124	45.8	+02.5	S 22 29.6	+00.0	04
05	258	04.6	+01.0	N 06 46.5	-00.6	170	11.3	+02.2	S 22 22.8	+00.0	139	48.3	+02.4	S 22 29.6	+00.0	05
06	273	05.6	+01.0	N 06 45.9	-00.6	185	13.5	+02.3	S 22 22.8	+00.1	154	50.7	+02.5	S 22 29.6	+00.0	06
07	288	06.6	+00.9	N 06 45.3	-00.7	200	15.8	+02.2	S 22 22.9	+00.0	169	53.2	+02.5	S 22 29.6	+00.0	07
08	303	07.5	+01.0	N 06 44.6	-00.6	215	18.0	+02.2	S 22 22.9	+00.0	184	55.7	+02.5	S 22 29.6	+00.0	08
09	318	08.5	+01.0	N 06 44.0	-00.6	230	20.2	+02.2	S 22 22.9	+00.1	199	58.2	+02.5	S 22 29.6	+00.0	09
10	333	09.5	+01.0	N 06 43.4	-00.6	245	22.4	+02.2	S 22 23.0	+00.0	215	00.7	+02.5	S 22 29.6	+00.1	10
11	348	10.5	+01.0	N 06 42.8	-00.7	260	24.6	+02.3	S 22 23.0	+00.0	230	03.2	+02.5	S 22 29.7	+00.0	11
12	3	11.5	+01.0	N 06 42.1	-00.6	275	26.9	+02.2	S 22 23.0	+00.1	245	05.7	+02.5	S 22 29.7	+00.0	12
13	18	12.5	+01.0	N 06 41.5	-00.6	290	29.1	+02.2	S 22 23.1	+00.0	260	08.2	+02.5	S 22 29.7	+00.0	13
14																

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	180	36.1	+00.2	N 05 30.4	-01.0	173	33.6	-00.4	N 04 00.4	-01.2	56	53.9	-30.5	S 22 20.7	-01.7	00				
01	195	36.3	+00.3	N 05 29.4	-00.9	188	33.2	-00.4	N 03 59.2	-01.3	71	23.4	-30.4	S 22 19.0	-01.8	01				
02	210	36.6	+00.2	N 05 28.5	-01.0	203	32.8	-00.3	N 03 57.9	-01.2	85	53.0	-30.4	S 22 17.2	-01.9	02				
03	225	36.8	+00.2	N 05 27.5	-00.9	218	32.5	-00.4	N 03 56.7	-01.3	100	22.6	-30.4	S 22 15.3	-02.0	03				
04	240	37.0	+00.2	N 05 26.6	-01.0	233	32.1	-00.4	N 03 55.4	-01.2	114	52.2	-30.3	S 22 13.3	-02.1	04				
05	255	37.2	+00.2	N 05 25.6	-00.9	248	31.7	-00.4	N 03 54.2	-01.3	129	21.9	-30.3	S 22 11.2	-02.2	05				
06	270	37.4	+00.2	N 05 24.7	-00.9	263	31.3	-00.4	N 03 52.9	-01.2	143	51.6	-30.3	S 22 09.0	-02.3	06				
07	285	37.6	+00.3	N 05 23.8	-01.0	278	30.9	-00.4	N 03 51.7	-01.3	158	21.3	-30.2	S 22 06.7	-02.5	07				
08	300	37.9	+00.2	N 05 22.8	-00.9	293	30.5	-00.3	N 03 50.4	-01.2	172	51.1	-30.2	S 22 04.2	-02.5	08				
09	315	38.1	+00.2	N 05 21.9	-01.0	308	30.2	-00.4	N 03 49.2	-01.3	187	20.9	-30.1	S 22 01.7	-02.7	09				
10	330	38.3	+00.2	N 05 20.9	-00.9	323	29.8	-00.4	N 03 47.9	-01.2	201	50.8	-30.1	S 21 59.0	-02.7	10				
11	345	38.5	+00.2	N 05 20.0	-01.0	338	29.4	-00.4	N 03 46.7	-01.3	216	20.7	-30.1	S 21 56.3	-02.9	11				
12	0	38.7	+00.2	N 05 19.0	-00.9	353	29.0	-00.4	N 03 45.4	-01.2	230	50.6	-30.0	S 21 53.4	-03.0	12				
13	15	39.0	+00.3	N 05 18.1	-00.9	8	28.6	-00.3	N 03 44.2	-01.3	245	20.6	-30.0	S 21 50.4	-03.0	13				
14	30	39.2	+00.2	N 05 17.2	-01.0	23	28.3	-00.4	N 03 42.9	-01.2	259	50.6	-29.9	S 21 47.4	-03.2	14				
15	45	39.4	+00.2	N 05 16.2	-00.9	38	27.9	-00.4	N 03 41.7	-01.3	274	20.7	-29.9	S 21 44.2	-03.3	15				
16	60	39.6	+00.2	N 05 15.3	-01.0	53	27.5	-00.4	N 03 40.4	-01.2	288	50.8	-29.9	S 21 40.9	-03.4	16				
17	75	39.8	+00.2	N 05 14.3	-00.9	68	27.1	-00.4	N 03 39.2	-01.3	303	20.9	-29.8	S 21 37.5	-03.5	17				
18	90	40.0	+00.3	N 05 13.4	-01.0	83	26.7	-00.3	N 03 37.9	-01.3	317	51.1	-29.8	S 21 34.0	-03.6	18				
19	105	40.3	+00.2	N 05 12.4	-00.9	98	26.4	-00.4	N 03 36.6	-01.2	332	21.3	-29.7	S 21 30.4	-03.6	19				
20	120	40.5	+00.2	N 05 11.5	-00.9	113	26.0	-00.4	N 03 35.4	-01.3	346	51.6	-29.7	S 21 26.8	-03.8	20				
21	135	40.7	+00.2	N 05 10.6	-01.0	128	25.6	-00.4	N 03 34.1	-01.2	1	21.9	-29.6	S 21 23.0	-03.9	21				
22	150	40.9	+00.2	N 05 09.6	-01.0	143	25.2	-00.3	N 03 32.9	-01.3	15	52.3	-29.6	S 21 19.1	-04.0	22				
23	165	41.1	+00.2	N 05 08.7	-01.0	158	24.9	-00.4	N 03 31.6	-01.2	30	22.7	-29.5	S 21 15.1	-04.1	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	15°9	15°9	15°9	15°9	15°9	15°9	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	15°0	14°9	14°9	14°9	14°9	14°9
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	54°9	54°9	54°8	54°7	54°6	54°6
SHA	193°	193°	192°	192°	192°	192°	SHA	186°	186°	185°	185°	185°	185°	SHA	068°	066°	064°	062°	059°	057°
Greenwich Culmination Time: 11:57				Greenwich Culmination Time: 12:26				Greenwich Culmination Time: 20:54												

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	180	41.3	+00.3	N 05 07.7	-00.9	173	24.5	-00.4	N 03 30.4	-01.3	44	53.2	-29.5	S 21 11.0	-04.2	00				
01	195	41.6	+00.2	N 05 06.8	-01.0	188	24.1	-00.4	N 03 29.1	-01.2	59	23.7	-29.5	S 21 06.8	-04.3	01				
02	210	41.8	+00.2	N 05 05.8	-00.9	203	23.7	-00.4	N 03 27.9	-01.3	73	54.2	-29.4	S 21 02.5	-04.4	02				
03	225	42.0	+00.2	N 05 04.9	-01.0	218	23.3	-00.3	N 03 26.6	-01.2	88	24.8	-29.4	S 20 58.1	-04.4	03				
04	240	42.2	+00.2	N 05 03.9	-00.9	233	23.0	-00.4	N 03 25.4	-01.3	102	55.4	-29.3	S 20 53.7	-04.6	04				
05	255	42.4	+00.3	N 05 03.0	-01.0	248	22.6	-00.4	N 03 24.1	-01.3	117	26.1	-29.2	S 20 49.1	-04.7	05				
06	270	42.7	+00.2	N 05 02.0	-00.9	263	22.2	-00.4	N 03 22.8	-01.2	131	56.9	-29.3	S 20 44.4	-04.7	06				
07	285	42.9	+00.2	N 05 01.1	-00.9	278	21.8	-00.3	N 03 21.6	-01.3	146	27.6	-29.1	S 20 39.7	-04.9	07				
08	300	43.1	+00.2	N 05 00.2	-01.0	293	21.5	-00.4	N 03 20.3	-01.2	160	58.5	-29.2	S 20 34.8	-05.0	08				
09	315	43.3	+00.2	N 04 59.2	-00.9	308	21.1	-00.4	N 03 19.1	-01.3	175	29.3	-29.1	S 20 29.8	-05.0	09				
10	330	43.5	+00.3	N 04 58.3	-01.0	323	20.7	-00.4	N 03 17.8	-01.2	190	00.2	-29.0	S 20 24.8	-05.2	10				
11	345	43.8	+00.2	N 04 57.3	-00.9	338	20.3	-00.4	N 03 16.6	-01.3	204	31.2	-29.0	S 20 19.6	-05.2	11				
12	0	44.0	+00.2	N 04 56.4	-01.0	353	19.9	-00.3	N 03 15.3	-01.3	219	02.2	-28.9	S 20 14.4	-05.3	12				
13	15	44.2	+00.2	N 04 55.4	-00.9	8	19.6	-00.4	N 03 14.0	-01.2	233	33.3	-28.9	S 20 09.1	-05.4	13				
14	30	44.4	+00.2	N 04 54.5	-01.0	23	19.2	-00.4	N 03 12.8	-01.3	248	04.4	-28.9	S 20 03.7	-05.5	14				
15	45	44.6	+00.2	N 04 53.5	-00.9	38	18.8	-00.4	N 03 11.5	-01.2	262	35.5	-28.7	S 19 58.2	-05.6	15				
16	60	44.8	+00.3	N 04 52.6	-01.0	53	18.4	-00.3	N 03 10.3	-01.3	277	06.8	-28.8	S 19 52.6	-05.7	16				
17	75	45.1	+00.2	N 04 51.6	-00.9	68	18.1	-00.4	N 03 09.0	-01.2	291	38.0	-28.7	S 19 46.9	-05.8	17				
18	90	45.3	+00.2	N 04 50.7	-01.0	83	17.7	-00.4	N 03 07.8	-01.3	306	09.3	-28.6	S 19 41.1	-05.9	18				
19	105	45.5	+00.2	N 04 49.7	-00.9	98	17.3	-00.4	N 03 06.5	-01.3	320	40.7	-28.6	S 19 35.2	-05.9	19				
20	120	45.7	+00.2	N 04 48.8	-01.0	113	16.9	-00.3	N 03 05.2	-01.2	335	12.1	-28.6	S 19 29.3	-06.0	20				
21	135	45.9	+00.3	N 04 47.8	-00.9	128	16.6	-00.4	N 03 04.0	-01.3	349	43.5	-28.5	S 19 23.3	-06.2	21				
22	150	46.2	+00.2	N 04 46.9	-01.0	143	16.2	-00.4	N 03 02.7	-01.2	4	15.0	-28.4	S 19 17.1	-06.2	22				
23	165	46.4	+00.2	N 04 45.9	-00.9	158	15.8	-00.4	N 03 01.5	-01.3	18	46.6	-28.5	S 19 10.9	-06.2	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	15°9	15°9	15°9	15°9	15°9	15°9	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	14°9	14°8	14°8	14°8	14°8	14°8
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	54°5	54°5	54°4	54°4	54°3	54°3
SHA	192°	192°	192°	191°	191°	191°	SHA	185°	184°	184°	184°	184°	184°	SHA	055°	053°	051°	049°	047°	045°
Greenwich Culmination Time: 11:57				Greenwich Culmination Time: 12:26				Greenwich Culmination Time: 21:42												

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	182	12.4	+01.0	N 07 19.6	-00.6	93	13.1	+02.2	S 22 21.2	+00.1	62	35.8	+02.5	S 22 29.2	+00.0	00
01	197	13.4	+01.0	N 07 19.0	-00.7	108	15.3	+02.2	S 22 21.3	+00.0	77	38.3	+02.5	S 22 29.2	+00.0	01
02	212	14.4	+01.0	N 07 18.3	-00.6	123	17.5	+02.3	S 22 21.3	+00.0	92	40.8	+02.5	S 22 29.2	+00.0	02
03	227	15.4	+00.9	N 07 17.7	-00.6	138	19.8	+02.2	S 22 21.3	+00.1	107	43.3	+02.5	S 22 29.2	+00.0	03
04	242	16.3	+01.0	N 07 17.1	-00.6	153	22.0	+02.3	S 22 21.4	+00.0	122	45.8	+02.5	S 22 29.2	+00.0	04
05	257	17.3	+01.0	N 07 16.5	-00.7	168	24.3	+02.2	S 22 21.4	+00.0	137	48.3	+02.5	S 22 29.2	+00.0	05
06	272	18.3	+01.0	N 07 15.8	-00.6	183	26.5	+02.2	S 22 21.4	+00.0	152	50.8	+02.5	S 22 29.2	+00.1	06
07	287	19.3	+01.0	N 07 15.2	-00.6	198	28.7	+02.3	S 22 21.4	+00.1	167	53.3	+02.5	S 22 29.3	+00.0	07
08	302	20.3	+01.0	N 07 14.6	-00.6	213	31.0	+02.2	S 22 21.5	+00.0	182	55.8	+02.5	S 22 29.3	+00.0	08
09	317	21.3	+00.9	N 07 14.0	-00.6	228	33.2	+02.2	S 22 21.5	+00.0	197	58.3	+02.5	S 22 29.3	+00.0	09
10	332	22.2	+01.0	N 07 13.4	-00.7	243	35.4	+02.3	S 22 21.5	+00.1	213	00.8	+02.5	S 22 29.3	+00.0	10
11	347	23.2	+01.0	N 07 12.7	-00.6	258	37.7	+02.2	S 22 21.6	+00.0	228	03.3	+02.5	S 22 29.3	+00.0	11
12	2	24.2	+01.0	N 07 12.1	-00.6	273	39.9	+02.2	S 22 21.6	+00.0	243	05.8	+02.5	S 22 29.3	+00.0	12
13	17	25.2	+01.0	N 07 11.5	-00.6	288	42.1	+02.3	S 22 21.6	+00.0	258					

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	181	07.9	+00.3	N 03 13.4	-01.0	172	39.8	-00.3	N 00 58.7	-01.3	351	03.8	-25.1	S 04 10.8	-11.2	00
01	196	08.2	+00.2	N 03 12.4	-00.9	187	39.5	-00.4	N 00 57.4	-01.3	5	38.7	-25.1	S 03 59.6	-11.3	01
02	211	08.4	+00.2	N 03 11.5	-01.0	202	39.1	-00.4	N 00 56.1	-01.2	20	13.6	-25.1	S 03 48.3	-11.3	02
03	226	08.6	+00.2	N 03 10.5	-01.0	217	38.7	-00.3	N 00 54.9	-01.3	34	48.5	-25.0	S 03 37.0	-11.3	03
04	241	08.8	+00.2	N 03 09.5	-00.9	232	38.4	-00.4	N 00 53.6	-01.3	49	23.5	-25.1	S 03 25.7	-11.3	04
05	256	09.0	+00.3	N 03 08.6	-01.0	247	38.0	-00.4	N 00 52.3	-01.2	63	58.4	-25.0	S 03 14.4	-11.3	05
06	271	09.3	+00.2	N 03 07.6	-00.9	262	37.6	-00.3	N 00 51.1	-01.3	78	33.4	-25.1	S 03 03.1	-11.3	06
07	286	09.5	+00.2	N 03 06.7	-01.0	277	37.3	-00.4	N 00 49.8	-01.3	93	08.3	-25.0	S 02 51.8	-11.4	07
08	301	09.7	+00.2	N 03 05.7	-01.0	292	36.9	-00.4	N 00 48.5	-01.3	107	43.3	-25.0	S 02 40.4	-11.3	08
09	316	09.9	+00.3	N 03 04.7	-00.9	307	36.5	-00.3	N 00 47.2	-01.2	122	18.3	-25.1	S 02 29.1	-11.4	09
10	331	10.2	+00.2	N 03 03.8	-01.0	322	36.2	-00.4	N 00 46.0	-01.3	136	53.2	-25.0	S 02 17.7	-11.4	10
11	346	10.4	+00.2	N 03 02.8	-00.9	337	35.8	-00.4	N 00 44.7	-01.3	151	28.2	-25.0	S 02 06.3	-11.4	11
12	1	10.6	+00.2	N 03 01.9	-01.0	352	35.4	-00.3	N 00 43.4	-01.2	166	03.2	-25.1	S 01 54.9	-11.4	12
13	16	10.8	+00.3	N 03 00.9	-01.0	7	35.1	-00.4	N 00 42.2	-01.3	180	38.1	-25.0	S 01 43.5	-11.4	13
14	31	11.1	+00.2	N 02 59.9	-00.9	22	34.7	-00.4	N 00 40.9	-01.3	195	13.1	-25.0	S 01 32.1	-11.5	14
15	46	11.3	+00.2	N 02 59.0	-01.0	37	34.3	-00.3	N 00 39.6	-01.3	209	48.1	-25.1	S 01 20.6	-11.4	15
16	61	11.5	+00.2	N 02 58.0	-01.0	52	34.0	-00.4	N 00 38.3	-01.2	224	23.0	-25.0	S 01 09.2	-11.5	16
17	76	11.7	+00.3	N 02 57.0	-00.9	67	33.6	-00.4	N 00 37.1	-01.3	238	58.0	-25.1	S 00 57.7	-11.4	17
18	91	12.0	+00.2	N 02 56.1	-01.0	82	33.2	-00.3	N 00 35.8	-01.3	253	32.9	-25.0	S 00 46.3	-11.5	18
19	106	12.2	+00.2	N 02 55.1	-00.9	97	32.9	-00.4	N 00 34.5	-01.3	268	07.9	-25.0	S 00 34.8	-11.4	19
20	121	12.4	+00.2	N 02 54.2	-01.0	112	32.5	-00.4	N 00 33.2	-01.2	282	42.9	-25.1	S 00 23.4	-11.5	20
21	136	12.6	+00.3	N 02 53.2	-01.0	127	32.1	-00.3	N 00 32.0	-01.3	297	17.8	-25.1	S 00 11.9	-11.5	21
22	151	12.9	+00.2	N 02 52.2	-01.0	142	31.8	-00.4	N 00 30.7	-01.3	311	52.7	-25.0	S 00 00.4	-11.5	22
23	166	13.1	+00.2	N 02 51.3	-01.0	157	31.4	-00.4	N 00 29.4	-01.2	326	27.7	-25.1	N 00 11.1	+11.4	23
UT 02 06 10 14 18 22	SD 15°9' 15°9' 15°9' 15°9' 15°9' 15°9'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	UT 02 06 10 14 18 22	SD 14°7' 14°7' 14°7' 14°7' 14°8' 14°8'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'											
HP 100°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'	HP 100°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 54°0' 54°1' 54°1' 54°1' 54°1' 54°2'	HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'	HP 54°0' 54°1' 54°1' 54°1' 54°1' 54°2'											
SHA 187° 187° 187° 187° 187° 187°	SHA 179° 179° 179° 179° 178° 178° 178°	SHA 187° 187° 187° 187° 187° 187°	SHA 356° 355° 353° 351° 349° 347°	SHA 190° 190° 190° 190° 189° 189°	SHA 356° 355° 353° 351° 349° 347°											
Greenwich Culmination Time: 11:55	Greenwich Culmination Time: 12:29	Greenwich Culmination Time: 11:55	Greenwich Culmination Time: 00:36	Greenwich Culmination Time: 11:56	Greenwich Culmination Time: 12:27											

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	180	51.9	+00.2	N 04 22.2	-01.0	173	06.5	-00.4	N 02 29.9	-01.2	22	10.9	-27.2	S 16 10.1	-08.2	00
01	195	52.1	+00.2	N 04 21.2	-00.9	188	06.1	-00.4	N 02 28.7	-01.3	36	43.7	-27.1	S 16 01.9	-08.3	01
02	210	52.3	+00.3	N 04 20.3	-01.0	203	05.7	-00.4	N 02 27.4	-01.3	51	16.6	-27.2	S 15 53.6	-08.3	02
03	225	52.6	+00.2	N 04 19.3	-00.9	218	05.3	-00.3	N 02 26.1	-01.2	65	49.4	-27.0	S 15 45.3	-08.4	03
04	240	52.8	+00.2	N 04 18.4	-01.0	233	05.0	-00.4	N 02 24.9	-01.3	80	22.4	-27.1	S 15 36.9	-08.4	04
05	255	53.0	+00.2	N 04 17.4	-00.9	248	04.6	-00.4	N 02 23.6	-01.2	94	55.3	-27.0	S 15 28.5	-08.5	05
06	270	53.2	+00.3	N 04 16.5	-01.0	263	04.2	-00.3	N 02 22.4	-01.3	109	28.3	-26.9	S 15 20.0	-08.6	06
07	285	53.5	+00.2	N 04 15.5	-00.9	278	03.9	-00.4	N 02 21.1	-01.3	124	01.4	-26.9	S 15 11.4	-08.7	07
08	300	53.7	+00.2	N 04 14.6	-01.0	293	03.5	-00.4	N 02 19.8	-01.2	138	34.5	-26.8	S 15 02.7	-08.7	08
09	315	53.9	+00.2	N 04 13.6	-00.9	308	03.1	-00.4	N 02 18.6	-01.3	153	07.7	-26.9	S 14 54.0	-08.7	09
10	330	54.1	+00.2	N 04 12.7	-01.0	323	02.7	-00.3	N 02 17.3	-01.3	167	40.8	-26.7	S 14 45.3	-08.8	10
11	345	54.3	+00.3	N 04 11.7	-00.9	338	02.4	-00.4	N 02 16.0	-01.2	182	14.1	-26.7	S 14 36.5	-08.9	11
12	0	54.6	+00.2	N 04 10.8	-01.0	353	02.0	-00.4	N 02 14.8	-01.3	196	47.4	-26.7	S 14 27.6	-09.0	12
13	15	54.8	+00.2	N 04 09.8	-00.9	8	01.6	-00.3	N 02 13.5	-01.3	211	20.7	-26.7	S 14 18.6	-09.0	13
14	30	55.0	+00.2	N 04 08.9	-01.0	23	01.3	-00.4	N 02 12.2	-01.2	225	54.0	-26.6	S 14 09.6	-09.0	14
15	45	55.2	+00.2	N 04 07.9	-00.9	38	00.9	-00.4	N 02 11.0	-01.3	240	27.4	-26.5	S 14 00.6	-09.1	15
16	60	55.4	+00.3	N 04 07.0	-01.0	53	00.5	-00.4	N 02 09.7	-01.3	255	00.9	-26.6	S 13 51.5	-09.2	16
17	75	55.7	+00.2	N 04 06.0	-00.9	68	00.1	-00.3	N 02 08.4	-01.2	269	34.3	-26.4	S 13 42.3	-09.3	17
18	90	55.9	+00.2	N 04 05.1	-01.0	82	59.8	-00.4	N 02 07.2	-01.3	284	07.9	-26.5	S 13 33.0	-09.2	18
19	105	56.1	+00.2	N 04 04.1	-01.0	97	59.4	-00.4	N 02 05.9	-01.2	298	41.4	-26.4	S 13 23.8	-09.4	19
20	120	56.3	+00.3	N 04 03.1	-00.9	112	59.0	-00.3	N 02 04.7	-01.3	313	15.0	-26.3	S 13 14.4	-09.4	20
21	135	56.6	+00.2	N 04 02.2	-01.0	127	58.7	-00.4	N 02 03.4	-01.3	327	48.7	-26.4	S 13 05.0	-09.4	21
22	150	56.8	+00.2	N 04 01.2	-00.9	142	58.3	-00.4	N 02 02.1	-01.2	342	22.3	-26.2	S 12 55.6	-09.5	22
23	165	57.0	+00.2	N 04 00.3	-01.0	157	57.9	-00.4	N 02 00.9	-01.3	356	56.1	-26.3	S 12 46.1	-09.6	23
UT 02 06 10 14 18 22	SD 15°9' 15°9' 15°9' 15°9' 15°9' 15°9'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	UT 02 06 10 14 18 22	SD 14°7' 14°7' 14°7' 14°7' 14°8' 14°8'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'											
HP 100°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'	HP 100°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 54°0' 54°1' 54°1' 54°1' 54°1' 54°2'	HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'	HP 54°0' 54°1' 54°1' 54°1' 54°1' 54°2'											
SHA 190° 190° 190° 190° 189° 189°	SHA 182° 182° 182° 182° 181°	SHA 190° 190° 190° 190° 189° 189°	SHA 356° 355° 353° 351° 349° 347°	SHA 190° 190° 190° 190° 189° 189°	SHA 356° 355° 353° 351° 349° 347°											
Greenwich Culmination Time: 11:56	Greenwich Culmination Time: 12:27	Greenwich Culmination Time: 11:56	Greenwich Culmination Time: 23:12	Greenwich Culmination Time: 11:56	Greenwich Culmination Time: 12:27											

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	184	34.5	+00.9	N 05 49.3	-00.7	98	32.4	+02.2	S 22 25.7	+00.0	68	34.5	+02.5	S 22 30.2	+00.0	00
01	199	35.4	+01.0	N 05 48.6	-00.6	113	34.6	+02.2	S 22 25.7	+00.0	83	37.0	+02.5	S 22 30.2	+00.0	01
02	214	36.4	+01.0	N 05 48.0	-00.6	128	36.8	+02.2	S 22 25.7	+00.1	98	39.5	+02.5	S 22 30.2	+00.0	02
03	229	37.4	+01.0	N 05 47.4	-00.7	143	39.0	+02.2	S 22 25.8	+00.0	113	42.0	+02.4	S 22 30.2	+00.0	03
04	244	38.4	+01.0	N 05 46.7	-00.6	158	41.2	+02.2	S 22 25.8	+00.0	128	44.4	+02.5	S 22 30.2	+00.0	04
05	259	39.4	+01.0	N 05 46.1	-00.6	173	43.4	+02.2	S 22 25.8	+00.1	143	46.9	+02.5	S 22 30.2	+00.0	05
06	274	40.4	+01.0	N 05 45.5	-00.7	188	45.6	+02.2	S 22 25.9	+00.0	158	49.4	+02.5	S 22 30.2	+00.0	06
07	289	41.4	+01.0	N 05 44.8	-00.6	203	47.8	+02.2	S 22 25.9	+00.0	173	51.9	+02.4	S 22 30.2	+00.0	07
08	304	42.4	+01.0	N 05 44.2	-00.6	218	50.0	+02.2	S 22 25.9	+00.1	188	54.3	+02.5	S 22 30.2	+00.0	08
09	319	43.4	+00.9	N 05 43.6	-00.7	233	52.2	+02.2	S 22 26.0	+00.0	203	56.8	+02.5	S 22 30.2	+00.1	09
10	334	44.3	+01.0	N 05 42.9	-00.6	248	54.4	+02.2	S 22 26.0	+00.0	218	59.3	+02.5	S 22 30.3	+00.0	10
11	349	45.3	+01.0	N 05 42.3	-00.6	263	56.6	+02.1	S 22 26.0	+00.1	234	01.8	+02.5	S 22 30.3	+00.0	11
12	4	46.3	+01.0	N 05 41.7	-00.6	278	58.7	+02.2	S 22 26.1	+00.0	249	04.3	+02.4	S 22 30.3	+00.0	12
13	19	47.3	+01.0	N 05 41.1	-00.7	294	60.9	+02.2	S 22 26.1	+00.0						

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	180	57.2	+00.2	N 03 59.3	-00.9	172	57.5	-00.3	N 01 59.6	-01.3	11	29.8	-26.2	S 12 36.5	-09.6	00
01	195	57.4	+00.3	N 03 58.4	-01.0	187	57.2	-00.4	N 01 58.3	-01.2	26	03.6	-26.2	S 12 26.9	-09.6	01
02	210	57.7	+00.2	N 03 57.4	-00.9	202	56.8	-00.4	N 01 57.1	-01.3	40	37.4	-26.1	S 12 17.3	-09.7	02
03	225	57.9	+00.2	N 03 56.5	-01.0	217	56.4	+00.3	N 01 55.8	-01.3	55	11.3	-26.1	S 12 07.6	-09.8	03
04	240	58.1	+00.2	N 03 55.5	-00.9	232	56.1	-00.4	N 01 54.5	-01.2	69	45.2	-26.1	S 11 57.8	-09.8	04
05	255	58.3	+00.3	N 03 54.6	-01.0	247	55.7	-00.4	N 01 53.3	-01.3	84	19.1	-26.0	S 11 48.0	-09.8	05
06	270	58.6	+00.2	N 03 53.6	-01.0	262	55.3	+00.3	N 01 52.0	-01.3	98	53.1	-26.0	S 11 38.2	-09.9	06
07	285	58.8	+00.2	N 03 52.6	-00.9	277	55.0	-00.4	N 01 50.7	-01.2	113	27.1	-26.0	S 11 28.3	-09.9	07
08	300	59.0	+00.2	N 03 51.7	-01.0	292	54.6	-00.4	N 01 49.5	-01.3	128	01.1	-25.9	S 11 18.4	-10.0	08
09	315	59.2	+00.2	N 03 50.7	-00.9	307	54.2	-00.4	N 01 48.2	-01.3	142	35.2	-25.9	S 11 08.4	-10.0	09
10	330	59.4	+00.3	N 03 49.8	-01.0	322	53.8	-00.3	N 01 46.9	-01.2	157	09.3	-25.9	S 11 08.4	-10.1	10
11	345	59.7	+00.2	N 03 48.8	-00.9	337	53.5	-00.4	N 01 45.7	-01.3	171	43.4	-25.8	S 10 48.3	-10.1	11
12	0	59.9	+00.2	N 03 47.9	-01.0	352	53.1	-00.4	N 01 44.4	-01.3	186	17.6	-25.8	S 10 38.2	-10.2	12
13	16	00.1	+00.2	N 03 46.9	-00.9	7	52.7	-00.3	N 01 43.1	-01.2	200	51.8	-25.8	S 10 28.0	-10.2	13
14	31	00.3	+00.3	N 03 46.0	-01.0	22	52.4	-00.4	N 01 41.9	-01.3	215	26.0	-25.7	S 10 17.8	-10.2	14
15	46	00.6	+00.2	N 03 45.0	-01.0	37	52.0	-00.4	N 01 40.6	-01.3	230	00.3	-25.7	S 10 07.6	-10.3	15
16	61	00.8	+00.2	N 03 44.0	-00.9	52	51.6	-00.3	N 01 39.3	-01.3	244	34.6	-25.7	S 09 57.3	-10.3	16
17	76	01.0	+00.2	N 03 43.1	-01.0	67	51.3	-00.4	N 01 38.0	-01.2	259	08.9	-25.7	S 09 47.0	-10.4	17
18	91	01.2	+00.3	N 03 42.1	-00.9	82	50.9	-00.4	N 01 36.8	-01.3	273	43.2	-25.6	S 09 36.6	-10.4	18
19	106	01.5	+00.2	N 03 41.2	-01.0	97	50.5	-00.4	N 01 35.5	-01.3	288	17.6	-25.6	S 09 26.2	-10.4	19
20	121	01.7	+00.2	N 03 40.2	-00.9	112	50.1	-00.3	N 01 34.2	-01.2	302	52.0	-25.6	S 09 15.8	-10.5	20
21	136	01.9	+00.2	N 03 39.3	-01.0	127	49.8	-00.4	N 01 33.0	-01.3	317	26.4	-25.5	S 09 05.3	-10.5	21
22	151	02.1	+00.2	N 03 38.3	-01.0	142	49.4	-00.4	N 01 31.7	-01.3	332	00.9	-25.5	S 08 54.8	-10.6	22
23	166	02.3	+00.3	N 03 37.3	-00.9	157	49.0	-00.3	N 01 30.4	-01.2	346	35.4	-25.5	S 08 44.2	-10.6	23
UT 02 06 10 14 18 22	SD 15°9' 15°9' 15°9' 15°9' 15°9' 15°9'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SHA 189° 189° 189° 189° 189° 189°	Greenwich Culmination Time: 11:56	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SHA 181° 181° 181° 181° 180° 180°	Greenwich Culmination Time: 12:28	UT 02 06 10 14 18 22	SD 14°7' 14°7' 14°7' 14°7' 14°7' 14°7'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 53°9' 53°9' 53°9' 53°9' 53°9' 53°9'	SHA 019° 019° 015° 013° 011° 009°	Greenwich Culmination Time: 23:55	

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	181	02.6	+00.2	N 03 36.4	-01.0	172	48.7	-00.4	N 01 29.2	-01.3	1	09.9	-25.5	S 08 33.6	-10.6	00
01	196	02.8	+00.2	N 03 35.4	-00.9	187	48.3	-00.4	N 01 27.9	-01.3	15	44.4	-25.5	S 08 23.0	-10.6	01
02	211	03.0	+00.2	N 03 34.5	-01.0	202	47.9	-00.3	N 01 26.6	-01.2	30	18.9	-25.4	S 08 12.4	-10.7	02
03	226	03.2	+00.3	N 03 33.5	-00.9	217	47.6	-00.4	N 01 25.4	-01.3	44	53.5	-25.4	S 08 01.7	-10.7	03
04	241	03.5	+00.2	N 03 32.6	-01.0	232	47.2	-00.4	N 01 24.1	-01.3	59	28.1	-25.4	S 07 51.0	-10.8	04
05	256	03.7	+00.2	N 03 31.6	-01.0	247	46.8	-00.3	N 01 22.8	-01.2	74	02.7	-25.3	S 07 40.2	-10.8	05
06	271	03.9	+00.2	N 03 30.6	-00.9	262	46.5	-00.4	N 01 21.6	-01.3	88	37.4	-25.4	S 07 29.4	-10.8	06
07	286	04.1	+00.3	N 03 29.7	-01.0	277	46.1	-00.4	N 01 20.3	-01.3	103	12.0	-25.3	S 07 18.6	-10.8	07
08	301	04.4	+00.2	N 03 28.7	-00.9	292	45.7	-00.3	N 01 19.0	-01.3	117	46.7	-25.3	S 07 07.8	-10.9	08
09	316	04.6	+00.2	N 03 27.8	-01.0	307	45.4	-00.4	N 01 17.7	-01.2	132	21.4	-25.3	S 06 56.9	-10.9	09
10	331	04.8	+00.2	N 03 26.8	-01.0	322	45.0	-00.4	N 01 16.5	-01.3	146	56.1	-25.2	S 06 46.0	-10.9	10
11	346	05.0	+00.2	N 03 25.8	-00.9	337	44.6	-00.4	N 01 15.2	-01.3	161	30.9	-25.3	S 06 35.1	-11.0	11
12	1	05.2	+00.3	N 03 24.9	-01.0	352	44.2	-00.3	N 01 13.9	-01.2	176	05.6	-25.2	S 06 24.1	-11.0	12
13	16	05.5	+00.2	N 03 23.9	-00.9	7	43.9	-00.4	N 01 12.7	-01.3	190	40.4	-25.2	S 06 13.1	-11.0	13
14	31	05.7	+00.2	N 03 23.0	-01.0	22	43.5	-00.4	N 01 11.4	-01.3	205	15.2	-25.2	S 06 02.1	-11.0	14
15	46	05.9	+00.2	N 03 22.0	-00.9	37	43.1	-00.3	N 01 10.1	-01.2	219	50.0	-25.2	S 05 51.1	-11.0	15
16	61	06.1	+00.3	N 03 21.1	-01.0	52	42.8	-00.4	N 01 08.9	-01.3	234	24.8	-25.2	S 05 40.1	-11.1	16
17	76	06.4	+00.2	N 03 20.1	-01.0	67	42.4	-00.4	N 01 07.6	-01.3	248	59.6	-25.1	S 05 29.0	-11.1	17
18	91	06.6	+00.2	N 03 19.1	-00.9	82	42.0	-00.3	N 01 06.3	-01.3	263	34.5	-25.2	S 05 17.9	-11.1	18
19	106	06.8	+00.2	N 03 18.2	-01.0	97	41.7	-00.4	N 01 05.0	-01.2	278	09.3	-25.1	S 05 06.8	-11.2	19
20	121	07.0	+00.3	N 03 17.2	-00.9	112	41.3	-00.4	N 01 03.8	-01.3	292	44.2	-25.1	S 04 55.6	-11.2	20
21	136	07.3	+00.2	N 03 16.3	-01.0	127	40.9	-00.3	N 01 02.5	-01.3	307	19.1	-25.2	S 04 44.4	-11.1	21
22	151	07.5	+00.2	N 03 15.3	-01.0	142	40.6	-00.4	N 01 01.2	-01.2	321	53.9	-25.1	S 04 33.3	-11.2	22
23	166	07.7	+00.2	N 03 14.3	-00.9	157	40.2	-00.4	N 00 00.0	-01.3	336	28.8	-25.0	S 04 22.1	-11.3	23
UT 02 06 10 14 18 22	SD 15°9' 15°9' 15°9' 15°9' 15°9' 15°9'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SHA 188° 188° 188° 188° 188° 188°	Greenwich Culmination Time: 11:55	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 53°9' 54°0' 54°0' 54°0' 54°0' 54°0'	SHA 180° 180° 180° 179° 179° 179°	Greenwich Culmination Time: 12:29	UT 02 06 10 14 18 22	SD 14°7' 14°7' 14°7' 14°7' 14°7' 14°7'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 53°9' 54°0' 54°0' 54°0' 54°0'	SHA 008° 006° 004° 002° 000° 358°	Greenwich Culmination Time: -1:00	

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	183	47.0	+01.0	N 06 19.5	-00.6	96	46.6	+02.2	S 22 24.1	+00.1	66	35.4	+02.4	S 22 29.9	+00.0	00
01	198	48.0	+01.0	N 06 18.9	-00.6	111	48.8	+02.3	S 22 24.2	+00.0	81	37.8	+02.5	S 22 29.9	+00.0	01
02	213	49.0	+01.0	N 06 18.3	-00.7	126	51.1	+02.2	S 22 24.2	+00.0	96	40.3	+02.5	S 22 29.9	+00.0	02
03	228	50.0	+01.0	N 06 17.6	-00.6	141	53.3	+02.2	S 22 24.2	+00.1	111	42.8	+02.5	S 22 29.9	+00.0	03
04	243	51.0	+00.9	N 06 17.0	-00.6	156	55.5	+02.2	S 22 24.3	+00.0	126	45.3	+02.5	S 22 29.9	+00.0	04
05	258	51.9	+01.0	N 06 16.4	-00.6	171	57.7	+02.2	S 22 24.3	+00.0	141	47.8	+02.5	S 22 29.9	+00.0	05
06	273	52.9	+01.0	N 06 15.8	-00.7	186	59.9	+02.2	S 22 24.3	+00.1	156	50.3	+02.5	S 22 29.9	+00.1	06
07	288	53.9	+01.0	N 06 15.1	-00.6	202	02.1	+02.2	S 22 24.4	+00.0	171	52.8	+02.5	S 22 30.0	+00.0	07
08	303	54.9	+01.0	N 06 14.5	-00.6	217	04.3	+02.2	S 22 24.4	+00.0	186	55.3	+02.4	S 22 30.0	+00.0	08
09	318	55.9	+01.0	N 06 13.9	-00.7	232	06.5	+02.2	S 22 24.4	+00.1	201	57.7	+02.5	S 22 30.0	+00.0	09
10	333	56.9	+01.0	N 06 13.2	-00.6	247	08.7	+02.2	S 22 24.5	+00.0	217	00.2	+02.5	S 22 30.0	+00.0	10
11	348	57.9	+01.0	N 06 12.6	-00.6	262	10.9	+02.2	S 22 24.5	+00.0	232	02.7	+02.5	S 22 30.0	+00.0	11
12	3	58.9	+01.0	N 06 12.0	-00.6	277	13.1	+02.3	S 22 24.5	+00.1	247	05.2	+02.5	S 22 30.0	+00.0	12
13	18	59.9	+00.9	N 06 11.4	-00.7	292	15.4	+02.2	S 22 24.6	+00.0	262	07.7	+02.5	S 22 30.0	+00.0	13
14	34	00.8	+01.0	N 06 10.7	-00.6	307	17.6	+02.2	S 22 24.6	+00.0	277	10.2	+02.4	S 22 30.0	+00.0	14
15	49	01.8	+01.0	N 06 10.1	-00.6	322	19.8	+02.2	S 22 24.6	+00.0	292	12.6	+02.5	S 22 30.0	+00.0	15
16	64	02.8	+01.0	N 06 09.5	-00.7	337	22.0	+02.2	S 22 24.6	+00.1	307	15.1	+02.5	S 22 30.0		

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	181	29.4	+00.3	N 01 40.8	-01.0	172	04.6	-00.4	S 01 03.6	+01.3	309	46.8	-27.7	N 13 30.1	+09.7	00
01	196	29.7	+00.2	N 01 39.8	-00.9	187	04.2	-00.3	S 01 04.9	+01.3	324	19.1	-27.8	N 13 39.8	+09.6	01
02	211	29.9	+00.2	N 01 38.9	-01.0	202	03.9	-00.4	S 01 06.2	+01.2	338	51.3	-27.8	N 13 49.4	+09.6	02
03	226	30.1	+00.2	N 01 37.9	-01.0	217	03.5	-00.4	S 01 07.4	+01.3	353	23.5	-27.9	N 13 59.0	+09.6	03
04	241	30.3	+00.3	N 01 36.9	-00.9	232	03.1	-00.3	S 01 08.7	+01.3	7	55.6	-27.9	N 14 08.6	+09.5	04
05	256	30.6	+00.2	N 01 36.0	-01.0	247	02.8	-00.4	S 01 10.0	+01.3	22	27.7	-28.1	N 14 18.1	+09.4	05
06	271	30.8	+00.2	N 01 35.0	-01.0	262	02.4	-00.4	S 01 11.3	+01.2	36	59.6	-28.1	N 14 27.5	+09.4	06
07	286	31.0	+00.2	N 01 34.0	-00.9	277	02.0	-00.3	S 01 12.5	+01.3	51	31.5	-28.1	N 14 36.9	+09.3	07
08	301	31.2	+00.2	N 01 33.1	-01.0	292	01.7	-00.4	S 01 13.8	+01.3	66	03.4	-28.3	N 14 46.2	+09.3	08
09	316	31.4	+00.3	N 01 32.1	-01.0	307	01.3	-00.4	S 01 15.1	+01.3	80	35.1	-28.2	N 14 55.5	+09.2	09
10	331	31.7	+00.2	N 01 31.1	-00.9	322	00.9	-00.3	S 01 16.4	+01.2	95	06.9	-28.4	N 15 04.7	+09.1	10
11	346	31.9	+00.2	N 01 30.2	-01.0	337	00.6	-00.4	S 01 17.6	+01.3	109	38.5	-28.4	N 15 13.8	+09.1	11
12	1	32.1	+00.2	N 01 29.2	-01.0	352	00.2	-00.4	S 01 18.9	+01.3	124	10.1	-28.5	N 15 22.9	+09.0	12
13	16	32.3	+00.3	N 01 28.2	-01.0	6	59.8	-00.3	S 01 20.2	+01.3	138	41.6	-28.6	N 15 31.9	+08.9	13
14	31	32.6	+00.2	N 01 27.2	-00.9	21	59.5	-00.4	S 01 21.5	+01.2	153	13.0	-28.6	N 15 40.8	+08.9	14
15	46	32.8	+00.2	N 01 26.3	-01.0	36	59.1	-00.4	S 01 22.7	+01.3	167	44.4	-28.8	N 15 49.7	+08.8	15
16	61	33.0	+00.2	N 01 25.3	-01.0	51	58.7	-00.3	S 01 24.0	+01.3	182	15.6	-28.7	N 15 58.5	+08.8	16
17	76	33.2	+00.3	N 01 24.3	-00.9	66	58.4	-00.4	S 01 25.3	+01.3	196	46.9	-28.9	N 16 07.3	+08.6	17
18	91	33.5	+00.2	N 01 23.4	-01.0	81	58.0	-00.4	S 01 26.6	+01.2	211	18.0	-28.9	N 16 15.9	+08.6	18
19	106	33.7	+00.2	N 01 22.4	-01.0	96	57.6	-00.3	S 01 27.8	+01.3	225	49.1	-29.0	N 16 24.5	+08.6	19
20	121	33.9	+00.2	N 01 21.4	-00.9	111	57.3	-00.4	S 01 29.1	+01.3	240	20.1	-29.1	N 16 33.1	+08.4	20
21	136	34.1	+00.2	N 01 20.5	-01.0	126	56.9	-00.4	S 01 30.4	+01.3	254	51.0	-29.1	N 16 41.5	+08.4	21
22	151	34.3	+00.3	N 01 19.5	-01.0	141	56.5	-00.4	S 01 31.7	+01.2	269	21.9	-29.2	N 16 49.9	+08.4	22
23	166	34.6	+00.2	N 01 18.5	-00.9	156	56.1	-00.3	S 01 32.9	+01.3	283	52.7	-29.3	N 16 58.3	+08.2	23

UT 02 06 10 14 18 22	SD 15°9' 15°9' 15°9' 15°9' 15°9' 15°9'	UT 02 06 10 14 18 22	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	UT 02 06 10 14 18 22	SD 15°1' 15°1' 15°1' 15°2' 15°2' 15°2'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 55°3' 55°4' 55°5' 55°6' 55°7' 55°8'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
SHA 184° 184° 184° 183° 183° 183°	SHA 174° 174° 174° 174° 174° 173°	SHA 311° 309° 307° 305° 303° 301°	SHA 188° 188° 188° 188° 188° 188°	SHA 178° 178° 177° 177° 177° 177°	SHA 190° 190° 190° 190° 190° 190°
Greenwich Culmination Time: 11:53		Greenwich Culmination Time: 12:31		Greenwich Culmination Time: 03:27	

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	186	09.5	+01.0	N 04 48.3	-00.6	102	02.0	+02.1	S 22 28.8	+00.1	72	31.6	+02.5	S 22 30.7	+00.0	00
01	201	10.5	+01.0	N 04 47.7	-00.7	117	04.1	+02.2	S 22 28.9	+00.0	87	34.1	+02.4	S 22 30.7	+00.0	01
02	216	11.5	+01.0	N 04 47.0	-00.6	132	06.3	+02.2	S 22 28.9	+00.0	102	36.5	+02.5	S 22 30.7	+00.0	02
03	231	12.5	+01.0	N 04 46.4	-00.6	147	08.5	+02.1	S 22 28.9	+00.1	117	39.0	+02.5	S 22 30.7	+00.0	03
04	246	13.5	+01.0	N 04 45.8	-00.7	162	10.6	+02.2	S 22 29.0	+00.0	132	41.5	+02.4	S 22 30.7	+00.0	04
05	261	14.5	+01.0	N 04 45.1	-00.6	177	12.8	+02.2	S 22 29.0	+00.0	147	43.9	+02.5	S 22 30.7	+00.0	05
06	276	15.5	+01.0	N 04 44.5	-00.6	192	15.0	+02.1	S 22 29.0	+00.1	162	46.4	+02.4	S 22 30.7	+00.0	06
07	291	16.5	+01.0	N 04 43.9	-00.7	207	17.1	+02.2	S 22 29.1	+00.0	177	48.8	+02.5	S 22 30.7	+00.0	07
08	306	17.5	+01.0	N 04 43.2	-00.6	222	19.3	+02.2	S 22 29.1	+00.0	192	51.3	+02.4	S 22 30.7	+00.0	08
09	321	18.5	+01.0	N 04 42.6	-00.7	237	21.5	+02.1	S 22 29.1	+00.1	207	53.7	+02.5	S 22 30.7	+00.0	09
10	336	19.5	+01.0	N 04 41.9	-00.6	252	23.6	+02.2	S 22 29.2	+00.0	222	56.2	+02.5	S 22 30.7	+00.0	10
11	351	20.5	+00.9	N 04 41.3	-00.6	267	25.8	+02.2	S 22 29.2	+00.0	237	58.7	+02.4	S 22 30.7	+00.0	11
12	6	21.4	+01.0	N 04 40.7	-00.7	282	28.0	+02.1	S 22 29.2	+00.1	253	01.1	+02.5	S 22 30.7	+00.0	12
13	21	22.4	+01.0	N 04 40.0	-00.6	297	30.1	+02.2	S 22 29.3	+00.0	268	03.6	+02.4	S 22 30.7	+00.0	13
14	36	23.4	+01.0	N 04 39.4	-00.6	312	32.3	+02.2	S 22 29.3	+00.0	283	06.0	+02.5	S 22 30.7	+00.0	14
15	51	24.4	+01.0	N 04 38.8	-00.7	327	34.5	+02.1	S 22 29.3	+00.1	298	08.5	+02.5	S 22 30.7	+00.0	15
16	66	25.4	+01.0	N 04 38.1	-00.6	342	36.6	+02.2	S 22 29.4	+00.0	313	11.0	+02.4	S 22 30.7	+00.0	16
17	81	26.4	+01.0	N 04 37.5	-00.7	357	38.8	+02.2	S 22 29.4	+00.0	328	13.4	+02.5	S 22 30.7	+00.0	17
18	96	27.4	+01.0	N 04 36.8	-00.6	12	41.0	+02.1	S 22 29.4	+00.1	343	15.9	+02.4	S 22 30.7	+00.0	18
19	111	28.4	+01.0	N 04 36.2	-00.6	27	43.1	+02.2	S 22 29.5	+00.0	358	18.3	+02.5	S 22 30.7	+00.0	19
20	126	29.4	+01.0	N 04 35.6	-00.7	42	45.3	+02.2	S 22 29.5	+00.0	13	20.8	+02.4	S 22 30.7	+00.0	20
21	141	30.4	+01.0	N 04 34.9	-00.6	57	47.5	+02.1	S 22 29.5	+00.1	28	23.2	+02.5	S 22 30.7	+00.0	21
22	156	31.4	+01.0	N 04 34.3	-00.7	72	49.6	+02.2	S 22 29.6	+00.0	43	25.7	+02.5	S 22 30.7	+00.0	22
23	171	32.4	+01.0	N 04 33.8	-00.6	87	51.8	+02.1	S 22 29.6	+00.0	58	28.2	+02.4	S 22 30.7	+00.0	23

UT 02 06 10 14 18 22	SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'	UT 02 06 10 14 18 22	SD 00°3' 00°3' 00°3' 00°3' 00°3' 00°3'	UT 02 06 10 14 18 22	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'	HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'	HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'	HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'	HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
SHA 188° 188° 188° 188° 188° 188°	SHA 104° 104° 104° 104° 104° 104°	SHA 075° 075° 075° 075° 075° 075°	SHA 188° 188° 188° 188° 188° 188°	SHA 105° 105° 105° 105° 105° 105°	SHA 190° 190° 190° 190° 190° 190°
Greenwich Culmination Time: 11:34		Greenwich Culmination Time: 17:09		Greenwich Culmination Time: 19:06	

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	181	13.3	+00.2	N 02 50.3	-01.0	172	31.0	-00.3	N 00 28.2	-01.3	341	02.6	-25.1	N 00 22.5	+11.5	00
01	196	13.5	+00.3	N 02 49.3	-00.9	187	30.7	-00.4	N 00 26.9	-01.3	355	37.5	-25.1	N 00 34.0	+11.5	01
02	211	13.8	+00.2	N 02 48.4	-01.0	202	30.3	-00.4	N 00 25.6	-01.3	10	12.4	-25.1	N 00 45.5	+11.5	02
03	226	14.0	+00.2	N 02 47.4	-00.9	217	29.9	-00.3	N 00 24.3	-01.2	24	47.3	-25.1	N 00 57.0	+11.5	03
04	241	14.2	+00.2	N 02 46.5	-01.0	232	29.6	-00.4	N 00 23.1	-01.3	39	22.2	-25.1	N 01 08.5	+11.4	04
05	256	14.4	+00.2	N 02 45.5	-01.0	247	29.2	-00.4	N 00 21.8	-01.3	53	57.1	-25.2	N 01 19.9	+11.5	05
06	271	14.6	+00.3	N 02 44.5	-00.9	262	28.8	-00.3	N 00 20.5	-01.3	68	31.9	-25.1	N 01 31.4	+11.5	06
07	286	14.9	+00.2	N 02 43.6	-01.0	277	28.5	-00.4	N 00 19.2	-01.2	83	06.8	-25.2	N 01 42.9	+11.5	07
08	301	15.1	+00.2	N 02 42.6	-01.0	292	28.1	-00.4	N 00 18.0	-01.3	97	41.6	-25.2	N 01 54.4	+11.4	08
09	316	15.3	+00.2	N 02 41.6	-00.9	307	27.7	-00.3	N 00 16.7	-01.3	112	16.4	-25.2	N 02 05.8	+11.5	09
10	331	15.5	+00.3	N 02 40.7	-01.0	322	27.4	-00.4	N 00 15.4	-01.3	126	51.2	-25.2	N 02 17.3	+11.5	10
11	346	15.8	+00.2	N 02 39.7	-00.9	337	27.0	-00.4	N 00 14.1	-01.2	141	26.0	-25.2	N 02 28.8	+11.4	11
12	1	16.0	+00.2	N 02 38.8	-01.0	352	26.6	-00.3	N 00 12.9	-01.3	156	06.8	-25.3	N 02 40.2	+11.5	12
13	16	16.2	+00.2	N 02 37.8	-01.0	7	26.3	-00.4	N 00 11.6	-01.3	170	35.5	-25.3	N 02 51.7	+11.4	

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	181	18.7	+00.2	N 02 27.2	-01.0	172	22.2	-00.3	S 00 02.4	+01.3	330	56.4	-25.5	N 04 57.1	+11.3	00
01	196	18.9	+00.2	N 02 26.2	-00.9	187	21.9	-00.4	S 00 03.7	+01.3	345	30.9	-25.6	N 05 08.4	+11.3	01
02	211	19.1	+00.3	N 02 25.3	-01.0	202	21.5	-00.4	S 00 05.0	+01.2	0	05.3	-25.6	N 05 19.7	+11.3	02
03	226	19.4	+00.2	N 02 24.3	-01.0	217	21.1	-00.3	S 00 06.2	+01.3	14	39.7	-25.6	N 05 31.0	+11.3	03
04	241	19.6	+00.2	N 02 23.3	-00.9	232	20.8	-00.4	S 00 07.5	+01.3	29	14.1	-25.6	N 05 42.3	+11.2	04
05	256	19.8	+00.2	N 02 22.4	-01.0	247	20.4	-00.4	S 00 08.8	+01.3	43	48.5	-25.7	N 05 53.5	+11.2	05
06	271	20.0	+00.3	N 02 21.4	-01.0	262	20.0	-00.3	S 00 10.1	+01.2	58	22.8	-25.7	N 06 04.7	+11.3	06
07	286	20.3	+00.2	N 02 20.4	-00.9	277	19.7	-00.4	S 00 11.3	+01.3	72	57.1	-25.7	N 06 16.0	+11.2	07
08	301	20.5	+00.2	N 02 19.5	-01.0	292	19.3	-00.4	S 00 12.6	+01.3	87	31.4	-25.8	N 06 27.2	+11.1	08
09	316	20.7	+00.2	N 02 18.5	-01.0	307	18.9	-00.3	S 00 13.9	+01.3	102	05.6	-25.8	N 06 38.3	+11.2	09
10	331	20.9	+00.2	N 02 17.5	-00.9	322	18.6	-00.4	S 00 15.2	+01.2	116	39.8	-25.8	N 06 49.5	+11.1	10
11	346	21.1	+00.3	N 02 16.6	-01.0	337	18.2	-00.4	S 00 16.4	+01.3	131	14.0	-25.9	N 07 00.6	+11.1	11
12	1	21.4	+00.2	N 02 15.6	-01.0	352	17.8	-00.3	S 00 17.7	+01.3	145	48.1	-25.9	N 07 11.7	+11.1	12
13	16	21.6	+00.2	N 02 14.6	-00.9	7	17.5	-00.4	S 00 19.0	+01.3	160	22.2	-25.9	N 07 22.8	+11.1	13
14	31	21.8	+00.2	N 02 13.7	-01.0	22	17.1	-00.4	S 00 20.3	+01.2	174	56.3	-26.0	N 07 33.9	+11.0	14
15	46	22.0	+00.3	N 02 12.7	-01.0	37	16.7	-00.3	S 00 21.5	+01.3	189	30.3	-26.0	N 07 44.9	+11.1	15
16	61	22.3	+00.2	N 02 11.7	-00.9	52	16.4	-00.4	S 00 22.8	+01.3	204	04.3	-26.1	N 07 56.0	+10.9	16
17	76	22.5	+00.2	N 02 10.8	-01.0	67	16.0	-00.4	S 00 24.1	+01.3	218	38.2	-26.1	N 08 06.9	+11.0	17
18	91	22.7	+00.2	N 02 09.8	-00.9	82	15.6	-00.3	S 00 25.4	+01.2	233	12.1	-26.1	N 08 17.9	+10.9	18
19	106	22.9	+00.3	N 02 08.9	-01.0	97	15.3	-00.4	S 00 26.6	+01.3	247	46.0	-26.2	N 08 28.8	+10.9	19
20	121	23.2	+00.2	N 02 07.9	-01.0	112	14.9	-00.4	S 00 27.9	+01.3	262	19.8	-26.2	N 08 39.7	+10.9	20
21	136	23.4	+00.2	N 02 06.9	-01.0	127	14.5	-00.3	S 00 29.2	+01.3	276	53.6	-26.3	N 08 50.6	+10.9	21
22	151	23.6	+00.2	N 02 06.0	-00.9	142	14.2	-00.4	S 00 30.5	+01.2	291	27.3	-26.3	N 09 01.5	+10.8	22
23	166	23.8	+00.3	N 02 05.0	-01.0	157	13.8	-00.4	S 00 31.7	+01.3	306	01.0	-26.4	N 09 12.3	+10.7	23
UT 02 06 10 14 18 22	SD 15°9' 15°9' 15°9' 15°9' 15°9' 15°9'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SD 14°8' 14°9' 14°9' 14°9' 14°9' 14°9'	SD 15°9' 15°9' 15°9' 15°9' 15°9'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SD 14°8' 14°9' 14°9' 14°9' 14°9' 14°9'	SD 15°9' 15°9' 15°9' 15°9' 15°9'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'								
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 54°5' 54°5' 54°6' 54°7' 54°7' 54°8'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 54°5' 54°5' 54°6' 54°7' 54°7' 54°8'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'									
SHA 186° 185° 185° 185° 185° 185°	SHA 177° 176° 176° 176° 176° 176°	SHA 334° 332° 331° 329° 327° 325°	SHA 186° 185° 184° 184° 184° 184°	SHA 186° 185° 184° 184° 184° 184°	SHA 176° 175° 175° 175° 175° 175°	SHA 323° 321° 319° 317° 315° 313°	SHA 186° 185° 184° 184° 184° 184°									
Greenwich Culmination Time: 11:54				Greenwich Culmination Time: 12:30				Greenwich Culmination Time: 01:59				Greenwich Culmination Time: 11:54				

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	181	24.1	+00.2	N 02 04.0	-00.9	172	13.4	-00.3	S 00 33.0	+01.3	320	34.6	-26.4	N 09 23.0	+10.8	00
01	196	24.3	+00.2	N 02 03.1	-01.0	187	13.1	-00.4	S 00 34.3	+01.3	335	08.2	-26.4	N 09 33.8	+10.7	01
02	211	24.5	+00.2	N 02 02.1	-01.0	202	12.7	-00.4	S 00 35.6	+01.2	349	41.8	-26.5	N 09 44.5	+10.7	02
03	226	24.7	+00.3	N 02 01.1	-00.9	217	12.3	-00.3	S 00 36.8	+01.3	4	15.3	-26.5	N 09 55.2	+10.6	03
04	241	25.0	+00.2	N 02 00.2	-01.0	232	12.0	-00.4	S 00 38.1	+01.3	18	48.8	-26.6	N 10 05.8	+10.6	04
05	256	25.2	+00.2	N 01 59.2	-01.0	247	11.6	-00.4	S 00 39.4	+01.3	33	22.2	-26.7	N 10 16.4	+10.6	05
06	271	25.4	+00.2	N 01 58.2	-00.9	262	11.2	-00.4	S 00 40.7	+01.2	47	55.5	-26.7	N 10 27.0	+10.5	06
07	286	25.6	+00.3	N 01 57.3	-01.0	277	10.8	-00.3	S 00 41.9	+01.3	62	28.8	-26.7	N 10 37.5	+10.5	07
08	301	25.9	+00.2	N 01 56.3	-01.0	292	10.5	-00.4	S 00 43.2	+01.3	77	02.1	-26.8	N 10 48.0	+10.5	08
09	316	26.1	+00.2	N 01 55.3	-00.9	307	10.1	-00.4	S 00 44.5	+01.3	91	35.3	-26.8	N 10 58.5	+10.4	09
10	331	26.3	+00.2	N 01 54.4	-01.0	322	09.7	-00.3	S 00 45.8	+01.2	106	08.5	-26.9	N 11 08.9	+10.4	10
11	346	26.5	+00.2	N 01 53.4	-01.0	337	09.4	-00.4	S 00 47.0	+01.3	120	41.6	-27.0	N 11 19.3	+10.3	11
12	1	26.7	+00.3	N 01 52.4	-00.9	352	09.0	-00.4	S 00 48.3	+01.3	135	14.6	-27.0	N 11 29.6	+10.3	12
13	16	27.0	+00.2	N 01 51.5	-01.0	7	08.6	-00.3	S 00 49.6	+01.3	149	47.6	-27.0	N 11 39.9	+10.3	13
14	31	27.2	+00.2	N 01 50.5	-01.0	22	08.3	-00.4	S 00 50.9	+01.2	164	20.6	-27.2	N 11 50.2	+10.2	14
15	46	27.4	+00.2	N 01 49.5	-01.0	37	07.9	-00.4	S 00 52.1	+01.3	178	53.4	-27.1	N 12 00.4	+10.1	15
16	61	27.6	+00.3	N 01 48.5	-00.9	52	07.5	-00.3	S 00 53.4	+01.3	193	26.3	-27.3	N 12 10.5	+10.1	16
17	76	27.9	+00.2	N 01 47.6	-01.0	67	07.2	-00.4	S 00 54.7	+01.3	207	59.0	-27.2	N 12 20.6	+10.1	17
18	91	28.1	+00.2	N 01 46.6	-01.0	82	06.8	-00.4	S 00 56.0	+01.2	222	31.8	-27.4	N 12 30.7	+10.0	18
19	106	28.3	+00.2	N 01 45.6	-00.9	97	06.4	-00.3	S 00 57.2	+01.3	237	04.4	-27.4	N 12 40.7	+10.0	19
20	121	28.5	+00.3	N 01 44.7	-01.0	112	06.1	-00.4	S 00 58.5	+01.3	251	37.0	-27.4	N 12 50.7	+09.9	20
21	136	28.8	+00.2	N 01 43.7	-01.0	127	05.7	-00.4	S 00 59.8	+01.3	266	09.6	-27.6	N 13 00.6	+09.9	21
22	151	29.0	+00.2	N 01 42.7	-00.9	142	05.3	-00.3	S 01 01.1	+01.2	280	42.0	-27.5	N 13 10.5	+09.8	22
23	166	29.2	+00.2	N 01 41.8	-01.0	157	05.0	-00.4	S 01 02.3	+01.3	295	14.5	-27.7	N 13 20.3	+09.8	23
UT 02 06 10 14 18 22	SD 15°9' 15°9' 15°9' 15°9' 15°9' 15°9'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SD 14°8' 14°9' 14°9' 14°9' 14°9' 14°9'	SD 15°9' 15°9' 15°9' 15°9' 15°9'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	SD 14°8' 14°9' 14°9' 14°9' 14°9' 14°9'	SD 15°9' 15°9' 15°9' 15°9' 15°9'	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'								
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 54°5' 54°5' 54°6' 54°7' 54°7' 54°8'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 54°5' 54°5' 54°6' 54°7' 54°7' 54°8'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'									
SHA 186° 185° 184° 184° 184° 184°	SHA 186° 185° 184° 184° 184° 184°	SHA 323° 321° 319° 317° 315° 313°	SHA 186° 185° 184° 184° 184° 184°	SHA 186° 185° 184° 184° 184° 184°	SHA 176° 175° 175° 175° 175° 175°	SHA 323° 321° 319° 317° 315° 313°	SHA 186° 185° 184° 184° 184° 184°									
Greenwich Culmination Time: 11:54				Greenwich Culmination Time: 12:31				Greenwich Culmination Time: 02:42				Greenwich Culmination Time: 11:54				

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	185	22.0	+01.0	N 05 18.9	-00.7	100	17.5	+02.2	S 22 27.2	+00.1	70	33.3	+02.4	S 22 30.4	+00.1	00
01	200	23.0	+01.0	N 05 18.2	-00.6	115	19.7	+02.2	S 22 27.3	+00.0	85	35.7	+02.5	S 22 30.5	+00.0	01
02	215	24.0	+00.9	N 05 17.6	-00.6	130	21.9	+02.2	S 22 27.3	+00.0	100	38.2	+02.5	S 22 30.5	+00.0	02
03	230	24.9	+01.0	N 05 17.0	-00.7	145	24.1	+02.1	S 22 27.3	+00.1	115	40.7	+02.5	S 22 30.5	+00.0	03
04	245	25.9	+01.0	N 05 16.3												

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23 show celestial coordinates and magnitudes for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23 show sidereal time and Greenwich Culmination Time for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23 show celestial coordinates and magnitudes for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23 show sidereal time and Greenwich Culmination Time for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23 show celestial coordinates and magnitudes for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23 show sidereal time and Greenwich Culmination Time for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23 show celestial coordinates and magnitudes for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23 show sidereal time and Greenwich Culmination Time for each planet.

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	181	40.1	+00.3	N 00 54.3	-01.0	171	46.9	-00.3	S 02 04.8	+01.3	286	17.3	-31.2	N 19 59.5	+06.1	00
01	196	40.4	+00.2	N 00 53.3	-01.0	186	46.6	-00.4	S 02 06.1	+01.3	300	46.1	-31.3	N 20 05.6	+05.9	01
02	211	40.6	+00.2	N 00 52.3	-00.9	201	46.2	-00.4	S 02 07.4	+01.2	315	14.8	-31.4	N 20 11.5	+05.9	02
03	226	40.8	+00.2	N 00 51.4	-01.0	216	45.8	-00.4	S 02 08.6	+01.3	329	43.4	-31.5	N 20 17.4	+05.8	03
04	241	41.0	+00.3	N 00 50.4	-01.0	231	45.4	-00.3	S 02 09.9	+01.3	344	11.9	-31.6	N 20 23.2	+05.6	04
05	256	41.3	+00.2	N 00 49.4	-01.0	246	45.1	-00.4	S 02 11.2	+01.3	358	40.3	-31.6	N 20 28.8	+05.6	05
06	271	41.5	+00.2	N 00 48.4	-00.9	261	44.7	-00.4	S 02 12.5	+01.2	13	08.7	-31.7	N 20 34.4	+05.4	06
07	286	41.7	+00.2	N 00 47.5	-01.0	276	44.3	-00.3	S 02 13.7	+01.3	27	37.0	-31.8	N 20 39.8	+05.4	07
08	301	41.9	+00.2	N 00 46.5	-01.0	291	44.0	-00.4	S 02 15.0	+01.3	42	05.2	-31.8	N 20 45.2	+05.2	08
09	316	42.1	+00.3	N 00 45.5	-00.9	306	43.6	-00.4	S 02 16.3	+01.2	56	33.4	-32.0	N 20 50.4	+05.1	09
10	331	42.4	+00.2	N 00 44.6	-01.0	321	43.2	-00.4	S 02 17.5	+01.3	71	01.4	-32.0	N 20 55.5	+05.0	10
11	346	42.6	+00.2	N 00 43.6	-01.0	336	42.8	-00.3	S 02 18.8	+01.3	85	29.4	-32.1	N 21 00.5	+04.9	11
12	1	42.8	+00.2	N 00 42.6	-01.0	351	42.5	-00.4	S 02 20.1	+01.3	99	57.3	-32.1	N 21 05.4	+04.8	12
13	16	43.0	+00.2	N 00 41.6	-00.9	6	42.1	-00.4	S 02 21.4	+01.2	114	25.2	-32.3	N 21 10.2	+04.7	13
14	31	43.2	+00.3	N 00 40.7	-01.0	21	41.7	-00.3	S 02 22.6	+01.3	128	52.9	-32.3	N 21 14.9	+04.6	14
15	46	43.5	+00.2	N 00 39.7	-01.0	36	41.4	-00.4	S 02 23.9	+01.3	143	20.6	-32.4	N 21 19.5	+04.4	15
16	61	43.7	+00.2	N 00 38.7	-00.9	51	41.0	-00.4	S 02 25.2	+01.3	157	48.2	-32.5	N 21 23.9	+04.4	16
17	76	43.9	+00.2	N 00 37.8	-01.0	66	40.6	-00.4	S 02 26.5	+01.2	172	15.7	-32.5	N 21 28.3	+04.2	17
18	91	44.1	+00.3	N 00 36.8	-01.0	81	40.2	-00.3	S 02 27.7	+01.3	186	43.2	-32.6	N 21 32.5	+04.1	18
19	106	44.4	+00.2	N 00 35.8	-01.0	96	39.9	-00.4	S 02 29.0	+01.3	201	10.6	-32.7	N 21 36.6	+04.0	19
20	121	44.6	+00.2	N 00 34.8	-00.9	111	39.5	-00.4	S 02 30.3	+01.3	215	37.9	-32.8	N 21 40.6	+03.8	20
21	136	44.8	+00.2	N 00 33.9	-01.0	126	39.1	-00.3	S 02 31.6	+01.2	230	05.1	-32.9	N 21 44.4	+03.8	21
22	151	45.0	+00.2	N 00 32.9	-01.0	141	38.8	-00.4	S 02 32.8	+01.3	244	32.2	-32.9	N 21 48.2	+03.6	22
23	166	45.2	+00.3	N 00 31.9	-00.9	156	38.4	-00.4	S 02 34.1	+01.3	258	59.3	-33.0	N 21 51.8	+03.5	23

UT 02 06 10 14 18 22	SD 15°9 15°9 15°9 15°9 15°9 15°9	UT 02 06 10 14 18 22	SD 00°1 00°1 00°1 00°1 00°1 00°1	UT 02 06 10 14 18 22	SD 15°4 15°5 15°5 15°5 15°6 15°6	UT 02 06 10 14 18 22	SD 00°1 00°1 00°1 00°1 00°1 00°1
HP 00°1 00°1 00°1 00°1 00°1 00°1	SHA 182° 182° 182° 182° 181° 181°	HP 00°1 00°1 00°1 00°1 00°1 00°1	SHA 172° 172° 172° 172° 171° 171°	HP 56°6 56°7 56°9 57°0 57°1 57°3	SHA 286° 283° 281° 279° 276° 274°	HP 00°1 00°1 00°1 00°1 00°1 00°1	SHA 181° 181° 181° 181° 180° 180°
Greenwich Culmination Time: 11:53		Greenwich Culmination Time: 12:33		Greenwich Culmination Time: 05:05		Greenwich Culmination Time: 11:52	

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	186	57.2	+01.0	N 04 17.7	-00.7	103	45.8	+02.1	S 22 30.5	+00.0	74	29.5	+02.5	S 22 30.8	+00.0	00
01	201	58.2	+01.0	N 04 17.0	-00.6	118	47.9	+02.2	S 22 30.5	+00.0	89	32.0	+02.4	S 22 30.8	+00.0	01
02	216	59.2	+00.9	N 04 16.4	-00.7	133	50.1	+02.1	S 22 30.5	+00.1	104	34.4	+02.5	S 22 30.8	+00.0	02
03	232	00.1	+01.0	N 04 15.7	-00.6	148	52.2	+02.2	S 22 30.6	+00.0	119	36.9	+02.4	S 22 30.8	+00.0	03
04	247	01.1	+01.0	N 04 15.1	-00.6	163	54.4	+02.1	S 22 30.6	+00.0	134	39.3	+02.5	S 22 30.8	+00.0	04
05	262	02.1	+01.0	N 04 14.5	-00.7	178	56.5	+02.2	S 22 30.6	+00.1	149	41.8	+02.4	S 22 30.8	+00.0	05
06	277	03.1	+01.0	N 04 13.8	-00.6	193	58.7	+02.2	S 22 30.7	+00.0	164	44.2	+02.5	S 22 30.8	+00.0	06
07	292	04.1	+01.0	N 04 13.2	-00.7	209	00.9	+02.1	S 22 30.7	+00.0	179	46.7	+02.4	S 22 30.8	+00.0	07
08	307	05.1	+01.0	N 04 12.5	-00.6	224	03.0	+02.2	S 22 30.7	+00.1	194	49.1	+02.5	S 22 30.8	+00.0	08
09	322	06.1	+01.0	N 04 11.9	-00.7	239	05.2	+02.1	S 22 30.8	+00.0	209	51.6	+02.4	S 22 30.8	+00.1	09
10	337	07.1	+01.0	N 04 11.2	-00.6	254	07.3	+02.2	S 22 30.8	+00.0	224	54.0	+02.5	S 22 30.9	+00.0	10
11	352	08.1	+01.0	N 04 10.6	-00.6	269	09.5	+02.1	S 22 30.8	+00.1	239	56.5	+02.4	S 22 30.9	+00.0	11
12	7	09.1	+01.0	N 04 10.0	-00.7	284	11.6	+02.2	S 22 30.9	+00.0	254	58.9	+02.5	S 22 30.9	+00.0	12
13	22	10.1	+01.0	N 04 09.3	-00.6	299	13.8	+02.1	S 22 30.9	+00.0	270	01.4	+02.4	S 22 30.9	+00.0	13
14	37	11.1	+01.0	N 04 08.7	-00.7	314	15.9	+02.2	S 22 30.9	+00.1	285	03.8	+02.5	S 22 30.9	+00.0	14
15	52	12.1	+01.0	N 04 08.0	-00.6	329	18.1	+02.1	S 22 31.0	+00.0	300	06.3	+02.4	S 22 30.9	+00.0	15
16	67	13.1	+00.9	N 04 07.4	-00.6	344	20.2	+02.2	S 22 31.0	+00.0	315	08.7	+02.5	S 22 30.9	+00.0	16
17	82	14.0	+01.0	N 04 06.8	-00.7	359	22.4	+02.1	S 22 31.0	+00.1	330	11.2	+02.4	S 22 30.9	+00.0	17
18	97	15.0	+01.0	N 04 06.1	-00.6	14	24.5	+02.2	S 22 31.1	+00.0	345	13.6	+02.5	S 22 30.9	+00.0	18
19	112	16.0	+01.0	N 04 05.5	-00.7	29	26.7	+02.1	S 22 31.1	+00.0	0	16.1	+02.4	S 22 30.9	+00.0	19
20	127	17.0	+01.0	N 04 04.8	-00.6	44	28.8	+02.2	S 22 31.1	+00.1	15	18.5	+02.5	S 22 30.9	+00.0	20
21	142	18.0	+01.0	N 04 04.2	-00.6	59	31.0	+02.1	S 22 31.2	+00.0	30	21.0	+02.4	S 22 30.9	+00.0	21
22	157	19.0	+01.0	N 04 03.6	-00.7	74	33.1	+02.2	S 22 31.2	+00.1	45	23.4	+02.5	S 22 30.9	+00.0	22
23	172	20.0	+01.0	N 04 02.9	-00.6	89	35.3	+02.1	S 22 31.3	+00.0	60	25.9	+02.4	S 22 30.9	+00.0	23

UT 02 06 10 14 18 22	SD 00°0 00°0 00°0 00°0 00°0 00°0	UT 02 06 10 14 18 22	SD 00°3 00°3 00°3 00°3 00°3 00°3	UT 02 06 10 14 18 22	SD 00°1 00°1 00°1 00°1 00°1 00°1	UT 02 06 10 14 18 22	SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1	SHA 187° 187° 187° 187° 187° 187°	HP 00°0 00°0 00°0 00°0 00°0 00°0	SHA 104° 104° 104° 104° 104° 104°	HP 00°0 00°0 00°0 00°0 00°0 00°0	SHA 075° 075° 075° 075° 075° 075°	HP 00°0 00°0 00°0 00°0 00°0 00°0	SHA 187° 187° 187° 186° 186° 186°
Greenwich Culmination Time: 11:31		Greenwich Culmination Time: 17:02		Greenwich Culmination Time: 18:58		Greenwich Culmination Time: 11:29	

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	181	45.5	+00.2	N 00 31.0	-01.0	171	38.0	-00.4	S 02 35.4	+01.2	273	26.3	-33.0	N 21 55.3	+03.4	00
01	196	45.7	+00.2	N 00 30.0	-01.0	186	37.6	-00.3	S 02 36.6	+01.3	287	53.3	-33.1	N 21 58.7	+03.3	01
02	211	45.9	+00.2	N 00 29.0	-01.0	201	37.3	-00.4	S 02 37.9	+01.3	302	20.2	-33.2	N 22 02.0	+03.1	02
03	226	46.1	+00.2	N 00 28.0	-00.9	216	36.9	-00.4	S 02 39.2	+01.3	316	47.0	-33.3	N 22 05.1	+03.0	03
04	241	46.3	+00.3	N 00 27.1	-01.0	231	36.5	-00.3	S 02 40.5	+01.2	331	13.7	-33.3	N 22 08.1	+02.9	04
05	256	46.6	+00.2	N 00 26.1	-01.0	246	36.2	-00.4	S 02 41.7	+01.3	345	40.4	-33.4	N 22 11.0	+02.7	05
06	271	46.8	+00.2	N 00 25.1	-00.9	261	35.8	-00.4	S 02 43.0	+01.3	0	07.0	-33.5	N 22 13.7	+02.7	06
07	286	47.0	+00.2	N 00 24.2	-01.0	276	35.4	-00.4	S 02 44.3	+01.3	14	33.5	-33.5	N 22 16.4	+02.5	07
08	301	47.2	+00.2	N 00 23.2	-01.0	291	35.0	-00.3	S 02 45.6	+01.2	28	60.0	-33.6	N 22 18.9	+02.3	08
09	316	47.4	+00.3	N 00 22.2	-01.0	306	34.7	-00.4	S 02 46.8	+01.3	43	26.4	-33.7	N 22 21.2	+02.3	09
10	331	47.7	+00.2	N 00 21.2	-00.9	321	34.3	-00.4	S 02 48.1	+01.3	57	52.7	-33.7	N 22 23.5	+02.1	10
11	346	47.9	+00.2	N 00 20.3	-01.0	336	33.9	-00.4	S 02 49.4	+01.2	72	19.0	-33.8	N 22 25.6	+02.0	11
12	1	48.1	+00.2	N 00 19.3	-01.0	351	33.5	-00.3	S 02 50.6	+01.3	86	45.2	-33.9	N 22 27.6	+01.8	12
13	16	48.3	+00.3	N 00 18.3	-01.0	6	33.2	-00.4	S 02 51.9	+01.3	101	11.3	-33.9	N 22 29.4	+01.7	13
14	31	48.6	+00.2	N 00 17.3	-00.9	21	32.8	-00.4	S 02 53.2	+01.2	115	37.4	-33.9	N 22 31.1	+01.6	14
15	46	48.8	+00.2	N 00 16.4	-01.0	36	32									

Table for 2019 September 27 Friday showing astronomical data for Sun, Venus, Moon, and Mars. Includes columns for UT, GHA, ddGHA, Dec, dDec, and UT. Includes sub-tables for Greenwich Culmination Time.

Table for 2019 September 24 Tuesday showing astronomical data for Sun, Venus, Moon, and Mars. Includes columns for UT, GHA, ddGHA, Dec, dDec, and UT. Includes sub-tables for Greenwich Culmination Time.

Table for 2019 September 27 Friday showing astronomical data for Mars, Jupiter, and Saturn. Includes columns for UT, GHA, ddGHA, Dec, dDec, and UT. Includes sub-tables for Greenwich Culmination Time.

Table for 2019 September 24 Tuesday showing astronomical data for Mars, Jupiter, and Saturn. Includes columns for UT, GHA, ddGHA, Dec, dDec, and UT. Includes sub-tables for Greenwich Culmination Time.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon (A: 88%), and Mars, Jupiter, Saturn. Rows include astronomical data for days 00-23, including GHA, ddGHA, Dec, dDec, and Greenwich Culmination Time.

Table with columns for UT, Sun, Venus, Moon (A: 92%), and Mars, Jupiter, Saturn. Rows include astronomical data for days 00-23, including GHA, ddGHA, Dec, dDec, and Greenwich Culmination Time.

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	182	31.5	+00.2	S 02 59.2	+01.0	170	14.3	-00.4	S 07 07.4	+01.2	151	34.2	-32.1	S 10 07.4	+12.7					
01	197	31.7	+00.2	S 03 00.2	+00.9	185	13.9	-00.5	S 07 08.6	+01.3	166	02.1	-32.2	S 10 20.1	+12.6					
02	212	31.9	+00.2	S 03 01.1	+01.0	200	13.4	-00.4	S 07 09.9	+01.2	180	29.9	-32.2	S 10 32.7	+12.6					
03	227	32.1	+00.2	S 03 02.1	+01.0	215	13.0	-00.4	S 07 11.1	+01.3	194	57.7	-32.2	S 10 45.3	+12.5					
04	242	32.3	+00.2	S 03 03.1	+00.9	230	12.6	-00.4	S 07 12.4	+01.2	209	25.5	-32.3	S 10 57.8	+12.4					
05	257	32.5	+00.3	S 03 04.0	+01.0	245	12.2	-00.4	S 07 13.6	+01.3	223	53.2	-32.2	S 11 10.2	+12.3					
06	272	32.8	+00.2	S 03 05.0	+01.0	260	11.8	-00.4	S 07 14.8	+01.3	238	21.0	-32.2	S 11 22.5	+12.2					
07	287	33.0	+00.2	S 03 06.0	+00.9	275	11.4	-00.4	S 07 16.1	+01.2	252	48.8	-32.2	S 11 34.7	+12.2					
08	302	33.2	+00.2	S 03 06.9	+01.0	290	11.0	-00.4	S 07 17.3	+01.2	267	16.6	-32.3	S 11 46.9	+12.0					
09	317	33.4	+00.2	S 03 07.9	+01.0	305	10.6	-00.4	S 07 18.5	+01.3	281	44.3	-32.2	S 11 58.9	+12.0					
10	332	33.6	+00.2	S 03 08.9	+01.0	320	10.2	-00.5	S 07 19.8	+01.2	296	12.1	-32.3	S 12 10.9	+11.9					
11	347	33.8	+00.2	S 03 09.9	+00.9	335	09.7	-00.4	S 07 21.0	+01.2	310	39.8	-32.2	S 12 22.8	+11.8					
12	2	34.0	+00.2	S 03 10.8	+01.0	350	09.3	-00.4	S 07 22.2	+01.3	325	07.6	-32.3	S 12 34.6	+11.7					
13	17	34.2	+00.2	S 03 11.8	+01.0	5	08.9	-00.4	S 07 23.5	+01.3	339	35.3	-32.3	S 12 46.3	+11.7					
14	32	34.4	+00.2	S 03 12.8	+00.9	20	08.5	-00.4	S 07 24.7	+01.2	354	03.0	-32.2	S 12 58.0	+11.5					
15	47	34.6	+00.2	S 03 13.7	+01.0	35	08.1	-00.4	S 07 25.9	+01.3	8	30.8	-32.3	S 13 09.5	+11.4					
16	62	34.8	+00.2	S 03 14.7	+01.0	50	07.7	-00.4	S 07 27.2	+01.2	22	58.5	-32.3	S 13 20.9	+11.4					
17	77	35.0	+00.2	S 03 15.7	+00.9	65	07.3	-00.4	S 07 28.4	+01.3	37	26.2	-32.3	S 13 32.3	+11.2					
18	92	35.2	+00.2	S 03 16.6	+01.0	80	06.9	-00.5	S 07 29.7	+01.2	51	53.9	-32.4	S 13 43.5	+11.2					
19	107	35.4	+00.2	S 03 17.6	+01.0	95	06.4	-00.4	S 07 30.9	+01.2	66	21.5	-32.3	S 13 54.7	+11.1					
20	122	35.6	+00.2	S 03 18.6	+00.9	110	06.0	-00.4	S 07 32.1	+01.3	80	49.2	-32.3	S 14 05.8	+10.9					
21	137	35.8	+00.2	S 03 19.5	+01.0	125	05.6	-00.4	S 07 33.4	+01.2	95	16.9	-32.4	S 14 16.7	+10.9					
22	152	36.0	+00.2	S 03 20.5	+01.0	140	05.2	-00.4	S 07 34.6	+01.2	109	44.5	-32.3	S 14 27.6	+10.7					
23	167	36.2	+00.2	S 03 21.5	+01.0	155	04.8	-00.4	S 07 35.8	+01.2	124	12.2	-32.4	S 14 38.3	+10.7					
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°0	16°0	16°0	16°0	16°0	16°0	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	16°3	16°3	16°2	16°2	16°2	16°1
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	59°9	59°8	59°6	59°5	59°3	59°2
SHA	173°	173°	173°	173°	173°	172°	SHA	161°	161°	160°	160°	160°	160°	SHA	141°	139°	136°	134°	132°	129°
Greenwich Culmination Time: 11:49				Greenwich Culmination Time: 12:39				Greenwich Culmination Time: 14:24												

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	182	16.6	+00.2	S 01 49.2	+01.0	170	43.1	-00.4	S 05 37.6	+01.3	190	28.7	-33.1	N 06 51.0	-14.1					
01	197	16.8	+00.3	S 01 50.2	+00.9	185	42.7	-00.4	S 05 38.9	+01.2	204	55.6	-33.1	N 06 36.9	-14.1					
02	212	17.1	+00.2	S 01 51.1	+01.0	200	42.3	-00.4	S 05 40.1	+01.3	219	22.5	-33.1	N 06 22.8	-14.2					
03	227	17.3	+00.2	S 01 52.1	+01.0	215	41.9	-00.4	S 05 41.4	+01.2	233	49.4	-33.0	N 06 08.6	-14.2					
04	242	17.5	+00.2	S 01 53.1	+01.0	230	41.5	-00.3	S 05 42.6	+01.3	248	16.4	-33.0	N 05 54.4	-14.3					
05	257	17.7	+00.2	S 01 54.1	+00.9	245	41.2	-00.4	S 05 43.9	+01.2	262	43.4	-32.9	N 05 40.1	-14.3					
06	272	17.9	+00.2	S 01 55.0	+01.0	260	40.8	-00.4	S 05 45.1	+01.3	277	10.5	-33.0	N 05 25.8	-14.3					
07	287	18.1	+00.2	S 01 56.0	+01.0	275	40.4	-00.4	S 05 46.4	+01.2	291	37.5	-32.9	N 05 11.5	-14.4					
08	302	18.3	+00.2	S 01 57.0	+01.0	290	40.0	-00.4	S 05 47.6	+01.3	306	04.6	-32.9	N 04 57.1	-14.4					
09	317	18.5	+00.2	S 01 58.0	+00.9	305	39.6	-00.4	S 05 48.9	+01.2	320	31.7	-32.8	N 04 42.7	-14.4					
10	332	18.7	+00.2	S 01 58.9	+01.0	320	39.2	-00.4	S 05 50.1	+01.3	334	58.9	-32.8	N 04 28.3	-14.4					
11	347	18.9	+00.3	S 01 59.9	+01.0	335	38.8	-00.4	S 05 51.4	+01.3	349	26.1	-32.8	N 04 13.9	-14.5					
12	2	19.2	+00.2	S 02 00.9	+00.9	350	38.4	-00.4	S 05 52.7	+01.2	3	53.3	-32.8	N 03 59.4	-14.5					
13	17	19.4	+00.2	S 02 01.8	+01.0	5	38.0	-00.4	S 05 53.9	+01.3	18	20.5	-32.7	N 03 44.9	-14.5					
14	32	19.6	+00.2	S 02 02.8	+01.0	20	37.6	-00.4	S 05 55.2	+01.2	32	47.8	-32.7	N 03 30.4	-14.6					
15	47	19.8	+00.2	S 02 03.8	+01.0	35	37.2	-00.4	S 05 56.4	+01.3	47	15.1	-32.7	N 03 15.8	-14.5					
16	62	20.0	+00.2	S 02 04.8	+00.9	50	36.8	-00.4	S 05 57.7	+01.2	61	42.4	-32.7	N 03 01.3	-14.6					
17	77	20.2	+00.2	S 02 05.7	+01.0	65	36.4	-00.4	S 05 58.9	+01.3	76	09.7	-32.6	N 02 46.7	-14.6					
18	92	20.4	+00.2	S 02 06.7	+01.0	80	36.0	-00.4	S 06 00.2	+01.2	90	37.1	-32.6	N 02 32.1	-14.6					
19	107	20.6	+00.2	S 02 07.7	+01.0	95	35.6	-00.4	S 06 01.4	+01.3	105	04.5	-32.6	N 02 17.5	-14.6					
20	122	20.8	+00.2	S 02 08.7	+00.9	110	35.2	-00.4	S 06 02.7	+01.2	119	31.9	-32.6	N 02 02.9	-14.6					
21	137	21.0	+00.2	S 02 09.6	+01.0	125	34.8	-00.4	S 06 03.9	+01.3	133	59.3	-32.5	N 01 48.3	-14.6					
22	152	21.2	+00.3	S 02 10.6	+01.0	140	34.4	-00.4	S 06 05.2	+01.2	148	26.8	-32.6	N 01 33.7	-14.6					
23	167	21.5	+00.2	S 02 11.6	+00.9	155	34.0	-00.4	S 06 06.4	+01.3	162	54.2	-32.5	N 01 19.1	-14.6					
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°0	16°0	16°0	16°0	16°0	16°0	SD	16°0	16°0	16°0	16°0	16°0	16°0	SD	16°7	16°7	16°7	16°7	16°7	16°7
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	61°3	61°3	61°2	61°2	61°2	61°1
SHA	176°	176°	175°	175°	175°	175°	SHA	164°	164°	164°	163°	163°	163°	SHA	183°	183°	178°	176°	173°	171°
Greenwich Culmination Time: 11:50				Greenwich Culmination Time: 12:37				Greenwich Culmination Time: 11:43												

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes SD, HP, SHA, and Greenwich Culmination Time for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes SD, HP, SHA, and Greenwich Culmination Time for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	182	50.4	+00.2	S 04 32.0	+01.0	169	33.7	-00.4	S 09 05.0	+01.2	99	45.7	-32.0	S 22 31.7	+01.9	00				
01	197	50.6	+00.2	S 04 33.0	+00.9	184	33.3	-00.4	S 09 06.2	+01.2	114	13.7	-32.0	S 22 33.6	+01.8	01				
02	212	50.8	+00.2	S 04 33.9	+01.0	199	32.9	-00.5	S 09 07.4	+01.2	128	41.7	-32.0	S 22 35.4	+01.6	02				
03	227	51.0	+00.2	S 04 34.9	+01.0	214	32.4	-00.4	S 09 08.6	+01.2	143	09.7	-31.9	S 22 37.0	+01.5	03				
04	242	51.2	+00.2	S 04 35.9	+00.9	229	32.0	-00.4	S 09 09.8	+01.2	157	37.8	-31.9	S 22 38.5	+01.4	04				
05	257	51.4	+00.2	S 04 36.8	+01.0	244	31.6	-00.5	S 09 11.0	+01.2	172	05.9	-31.9	S 22 39.9	+01.3	05				
06	272	51.6	+00.2	S 04 37.8	+01.0	259	31.1	-00.4	S 09 12.2	+01.2	186	34.0	-31.9	S 22 41.2	+01.2	06				
07	287	51.8	+00.2	S 04 38.8	+00.9	274	30.7	-00.5	S 09 13.4	+01.2	201	02.1	-31.8	S 22 42.4	+01.0	07				
08	302	52.0	+00.2	S 04 39.7	+01.0	289	30.2	-00.4	S 09 14.6	+01.2	215	30.3	-31.8	S 22 43.4	+00.9	08				
09	317	52.2	+00.1	S 04 40.7	+00.9	304	29.8	-00.4	S 09 15.8	+01.2	229	58.5	-31.7	S 22 44.3	+00.8	09				
10	332	52.3	+00.2	S 04 41.6	+01.0	319	29.4	-00.5	S 09 17.0	+01.3	244	26.8	-31.7	S 22 45.1	+00.7	10				
11	347	52.5	+00.2	S 04 42.6	+01.0	334	28.9	-00.4	S 09 18.3	+01.2	258	55.1	-31.7	S 22 45.8	+00.5	11				
12	2	52.7	+00.2	S 04 43.6	+00.9	349	28.5	-00.5	S 09 19.5	+01.2	273	23.4	-31.7	S 22 46.3	+00.5	12				
13	17	52.9	+00.2	S 04 44.5	+01.0	4	28.0	-00.4	S 09 20.7	+01.2	287	51.7	-31.6	S 22 46.8	+00.3	13				
14	32	53.1	+00.2	S 04 45.5	+01.0	19	27.6	-00.4	S 09 21.9	+01.2	302	20.1	-31.6	S 22 47.1	+00.1	14				
15	47	53.3	+00.2	S 04 46.5	+00.9	34	27.2	-00.5	S 09 23.1	+01.2	316	48.5	-31.5	S 22 47.2	+00.1	15				
16	62	53.5	+00.2	S 04 47.4	+01.0	49	26.7	-00.4	S 09 24.3	+01.2	331	17.0	-31.5	S 22 47.3	-00.1	16				
17	77	53.7	+00.2	S 04 48.4	+00.9	64	26.3	-00.5	S 09 25.5	+01.2	345	45.5	-31.5	S 22 47.2	-00.1	17				
18	92	53.9	+00.1	S 04 49.3	+01.0	79	25.8	-00.4	S 09 26.7	+01.2	0	14.0	-31.4	S 22 47.1	-00.3	18				
19	107	54.0	+00.2	S 04 50.3	+01.0	94	25.4	-00.4	S 09 27.9	+01.2	14	42.6	-31.4	S 22 46.8	-00.4	19				
20	122	54.2	+00.2	S 04 51.3	+00.9	109	25.0	-00.5	S 09 29.1	+01.2	29	11.2	-31.4	S 22 46.4	-00.6	20				
21	137	54.4	+00.2	S 04 52.2	+01.0	124	24.5	-00.4	S 09 30.3	+01.2	43	39.8	-31.3	S 22 45.8	-00.6	21				
22	152	54.6	+00.2	S 04 53.2	+01.0	139	24.1	-00.5	S 09 31.5	+01.2	58	08.5	-31.2	S 22 45.2	-00.8	22				
23	167	54.8	+00.2	S 04 54.1	+01.0	154	23.6	-00.4	S 09 32.7	+01.2	72	37.3	-31.3	S 22 44.4	-00.9	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°0	16°0	16°0	16°0	16°0	16°0	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	15°3	15°3	15°3	15°2	15°2	15°2
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	56°3	56°1	56°0	55°9	55°7	55°6
SHA	169°	169°	169°	169°	169°	169°	SHA	156°	156°	156°	156°	155°	155°	SHA	085°	083°	081°	078°	076°	074°
Greenwich Culmination Time: 11:48				Greenwich Culmination Time: 12:42				Greenwich Culmination Time: 17:59												

UT	Mars				Jupiter				Saturn				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	192	30.8	+01.0	N 00 40.5	-00.6	115	35.4	+02.1	S 22 42.5	+00.0	88	03.0	+02.4	S 22 30.8	+00.0	00				
01	207	31.8	+01.0	N 00 39.9	-00.7	130	37.5	+02.1	S 22 42.5	+00.1	103	05.4	+02.4	S 22 30.8	+00.0	01				
02	222	32.8	+01.0	N 00 39.2	-00.6	145	39.6	+02.0	S 22 42.6	+00.0	118	07.8	+02.3	S 22 30.8	+00.0	02				
03	237	33.8	+01.0	N 00 38.6	-00.7	160	41.6	+02.1	S 22 42.6	+00.0	133	10.1	+02.3	S 22 30.8	+00.0	03				
04	252	34.8	+01.0	N 00 37.9	-00.6	175	43.7	+02.1	S 22 42.6	+00.1	148	12.5	+02.4	S 22 30.8	+00.0	04				
05	267	35.8	+01.0	N 00 37.3	-00.7	190	45.8	+02.0	S 22 42.7	+00.0	163	14.9	+02.4	S 22 30.8	+00.0	05				
06	282	36.8	+01.0	N 00 36.6	-00.6	205	47.8	+02.1	S 22 42.7	+00.1	178	17.3	+02.4	S 22 30.8	+00.0	06				
07	297	37.8	+01.0	N 00 36.0	-00.7	220	49.9	+02.1	S 22 42.8	+00.0	193	19.7	+02.4	S 22 30.8	+00.0	07				
08	312	38.8	+00.9	N 00 35.3	-00.6	235	52.0	+02.0	S 22 42.8	+00.0	208	22.1	+02.4	S 22 30.8	+00.0	08				
09	327	39.7	+01.0	N 00 34.7	-00.7	250	54.0	+02.1	S 22 42.8	+00.1	223	24.5	+02.4	S 22 30.8	+00.0	09				
10	342	40.7	+01.0	N 00 34.0	-00.6	265	56.1	+02.1	S 22 42.9	+00.0	238	26.9	+02.4	S 22 30.8	+00.0	10				
11	357	41.7	+01.0	N 00 33.4	-00.7	280	58.2	+02.0	S 22 42.9	+00.0	253	29.3	+02.3	S 22 30.8	+00.0	11				
12	12	42.7	+01.0	N 00 32.7	-00.6	296	00.2	+02.1	S 22 42.9	+00.1	268	31.6	+02.4	S 22 30.8	+00.0	12				
13	27	43.7	+01.0	N 00 32.1	-00.7	311	02.3	+02.1	S 22 43.0	+00.0	283	34.0	+02.4	S 22 30.8	+00.0	13				
14	42	44.7	+01.0	N 00 31.4	-00.6	326	04.4	+02.0	S 22 43.0	+00.1	298	36.4	+02.4	S 22 30.8	+00.0	14				
15	57	45.7	+01.0	N 00 30.8	-00.7	341	06.4	+02.1	S 22 43.1	+00.0	313	38.8	+02.4	S 22 30.8	+00.0	15				
16	72	46.7	+01.0	N 00 30.1	-00.6	356	08.5	+02.1	S 22 43.1	+00.0	328	41.2	+02.4	S 22 30.8	-00.1	16				
17	87	47.7	+01.0	N 00 29.5	-00.7	11	10.6	+02.0	S 22 43.1	+00.1	343	43.6	+02.4	S 22 30.7	+00.0	17				
18	102	48.7	+01.0	N 00 28.8	-00.6	26	12.6	+02.1	S 22 43.2	+00.0	358	46.0	+02.4	S 22 30.7	+00.0	18				
19	117	49.7	+01.0	N 00 28.2	-00.7	41	14.7	+02.1	S 22 43.2	+00.0	13	48.4	+02.3	S 22 30.7	+00.0	19				
20	132	50.7	+00.9	N 00 27.5	-00.6	56	16.8	+02.0	S 22 43.2	+00.1	28	50.7	+02.4	S 22 30.7	+00.0	20				
21	147	51.6	+01.0	N 00 26.9	-00.7	71	18.8	+02.1	S 22 43.3	+00.0	43	53.1	+02.4	S 22 30.7	+00.0	21				
22	162	52.6	+01.0	N 00 26.2	-00.6	86	20.9	+02.1	S 22 43.3	+00.0	58	55.5	+02.4	S 22 30.7	+00.0	22				
23	177	53.6	+01.0	N 00 25.6	-00.7	101	23.0	+02.0	S 22 43.3	+00.1	73	57.9	+02.4	S 22 30.7	+00.0	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	00°0	00°0	00°0	00°0	00°0	00°0	SD	00°3	00°3	00°3	00°3	00°3	00°3	SD	00°1	00°1	00°1	00°1	00°1	00°1
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°0	00°0	00°0	00°0	00°0	00°0	HP	00°0	00°0	00°0	00°0	00°0	00°0
SHA	179°	179°	179°	179°	179°	179°	SHA	102°	102°	102°	102°	102°	102°	SHA	075°	075°	075°	075°	075°	075°
Greenwich Culmination Time: 11:09				Greenwich Culmination Time: 16:15				Greenwich Culmination Time: 18:04												

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	182	36.4	+00.2	S 03 22.5	+00.9	170	04.4	-00.4	S 07 37.0	+01.3	138	39.8	-32.3	S 14 49.0	+10.6	00
01	197	36.6	+00.2	S 03 23.4	+01.0	185	04.0	-00.5	S 07 38.3	+01.2	153	07.5	-32.4	S 14 59.6	+10.4	01
02	212	36.8	+00.2	S 03 24.4	+01.0	200	03.5	-00.4	S 07 39.5	+01.2	167	35.1	-32.4	S 15 10.0	+10.4	02
03	227	37.0	+00.2	S 03 25.4	+00.9	215	03.1	-00.4	S 07 40.7	+01.3	182	02.1	-32.4	S 15 20.4	+10.2	03
04	242	37.2	+00.2	S 03 26.3	+01.0	230	02.7	-00.4	S 07 42.0	+01.2	196	30.3	-32.4	S 15 30.6	+10.2	04
05	257	37.4	+00.2	S 03 27.3	+01.0	245	02.3	-00.4	S 07 43.2	+01.2	210	57.9	-32.4	S 15 40.8	+10.0	05
06	272	37.6	+00.2	S 03 28.3	+00.9	260	01.9	-00.4	S 07 44.4	+01.3	225	25.5	-32.4	S 15 50.8	+10.0	06
07	287	37.8	+00.2	S 03 29.2	+01.0	275	01.5	-00.5	S 07 45.7	+01.2	239	53.1	-32.4	S 16 00.8	+09.8	07
08	302	38.0	+00.2	S 03 30.2	+01.0	290	01.0	-00.4	S 07 46.9	+01.2	254	20.7	-32.5	S 16 10.6	+09.7	08
09	317	38.2	+00.2	S 03 31.2	+00.9	305	00.6	-00.4	S 07 48.1	+01.3	268	48.2	-32.4	S 16 20.3	+09.6	09
10	332	38.4	+00.2	S 03 32.1	+01.0	320	00.2	-00.4	S 07 49.4	+01.2	283	15.8	-32.4	S 16 29.9	+09.5	10
11	347	38.6	+00.2	S 03 33.1	+01.0	334	59.8	-00.4	S 07 50.6	+01.2	297	43.4	-32.5	S 16 39.4	+09.4	11
12	2	38.8	+00.2	S 03 34.1	+00.9	349	59.4	-00.5	S 07 51.8	+01.2	312	10.9	-32.5	S 16 48.8	+09.3	12
13	17	39.0	+00.2	S 03 35.0	+01.0	4	58.9	-00.4	S 07 53.0	+01.3	326					

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 02, 06, 10, 14, 18, 22. Includes SD, HP, SHA coordinates and Greenwich Culmination Time.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 02, 06, 10, 14, 18, 22. Includes SD, HP, SHA coordinates and Greenwich Culmination Time.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 02, 06, 10, 14, 18, 22. Includes SD, HP, SHA coordinates and Greenwich Culmination Time.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 02, 06, 10, 14, 18, 22. Includes SD, HP, SHA coordinates and Greenwich Culmination Time.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for Sun, Venus, and Moon. Rows include UT (00-23), GHA, ddGHA, Dec, dDec, and A: 37%. Data includes celestial coordinates and magnitudes for each planet.

Table with columns for UT (02-22), GHA, ddGHA, Dec, dDec, and A: 37%. Data includes specific celestial coordinates and magnitudes.

Table with columns for Mars, Jupiter, and Saturn. Rows include UT (00-23), GHA, ddGHA, Dec, dDec, and A: 37%. Data includes celestial coordinates and magnitudes for each planet.

Table with columns for UT (02-22), GHA, ddGHA, Dec, dDec, and A: 37%. Data includes specific celestial coordinates and magnitudes.

Table with columns for Sun, Venus, and Moon. Rows include UT (00-23), GHA, ddGHA, Dec, dDec, and A: 28%. Data includes celestial coordinates and magnitudes for each planet.

Table with columns for UT (02-22), GHA, ddGHA, Dec, dDec, and A: 28%. Data includes specific celestial coordinates and magnitudes.

Table with columns for Mars, Jupiter, and Saturn. Rows include UT (00-23), GHA, ddGHA, Dec, dDec, and A: 28%. Data includes celestial coordinates and magnitudes for each planet.

Table with columns for UT (02-22), GHA, ddGHA, Dec, dDec, and A: 28%. Data includes specific celestial coordinates and magnitudes.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°0 16°0 16°0 16°0 16°0 16°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 168° 167° 167° 167° 167° 167°
Greenwich Culmination Time: 11:47

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 178° 178° 178° 178° 177° 177°
Greenwich Culmination Time: 11:06

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°0 16°0 16°0 16°0 16°0 16°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 167° 166° 166° 166° 166° 166°
Greenwich Culmination Time: 11:47

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 177° 177° 177° 177° 177° 177°
Greenwich Culmination Time: 11:04

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet. Moon A: 49%.

UT 02 06 10 14 18 22
SD 16°0 16°0 16°0 16°0 16°0 16°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 162° 162° 162° 162° 161° 161°
Greenwich Culmination Time: 11:46

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet. Moon A: 40%.

UT 02 06 10 14 18 22
SD 16°0 16°0 16°0 16°0 16°0 16°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 150° 150° 150° 150° 149° 149°
Greenwich Culmination Time: 11:47

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 174° 174° 174° 174° 174° 174°
Greenwich Culmination Time: 10:56

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 176° 176° 176° 176° 176° 176°
Greenwich Culmination Time: 11:01

UT	Sun				Venus				Moon <small>A: 43%</small>				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	183	16.2	+00.1	S 06 49.5	+00.9	168	27.4	-00.5	S 11 55.0	+01.2	30	40.1	-25.6	S 09 43.6	-10.5	00				
01	198	16.3	+00.2	S 06 50.4	+00.9	183	26.9	-00.5	S 11 56.2	+01.1	45	14.5	-25.6	S 09 33.1	-10.5	01				
02	213	16.5	+00.1	S 06 51.3	+01.0	198	26.4	-00.5	S 11 57.3	+01.2	59	48.9	-25.5	S 09 22.6	-10.6	02				
03	228	16.6	+00.2	S 06 52.3	+00.9	213	25.9	-00.5	S 11 58.5	+01.1	74	23.4	-25.5	S 09 12.0	-10.6	03				
04	243	16.8	+00.2	S 06 53.2	+01.0	228	25.4	-00.5	S 11 59.6	+01.2	88	57.9	-25.5	S 09 01.4	-10.7	04				
05	258	17.0	+00.1	S 06 54.2	+00.9	243	24.9	-00.5	S 12 00.8	+01.1	103	32.4	-25.5	S 08 50.7	-10.6	05				
06	273	17.1	+00.2	S 06 55.1	+01.0	258	24.4	-00.4	S 12 01.9	+01.2	118	06.9	-25.4	S 08 40.1	-10.8	06				
07	288	17.3	+00.2	S 06 56.1	+00.9	273	24.0	-00.5	S 12 03.1	+01.1	132	41.5	-25.5	S 08 29.3	-10.7	07				
08	303	17.5	+00.1	S 06 57.0	+00.9	288	23.5	-00.5	S 12 04.2	+01.2	147	16.0	-25.4	S 08 18.6	-10.8	08				
09	318	17.6	+00.2	S 06 57.9	+01.0	303	23.0	-00.5	S 12 05.4	+01.1	161	50.6	-25.4	S 08 07.8	-10.8	09				
10	333	17.8	+00.2	S 06 58.9	+00.9	318	22.5	-00.5	S 12 06.5	+01.2	176	25.2	-25.3	S 07 57.0	-10.9	10				
11	348	18.0	+00.1	S 06 59.8	+01.0	333	22.0	-00.5	S 12 07.7	+01.1	190	59.9	-25.4	S 07 46.1	-10.9	11				
12	3	18.1	+00.2	S 07 00.8	+00.9	348	21.5	-00.5	S 12 08.8	+01.1	205	34.5	-25.3	S 07 35.2	-10.9	12				
13	18	18.3	+00.1	S 07 01.7	+01.0	3	21.0	-00.5	S 12 09.9	+01.2	220	09.2	-25.3	S 07 24.3	-11.0	13				
14	33	18.4	+00.2	S 07 02.7	+00.9	18	20.5	-00.5	S 12 11.1	+01.1	234	43.9	-25.3	S 07 13.3	-11.0	14				
15	48	18.6	+00.2	S 07 03.6	+00.9	33	20.0	-00.5	S 12 12.2	+01.2	249	18.6	-25.3	S 07 02.3	-11.0	15				
16	63	18.8	+00.1	S 07 04.5	+01.0	48	19.5	-00.5	S 12 13.4	+01.1	263	53.3	-25.2	S 06 51.3	-11.0	16				
17	78	18.9	+00.2	S 07 05.5	+00.9	63	19.0	-00.5	S 12 14.5	+01.2	278	28.1	-25.3	S 06 40.3	-11.1	17				
18	93	19.1	+00.2	S 07 06.4	+01.0	78	18.5	-00.5	S 12 15.7	+01.1	293	02.8	-25.2	S 06 29.2	-11.1	18				
19	108	19.3	+00.1	S 07 07.4	+00.9	93	18.0	-00.5	S 12 16.8	+01.1	307	37.6	-25.2	S 06 18.1	-11.1	19				
20	123	19.4	+00.2	S 07 08.3	+01.0	108	17.5	-00.5	S 12 17.9	+01.2	322	12.4	-25.2	S 06 07.0	-11.2	20				
21	138	19.6	+00.1	S 07 09.3	+00.9	123	17.0	-00.5	S 12 19.1	+01.1	336	47.2	-25.2	S 05 55.8	-11.2	21				
22	153	19.7	+00.2	S 07 10.2	+00.9	138	16.5	-00.5	S 12 20.2	+01.1	351	22.0	-25.2	S 05 44.6	-11.2	22				
23	168	19.9	+00.2	S 07 11.1	+01.0	153	16.0	-00.4	S 12 21.3	+01.2	5	56.8	-25.2	S 05 33.4	-11.2	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°0	16°0	16°0	16°0	16°0	16°0	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	14°7	14°7	14°7	14°7	14°7	14°7
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	54°0	54°0	54°0	54°0	54°0	54°1
SHA	164°	164°	164°	163°	163°	163°	SHA	149°	149°	149°	148°	148°	148°	SHA	010°	009°	007°	005°	003°	001°
Greenwich Culmination Time: 11:46				Greenwich Culmination Time: 12:46				Greenwich Culmination Time: 22:35												

UT	Mars				Jupiter				Saturn				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	194	53.4	+01.0	S 00 53.1	+00.7	120	31.2	+02.0	S 22 47.8	+00.0	93	45.3	+02.4	S 22 30.2	+00.0	00				
01	209	54.4	+01.0	S 00 53.8	+00.6	135	33.2	+02.0	S 22 47.8	+00.0	108	47.7	+02.3	S 22 30.2	-00.1	01				
02	224	55.4	+01.0	S 00 54.4	+00.7	150	35.2	+02.1	S 22 47.8	+00.0	123	50.0	+02.4	S 22 30.1	+00.0	02				
03	239	56.4	+01.0	S 00 55.1	+00.6	165	37.3	+02.0	S 22 47.9	+00.1	138	52.4	+02.4	S 22 30.1	+00.0	03				
04	254	57.4	+00.9	S 00 55.7	+00.7	180	39.3	+02.0	S 22 47.9	+00.0	153	54.8	+02.3	S 22 30.1	+00.0	04				
05	269	58.3	+01.0	S 00 56.4	+00.6	195	41.3	+02.1	S 22 47.9	+00.1	168	57.1	+02.4	S 22 30.1	+00.0	05				
06	284	59.3	+01.0	S 00 57.1	+00.7	210	43.4	+02.0	S 22 48.0	+00.0	183	59.5	+02.4	S 22 30.1	+00.0	06				
07	300	00.3	+01.0	S 00 57.7	+00.7	225	45.4	+02.1	S 22 48.0	+00.0	199	01.9	+02.3	S 22 30.1	+00.0	07				
08	315	01.3	+01.0	S 00 58.4	+00.6	240	47.5	+02.0	S 22 48.0	+00.1	214	04.2	+02.4	S 22 30.1	+00.0	08				
09	330	02.3	+01.0	S 00 59.0	+00.7	255	49.5	+02.0	S 22 48.1	+00.0	229	06.6	+02.3	S 22 30.1	+00.0	09				
10	345	03.3	+01.0	S 00 59.7	+00.6	270	51.5	+02.1	S 22 48.1	+00.1	244	08.9	+02.4	S 22 30.1	+00.0	10				
11	0	04.3	+01.0	S 01 00.3	+00.7	285	53.6	+02.0	S 22 48.2	+00.0	259	11.3	+02.4	S 22 30.1	+00.0	11				
12	15	05.3	+00.9	S 01 01.0	+00.6	300	55.6	+02.0	S 22 48.2	+00.0	274	13.7	+02.3	S 22 30.1	+00.0	12				
13	30	06.2	+01.0	S 01 01.6	+00.7	315	57.6	+02.1	S 22 48.2	+00.1	289	16.0	+02.4	S 22 30.1	+00.0	13				
14	45	07.2	+01.0	S 01 02.3	+00.6	330	59.7	+02.0	S 22 48.3	+00.0	304	18.4	+02.4	S 22 30.1	+00.0	14				
15	60	08.2	+01.0	S 01 02.9	+00.7	346	01.7	+02.0	S 22 48.3	+00.0	319	20.8	+02.3	S 22 30.1	+00.0	15				
16	75	09.2	+01.0	S 01 03.6	+00.6	1	03.7	+02.1	S 22 48.3	+00.1	334	23.1	+02.4	S 22 30.1	+00.0	16				
17	90	10.2	+01.0	S 01 04.2	+00.7	16	05.8	+02.0	S 22 48.4	+00.0	349	25.5	+02.3	S 22 30.1	-00.1	17				
18	105	11.2	+01.0	S 01 04.9	+00.6	31	07.8	+02.0	S 22 48.4	+00.0	4	27.8	+02.4	S 22 30.0	+00.0	18				
19	120	12.2	+01.0	S 01 05.5	+00.7	46	09.8	+02.1	S 22 48.4	+00.1	19	30.2	+02.4	S 22 30.0	+00.0	19				
20	135	13.2	+00.9	S 01 06.2	+00.6	61	11.9	+02.0	S 22 48.5	+00.0	34	32.6	+02.3	S 22 30.0	+00.0	20				
21	150	14.1	+01.0	S 01 06.8	+00.7	76	13.9	+02.0	S 22 48.5	+00.1	49	34.9	+02.4	S 22 30.0	+00.0	21				
22	165	15.1	+01.0	S 01 07.5	+00.6	91	15.9	+02.1	S 22 48.6	+00.0	64	37.3	+02.3	S 22 30.0	+00.0	22				
23	180	16.1	+01.0	S 01 08.1	+00.7	106	18.0	+02.0	S 22 48.6	+00.0	79	39.6	+02.4	S 22 30.0	+00.0	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	00°0	00°0	00°0	00°0	00°0	00°0	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	00°1	00°1	00°1	00°1	00°1	00°1
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°0	00°0	00°0	00°0	00°0	00°0	HP	00°0	00°0	00°0	00°0	00°0	00°0
SHA	176°	175°	175°	175°	175°	175°	SHA	101°	101°	101°	101°	101°	101°	SHA	074°	074°	074°	074°	074°	074°
Greenwich Culmination Time: 10:59				Greenwich Culmination Time: 15:55				Greenwich Culmination Time: 17:42												

UT	Sun				Venus				Moon <small>A: 46%</small>				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	183	20.1	+00.1	S 07 12.1	+00.9	168	15.6	-00.5	S 12 22.5	+01.1	20	31.6	-25.1	S 05 22.2	-11.3	00
01	198	20.2	+00.2	S 07 13.0	+01.0	183	15.1	-00.5	S 12 23.6	+01.2	35	06.5	-25.2	S 05 10.9	-11.3	01
02	213	20.4	+00.1	S 07 14.0	+00.9	198	14.6	-00.5	S 12 24.8	+01.1	49	41.3	-25.1	S 04 59.6	-11.3	02
03	228	20.5	+00.2	S 07 14.9	+00.9	213	14.1	-00.5	S 12 25.9	+01.1	64	16.2	-25.1	S 04 48.3	-11.3	03
04	243	20.7	+00.2	S 07 15.8	+01.0	228	13.6	-00.5	S 12 27.0	+01.2	78	51.1	-25.2	S 04 37.0	-11.3	04
05	258	20.9	+00.1	S 07 16.8	+00.9	243	13.1	-00.5	S 12 28.2	+01.1	93	25.9	-25.1	S 04 25.7	-11.4	05
06	273	21.0	+00.2	S 07 17.7	+00.9	258	12.6	-00.5	S 12 29.3	+01.1	108	00.8	-25.1	S 04 14.3	-11.4	06
07	288	21.2	+00.1	S 07 18.6	+01.0	273	12.1	-00.5	S 12 30.4	+01.2	122	35.7	-25.1	S 04 02.9	-11.4	07
08	303	21.3	+00.2	S 07 19.6	+00.9	288	11.6	-00.5	S 12 31.6	+01.1	137	10.6	-25.1	S 03 51.5	-11.4	08
09	318	21.5	+00.2	S 07 20.5	+01.0	303	11.1	-00.5	S 12 32.7	+01.1	151	45.5	-25.1	S 03 40.1	-11.4	09
10	333	21.7	+00.1	S 07 21.5	+00.9	318	10.6	-00.5	S 12 33.8	+01.2	166	20.4	-25.1	S 03 28.7	-11.5	10
11	348	21.8	+00.2	S 07 22.4	+00.9	333	10.1	-00.6	S 12 35.0	+01.1	180	55.3	-25.1	S 03 17.2	-11.5	11
12	3	22.0	+00.1	S 07 23.3	+01.0	348	09.5	-00.5	S							

UT	<i>Sun</i>				<i>Venus</i>				<i>Moon</i>				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
00	183	37.7	+00.1	S 09 03.6	+00.9	167	12.7	-00.6	S 14 35.1	+01.0	327	57.9	-29.0	N 16 31.5	+08.7
01	198	37.8	+00.1	S 09 04.5	+00.9	182	12.1	-00.5	S 14 36.1	+01.1	342	28.9	-29.1	N 16 40.2	+08.6
02	213	37.9	+00.1	S 09 05.4	+00.9	197	11.6	-00.6	S 14 37.2	+01.1	356	59.8	-29.2	N 16 48.8	+08.6
03	228	38.0	+00.2	S 09 06.3	+00.9	212	11.0	-00.6	S 14 38.3	+01.0	11	30.6	-29.3	N 16 57.4	+08.4
04	243	38.2	+00.1	S 09 07.2	+00.9	227	10.4	-00.5	S 14 39.3	+01.1	26	01.3	-29.3	N 17 05.8	+08.4
05	258	38.3	+00.1	S 09 08.1	+00.9	242	09.9	-00.6	S 14 40.4	+01.1	40	32.0	-29.4	N 17 14.2	+08.3
06	273	38.4	+00.2	S 09 09.0	+01.0	257	09.3	-00.5	S 14 41.5	+01.0	55	02.6	-29.4	N 17 22.5	+08.3
07	288	38.6	+00.1	S 09 10.0	+00.9	272	08.8	-00.6	S 14 42.5	+01.1	69	33.2	-29.5	N 17 30.8	+08.1
08	303	38.7	+00.1	S 09 10.9	+00.9	287	08.2	-00.5	S 14 43.6	+01.1	84	03.7	-29.6	N 17 38.9	+08.1
09	318	38.8	+00.2	S 09 11.8	+00.9	302	07.7	-00.6	S 14 44.7	+01.0	98	34.1	-29.7	N 17 47.0	+08.0
10	333	39.0	+00.1	S 09 12.7	+00.9	317	07.1	-00.5	S 14 45.7	+01.1	113	04.4	-29.7	N 17 55.0	+07.9
11	348	39.1	+00.1	S 09 13.6	+00.9	332	06.6	-00.6	S 14 46.8	+01.1	127	34.7	-29.8	N 18 02.9	+07.8
12	3	39.2	+00.1	S 09 14.5	+01.0	347	06.0	-00.6	S 14 47.9	+01.0	142	04.9	-29.9	N 18 10.7	+07.8
13	18	39.3	+00.2	S 09 15.5	+00.9	2	05.4	-00.5	S 14 48.9	+01.1	156	35.0	-29.9	N 18 18.5	+07.6
14	33	39.5	+00.1	S 09 16.4	+00.9	17	04.9	-00.6	S 14 50.0	+01.1	171	05.1	-30.0	N 18 26.1	+07.6
15	48	39.6	+00.1	S 09 17.3	+00.9	32	04.3	-00.5	S 14 51.1	+01.0	185	35.1	-30.1	N 18 33.7	+07.5
16	63	39.7	+00.2	S 09 18.2	+00.9	47	03.8	-00.6	S 14 52.1	+01.1	200	05.0	-30.2	N 18 41.2	+07.4
17	78	39.9	+00.1	S 09 19.1	+00.9	62	03.2	-00.6	S 14 53.2	+01.0	214	34.8	-30.2	N 18 48.6	+07.3
18	93	40.0	+00.1	S 09 20.0	+00.9	77	02.6	-00.5	S 14 54.2	+01.0	229	04.6	-30.3	N 18 55.9	+07.2
19	108	40.1	+00.1	S 09 20.9	+00.9	92	02.1	-00.6	S 14 55.3	+01.0	243	34.3	-30.3	N 19 03.1	+07.1
20	123	40.2	+00.2	S 09 21.8	+01.0	107	01.5	-00.5	S 14 56.3	+01.1	258	04.0	-30.5	N 19 10.2	+07.0
21	138	40.4	+00.1	S 09 22.8	+00.9	122	01.0	-00.6	S 14 57.4	+01.1	272	33.5	-30.5	N 19 17.2	+07.0
22	153	40.5	+00.1	S 09 23.7	+00.9	137	00.4	-00.6	S 14 58.5	+01.0	287	03.0	-30.5	N 19 24.2	+06.8
23	168	40.6	+00.1	S 09 24.6	+00.9	151	59.8	-00.5	S 14 59.5	+01.1	301	32.5	-30.7	N 19 31.0	+06.8

UT 02 06 10 14 18 22	SD 16°0 16°0 16°0 16°0 16°0 16°0	UT 02 06 10 14 18 22	SD 15°2 15°2 15°2 15°2 15°3 15°3	UT 02 06 10 14 18 22	SD 16°0 16°0 16°0 16°0 16°0 16°0
HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 55°7 55°8 55°9 55°9 56°0 56°1	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 54°5 54°6 54°6 54°7 54°7 54°8
SHA 158° 158° 158° 158° 158° 158°	SHA 142° 142° 141° 141° 141° 141°	SHA 302° 300° 297° 295° 293° 291°	SHA 161° 161° 161° 161° 161° 160°	SHA 337° 335° 333° 332° 330° 328°	Greenwich Culmination Time: -1:00
Greenwich Culmination Time: 11:45		Greenwich Culmination Time: 02:12		Greenwich Culmination Time: 12:49	

UT	<i>Mars</i>				<i>Jupiter</i>				<i>Saturn</i>				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
00	197	15.2	+01.0	S 02 26.7	+00.6	125	22.4	+02.0	S 22 52.9	+00.0	99	24.0	+02.4	S 22 29.1	+00.0
01	212	16.2	+01.0	S 02 27.3	+00.7	140	24.4	+02.1	S 22 52.9	+00.1	114	26.4	+02.3	S 22 29.1	+00.0
02	227	17.2	+01.0	S 02 28.0	+00.6	155	26.5	+02.0	S 22 53.0	+00.0	129	28.7	+02.3	S 22 29.1	+00.0
03	242	18.2	+00.9	S 02 28.6	+00.7	170	28.5	+02.0	S 22 53.0	+00.0	144	31.0	+02.4	S 22 29.1	+00.0
04	257	19.1	+01.0	S 02 29.3	+00.6	185	30.5	+02.0	S 22 53.0	+00.1	159	33.4	+02.3	S 22 29.1	+00.0
05	272	20.1	+01.0	S 02 29.9	+00.7	200	32.5	+02.0	S 22 53.1	+00.0	174	35.7	+02.4	S 22 29.1	+00.0
06	287	21.1	+01.0	S 02 30.6	+00.6	215	34.5	+02.0	S 22 53.1	+00.0	189	38.1	+02.3	S 22 29.1	+00.0
07	302	22.1	+01.0	S 02 31.2	+00.7	230	36.5	+02.0	S 22 53.1	+00.1	204	40.4	+02.3	S 22 29.1	+00.1
08	317	23.1	+00.9	S 02 31.9	+00.6	245	38.5	+02.0	S 22 53.2	+00.0	219	42.7	+02.4	S 22 29.0	+00.0
09	332	24.0	+01.0	S 02 32.5	+00.7	260	40.5	+02.0	S 22 53.2	+00.0	234	45.1	+02.3	S 22 29.0	+00.0
10	347	25.0	+01.0	S 02 33.2	+00.6	275	42.5	+02.0	S 22 53.2	+00.1	249	47.4	+02.4	S 22 29.0	+00.0
11	2	26.0	+01.0	S 02 33.8	+00.7	290	44.5	+02.0	S 22 53.3	+00.0	264	49.8	+02.3	S 22 29.0	+00.0
12	17	27.0	+01.0	S 02 34.5	+00.6	305	46.5	+02.0	S 22 53.3	+00.1	279	52.1	+02.3	S 22 29.0	+00.0
13	32	28.0	+00.9	S 02 35.1	+00.7	320	48.5	+02.0	S 22 53.4	+00.0	294	54.4	+02.4	S 22 29.0	+00.0
14	47	28.9	+01.0	S 02 35.8	+00.6	335	50.5	+02.0	S 22 53.4	+00.0	309	56.8	+02.3	S 22 29.0	+00.0
15	62	29.9	+01.0	S 02 36.4	+00.7	350	52.5	+02.0	S 22 53.4	+00.1	324	59.1	+02.3	S 22 29.0	+00.0
16	77	30.9	+01.0	S 02 37.1	+00.6	5	54.5	+02.0	S 22 53.5	+00.0	340	01.4	+02.4	S 22 29.0	+00.0
17	92	31.9	+01.0	S 02 37.7	+00.7	20	56.5	+02.1	S 22 53.5	+00.0	355	03.8	+02.3	S 22 29.0	+00.0
18	107	32.9	+00.9	S 02 38.4	+00.6	35	58.6	+02.0	S 22 53.5	+00.1	10	06.1	+02.3	S 22 29.0	+00.1
19	122	33.8	+01.0	S 02 39.0	+00.6	51	00.6	+02.0	S 22 53.6	+00.0	25	08.4	+02.4	S 22 28.9	+00.0
20	137	34.8	+01.0	S 02 39.6	+00.7	66	02.6	+02.0	S 22 53.6	+00.0	40	10.8	+02.3	S 22 28.9	+00.0
21	152	35.8	+01.0	S 02 40.3	+00.6	81	04.6	+02.0	S 22 53.6	+00.1	55	13.1	+02.4	S 22 28.9	+00.0
22	167	36.8	+01.0	S 02 40.9	+00.6	96	06.6	+02.0	S 22 53.7	+00.0	70	15.5	+02.3	S 22 28.9	+00.0
23	182	37.8	+00.9	S 02 41.6	+00.6	111	08.6	+02.0	S 22 53.7	+00.0	85	17.8	+02.3	S 22 28.9	+00.0

UT 02 06 10 14 18 22	SD 00°0 00°0 00°0 00°0 00°0 00°0	UT 02 06 10 14 18 22	SD 00°3 00°3 00°3 00°3 00°3 00°3	UT 02 06 10 14 18 22	SD 00°1 00°1 00°1 00°1 00°1 00°1
HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 172° 172° 172° 172° 172° 172°	SHA 100° 100° 100° 100° 100° 100°	SHA 074° 074° 074° 074° 074° 074°	SHA 174° 174° 174° 174° 174° 174°	SHA 101° 101° 101° 101° 101° 101°	SHA 074° 074° 074° 074° 074° 074°
Greenwich Culmination Time: 10:50		Greenwich Culmination Time: 15:36		Greenwich Culmination Time: 17:30	

UT	<i>Sun</i>				<i>Venus</i>				<i>Moon</i>				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
00	183	27.5	+00.2	S 07 57.0	+00.9	167	51.2	-00.5	S 13 16.5	+01.1	0	22.1	-25.5	N 03 52.6	+11.6
01	198	27.7	+00.1	S 07 57.9	+01.0	182	50.7	-00.6	S 13 17.6	+01.1	14	56.6	-25.6	N 04 04.2	+11.6
02	213	27.8	+00.1	S 07 58.9	+00.9	197	50.1	-00.5	S 13 18.7	+01.1	29	31.0	-25.5	N 04 15.8	+11.6
03	228	27.9	+00.2	S 07 59.8	+00.9	212	49.6	-00.5	S 13 19.8	+01.1	44	05.5	-25.7	N 04 27.4	+11.5
04	243	28.1	+00.1	S 08 00.7	+01.0	227	49.1	-00.5	S 13 20.9	+01.1	58	39.8	-25.6	N 04 38.9	+11.6
05	258	28.2	+00.2	S 08 01.7	+00.9	242	48.6	-00.5	S 13 22.0	+01.2	73	14.2	-25.6	N 04 50.5	+11.5
06	273	28.4	+00.1	S 08 02.6	+00.9	257	48.1	-00.6	S 13 23.2	+01.1	87	48.6	-25.7	N 05 02.0	+11.5
07	288	28.5	+00.2	S 08 03.5	+00.9	272	47.5	-00.5	S 13 24.3	+01.1	102	22.9	-25.8	N 05 13.5	+11.5
08	303	28.7	+00.1	S 08 04.4	+01.0	287	47.0	-00.5	S 13 25.4	+01.1	116	57.1	-25.7	N 05 25.0	+11.5
09	318	28.8	+00.2	S 08 05.4	+00.9	302	46.5	-00.5	S 13 26.5	+01.1	131	31.4	-25.8	N 05 36.5	+11.5
10	333	29.0	+00.1	S 08 06.3	+00.9	317	46.0	-00.6	S 13 27.6	+01.1	146	05.6	-25.8	N 05 48.0	+11.4
11	348	29.1	+00.2	S 08 07.2	+01.0	332	45.4	-00.5	S 13 28.7	+01.1	160	39.8	-25.9	N 05 59.4	+11.5
12	3	29.3	+00.1	S 08 08.2	+00.9	347	44.9	-00.5	S 13 29.8	+01.1	175	13.9	-25.8	N 06 10.9	+11.4
13	18	29.4	+00.2	S 08 09.1	+00.9	2	44.4	-00.5	S 13 30.9	+01.1	189	48.1	-26.0	N 06 22.3	+11.4
14	33	29.6	+00.1	S 08 10.0	+01.0	17	43.9	-00.6	S 13 32.0	+01.1	204	22.1	-25.9	N 06 33.7	+11.4
15	48	29.7	+00.2	S 08 11.0	+00.9	32	43.3	-00.5	S 13 33.1	+01.1	218	56.2	-26.0	N 06 45.1	+11.3
16	63	29.9	+00.1	S 08 11.9	+00.9	47	42.8	-00.5	S 13 34.2	+01.1	233	30.2	-26.0	N 06 56.4	

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°0 16°0 16°0 16°0 16°0 16°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 160° 160° 160° 160° 160° 159°
Greenwich Culmination Time: 11:45

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 173° 173° 173° 173° 173° 173°
Greenwich Culmination Time: 10:53

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°0 16°0 16°0 16°0 16°0 16°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 159° 159° 159° 159° 159° 158°
Greenwich Culmination Time: 11:45

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 173° 172° 172° 172° 172° 172°
Greenwich Culmination Time: 10:51

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table for Sun, Venus, and Moon on Monday, October 21, 2019. Columns include UT, GHA, ddGHA, Dec, dDec, and A: 76%. Rows 00-23.

Table for Sun, Venus, and Moon on Friday, October 18, 2019. Columns include UT, GHA, ddGHA, Dec, dDec, and A: 64%. Rows 00-23.

Table for Mars, Jupiter, and Saturn on Monday, October 21, 2019. Columns include UT, GHA, ddGHA, Dec, dDec, and Greenwich Culmination Time. Rows 00-23.

Table for Mars, Jupiter, and Saturn on Friday, October 18, 2019. Columns include UT, GHA, ddGHA, Dec, dDec, and Greenwich Culmination Time. Rows 00-23.

Table for 2019 October 19 Saturday showing astronomical data for Sun, Venus, and Moon. Columns include UT, GHA, ddGHA, Dec, dDec, and UT. Includes Greenwich Culmination Time: 11:44.

Table for 2019 October 20 Sunday showing astronomical data for Sun, Venus, and Moon. Columns include UT, GHA, ddGHA, Dec, dDec, and UT. Includes Greenwich Culmination Time: 11:44.

Table for 2019 October 19 Saturday showing astronomical data for Mars, Jupiter, and Saturn. Columns include UT, GHA, ddGHA, Dec, dDec, and UT. Includes Greenwich Culmination Time: 10:47.

Table for 2019 October 20 Sunday showing astronomical data for Mars, Jupiter, and Saturn. Columns include UT, GHA, ddGHA, Dec, dDec, and UT. Includes Greenwich Culmination Time: 10:45.

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	183	57.8	+00.1	S 11 54.9	+00.9	165	17.4	-00.6	S 17 48.0	+00.9	222	52.0	-32.4	N 09 13.5	-13.4	00
01	198	57.9	+00.1	S 11 55.8	+00.9	180	16.8	-00.7	S 17 48.9	+00.9	237	19.6	-32.4	N 09 00.1	-13.4	01
02	213	58.0	+00.1	S 11 56.7	+00.8	195	16.1	-00.6	S 17 49.8	+01.0	251	47.2	-32.3	N 08 46.7	-13.4	02
03	228	58.1	+00.0	S 11 57.5	+00.9	210	15.5	-00.7	S 17 50.8	+00.9	266	14.9	-32.4	N 08 33.3	-13.5	03
04	243	58.1	+00.1	S 11 58.4	+00.8	225	14.8	-00.7	S 17 51.7	+00.9	280	42.5	-32.3	N 08 19.8	-13.6	04
05	258	58.2	+00.1	S 11 59.2	+00.9	240	14.1	-00.6	S 17 52.6	+01.0	295	10.2	-32.3	N 08 06.2	-13.6	05
06	273	58.3	+00.1	S 12 00.1	+00.9	255	13.5	-00.7	S 17 53.6	+00.9	309	37.9	-32.2	N 07 52.6	-13.7	06
07	288	58.4	+00.0	S 12 01.0	+00.8	270	12.8	-00.6	S 17 54.5	+00.9	324	05.7	-32.3	N 07 38.9	-13.7	07
08	303	58.4	+00.1	S 12 01.8	+00.9	285	12.2	-00.7	S 17 55.4	+00.9	338	33.4	-32.2	N 07 25.2	-13.8	08
09	318	58.5	+00.1	S 12 02.7	+00.9	300	11.5	-00.6	S 17 56.3	+01.0	353	01.2	-32.2	N 07 11.4	-13.8	09
10	333	58.6	+00.1	S 12 03.6	+00.8	315	10.9	-00.7	S 17 57.3	+00.9	7	29.0	-32.1	N 06 57.6	-13.9	10
11	348	58.7	+00.0	S 12 04.4	+00.9	330	10.2	-00.6	S 17 58.2	+00.9	21	56.9	-32.2	N 06 43.7	-14.0	11
12	3	58.7	+00.1	S 12 05.3	+00.8	345	09.6	-00.7	S 17 59.1	+00.9	36	24.7	-32.2	N 06 29.7	-13.9	12
13	18	58.8	+00.1	S 12 06.1	+00.9	0	08.9	-00.7	S 18 00.0	+01.0	50	52.5	-32.1	N 06 15.8	-14.1	13
14	33	58.9	+00.1	S 12 07.0	+00.9	15	08.2	-00.6	S 18 01.0	+00.9	65	20.4	-32.1	N 06 01.7	-14.0	14
15	48	59.0	+00.0	S 12 07.9	+00.8	30	07.6	-00.7	S 18 01.9	+00.9	79	48.3	-32.1	N 05 47.7	-14.1	15
16	63	59.0	+00.1	S 12 08.7	+00.9	45	06.9	-00.6	S 18 02.8	+00.9	94	16.2	-32.1	N 05 33.6	-14.1	16
17	78	59.1	+00.1	S 12 09.6	+00.9	60	06.3	-00.7	S 18 03.7	+01.0	108	44.1	-32.0	N 05 19.5	-14.2	17
18	93	59.2	+00.0	S 12 10.5	+00.8	75	05.6	-00.7	S 18 04.7	+00.9	123	12.1	-32.1	N 05 05.3	-14.2	18
19	108	59.2	+00.1	S 12 11.3	+00.9	90	04.9	-00.6	S 18 05.6	+00.9	137	40.0	-32.0	N 04 51.1	-14.3	19
20	123	59.3	+00.1	S 12 12.2	+00.8	105	04.3	-00.7	S 18 06.5	+00.9	152	08.0	-32.0	N 04 36.8	-14.3	20
21	138	59.4	+00.0	S 12 13.0	+00.9	120	03.6	-00.6	S 18 07.4	+00.9	166	36.0	-32.0	N 04 22.5	-14.3	21
22	153	59.4	+00.1	S 12 13.9	+00.8	135	03.0	-00.7	S 18 08.3	+00.9	181	04.0	-32.0	N 04 08.2	-14.3	22
23	168	59.5	+00.1	S 12 14.7	+00.9	150	02.3	-00.7	S 18 09.2	+01.0	195	32.0	-32.0	N 03 53.9	-14.4	23

UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°1	16°1	16°1	16°1	16°1	16°1	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	16°5	16°5	16°5	16°5	16°5	16°5
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	60°4	60°5	60°5	60°6	60°6	60°6
SHA	151°	151°	150°	150°	150°	150°	SHA	132°	132°	132°	131°	131°	131°	SHA	154°	153°	153°	153°	153°	153°
Greenwich Culmination Time: 11:44							Greenwich Culmination Time: 12:59							Greenwich Culmination Time: 09:28						

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	200	22.4	+01.0	S 04 30.7	+00.6	131	44.4	+02.0	S 22 59.4	+00.0	106	50.2	+02.3	S 22 27.1	+00.0	00
01	215	23.4	+01.0	S 04 31.3	+00.7	146	46.4	+02.0	S 22 59.4	+00.1	121	52.5	+02.3	S 22 27.1	+00.0	01
02	230	24.4	+00.9	S 04 32.0	+00.6	161	48.4	+02.0	S 22 59.5	+00.0	136	54.8	+02.4	S 22 27.1	+00.0	02
03	245	25.3	+01.0	S 04 32.6	+00.6	176	50.4	+01.9	S 22 59.5	+00.0	151	57.2	+02.3	S 22 27.1	+00.0	03
04	260	26.3	+01.0	S 04 33.2	+00.7	191	52.3	+02.0	S 22 59.5	+00.0	166	59.5	+02.3	S 22 27.1	-00.1	04
05	275	27.3	+00.9	S 04 33.9	+00.6	206	54.3	+02.0	S 22 59.5	+00.1	182	01.8	+02.3	S 22 27.0	+00.0	05
06	290	28.2	+01.0	S 04 34.5	+00.7	221	56.3	+01.9	S 22 59.6	+00.0	197	04.1	+02.3	S 22 27.0	+00.0	06
07	305	29.2	+01.0	S 04 35.2	+00.6	236	58.2	+02.0	S 22 59.6	+00.0	212	06.4	+02.3	S 22 27.0	+00.0	07
08	320	30.2	+00.9	S 04 35.8	+00.6	252	00.2	+02.0	S 22 59.6	+00.1	227	08.7	+02.3	S 22 27.0	+00.0	08
09	335	31.1	+01.0	S 04 36.4	+00.7	267	02.2	+01.9	S 22 59.7	+00.0	242	11.0	+02.3	S 22 27.0	+00.0	09
10	350	32.1	+01.0	S 04 37.1	+00.6	282	04.1	+02.0	S 22 59.7	+00.0	257	13.3	+02.3	S 22 27.0	+00.0	10
11	5	33.1	+00.9	S 04 37.7	+00.7	297	06.1	+02.0	S 22 59.7	+00.1	272	15.6	+02.3	S 22 27.0	+00.0	11
12	20	34.0	+01.0	S 04 38.4	+00.6	312	08.1	+02.0	S 22 59.8	+00.0	287	17.9	+02.3	S 22 27.0	-00.1	12
13	35	35.0	+01.0	S 04 39.0	+00.7	327	10.1	+01.9	S 22 59.8	+00.0	302	20.2	+02.3	S 22 26.9	+00.0	13
14	50	36.0	+00.9	S 04 39.7	+00.6	342	12.0	+02.0	S 22 59.8	+00.1	317	22.5	+02.3	S 22 26.9	+00.0	14
15	65	36.9	+01.0	S 04 40.3	+00.6	357	14.0	+02.0	S 22 59.9	+00.0	332	24.8	+02.3	S 22 26.9	+00.0	15
16	80	37.9	+01.0	S 04 40.9	+00.7	12	16.0	+01.9	S 22 59.9	+00.0	347	27.1	+02.3	S 22 26.9	+00.0	16
17	95	38.9	+00.9	S 04 41.6	+00.6	27	17.9	+02.0	S 22 59.9	+00.1	2	29.4	+02.4	S 22 26.9	+00.0	17
18	110	39.8	+01.0	S 04 42.2	+00.7	42	19.9	+02.0	S 22 60.0	+00.0	17	31.8	+02.3	S 22 26.9	+00.0	18
19	125	40.8	+01.0	S 04 42.9	+00.6	57	21.9	+01.9	S 22 60.0	+00.0	32	34.1	+02.3	S 22 26.9	+00.0	19
20	140	41.8	+00.9	S 04 43.5	+00.6	72	23.8	+02.0	S 23 00.0	+00.1	47	36.4	+02.3	S 22 26.9	-00.1	20
21	155	42.7	+01.0	S 04 44.1	+00.7	87	25.8	+02.0	S 23 00.1	+00.0	62	38.7	+02.3	S 22 26.8	+00.0	21
22	170	43.7	+01.0	S 04 44.8	+00.6	102	27.8	+01.9	S 23 00.1	+00.0	77	41.0	+02.3	S 22 26.8	+00.0	22
23	185	44.7	+00.9	S 04 45.4	+00.7	117	29.7	+02.0	S 23 00.1	+00.1	92	43.3	+02.3	S 22 26.8	+00.0	23

UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	00°0	00°0	00°0	00°0	00°0	00°0	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	00°1	00°1	00°1	00°1	00°1	00°1
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°0	00°0	00°0	00°0	00°0	00°0	HP	00°0	00°0	00°0	00°0	00°0	00°0
SHA	167°	167°	167°	167°	167°	167°	SHA	099°	099°	099°	099°	098°	098°	SHA	074°	074°	074°	074°	074°	074°
Greenwich Culmination Time: 10:37							Greenwich Culmination Time: 15:11							Greenwich Culmination Time: 16:50						

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	183	51.5	+00.1	S 10 51.8	+00.9	166	02.9	-00.6	S 16 38.7	+01.0	262	58.6	-34.3	N 21 05.5	-05.7	00
01	198	51.6	+00.1	S 10 52.7	+00.9	181	02.3	-00.7	S 16 39.7	+01.0	277	24.3	-34.2	N 20 59.8	-05.8	01
02	213	51.7	+00.1	S 10 53.6	+00.9	196	01.6	-00.6	S 16 40.7	+01.0	291	50.1	-34.2	N 20 54.0	-05.9	02
03	228	51.8	+00.1	S 10 54.5	+00.9	211	01.0	-00.6	S 16 41.7	+01.0	306	15.9	-34.3	N 20 48.1	-06.1	03
04	243	51.9	+00.1	S 10 55.4	+00.9	226	00.4	-00.6	S 16 42.7	+01.0	320	41.6	-34.2	N 20 42.0	-06.2	04
05	258	52.0	+00.1	S 10 56.3	+00.8	240	59.8	-00.6	S 16 43.7	+01.0	335	07.4	-34.2	N 20 35.8	-06.3	05
06	273	52.1	+00.1	S 10 57.1	+00.9	255	59.2	-00.6	S 16 44.7	+00.9	349	33.2	-34.2	N 20 29.5	-06.5	06
07	288	52.2	+00.1	S 10 58.0	+00.9	270	58.6	-00.6	S 16 45.6	+01.0	3	59.0	-34.2	N 20 23.0	-06.6	07
08	303	52.3	+00.1	S 10 58.9	+00.9	285	58.0	-00.7	S 16 46.6	+01.0	18	24.8	-34.1	N 20 16.4	-06.7	08
09	318	52.4	+00.1	S 10 59.8	+00.9	300	57.3	-00.6	S 16 47.6	+01.0	32	50.7	-34.2	N 20 09.7	-06.9	09
10	333	52.5	+00.1	S 11 00.7	+00.9	315	56.7	-00.6	S 16 48.6	+01.0	47	16.5	-34.1	N 20 02.8	-07.0	10
11	348	52.6	+00.1	S 11 01.6	+00.8	330	56.1	-00.6	S 16 49.6	+01.0	61	42.4	-34.1	N 19 55.8	-07.1	11
12	3	52.7	+00.1	S 11 02.4	+00.9	345	55.5	-00.6	S 16 50.6	+00.9	76	08.3	-34.1	N 19 48.7	-07.3	12
13	18	52.8														

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23 showing celestial coordinates and magnitudes for each planet.

UT 02 06 10 14 18 22
SD 16°1 16°1 16°1 16°1 16°1 16°1
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 153° 153° 152° 152° 152° 152°
Greenwich Culmination Time: 11:44

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23 showing celestial coordinates and magnitudes for each planet.

UT 02 06 10 14 18 22
SD 16°1 16°1 16°1 16°1 16°1 16°1
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 152° 152° 151° 151° 151° 151°
Greenwich Culmination Time: 11:44

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23 showing celestial coordinates and magnitudes for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 168° 168° 168° 168° 168° 168°
Greenwich Culmination Time: 10:40

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23 showing celestial coordinates and magnitudes for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 168° 168° 168° 168° 167° 167°
Greenwich Culmination Time: 10:39

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for days 00-23 and a summary row with UT 02-22. Columns include GHA, ddGHA, Dec, dDec, and A: 05%.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for days 00-23 and a summary row with UT 02-22. Columns include GHA, ddGHA, Dec, dDec, and A: 94%.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for days 00-23 and a summary row with UT 02-22. Columns include GHA, ddGHA, Dec, dDec, and Greenwich Culmination Time.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for days 00-23 and a summary row with UT 02-22. Columns include GHA, ddGHA, Dec, dDec, and Greenwich Culmination Time.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes celestial coordinates (GHA, ddGHA, Dec, dDec) and magnitude (A: 98%).

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 02-22. Includes celestial coordinates (GHA, ddGHA, Dec, dDec) and magnitude (A: 98%).

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes celestial coordinates (GHA, ddGHA, Dec, dDec) and magnitude (A: 98%).

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 02-22. Includes celestial coordinates (GHA, ddGHA, Dec, dDec) and magnitude (A: 98%).

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes celestial coordinates (GHA, ddGHA, Dec, dDec) and magnitude (A: 01%).

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 02-22. Includes celestial coordinates (GHA, ddGHA, Dec, dDec) and magnitude (A: 01%).

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes celestial coordinates (GHA, ddGHA, Dec, dDec) and magnitude (A: 01%).

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 02-22. Includes celestial coordinates (GHA, ddGHA, Dec, dDec) and magnitude (A: 01%).

UT	<i>Sun</i>				<i>Venus</i>				<i>Moon</i>				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	184	06.5	+00.1	S 14 34.7	+00.8	163	02.6	-00.8	S 20 31.3	+00.8	118	24.4	-32.4	S 23 02.7	+00.0	00
01	199	06.6	+00.0	S 14 35.5	+00.8	178	01.8	-00.7	S 20 32.1	+00.8	132	52.0	-32.4	S 23 02.7	-00.1	01
02	214	06.6	+00.0	S 14 36.3	+00.8	193	01.1	-00.8	S 20 32.9	+00.7	147	19.6	-32.3	S 23 02.6	-00.3	02
03	229	06.6	+00.0	S 14 37.1	+00.8	208	00.3	-00.8	S 20 33.6	+00.8	161	47.3	-32.3	S 23 02.3	-00.3	03
04	244	06.6	+00.0	S 14 37.9	+00.8	222	59.5	-00.7	S 20 34.4	+00.7	176	15.0	-32.2	S 23 02.0	-00.5	04
05	259	06.6	+00.0	S 14 38.7	+00.8	237	58.8	-00.8	S 20 35.1	+00.8	190	42.8	-32.2	S 23 01.5	-00.7	05
06	274	06.6	+00.0	S 14 39.5	+00.8	252	58.0	-00.7	S 20 35.9	+00.8	205	10.6	-32.2	S 23 00.8	-00.7	06
07	289	06.6	+00.0	S 14 40.3	+00.8	267	57.3	-00.8	S 20 36.7	+00.7	219	38.4	-32.0	S 23 00.1	-00.9	07
08	304	06.6	+00.0	S 14 41.1	+00.8	282	56.5	-00.7	S 20 37.4	+00.8	234	06.4	-32.1	S 22 59.2	-01.0	08
09	319	06.6	+00.1	S 14 41.9	+00.8	297	55.8	-00.8	S 20 38.2	+00.7	248	34.3	-32.0	S 22 58.2	-01.1	09
10	334	06.7	+00.0	S 14 42.7	+00.8	312	55.0	-00.8	S 20 38.9	+00.8	263	02.3	-31.9	S 22 57.1	-01.2	10
11	349	06.7	+00.0	S 14 43.5	+00.8	327	54.2	-00.7	S 20 39.7	+00.7	277	30.4	-31.9	S 22 55.9	-01.4	11
12	4	06.7	+00.0	S 14 44.3	+00.8	342	53.5	-00.8	S 20 40.4	+00.8	291	58.5	-31.8	S 22 54.5	-01.5	12
13	19	06.7	+00.0	S 14 45.1	+00.8	357	52.7	-00.7	S 20 41.2	+00.7	306	26.7	-31.8	S 22 53.0	-01.6	13
14	34	06.7	+00.0	S 14 45.9	+00.7	12	52.0	-00.8	S 20 41.9	+00.8	320	54.9	-31.7	S 22 51.4	-01.7	14
15	49	06.7	+00.0	S 14 46.6	+00.8	27	51.2	-00.8	S 20 42.7	+00.7	335	23.2	-31.6	S 22 49.7	-01.8	15
16	64	06.7	+00.0	S 14 47.4	+00.8	42	50.4	-00.7	S 20 43.4	+00.8	349	51.6	-31.7	S 22 47.9	-02.0	16
17	79	06.7	+00.0	S 14 48.2	+00.8	57	49.7	-00.8	S 20 44.2	+00.7	4	19.9	-31.5	S 22 45.9	-02.1	17
18	94	06.7	+00.0	S 14 49.0	+00.8	72	48.9	-00.8	S 20 44.9	+00.7	18	48.4	-31.5	S 22 43.8	-02.2	18
19	109	06.7	+00.0	S 14 49.8	+00.8	87	48.1	-00.7	S 20 45.6	+00.8	33	16.9	-31.4	S 22 41.6	-02.3	19
20	124	06.7	+00.0	S 14 50.6	+00.8	102	47.4	-00.8	S 20 46.4	+00.7	47	45.5	-31.4	S 22 39.3	-02.4	20
21	139	06.7	+00.1	S 14 51.4	+00.8	117	46.6	-00.7	S 20 47.1	+00.8	62	14.1	-31.3	S 22 36.9	-02.6	21
22	154	06.8	+00.0	S 14 52.2	+00.7	132	45.9	-00.8	S 20 47.9	+00.7	76	42.8	-31.3	S 22 34.3	-02.6	22
23	169	06.8	+00.0	S 14 52.9	+00.8	147	45.1	-00.8	S 20 48.6	+00.8	91	11.5	-31.2	S 22 31.7	-02.8	23

UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°1	16°1	16°1	16°1	16°1	16°1	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	15°4	15°3	15°3	15°3	15°2	15°2
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	56°4	56°2	56°1	56°0	55°8	55°7
SHA	143°	143°	143°	143°	142°	142°	SHA	122°	122°	122°	121°	121°	121°	SHA	076°	074°	072°	069°	065°	065°

UT	<i>Mars</i>				<i>Jupiter</i>				<i>Saturn</i>				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	203	26.8	+00.9	S 06 33.0	+00.7	137	59.9	+01.9	S 23 05.2	+00.1	114	10.6	+02.2	S 22 24.4	-00.1	00
01	218	27.7	+01.0	S 06 33.7	+00.6	153	01.8	+01.9	S 23 05.3	+00.0	129	12.8	+02.3	S 22 24.3	+00.0	01
02	233	28.7	+00.9	S 06 34.3	+00.6	168	03.7	+02.0	S 23 05.3	+00.0	144	15.1	+02.3	S 22 24.3	+00.0	02
03	248	29.6	+01.0	S 06 34.9	+00.7	183	05.7	+01.9	S 23 05.3	+00.1	159	17.4	+02.3	S 22 24.3	+00.0	03
04	263	30.6	+01.0	S 06 35.6	+00.6	198	07.6	+02.0	S 23 05.4	+00.0	174	19.7	+02.3	S 22 24.3	+00.0	04
05	278	31.6	+00.9	S 06 36.2	+00.6	213	09.6	+01.9	S 23 05.4	+00.0	189	22.0	+02.2	S 22 24.3	+00.0	05
06	293	32.5	+01.0	S 06 36.8	+00.7	228	11.5	+01.9	S 23 05.4	+00.0	204	24.2	+02.3	S 22 24.3	-00.1	06
07	308	33.5	+00.9	S 06 37.5	+00.6	243	13.4	+02.0	S 23 05.4	+00.1	219	26.5	+02.3	S 22 24.2	+00.0	07
08	323	34.4	+01.0	S 06 38.1	+00.6	258	15.4	+01.9	S 23 05.5	+00.0	234	28.8	+02.3	S 22 24.2	+00.0	08
09	338	35.4	+00.9	S 06 38.7	+00.6	273	17.3	+02.0	S 23 05.5	+00.0	249	31.1	+02.3	S 22 24.2	+00.0	09
10	353	36.3	+01.0	S 06 39.3	+00.7	288	19.3	+01.9	S 23 05.5	+00.1	264	33.4	+02.2	S 22 24.2	+00.0	10
11	8	37.3	+00.9	S 06 40.0	+00.6	303	21.2	+01.9	S 23 05.6	+00.0	279	35.6	+02.3	S 22 24.2	+00.0	11
12	23	38.2	+01.0	S 06 40.6	+00.6	318	23.1	+02.0	S 23 05.6	+00.0	294	37.9	+02.3	S 22 24.2	+00.0	12
13	38	39.2	+00.9	S 06 41.2	+00.6	333	25.1	+01.9	S 23 05.6	+00.0	309	40.2	+02.3	S 22 24.2	-00.1	13
14	53	40.1	+01.0	S 06 41.9	+00.6	348	27.0	+01.9	S 23 05.6	+00.1	324	42.5	+02.2	S 22 24.1	+00.0	14
15	68	41.1	+00.9	S 06 42.5	+00.6	3	28.9	+02.0	S 23 05.7	+00.0	339	44.7	+02.3	S 22 24.1	+00.0	15
16	83	42.0	+01.0	S 06 43.1	+00.7	18	30.9	+01.9	S 23 05.7	+00.0	354	47.0	+02.3	S 22 24.1	+00.0	16
17	98	43.0	+00.9	S 06 43.8	+00.6	33	32.8	+02.0	S 23 05.7	+00.0	9	49.3	+02.3	S 22 24.1	+00.0	17
18	113	43.9	+01.0	S 06 44.4	+00.6	48	34.8	+01.9	S 23 05.7	+00.1	24	51.6	+02.2	S 22 24.1	+00.0	18
19	128	44.9	+00.9	S 06 45.0	+00.7	63	36.7	+01.9	S 23 05.8	+00.0	39	53.8	+02.3	S 22 24.1	-00.1	19
20	143	45.8	+01.0	S 06 45.7	+00.6	78	38.6	+02.0	S 23 05.8	+00.0	54	56.1	+02.3	S 22 24.0	+00.0	20
21	158	46.8	+00.9	S 06 46.3	+00.6	93	40.6	+01.9	S 23 05.8	+00.1	69	58.4	+02.3	S 22 24.0	+00.0	21
22	173	47.7	+01.0	S 06 46.9	+00.6	108	42.5	+01.9	S 23 05.9	+00.0	85	00.7	+02.2	S 22 24.0	+00.0	22
23	188	48.7	+00.9	S 06 47.5	+00.7	123	44.4	+02.0	S 23 05.9	+00.0	100	02.9	+02.3	S 22 24.0	+00.0	23

UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	00°0	00°0	00°0	00°0	00°0	00°0	SD	00°3	00°3	00°3	00°3	00°3	00°3	SD	00°1	00°1	00°1	00°1	00°1	00°1
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°0	00°0	00°0	00°0	00°0	00°0	HP	00°0	00°0	00°0	00°0	00°0	00°0
SHA	162°	162°	162°	162°	162°	162°	SHA	097°	097°	097°	097°	097°	097°	SHA	073°	073°	073°	073°	073°	073°

UT	<i>Sun</i>				<i>Venus</i>				<i>Moon</i>				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	184	04.7	+00.0	S 13 36.4	+00.8	163	55.4	-00.7	S 19 34.0	+00.8	158	16.2	-33.2	S 17 15.4	+09.4	00
01	199	04.7	+00.1	S 13 37.2	+00.8	178	54.7	-00.7	S 19 34.8	+00.8	172	43.0	-33.3	S 17 24.8	+09.3	01
02	214	04.8	+00.0	S 13 38.0	+00.9	193	54.0	-00.7	S 19 35.6	+00.9	187	09.7	-33.2	S 17 34.1	+09.1	02
03	229	04.8	+00.0	S 13 38.9	+00.8	208	53.3	-00.7	S 19 36.5	+00.8	201	36.5	-33.3	S 17 43.2	+09.0	03
04	244	04.8	+00.1	S 13 39.7	+00.8	223	52.6	-00.7	S 19 37.3	+00.8	216	03.2	-33.3	S 17 52.2	+09.0	04
05	259	04.9	+00.0	S 13 40.5	+00.8	238	51.9	-00.8	S 19 38.1	+00.8	230	29.9	-33.3	S 18 01.2	+08.7	05
06	274	04.9	+00.1	S 13 41.3	+00.9	253	51.1	-00.7	S 19 38.9	+00.9	244	56.6	-33.3	S 18 09.9	+08.7	06
07	289	05.0	+00.0	S 13 42.2	+00.8	268	50.4	-00.7	S 19 39.8	+00.8	259	23.3	-33.3	S 18 18.6	+08.6	07
08	304	05.0	+00.0	S 13 43.0	+00.8	283	49.7	-00.7	S 19 40.6	+00.8	273	50.0	-33.4	S 18 27.2	+08.4	08
09	319	05.0	+00.1	S 13 43.8	+00.8	298	49.0	-00.7	S 19 41.4	+00.8	288	16.6	-33.4	S 18 35.6	+08.3	09
10	334	05.1	+00.0	S 13 44.6	+00.8	313	48.3	-00.8	S 19 42.2	+00.8	302	43.2	-33.3	S 18 43.9	+08.2	10
11	349	05.1	+00.0	S 13 45.4	+00.9	328	47.5	-00.7	S 19 43.0	+00.9	317	09.9	-33.4	S 18 52.1	+08.0	11
12	4	05.1	+00.1	S 13 46.3	+00.8	343	46.8	-00.7	S 19 43.9	+00.8	331	36.5	-33.4	S 19 00.1	+08.0	12
13	19	05.2	+00.0	S 13 47.1	+00.8	358	46.1	-00.7	S 19 44.7	+00.8	346	03.1	-33.4	S 19 08.1	+07.8	13
14	34	05.2	+00.0	S												

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	184	05.5	+00.0	S 13 56.1	+00.8	163	38.1	-00.7	S 19 53.6	+00.8	144	55.2	-33.5	S 20 26.9	+06.4	00
01	199	05.5	+00.1	S 13 56.9	+00.8	178	37.4	-00.7	S 19 54.4	+00.8	159	21.7	-33.4	S 20 33.3	+06.3	01
02	214	05.6	+00.0	S 13 57.7	+00.8	193	36.7	-00.8	S 19 55.2	+00.9	173	48.3	-33.5	S 20 39.6	+06.1	02
03	229	05.6	+00.0	S 13 58.5	+00.8	208	35.9	-00.7	S 19 56.1	+00.8	188	14.8	-33.5	S 20 45.7	+06.0	03
04	244	05.6	+00.1	S 13 59.3	+00.8	223	35.2	-00.7	S 19 56.9	+00.8	202	41.3	-33.4	S 20 51.7	+05.8	04
05	259	05.7	+00.0	S 14 00.1	+00.9	238	34.5	-00.8	S 19 57.7	+00.8	217	07.9	-33.5	S 20 57.5	+05.8	05
06	274	05.7	+00.0	S 14 01.0	+00.8	253	33.7	-00.7	S 19 58.5	+00.8	231	34.4	-33.5	S 21 03.3	+05.5	06
07	289	05.7	+00.0	S 14 01.8	+00.8	268	33.0	-00.7	S 19 59.3	+00.8	246	00.9	-33.4	S 21 08.8	+05.5	07
08	304	05.7	+00.1	S 14 02.6	+00.8	283	32.3	-00.8	S 20 00.1	+00.8	260	27.5	-33.5	S 21 14.3	+05.3	08
09	319	05.8	+00.0	S 14 03.4	+00.8	298	31.5	-00.7	S 20 00.9	+00.8	274	54.0	-33.4	S 21 19.6	+05.2	09
10	334	05.8	+00.0	S 14 04.2	+00.8	313	30.8	-00.7	S 20 01.7	+00.8	289	20.6	-33.4	S 21 24.8	+05.1	10
11	349	05.8	+00.0	S 14 05.0	+00.8	328	30.1	-00.8	S 20 02.5	+00.8	303	47.2	-33.5	S 21 29.9	+04.9	11
12	4	05.8	+00.1	S 14 05.8	+00.8	343	29.3	-00.7	S 20 03.3	+00.8	318	13.7	-33.4	S 21 34.8	+04.8	12
13	19	05.9	+00.0	S 14 06.6	+00.8	358	28.6	-00.7	S 20 04.1	+00.8	332	40.3	-33.4	S 21 39.6	+04.6	13
14	34	05.9	+00.0	S 14 07.4	+00.9	13	27.9	-00.8	S 20 04.9	+00.8	347	06.9	-33.4	S 21 44.2	+04.6	14
15	49	05.9	+00.0	S 14 08.3	+00.8	28	27.1	-00.7	S 20 05.7	+00.7	1	33.5	-33.4	S 21 48.8	+04.3	15
16	64	05.9	+00.1	S 14 09.1	+00.8	43	26.4	-00.7	S 20 06.4	+00.8	16	00.1	-33.3	S 21 53.1	+04.3	16
17	79	06.0	+00.0	S 14 09.9	+00.8	58	25.7	-00.8	S 20 07.2	+00.8	30	26.8	-33.4	S 21 57.4	+04.1	17
18	94	06.0	+00.0	S 14 10.7	+00.8	73	24.9	-00.7	S 20 08.0	+00.8	44	53.4	-33.3	S 22 01.5	+04.0	18
19	109	06.0	+00.0	S 14 11.5	+00.8	88	24.2	-00.8	S 20 08.8	+00.8	59	20.1	-33.4	S 22 05.5	+03.8	19
20	124	06.0	+00.1	S 14 12.3	+00.8	103	23.4	-00.7	S 20 09.6	+00.8	73	46.7	-33.3	S 22 09.3	+03.7	20
21	139	06.1	+00.0	S 14 13.1	+00.8	118	22.7	-00.7	S 20 10.4	+00.8	88	13.4	-33.3	S 22 13.0	+03.6	21
22	154	06.1	+00.0	S 14 13.9	+00.8	133	22.0	-00.8	S 20 11.2	+00.8	102	40.1	-33.2	S 22 16.6	+03.5	22
23	169	06.1	+00.0	S 14 14.7	+00.8	148	21.2	-00.7	S 20 12.0	+00.8	117	06.9	-33.3	S 22 20.1	+03.3	23

UT	02	06	10	14	18	22
SD	16°1	16°1	16°1	16°1	16°1	16°1
HP	00°1	00°1	00°1	00°1	00°1	00°1
SHA	145°	145°	145°	144°	144°	144°

Greenwich Culmination Time: 11:43

UT	02	06	10	14	18	22
SD	00°1	00°1	00°1	00°1	00°1	00°1
HP	00°1	00°1	00°1	00°1	00°1	00°1
SHA	125°	124°	124°	124°	124°	123°

Greenwich Culmination Time: 13:06

UT	02	06	10	14	18	22
SD	15°8	15°8	15°8	15°7	15°7	15°6
HP	58°1	58°0	57°8	57°7	57°5	57°4
SHA	105°	102°	100°	098°	095°	093°

Greenwich Culmination Time: 14:53

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	202	41.0	+01.0	S 06 02.6	+00.7	136	26.6	+01.9	S 23 03.8	+00.1	112	21.0	+02.3	S 22 25.1	+00.0	00
01	217	42.0	+00.9	S 06 03.3	+00.6	151	28.5	+02.0	S 23 03.9	+00.0	127	23.3	+02.3	S 22 25.1	+00.0	01
02	232	42.9	+01.0	S 06 03.9	+00.6	166	30.5	+01.9	S 23 03.9	+00.0	142	25.6	+02.3	S 22 25.1	+00.0	02
03	247	43.9	+00.9	S 06 04.5	+00.7	181	32.4	+02.0	S 23 03.9	+00.1	157	27.9	+02.3	S 22 25.1	+00.0	03
04	262	44.8	+01.0	S 06 05.2	+00.6	196	34.4	+01.9	S 23 04.0	+00.0	172	30.2	+02.2	S 22 25.1	-00.1	04
05	277	45.8	+00.9	S 06 05.8	+00.7	211	36.3	+02.0	S 23 04.0	+00.0	187	32.4	+02.3	S 22 25.0	+00.0	05
06	292	46.7	+01.0	S 06 06.5	+00.6	226	38.3	+01.9	S 23 04.0	+00.1	202	34.7	+02.3	S 22 25.0	+00.0	06
07	307	47.7	+00.9	S 06 07.1	+00.6	241	40.2	+01.9	S 23 04.1	+00.0	217	37.0	+02.3	S 22 25.0	+00.0	07
08	322	48.6	+01.0	S 06 07.7	+00.7	256	42.1	+02.0	S 23 04.1	+00.0	232	39.3	+02.3	S 22 25.0	+00.0	08
09	337	49.6	+01.0	S 06 08.4	+00.6	271	44.1	+01.9	S 23 04.1	+00.0	247	41.6	+02.3	S 22 25.0	+00.0	09
10	352	50.6	+00.9	S 06 09.0	+00.6	286	46.0	+02.0	S 23 04.1	+00.1	262	43.9	+02.2	S 22 25.0	-00.1	10
11	7	51.5	+01.0	S 06 09.6	+00.7	301	48.0	+01.9	S 23 04.2	+00.0	277	46.1	+02.3	S 22 24.9	+00.0	11
12	22	52.5	+00.9	S 06 10.3	+00.6	316	49.9	+02.0	S 23 04.2	+00.0	292	48.4	+02.3	S 22 24.9	+00.0	12
13	37	53.4	+01.0	S 06 10.9	+00.6	331	51.9	+01.9	S 23 04.2	+00.1	307	50.7	+02.3	S 22 24.9	+00.0	13
14	52	54.4	+00.9	S 06 11.5	+00.7	346	53.8	+02.0	S 23 04.3	+00.0	322	53.0	+02.3	S 22 24.9	+00.0	14
15	67	55.3	+01.0	S 06 12.2	+00.6	1	55.8	+01.9	S 23 04.3	+00.0	337	55.3	+02.3	S 22 24.9	+00.0	15
16	82	56.3	+00.9	S 06 12.8	+00.6	16	57.7	+02.0	S 23 04.3	+00.0	352	57.6	+02.3	S 22 24.9	+00.0	16
17	97	57.2	+01.0	S 06 13.4	+00.7	31	59.7	+01.9	S 23 04.3	+00.1	7	59.9	+02.2	S 22 24.9	-00.1	17
18	112	58.2	+00.9	S 06 14.1	+00.6	47	01.6	+01.9	S 23 04.4	+00.0	23	02.1	+02.3	S 22 24.8	+00.0	18
19	127	59.1	+01.0	S 06 14.7	+00.6	62	03.5	+02.0	S 23 04.4	+00.0	38	04.4	+02.3	S 22 24.8	+00.0	19
20	143	00.1	+01.0	S 06 15.3	+00.7	77	05.5	+01.9	S 23 04.4	+00.1	53	06.7	+02.3	S 22 24.8	+00.0	20
21	158	01.1	+00.9	S 06 16.0	+00.6	92	07.4	+02.0	S 23 04.5	+00.0	68	09.0	+02.3	S 22 24.8	+00.0	21
22	173	02.0	+01.0	S 06 16.6	+00.6	107	09.4	+01.9	S 23 04.5	+00.0	83	11.3	+02.3	S 22 24.8	+00.0	22
23	188	03.0	+00.9	S 06 17.2	+00.7	122	11.3	+02.0	S 23 04.5	+00.0	98	13.6	+02.2	S 22 24.8	-00.1	23

UT	02	06	10	14	18	22
SD	00°0	00°0	00°0	00°0	00°0	00°0
HP	00°1	00°1	00°1	00°1	00°1	00°1
SHA	164°	164°	163°	163°	163°	163°

Greenwich Culmination Time: 10:28

UT	02	06	10	14	18	22
SD	00°3	00°3	00°3	00°3	00°3	00°3
HP	00°0	00°0	00°0	00°0	00°0	00°0
SHA	097°	097°	097°	097°	097°	097°

Greenwich Culmination Time: 14:52

UT	02	06	10	14	18	22
SD	00°1	00°1	00°1	00°1	00°1	00°1
HP	00°0	00°0	00°0	00°0	00°0	00°0
SHA	073°	073°	073°	073°	073°	073°

Greenwich Culmination Time: 16:28

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	184	06.1	+00.0	S 14 15.5	+00.8	163	20.5	-00.8	S 20 12.8	+00.7	131	33.6	-33.2	S 22 23.4	+03.1	00
01	199	06.1	+00.1	S 14 16.3	+00.8	178	19.7	-00.7	S 20 13.5	+00.8	146	00.4	-33.2	S 22 26.5	+03.1	01
02	214	06.2	+00.0	S 14 17.1	+00.8	193	19.0	-00.7	S 20 14.3	+00.8	160	27.2	-33.2	S 22 29.6	+02.9	02
03	229	06.2	+00.0	S 14 17.9	+00.8	208	18.3	-00.8	S 20 15.1	+00.8	174	54.0	-33.1	S 22 32.5	+02.7	03
04	244	06.2	+00.0	S 14 18.7	+00.8	223	17.5	-00.7	S 20 15.9	+00.8	189	20.9	-33.2	S 22 35.2	+02.7	04
05	259	06.2	+00.0	S 14 19.5	+00.8	238	16.8	-00.8	S 20 16.7	+00.8	203	47.7	-33.1	S 22 37.9	+02.5	05
06	274	06.2	+00.1	S 14 20.3	+00.9	253	16.0	-00.7	S 20 17.5	+00.7	218	14.6	-33.1	S 22 40.4	+02.3	06
07	289	06.3	+00.0	S 14 21.2	+00.8	268	15.3	-00.8	S 20 18.2	+00.8	232	41.5	-33.0	S 22 42.7	+02.3	07
08	304	06.3	+00.0	S 14 22.0	+00.8	283	14.5	-00.7	S 20 19.0	+00.8	247	08.5	-33.0	S 22 45.0	+02.0	08
09	319	06.3	+00.0	S 14 22.8	+00.8	298	13.8	-00.7	S 20 19.8	+00.8	261	35.5	-33.0	S 22 47.0	+02.0	09
10	334	06.3	+00.0	S 14 23.6	+00.8	313	13.1	-00.8	S 20 20.6	+00.7						

UT	Sun				Venus				Moon				UT										
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec											
00	184	06.2	+00.0	S 15 49.2	+00.8	161	47.9	-00.8	S 21 39.9	+00.7	70	59.6	-26.8	S 14 59.0	-09.1	00							
01	199	06.2	+00.0	S 15 50.0	+00.7	176	47.1	-00.8	S 21 40.6	+00.6	85	32.8	-26.7	S 14 49.9	-09.1	01							
02	214	06.2	+00.0	S 15 50.7	+00.8	191	46.3	-00.8	S 21 41.2	+00.7	100	06.1	-26.6	S 14 40.8	-09.1	02							
03	229	06.2	-00.1	S 15 51.5	+00.6	206	45.5	-00.8	S 21 41.9	+00.6	114	39.5	-26.6	S 14 31.7	-09.3	03							
04	244	06.1	+00.0	S 15 52.2	+00.8	221	44.7	-00.8	S 21 42.5	+00.7	129	12.9	-26.6	S 14 22.4	-09.3	04							
05	259	06.1	+00.0	S 15 53.0	+00.7	236	43.9	-00.8	S 21 43.2	+00.7	143	46.3	-26.5	S 14 13.1	-09.3	05							
06	274	06.1	+00.0	S 15 53.7	+00.8	251	43.1	-00.8	S 21 43.9	+00.6	158	19.8	-26.4	S 14 03.8	-09.4	06							
07	289	06.1	+00.0	S 15 54.5	+00.7	266	42.3	-00.8	S 21 44.5	+00.7	172	53.4	-26.5	S 13 54.4	-09.4	07							
08	304	06.1	-00.1	S 15 55.2	+00.8	281	41.5	-00.9	S 21 45.2	+00.6	187	26.9	-26.3	S 13 45.0	-09.5	08							
09	319	06.0	+00.0	S 15 56.0	+00.7	296	40.6	-00.8	S 21 45.8	+00.7	202	00.6	-26.4	S 13 35.5	-09.6	09							
10	334	06.0	+00.0	S 15 56.7	+00.8	311	39.8	-00.8	S 21 46.5	+00.6	216	34.2	-26.2	S 13 25.9	-09.6	10							
11	349	06.0	+00.0	S 15 57.5	+00.7	326	39.0	-00.8	S 21 47.1	+00.7	231	08.0	-26.3	S 13 16.3	-09.7	11							
12	4	06.0	-00.1	S 15 58.2	+00.8	341	38.2	-00.8	S 21 47.8	+00.6	245	41.7	-26.2	S 13 06.6	-09.7	12							
13	19	05.9	+00.0	S 15 59.0	+00.7	356	37.4	-00.8	S 21 48.4	+00.7	260	15.5	-26.1	S 12 56.9	-09.8	13							
14	34	05.9	+00.0	S 15 59.7	+00.8	11	36.6	-00.8	S 21 49.1	+00.6	274	49.4	-26.2	S 12 47.1	-09.8	14							
15	49	05.9	+00.0	S 16 00.5	+00.7	26	35.8	-00.8	S 21 49.7	+00.7	289	23.2	-26.0	S 12 37.3	-09.8	15							
16	64	05.9	-00.1	S 16 01.2	+00.8	41	35.0	-00.8	S 21 50.4	+00.6	303	57.2	-26.1	S 12 27.5	-09.9	16							
17	79	05.8	+00.0	S 16 02.0	+00.7	56	34.2	-00.8	S 21 51.0	+00.7	318	31.1	-26.0	S 12 17.6	-10.0	17							
18	94	05.8	+00.0	S 16 02.7	+00.8	71	33.4	-00.8	S 21 51.7	+00.6	333	05.1	-25.9	S 12 07.6	-10.0	18							
19	109	05.8	+00.0	S 16 03.5	+00.7	86	32.6	-00.9	S 21 52.3	+00.7	347	39.2	-26.0	S 11 57.6	-10.1	19							
20	124	05.8	-00.1	S 16 04.2	+00.8	101	31.7	-00.8	S 21 53.0	+00.6	2	13.2	-25.9	S 11 47.5	-10.1	20							
21	139	05.7	+00.0	S 16 05.0	+00.7	116	30.9	-00.8	S 21 53.6	+00.7	16	47.3	-25.8	S 11 37.4	-10.1	21							
22	154	05.7	+00.0	S 16 05.7	+00.8	131	30.1	-00.8	S 21 54.3	+00.6	31	21.5	-25.8	S 11 27.3	-10.2	22							
23	169	05.7	-00.1	S 16 06.4	+00.8	146	29.3	-00.8	S 21 54.9	+00.6	45	55.7	-25.8	S 11 17.1	-10.3	23							
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22			
SD	16°1	16°1	16°1	16°1	16°1	16°1	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	14°8	14°8	14°8	14°8	14°7	14°7			
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	54°2	54°2	54°2	54°2	54°1	54°1			
SHA	139°	139°	139°	139°	139°	138°	SHA	117°	117°	116°	116°	116°	116°	SHA	025°	023°	021°	019°	017°	016°			
Greenwich Culmination Time: 11:43				Greenwich Culmination Time: 13:13				Greenwich Culmination Time: 19:50				Greenwich Culmination Time: 11:43				Greenwich Culmination Time: 13:09				Greenwich Culmination Time: 17:33			

UT	Sun				Venus				Moon				UT										
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec											
00	184	06.8	+00.0	S 14 53.7	+00.8	162	44.3	-00.7	S 20 49.4	+00.7	105	40.3	-31.1	S 22 28.9	-02.9	00							
01	199	06.8	+00.0	S 14 54.5	+00.8	177	43.6	-00.8	S 20 50.1	+00.7	120	09.2	-31.1	S 22 26.0	-03.0	01							
02	214	06.8	+00.0	S 14 55.3	+00.8	192	42.8	-00.8	S 20 50.8	+00.8	134	38.1	-31.0	S 22 23.0	-03.1	02							
03	229	06.8	+00.0	S 14 56.1	+00.8	207	42.0	-00.7	S 20 51.6	+00.7	149	07.1	-31.0	S 22 19.9	-03.2	03							
04	244	06.8	+00.0	S 14 56.9	+00.8	222	41.3	-00.8	S 20 52.3	+00.7	163	36.1	-30.9	S 22 16.7	-03.3	04							
05	259	06.8	+00.0	S 14 57.7	+00.7	237	40.5	-00.8	S 20 53.0	+00.8	178	05.2	-30.8	S 22 13.4	-03.5	05							
06	274	06.8	+00.0	S 14 58.4	+00.8	252	39.7	-00.7	S 20 53.8	+00.7	192	34.4	-30.8	S 22 09.9	-03.5	06							
07	289	06.8	+00.0	S 14 59.2	+00.8	267	39.0	-00.8	S 20 54.5	+00.7	207	03.6	-30.7	S 22 06.4	-03.7	07							
08	304	06.8	+00.0	S 15 00.0	+00.8	282	38.2	-00.8	S 20 55.2	+00.8	221	32.9	-30.6	S 22 02.7	-03.7	08							
09	319	06.8	+00.0	S 15 00.8	+00.8	297	37.4	-00.8	S 20 56.0	+00.7	236	02.3	-30.6	S 21 59.0	-03.9	09							
10	334	06.8	+00.0	S 15 01.6	+00.8	312	36.6	-00.7	S 20 56.7	+00.7	250	31.7	-30.5	S 21 55.1	-04.0	10							
11	349	06.8	+00.0	S 15 02.4	+00.7	327	35.9	-00.8	S 20 57.4	+00.7	265	01.2	-30.5	S 21 51.1	-04.0	11							
12	4	06.8	+00.0	S 15 03.1	+00.8	342	35.1	-00.8	S 20 58.1	+00.8	279	30.7	-30.4	S 21 47.1	-04.2	12							
13	19	06.8	+00.0	S 15 03.9	+00.8	357	34.3	-00.7	S 20 58.9	+00.7	294	00.3	-30.3	S 21 42.9	-04.3	13							
14	34	06.8	+00.0	S 15 04.7	+00.8	12	33.6	-00.8	S 20 59.6	+00.7	308	30.0	-30.2	S 21 38.6	-04.4	14							
15	49	06.8	+00.0	S 15 05.5	+00.8	27	32.8	-00.8	S 21 00.3	+00.7	322	59.8	-30.2	S 21 34.2	-04.5	15							
16	64	06.8	+00.0	S 15 06.3	+00.7	42	32.0	-00.8	S 21 01.0	+00.8	337	29.6	-30.2	S 21 29.7	-04.6	16							
17	79	06.8	+00.0	S 15 07.0	+00.8	57	31.2	-00.7	S 21 01.8	+00.8	351	59.4	-30.0	S 21 25.1	-04.7	17							
18	94	06.8	+00.0	S 15 07.8	+00.8	72	30.5	-00.8	S 21 02.5	+00.7	6	29.4	-30.0	S 21 20.4	-04.8	18							
19	109	06.8	+00.0	S 15 08.6	+00.8	87	29.7	-00.8	S 21 03.2	+00.7	20	59.4	-30.0	S 21 15.6	-04.9	19							
20	124	06.8	+00.0	S 15 09.4	+00.7	102	28.9	-00.8	S 21 03.9	+00.7	35	29.4	-29.8	S 21 10.7	-05.0	20							
21	139	06.8	+00.0	S 15 10.1	+00.8	117	28.1	-00.7	S 21 04.6	+00.8	49	59.6	-29.9	S 21 05.7	-05.0	21							
22	154	06.8	+00.0	S 15 10.9	+00.8	132	27.4	-00.8	S 21 05.4	+00.7	64	29.7	-29.7	S 21 00.7	-05.2	22							
23	169	06.8	+00.0	S 15 11.7	+00.8	147	26.6	-00.8	S 21 06.1	+00.7	79	00.0	-29.7	S 20 55.5	-05.3	23							
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22			
SD	16°1	16°1	16°1	16°1	16°1	16°1	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	15°2	15°1	15°1	15°1	15°0	15°0			
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	55°6	55°5	55°4	55°3	55°2	55°1			
SHA	142°	142°	142°	142°	141°	141°	SHA	121°	120°	120°	120°	120°	120°	SHA	063°	060°	058°	056°	054°	052°			
Greenwich Culmination Time: 11:43				Greenwich Culmination Time: 13:09				Greenwich Culmination Time: 17:33				Greenwich Culmination Time: 11:43				Greenwich Culmination Time: 13:09				Greenwich Culmination Time: 17:33			

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	204	57.7	+01.0	S 07 33.3	+00.6	141	05.4	+01.9	S 23 07.9	+00.0	117	48.7	+02.3	S 22 22.7	+00.0	00
01	219	58.7	+00.9	S 07 33.9	+00.7	156	07.3	+01.9	S 23 07.9	+00.0	132	51.0	+02.2	S 22 22.7	+00.0	01
02	234	59.6	+01.0	S 07 34.6	+00.6	171	09.2	+02.0	S 23 07.9	+00.0	147	53.2	+02.3	S 22 22.7	+00.0	02
03	250	06.6	+00.9	S 07 35.2	+00.6	186	11.2	+01.9	S 23 07.9	+00.0	162	55.5	+02.2	S 22 22.7	-00.1	03
04	265	01.5	+00.9	S 07 35.8	+00.6	201	13.1	+01.9	S 23 08.0	+00.0	177	57.7	+02.3	S 22 22.6	+00.0	04
05	280	02.4	+01.0	S 07 36.4	+00.7	216	15.0	+01.9	S 23 08.0	+00.0	193	00.0	+02.3	S 22 22.6	+00.0	05
06	295	03.4	+00.9	S 07 37.1	+00.6	231	16.9	+02.0	S 23 08.0	+00.0	208	02.3	+02.2	S 22 22.6	+00.0	06
07	310	04.3	+01.0	S 07 37.7	+00.6	246	18.9	+01.9	S 23 08.0	+00.1	223	04.5	+02.3	S 22 22.6	+00.0	07
08	325	05.3	+00.9	S 07 38.3	+00.6	261	20.8	+01.9	S 23 08.1	+00.0	238	06.8	+02.3	S 22 22.6	+00.0	08
09	340	06.2	+00.9	S 07 38.9	+00.7	276	22.7	+01.9	S 23 08.1	+00.0	253	09.1	+02.2	S 22 22.6	-00.1	09
10	355	07.1	+01.0	S 07 39.6	+00.6	291	24.6	+02.0	S 23 08.1	+00.0	268	11.3	+02.3	S 22 22.5	+00.0	10
11	10	08.1	+00.9	S 07 40.2	+00.6	306	26.6	+01.9	S 23 08.1	+00.1	283	13.6	+02.3	S 22 22.5	+00.0	11
12	25	09.0	+01.0	S 07 40.8	+00.6	3										

UT	Sun				Venus				Moon				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	184	06.8	+00.0	S 15 12.5	162	25.8	-00.8	S 21 06.8	93	30.3	-29.6	S 20 50.2	00
01	199	06.8	+00.0	S 15 13.3	177	25.0	-00.8	S 21 07.5	108	00.7	-29.5	S 20 44.8	01
02	214	06.8	+00.0	S 15 14.0	192	24.2	-00.7	S 21 08.2	122	31.2	-29.5	S 20 39.4	02
03	229	06.8	+00.0	S 15 14.8	207	23.5	-00.8	S 21 08.9	137	01.7	-29.4	S 20 33.8	03
04	244	06.8	+00.0	S 15 15.6	222	22.7	-00.8	S 21 09.6	151	32.3	-29.4	S 20 28.1	04
05	259	06.8	+00.0	S 15 16.4	237	21.9	-00.8	S 21 10.3	166	02.9	-29.2	S 20 22.4	05
06	274	06.8	+00.0	S 15 17.1	252	21.1	-00.8	S 21 11.1	180	33.7	-29.3	S 20 16.5	06
07	289	06.8	-00.1	S 15 17.9	267	20.3	-00.7	S 21 11.8	195	04.4	-29.1	S 20 10.6	07
08	304	06.7	+00.0	S 15 18.7	282	19.6	-00.8	S 21 12.5	209	35.3	-29.1	S 20 04.6	08
09	319	06.7	+00.0	S 15 19.4	297	18.8	-00.8	S 21 13.2	224	06.2	-29.0	S 19 58.5	09
10	334	06.7	+00.0	S 15 20.2	312	18.0	-00.8	S 21 13.9	238	37.2	-29.0	S 19 52.3	10
11	349	06.7	+00.0	S 15 21.0	327	17.2	-00.8	S 21 14.6	253	08.2	-28.9	S 19 46.0	11
12	4	06.7	+00.0	S 15 21.8	342	16.4	-00.8	S 21 15.3	267	39.3	-28.8	S 19 39.6	12
13	19	06.7	+00.0	S 15 22.5	357	15.6	-00.7	S 21 16.0	282	10.5	-28.8	S 19 33.2	13
14	34	06.7	+00.0	S 15 23.3	12	14.9	-00.8	S 21 16.7	296	41.7	-28.7	S 19 26.6	14
15	49	06.7	+00.0	S 15 24.1	27	14.1	-00.8	S 21 17.4	311	13.0	-28.6	S 19 20.0	15
16	64	06.7	+00.0	S 15 24.8	42	13.3	-00.8	S 21 18.1	325	44.4	-28.6	S 19 13.3	16
17	79	06.7	+00.0	S 15 25.6	57	12.5	-00.8	S 21 18.8	340	15.8	-28.5	S 19 06.5	17
18	94	06.7	+00.0	S 15 26.4	72	11.7	-00.8	S 21 19.5	354	47.3	-28.4	S 18 59.6	18
19	109	06.7	+00.0	S 15 27.1	87	10.9	-00.8	S 21 20.2	9	18.9	-28.4	S 18 52.7	19
20	124	06.7	-00.1	S 15 27.9	102	10.1	-00.7	S 21 20.9	23	50.5	-28.4	S 18 45.7	20
21	139	06.6	+00.0	S 15 28.7	117	09.4	-00.8	S 21 21.6	38	22.1	-28.2	S 18 38.5	21
22	154	06.6	+00.0	S 15 29.4	132	08.6	-00.8	S 21 22.3	52	53.9	-28.2	S 18 31.4	22
23	169	06.6	+00.0	S 15 30.2	147	07.8	-00.8	S 21 23.0	67	25.7	-28.2	S 18 24.1	23
UT 02 06 10 14 18 22	SD 16°1 16°1 16°1 16°1 16°1 16°1	SD 00°1 00°1 00°1 00°1 00°1 00°1	UT 02 06 10 14 18 22	SD 15°0 15°0 14°9 14°9 14°9 14°9	SD 00°1 00°1 00°1 00°1 00°1 00°1								
HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 55°0 54°9 54°8 54°7 54°7 54°6	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°1 00°1 00°1 00°1 00°1 00°1								
SHA 141° 141° 141° 141° 141° 140°	SHA 119° 119° 119° 119° 119° 118°	SHA 049° 047° 045° 043° 041° 039°	SHA 118° 118° 118° 117° 117° 117°	SHA 140° 140° 140° 140° 139° 139°	SHA 118° 118° 118° 117° 117° 117°								
Greenwich Culmination Time: 11:43	Greenwich Culmination Time: 13:10	Greenwich Culmination Time: 18:21	Greenwich Culmination Time: 13:12	Greenwich Culmination Time: 11:43	Greenwich Culmination Time: 19:07								

UT	Sun				Venus				Moon				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	184	06.6	+00.0	S 15 31.0	162	07.0	-00.8	S 21 23.6	81	57.5	-28.0	S 18 16.7	00
01	199	06.6	+00.0	S 15 31.7	177	06.2	-00.8	S 21 24.3	96	29.5	-28.0	S 18 09.3	01
02	214	06.6	+00.0	S 15 32.5	192	05.4	-00.8	S 21 25.0	111	01.5	-28.0	S 18 01.8	02
03	229	06.6	+00.0	S 15 33.3	207	04.6	-00.8	S 21 25.7	125	33.5	-27.9	S 17 54.2	03
04	244	06.6	-00.1	S 15 34.0	222	03.8	-00.8	S 21 26.4	140	05.6	-27.8	S 17 46.6	04
05	259	06.5	+00.0	S 15 34.8	237	03.0	-00.8	S 21 27.1	154	37.8	-27.8	S 17 38.8	05
06	274	06.5	+00.0	S 15 35.6	252	02.2	-00.8	S 21 27.8	169	10.0	-27.7	S 17 31.0	06
07	289	06.5	+00.0	S 15 36.3	267	01.4	-00.8	S 21 28.4	183	42.3	-27.7	S 17 23.2	07
08	304	06.5	+00.0	S 15 37.1	282	00.6	-00.7	S 21 29.1	198	14.6	-27.6	S 17 15.2	08
09	319	06.5	+00.0	S 15 37.8	296	59.9	-00.8	S 21 29.8	212	47.0	-27.5	S 17 07.2	09
10	334	06.5	+00.0	S 15 38.6	311	59.1	-00.8	S 21 30.5	227	19.5	-27.5	S 16 59.1	10
11	349	06.5	-00.1	S 15 39.4	326	58.3	-00.8	S 21 31.2	241	52.0	-27.5	S 16 51.0	11
12	4	06.4	+00.0	S 15 40.1	341	57.5	-00.8	S 21 31.8	256	24.5	-27.3	S 16 42.8	12
13	19	06.4	+00.0	S 15 40.9	356	56.7	-00.8	S 21 32.5	270	57.2	-27.4	S 16 34.5	13
14	34	06.4	+00.0	S 15 41.6	11	55.9	-00.8	S 21 33.2	285	29.8	-27.2	S 16 26.1	14
15	49	06.4	+00.0	S 15 42.4	26	55.1	-00.8	S 21 33.9	300	02.6	-27.2	S 16 17.7	15
16	64	06.4	+00.0	S 15 43.2	41	54.3	-00.8	S 21 34.5	314	35.4	-27.2	S 16 09.2	16
17	79	06.4	-00.1	S 15 43.9	56	53.5	-00.8	S 21 35.2	329	08.2	-27.1	S 16 00.6	17
18	94	06.3	+00.0	S 15 44.7	71	52.7	-00.8	S 21 35.9	343	41.1	-27.0	S 15 52.0	18
19	109	06.3	+00.0	S 15 45.4	86	51.9	-00.8	S 21 36.6	358	14.1	-27.0	S 15 43.3	19
20	124	06.3	+00.0	S 15 46.2	101	51.1	-00.8	S 21 37.2	12	47.1	-27.0	S 15 34.6	20
21	139	06.3	+00.0	S 15 46.9	116	50.3	-00.8	S 21 37.9	27	20.1	-26.9	S 15 25.8	21
22	154	06.3	+00.0	S 15 47.7	131	49.5	-00.8	S 21 38.6	41	53.2	-26.8	S 15 16.9	22
23	169	06.3	-00.1	S 15 48.5	146	48.7	-00.8	S 21 39.2	56	26.4	-26.8	S 15 08.0	23
UT 02 06 10 14 18 22	SD 16°1 16°1 16°1 16°1 16°1 16°1	SD 00°1 00°1 00°1 00°1 00°1 00°1	UT 02 06 10 14 18 22	SD 14°9 14°8 14°8 14°8 14°8 14°8	SD 00°1 00°1 00°1 00°1 00°1 00°1								
HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 54°5 54°5 54°4 54°4 54°3 54°3	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°1 00°1 00°1 00°1 00°1 00°1								
SHA 140° 140° 140° 140° 139° 139°	SHA 118° 118° 118° 117° 117° 117°	SHA 037° 035° 033° 031° 029° 027°	SHA 118° 118° 118° 117° 117° 117°	SHA 140° 140° 140° 140° 139° 139°	SHA 118° 118° 118° 117° 117° 117°								
Greenwich Culmination Time: 11:43	Greenwich Culmination Time: 13:12	Greenwich Culmination Time: 19:07	Greenwich Culmination Time: 13:12	Greenwich Culmination Time: 11:43	Greenwich Culmination Time: 19:07								

UT	Mars				Jupiter				Saturn				UT
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	
00	204	12.4	+00.9	S 07 03.3	139	32.8	+01.9	S 23 06.6	115	59.8	+02.3	S 22 23.6	00
01	219	13.3	+01.0	S 07 03.9	154	34.7	+02.0	S 23 06.6	131	02.1	+02.2	S 22 23.5	01
02	234	14.3	+00.9	S 07 04.5	169	36.7	+01.9	S 23 06.6	146	04.3	+02.3	S 22 23.5	02
03	249	15.2	+01.0	S 07 05.2	184	38.6	+01.9	S 23 06.7	161	06.6	+02.3	S 22 23.5	03
04	264	16.2	+00.9	S 07 05.8	199	40.5	+02.0	S 23 06.7	176	08.9	+02.2	S 22 23.5	04
05	279	17.1	+01.0	S 07 06.4	214	42.5	+01.9	S 23 06.7	191	11.1	+02.3	S 22 23.5	05
06	294	18.1	+00.9	S 07 07.0	229	44.4	+01.9	S 23 06.7	206	13.4	+02.3	S 22 23.5	06
07	309	19.0	+00.9	S 07 07.7	244	46.3	+02.0	S 23 06.8	221	15.7	+02.3	S 22 23.4	07
08	324	19.9	+01.0	S 07 08.3	259	48.3	+01.9	S 23 06.8	236	18.0	+02.2	S 22 23.4	08
09	339	20.9	+00.9	S 07 08.9	274	50.2	+01.9	S 23 06.8	251	20.2	+02.3	S 22 23.4	09
10	354	21.8	+01.0	S 07 09.5	289	52.1	+01.9	S 23 06.8	266	22.5	+02.3	S 22 23.4	10
11	9	22.8	+00.9	S 07 10.2	304	54.0	+02.0	S 23 06.9	281	24.8	+02.2	S 22 23.4	11
12	24	23.7	+01.0	S 07 10.8	319	56.0	+01.9	S 23 06.9	296	27.0	+02.3	S 22 23.4	12
13	39	24.7	+00.9	S 07 11.4	334	57.9	+01.9	S 23 06.9	311	29.3	+02.3	S 22 23.3	13
14	54	25.6	+01.0	S 07 12.1	349	59.8	+02.0	S 23 07.0	326	31.6	+02.3	S 22 23.3	14
15	69	26.6	+00.9	S 07 12.7	5	01.8	+01.9	S 23 07.0	341	33.9	+02.2	S 22 23.3	15
16	84	27.5	+01.0	S 07 13.3	20	03.7	+01.9	S 23 07.0	356	36.1	+02.3	S 22 23.3	16
17	99	28.5	+00.9	S 07 13.9	35	05.6	+02.0	S 23 07.0	11	38.4	+02.3	S 22 23.3	17
18	114	29.4	+01.0	S 07 14.6	50	07.6	+01.9	S 23 07.1	26	40.7	+02.2	S 22 23.3	18
19	129	30.4	+00.9	S 07 15.2	65	09.5	+01.9	S 23 07.1	41	42.9	+02.3	S 22 23.2	19
20	144	31.3	+00.9	S 07 15.8	80	11.4	+01.9	S 23 07.1	56	45.2	+02.3	S 22 23.2	20
21	159	32.2	+01.0	S 07 16.4	95	13.3	+02.0	S 23 07.1	71	47.5	+02.2	S 22 23.2	21
22	174	33.2	+00.9	S 07 17.1	110	15.3	+01.9	S 23 07.2	86	49.7	+02.3	S 22 23.2	22
23	189	34.1	+01.0	S 07 17.7	125	17.2	+01.9	S 23 07.2	101	52.0	+02.3	S 22 23.2	23
UT 02 06 10 14 18 22	SD 00°0 00°0 00°0 00°0 00°0 00°0	SD 00°3 00°3 00°3 00°3 00°3 00°3	UT 02 06 10 14 18 22	SD 00°1 00°1 00°1 00°1 00°1 00°1	SD 00°0 00°0 00°0 00°0 00°0 00°0								
HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 097° 097° 0											

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet and Moon. Moon column includes phase (A: 44%).

UT 02 06 10 14 18 22
SD 16°1 16°1 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 135° 135° 135° 135° 134° 134°
Greenwich Culmination Time: 11:43

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 158° 157° 157° 157° 157° 157°
Greenwich Culmination Time: 10:13

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet and Moon. Moon column includes phase (A: 35%).

UT 02 06 10 14 18 22
SD 16°1 16°1 16°1 16°1 16°1 16°1
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 138° 138° 138° 138° 137° 137°
Greenwich Culmination Time: 11:43

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 159° 159° 159° 159° 159° 159°
Greenwich Culmination Time: 10:18

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	184	04.9	-00.1	S 16 24.9	+00.7	161	08.8	-00.8	S 22 10.6	+00.6	50	19.3	-25.1	S 06 49.3	-11.1	00				
01	199	04.8	+00.0	S 16 25.6	+00.8	176	08.0	-00.8	S 22 11.2	+00.6	64	54.2	-25.2	S 06 38.2	-11.2	01				
02	214	04.8	-00.1	S 16 26.4	+00.7	191	07.2	-00.8	S 22 11.8	+00.6	79	29.0	-25.2	S 06 27.0	-11.2	02				
03	229	04.7	+00.0	S 16 27.1	+00.6	206	06.4	+00.9	S 22 12.4	+00.6	94	03.8	-25.1	S 06 15.8	-11.2	03				
04	244	04.7	+00.0	S 16 27.8	+00.7	221	05.5	-00.8	S 22 13.0	+00.6	108	38.7	-25.1	S 06 04.6	-11.3	04				
05	259	04.7	-00.1	S 16 28.5	+00.8	236	04.7	-00.8	S 22 13.6	+00.6	123	13.6	-25.1	S 05 53.3	-11.3	05				
06	274	04.6	+00.0	S 16 29.3	+00.7	251	03.9	-00.8	S 22 14.2	+00.6	137	48.5	-25.1	S 05 42.0	-11.3	06				
07	289	04.6	+00.0	S 16 30.0	+00.7	266	03.1	-00.9	S 22 14.8	+00.6	152	23.4	-25.1	S 05 30.7	-11.3	07				
08	304	04.6	-00.1	S 16 30.7	+00.8	281	02.2	-00.8	S 22 15.4	+00.6	166	58.3	-25.1	S 05 19.4	-11.4	08				
09	319	04.5	+00.0	S 16 31.5	+00.7	296	01.4	-00.8	S 22 16.0	+00.6	181	33.2	-25.1	S 05 08.0	-11.4	09				
10	334	04.5	-00.1	S 16 32.2	+00.7	311	00.6	-00.9	S 22 16.6	+00.6	196	08.1	-25.1	S 04 56.6	-11.4	10				
11	349	04.4	+00.0	S 16 32.9	+00.7	325	59.7	-00.8	S 22 17.2	+00.6	210	43.0	-25.0	S 04 45.2	-11.4	11				
12	4	04.4	-00.1	S 16 33.6	+00.8	340	58.9	-00.8	S 22 17.8	+00.6	225	18.0	-25.1	S 04 33.8	-11.5	12				
13	19	04.3	+00.0	S 16 34.4	+00.7	355	58.1	-00.8	S 22 18.4	+00.6	239	52.9	-25.0	S 04 22.3	-11.5	13				
14	34	04.3	+00.0	S 16 35.1	+00.7	10	57.3	-00.9	S 22 19.0	+00.6	254	27.9	-25.1	S 04 10.8	-11.4	14				
15	49	04.3	-00.1	S 16 35.8	+00.7	25	56.4	+00.8	S 22 19.6	+00.6	269	02.8	-25.0	S 03 59.4	-11.6	15				
16	64	04.2	+00.0	S 16 36.5	+00.8	40	55.6	-00.8	S 22 20.2	+00.6	283	37.8	-25.1	S 03 47.8	-11.5	16				
17	79	04.2	-00.1	S 16 37.3	+00.7	55	54.8	-00.9	S 22 20.8	+00.6	298	12.7	-25.0	S 03 36.3	-11.5	17				
18	94	04.1	+00.0	S 16 38.0	+00.7	70	53.9	-00.8	S 22 21.4	+00.6	312	47.7	-25.0	S 03 24.8	-11.6	18				
19	109	04.1	-00.1	S 16 38.7	+00.7	85	53.1	-00.8	S 22 22.0	+00.6	327	22.7	-25.1	S 03 13.2	-11.6	19				
20	124	04.0	+00.0	S 16 39.4	+00.8	100	52.3	-00.9	S 22 22.6	+00.6	341	57.6	-25.0	S 03 01.6	-11.6	20				
21	139	04.0	+00.0	S 16 40.2	+00.7	115	51.4	-00.8	S 22 23.2	+00.6	356	32.6	-25.1	S 02 50.0	-11.6	21				
22	154	04.0	-00.1	S 16 40.9	+00.7	130	50.6	-00.8	S 22 23.8	+00.6	11	07.5	-25.0	S 02 38.4	-11.6	22				
23	169	03.9	+00.0	S 16 41.6	+00.7	145	49.8	-00.9	S 22 24.4	+00.5	25	42.5	-25.1	S 02 26.8	-11.7	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°1	16°1	16°1	16°1	16°1	16°1	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	14°8	14°8	14°8	14°8	14°8	14°8
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	54°1	54°2	54°2	54°2	54°2	54°3
SHA	137°	137°	137°	137°	136°	136°	SHA	114°	114°	114°	113°	113°	113°	SHA	003°	001°	359°	357°	355°	353°
Greenwich Culmination Time: 11:43				Greenwich Culmination Time: 13:16				Greenwich Culmination Time: 21:14												

UT	Mars				Jupiter				Saturn				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	205	42.8	+01.0	S 08 03.2	+00.6	142	37.7	+01.9	S 23 09.1	+00.0	119	37.3	+02.2	S 22 21.8	+00.0	00				
01	220	43.8	+00.9	S 08 03.8	+00.6	157	39.6	+01.9	S 23 09.1	+00.0	134	39.5	+02.3	S 22 21.8	+00.0	01				
02	235	44.7	+00.9	S 08 04.4	+00.7	172	41.5	+01.9	S 23 09.1	+00.0	149	41.8	+02.2	S 22 21.8	+00.0	02				
03	250	45.6	+01.0	S 08 05.1	+00.6	187	43.4	+01.9	S 23 09.1	+00.1	164	44.0	+02.3	S 22 21.8	+00.0	03				
04	265	46.6	+00.9	S 08 05.7	+00.6	202	45.3	+02.0	S 23 09.2	+00.0	179	46.3	+02.3	S 22 21.8	-00.1	04				
05	280	47.5	+01.0	S 08 06.3	+00.6	217	47.3	+01.9	S 23 09.2	+00.0	194	48.6	+02.2	S 22 21.7	+00.0	05				
06	295	48.5	+00.9	S 08 06.9	+00.6	232	49.2	+01.9	S 23 09.2	+00.0	209	50.8	+02.3	S 22 21.7	+00.0	06				
07	310	49.4	+00.9	S 08 07.5	+00.7	247	51.1	+01.9	S 23 09.2	+00.1	224	53.1	+02.2	S 22 21.7	+00.0	07				
08	325	50.3	+01.0	S 08 08.2	+00.6	262	53.0	+01.9	S 23 09.3	+00.0	239	55.3	+02.3	S 22 21.7	+00.0	08				
09	340	51.3	+00.9	S 08 08.8	+00.6	277	54.9	+01.9	S 23 09.3	+00.0	254	57.6	+02.2	S 22 21.7	-00.1	09				
10	355	52.2	+00.9	S 08 09.4	+00.6	292	56.8	+02.0	S 23 09.3	+00.0	269	59.8	+02.3	S 22 21.6	+00.0	10				
11	10	53.1	+01.0	S 08 10.0	+00.6	307	58.8	+01.9	S 23 09.3	+00.1	285	02.1	+02.3	S 22 21.6	+00.0	11				
12	25	54.1	+00.9	S 08 10.6	+00.6	323	00.7	+01.9	S 23 09.4	+00.0	300	04.4	+02.2	S 22 21.6	+00.0	12				
13	40	55.0	+00.9	S 08 11.2	+00.7	338	02.6	+01.9	S 23 09.4	+00.0	315	06.6	+02.3	S 22 21.6	+00.0	13				
14	55	55.9	+01.0	S 08 11.9	+00.6	353	04.5	+01.9	S 23 09.4	+00.0	330	08.9	+02.2	S 22 21.6	-00.1	14				
15	70	56.9	+00.9	S 08 12.5	+00.6	8	06.4	+01.9	S 23 09.4	+00.1	345	11.1	+02.3	S 22 21.5	+00.0	15				
16	85	57.8	+01.0	S 08 13.1	+00.6	23	08.3	+02.0	S 23 09.5	+00.0	0	13.4	+02.2	S 22 21.5	+00.0	16				
17	100	58.8	+00.9	S 08 13.7	+00.6	38	10.3	+01.9	S 23 09.5	+00.0	15	15.6	+02.3	S 22 21.5	+00.0	17				
18	115	59.7	+00.9	S 08 14.3	+00.7	53	12.2	+01.9	S 23 09.5	+00.0	30	17.9	+02.3	S 22 21.5	+00.0	18				
19	131	00.6	+01.0	S 08 15.0	+00.6	68	14.1	+01.9	S 23 09.5	+00.1	45	20.2	+02.2	S 22 21.5	-00.1	19				
20	146	01.6	+00.9	S 08 15.6	+00.6	83	16.0	+01.9	S 23 09.6	+00.0	60	22.4	+02.3	S 22 21.4	+00.0	20				
21	161	02.5	+00.9	S 08 16.2	+00.6	98	17.9	+01.9	S 23 09.6	+00.0	75	24.7	+02.2	S 22 21.4	+00.0	21				
22	176	03.4	+01.0	S 08 16.8	+00.6	113	19.8	+02.0	S 23 09.6	+00.0	90	26.9	+02.3	S 22 21.4	+00.0	22				
23	191	04.4	+00.9	S 08 17.4	+00.7	128	21.8	+01.9	S 23 09.6	+00.1	105	29.2	+02.2	S 22 21.4	+00.0	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	00°0	00°0	00°0	00°0	00°0	00°0	SD	00°3	00°3	00°3	00°3	00°3	00°3	SD	00°1	00°1	00°1	00°1	00°1	00°1
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°0	00°0	00°0	00°0	00°0	00°0	HP	00°0	00°0	00°0	00°0	00°0	00°0
SHA	159°	159°	159°	158°	158°	158°	SHA	096°	096°	096°	096°	096°	096°	SHA	073°	073°	073°	073°	073°	073°
Greenwich Culmination Time: 10:16				Greenwich Culmination Time: 14:27				Greenwich Culmination Time: 15:59												

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	184	03.9	-00.1	S 16 42.3	+00.7	160	48.9	-00.8	S 22 24.9	+00.6	40	17.4	-25.0	S 02 15.1	-11.7	00
01	199	03.8	+00.0	S 16 43.0	+00.8	175	48.1	-00.8	S 22 25.5	+00.6	54	52.4	-25.1	S 02 03.4	-11.6	01
02	214	03.8	-00.1	S 16 43.8	+00.7	190	47.3	-00.9	S 22 26.1	+00.6	69	27.3	-25.1	S 01 51.8	-11.7	02
03	229	03.7	+00.0	S 16 44.5	+00.7	205	46.4	-00.8	S 22 26.7	+00.6	84	02.2	-25.0	S 01 40.1	-11.7	03
04	244	03.7	-00.1	S 16 45.2	+00.7	220	45.6	-00.9	S 22 27.3	+00.6	98	37.2	-25.1	S 01 28.4	-11.7	04
05	259	03.6	+00.0	S 16 45.9	+00.7	235	44.7	-00.8	S 22 27.9	+00.5	113	12.1	-25.1	S 01 16.7	-11.7	05
06	274	03.6	-00.1	S 16 46.6	+00.7	250	43.9	-00.8	S 22 28.4	+00.6	127	47.0	-25.1	S 01 05.0	-11.8	06
07	289	03.5	+00.0	S 16 47.3	+00.8	265	43.1	-00.9	S 22 29.0	+00.6	142	21.9	-25.1	S 00 53.2	-11.7	07
08	304	03.5	-00.1	S 16 48.1	+00.7	280	42.2	-00.8	S 22 29.6	+00.6	156	56.8	-25.1	S 00 41.5	-11.8	08
09	319	03.4	+00.0	S 16 48.8	+00.7	295	41.4	-00.9	S 22 30.2	+00.5	171	31.7	-25.2	S 00 29.7	-11.7	09
10	334	03.4	-00.1	S 16 49.5	+00.7	310	40.5	-00.8	S 22 30.7	+00.6	186	06.5	-25.1	S 00 18.0	-11.8	10
11	349	03.3	+00.0	S 16 50.2	+00.7	325	39.7	-00.8	S 22 31.3	+00.6	200	41.4	-25.2	S 00 06.2	-11.8	11
12	4	03.3	-00.1	S 16 50.9	+00.7	340	38.9	-00.9	S 22 31.9	+00.6</						

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	183	55.7	-00.1	S 18 05.1	+00.6	159	05.6	-00.8	S 23 27.0	+00.5	345	58.7	-30.8	N 19 02.6	+07.4	00
01	198	55.6	+00.0	S 18 05.7	+00.7	174	04.8	-00.9	S 23 27.5	+00.4	0	27.9	-30.8	N 19 10.0	+07.3	01
02	213	55.6	-00.1	S 18 06.4	+00.6	189	03.9	-00.9	S 23 27.9	+00.5	14	57.1	-30.9	N 19 17.3	+07.3	02
03	228	55.5	-00.1	S 18 07.0	+00.4	204	03.0	-00.9	S 23 28.4	+00.4	29	26.2	-31.0	N 19 24.6	+07.1	03
04	243	55.4	-00.1	S 18 07.7	+00.6	219	02.1	-00.9	S 23 28.8	+00.5	43	55.2	-31.0	N 19 31.7	+07.0	04
05	258	55.3	-00.1	S 18 08.3	+00.7	234	01.2	-00.9	S 23 29.3	+00.4	58	24.2	-31.2	N 19 38.7	+07.0	05
06	273	55.2	-00.1	S 18 09.0	+00.7	249	00.3	-00.9	S 23 29.7	+00.5	72	53.0	-31.2	N 19 45.7	+06.8	06
07	288	55.1	-00.1	S 18 09.7	+00.6	263	59.4	-00.8	S 23 30.2	+00.4	87	21.8	-31.2	N 19 52.5	+06.8	07
08	303	55.0	-00.1	S 18 10.3	+00.7	278	58.6	-00.9	S 23 30.6	+00.4	101	50.6	-31.4	N 19 59.3	+06.6	08
09	318	54.9	-00.1	S 18 11.0	+00.6	293	57.7	-00.9	S 23 31.0	+00.5	116	19.2	-31.4	N 20 05.9	+06.6	09
10	333	54.8	-00.1	S 18 11.6	+00.7	308	56.8	-00.9	S 23 31.5	+00.4	130	47.8	-31.4	N 20 12.5	+06.4	10
11	348	54.7	-00.1	S 18 12.3	+00.6	323	55.9	-00.9	S 23 31.9	+00.4	145	16.4	-31.6	N 20 18.9	+06.3	11
12	3	54.6	-00.1	S 18 12.9	+00.7	338	55.0	-00.9	S 23 32.3	+00.5	159	44.8	-31.6	N 20 25.2	+06.3	12
13	18	54.5	-00.1	S 18 13.6	+00.6	353	54.1	-00.9	S 23 32.8	+00.4	174	13.2	-31.7	N 20 31.5	+06.1	13
14	33	54.4	-00.1	S 18 14.2	+00.7	8	53.2	-00.9	S 23 33.2	+00.4	188	41.5	-31.7	N 20 37.6	+06.0	14
15	48	54.3	+00.0	S 18 14.9	+00.6	23	52.3	-00.9	S 23 33.6	+00.5	203	09.8	-31.8	N 20 43.6	+05.9	15
16	63	54.3	-00.1	S 18 15.5	+00.7	38	51.4	-00.8	S 23 34.1	+00.4	217	38.0	-31.9	N 20 49.5	+05.8	16
17	78	54.2	-00.1	S 18 16.2	+00.6	53	50.6	-00.9	S 23 34.5	+00.4	232	06.1	-32.0	N 20 55.3	+05.7	17
18	93	54.1	-00.1	S 18 16.8	+00.7	68	49.7	-00.9	S 23 34.9	+00.4	246	34.1	-32.0	N 21 01.0	+05.5	18
19	108	54.0	-00.1	S 18 17.5	+00.6	83	48.8	-00.9	S 23 35.3	+00.5	261	02.1	-32.1	N 21 06.5	+05.5	19
20	123	53.9	-00.1	S 18 18.1	+00.7	98	47.9	-00.9	S 23 35.8	+00.4	275	30.0	-32.1	N 21 12.0	+05.3	20
21	138	53.8	-00.1	S 18 18.8	+00.6	113	47.0	-00.9	S 23 36.2	+00.4	289	57.9	-32.2	N 21 17.3	+05.3	21
22	153	53.7	-00.1	S 18 19.4	+00.6	128	46.1	-00.9	S 23 36.6	+00.4	304	25.7	-32.3	N 21 22.6	+05.1	22
23	168	53.6	-00.1	S 18 20.0	+00.7	143	45.2	-00.9	S 23 37.0	+00.4	318	53.4	-32.3	N 21 27.7	+05.0	23
UT 02 06 10 14 18 22	SD 16°2 16°2 16°2 16°2 16°2 16°2 HP 00°1 00°1 00°1 00°1 00°1 00°1 SHA 131° 131° 131° 131° 131° 131° Greenwich Culmination Time: 11:44	UT 02 06 10 14 18 22	SD 00°1 00°1 00°1 00°1 00°1 00°1 HP 00°1 00°1 00°1 00°1 00°1 00°1 SHA 106° 106° 106° 106° 105° 105° Greenwich Culmination Time: 13:24	UT 02 06 10 14 18 22	SD 15°4 15°4 15°4 15°4 15°4 15°5 HP 56°4 56°4 56°5 56°6 56°7 56°8 SHA 292° 290° 288° 285° 283° 281° Greenwich Culmination Time: 00:58											

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	184	01.2	+00.0	S 17 16.3	+00.7	160	08.3	-00.8	S 22 51.8	+00.5	19	54.7	-26.2	N 07 07.7	+11.5	00
01	199	01.2	-00.1	S 17 17.0	+00.7	175	07.5	-00.9	S 22 52.3	+00.5	34	28.5	-26.3	N 07 19.2	+11.4	01
02	214	01.1	+00.0	S 17 17.7	+00.7	190	06.6	-00.9	S 22 52.8	+00.6	49	02.2	-26.3	N 07 30.6	+11.5	02
03	229	01.1	-00.1	S 17 18.4	+00.7	205	05.7	-00.8	S 22 53.4	+00.5	63	35.9	-26.3	N 07 42.1	+11.4	03
04	244	01.0	-00.1	S 17 19.1	+00.7	220	04.9	-00.9	S 22 53.9	+00.5	78	09.6	-26.4	N 07 53.5	+11.4	04
05	259	00.9	+00.0	S 17 19.8	+00.7	235	04.0	-00.8	S 22 54.4	+00.5	92	43.2	-26.5	N 08 04.9	+11.4	05
06	274	00.9	-00.1	S 17 20.5	+00.7	250	03.2	-00.9	S 22 54.9	+00.6	107	16.7	-26.5	N 08 16.3	+11.4	06
07	289	00.8	-00.1	S 17 21.2	+00.7	265	02.3	-00.8	S 22 55.5	+00.5	121	50.2	-26.5	N 08 27.7	+11.3	07
08	304	00.7	+00.0	S 17 21.9	+00.7	280	01.5	-00.9	S 22 56.0	+00.5	136	23.7	-26.6	N 08 39.0	+11.3	08
09	319	00.7	-00.1	S 17 22.6	+00.6	295	00.6	-00.9	S 22 56.5	+00.5	150	57.1	-26.6	N 08 50.3	+11.2	09
10	334	00.6	-00.1	S 17 23.2	+00.7	309	59.7	-00.8	S 22 57.0	+00.6	165	30.5	-26.7	N 09 01.5	+11.3	10
11	349	00.5	+00.0	S 17 23.9	+00.7	324	58.9	-00.9	S 22 57.6	+00.5	180	03.8	-26.8	N 09 12.8	+11.2	11
12	4	00.5	-00.1	S 17 24.6	+00.7	339	58.0	-00.8	S 22 58.1	+00.5	194	37.0	-26.8	N 09 24.0	+11.2	12
13	19	00.4	-00.1	S 17 25.3	+00.7	354	57.2	-00.9	S 22 58.6	+00.5	209	10.2	-26.8	N 09 35.2	+11.1	13
14	34	00.3	+00.0	S 17 26.0	+00.7	9	56.3	-00.9	S 22 59.1	+00.5	223	43.4	-26.9	N 09 46.3	+11.1	14
15	49	00.3	-00.1	S 17 26.7	+00.7	24	55.4	-00.8	S 22 59.6	+00.5	238	16.5	-27.0	N 09 57.4	+11.1	15
16	64	00.2	-00.1	S 17 27.4	+00.7	39	54.6	-00.9	S 23 00.1	+00.5	252	49.5	-27.0	N 10 08.5	+11.0	16
17	79	00.1	-00.1	S 17 28.1	+00.7	54	53.7	-00.9	S 23 00.6	+00.6	267	22.5	-27.0	N 10 19.5	+11.0	17
18	94	00.0	+00.0	S 17 28.8	+00.6	69	52.8	-00.8	S 23 01.2	+00.5	281	55.5	-27.1	N 10 30.5	+11.0	18
19	108	60.0	-00.1	S 17 29.4	+00.7	84	52.0	-00.9	S 23 01.7	+00.5	296	28.4	-27.2	N 10 41.5	+10.9	19
20	123	59.9	-00.1	S 17 30.1	+00.7	99	51.1	-00.9	S 23 02.2	+00.5	311	01.2	-27.2	N 10 52.4	+10.9	20
21	138	59.8	-00.0	S 17 30.8	+00.7	114	50.2	-00.8	S 23 02.7	+00.5	325	34.0	-27.3	N 11 03.3	+10.8	21
22	153	59.8	-00.1	S 17 31.5	+00.7	129	49.4	-00.9	S 23 03.2	+00.5	340	06.7	-27.4	N 11 14.1	+10.9	22
23	168	59.7	-00.1	S 17 32.2	+00.7	144	48.5	-00.8	S 23 03.7	+00.5	354	39.3	-27.4	N 11 25.0	+10.7	23
UT 02 06 10 14 18 22	SD 16°2 16°2 16°2 16°2 16°2 16°2 HP 00°1 00°1 00°1 00°1 00°1 00°1 SHA 134° 134° 134° 134° 133° 133° Greenwich Culmination Time: 11:43	UT 02 06 10 14 18 22	SD 00°1 00°1 00°1 00°1 00°1 00°1 HP 55°0 55°0 55°1 55°2 55°3 55°3 SHA 329° 327° 325° 323° 321° 319° Greenwich Culmination Time: 13:20	UT 02 06 10 14 18 22	SD 15°0 15°0 15°0 15°0 15°0 15°1 HP 00°0 00°0 00°0 00°0 00°0 00°0 SHA 110° 110° 110° 110° 109° 109° Greenwich Culmination Time: 23:22											

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	207	56.6	+00.9	S 09 31.6	+00.6	147	12.6	+01.9	S 23 12.3	+00.0	125	01.1	+02.3	S 22 18.9	+00.0	00
01	222	57.5	+00.9	S 09 32.2	+00.6	162	14.5	+02.0	S 23 12.3	+00.1	140	03.4	+02.2	S 22 18.9	-00.1	01
02	237	58.4	+00.9	S 09 32.8	+00.6	177	16.5	+01.9	S 23 12.4	+00.0	155	05.6	+02.3	S 22 18.8	+00.0	02
03	252	59.3	+01.0	S 09 33.4	+00.6	192	18.4	+01.9	S 23 12.4	+00.0	170	07.9	+02.2	S 22 18.8	+00.0	03
04	268	00.3	+00.9	S 09 34.0	+00.6	207	20.3	+01.9	S 23 12.4	+00.0	185	10.1	+02.2	S 22 18.8	+00.0	04
05	283	01.2	+00.9	S 09 34.6	+00.6	222	22.2	+01.9	S 23 12.4	+00.1	200	12.3	+02.3	S 22 18.8	+00.0	05
06	298	02.1	+00.9	S 09 35.2	+00.6	237	24.1	+01.9	S 23 12.5	+00.0	215	14.6	+02.2	S 22 18.8	-00.1	06
07	313	03.0	+00.9	S 09 35.8	+00.6	252	26.0	+01.9	S 23 12.5	+00.0	230	16.8	+02.3	S 22 18.7	+00.0	07
08	328	03.9	+01.0	S 09 36.4	+00.6	267	27.9	+01.8	S 23 12.5	+00.0	245	19.1	+02.2	S 22 18.7	+00.0	08
09	343	04.9	+00.9	S 09 37.0	+00.6	282	29.7	+01.9	S 23 12.5	+00.0	260	21.3	+02.2	S 22 18.7	+00.0	09
10	358	05.8	+00.9	S 09 37.6	+00.6	297	31.6	+01.9	S 23 12.5	+00.1	275	23.5	+02.3	S 22 18.7	-00.1	10
11	13	06.7	+00.9	S 09 38.2	+0											

Table with columns for UT, Sun, Venus, Moon, and UT. Each planet section has sub-columns for GHA, ddGHA, Dec, and dDec. Data rows are provided for each planet from UT 00 to 23.

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 133° 133° 133° 133° 132° 132°
Greenwich Culmination Time: 11:44

Table with columns for UT, Sun, Venus, Moon, and UT. Each planet section has sub-columns for GHA, ddGHA, Dec, and dDec. Data rows are provided for each planet from UT 00 to 23.

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 132° 132° 132° 132° 131° 131°
Greenwich Culmination Time: 11:44

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Each planet section has sub-columns for GHA, ddGHA, Dec, and dDec. Data rows are provided for each planet from UT 00 to 23.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 156° 156° 156° 156° 156° 156°
Greenwich Culmination Time: 10:10

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Each planet section has sub-columns for GHA, ddGHA, Dec, and dDec. Data rows are provided for each planet from UT 00 to 23.

UT 02 06 10 14 18 22
SD 00°3 00°3 00°3 00°3 00°3 00°3
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 095° 095° 095° 094° 094° 094°
Greenwich Culmination Time: 14:12

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Includes astronomical data for Sun, Venus, and Moon on 2019 November 18, including GHA, ddGHA, Dec, and dDec values.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes astronomical data for Sun, Venus, and Moon on 2019 November 15, including GHA, ddGHA, Dec, and dDec values.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes astronomical data for Mars, Jupiter, and Saturn on 2019 November 18, including GHA, ddGHA, Dec, and dDec values.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes astronomical data for Mars, Jupiter, and Saturn on 2019 November 15, including GHA, ddGHA, Dec, and dDec values.

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	183	51.0	-00.1	S 18 36.0	+00.6	158	22.8	-00.9	S 23 47.1	+00.4	320	08.5	-33.6	N 22 55.7	+01.8	00
01	198	50.9	-00.1	S 18 36.6	+00.7	173	21.9	-00.9	S 23 47.5	+00.4	334	34.9	-33.7	N 22 57.5	+01.7	01
02	213	50.8	-00.1	S 18 37.3	+00.6	188	21.0	-00.9	S 23 47.9	+00.4	349	01.2	-33.7	N 22 59.2	+01.6	02
03	228	50.7	-00.1	S 18 37.9	+00.6	203	20.1	-00.9	S 23 48.3	+00.4	3	27.5	-33.7	N 23 00.8	+01.4	03
04	243	50.6	-00.1	S 18 38.5	+00.7	218	19.2	-00.9	S 23 48.7	+00.4	17	53.8	-33.8	N 23 02.2	+01.3	04
05	258	50.5	-00.2	S 18 39.2	+00.6	233	18.3	-00.9	S 23 49.1	+00.4	32	20.0	-33.7	N 23 03.5	+01.2	05
06	273	50.3	-00.1	S 18 39.8	+00.6	248	17.4	-00.9	S 23 49.5	+00.3	46	46.3	-33.9	N 23 04.7	+01.0	06
07	288	50.2	-00.1	S 18 40.4	+00.6	263	16.5	-00.9	S 23 49.8	+00.4	61	12.4	-33.8	N 23 05.7	+00.9	07
08	303	50.1	-00.1	S 18 41.0	+00.7	278	15.6	-00.9	S 23 50.2	+00.4	75	38.6	-33.9	N 23 06.6	+00.8	08
09	318	50.0	-00.1	S 18 41.7	+00.6	293	14.7	-00.9	S 23 50.6	+00.4	90	04.7	-33.9	N 23 07.4	+00.6	09
10	333	49.9	-00.1	S 18 42.3	+00.6	308	13.8	-00.9	S 23 51.0	+00.4	104	30.8	-34.0	N 23 08.0	+00.5	10
11	348	49.8	-00.1	S 18 42.9	+00.6	323	12.9	-00.9	S 23 51.4	+00.3	118	56.8	-33.9	N 23 08.5	+00.3	11
12	3	49.7	-00.1	S 18 43.5	+00.7	338	12.0	-00.9	S 23 51.7	+00.4	133	22.9	-34.0	N 23 08.8	+00.2	12
13	18	49.6	-00.1	S 18 44.2	+00.6	353	11.1	-01.0	S 23 52.1	+00.4	147	48.9	-34.0	N 23 09.0	+00.0	13
14	33	49.5	-00.2	S 18 44.8	+00.6	8	10.1	-00.9	S 23 52.5	+00.3	162	14.9	-34.0	N 23 09.0	+00.0	14
15	48	49.3	-00.1	S 18 45.4	+00.6	23	09.2	-00.9	S 23 52.8	+00.4	176	40.9	-34.1	N 23 09.0	-00.3	15
16	63	49.2	-00.1	S 18 46.0	+00.7	38	08.3	-00.9	S 23 53.2	+00.4	191	06.8	-34.1	N 23 08.7	-00.3	16
17	78	49.1	-00.1	S 18 46.7	+00.6	53	07.4	-00.9	S 23 53.6	+00.4	205	32.7	-34.1	N 23 08.4	-00.5	17
18	93	49.0	-00.1	S 18 47.3	+00.6	68	06.5	-00.9	S 23 54.0	+00.3	219	58.6	-34.1	N 23 07.9	-00.7	18
19	108	48.9	-00.1	S 18 47.9	+00.6	83	05.6	-00.9	S 23 54.3	+00.4	234	24.5	-34.1	N 23 07.2	-00.8	19
20	123	48.8	-00.1	S 18 48.5	+00.6	98	04.7	-00.9	S 23 54.7	+00.4	248	50.4	-34.1	N 23 06.4	-00.9	20
21	138	48.7	-00.2	S 18 49.1	+00.6	113	03.8	-00.9	S 23 55.1	+00.3	263	16.3	-34.2	N 23 05.5	-01.1	21
22	153	48.5	-00.1	S 18 49.7	+00.7	128	02.9	-00.9	S 23 55.4	+00.4	277	42.1	-34.1	N 23 04.4	-01.2	22
23	168	48.4	-00.1	S 18 50.4	+00.6	143	02.0	-00.9	S 23 55.8	+00.3	292	08.0	-34.2	N 23 03.2	-01.3	23

UT 02 06 10 14 18 22 SD 16°2 16°2 16°2 16°2 16°2 16°2 HP 00°1 00°1 00°1 00°1 00°1 00°1 SHA 129° 129° 129° 128° 128° 128° Greenwich Culmination Time: 11:44	UT 02 06 10 14 18 22 SD 00°1 00°1 00°1 00°1 00°1 00°1 HP 00°1 00°1 00°1 00°1 00°1 00°1 SHA 103° 103° 103° 103° 103° 102° Greenwich Culmination Time: 13:27	UT 02 06 10 14 18 22 SD 15°6 15°6 15°7 15°7 15°7 15°7 HP 57°3 57°4 57°5 57°6 57°6 57°7 SHA 264° 262° 259° 257° 254° 252° Greenwich Culmination Time: 02:45
--	--	--

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	208	40.6	+00.9	S 10 00.5	+00.6	148	43.7	+01.9	S 23 13.3	+00.0	126	48.5	+02.3	S 22 17.8	+00.0	00
01	223	41.5	+00.9	S 10 01.1	+00.7	163	45.6	+01.9	S 23 13.3	+00.0	141	50.8	+02.2	S 22 17.8	+00.0	01
02	238	42.4	+00.9	S 10 01.8	+00.6	178	47.5	+01.9	S 23 13.3	+00.0	156	53.0	+02.2	S 22 17.8	-00.1	02
03	253	43.3	+01.0	S 10 02.4	+00.6	193	49.4	+01.9	S 23 13.3	+00.0	171	55.2	+02.3	S 22 17.7	+00.0	03
04	268	44.3	+00.9	S 10 03.0	+00.6	208	51.3	+01.9	S 23 13.3	+00.1	186	57.5	+02.2	S 22 17.7	+00.0	04
05	283	45.2	+00.9	S 10 03.6	+00.6	223	53.2	+01.9	S 23 13.4	+00.0	201	59.7	+02.2	S 22 17.7	+00.0	05
06	298	46.1	+00.9	S 10 04.2	+00.6	238	55.1	+01.9	S 23 13.4	+00.0	217	01.9	+02.2	S 22 17.7	+00.0	06
07	313	47.0	+00.9	S 10 04.8	+00.6	253	57.0	+01.9	S 23 13.4	+00.0	232	04.2	+02.2	S 22 17.7	-00.1	07
08	328	47.9	+00.9	S 10 05.4	+00.6	268	58.9	+01.9	S 23 13.4	+00.0	247	06.4	+02.2	S 22 17.6	+00.0	08
09	343	48.8	+00.9	S 10 06.0	+00.6	284	00.8	+01.9	S 23 13.4	+00.1	262	08.6	+02.3	S 22 17.6	+00.0	09
10	358	49.7	+00.9	S 10 06.6	+00.6	299	02.7	+01.9	S 23 13.5	+00.0	277	10.9	+02.2	S 22 17.6	+00.0	10
11	13	50.6	+01.0	S 10 07.2	+00.6	314	04.6	+01.9	S 23 13.5	+00.0	292	13.1	+02.2	S 22 17.6	-00.1	11
12	28	51.6	+00.9	S 10 07.8	+00.6	329	06.5	+01.9	S 23 13.5	+00.0	307	15.3	+02.3	S 22 17.5	+00.0	12
13	43	52.5	+00.9	S 10 08.4	+00.6	344	08.4	+01.9	S 23 13.5	+00.0	322	17.6	+02.2	S 22 17.5	+00.0	13
14	58	53.4	+00.9	S 10 09.0	+00.6	359	10.3	+01.9	S 23 13.5	+00.0	337	19.8	+02.2	S 22 17.5	+00.0	14
15	73	54.3	+00.9	S 10 09.6	+00.6	14	12.2	+01.8	S 23 13.6	+00.1	352	22.0	+02.3	S 22 17.5	-00.1	15
16	88	55.2	+00.9	S 10 10.2	+00.6	29	14.0	+01.9	S 23 13.6	+00.0	7	24.3	+02.2	S 22 17.4	+00.0	16
17	103	56.1	+00.9	S 10 10.8	+00.6	44	15.9	+01.9	S 23 13.6	+00.0	22	26.5	+02.2	S 22 17.4	+00.0	17
18	118	57.0	+00.9	S 10 11.4	+00.6	59	17.8	+01.9	S 23 13.6	+00.0	37	28.7	+02.3	S 22 17.4	+00.0	18
19	133	57.9	+00.9	S 10 12.0	+00.6	74	19.7	+01.9	S 23 13.6	+00.0	52	31.0	+02.2	S 22 17.4	+00.0	19
20	148	58.8	+01.0	S 10 12.6	+00.6	89	21.6	+01.9	S 23 13.6	+00.1	67	33.2	+02.2	S 22 17.4	-00.1	20
21	163	59.8	+00.9	S 10 13.2	+00.6	104	23.5	+01.9	S 23 13.7	+00.0	82	35.4	+02.2	S 22 17.3	+00.0	21
22	179	00.7	+00.9	S 10 13.8	+00.6	119	25.4	+01.9	S 23 13.7	+00.0	97	37.6	+02.3	S 22 17.3	+00.0	22
23	194	01.6	+00.9	S 10 14.4	+00.6	134	27.3	+01.9	S 23 13.7	+00.0	112	39.9	+02.2	S 22 17.3	+00.0	23

UT 02 06 10 14 18 22 SD 00°0 00°0 00°0 00°0 00°0 00°0 HP 00°1 00°1 00°1 00°1 00°1 00°1 SHA 154° 154° 154° 153° 153° 153° Greenwich Culmination Time: 10:04	UT 02 06 10 14 18 22 SD 00°3 00°3 00°3 00°3 00°3 00°3 HP 00°0 00°0 00°0 00°0 00°0 00°0 SHA 094° 094° 094° 094° 094° 094° Greenwich Culmination Time: 14:03	UT 02 06 10 14 18 22 SD 00°1 00°1 00°1 00°1 00°1 00°1 HP 00°0 00°0 00°0 00°0 00°0 00°0 SHA 072° 072° 072° 072° 072° 072° Greenwich Culmination Time: 15:30
--	--	--

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	183	48.3	-00.1	S 18 51.0	+00.6	158	01.1	-00.9	S 23 56.1	+00.4	306	33.8	-34.2	N 23 01.9	-01.5	00
01	198	48.2	-00.1	S 18 51.6	+00.6	173	00.2	-00.9	S 23 56.5	+00.4	320	59.6	-34.2	N 23 00.4	-01.7	01
02	213	48.1	-00.1	S 18 52.2	+00.6	187	59.3	-00.9	S 23 56.9	+00.3	335	25.4	-34.1	N 22 58.7	-01.7	02
03	228	48.0	-00.2	S 18 52.8	+00.7	202	58.4	-01.0	S 23 57.2	+00.4	349	51.3	-34.2	N 22 57.0	-01.9	03
04	243	47.8	-00.1	S 18 53.5	+00.6	217	57.4	-00.9	S 23 57.6	+00.3	4	17.1	-34.2	N 22 55.1	-02.1	04
05	258	47.7	-00.1	S 18 54.1	+00.6	232	56.5	-00.9	S 23 57.9	+00.4	18	42.9	-34.2	N 22 53.0	-02.2	05
06	273	47.6	-00.1	S 18 54.7	+00.6	247	55.6	-00.9	S 23 58.3	+00.3	33	08.7	-34.2	N 22 50.8	-02.3	06
07	288	47.5	-00.1	S 18 55.3	+00.6	262	54.7	-00.9	S 23 58.6	+00.4	47	34.5	-34.2	N 22 48.5	-02.5	07
08	303	47.4	-00.2	S 18 55.9	+00.6	277	53.8	-00.9	S 23 59.0	+00.3	62	00.3	-34.2	N 22 46.0	-02.6	08
09	318	47.2	-00.1	S 18 56.5	+00.6	292	52.9	-00.9	S 23 59.3	+00.4	76	26.1	-34.2	N 22 43.4	-02.8	09
10	333	47.1	-00.1	S 18 57.1	+00.6	307	52.0	-00.9	S 23 59.7	+00.3	90	51.9	-34.2	N 22 40.6		

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for days 00-23 and Greenwich Culmination Time: 11:46.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for days 00-23 and Greenwich Culmination Time: 11:45.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for days 00-23 and Greenwich Culmination Time: 13:45.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for days 00-23 and Greenwich Culmination Time: 13:54.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA/Dec and Az/El for each planet.

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 125° 125° 124° 124° 124° 124°
Greenwich Culmination Time: 11:45

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes RA/Dec and Az/El for each planet.

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 124° 124° 123° 123° 123° 123°
Greenwich Culmination Time: 11:45

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA/Dec and Az/El for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 151° 151° 151° 151° 151° 151°
Greenwich Culmination Time: 09:58

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes RA/Dec and Az/El for each planet.

UT 02 06 10 14 18 22
SD 00°3 00°3 00°3 00°3 00°3 00°3
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 093° 093° 093° 093° 093° 093°
Greenwich Culmination Time: 13:48

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

UT	Sun				Venus				Moon				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
00	183	14.7	-00.2	S 20 50.1	+00.5	154	39.6	-00.9	S 24 44.5	+00.1	190	54.8	-32.7	S 15 34.9	+10.5
01	198	14.5	-00.2	S 20 50.6	+00.4	169	38.7	-00.9	S 24 44.6	+00.0	205	22.1	-32.8	S 15 45.4	+10.5
02	213	14.3	-00.2	S 20 51.0	+00.5	184	37.8	-01.0	S 24 44.6	+00.1	219	49.3	-32.8	S 15 55.9	+10.3
03	228	14.1	-00.2	S 20 51.5	+00.5	199	36.8	-00.9	S 24 44.7	+00.1	234	16.5	-32.8	S 16 06.2	+10.3
04	243	13.9	-00.2	S 20 52.0	+00.5	214	35.9	-01.0	S 24 44.8	+00.1	248	43.7	-32.9	S 16 16.5	+10.2
05	258	13.7	-00.2	S 20 52.5	+00.5	229	34.9	-00.9	S 24 44.9	+00.1	263	10.8	-32.9	S 16 26.7	+10.0
06	273	13.5	-00.2	S 20 53.0	+00.4	244	34.0	-01.0	S 24 45.0	+00.0	277	37.9	-33.0	S 16 36.7	+09.9
07	288	13.3	-00.2	S 20 53.4	+00.5	259	33.0	-00.9	S 24 45.0	+00.1	292	04.9	-33.0	S 16 46.6	+09.9
08	303	13.1	-00.2	S 20 53.9	+00.5	274	32.1	-01.0	S 24 45.1	+00.1	306	31.9	-33.0	S 16 56.5	+09.7
09	318	12.9	-00.2	S 20 54.4	+00.5	289	31.1	-00.9	S 24 45.2	+00.1	320	58.9	-33.1	S 17 06.2	+09.6
10	333	12.7	-00.2	S 20 54.9	+00.4	304	30.2	-01.0	S 24 45.3	+00.0	335	25.8	-33.0	S 17 15.8	+09.5
11	348	12.5	-00.2	S 20 55.3	+00.5	319	29.2	-00.9	S 24 45.3	+00.1	349	52.8	-33.2	S 17 25.3	+09.4
12	3	12.3	-00.2	S 20 55.8	+00.5	334	28.3	-01.0	S 24 45.4	+00.1	4	19.6	-33.1	S 17 34.7	+09.2
13	18	11.1	-00.2	S 20 56.3	+00.5	349	27.3	-00.9	S 24 45.5	+00.0	18	46.5	-33.2	S 17 43.9	+09.2
14	33	11.9	-00.2	S 20 56.8	+00.4	4	26.4	-01.0	S 24 45.5	+00.1	33	13.3	-33.2	S 17 53.1	+09.1
15	48	11.7	-00.2	S 20 57.2	+00.5	19	25.4	-00.9	S 24 45.6	+00.1	47	40.1	-33.3	S 18 02.2	+08.9
16	63	11.5	-00.2	S 20 57.7	+00.5	34	24.5	-01.0	S 24 45.7	+00.0	62	06.8	-33.3	S 18 11.1	+08.8
17	78	11.3	-00.2	S 20 58.2	+00.4	49	23.5	-00.9	S 24 45.7	+00.1	76	33.5	-33.3	S 18 19.9	+08.7
18	93	11.1	-00.2	S 20 58.6	+00.5	64	22.6	-01.0	S 24 45.8	+00.1	91	00.2	-33.3	S 18 28.6	+08.6
19	108	10.9	-00.2	S 20 59.1	+00.5	79	21.6	-00.9	S 24 45.9	+00.0	105	26.9	-33.4	S 18 37.2	+08.4
20	123	10.7	-00.2	S 20 59.6	+00.4	94	20.7	-01.0	S 24 45.9	+00.1	119	53.5	-33.4	S 18 45.6	+08.3
21	138	10.5	-00.2	S 21 00.0	+00.5	109	19.7	-00.9	S 24 46.0	+00.0	134	20.1	-33.4	S 18 53.9	+08.2
22	153	10.3	-00.2	S 21 00.5	+00.5	124	18.8	-01.0	S 24 46.0	+00.1	148	46.7	-33.5	S 19 02.1	+08.1
23	168	10.1	-00.2	S 21 01.0	+00.4	139	17.8	-00.9	S 24 46.1	+00.0	163	13.2	-33.4	S 19 10.2	+08.0

UT 02 06 10 14 18 22	SD 16°2 16°2 16°2 16°2 16°2 16°2	UT 02 06 10 14 18 22	SD 00°1 00°1 00°1 00°1 00°1 00°1	UT 02 06 10 14 18 22	SD 16°1 16°1 16°0 16°0 16°0 16°0
HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 59°1 59°0 58°9 58°8 58°7 58°6	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 59°1 59°0 58°9 58°8 58°7 58°6	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 59°1 59°0 58°9 58°8 58°7 58°6
SHA 119° 118° 118° 118° 118° 118°	SHA 090° 090° 089° 089° 089° 089°	SHA 119° 118° 118° 118° 118° 118°	SHA 090° 090° 089° 089° 089° 089°	SHA 125° 123° 120° 118° 116° 113°	SHA 125° 123° 120° 118° 116° 113°
Greenwich Culmination Time: 11:47			Greenwich Culmination Time: 13:42		

UT	Mars				Jupiter				Saturn				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
00	212	15.8	+00.9	S 12 21.4	+00.6	156	15.5	+01.8	S 23 16.8	+00.0	135	41.4	+02.2	S 22 11.8	-00.1
01	227	16.7	+00.9	S 12 22.0	+00.6	171	17.3	+01.9	S 23 16.8	+00.0	150	43.6	+02.2	S 22 11.7	+00.0
02	242	17.6	+00.9	S 12 22.6	+00.6	186	19.2	+01.9	S 23 16.8	+00.1	165	45.8	+02.2	S 22 11.7	+00.0
03	257	18.5	+00.9	S 12 23.2	+00.5	201	21.1	+01.9	S 23 16.9	+00.0	180	48.0	+02.2	S 22 11.7	-00.1
04	272	19.4	+00.8	S 12 23.7	+00.6	216	23.0	+01.8	S 23 16.9	+00.0	195	50.2	+02.2	S 22 11.6	+00.0
05	287	20.2	+00.9	S 12 24.3	+00.6	231	24.8	+01.9	S 23 16.9	+00.0	210	52.4	+02.2	S 22 11.6	+00.0
06	302	21.1	+00.9	S 12 24.9	+00.5	246	26.7	+01.9	S 23 16.9	+00.0	225	54.6	+02.3	S 22 11.6	+00.0
07	317	22.0	+00.9	S 12 25.4	+00.6	261	28.6	+01.8	S 23 16.9	+00.0	240	56.9	+02.2	S 22 11.6	-00.1
08	332	22.9	+00.9	S 12 26.0	+00.6	276	30.4	+01.9	S 23 16.9	+00.0	255	59.1	+02.2	S 22 11.5	+00.0
09	347	23.8	+00.8	S 12 26.6	+00.5	291	32.3	+01.9	S 23 16.9	+00.0	271	01.3	+02.2	S 22 11.5	+00.0
10	2	24.6	+00.9	S 12 27.1	+00.6	306	34.2	+01.8	S 23 16.9	+00.0	286	03.5	+02.2	S 22 11.5	+00.0
11	17	25.5	+00.9	S 12 27.7	+00.6	321	36.0	+01.9	S 23 16.9	+00.0	301	05.7	+02.2	S 22 11.5	-00.1
12	32	26.4	+00.9	S 12 28.3	+00.6	336	37.9	+01.9	S 23 16.9	+00.1	316	07.9	+02.2	S 22 11.4	+00.0
13	47	27.3	+00.8	S 12 28.9	+00.5	351	39.8	+01.9	S 23 17.0	+00.0	331	10.1	+02.2	S 22 11.4	+00.0
14	62	28.1	+00.9	S 12 29.4	+00.6	6	41.7	+01.8	S 23 17.0	+00.0	346	12.3	+02.2	S 22 11.4	-00.1
15	77	29.0	+00.9	S 12 30.0	+00.6	21	43.5	+01.9	S 23 17.0	+00.0	1	14.5	+02.2	S 22 11.3	+00.0
16	92	29.9	+00.9	S 12 30.6	+00.5	36	45.4	+01.9	S 23 17.0	+00.0	16	16.7	+02.2	S 22 11.3	+00.0
17	107	30.8	+00.9	S 12 31.1	+00.6	51	47.3	+01.8	S 23 17.0	+00.0	31	18.9	+02.2	S 22 11.3	+00.0
18	122	31.7	+00.8	S 12 31.7	+00.6	66	49.1	+01.9	S 23 17.0	+00.0	46	21.1	+02.2	S 22 11.3	-00.1
19	137	32.5	+00.9	S 12 32.3	+00.5	81	51.0	+01.9	S 23 17.0	+00.0	61	23.3	+02.2	S 22 11.2	+00.0
20	152	33.4	+00.9	S 12 32.8	+00.6	96	52.9	+01.8	S 23 17.0	+00.0	76	25.5	+02.2	S 22 11.2	+00.0
21	167	34.3	+00.9	S 12 33.4	+00.6	111	54.7	+01.9	S 23 17.0	+00.0	91	27.7	+02.2	S 22 11.2	-00.1
22	182	35.2	+00.8	S 12 34.0	+00.5	126	56.6	+01.9	S 23 17.0	+00.1	106	29.9	+02.2	S 22 11.1	+00.0
23	197	36.0	+00.9	S 12 34.5	+00.6	141	58.5	+01.8	S 23 17.1	+00.0	121	32.1	+02.3	S 22 11.1	+00.0

UT 02 06 10 14 18 22	SD 00°0 00°0 00°0 00°0 00°0 00°0	UT 02 06 10 14 18 22	SD 00°3 00°3 00°3 00°3 00°3 00°3	UT 02 06 10 14 18 22	SD 00°1 00°1 00°1 00°1 00°1 00°1
HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 148° 147° 147° 147° 147° 147°	SHA 092° 092° 092° 091° 091° 091°	SHA 148° 147° 147° 147° 147° 147°	SHA 092° 092° 092° 092° 092° 092°	SHA 071° 071° 071° 071° 071° 071°	SHA 071° 071° 071° 071° 071° 071°
Greenwich Culmination Time: 09:50			Greenwich Culmination Time: 13:33		

UT	Sun				Venus				Moon				UT		
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec			
00	183	27.7	-00.1	S 20 13.7	+00.5	155	47.7	-01.0	S 24 35.0	+00.2	228	44.8	-30.7	N 00 03.6	-14.2
01	198	27.6	-00.2	S 20 14.2	+00.5	170	46.7	-00.9	S 24 35.2	+00.2	243	14.1	-30.8	S 00 10.6	+14.2
02	213	27.4	-00.2	S 20 14.7	+00.5	185	45.8	-00.9	S 24 35.4	+00.1	257	43.3	-30.8	S 00 24.8	+14.2
03	228	27.2	-00.2	S 20 15.2	+00.6	200	44.9	-01.0	S 24 35.5	+00.2	272	12.5	-30.8	S 00 39.0	+14.2
04	243	27.0	-00.1	S 20 15.8	+00.5	215	43.9	-00.9	S 24 35.7	+00.2	286	41.7	-30.7	S 00 53.2	+14.3
05	258	26.9	-00.2	S 20 16.3	+00.5	230	43.0	-01.0	S 24 35.9	+00.1	301	11.0	-30.8	S 01 07.5	+14.2
06	273	26.7	-00.2	S 20 16.8	+00.5	245	42.0	-00.9	S 24 36.0	+00.2	315	40.2	-30.8	S 01 21.7	+14.2
07	288	26.5	-00.1	S 20 17.3	+00.6	260	41.1	-00.9	S 24 36.2	+00.2	330	09.4	-30.9	S 01 35.9	+14.1
08	303	26.4	-00.2	S 20 17.9	+00.5	275	40.2	-01.0	S 24 36.4	+00.1	344	38.5	-30.8	S 01 50.0	+14.2
09	318	26.2	-00.2	S 20 18.4	+00.5	290	39.2	-00.9	S 24 36.5	+00.2	359	07.7	-30.8	S 02 04.2	+14.2
10	333	26.0	-00.2	S 20 18.9	+00.5	305	38.3	-01.0	S 24 36.7	+00.2	13	36.9	-30.9	S 02 18.4	+14.2
11	348	25.8	-00.1	S 20 19.4	+00.6	320	37.3	-00.9	S 24 36.9	+00.1	28	06.0	-30.8	S 02 32.6	+14.1
12	3	25.7	-00.2	S 20 20.0	+00.5	335	36.4	-01.0	S 24 37.0	+00.2	42	35.2	-30.9	S 02 46.7	+14.1
13	18	25.5	-00.2	S 20 20.5	+00.5	350	35.4	-00.9	S 24 37.2	+00.2	57	04.3	-30.9	S 03 00.8	+14.1
14	33	25.3	-00.1	S 20 21.0	+00.5	5	34.5	-00.9	S 24 37.4	+00.1	71	33.4	-30.9	S 03 14.9	+14.1
15	48	25.2	-00.2	S 20 21.5	+00.5	20	33.6	-01.0	S 24 37.5	+00.2	86	02.5	-30.9	S 03 29.0	+14.1
16	63	25.0	-00.2	S 20 22.0	+00.6	35	32.6	-00.9	S 24 37.7	+00.1	100	31.6	-31.0	S 03 43.1	+14.1
17	78	24.8													

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	183	23.6	-00.2	S 20 26.2	+00.5	155	25.1	-01.0	S 24 38.9	+00.2	216	23.5	-31.1	S 05 34.8	+13.9	00
01	198	23.4	-00.2	S 20 26.7	+00.5	170	24.1	-00.9	S 24 39.1	+00.1	230	52.4	-31.2	S 05 48.7	+13.8	01
02	213	23.2	-00.2	S 20 27.2	+00.5	185	23.2	-01.0	S 24 39.2	+00.1	245	21.2	-31.1	S 06 02.5	+13.7	02
03	228	23.0	-00.1	S 20 27.7	+00.5	200	22.2	-00.9	S 24 39.3	+00.2	259	50.1	-31.2	S 06 16.2	+13.7	03
04	243	22.9	-00.2	S 20 28.2	+00.5	215	21.3	-00.9	S 24 39.5	+00.1	274	18.9	-31.2	S 06 29.9	+13.7	04
05	258	22.7	-00.2	S 20 28.7	+00.5	230	20.4	-01.0	S 24 39.6	+00.2	288	47.7	-31.2	S 06 43.6	+13.7	05
06	273	22.5	-00.2	S 20 29.2	+00.6	245	19.4	-00.9	S 24 39.8	+00.1	303	16.5	-31.3	S 06 57.3	+13.6	06
07	288	22.3	-00.2	S 20 29.8	+00.5	260	18.5	-01.0	S 24 39.9	+00.1	317	45.2	-31.3	S 07 10.9	+13.5	07
08	303	22.1	-00.1	S 20 30.3	+00.5	275	17.5	-00.9	S 24 40.0	+00.2	332	13.9	-31.3	S 07 24.4	+13.6	08
09	318	22.0	-00.2	S 20 30.8	+00.5	290	16.6	-01.0	S 24 40.2	+00.1	346	42.6	-31.4	S 07 38.0	+13.4	09
10	333	21.8	-00.2	S 20 31.3	+00.5	305	15.6	-00.9	S 24 40.3	+00.1	1	11.2	-31.3	S 07 51.4	+13.5	10
11	348	21.6	-00.2	S 20 31.8	+00.5	320	14.7	-01.0	S 24 40.4	+00.2	15	39.9	-31.4	S 08 04.9	+13.3	11
12	3	21.4	-00.2	S 20 32.3	+00.5	335	13.7	-00.9	S 24 40.6	+00.1	30	08.5	-31.5	S 08 18.2	+13.4	12
13	18	21.2	-00.1	S 20 32.8	+00.5	350	12.8	-01.0	S 24 40.7	+00.1	44	37.0	-31.4	S 08 31.6	+13.2	13
14	33	21.1	-00.2	S 20 33.3	+00.5	5	11.8	-00.9	S 24 40.8	+00.2	59	05.6	-31.5	S 08 44.8	+13.2	14
15	48	20.9	-00.2	S 20 33.8	+00.5	20	10.9	-00.9	S 24 41.0	+00.1	73	34.1	-31.6	S 08 58.0	+13.2	15
16	63	20.7	-00.2	S 20 34.3	+00.5	35	10.0	-01.0	S 24 41.1	+00.1	88	02.5	-31.5	S 09 11.2	+13.1	16
17	78	20.5	-00.2	S 20 34.8	+00.5	50	09.0	-00.9	S 24 41.2	+00.1	102	31.0	-31.6	S 09 24.3	+13.1	17
18	93	20.3	-00.2	S 20 35.3	+00.5	65	08.1	-01.0	S 24 41.3	+00.2	116	59.4	-31.6	S 09 37.4	+13.0	18
19	108	20.1	-00.1	S 20 35.8	+00.5	80	07.1	-00.9	S 24 41.5	+00.1	131	27.8	-31.7	S 09 50.4	+12.9	19
20	123	20.0	-00.2	S 20 36.3	+00.5	95	06.2	-01.0	S 24 41.6	+00.1	145	56.1	-31.7	S 10 03.3	+12.8	20
21	138	19.8	-00.2	S 20 36.8	+00.5	110	05.2	-00.9	S 24 41.7	+00.1	160	24.4	-31.7	S 10 16.1	+12.9	21
22	153	19.6	-00.2	S 20 37.3	+00.5	125	04.3	-01.0	S 24 41.8	+00.1	174	52.7	-31.8	S 10 29.0	+12.7	22
23	168	19.4	-00.2	S 20 37.8	+00.5	140	03.3	-00.9	S 24 41.9	+00.2	189	20.9	-31.8	S 10 41.7	+12.7	23

UT 02 06 10 14 18 22	SD 16°2' 16°2' 16°2' 16°2' 16°2' 16°2'	UT 02 06 10 14 18 22	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	UT 02 06 10 14 18 22	SD 16°3' 16°3' 16°3' 16°2' 16°2' 16°2'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 59°7' 59°7' 59°7' 59°6' 59°6' 59°6'	HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'	HP 59°7' 59°7' 59°7' 59°6' 59°6' 59°6'	HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
SHA 121° 120° 120° 120° 120° 120°	SHA 093° 092° 092° 092° 092° 092°	SHA 153° 150° 148° 146° 144° 141°	SHA 093° 092° 092° 092° 092° 092°	SHA 153° 150° 148° 146° 144° 141°	SHA 093° 092° 092° 092° 092° 092°
Greenwich Culmination Time: 11:46		Greenwich Culmination Time: 13:39		Greenwich Culmination Time: 09:55	

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	211	33.5	+00.9	S 11 53.9	+00.5	154	45.6	+01.9	S 23 16.3	+00.0	133	55.3	+02.3	S 22 13.1	-00.1	00
01	226	34.4	+00.8	S 11 54.4	+00.6	169	47.5	+01.8	S 23 16.3	+00.0	148	57.6	+02.2	S 22 13.0	+00.0	01
02	241	35.2	+00.9	S 11 55.0	+00.6	184	49.3	+01.9	S 23 16.3	+00.0	163	59.8	+02.2	S 22 13.0	+00.0	02
03	256	36.1	+00.9	S 11 55.6	+00.6	199	51.2	+01.9	S 23 16.3	+00.0	179	02.0	+02.2	S 22 13.0	+00.0	03
04	271	37.0	+00.9	S 11 56.2	+00.5	214	53.1	+01.9	S 23 16.3	+00.0	194	04.2	+02.2	S 22 13.0	-00.1	04
05	286	37.9	+00.9	S 11 56.7	+00.6	229	55.0	+01.8	S 23 16.3	+00.1	209	06.4	+02.2	S 22 12.9	+00.0	05
06	301	38.8	+00.9	S 11 57.3	+00.6	244	56.8	+01.9	S 23 16.4	+00.0	224	08.6	+02.2	S 22 12.9	+00.0	06
07	316	39.7	+00.9	S 11 57.9	+00.6	259	58.7	+01.9	S 23 16.4	+00.0	239	10.8	+02.2	S 22 12.9	-00.1	07
08	331	40.6	+00.8	S 11 58.5	+00.6	275	00.6	+01.9	S 23 16.4	+00.0	254	13.0	+02.2	S 22 12.8	+00.0	08
09	346	41.4	+00.9	S 11 59.1	+00.5	290	02.5	+01.8	S 23 16.4	+00.0	269	15.2	+02.3	S 22 12.8	+00.0	09
10	1	42.3	+00.9	S 11 59.6	+00.6	305	04.3	+01.9	S 23 16.4	+00.0	284	17.5	+02.2	S 22 12.8	+00.0	10
11	16	43.2	+00.9	S 12 00.2	+00.6	320	06.2	+01.9	S 23 16.4	+00.0	299	19.7	+02.2	S 22 12.8	-00.1	11
12	31	44.1	+00.9	S 12 00.8	+00.6	335	08.1	+01.9	S 23 16.4	+00.0	314	21.9	+02.2	S 22 12.7	+00.0	12
13	46	45.0	+00.9	S 12 01.4	+00.5	350	10.0	+01.8	S 23 16.4	+00.0	329	24.1	+02.2	S 22 12.7	+00.0	13
14	61	45.9	+00.8	S 12 01.9	+00.6	5	11.8	+01.9	S 23 16.4	+00.0	344	26.3	+02.2	S 22 12.7	+00.0	14
15	76	46.7	+00.9	S 12 02.5	+00.6	20	13.7	+01.9	S 23 16.5	+00.1	359	28.5	+02.2	S 22 12.7	-00.1	15
16	91	47.6	+00.9	S 12 03.1	+00.6	35	15.6	+01.8	S 23 16.5	+00.0	14	30.7	+02.2	S 22 12.6	+00.0	16
17	106	48.5	+00.9	S 12 03.7	+00.5	50	17.4	+01.9	S 23 16.5	+00.0	29	32.9	+02.2	S 22 12.6	+00.0	17
18	121	49.4	+00.9	S 12 04.2	+00.6	65	19.3	+01.9	S 23 16.5	+00.0	44	35.1	+02.3	S 22 12.6	+00.0	18
19	136	50.3	+00.9	S 12 04.8	+00.6	80	21.2	+01.9	S 23 16.5	+00.0	59	37.4	+02.2	S 22 12.6	-00.1	19
20	151	51.2	+00.9	S 12 05.4	+00.6	95	23.1	+01.8	S 23 16.5	+00.0	74	39.6	+02.2	S 22 12.5	+00.0	20
21	166	52.1	+00.8	S 12 06.0	+00.5	110	24.9	+01.9	S 23 16.5	+00.0	89	41.8	+02.2	S 22 12.5	+00.0	21
22	181	52.9	+00.9	S 12 06.5	+00.6	125	26.8	+01.9	S 23 16.5	+00.1	104	44.0	+02.2	S 22 12.5	-00.1	22
23	196	53.8	+00.9	S 12 07.1	+00.6	140	28.7	+01.9	S 23 16.6	+00.0	119	46.2	+02.2	S 22 12.4	+00.0	23

UT 02 06 10 14 18 22	SD 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'	UT 02 06 10 14 18 22	SD 00°3' 00°3' 00°3' 00°3' 00°3' 00°3'	UT 02 06 10 14 18 22	SD 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'
HP 00°1' 00°1' 00°1' 00°1' 00°1' 00°1'	HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'	HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'	HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'	HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'	HP 00°0' 00°0' 00°0' 00°0' 00°0' 00°0'
SHA 149° 149° 149° 149° 148° 148°	SHA 092° 092° 092° 092° 092° 092°	SHA 071° 071° 071° 071° 071° 071°	SHA 092° 092° 092° 092° 092° 092°	SHA 071° 071° 071° 071° 071° 071°	SHA 092° 092° 092° 092° 092° 092°
Greenwich Culmination Time: 09:53		Greenwich Culmination Time: 13:39		Greenwich Culmination Time: 15:02	

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	183	19.2	-00.2	S 20 38.3	+00.5	155	02.4	-01.0	S 24 42.1	+00.1	203	49.1	-31.8	S 10 54.4	+12.6	00
01	198	19.0	-00.2	S 20 38.8	+00.5	170	01.4	-00.9	S 24 42.2	+00.1	218	17.3	-31.9	S 11 07.0	+12.5	01
02	213	18.8	-00.1	S 20 39.3	+00.5	185	00.5	-01.0	S 24 42.3	+00.1	232	45.4	-31.9	S 11 19.5	+12.5	02
03	228	18.7	-00.2	S 20 39.8	+00.5	200	59.5	-00.9	S 24 42.4	+00.1	247	13.5	-31.9	S 11 32.0	+12.3	03
04	243	18.5	-00.2	S 20 40.3	+00.5	214	58.6	-00.9	S 24 42.5	+00.1	261	41.6	-32.0	S 11 44.3	+12.4	04
05	258	18.3	-00.2	S 20 40.8	+00.5	229	57.7	-01.0	S 24 42.6	+00.1	276	09.6	-32.0	S 11 56.7	+12.2	05
06	273	18.1	-00.2	S 20 41.3	+00.5	244	56.7	-00.9	S 24 42.7	+00.1	290	37.6	-32.1	S 12 08.9	+12.2	06
07	288	17.9	-00.2	S 20 41.8	+00.5	259	55.8	-01.0	S 24 42.8	+00.2	305	05.5	-32.1	S 12 21.1	+12.1	07
08	303	17.7	-00.2	S 20 42.3	+00.5	274	54.8	-00.9	S 24 43.0	+00.1	319	33.4	-32.1	S 12 33.2	+12.0	08
09	318	17.5	-00.1	S 20 42.8	+00.5	289	53.9	-01.0	S 24 43.1	+00.1	334	01.3	-32.2	S 12 45.2	+11.9	09
10	333	17.4	-00.2	S 20 43.3	+00.5	304	52.9	-00.9	S 24 43.2	+00.1	348	29.1	-32.2	S 12 57.1	+11.8	10
11	348	17.2	-00.2	S 20 43.8	+00.4	319	52.0	-01.0	S 24 43.3	+00.1	2	56.9	-32.2	S 13 08.9	+11.8	11
12	3	17.0	-00.2	S 20 44.2	+00.5	334	51.0	-00.9	S 24 43.4	+00.1	17	24.7	-32.3	S 13 20.7	+11.7	12
13	18	16.8	-00.2	S 20 44.7	+00.5	349	50.1	-01.0	S 24 43.5	+00.1	31	52.4	-32.3	S 13 32.4	+11.6	

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	182	54.7	-00.2	S 21 33.2	+00.4	153	08.5	-00.9	S 24 46.6	+00.0	137	30.4	-32.3	S 23 00.2	-01.8	00
01	197	54.5	-00.3	S 21 33.6	+00.4	168	07.6	-01.0	S 24 46.6	-00.1	151	58.1	-32.4	S 22 58.4	-01.9	01
02	212	54.2	-00.2	S 21 34.0	+00.4	183	06.6	-00.9	S 24 46.5	+00.0	166	25.7	-32.2	S 22 56.5	-02.1	02
03	227	54.0	-00.2	S 21 34.4	+00.4	198	05.7	-00.9	S 24 46.5	-00.1	180	53.5	-32.3	S 22 54.4	-02.1	03
04	242	53.8	-00.2	S 21 34.8	+00.4	213	04.8	-01.0	S 24 46.4	+00.0	195	21.2	-32.1	S 22 52.3	-02.3	04
05	257	53.6	-00.3	S 21 35.2	+00.4	228	03.8	-00.9	S 24 46.4	+00.0	209	49.1	-32.1	S 22 50.0	-02.4	05
06	272	53.3	-00.2	S 21 35.6	+00.5	243	02.9	-01.0	S 24 46.4	-00.1	224	17.0	-32.0	S 22 47.6	-02.6	06
07	287	53.1	-00.2	S 21 36.1	+00.4	258	01.9	-00.9	S 24 46.3	+00.0	238	45.0	-32.0	S 22 45.0	-02.6	07
08	302	52.9	-00.2	S 21 36.5	+00.4	273	01.0	-01.0	S 24 46.3	-00.1	253	13.0	-31.9	S 22 42.4	-02.8	08
09	317	52.7	-00.3	S 21 36.9	+00.4	288	00.0	-00.9	S 24 46.2	-00.1	267	41.1	-31.9	S 22 39.6	-02.9	09
10	332	52.4	-00.2	S 21 37.3	+00.4	302	59.1	-01.0	S 24 46.1	+00.0	282	09.2	-31.7	S 22 36.7	-03.0	10
11	347	52.2	-00.2	S 21 37.7	+00.4	317	58.1	-00.9	S 24 46.1	-00.1	296	37.5	-31.8	S 22 33.7	-03.1	11
12	2	52.0	-00.2	S 21 38.1	+00.4	332	57.2	-01.0	S 24 46.0	+00.0	311	05.7	-31.6	S 22 30.6	-03.3	12
13	17	51.8	-00.3	S 21 38.5	+00.4	347	56.2	-00.9	S 24 46.0	-00.1	325	34.1	-31.6	S 22 27.3	-03.3	13
14	32	51.5	-00.2	S 21 38.9	+00.4	2	55.3	-01.0	S 24 45.9	+00.0	340	02.5	-31.5	S 22 24.0	-03.5	14
15	47	51.3	-00.2	S 21 39.3	+00.4	17	54.3	-00.9	S 24 45.9	-00.1	354	31.0	-31.5	S 22 20.5	-03.6	15
16	62	51.1	-00.2	S 21 39.7	+00.4	32	53.4	-01.0	S 24 45.8	-00.1	8	59.5	-31.4	S 22 16.9	-03.7	16
17	77	50.9	-00.3	S 21 40.1	+00.4	47	52.4	-00.9	S 24 45.7	+00.0	23	28.1	-31.3	S 22 13.2	-03.8	17
18	92	50.6	-00.2	S 21 40.5	+00.4	62	51.5	-01.0	S 24 45.7	-00.1	37	56.8	-31.2	S 22 09.4	-03.9	18
19	107	50.4	-00.2	S 21 40.9	+00.4	77	50.5	-00.9	S 24 45.6	-00.1	52	25.6	-31.2	S 22 05.5	-04.1	19
20	122	50.2	-00.3	S 21 41.3	+00.4	92	49.6	-00.9	S 24 45.5	+00.0	66	54.4	-31.1	S 22 01.4	-04.1	20
21	137	49.9	-00.2	S 21 41.7	+00.4	107	48.7	-01.0	S 24 45.5	-00.1	81	23.3	-31.1	S 21 57.3	-04.3	21
22	152	49.7	-00.2	S 21 42.1	+00.4	122	47.7	-00.9	S 24 45.4	-00.1	95	52.2	-31.0	S 21 53.0	-04.3	22
23	167	49.5	-00.2	S 21 42.5	+00.4	137	46.8	-01.0	S 24 45.3	+00.0	110	21.2	-30.9	S 21 48.7	-04.5	23

UT 02 06 10 14 18 22 SD 16°2 16°2 16°2 16°2 16°2 16°2 HP 00°1 00°1 00°1 00°1 00°1 00°1 SHA 114° 114° 114° 114° 114° 113° Greenwich Culmination Time: 11:48	UT 02 06 10 14 18 22 SD 00°1 00°1 00°1 00°1 00°1 00°1 HP 00°1 00°1 00°1 00°1 00°1 00°1 SHA 084° 084° 084° 084° 084° 083° Greenwich Culmination Time: 13:48	UT 02 06 10 14 18 22 SD 15°3 15°3 15°3 15°2 15°2 15°2 HP 56°3 56°2 56°1 55°9 55°8 55°7 SHA 068° 065° 063° 061° 059° 056° Greenwich Culmination Time: 15:22
--	--	--

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	213	39.6	+00.8	S 13 15.6	+00.6	159	14.7	+01.8	S 23 17.7	+00.0	139	12.8	+02.2	S 22 09.0	+00.0	00
01	228	40.4	+00.9	S 13 16.2	+00.5	174	16.5	+01.9	S 23 17.7	+00.0	154	15.0	+02.2	S 22 09.0	+00.0	01
02	243	41.3	+00.9	S 13 16.7	+00.6	189	18.4	+01.8	S 23 17.7	+00.0	169	17.2	+02.2	S 22 09.0	-00.1	02
03	258	42.2	+00.8	S 13 17.3	+00.5	204	20.2	+01.9	S 23 17.7	+00.0	184	19.4	+02.2	S 22 08.9	+00.0	03
04	273	43.0	+00.9	S 13 17.8	+00.6	219	22.1	+01.9	S 23 17.7	+00.0	199	21.6	+02.2	S 22 08.9	+00.0	04
05	288	43.9	+00.9	S 13 18.4	+00.5	234	24.0	+01.8	S 23 17.7	+00.0	214	23.8	+02.2	S 22 08.9	-00.1	05
06	303	44.8	+00.8	S 13 18.9	+00.6	249	25.8	+01.9	S 23 17.7	+00.0	229	26.0	+02.2	S 22 08.8	+00.0	06
07	318	45.6	+00.9	S 13 19.5	+00.6	264	27.7	+01.9	S 23 17.7	+00.0	244	28.2	+02.2	S 22 08.8	+00.0	07
08	333	46.5	+00.8	S 13 20.1	+00.5	279	29.6	+01.8	S 23 17.7	+00.0	259	30.4	+02.2	S 22 08.8	-00.1	08
09	348	47.3	+00.9	S 13 20.6	+00.6	294	31.4	+01.9	S 23 17.7	+00.0	274	32.6	+02.2	S 22 08.7	+00.0	09
10	3	48.2	+00.9	S 13 21.2	+00.5	309	33.3	+01.8	S 23 17.7	+00.0	289	34.8	+02.2	S 22 08.7	+00.0	10
11	18	49.1	+00.8	S 13 21.7	+00.6	324	35.1	+01.9	S 23 17.7	+00.0	304	37.0	+02.2	S 22 08.7	+00.0	11
12	33	49.9	+00.9	S 13 22.3	+00.5	339	37.0	+01.9	S 23 17.7	+00.0	319	39.2	+02.2	S 22 08.7	-00.1	12
13	48	50.8	+00.9	S 13 22.8	+00.6	354	38.9	+01.8	S 23 17.7	+00.0	334	41.4	+02.2	S 22 08.6	+00.0	13
14	63	51.7	+00.8	S 13 23.4	+00.5	9	40.7	+01.9	S 23 17.7	+00.1	349	43.6	+02.2	S 22 08.6	+00.0	14
15	78	52.5	+00.9	S 13 23.9	+00.6	24	42.6	+01.8	S 23 17.8	+00.0	4	45.8	+02.2	S 22 08.6	-00.1	15
16	93	53.4	+00.8	S 13 24.5	+00.6	39	44.4	+01.9	S 23 17.8	+00.0	19	48.0	+02.2	S 22 08.5	+00.0	16
17	108	54.2	+00.9	S 13 25.1	+00.5	54	46.3	+01.9	S 23 17.8	+00.0	34	50.2	+02.2	S 22 08.5	+00.0	17
18	123	55.1	+00.9	S 13 25.6	+00.6	69	48.2	+01.8	S 23 17.8	+00.0	49	52.4	+02.2	S 22 08.5	+00.0	18
19	138	56.0	+00.8	S 13 26.2	+00.5	84	50.0	+01.9	S 23 17.8	+00.0	64	54.6	+02.2	S 22 08.5	-00.1	19
20	153	56.8	+00.9	S 13 26.7	+00.6	99	51.9	+01.9	S 23 17.8	+00.0	79	56.8	+02.2	S 22 08.4	+00.0	20
21	168	57.7	+00.9	S 13 27.3	+00.5	114	53.8	+01.8	S 23 17.8	+00.0	94	59.0	+02.2	S 22 08.4	+00.0	21
22	183	58.6	+00.8	S 13 27.8	+00.6	129	55.6	+01.9	S 23 17.8	+00.0	110	01.2	+02.2	S 22 08.4	-00.1	22
23	198	59.4	+00.9	S 13 28.4	+00.5	144	57.5	+01.8	S 23 17.8	+00.0	125	03.4	+02.2	S 22 08.3	+00.0	23

UT 02 06 10 14 18 22 SD 00°0 00°0 00°0 00°0 00°0 00°0 HP 00°1 00°1 00°1 00°1 00°1 00°1 SHA 145° 145° 145° 145° 145° 144° Greenwich Culmination Time: 09:44	UT 02 06 10 14 18 22 SD 00°3 00°3 00°3 00°3 00°3 00°3 HP 00°0 00°0 00°0 00°0 00°0 00°0 SHA 091° 091° 091° 091° 090° 090° Greenwich Culmination Time: 13:21	UT 02 06 10 14 18 22 SD 00°1 00°1 00°1 00°1 00°1 00°1 HP 00°0 00°0 00°0 00°0 00°0 00°0 SHA 071° 071° 071° 071° 071° 071° Greenwich Culmination Time: 14:40
--	--	--

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	183	09.9	-00.2	S 21 01.4	+00.5	154	16.9	-01.0	S 24 46.1	+00.1	177	39.8	-33.5	S 19 18.2	+07.8	00
01	198	09.7	-00.2	S 21 01.9	+00.5	169	15.9	-00.9	S 24 46.2	+00.0	192	06.3	-33.6	S 19 26.0	+07.8	01
02	213	09.5	-00.2	S 21 02.4	+00.4	184	15.0	-01.0	S 24 46.2	+00.0	206	32.7	-33.5	S 19 33.8	+07.5	02
03	228	09.3	-00.2	S 21 02.8	+00.5	199	14.0	-00.9	S 24 46.3	+00.1	220	59.2	-33.6	S 19 41.3	+07.5	03
04	243	09.1	-00.2	S 21 03.3	+00.5	214	13.1	-01.0	S 24 46.3	+00.1	235	25.6	-33.6	S 19 48.8	+07.3	04
05	258	08.9	-00.2	S 21 03.8	+00.4	229	12.1	-00.9	S 24 46.4	+00.0	249	52.0	-33.6	S 19 56.1	+07.2	05
06	273	08.7	-00.2	S 21 04.2	+00.5	244	11.2	-01.0	S 24 46.4	+00.1	264	18.4	-33.6	S 20 03.3	+07.1	06
07	288	08.5	-00.2	S 21 04.7	+00.4	259	10.2	-00.9	S 24 46.5	+00.0	278	44.8	-33.7	S 20 10.4	+07.0	07
08	303	08.3	-00.2	S 21 05.1	+00.5	274	09.3	-01.0	S 24 46.5	+00.1	293	11.1	-33.6	S 20 17.4	+06.8	08
09	318	08.1	-00.2	S 21 05.6	+00.5	289	08.3	-00.9	S 24 46.6	+00.0	307	37.5	-33.7	S 20 24.2	+06.7	09
10	333	07.9	-00.2	S 21 06.1	+00.4	304	07.4	-01.0	S 24 46.6	+00.1	322	03.8	-33.7	S 20 30.9	+06.5	10
11	348	07.7	-00.2	S 21 06.5	+00.5	319	06.4	-00.9	S 24 46.7	+00.0	336	30.1	-33.8	S 20 37.4	+06.5	11
12	3	07.5	-00.2	S 21 07.0	+00.4	334	05.5	-01.0	S 24 46.7	+00.0	350	56.3	-33.7	S 20 43.9	+06.3	12
13	18	07.3	-00.2	S 21 07.4	+00.5	349	04.5	-00.9	S 24 46.7	+00.1	5	22.6	-33.7	S 20 50.2	+06.1	13
14	33	07.1	-00.2	S 21 07.9	+00.4	4	03.6	-01.0	S 24 46.8	+00.0	19	48.9	-33.8	S 20 56.3	+06.0	14
15	48	06.9	-00.2	S 21 08.3	+00.5	19	02.6	-00.9	S 24 46.8	+00.0	34	15.1	-33.8	S 21 02.3	+05.9	15
16	63	06.7	-00.2	S 21 08.8	+00.5	34	01.7	-01.0	S 24 46.8	+00.1	48	41.3	-33.7	S 21 08.2	+05.8	16
17	78	06.5	-00.2	S 21 09.3	+00.4	49	00.7	-00.9	S 24 46.9	+00.0	63	07.6	-33.8			

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 02, 06, 10, 14, 18, 22. Includes SD, HP, SHA, and Greenwich Culmination Time for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 02, 06, 10, 14, 18, 22. Includes SD, HP, SHA, and Greenwich Culmination Time for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 02, 06, 10, 14, 18, 22. Includes SD, HP, SHA, and Greenwich Culmination Time for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 02, 06, 10, 14, 18, 22. Includes SD, HP, SHA, and Greenwich Culmination Time for each planet.

UT	<i>Sun</i>				<i>Venus</i>				<i>Moon</i> A: 26%				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	182	32.0	-00.2	S 22 09.7	+00.3	151	38.1	-01.0	S 24 36.7	-00.2	90	47.4	-26.2	S 12 37.2	-10.0	00
01	197	31.8	-00.3	S 22 10.0	+00.4	166	37.1	-00.9	S 24 36.5	-00.1	105	21.2	-26.1	S 12 27.2	-10.1	01
02	212	31.5	-00.2	S 22 10.4	+00.3	181	36.2	-00.9	S 24 36.4	-00.2	119	55.1	-26.1	S 12 17.1	-10.0	02
03	227	31.3	-00.3	S 22 10.7	+00.4	196	35.3	-01.0	S 24 36.2	-00.2	134	29.0	-26.0	S 12 07.1	-10.2	03
04	242	31.0	-00.2	S 22 11.1	+00.3	211	34.3	-00.9	S 24 36.0	-00.1	149	03.0	-26.0	S 11 56.9	-10.1	04
05	257	30.8	-00.3	S 22 11.4	+00.4	226	33.4	-01.0	S 24 35.9	-00.2	163	37.0	-25.9	S 11 46.8	-10.3	05
06	272	30.5	-00.2	S 22 11.8	+00.3	241	32.4	-00.9	S 24 35.7	-00.2	178	11.1	-25.9	S 11 36.5	-10.2	06
07	287	30.3	-00.3	S 22 12.1	+00.3	256	31.5	-00.9	S 24 35.5	-00.2	192	45.2	-25.9	S 11 26.3	-10.3	07
08	302	30.0	-00.2	S 22 12.4	+00.4	271	30.6	-01.0	S 24 35.3	-00.1	207	19.3	-25.8	S 11 16.0	-10.4	08
09	317	29.8	-00.3	S 22 12.8	+00.3	286	29.6	-00.9	S 24 35.2	-00.2	221	53.5	-25.8	S 11 05.6	-10.4	09
10	332	29.5	-00.2	S 22 13.1	+00.3	301	28.7	-00.9	S 24 35.0	-00.2	236	27.7	-25.7	S 10 55.2	-10.4	10
11	347	29.3	-00.3	S 22 13.4	+00.4	316	27.8	-01.0	S 24 34.8	-00.2	251	02.0	-25.7	S 10 44.8	-10.4	11
12	2	29.0	-00.2	S 22 13.8	+00.3	331	26.8	-00.9	S 24 34.6	-00.1	265	36.3	-25.7	S 10 34.4	-10.6	12
13	17	28.8	-00.3	S 22 14.1	+00.4	346	25.9	-00.9	S 24 34.5	-00.2	280	10.6	-25.6	S 10 23.8	-10.5	13
14	32	28.5	-00.2	S 22 14.5	+00.3	1	25.0	-01.0	S 24 34.3	-00.2	294	45.0	-25.6	S 10 13.3	-10.6	14
15	47	28.3	-00.3	S 22 14.8	+00.3	16	24.0	-00.9	S 24 34.1	-00.2	309	19.4	-25.5	S 10 02.7	-10.6	15
16	62	28.0	-00.2	S 22 15.1	+00.4	31	23.1	-00.9	S 24 33.9	-00.2	323	53.9	-25.6	S 09 52.1	-10.7	16
17	77	27.8	-00.3	S 22 15.5	+00.3	46	22.2	-00.9	S 24 33.7	-00.2	338	28.3	-25.4	S 09 41.4	-10.7	17
18	92	27.5	-00.2	S 22 15.8	+00.3	61	21.3	-01.0	S 24 33.5	-00.2	353	02.9	-25.5	S 09 30.7	-10.7	18
19	107	27.3	-00.3	S 22 16.1	+00.4	76	20.3	-00.9	S 24 33.3	-00.2	7	37.4	-25.4	S 09 20.0	-10.8	19
20	122	27.0	-00.2	S 22 16.5	+00.3	91	19.4	-00.9	S 24 33.1	-00.1	22	12.0	-25.4	S 09 09.2	-10.8	20
21	137	26.8	-00.3	S 22 16.8	+00.3	106	18.5	-01.0	S 24 33.0	-00.2	36	46.6	-25.4	S 08 58.4	-10.8	21
22	152	26.5	-00.3	S 22 17.1	+00.3	121	17.5	-00.9	S 24 32.8	-00.2	51	21.2	-25.3	S 08 47.6	-10.9	22
23	167	26.2	-00.2	S 22 17.4	+00.4	136	16.6	-00.9	S 24 32.6	-00.2	65	55.9	-25.4	S 08 36.7	-10.9	23

UT 02 06 10 14 18 22	SD 16°2 16°2 16°2 16°2 16°2 16°2	UT 02 06 10 14 18 22	SD 00°1 00°1 00°1 00°1 00°1 00°1	UT 02 06 10 14 18 22	SD 14°8 14°8 14°8 14°8 14°8 14°8
HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 54°3 54°3 54°2 54°2 54°2 54°2
SHA 110° 110° 110° 109° 109° 109°	SHA 110° 110° 110° 109° 109° 109°	SHA 079° 079° 079° 078° 078° 078°	SHA 079° 079° 079° 078° 078° 078°	SHA 017° 015° 014° 012° 010° 008°	SHA 017° 015° 014° 012° 010° 008°
Greenwich Culmination Time: 11:50		Greenwich Culmination Time: 13:54		Greenwich Culmination Time: 18:28	

UT	<i>Mars</i>				<i>Jupiter</i>				<i>Saturn</i>				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	215	01.9	+00.8	S 14 08.3	+00.6	162	13.1	+01.9	S 23 18.1	+00.0	142	43.4	+02.2	S 22 06.1	+00.0	00
01	230	02.7	+00.9	S 14 08.9	+00.5	177	15.0	+01.9	S 23 18.1	+00.0	157	45.6	+02.2	S 22 06.1	-00.1	01
02	245	03.6	+00.8	S 14 09.4	+00.5	192	16.9	+01.8	S 23 18.1	+00.0	172	47.8	+02.2	S 22 06.0	+00.0	02
03	260	04.4	+00.9	S 14 09.9	+00.6	207	18.7	+01.9	S 23 18.1	+00.0	187	50.0	+02.2	S 22 06.0	+00.0	03
04	275	05.3	+00.8	S 14 10.5	+00.5	222	20.6	+01.8	S 23 18.1	+00.0	202	52.2	+02.2	S 22 06.0	-00.1	04
05	290	06.1	+00.9	S 14 11.0	+00.6	237	22.4	+01.9	S 23 18.1	+00.1	217	54.4	+02.2	S 22 05.9	+00.0	05
06	305	07.0	+00.8	S 14 11.6	+00.5	252	24.3	+01.8	S 23 18.2	+00.0	232	56.6	+02.2	S 22 05.9	+00.0	06
07	320	07.8	+00.9	S 14 12.1	+00.5	267	26.1	+01.9	S 23 18.2	+00.0	247	58.8	+02.1	S 22 05.9	-00.1	07
08	335	08.7	+00.8	S 14 12.6	+00.6	282	28.0	+01.8	S 23 18.2	+00.0	263	00.9	+02.2	S 22 05.8	+00.0	08
09	350	09.5	+00.9	S 14 13.2	+00.5	297	29.8	+01.9	S 23 18.2	+00.0	278	03.1	+02.2	S 22 05.8	+00.0	09
10	5	10.4	+00.8	S 14 13.7	+00.6	312	31.7	+01.9	S 23 18.2	+00.0	293	05.3	+02.2	S 22 05.8	+00.0	10
11	20	11.2	+00.8	S 14 14.3	+00.5	327	33.6	+01.8	S 23 18.2	+00.0	308	07.5	+02.2	S 22 05.8	-00.1	11
12	35	12.0	+00.9	S 14 14.8	+00.5	342	35.4	+01.9	S 23 18.2	+00.0	323	09.7	+02.2	S 22 05.7	+00.0	12
13	50	12.9	+00.8	S 14 15.3	+00.6	357	37.3	+01.8	S 23 18.2	+00.0	338	11.9	+02.2	S 22 05.7	+00.0	13
14	65	13.7	+00.9	S 14 15.9	+00.5	12	39.1	+01.9	S 23 18.2	+00.0	353	14.1	+02.2	S 22 05.7	-00.1	14
15	80	14.6	+00.8	S 14 16.4	+00.6	27	41.0	+01.8	S 23 18.2	+00.0	8	16.3	+02.2	S 22 05.6	+00.0	15
16	95	15.4	+00.9	S 14 17.0	+00.5	42	42.8	+01.9	S 23 18.2	+00.0	23	18.5	+02.1	S 22 05.6	+00.0	16
17	110	16.3	+00.8	S 14 17.5	+00.5	57	44.7	+01.8	S 23 18.2	+00.0	38	20.6	+02.2	S 22 05.6	-00.1	17
18	125	17.1	+00.9	S 14 18.0	+00.6	72	46.5	+01.9	S 23 18.2	+00.0	53	22.8	+02.2	S 22 05.5	+00.0	18
19	140	18.0	+00.8	S 14 18.6	+00.5	87	48.4	+01.8	S 23 18.2	+00.0	68	25.0	+02.2	S 22 05.5	+00.0	19
20	155	18.8	+00.9	S 14 19.1	+00.5	102	50.2	+01.9	S 23 18.2	+00.0	83	27.2	+02.2	S 22 05.5	-00.1	20
21	170	19.7	+00.8	S 14 19.6	+00.6	117	52.1	+01.9	S 23 18.2	+00.0	98	29.4	+02.2	S 22 05.4	+00.0	21
22	185	20.5	+00.9	S 14 20.2	+00.5	132	54.0	+01.8	S 23 18.2	+00.0	113	31.6	+02.2	S 22 05.4	+00.0	22
23	200	21.4	+00.8	S 14 20.7	+00.6	147	55.8	+01.9	S 23 18.2	+00.0	128	33.8	+02.2	S 22 05.4	-00.1	23

UT 02 06 10 14 18 22	SD 00°0 00°0 00°0 00°0 00°0 00°0	UT 02 06 10 14 18 22	SD 00°3 00°3 00°3 00°3 00°3 00°3	UT 02 06 10 14 18 22	SD 00°1 00°1 00°1 00°1 00°1 00°1
HP 00°1 00°1 00°1 00°1 00°1 00°1	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 00°0 00°0 00°0 00°0 00°0 00°0	HP 07°0 07°0 07°0 07°0 07°0 07°0
SHA 142° 142° 142° 142° 142° 142°	SHA 142° 142° 142° 142° 142° 142°	SHA 090° 090° 090° 090° 090° 089°	SHA 090° 090° 090° 090° 090° 089°	SHA 070° 070° 070° 070° 070° 070°	SHA 070° 070° 070° 070° 070° 070°
Greenwich Culmination Time: 09:39		Greenwich Culmination Time: 13:09		Greenwich Culmination Time: 14:26	

UT	<i>Sun</i>				<i>Venus</i>				<i>Moon</i> A: 17%				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	182	49.3	-00.3	S 21 42.9	+00.4	152	45.8	-00.9	S 24 45.3	-00.1	124	50.3	-30.8	S 21 44.2	-04.6	00
01	197	49.0	-00.2	S 21 43.3	+00.4	167	44.9	-01.0	S 24 45.2	-00.1	139	19.5	-30.8	S 21 39.6	-04.6	01
02	212	48.8	-00.2	S 21 43.7	+00.4	182	43.9	-00.9	S 24 45.1	-00.1	153	48.7	-30.7	S 21 35.0	-04.8	02
03	227	48.6	-00.3	S 21 44.1	+00.4	197	43.0	-01.0	S 24 45.0	+00.0	168	18.0	-30.6	S 21 30.2	-04.9	03
04	242	48.3	-00.2	S 21 44.5	+00.4	212	42.0	-00.9	S 24 45.0	-00.1	182	47.4	-30.5	S 21 25.3	-05.0	04
05	257	48.1	-00.2	S 21 44.9	+00.4	227	41.1	-01.0	S 24 44.9	-00.1	197	16.9	-30.5	S 21 20.3	-05.1	05
06	272	47.9	-00.3	S 21 45.3	+00.4	242	40.1	-00.9	S 24 44.8	-00.1	211	46.4	-30.4	S 21 15.2	-05.2	06
07	287	47.6	-00.2	S 21 45.7	+00.4	257	39.2	-00.9	S 24 44.7	+00.0	226	16.0	-30.4	S 21 10.0	-05.3	07
08	302	47.4	-00.2	S 21 46.1	+00.4	272	38.3	-01.0	S 24 44.7	-00.1	240	45.6	-30.2	S 21 04.7	-05.4	08
09	317	47.2	-00.3	S 21 46.5	+00.4	287	37.3	-00.9	S 24 44.6	-00.1	255	15.4	-30.2	S 20 59.3	-05.4	09
10	332	46.9	-00.2	S 21 46.9	+00.4	302	36.4	-01.0	S 24 44.5	-00.1	269	45.2	-30.1	S 20 53.9	-05.6	10
11	347	46.7	-00.2	S 21 47.3	+00.4	317	35.4	-00.9	S 24 44.4	-00.1	284	15.1	-30.1	S 20 48.3	-05.7	11
12	2	46.5	-00.3	S 21 47.7	+00.3	332	34.5	-01.0	S 24 44.3	-00.1	298	45.0	-30.0	S 20 42.6	-05.8	12
13	17	46.2	-00.2	S 21 48.0	+00.4	347	33.5	-00.9	S 24 44.2	-00.1	313	15.0	-29.8	S 20 36.8	-05.9	13
14	32	46.0	-00.2</													

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	182	43.7	-00.3	S 21 52.3	+00.4	152	23.2	-01.0	S 24 43.2	-00.1	112	50.2	-29.1	S 19 27.2	-06.9	00				
01	197	43.4	-00.2	S 21 52.7	+00.3	167	22.2	-00.9	S 24 43.1	-00.1	127	21.1	-29.1	S 19 20.3	-06.9	01				
02	212	43.2	-00.2	S 21 53.0	+00.4	182	21.3	-01.0	S 24 43.0	-00.1	141	52.0	-28.9	S 19 13.4	-07.1	02				
03	227	43.0	-00.3	S 21 53.4	+00.4	197	20.3	-00.9	S 24 42.9	-00.1	156	23.1	-28.9	S 19 06.3	-07.1	03				
04	242	42.7	-00.2	S 21 53.8	+00.4	212	19.4	-01.0	S 24 42.7	-00.1	170	54.2	-28.8	S 18 59.2	-07.2	04				
05	257	42.5	-00.3	S 21 54.2	+00.3	227	18.4	-00.9	S 24 42.6	-00.1	185	25.4	-28.8	S 18 52.0	-07.2	05				
06	272	42.2	-00.2	S 21 54.5	+00.4	242	17.5	-00.9	S 24 42.5	-00.1	199	56.6	-28.7	S 18 44.8	-07.4	06				
07	287	42.0	-00.2	S 21 54.9	+00.4	257	16.6	-01.0	S 24 42.4	-00.1	214	27.9	-28.6	S 18 37.4	-07.4	07				
08	302	41.8	-00.3	S 21 55.3	+00.4	272	15.6	-00.9	S 24 42.3	-00.1	228	59.3	-28.5	S 18 30.0	-07.5	08				
09	317	41.5	-00.2	S 21 55.7	+00.3	287	14.7	-01.0	S 24 42.2	-00.1	243	30.8	-28.5	S 18 22.5	-07.6	09				
10	332	41.3	-00.3	S 21 56.0	+00.4	302	13.7	-00.9	S 24 42.1	-00.1	258	02.3	-28.4	S 18 14.9	-07.7	10				
11	347	41.0	-00.2	S 21 56.4	+00.4	317	12.8	-01.0	S 24 42.0	-00.2	272	33.9	-28.3	S 18 07.2	-07.7	11				
12	2	40.8	-00.2	S 21 56.8	+00.4	332	11.8	-00.9	S 24 41.8	-00.1	287	05.6	-28.2	S 17 59.5	-07.8	12				
13	17	40.6	-00.3	S 21 57.2	+00.3	347	10.9	-00.9	S 24 41.7	-00.1	301	37.4	-28.2	S 17 51.7	-07.9	13				
14	32	40.3	-00.2	S 21 57.5	+00.4	2	10.0	-01.0	S 24 41.6	-00.1	316	09.2	-28.2	S 17 43.8	-08.0	14				
15	47	40.1	-00.3	S 21 57.9	+00.4	17	09.0	-00.9	S 24 41.5	-00.1	330	41.0	-28.0	S 17 35.8	-08.0	15				
16	62	39.8	-00.2	S 21 58.3	+00.3	32	08.1	-01.0	S 24 41.4	-00.2	345	13.0	-28.0	S 17 27.8	-08.1	16				
17	77	39.6	-00.2	S 21 58.6	+00.4	47	07.1	-00.9	S 24 41.2	-00.1	359	45.0	-27.9	S 17 19.7	-08.2	17				
18	92	39.4	-00.3	S 21 59.0	+00.4	62	06.2	-00.9	S 24 41.1	-00.1	14	17.1	-27.9	S 17 11.5	-08.3	18				
19	107	39.1	-00.2	S 21 59.4	+00.3	77	05.3	-01.0	S 24 41.0	-00.2	28	49.2	-27.8	S 17 03.2	-08.3	19				
20	122	38.9	-00.3	S 21 59.7	+00.4	92	04.3	-00.9	S 24 40.8	-00.1	43	21.4	-27.7	S 16 54.9	-08.4	20				
21	137	38.6	-00.2	S 22 00.1	+00.4	107	03.4	-01.0	S 24 40.7	-00.1	57	53.7	-27.7	S 16 46.5	-08.4	21				
22	152	38.4	-00.2	S 22 00.5	+00.3	122	02.4	-00.9	S 24 40.6	-00.1	72	26.0	-27.6	S 16 38.1	-08.5	22				
23	167	38.2	-00.3	S 22 00.8	+00.4	137	01.5	-00.9	S 24 40.5	-00.2	86	58.4	-27.5	S 16 29.6	-08.6	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°2	16°2	16°2	16°2	16°2	16°2	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	15°0	15°0	14°9	14°9	14°9	14°9
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	55°0	54°9	54°9	54°8	54°7	54°6
SHA	112°	112°	112°	112°	112°	111°	SHA	082°	081°	081°	081°	081°	081°	SHA	041°	039°	037°	035°	033°	031°
Greenwich Culmination Time: 11:49				Greenwich Culmination Time: 13:51				Greenwich Culmination Time: 17:01												

UT	Mars				Jupiter				Saturn				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	214	20.9	+00.9	S 13 42.2	+00.5	160	44.0	+01.8	S 23 17.9	+00.0	140	58.2	+02.2	S 22 07.6	-00.1	00				
01	229	21.8	+00.8	S 13 42.7	+00.6	175	45.8	+01.9	S 23 17.9	+00.1	156	00.4	+02.2	S 22 07.5	+00.0	01				
02	244	22.6	+00.9	S 13 43.3	+00.5	190	47.7	+01.9	S 23 18.0	+00.0	171	02.6	+02.2	S 22 07.5	+00.0	02				
03	259	23.5	+00.8	S 13 43.8	+00.5	205	49.6	+01.8	S 23 18.0	+00.0	186	04.8	+02.2	S 22 07.5	+00.0	03				
04	274	24.3	+00.9	S 13 44.3	+00.6	220	51.4	+01.9	S 23 18.0	+00.0	201	07.0	+02.2	S 22 07.5	-00.1	04				
05	289	25.2	+00.8	S 13 44.9	+00.5	235	53.3	+01.8	S 23 18.0	+00.0	216	09.2	+02.2	S 22 07.4	+00.0	05				
06	304	26.0	+00.9	S 13 45.4	+00.6	250	55.1	+01.9	S 23 18.0	+00.0	231	11.4	+02.2	S 22 07.4	+00.0	06				
07	319	26.9	+00.9	S 13 46.0	+00.5	265	57.0	+01.8	S 23 18.0	+00.0	246	13.6	+02.2	S 22 07.4	-00.1	07				
08	334	27.8	+00.8	S 13 46.5	+00.6	280	58.8	+01.9	S 23 18.0	+00.0	261	15.8	+02.2	S 22 07.3	+00.0	08				
09	349	28.6	+00.9	S 13 47.1	+00.5	296	00.7	+01.9	S 23 18.0	+00.0	276	18.0	+02.2	S 22 07.3	+00.0	09				
10	4	29.5	+00.8	S 13 47.6	+00.6	311	02.6	+01.8	S 23 18.0	+00.0	291	20.2	+02.2	S 22 07.3	-00.1	10				
11	19	30.3	+00.9	S 13 48.2	+00.5	326	04.4	+01.9	S 23 18.0	+00.0	306	22.4	+02.2	S 22 07.2	+00.0	11				
12	34	31.2	+00.8	S 13 48.7	+00.6	341	06.3	+01.8	S 23 18.0	+00.0	321	24.6	+02.2	S 22 07.2	+00.0	12				
13	49	32.0	+00.9	S 13 49.3	+00.5	356	08.1	+01.9	S 23 18.0	+00.0	336	26.8	+02.1	S 22 07.2	+00.0	13				
14	64	32.9	+00.8	S 13 49.8	+00.6	11	10.0	+01.9	S 23 18.0	+00.0	351	28.9	+02.2	S 22 07.2	-00.1	14				
15	79	33.7	+00.9	S 13 50.4	+00.5	26	11.9	+01.8	S 23 18.0	+00.0	6	31.1	+02.2	S 22 07.1	+00.0	15				
16	94	34.6	+00.9	S 13 50.9	+00.6	41	13.7	+01.9	S 23 18.0	+00.0	21	33.3	+02.2	S 22 07.1	+00.0	16				
17	109	35.5	+00.8	S 13 51.5	+00.5	56	15.6	+01.8	S 23 18.0	+00.0	36	35.5	+02.2	S 22 07.1	-00.1	17				
18	124	36.3	+00.9	S 13 52.0	+00.6	71	17.4	+01.9	S 23 18.0	+00.0	51	37.7	+02.2	S 22 07.0	+00.0	18				
19	139	37.2	+00.8	S 13 52.6	+00.5	86	19.3	+01.8	S 23 18.0	+00.0	66	39.9	+02.2	S 22 07.0	+00.0	19				
20	154	38.0	+00.9	S 13 53.1	+00.6	101	21.1	+01.9	S 23 18.0	+00.0	81	42.1	+02.2	S 22 07.0	-00.1	20				
21	169	38.9	+00.8	S 13 53.7	+00.5	116	23.0	+01.9	S 23 18.0	+00.0	96	44.3	+02.2	S 22 06.9	+00.0	21				
22	184	39.7	+00.9	S 13 54.2	+00.5	131	24.9	+01.8	S 23 18.0	+00.0	111	46.5	+02.2	S 22 06.9	+00.0	22				
23	199	40.6	+00.8	S 13 54.7	+00.6	146	26.7	+01.9	S 23 18.0	+00.0	126	48.7	+02.2	S 22 06.9	-00.1	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	00°0	00°0	00°0	00°0	00°0	00°0	SD	00°3	00°3	00°3	00°3	00°3	00°3	SD	00°1	00°1	00°1	00°1	00°1	00°1
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°0	00°0	00°0	00°0	00°0	00°0	HP	00°0	00°0	00°0	00°0	00°0	00°0
SHA	144°	144°	144°	143°	143°	143°	SHA	090°	090°	090°	090°	090°	090°	SHA	070°	070°	070°	070°	070°	070°
Greenwich Culmination Time: 09:42				Greenwich Culmination Time: 13:15				Greenwich Culmination Time: 14:33												

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	182	37.9	-00.2	S 22 01.2	+00.4	152	00.6	-01.0	S 24 40.3	-00.1	101	30.9	-27.5	S 16 21.0	-08.7	00
01	197	37.7	-00.3	S 22 01.6	+00.3	166	59.6	-00.9	S 24 40.2	-00.2	116	03.4	-27.4	S 16 12.3	-08.7	01
02	212	37.4	-00.2	S 22 01.9	+00.4	181	58.7	-01.0	S 24 40.0	-00.1	130	36.0	-27.4	S 16 03.6	-08.7	02
03	227	37.2	-00.3	S 22 02.3	+00.3	196	57.7	-00.9	S 24 39.9	-00.1	145	08.6	-27.2	S 15 54.9	-08.9	03
04	242	36.9	-00.2	S 22 02.6	+00.4	211	56.8	-00.9	S 24 39.8	-00.2	159	41.4	-27.3	S 15 46.0	-08.9	04
05	257	36.7	-00.2	S 22 03.0	+00.4	226	55.9	-01.0	S 24 39.6	-00.1	174	14.1	-27.1	S 15 37.1	-09.0	05
06	272	36.5	-00.3	S 22 03.4	+00.3	241	54.9	-00.9	S 24 39.5	-00.2	188	47.0	-27.1	S 15 28.1	-09.0	06
07	287	36.2	-00.2	S 22 03.7	+00.4	256	54.0	-01.0	S 24 39.3	-00.1	203	19.9	-27.1	S 15 19.1	-09.1	07
08	302	36.0	-00.3	S 22 04.1	+00.3	271	53.0	-00.9	S 24 39.2	-00.1	217	52.8	-27.0	S 15 10.0	-09.1	08
09	317	35.7	-00.2	S 22 04.4	+00.4	286	52.1	-00.9	S 24 39.1	-00.2	232	25.8	-26.9	S 15 00.9	-09.2	09
10	332	35.5	-00.3	S 22 04.8	+00.3	301	51.2	-01.0	S 24 38.9	-00.1	246	58.9	-26.9	S 14 51.7	-09.3	10
11	347	35.2	-00.2	S 22 05.1	+00.4	316	50.2	-00.9	S 24 38.8	-00.2	261	32.0	-26.8	S 14 42.4	-09.3	11
12	2	35.0	-00.3	S 22 05.5	+00.4	331	49.3	-00.9	S 24 38.6	-00.1	276	05.2	-26.8	S 14 33.1	-09.4	12
13	17	34.7	-00.2	S 22 05.9	+00.3	346	48.4	-01.0	S 24 38.5	-00.2	290					

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	182	07.1	-00.3	S 22 39.4	+00.2	150	09.3	-00.9	S 24 14.9	-00.3	50	21.9	-25.7	N 05 27.1	+11.6	00				
01	197	06.8	-00.3	S 22 39.6	+00.3	165	08.4	-00.9	S 24 14.6	-00.3	64	56.2	-25.8	N 05 38.7	+11.7	01				
02	212	06.5	-00.2	S 22 39.9	+00.3	180	07.5	-00.9	S 24 14.3	-00.3	79	30.4	-25.9	N 05 50.4	+11.7	02				
03	227	06.3	-00.3	S 22 40.2	+00.2	195	06.6	-00.9	S 24 14.0	-00.3	94	04.5	-25.8	N 06 02.1	+11.6	03				
04	242	06.0	-00.3	S 22 40.4	+00.3	210	05.7	-01.0	S 24 13.7	-00.3	108	38.7	-26.0	N 06 13.7	+11.6	04				
05	257	05.7	-00.2	S 22 40.7	+00.3	225	04.7	-00.9	S 24 13.4	-00.3	123	12.7	-25.9	N 06 25.3	+11.6	05				
06	272	05.5	-00.3	S 22 41.0	+00.3	240	03.8	-00.9	S 24 13.1	-00.3	137	46.8	-26.1	N 06 36.9	+11.6	06				
07	287	05.2	-00.3	S 22 41.3	+00.2	255	02.9	-00.9	S 24 12.8	-00.3	152	20.7	-26.0	N 06 48.5	+11.5	07				
08	302	04.9	-00.3	S 22 41.5	+00.3	270	02.0	-00.9	S 24 12.5	-00.3	166	54.7	-26.1	N 07 00.0	+11.6	08				
09	317	04.6	-00.2	S 22 41.8	+00.2	285	01.1	-00.9	S 24 12.2	-00.3	181	28.6	-26.2	N 07 11.6	+11.5	09				
10	332	04.4	-00.3	S 22 42.0	+00.3	300	00.2	-00.9	S 24 11.9	-00.3	196	02.4	-26.2	N 07 23.1	+11.5	10				
11	347	04.1	-00.3	S 22 42.3	+00.3	314	59.3	-00.9	S 24 11.6	-00.3	210	36.2	-26.2	N 07 34.6	+11.5	11				
12	2	03.8	-00.3	S 22 42.6	+00.2	329	58.4	-00.9	S 24 11.3	-00.3	225	10.0	-26.3	N 07 46.1	+11.4	12				
13	17	03.5	-00.2	S 22 42.8	+00.2	344	57.5	-00.9	S 24 11.0	-00.3	239	43.7	-26.4	N 07 57.5	+11.5	13				
14	32	03.3	-00.3	S 22 43.1	+00.3	359	56.6	-00.9	S 24 10.7	-00.3	254	17.3	-26.4	N 08 09.0	+11.4	14				
15	47	03.0	-00.3	S 22 43.4	+00.2	1	55.7	-00.9	S 24 10.4	-00.3	268	50.9	-26.4	N 08 20.4	+11.4	15				
16	62	02.7	-00.2	S 22 43.6	+00.3	29	54.8	-01.0	S 24 10.1	-00.3	283	24.5	-26.5	N 08 31.8	+11.3	16				
17	77	02.5	-00.3	S 22 43.9	+00.2	44	53.8	-00.9	S 24 09.8	-00.3	297	58.0	-26.6	N 08 43.1	+11.3	17				
18	92	02.2	-00.3	S 22 44.1	+00.3	59	52.9	-00.9	S 24 09.5	-00.3	312	31.4	-26.6	N 08 54.4	+11.3	18				
19	107	01.9	-00.3	S 22 44.4	+00.3	74	52.0	-00.9	S 24 09.2	-00.4	327	04.8	-26.7	N 09 05.7	+11.3	19				
20	122	01.6	-00.2	S 22 44.7	+00.2	89	51.1	-00.9	S 24 08.8	-00.3	341	38.1	-26.7	N 09 17.0	+11.3	20				
21	137	01.4	-00.3	S 22 44.9	+00.3	104	50.2	-00.9	S 24 08.5	-00.3	356	11.4	-26.8	N 09 28.3	+11.2	21				
22	152	01.1	-00.3	S 22 45.2	+00.2	119	49.3	-00.9	S 24 08.2	-00.3	10	44.6	-26.9	N 09 39.5	+11.2	22				
23	167	00.8	-00.3	S 22 45.4	+00.3	134	48.4	-00.9	S 24 07.9	-00.3	25	17.7	-26.9	N 09 50.7	+11.1	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°2	16°2	16°2	16°2	16°2	16°2	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	15°0	15°0	15°0	15°0	15°0	15°1
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	54°9	55°0	55°0	55°1	55°2	55°3
SHA	106°	105°	105°	105°	105°	105°	SHA	074°	073°	073°	073°	073°	072°	SHA	333°	331°	329°	327°	325°	323°
Greenwich Culmination Time: 11:51				Greenwich Culmination Time: 14:00				Greenwich Culmination Time: 21:15												

UT	Mars				Jupiter				Saturn				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	216	22.7	+00.8	S 14 59.5	+00.5	165	11.0	+01.9	S 23 18.2	+00.0	146	13.2	+02.2	S 22 03.0	+00.0	00				
01	231	23.5	+00.8	S 14 60.0	+00.5	180	12.9	+01.8	S 23 18.2	+00.0	161	15.4	+02.2	S 22 03.0	-00.1	01				
02	246	24.3	+00.9	S 15 00.5	+00.5	195	14.7	+01.9	S 23 18.2	+00.0	176	17.6	+02.2	S 22 02.9	+00.0	02				
03	261	25.2	+00.8	S 15 01.0	+00.6	210	16.6	+01.8	S 23 18.2	+00.0	191	19.8	+02.2	S 22 02.9	+00.0	03				
04	276	26.0	+00.8	S 15 01.6	+00.5	225	18.4	+01.9	S 23 18.2	+00.0	206	22.0	+02.2	S 22 02.9	-00.1	04				
05	291	26.8	+00.9	S 15 02.1	+00.5	240	20.3	+01.8	S 23 18.2	+00.0	221	24.2	+02.1	S 22 02.8	+00.0	05				
06	306	27.7	+00.8	S 15 02.6	+00.5	255	22.1	+01.9	S 23 18.2	+00.0	236	26.3	+02.2	S 22 02.8	+00.0	06				
07	321	28.5	+00.8	S 15 03.1	+00.6	270	24.0	+01.8	S 23 18.2	+00.0	251	28.5	+02.2	S 22 02.8	-00.1	07				
08	336	29.3	+00.9	S 15 03.7	+00.5	285	25.8	+01.9	S 23 18.2	+00.0	266	30.7	+02.2	S 22 02.7	+00.0	08				
09	351	30.2	+00.8	S 15 04.2	+00.5	300	27.7	+01.8	S 23 18.2	+00.0	281	32.9	+02.2	S 22 02.7	+00.0	09				
10	6	31.0	+00.8	S 15 04.7	+00.5	315	29.5	+01.9	S 23 18.2	+00.0	296	35.1	+02.1	S 22 02.7	-00.1	10				
11	21	31.8	+00.9	S 15 05.2	+00.5	330	31.4	+01.8	S 23 18.2	+00.0	311	37.2	+02.2	S 22 02.6	+00.0	11				
12	36	32.7	+00.8	S 15 05.7	+00.6	345	33.2	+01.9	S 23 18.2	+00.0	326	39.4	+02.2	S 22 02.6	+00.0	12				
13	51	33.5	+00.8	S 15 06.3	+00.5	0	35.1	+01.8	S 23 18.2	+00.0	341	41.6	+02.2	S 22 02.6	-00.1	13				
14	66	34.3	+00.9	S 15 06.8	+00.5	15	36.9	+01.9	S 23 18.2	+00.0	356	43.8	+02.2	S 22 02.5	+00.0	14				
15	81	35.2	+00.8	S 15 07.3	+00.5	30	38.8	+01.8	S 23 18.2	+00.0	11	46.0	+02.1	S 22 02.5	+00.0	15				
16	96	36.0	+00.8	S 15 07.8	+00.6	45	40.6	+01.9	S 23 18.2	+00.0	26	48.1	+02.2	S 22 02.5	-00.1	16				
17	111	36.8	+00.9	S 15 08.4	+00.5	60	42.5	+01.8	S 23 18.2	+00.0	41	50.3	+02.2	S 22 02.4	+00.0	17				
18	126	37.7	+00.8	S 15 08.9	+00.5	75	44.3	+01.9	S 23 18.2	+00.0	56	52.5	+02.2	S 22 02.4	+00.0	18				
19	141	38.5	+00.8	S 15 09.4	+00.5	90	46.2	+01.8	S 23 18.2	+00.0	71	54.7	+02.2	S 22 02.4	-00.1	19				
20	156	39.3	+00.8	S 15 09.9	+00.5	105	48.0	+01.9	S 23 18.2	+00.0	86	56.9	+02.1	S 22 02.3	+00.0	20				
21	171	40.1	+00.9	S 15 10.4	+00.6	120	49.9	+01.8	S 23 18.2	+00.0	101	59.0	+02.2	S 22 02.3	+00.0	21				
22	186	41.0	+00.8	S 15 11.0	+00.5	135	51.7	+01.9	S 23 18.2	+00.0	117	01.2	+02.2	S 22 02.3	-00.1	22				
23	201	41.8	+00.8	S 15 11.5	+00.5	150	53.6	+01.8	S 23 18.2	+00.0	132	03.4	+02.2	S 22 02.2	+00.0	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	00°0	00°0	00°0	00°0	00°0	00°0	SD	00°3	00°3	00°3	00°3	00°3	00°3	SD	00°1	00°1	00°1	00°1	00°1	00°1
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°0	00°0	00°0	00°0	00°0	00°0	HP	00°0	00°0	00°0	00°0	00°0	00°0
SHA	140°	140°	140°	139°	139°	SHA	089°	089°	089°	089°	089°	088°	SHA	070°	070°	070°	070°	070°	070°	
Greenwich Culmination Time: 09:33				Greenwich Culmination Time: 12:57				Greenwich Culmination Time: 14:13												

UT	Sun				Venus				Moon				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	182	26.0	-00.3	S 22 17.8	+00.3	151	15.7	-01.0	S 24 32.4	-00.2	80	30.5	-25.2	S 08 25.8	-10.9	00
01	197	25.7	-00.2	S 22 18.1	+00.3	166	14.7	-00.9	S 24 32.2	-00.2	95	05.3	-25.3	S 08 14.9	-11.0	01
02	212	25.5	-00.3	S 22 18.4	+00.3	181	13.8	-00.9	S 24 32.0	-00.2	109	40.0	-25.2	S 08 03.9	-11.0	02
03	227	25.2	-00.2	S 22 18.7	+00.4	196	12.9	-01.0	S 24 31.8	-00.2	124	14.8	-25.2	S 07 52.9	-11.0	03
04	242	25.0	-00.3	S 22 19.1	+00.3	211	11.9	-00.9	S 24 31.6	-00.2	138	49.6	-25.2	S 07 41.9	-11.1	04
05	257	24.7	-00.2	S 22 19.4	+00.3	226	11.0	-00.9	S 24 31.4	-00.2	153	24.4	-25.2	S 07 30.8	-11.1	05
06	272	24.5	-00.3	S 22 19.7	+00.3	241	10.1	-00.9	S 24 31.2	-00.2	167	59.2	-25.1	S 07 19.7	-11.1	06
07	287	24.2	-00.3	S 22 20.0	+00.4	256	09.2	-01.0	S 24 31.0	-00.2	182	34.1	-25.2	S 07 08.6	-11.1	07
08	302	23.9	-00.2	S 22 20.4	+00.3	271	08.2	-00.9	S 24 30.8	-00.3	197	08.9	-25.1	S 06 57.5	-11.2	08
09	317	23.7	-00.3	S 22 20.7	+00.3	286	07.3	-00.9	S 24 30.5	-00.2	211	43.8	-25.0	S 06 46.3	-11.2	09
10	332	23.4	-00.2	S 22 21.0	+00.3	301	06.4	-01.0	S 24 30.3	-00.2	226	18.8	-25.1	S 06 35.1	-11.2	10
11	347	23.2	-00.3	S 22 21.3	+00.3	316	05.4	-00.9	S 24 30.1	-00.2	240	53.7	-25.1	S 06 23.9	-11.3	11
12	2	22.9	-00.2	S 22 21.6	+00.4	331	04.5	-00.9	S 24 29.9	-00.2	255	28.6	-25.0	S 06 12.6	-11.3	12
13	17	22.7	-00.3	S 22 22.0	+00.3	346	03.6	-00.9	S 24 29.7	-00.2	270	03.6	-25.0	S 06 01.3	-11.3	13
14	32															

Table with columns for UT, Sun, Venus, Moon, and UT. Includes astronomical data for Sun, Venus, and Moon for the date 2019 December 6. Includes sub-tables for UT 02-22 and Greenwich Culmination Time.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes astronomical data for Sun, Venus, and Moon for the date 2019 December 7. Includes sub-tables for UT 02-22 and Greenwich Culmination Time.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes astronomical data for Mars, Jupiter, and Saturn for the date 2019 December 6. Includes sub-tables for UT 02-22 and Greenwich Culmination Time.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes astronomical data for Mars, Jupiter, and Saturn for the date 2019 December 7. Includes sub-tables for UT 02-22 and Greenwich Culmination Time.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 101° 101° 101° 101° 100° 100°
Greenwich Culmination Time: 11:53

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 137° 137° 137° 137° 137° 137°
Greenwich Culmination Time: 09:28

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 104° 104° 104° 104° 104° 104°
Greenwich Culmination Time: 11:52

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 139° 139° 139° 139° 139° 139°
Greenwich Culmination Time: 09:32

Table with columns for UT, Sun, Venus, Moon, and UT. Includes astronomical data for the three planets and a Greenwich Culmination Time section.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes astronomical data for the three planets and a Greenwich Culmination Time section.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes astronomical data for the three planets and a Greenwich Culmination Time section.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes astronomical data for the three planets and a Greenwich Culmination Time section.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Table with columns for UT, Sun, Venus, Moon, and UT. Each planet column contains GHA, ddGHA, Dec, and dDec values for each hour of the day.

UT 02 06 10 14 18 22
SD 16°3 16°3 16°3 16°3 16°3 16°3
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 097° 097° 096° 096° 096° 096°
Greenwich Culmination Time: 11:55

Table with columns for UT, Sun, Venus, Moon, and UT. Each planet column contains GHA, ddGHA, Dec, and dDec values for each hour of the day.

UT 02 06 10 14 18 22
SD 16°2 16°2 16°2 16°2 16°2 16°2
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 100° 100° 100° 100° 099° 099°
Greenwich Culmination Time: 11:54

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Each planet column contains GHA, ddGHA, Dec, and dDec values for each hour of the day.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 135° 134° 134° 134° 134°
Greenwich Culmination Time: 09:23

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Each planet column contains GHA, ddGHA, Dec, and dDec values for each hour of the day.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 137° 136° 136° 136° 136°
Greenwich Culmination Time: 09:27

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	181	26.2	-00.3	S 23 10.5	+00.1	148	01.7	-00.9	S 23 20.3	-00.4	337	11.0	-34.9	N 23 12.9	-00.5	00				
01	196	25.9	-00.2	S 23 10.6	+00.2	163	00.8	-00.9	S 23 19.9	-00.5	351	36.1	-35.0	N 23 12.4	-00.7	01				
02	211	25.7	-00.3	S 23 10.8	+00.2	177	59.9	-00.8	S 23 19.4	-00.5	6	01.1	-35.0	N 23 11.7	-00.8	02				
03	226	25.4	-00.3	S 23 11.0	+00.1	192	59.1	-00.9	S 23 18.9	-00.5	20	26.1	-34.9	N 23 10.9	-01.0	03				
04	241	25.1	-00.3	S 23 11.1	+00.2	207	58.2	-00.8	S 23 18.4	-00.4	34	51.2	-35.1	N 23 09.9	-01.1	04				
05	256	24.8	-00.3	S 23 11.3	+00.1	222	57.4	-00.9	S 23 18.0	-00.5	49	16.1	-35.0	N 23 08.8	-01.3	05				
06	271	24.5	-00.3	S 23 11.4	+00.2	237	56.5	-00.8	S 23 17.5	-00.5	63	41.1	-35.0	N 23 07.5	-01.4	06				
07	286	24.2	-00.3	S 23 11.6	+00.1	252	55.7	-00.9	S 23 17.0	-00.5	78	06.1	-35.0	N 23 06.1	-01.5	07				
08	301	23.9	-00.3	S 23 11.7	+00.2	267	54.8	-00.8	S 23 16.5	-00.4	92	31.1	-35.1	N 23 04.6	-01.7	08				
09	316	23.6	-00.3	S 23 11.9	+00.1	282	54.0	-00.9	S 23 16.1	-00.5	106	56.0	-35.0	N 23 02.9	-01.9	09				
10	331	23.3	-00.3	S 23 12.0	+00.2	297	53.1	-00.9	S 23 15.6	-00.5	121	21.0	-35.0	N 23 01.0	-02.0	10				
11	346	23.0	-00.3	S 23 12.2	+00.1	312	52.2	-00.8	S 23 15.1	-00.5	135	46.0	-35.1	N 22 59.0	-02.1	11				
12	1	22.7	-00.3	S 23 12.3	+00.2	327	51.4	-00.9	S 23 14.6	-00.5	150	10.9	-35.0	N 22 56.9	-02.3	12				
13	16	22.4	-00.3	S 23 12.5	+00.2	342	50.5	-00.8	S 23 14.1	-00.4	164	35.9	-35.0	N 22 54.6	-02.5	13				
14	31	22.1	-00.3	S 23 12.6	+00.2	357	49.7	-00.9	S 23 13.7	-00.5	179	00.9	-35.1	N 22 52.1	-02.6	14				
15	46	21.8	-00.3	S 23 12.8	+00.1	12	48.8	-00.8	S 23 13.2	-00.5	193	25.8	-35.0	N 22 49.5	-02.7	15				
16	61	21.5	-00.3	S 23 12.9	+00.2	27	48.0	-00.9	S 23 12.7	-00.5	207	50.8	-35.0	N 22 46.8	-02.9	16				
17	76	21.2	-00.3	S 23 13.1	+00.1	42	47.1	-00.8	S 23 12.2	-00.5	222	15.8	-35.0	N 22 43.9	-03.0	17				
18	91	20.9	-00.3	S 23 13.2	+00.2	57	46.3	-00.9	S 23 11.7	-00.5	236	40.8	-35.0	N 22 40.9	-03.2	18				
19	106	20.6	-00.3	S 23 13.4	+00.1	72	45.4	-00.8	S 23 11.2	-00.5	251	05.8	-35.0	N 22 37.7	-03.3	19				
20	121	20.3	-00.3	S 23 13.5	+00.1	87	44.6	-00.9	S 23 10.7	-00.5	265	30.8	-34.9	N 22 34.4	-03.5	20				
21	136	20.0	-00.3	S 23 13.6	+00.2	102	43.7	-00.8	S 23 10.2	-00.4	279	55.9	-35.0	N 22 30.9	-03.6	21				
22	151	19.7	-00.3	S 23 13.8	+00.2	117	42.9	-00.9	S 23 09.8	-00.5	294	20.9	-34.9	N 22 27.3	-03.8	22				
23	166	19.4	-00.3	S 23 13.9	+00.2	132	42.0	-00.8	S 23 09.3	-00.5	308	46.0	-34.9	N 22 23.5	-03.9	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°2	16°2	16°2	16°2	16°2	16°2	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	15°9	15°9	15°9	15°9	15°9	15°9
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	58°2	58°3	58°4	58°5	58°5	58°5
SHA	099°	099°	099°	098°	098°	098°	SHA	066°	065°	065°	065°	065°	064°	SHA	254°	251°	249°	246°	244°	241°
Greenwich Culmination Time: 11:54				Greenwich Culmination Time: 14:08				Greenwich Culmination Time: 01:34												

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	181	19.1	-00.3	S 23 14.1	+00.1	147	41.2	-00.9	S 23 08.8	-00.5	323	11.1	-34.9	N 22 19.6	-04.0	00				
01	196	18.8	-00.3	S 23 14.2	+00.1	162	40.3	-00.8	S 23 08.3	-00.5	337	36.2	-34.9	N 22 15.6	-04.2	01				
02	211	18.5	-00.3	S 23 14.3	+00.2	177	39.5	-00.8	S 23 07.8	-00.5	352	01.3	-34.8	N 22 11.4	-04.4	02				
03	226	18.2	-00.3	S 23 14.5	+00.1	192	38.7	-00.9	S 23 07.3	-00.5	6	26.5	-34.9	N 22 07.0	-04.5	03				
04	241	17.9	-00.3	S 23 14.6	+00.2	207	37.8	-00.8	S 23 06.8	-00.5	20	51.6	-34.8	N 22 02.5	-04.6	04				
05	256	17.6	-00.3	S 23 14.8	+00.1	222	37.0	-00.9	S 23 06.3	-00.5	35	16.8	-34.7	N 21 57.9	-04.7	05				
06	271	17.3	-00.3	S 23 14.9	+00.1	237	36.1	-00.8	S 23 05.8	-00.5	49	42.1	-34.8	N 21 53.2	-04.9	06				
07	286	17.0	-00.3	S 23 15.0	+00.2	252	35.3	-00.9	S 23 05.3	-00.5	64	07.3	-34.7	N 21 48.3	-05.1	07				
08	301	16.7	-00.3	S 23 15.2	+00.1	267	34.4	-00.8	S 23 04.8	-00.5	78	32.6	-34.7	N 21 43.2	-05.2	08				
09	316	16.4	-00.3	S 23 15.3	+00.1	282	33.6	-00.9	S 23 04.3	-00.6	92	57.9	-34.7	N 21 38.0	-05.3	09				
10	331	16.1	-00.3	S 23 15.4	+00.2	297	32.7	-00.8	S 23 03.7	-00.5	107	23.2	-34.6	N 21 32.7	-05.5	10				
11	346	15.8	-00.3	S 23 15.6	+00.1	312	31.9	-00.8	S 23 03.2	-00.5	121	48.6	-34.6	N 21 27.2	-05.6	11				
12	1	15.5	-00.3	S 23 15.7	+00.1	327	31.1	-00.9	S 23 02.7	-00.5	136	14.0	-34.5	N 21 21.6	-05.7	12				
13	16	15.2	-00.3	S 23 15.8	+00.1	342	30.2	-00.8	S 23 02.2	-00.5	150	39.5	-34.5	N 21 15.9	-05.9	13				
14	31	14.9	-00.3	S 23 15.9	+00.2	357	29.4	-00.9	S 23 01.7	-00.5	165	05.0	-34.5	N 21 10.0	-06.0	14				
15	46	14.6	-00.3	S 23 16.1	+00.1	12	28.5	-00.8	S 23 01.2	-00.5	179	30.5	-34.4	N 21 04.0	-06.2	15				
16	61	14.3	-00.3	S 23 16.2	+00.1	27	27.7	-00.8	S 23 00.7	-00.5	193	56.1	-34.4	N 20 57.8	-06.2	16				
17	76	14.0	-00.3	S 23 16.3	+00.2	42	26.9	-00.9	S 23 00.2	-00.5	208	21.7	-34.4	N 20 51.6	-06.4	17				
18	91	13.7	-00.3	S 23 16.5	+00.1	57	26.0	-00.8	S 22 59.7	-00.6	222	47.3	-34.3	N 20 45.2	-06.6	18				
19	106	13.4	-00.3	S 23 16.6	+00.1	72	25.2	-00.9	S 22 59.1	-00.5	237	13.0	-34.3	N 20 38.6	-06.7	19				
20	121	13.1	-00.3	S 23 16.7	+00.1	87	24.3	-00.8	S 22 58.6	-00.5	251	38.7	-34.2	N 20 31.9	-06.8	20				
21	136	12.8	-00.3	S 23 16.8	+00.1	102	23.5	-00.8	S 22 58.1	-00.5	266	04.5	-34.2	N 20 25.1	-06.9	21				
22	151	12.5	-00.3	S 23 16.9	+00.2	117	22.7	-00.9	S 22 57.6	-00.5	280	30.3	-34.2	N 20 18.2	-07.1	22				
23	166	12.2	-00.3	S 23 17.1	+00.1	132	21.8	-00.8	S 22 57.1	-00.6	294	56.1	-34.1	N 20 11.1	-07.2	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°2	16°3	16°3	16°3	16°3	16°3	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	16°0	16°0	16°0	16°0	16°0	16°0
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	58°6	58°7	58°7	58°8	58°8	58°8
SHA	098°	098°	097°	097°	097°	097°	SHA	064°	064°	064°	063°	063°	SHA	239°	236°	234°	231°	229°	226°	
Greenwich Culmination Time: 11:54				Greenwich Culmination Time: 14:10				Greenwich Culmination Time: 02:33												

UT	Mars				Jupiter				Saturn				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	218	20.9	+00.9	S 16 13.0	+00.5	169	37.0	+01.9	S 23 17.7	+00.0	151	26.7	+02.2	S 21 58.0	+00.0	00
01	233	21.8	+00.8	S 16 13.5	+00.5	184	38.9	+01.8	S 23 17.7	+00.0	166	28.9	+02.1	S 21 58.0	+00.0	01
02	248	22.6	+00.8	S 16 14.0	+00.5	199	40.7	+01.8	S 23 17.7	+00.0	181	31.0	+02.2	S 21 58.0	-00.1	02
03	263	23.4	+00.8	S 16 14.5	+00.5	214	42.5	+01.9	S 23 17.7	+00.0	196	33.2	+02.2	S 21 57.9	+00.0	03
04	278	24.2	+00.8	S 16 15.0	+00.5	229	44.4	+01.8	S 23 17.7	-00.1	211	35.4	+02.1	S 21 57.9	+00.0	04
05	293	25.0	+00.8	S 16 15.5	+00.5	244	46.2	+01.9	S 23 17.6	+00.0	226	37.5	+02.2	S 21 57.9	-00.1	05
06	308	25.8	+00.8	S 16 16.0	+00.5	259	48.1	+01.8	S 23 17.6	+00.0	241	39.7	+02.2	S 21 57.8	+00.0	06
07	323	26.6	+00.8	S 16 16.5	+00.4	274	49.9	+01.9	S 23 17.6	+00.0	256	41.9	+02.2	S 21 57.8	+00.0	07
08	338	27.4	+00.8	S 16 16.9	+00.5	289	51.8	+01.8	S 23 17.6	+00.0	271	44.1	+02.1	S 21 57.8	-00.1	08
09	353	28.2	+00.8	S 16 17.4	+00.5	304	53.6	+01.8	S 23 17.6	+00.0	286	46.2	+02.2	S 21 57.7	+00.0	09
10	8	29.0	+00.8	S 16 17.9	+00.5	319	55.4	+01.9	S 23 17.6	+00.0	301	48.4	+02.2	S 21 57.7	-00.1	10
11	23	29.8	+00.8	S 16 18.4	+00.5	334	57.3	+01.8	S 23 17.6	+00.0	316	50.6	+02.1	S 21 57.6	+00.0	11
12	38	30.6	+00.8	S 16 18.9	+00.5	349	59.1	+01.9	S 23 17.6	+00.0	331	52.7	+02.2	S 21 57.6	+00.0	12
13	53	31.4	+00.9	S 16 19.4	+00.5	5	01.0	+01.8	S 23 17.6	+00.0	346	54.9	+02.2	S 21 57.6	-00.1	13
14	68															

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	180	42.6	-00.3	S 23 25.0	+00.1	146	03.1	-00.8	S 22 00.9	-00.6	258	39.1	-30.0	N 01 35.1	-13.9	00				
01	195	42.3	-00.4	S 23 25.1	+00.0	161	02.3	-00.8	S 22 00.3	-00.6	273	09.1	-29.9	N 01 21.2	-13.9	01				
02	210	41.9	-00.3	S 23 25.1	+00.1	176	01.5	-00.8	S 21 59.7	-00.7	287	39.2	-30.0	N 01 07.3	-13.9	02				
03	225	41.6	-00.3	S 23 25.2	+00.0	191	00.7	-00.8	S 21 59.0	-00.6	302	09.2	-30.0	N 00 53.4	-13.9	03				
04	240	41.3	-00.3	S 23 25.2	+00.0	205	59.9	-00.7	S 21 58.4	-00.6	316	39.2	-29.9	N 00 39.5	-13.9	04				
05	255	41.0	-00.3	S 23 25.2	+00.1	220	59.2	-00.8	S 21 57.8	-00.7	331	09.3	-30.0	N 00 25.6	-13.9	05				
06	270	40.7	-00.3	S 23 25.3	+00.0	235	58.4	-00.8	S 21 57.1	-00.6	345	39.3	-29.9	N 00 11.7	-13.9	06				
07	285	40.4	-00.3	S 23 25.3	+00.1	250	57.6	-00.8	S 21 56.5	-00.7	0	09.4	-30.0	S 00 02.2	+13.9	07				
08	300	40.1	-00.3	S 23 25.4	+00.0	265	56.8	-00.8	S 21 55.8	-00.6	14	39.4	-29.9	S 00 16.1	+13.9	08				
09	315	39.8	-00.3	S 23 25.4	+00.0	280	56.0	-00.8	S 21 55.2	-00.7	29	09.5	-30.0	S 00 30.0	+13.9	09				
10	330	39.5	-00.3	S 23 25.4	+00.1	295	55.2	-00.7	S 21 54.5	-00.6	43	39.5	-29.9	S 00 43.9	+13.9	10				
11	345	39.2	-00.3	S 23 25.5	+00.0	310	54.5	-00.8	S 21 53.9	-00.6	58	09.6	-30.0	S 00 57.8	+13.9	11				
12	0	38.9	-00.4	S 23 25.5	+00.0	325	53.7	-00.8	S 21 53.3	-00.7	72	39.6	-29.9	S 01 11.7	+13.8	12				
13	15	38.5	-00.3	S 23 25.5	+00.1	340	52.9	-00.8	S 21 52.6	-00.6	87	09.7	-29.9	S 01 25.5	+13.9	13				
14	30	38.2	-00.3	S 23 25.6	+00.0	355	52.1	-00.8	S 21 52.0	-00.7	101	39.8	-30.0	S 01 39.4	+13.9	14				
15	45	37.9	-00.3	S 23 25.6	+00.0	10	51.3	-00.7	S 21 51.3	-00.6	116	09.8	-30.0	S 01 53.3	+13.8	15				
16	60	37.6	-00.3	S 23 25.6	+00.0	25	50.6	-00.8	S 21 50.7	-00.7	130	39.8	-29.9	S 02 07.1	+13.8	16				
17	75	37.3	-00.3	S 23 25.6	+00.1	40	49.8	-00.8	S 21 50.0	-00.6	145	09.9	-30.0	S 02 20.9	+13.9	17				
18	90	37.0	-00.3	S 23 25.7	+00.0	55	49.0	-00.8	S 21 49.4	-00.6	159	39.9	-29.9	S 02 34.8	+13.8	18				
19	105	36.7	-00.3	S 23 25.7	+00.0	70	48.2	-00.7	S 21 48.7	-00.7	174	10.0	-30.0	S 02 48.6	+13.7	19				
20	120	36.4	-00.3	S 23 25.7	+00.1	85	47.5	-00.8	S 21 48.0	-00.6	188	40.0	-30.0	S 03 02.3	+13.8	20				
21	135	36.1	-00.4	S 23 25.8	+00.0	100	46.7	-00.8	S 21 47.4	-00.7	203	10.0	-30.0	S 03 16.1	+13.8	21				
22	150	35.7	-00.3	S 23 25.8	+00.0	115	45.9	-00.8	S 21 46.7	-00.6	217	40.0	-30.0	S 03 29.9	+13.7	22				
23	165	35.4	-00.3	S 23 25.8	+00.0	130	45.1	-00.7	S 21 46.1	-00.7	232	10.0	-30.0	S 03 43.6	+13.7	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°3	16°3	16°3	16°3	16°3	16°3	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	16°1	16°1	16°1	16°1	16°1	16°1
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	59°1	59°1	59°1	59°1	59°1	59°1
SHA	092°	092°	092°	092°	092°	091°	SHA	058°	057°	057°	057°	057°	057°	SHA	169°	167°	165°	163°	161°	158°
Greenwich Culmination Time: 11:57				Greenwich Culmination Time: 14:16				Greenwich Culmination Time: 06:59												

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	181	04.7	-00.3	S 23 19.9	+00.1	147	01.1	-00.8	S 22 43.6	-00.5	295	59.0	-32.8	N 16 35.5	-10.0	00				
01	196	04.4	-00.3	S 23 20.0	+00.1	162	00.3	-00.9	S 22 43.1	-00.6	310	26.2	-32.7	N 16 25.5	-10.2	01				
02	211	04.1	-00.3	S 23 20.1	+00.1	176	59.4	-00.8	S 22 42.5	-00.5	324	53.5	-32.7	N 16 15.3	-10.2	02				
03	226	03.8	-00.4	S 23 20.2	+00.1	191	58.6	-00.8	S 22 42.0	-00.6	339	20.8	-32.6	N 16 05.1	-10.4	03				
04	241	03.4	-00.3	S 23 20.3	+00.1	206	57.8	-00.8	S 22 41.4	-00.6	353	48.2	-32.5	N 15 54.7	-10.4	04				
05	256	03.1	-00.3	S 23 20.4	+00.0	221	57.0	-00.8	S 22 40.8	-00.5	8	15.7	-32.5	N 15 44.3	-10.6	05				
06	271	02.8	-00.3	S 23 20.4	+00.1	236	56.2	-00.9	S 22 40.3	-00.6	22	43.2	-32.5	N 15 33.7	-10.6	06				
07	286	02.5	-00.3	S 23 20.5	+00.1	251	55.3	-00.8	S 22 39.7	-00.5	37	10.7	-32.3	N 15 23.1	-10.7	07				
08	301	02.2	-00.3	S 23 20.6	+00.1	266	54.5	-00.8	S 22 39.2	-00.6	51	38.4	-32.4	N 15 12.4	-10.8	08				
09	316	01.9	-00.3	S 23 20.7	+00.1	281	53.7	-00.8	S 22 38.6	-00.6	66	06.0	-32.2	N 15 01.6	-10.9	09				
10	331	01.6	-00.3	S 23 20.8	+00.1	296	52.9	-00.8	S 22 38.0	-00.5	80	33.8	-32.3	N 14 50.7	-11.0	10				
11	346	01.3	-00.3	S 23 20.9	+00.1	311	52.1	-00.9	S 22 37.5	-00.6	95	01.5	-32.1	N 14 39.7	-11.1	11				
12	1	01.0	-00.3	S 23 21.0	+00.1	326	51.2	-00.8	S 22 36.9	-00.6	109	29.4	-32.1	N 14 28.6	-11.1	12				
13	16	00.7	-00.3	S 23 21.1	+00.1	341	50.4	-00.8	S 22 36.3	-00.5	123	57.3	-32.1	N 14 17.5	-11.3	13				
14	31	00.4	-00.3	S 23 21.2	+00.1	356	49.6	-00.8	S 22 35.8	-00.6	138	25.2	-32.0	N 14 06.2	-11.3	14				
15	46	00.1	-00.3	S 23 21.3	+00.1	11	48.8	-00.8	S 22 35.2	-00.6	152	53.2	-32.0	N 13 54.9	-11.4	15				
16	60	59.8	-00.3	S 23 21.4	+00.1	26	48.0	-00.8	S 22 34.6	-00.5	167	21.2	-31.9	N 13 43.5	-11.5	16				
17	75	59.5	-00.3	S 23 21.5	+00.0	41	47.2	-00.9	S 22 34.1	-00.6	181	49.3	-31.8	N 13 32.0	-11.5	17				
18	90	59.2	-00.3	S 23 21.5	+00.1	56	46.3	-00.8	S 22 33.5	-00.6	196	17.5	-31.8	N 13 20.5	-11.7	18				
19	105	58.9	-00.3	S 23 21.6	+00.1	71	45.5	-00.8	S 22 32.9	-00.5	210	45.7	-31.7	N 13 08.8	-11.7	19				
20	120	58.6	-00.3	S 23 21.7	+00.1	86	44.7	-00.8	S 22 32.4	-00.6	225	14.0	-31.7	N 12 57.1	-11.8	20				
21	135	58.3	-00.3	S 23 21.8	+00.1	101	43.9	-00.8	S 22 31.8	-00.6	239	42.3	-31.6	N 12 45.3	-11.9	21				
22	150	58.0	-00.3	S 23 21.9	+00.1	116	43.1	-00.8	S 22 31.2	-00.6	254	10.7	-31.6	N 12 33.4	-11.9	22				
23	165	57.7	-00.4	S 23 22.0	+00.1	131	42.3	-00.8	S 22 30.6	-00.6	268	39.1	-31.6	N 12 21.5	-12.0	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°3	16°3	16°3	16°3	16°3	16°3	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	16°1	16°1	16°1	16°1	16°1	16°1
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	59°1	59°1	59°1	59°1	59°1	59°1
SHA	096°	095°	095°	095°	095°	095°	SHA	062°	061°	061°	061°	060°	SHA	209°	207°	205°	203°	200°	198°	
Greenwich Culmination Time: 11:55				Greenwich Culmination Time: 14:12				Greenwich Culmination Time: 04:25												

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for positions (GHA, ddGHA, Dec, dDec) and times (UT 00-23) for the three celestial bodies.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes data for positions (GHA, ddGHA, Dec, dDec) and times (UT 00-23) for the three celestial bodies.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for positions (GHA, ddGHA, Dec, dDec) and times (UT 00-23) for the three celestial bodies.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes data for positions (GHA, ddGHA, Dec, dDec) and times (UT 00-23) for the three celestial bodies.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for its correctness. Use it only for training and exercising!

UT	<i>Sun</i>				<i>Venus</i>				<i>Moon</i> A: 93%				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	180	12.7	-00.3	S 23 25.4	-00.1	144	50.2	-00.8	S 20 55.2	-00.8	209	22.7	-32.4	S 18 04.5	+08.7	00				
01	195	12.4	-00.3	S 23 25.3	+00.0	159	49.4	-00.7	S 20 54.4	-00.7	223	50.3	-32.6	S 18 13.2	+08.7	01				
02	210	12.1	-00.4	S 23 25.3	+00.0	174	48.7	-00.7	S 20 53.7	-00.8	238	17.7	-32.5	S 18 21.9	+08.5	02				
03	225	11.7	-00.3	S 23 25.3	+00.1	189	48.0	-00.8	S 20 52.9	-00.7	252	45.2	-32.6	S 18 30.4	+08.4	03				
04	240	11.4	-00.3	S 23 25.2	+00.0	204	47.2	-00.7	S 20 52.2	-00.7	267	12.6	-32.7	S 18 38.8	+08.3	04				
05	255	11.1	-00.3	S 23 25.2	+00.0	219	46.5	-00.7	S 20 51.5	-00.8	281	39.9	-32.7	S 18 47.1	+08.2	05				
06	270	10.8	-00.3	S 23 25.2	-00.1	234	45.8	-00.8	S 20 50.7	-00.7	296	07.2	-32.7	S 18 55.3	+08.0	06				
07	285	10.5	-00.3	S 23 25.1	+00.0	249	45.0	-00.7	S 20 50.0	-00.8	310	34.5	-32.7	S 19 03.3	+08.0	07				
08	300	10.2	-00.3	S 23 25.1	-00.1	264	44.3	-00.7	S 20 49.2	-00.7	325	01.8	-32.8	S 19 11.3	+07.8	08				
09	315	09.9	-00.3	S 23 25.0	+00.0	279	43.6	-00.7	S 20 48.5	-00.8	339	29.0	-32.8	S 19 19.1	+07.7	09				
10	330	09.6	-00.3	S 23 25.0	-00.1	294	42.9	-00.8	S 20 47.7	-00.8	353	56.2	-32.9	S 19 26.8	+07.6	10				
11	345	09.3	-00.4	S 23 24.9	+00.0	309	42.1	-00.7	S 20 47.0	-00.7	8	23.3	-32.9	S 19 34.4	+07.5	11				
12	0	08.9	-00.3	S 23 24.9	-00.1	324	41.4	-00.7	S 20 46.3	-00.8	22	50.4	-32.9	S 19 41.9	+07.4	12				
13	15	08.6	-00.3	S 23 24.8	+00.0	339	40.7	-00.7	S 20 45.5	-00.7	37	17.5	-33.0	S 19 49.3	+07.2	13				
14	30	08.3	-00.3	S 23 24.8	+00.0	354	40.0	-00.8	S 20 44.8	-00.8	51	44.5	-32.9	S 19 56.5	+07.1	14				
15	45	08.0	-00.3	S 23 24.8	-00.1	9	39.2	-00.7	S 20 44.0	-00.7	66	11.6	-33.1	S 20 03.6	+07.0	15				
16	60	07.7	-00.3	S 23 24.7	+00.0	24	38.5	-00.7	S 20 43.3	-00.8	80	38.5	-33.0	S 20 10.6	+06.9	16				
17	75	07.4	-00.3	S 23 24.7	-00.1	39	37.8	-00.7	S 20 42.5	-00.8	95	05.5	-33.1	S 20 17.5	+06.7	17				
18	90	07.1	-00.3	S 23 24.6	+00.0	54	37.1	-00.8	S 20 41.7	-00.7	109	32.4	-33.1	S 20 24.2	+06.7	18				
19	105	06.8	-00.4	S 23 24.6	-00.1	69	36.3	-00.7	S 20 41.0	-00.8	123	59.3	-33.1	S 20 30.9	+06.5	19				
20	120	06.4	-00.3	S 23 24.5	+00.0	84	35.6	-00.7	S 20 40.2	-00.7	138	26.2	-33.2	S 20 37.4	+06.3	20				
21	135	06.1	-00.3	S 23 24.5	-00.1	99	34.9	-00.7	S 20 39.5	-00.8	152	53.0	-33.2	S 20 43.7	+06.3	21				
22	150	05.8	-00.3	S 23 24.4	+00.0	114	34.2	-00.7	S 20 38.7	-00.7	167	19.8	-33.2	S 20 50.0	+06.1	22				
23	165	05.5	-00.3	S 23 24.3	+00.0	129	33.5	-00.8	S 20 38.0	-00.8	181	46.6	-33.2	S 20 56.1	+06.0	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°3	16°3	16°3	16°3	16°3	16°3	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	15°8	15°8	15°8	15°8	15°8	15°7
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	58°1	58°1	58°0	57°9	57°8	57°7
SHA	088°	088°	088°	087°	087°	087°	SHA	052°	052°	052°	052°	052°	051°	SHA	116°	114°	111°	109°	107°	104°
Greenwich Culmination Time: 11:59						Greenwich Culmination Time: 14:21						Greenwich Culmination Time: 10:25								

UT	<i>Mars</i>				<i>Jupiter</i>				<i>Saturn</i>				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
00	221	29.8	+00.8	S 18 06.0	+00.4	176	58.7	+01.8	S 23 14.8	+00.0	160	06.3	+02.2	S 21 49.0	-00.1	00				
01	236	30.6	+00.8	S 18 06.4	+00.5	192	00.5	+01.9	S 23 14.8	+00.0	175	08.5	+02.1	S 21 48.9	+00.0	01				
02	251	31.4	+00.7	S 18 06.9	+00.4	207	02.4	+01.8	S 23 14.8	+00.0	190	10.6	+02.2	S 21 48.9	+00.0	02				
03	266	32.1	+00.8	S 18 07.3	+00.5	222	04.2	+01.8	S 23 14.8	+00.0	205	12.8	+02.1	S 21 48.9	-00.1	03				
04	281	32.9	+00.7	S 18 07.8	+00.4	237	06.0	+01.9	S 23 14.8	-00.1	220	14.9	+02.2	S 21 48.8	+00.0	04				
05	296	33.6	+00.8	S 18 08.2	+00.5	252	07.9	+01.8	S 23 14.7	+00.0	235	17.1	+02.1	S 21 48.8	-00.1	05				
06	311	34.4	+00.8	S 18 08.7	+00.4	267	09.7	+01.9	S 23 14.7	+00.0	250	19.2	+02.2	S 21 48.7	+00.0	06				
07	326	35.2	+00.7	S 18 09.1	+00.4	282	11.6	+01.8	S 23 14.7	+00.0	265	21.4	+02.2	S 21 48.7	+00.0	07				
08	341	35.9	+00.8	S 18 09.5	+00.5	297	13.4	+01.8	S 23 14.7	+00.0	280	23.6	+02.1	S 21 48.7	-00.1	08				
09	356	36.7	+00.8	S 18 10.0	+00.4	312	15.2	+01.9	S 23 14.7	-00.1	295	25.7	+02.2	S 21 48.6	+00.0	09				
10	11	37.5	+00.7	S 18 10.4	+00.5	327	17.1	+01.8	S 23 14.6	+00.0	310	27.9	+02.1	S 21 48.6	-00.1	10				
11	26	38.2	+00.8	S 18 10.9	+00.4	342	18.9	+01.8	S 23 14.6	+00.0	325	30.0	+02.2	S 21 48.5	+00.0	11				
12	41	39.0	+00.8	S 18 11.3	+00.4	357	20.7	+01.9	S 23 14.6	+00.0	340	32.2	+02.2	S 21 48.5	+00.0	12				
13	56	39.8	+00.7	S 18 11.7	+00.5	12	22.6	+01.8	S 23 14.6	+00.0	355	34.4	+02.1	S 21 48.5	-00.1	13				
14	71	40.5	+00.8	S 18 12.2	+00.4	27	24.4	+01.9	S 23 14.6	+00.0	14	36.5	+02.2	S 21 48.4	+00.0	14				
15	86	41.3	+00.7	S 18 12.6	+00.5	42	26.3	+01.8	S 23 14.6	-00.1	25	38.7	+02.1	S 21 48.4	-00.1	15				
16	101	42.0	+00.8	S 18 13.1	+00.4	57	28.1	+01.8	S 23 14.5	+00.0	40	40.8	+02.2	S 21 48.3	+00.0	16				
17	116	42.8	+00.8	S 18 13.5	+00.4	72	29.9	+01.9	S 23 14.5	+00.0	55	43.0	+02.1	S 21 48.3	+00.0	17				
18	131	43.6	+00.7	S 18 13.9	+00.5	87	31.8	+01.8	S 23 14.5	+00.0	70	45.1	+02.2	S 21 48.3	-00.1	18				
19	146	44.3	+00.8	S 18 14.4	+00.4	102	33.6	+01.9	S 23 14.5	+00.0	85	47.3	+02.2	S 21 48.2	+00.0	19				
20	161	45.1	+00.8	S 18 14.8	+00.5	117	35.5	+01.8	S 23 14.5	+00.0	100	49.5	+02.1	S 21 48.2	-00.1	20				
21	176	45.9	+00.7	S 18 15.3	+00.4	132	37.3	+01.8	S 23 14.5	-00.1	115	51.6	+02.2	S 21 48.1	+00.0	21				
22	191	46.6	+00.8	S 18 15.7	+00.4	147	39.1	+01.9	S 23 14.4	+00.0	130	53.8	+02.1	S 21 48.1	+00.0	22				
23	206	47.4	+00.7	S 18 16.1	+00.5	162	41.0	+01.8	S 23 14.4	+00.0	145	55.9	+02.2	S 21 48.1	-00.1	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	00°0	00°0	00°0	00°0	00°0	00°0	SD	00°3	00°3	00°3	00°3	00°3	00°3	SD	00°1	00°1	00°1	00°1	00°1	00°1
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°0	00°0	00°0	00°0	00°0	00°0	HP	00°0	00°0	00°0	00°0	00°0	00°0
SHA	129°	129°	129°	129°	129°	129°	SHA	085°	085°	085°	085°	085°	085°	SHA	068°	068°	068°	068°	068°	068°
Greenwich Culmination Time: 09:13						Greenwich Culmination Time: 12:10						Greenwich Culmination Time: 13:17								

UT	<i>Sun</i>				<i>Venus</i>				<i>Moon</i> A: 83%				UT			
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec				
00	180	35.1	-00.3	S 23 25.8	+00.1	145	44.4	-00.8	S 21 45.4	-00.6	246	40.0	-30.1	S 03 57.3	+13.7	00
01	195	34.8	-00.3	S 23 25.9	+00.0	160	43.6	-00.8	S 21 44.8	-00.7	261	09.9	-30.0	S 04 11.0	+13.6	01
02	210	34.5	-00.3	S 23 25.9	+00.0	175	42.8	-00.8	S 21 44.1	-00.7	275	39.9	-30.1	S 04 24.6	+13.7	02
03	225	34.2	-00.3	S 23 25.9	+00.0	190	42.0	-00.7	S 21 43.4	-00.6	290	09.8	-30.1	S 04 38.3	+13.6	03
04	240	33.9	-00.3	S 23 25.9	+00.0	205	41.3	-00.8	S 21 42.8	-00.7	304	39.7	-30.0	S 04 51.9	+13.5	04
05	255	33.6	-00.3	S 23 25.9	+00.1	220	40.5	-00.8	S 21 42.1	-00.7	319	09.7	-30.2	S 05 05.4	+13.6	05
06	270	33.3	-00.4	S 23 26.0	+00.0	235	39.7	-00.7	S 21 41.4	-00.6	333	39.5	-30.1	S 05 19.0	+13.5	06
07	285	32.9	-00.3	S 23 26.0	+00.0	250	39.0	-00.8	S 21 40.8	-00.7	348	09.4	-30.1	S 05 32.5	+13.5	07
08	300	32.6	-00.3	S 23 26.0	+00.0	265	38.2	-00.8	S 21 40.1	-00.7	2	39.3	-30.2	S 05 46.0	+13.4	08
09	315	32.3	-00.3	S 23 26.0	+00.0	280	37.4	-00.7	S 21 39.4	-00.6	17	09.1	-30.2	S 05 59.4	+13.4	09
10	330	32.0	-00.3	S 23 26.0	+00.0	295	36.7	-00.8	S 21 38.8	-00.7	31	38.9	-30.2	S 06 12.8	+13.4	10
11	345	31.7	-00.3	S 23 26.0	+00.1	310	35.9	-00.8	S 21 38.1	-00.7	46	08.7	-30.2	S 06 26.2	+13.3	11
12	0	31.4	-00.3	S 23 26.1	+00.0	325	35.1									

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°3 16°3 16°3 16°3 16°3 16°3
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 090° 090° 090° 090° 089° 089°
Greenwich Culmination Time: 11:58

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°3 00°3 00°3 00°3 00°3 00°3
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 131° 130° 130° 130° 130° 130°
Greenwich Culmination Time: 09:15

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°3 16°3 16°3 16°3 16°3 16°3
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 089° 089° 089° 088° 088° 088°
Greenwich Culmination Time: 11:58

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°3 00°3 00°3 00°3 00°3 00°3
HP 00°0 00°0 00°0 00°0 00°0 00°0
SHA 130° 130° 130° 130° 129° 129°
Greenwich Culmination Time: 09:14

Table with columns for UT, Sun, Venus, Moon, and UT. Includes astronomical data for Sun, Venus, and Moon for the date 2019 December 28. Includes sub-tables for UT 02 06 10 14 18 22 and Greenwich Culmination Time: 12:01, 14:25, 14:03.

Table with columns for UT, Sun, Venus, Moon, and UT. Includes astronomical data for Sun, Venus, and Moon for the date 2019 December 25. Includes sub-tables for UT 02 06 10 14 18 22 and Greenwich Culmination Time: 11:59, 14:22, 11:20.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes astronomical data for Mars, Jupiter, and Saturn for the date 2019 December 28. Includes sub-tables for UT 02 06 10 14 18 22 and Greenwich Culmination Time: 09:08, 11:58, 13:03.

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Includes astronomical data for Mars, Jupiter, and Saturn for the date 2019 December 25. Includes sub-tables for UT 02 06 10 14 18 22 and Greenwich Culmination Time: 09:12, 12:07, 13:14.

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°3 16°3 16°3 16°3 16°3 16°3
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 086° 085° 085° 085° 085° 085°
Greenwich Culmination Time: 12:00

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 128° 128° 128° 127° 127° 127°
Greenwich Culmination Time: 09:11

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°3 16°3 16°3 16°3 16°3 16°3
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 085° 084° 084° 084° 084° 084°
Greenwich Culmination Time: 12:00

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 127° 127° 127° 127° 127° 127°
Greenwich Culmination Time: 09:09

UT	Sun				Venus				Moon				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
	°	'	°	'	°	'	°	'	°	'	°	'								
00	179	35.5	-00.3	S 23 15.2	-00.1	143	26.6	-00.6	S 19 19.7	-00.9	144	11.4	-30.1	S 20 27.7	-06.1	00				
01	194	35.2	-00.3	S 23 15.1	-00.1	158	26.0	-00.7	S 19 18.8	-00.8	158	41.3	-30.0	S 20 21.6	-06.2	01				
02	209	34.9	-00.3	S 23 15.0	-00.2	173	25.3	-00.6	S 19 18.0	-00.9	173	11.3	-30.0	S 20 15.4	-06.3	02				
03	224	34.6	-00.3	S 23 14.8	-00.1	188	24.7	-00.7	S 19 17.1	-00.8	187	41.3	-29.9	S 20 09.1	-06.4	03				
04	239	34.3	-00.3	S 23 14.7	-00.1	203	24.0	-00.6	S 19 16.3	-00.9	202	11.4	-29.8	S 20 02.7	-06.5	04				
05	254	34.0	-00.3	S 23 14.6	-00.2	218	23.4	-00.7	S 19 15.4	-00.8	216	41.6	-29.7	S 19 56.2	-06.6	05				
06	269	33.7	-00.3	S 23 14.4	-00.1	233	22.7	-00.7	S 19 14.6	-00.9	231	11.9	-29.7	S 19 49.7	-06.7	06				
07	284	33.4	-00.4	S 23 14.3	-00.2	248	22.0	-00.6	S 19 13.7	-00.9	245	42.2	-29.6	S 19 42.9	-06.7	07				
08	299	33.0	-00.3	S 23 14.1	-00.1	263	21.4	-00.7	S 19 12.8	-00.8	260	12.6	-29.5	S 19 36.2	-06.9	08				
09	314	32.7	-00.3	S 23 14.0	-00.1	278	20.7	-00.6	S 19 12.0	-00.9	274	43.1	-29.5	S 19 29.3	-06.9	09				
10	329	32.4	-00.3	S 23 13.9	-00.2	293	20.1	-00.7	S 19 11.1	-00.9	289	13.6	-29.4	S 19 22.4	-07.1	10				
11	344	32.1	-00.3	S 23 13.7	-00.1	308	19.4	-00.6	S 19 10.2	-00.8	303	44.2	-29.3	S 19 15.3	-07.1	11				
12	359	31.8	-00.3	S 23 13.6	-00.2	323	18.8	-00.7	S 19 09.4	-00.9	318	14.9	-29.2	S 19 08.2	-07.2	12				
13	14	31.5	-00.3	S 23 13.4	-00.1	338	18.1	-00.6	S 19 08.5	-00.8	332	45.7	-29.2	S 19 01.0	-07.2	13				
14	29	31.2	-00.3	S 23 13.3	-00.2	353	17.5	-00.7	S 19 07.7	-00.9	347	16.5	-29.1	S 18 53.8	-07.4	14				
15	44	30.9	-00.3	S 23 13.1	-00.1	8	16.8	-00.6	S 19 06.8	-00.9	1	47.4	-29.0	S 18 46.4	-07.4	15				
16	59	30.6	-00.3	S 23 13.0	-00.2	23	16.2	-00.7	S 19 05.9	-00.8	16	18.4	-28.9	S 18 39.0	-07.6	16				
17	74	30.3	-00.3	S 23 12.8	-00.1	38	15.5	-00.6	S 19 05.1	-00.9	30	49.5	-28.9	S 18 31.4	-07.6	17				
18	89	30.0	-00.3	S 23 12.7	-00.2	53	14.9	-00.7	S 19 04.2	-00.9	45	20.6	-28.8	S 18 23.8	-07.7	18				
19	104	29.7	-00.3	S 23 12.5	-00.1	68	14.2	-00.6	S 19 03.3	-00.9	59	51.8	-28.7	S 18 16.1	-07.7	19				
20	119	29.4	-00.3	S 23 12.4	-00.2	83	13.6	-00.7	S 19 02.4	-00.8	74	23.1	-28.7	S 18 08.4	-07.9	20				
21	134	29.1	-00.3	S 23 12.2	-00.1	98	12.9	-00.6	S 19 01.6	-00.9	88	54.4	-28.6	S 18 00.5	-07.9	21				
22	149	28.8	-00.3	S 23 12.1	-00.2	113	12.3	-00.6	S 19 00.7	-00.9	103	25.8	-28.5	S 17 52.6	-08.0	22				
23	164	28.5	-00.3	S 23 11.9	-00.1	128	11.7	-00.7	S 18 59.8	-00.9	117	57.3	-28.4	S 17 44.6	-08.0	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	16°3	16°3	16°3	16°3	16°3	16°3	SD	00°1	00°1	00°1	00°1	00°1	00°1	SD	15°1	15°1	15°0	15°0	15°0	15°0
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	55°4	55°3	55°2	55°1	55°0	55°0
SHA	082°	082°	082°	082°	082°	081°	SHA	046°	046°	046°	046°	045°	045°	SHA	046°	044°	042°	040°	037°	035°
Greenwich Culmination Time: 12:01						Greenwich Culmination Time: 14:26						Greenwich Culmination Time: 14:52								

UT	Mars				Jupiter				Saturn				UT							
	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec	GHA	ddGHA	Dec	dDec								
	°	'	°	'	°	'	°	'	°	'	°	'								
00	223	00.4	+00.7	S 18 57.5	+00.4	180	39.2	+01.8	S 23 12.5	+00.0	164	25.1	+02.2	S 21 44.1	-00.1	00				
01	238	01.1	+00.8	S 18 57.9	+00.5	195	41.0	+01.9	S 23 12.5	-00.1	179	27.3	+02.1	S 21 44.0	+00.0	01				
02	253	01.9	+00.7	S 18 58.4	+00.4	210	42.9	+01.8	S 23 12.4	+00.0	194	29.4	+02.2	S 21 44.0	+00.0	02				
03	268	02.6	+00.7	S 18 58.8	+00.4	225	44.7	+01.9	S 23 12.4	+00.0	209	31.6	+02.1	S 21 44.0	-00.1	03				
04	283	03.3	+00.8	S 18 59.2	+00.4	240	46.6	+01.8	S 23 12.4	+00.0	224	33.7	+02.2	S 21 43.9	+00.0	04				
05	298	04.1	+00.7	S 18 59.6	+00.4	255	48.4	+01.8	S 23 12.4	-00.1	239	35.9	+02.1	S 21 43.9	-00.1	05				
06	313	04.8	+00.8	S 19 00.0	+00.4	270	50.2	+01.9	S 23 12.3	+00.0	254	38.0	+02.2	S 21 43.8	+00.0	06				
07	328	05.6	+00.7	S 19 00.4	+00.4	285	52.1	+01.8	S 23 12.3	+00.0	269	40.2	+02.1	S 21 43.8	+00.0	07				
08	343	06.3	+00.8	S 19 00.8	+00.4	300	53.9	+01.8	S 23 12.3	+00.0	284	42.3	+02.2	S 21 43.8	-00.1	08				
09	358	07.1	+00.7	S 19 01.2	+00.5	315	55.7	+01.9	S 23 12.3	+00.0	299	44.5	+02.1	S 21 43.7	+00.0	09				
10	13	07.8	+00.7	S 19 01.7	+00.4	330	57.6	+01.8	S 23 12.3	-00.1	314	46.6	+02.2	S 21 43.7	-00.1	10				
11	28	08.5	+00.8	S 19 02.1	+00.4	345	59.4	+01.8	S 23 12.2	+00.0	329	48.8	+02.2	S 21 43.6	+00.0	11				
12	43	09.3	+00.7	S 19 02.5	+00.4	1	01.2	+01.9	S 23 12.2	+00.0	344	51.0	+02.1	S 21 43.6	-00.1	12				
13	58	10.0	+00.8	S 19 02.9	+00.4	16	03.1	+01.8	S 23 12.2	+00.0	359	53.1	+02.2	S 21 43.5	+00.0	13				
14	73	10.8	+00.7	S 19 03.3	+00.4	31	04.9	+01.9	S 23 12.2	-00.1	14	55.3	+02.1	S 21 43.5	+00.0	14				
15	88	11.5	+00.7	S 19 03.7	+00.4	46	06.8	+01.8	S 23 12.1	+00.0	29	57.4	+02.2	S 21 43.5	-00.1	15				
16	103	12.2	+00.8	S 19 04.1	+00.4	61	08.6	+01.8	S 23 12.1	+00.0	44	59.6	+02.1	S 21 43.4	+00.0	16				
17	118	13.0	+00.7	S 19 04.5	+00.4	76	10.4	+01.9	S 23 12.1	+00.0	60	01.7	+02.2	S 21 43.4	-00.1	17				
18	133	13.7	+00.8	S 19 04.9	+00.5	91	12.3	+01.8	S 23 12.1	+00.0	75	03.9	+02.1	S 21 43.3	+00.0	18				
19	148	14.5	+00.7	S 19 05.4	+00.4	106	14.1	+01.8	S 23 12.1	-00.1	90	06.0	+02.2	S 21 43.3	-00.1	19				
20	163	15.2	+00.7	S 19 05.8	+00.4	121	15.9	+01.9	S 23 12.0	+00.0	105	08.2	+02.1	S 21 43.2	+00.0	20				
21	178	15.9	+00.8	S 19 06.2	+00.4	136	17.8	+01.8	S 23 12.0	+00.0	120	10.3	+02.2	S 21 43.2	+00.0	21				
22	193	16.7	+00.7	S 19 06.6	+00.4	151	19.6	+01.9	S 23 12.0	+00.0	135	12.5	+02.2	S 21 43.2	-00.1	22				
23	208	17.4	+00.8	S 19 07.0	+00.4	166	21.5	+01.8	S 23 12.0	-00.1	150	14.7	+02.1	S 21 43.1	+00.0	23				
UT	02	06	10	14	18	22	UT	02	06	10	14	18	22	UT	02	06	10	14	18	22
SD	00°0	00°0	00°0	00°0	00°0	00°0	SD	00°3	00°3	00°3	00°3	00°3	00°3	SD	00°1	00°1	00°1	00°1	00°1	00°1
HP	00°1	00°1	00°1	00°1	00°1	00°1	HP	00°0	00°0	00°0	00°0	00°0	00°0	HP	00°0	00°0	00°0	00°0	00°0	00°0
SHA	126°	126°	126°	125°	125°	125°	SHA	083°	083°	083°	083°	083°	083°	SHA	067°	067°	067°	067°	067°	067°
Greenwich Culmination Time: 09:07						Greenwich Culmination Time: 11:55						Greenwich Culmination Time: 13:00								

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°3 16°3 16°3 16°3 16°3 16°3
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 081° 081° 081° 081° 080° 080°
Greenwich Culmination Time: 12:02

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 125° 125° 125° 125° 125° 125°
Greenwich Culmination Time: 09:06

Table with columns for UT, Sun, Venus, Moon, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 16°3 16°3 16°3 16°3 16°3 16°3
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 080° 080° 080° 080° 079° 079°
Greenwich Culmination Time: 12:02

Table with columns for UT, Mars, Jupiter, Saturn, and UT. Rows 00-23. Includes GHA, ddGHA, Dec, dDec for each planet.

UT 02 06 10 14 18 22
SD 00°0 00°0 00°0 00°0 00°0 00°0
HP 00°1 00°1 00°1 00°1 00°1 00°1
SHA 124° 124° 124° 124° 124° 124°
Greenwich Culmination Time: 09:05

