The left column gives Julian Dates (number of days from 4713 B.C. Jan. 1 noon), useful for finding time spans between events by subtraction. The first 3 digits of the Julian date (245) are omitted, to save space.

Hours and minutes, where given, are in Universal Time. (Sometimes the hour appears as “24” or the minute as “60,” because the instant was shortly before the end of the day or hour.)

Occasions such as “Moon 1.25° NNE of Venus” are appulses: closest apparent approaches. They are slightly different from conjunctions, when one passes north of the other as measured in right ascension or in ecliptic longitude. A quasi-conjunction is an appulse without a conjunction, and typically happens when a planet is near its stationary moment.

Occasions when three bodies are within a circle of small size are "trios." Like appulses, they are most interesting when the bodies are bright and are not at small elongation from the Sun.

For meteor showers: ZHR (zenithal hourly rate) is an estimate of the number to be seen under ideal conditions at the peak time if the radiant were overhead. Actual rates may be very different. Peak times (predicted from where the center of the stream seems to cross nearest to Earth's orbit) are uncertain; best to start watching the night before. Meteor are usually most abundant in the morning hours.

Tell me of errors you notice. It's hard to check the accuracy of every detail, but errors are more easily corrected here than in the former printed Astronomical Calendars! universalworkshop.com/contact

This calendar may be subject to improvement. Come back to it!

Explanation of terms can be found in our glossary book Albedo to Zodiac. There is more about each kind of event in The Astronomical Companion. And events in this list can be traced in the large Zodiac Wavy Chart for the year.

For all these, see universalworkshop.com
9221.5 Jan 7 Thu 0 Moon 6.4° NNE of Spica; 82° and 83° from the Sun in the morning sky
9224.157 Jan 9 SAT 15:47 Moon at perigee; distance 57.60 Earth-radii
9224.688 Jan 10 SUN 5 Mercury 1.61° SE of Saturn; 13° from the Sun in the evening sky; magnitudes -0.9 and 0.6
9224.729 Jan 10 SUN 6 Moon 5.4° NNE of Antares; 39° and 40° from the Sun in the morning sky
9225.292 Jan 10 SUN 19 Mercury, Jupiter, and Saturn within circle of diameter 2.39°; about 13° from the Sun in the evening sky; magnitudes -1, -2, 1
9225.345 Jan 10 SUN 20 Moon at descending node; longitude 259.7°
9226.292 Jan 11 Mon 19 Mercury 1.41° SE of Jupiter; 14° from the Sun in the evening sky; magnitudes -0.9 and -1.9
9226.354 Jan 11 Mon 21 Venus 1.50° N of Moon; 18° from the Sun in the morning sky; magnitudes -3.9 and -5.9
9226.753 Jan 12 Tue 6 Venus at southernmost declination, -23.18°
9227.709 Jan 13 Wed 5:01 New Moon; beginning of lunation 1213
9228.438 Jan 13 Wed 23 Saturn 3.2° NNW of Moon; 9° and 10° from the Sun in the evening sky; magnitudes 0.6 and -5.0
9228.5 Jan 14 Thu 0 Moon, Mercury, and Saturn within circle of diameter 5.96°; about 12° from the Sun in the evening sky; magnitudes -5, -1, 1
9228.5 Jan 14 Thu 0 Moon, Jupiter, and Saturn within circle of diameter 3.77°; about 11° from the Sun in the evening sky; magnitudes -5, -2, 1
9228.625 Jan 14 Thu 3 Jupiter 3.3° NNW of Moon; 12° from the Sun in the evening sky; magnitudes -1.9 and -5.3
9228.700 Jan 14 Thu 5 Moon, Mercury, and Jupiter within circle of diameter 3.96°; about 13° from the Sun in the evening sky; magnitudes -5, -1, -2
9228.772 Jan 14 Thu 7 Uranus stationary in longitude; resumes direct motion
9228.806 Jan 14 Thu 7 Pluto at conjunction with the Sun; 35.184 AU from Earth; latitude -1.25°
9228.896 Jan 14 Thu 10 Mercury 2.28° NNW of Moon; 15° and 16° from the Sun in the evening sky; magnitudes -0.9 and -5.6
9228.971 Jan 14 Thu 11 Uranus stationary in right ascension; resumes direct motion
9230.988 Jan 16 SAT 12 Venus at descending node through the ecliptic plane
9231.917 Jan 17 SUN 10 Neptune 4.1° NNW of Moon; 51° and 52° from the Sun in the evening sky; magnitudes 7.9 and -8.3
9234.107 Jan 19 Tue 15 Sun enters Capricornus, at longitude 299.74° on the ecliptic
9234.361 Jan 19 Tue 21 Sun enters the astrological sign Aquarius, i.e. its longitude is 300°
9235.313 Jan 20 Wed 20 Mars 1.62° NNW of Uranus; 96° from the Sun in the evening sky; magnitudes 0.2 and 5.8
9235.377 Jan 20 Wed 21:02 First Quarter Moon
9235.896 Jan 21 Thu 10 Uranus 3.1° NNW of Moon; 95° and 96° from the Sun in the evening sky; magnitudes 5.8 and -10.2
February 1 Mon 10

Mars at east quadrature, 90° from the Sun

February 2 Tue

Ground Hog Day

February 3 Wed 6

Moon 6.2° NNE of Spica; 110° from the Sun in the morning sky

February 3 Wed 18:48

Moon at perigee; distance 58.03 Earth-radii

February 4 Thu 17:38

Last Quarter Moon

Venus 0.38° SE of Saturn; 12° from the Sun in the morning sky; magnitudes -3.9 and 0.7

February 5 Sat 8

Venus, Jupiter, and Saturn within circle of diameter 5.43°; about 10° from the Sun in the morning sky; magnitudes -4, -2, 1

February 6 Sat 9

Mars at east quadrature, 90° from the Sun

February 7 Sat 10

Ground Hog Day

February 8 Sat 11

Moon 5.3° NNE of Antares; 67° and 68° from the Sun in the morning sky
9252.5   Feb  7 SUN
Alpha Centaurid meteors; ZHR 6; peak Feb 7 18h; 4 days before New
9252.522 Feb  7 SUN  1
Moon at descending node; longitude 258.2°
9252.960 Feb  7 SUN 11
Spring equinox on Mars
9253.799 Feb  8 Mon  7
Mercury at northernmost latitude from the ecliptic plane, 7.0°
9254.071 Feb  8 Mon 14
Mercury at inferior conjunction with the Sun; 0.652 AU from Earth; latitude 7.00°
9256.042 Feb 10 Wed 13
Saturn 3.4° NNW of Moon; 16° from the Sun in the morning sky; magnitudes 0.7 and -5.6
9256.158 Feb 10 Wed 16
Moon, Venus, and Saturn within circle of diameter 5.18°; about 14° from the Sun in the morning sky; magnitudes -5, -4, 1
9256.438 Feb 10 Wed 23
Venus 3.1° NNW of Moon; 11° from the Sun in the morning sky; magnitudes -3.9 and -5.1
9256.458 Feb 10 Wed 23
Moon, Venus, and Jupiter within circle of diameter 3.57°; about 11° from the Sun in the morning sky; magnitudes -5, -4, -2
9256.479 Feb 10 Wed 24
Jupiter 3.6° NNW of Moon; 10° and 11° from the Sun in the morning sky; magnitudes -2.0 and -5.1
9256.642 Feb 11 Thu  3
The equation of time is at a minimum of -14.23 minutes.
9256.813 Feb 11 Thu  8
Mercury 8.0° NNW of Moon; 7° from the Sun in the morning sky; magnitudes 3.7 and -4.7
9257.125 Feb 11 Thu 15
Venus 0.43° SE of Jupiter; 11° from the Sun in the morning sky; magnitudes -3.9 and -2.0
9257.297 Feb 11 Thu 19:07
New Moon; beginning of lunation 1214
9258.917 Feb 13 SAT 10
Mercury 4.6° NNW of Venus; 11° and 10° from the Sun in the morning sky; magnitudes 2.7 and -3.9
9258.958 Feb 13 SAT 11
Mercury, Venus, and Jupiter within circle of diameter 4.59°; about 11° from the Sun in the morning sky; magnitudes 3, -4, -2
9259.354 Feb 13 SAT 21
Neptune 4.0° NNW of Moon; 24° and 25° from the Sun in the evening sky; magnitudes 8.0 and -6.4
9259.5   Feb 14 SUN
St. Valentine’s Day
9261.083 Feb 15 Mon 14
Mercury 3.9° NNW of Jupiter; 15° and 14° from the Sun in the morning sky; magnitudes 2.0 and -2.0
9261.884 Feb 16 Tue  9
Sun enters Aquarius, at longitude 327.92° on the ecliptic
9262.5   Feb 17 Wed
Ash Wednesday
9263.271 Feb 17 Wed 19
Uranus 2.80° NNW of Moon; 68° from the Sun in the evening sky; magnitudes 5.8 and -9.1
9263.935 Feb 18 Thu 10
Moon at apogee; distance 63.41 Earth-radii
9263.948 Feb 18 Thu 11
Sun enters the astrological sign Pisces, i.e. its longitude is 330°
9264.583 Feb 19 Fri  2
Mars 3.5° NNW of Moon; 82° from the Sun in the evening sky; magnitudes 0.8 and -9.7
9265.250 Feb 19 Fri 18
Moon 5.5° SE of the Pleiades; 90° and 89° from the Sun in the evening sky
9265.283 Feb 19 Fri 18:48
First Quarter Moon
9265.845 Feb 20 SAT 8
9266.000 Feb 20 SAT 12
9266.016 Feb 20 SAT 12
9266.533 Feb 21 SUN 1
9266.573 Feb 21 SUN 2
9266.833 Feb 23 Tue 8
9267.875 Feb 22 Mon 9
9268.333 Feb 23 Tue 8
9269.354 Feb 23 Tue 21
9269.563 Feb 24 Wed 2
9270.604 Feb 25 Thu 3
9271.229 Feb 26 Fri 18
9272.846 Feb 27 SAT 8:18

Venus at aphelion, 0.7282 AU from the Sun
Moon 4.9° N of Aldebaran; 98° from the Sun in the evening sky
Mercury stationary in right ascension; resumes direct motion
Mercury stationary in longitude; resumes direct motion
Moon at ascending node; longitude 76.7°
Moon 0.59° NE of M35 cluster; 119° and 118° from the Sun in the evening sky
Mercury 4.1° NE of Saturn; 24° and 27° from the Sun in the morning sky; magnitudes 0.6 and 0.7
Moon 7.3° S of Castor; 136° and 134° from the Sun in the evening sky
Moon 3.7° S of Pollux; 138° and 137° from the Sun in the evening sky
Moon 2.64° NNE of Beehive Cluster; 151° from the Sun in the evening sky
Moon 0.59° NE of M35 cluster; 119° and 118° from the Sun in the evening sky
Mercury at westernmost elongation; 27.3° from Sun in morning sky

9275.720 Mar 2 Tue 5:17
9276.000 Mar 2 Tue 12
9277.203 Mar 3 Wed 17
9277.871 Mar 4 Thu 9
9278.167 Mar 4 Thu 16
9278.771 Mar 5 Fri 7
9279.208 Mar 5 Fri 17
9279.540 Mar 6 SAT 1
9279.563 Mar 6 SAT 1:31
9279.967 Mar 6 SAT 11
9283.542 Mar 10 Wed 1
9284.250 Mar 10 Wed 18
9284.400 Mar 10 Wed 22
9284.504 Mar 11 Thu 0
9284.667 Mar 11 Thu 4

Full Moon

Moon at perigee; distance 57.29 Earth-radii
Moon 6.0° NNE of Spica; 137° and 138° from the Sun in the morning sky
Mercury at descending node through the ecliptic plane
Asteroid 4 Vesta at opposition in longitude
Mars 2.60° SE of Pleiades; 76° from the Sun in the evening sky; magnitudes 1.0 and 2.9
Mercury 0.32° N of Jupiter; 27° from the Sun in the morning sky; magnitudes 0.2 and -2.0
Moon 5.0° NNE of Antares; 95° from the Sun in the morning sky
Moon at descending node; longitude 255.4°

Last Quarter Moon

Mercury at westernmost elongation; 27.3° from Sun in morning sky
Saturn 3.6° NNW of Moon; 40° from the Sun in the morning sky; magnitudes 0.8 and -7.6
Jupiter 3.9° NNW of Moon; 32° from the Sun in the morning sky; magnitudes -2.0 and -6.9
Moon, Mercury, and Jupiter within circle of diameter 5.33°; about 30° from the Sun in the morning sky; magnitudes -7, 0, -2
Neptune at conjunction with the Sun; 30.919 AU from Earth; latitude -1.10°
Mercury 3.5° NNW of Moon; 27° from the Sun in the morning sky; magnitudes 0.1 and -6.5
9285.473 Mar 11 Thu 23 Sun enters Pisces, at longitude 351.60° on the ecliptic
9286.667 Mar 13 SAT 4 Venus 3.6° NNW of Moon; 4° and 6° from the Sun in the morning sky; magnitudes -3.9 and -4.5
9286.742 Mar 13 SAT 6 Moon, Venus, and Neptune within circle of diameter 3.9°; only about 4° from the Sun; magnitudes -4, -4, 8
9286.771 Mar 13 SAT 7 Neptune 3.9° NNW of Moon; 2° and 5° from the Sun in the evening sky; magnitudes 8.0 and -4.4
9286.932 Mar 13 SAT 10:22 New Moon; beginning of lunation 1215
9287.5 Mar 14 SUN Clocks forward 1 hour (America)
9287.5 Mar 14 SUN Gamma Normid meteors; ZHR 6; peak Mar 14 9h; 1 day after New
9287.574 Mar 14 SUN 2 Mercury at aphelion, 0.4667 AU from the Sun
9287.688 Mar 14 SUN 5 Venus 0.37° SE of Neptune; 3° from the Sun in the morning sky; magnitudes -3.9 and 8.0
9287.840 Mar 14 SUN 8 Venus at southernmost latitude from the ecliptic plane, -3.4°
9290.5 Mar 17 Wed St. Patrick’s Day
9290.688 Mar 17 Wed 5 Uranus 2.52° NNW of Moon; 41° and 42° from the Sun in the evening sky; magnitudes 5.8 and -7.6
9291.702 Mar 18 Thu 5 Moon at apogee; distance 63.54 Earth-radii
9292.583 Mar 19 Fri 2 Moon 5.2° SE of the Pleiades; 62° from the Sun in the evening sky
9293.313 Mar 19 Fri 20 Mars 1.89° NNW of Moon; 70° from the Sun in the evening sky; magnitudes 1.2 and -9.2
9293.333 Mar 19 Fri 20 Moon 5.1° N of Aldebaran; 71° from the Sun in the evening sky
9293.647 Mar 20 SAT 4 Moon at ascending node; longitude 73.6°
9293.902 Mar 20 SAT 9:40 Sun enters the astrological sign Aries, i.e. its longitude is 0°
9293.902 Mar 20 SAT 9:40 March or spring or vernal equinox
9294.813 Mar 21 SUN 8 Mars 6.9° N of Aldebaran; 69° from the Sun in the evening sky; magnitudes 1.2 and 0.9
9295.112 Mar 21 SUN 14:41 First Quarter Moon
9295.208 Mar 21 SUN 17 Moon 0.73° N of M35 cluster; 91° from the Sun in the evening sky
9296.729 Mar 23 Tue 6 Moon 7.0° S of Castor; 108° and 107° from the Sun in the evening sky
9296.958 Mar 23 Tue 11 Moon 3.4° S of Pollux; 111° and 110° from the Sun in the evening sky
9298.000 Mar 24 Wed 12 Moon 2.81° NNE of Beehive Cluster; 123° and 124° from the Sun in the evening sky
9299.667 Mar 26 Fri 4 Moon 4.5° NNE of Regulus; 144° from the Sun in the evening sky
9299.762 Mar 26 Fri 6 Venus at superior conjunction with the Sun; 1.723 AU from Earth; latitude -3.21°
9301.5 Mar 28 SUN Palm Sunday.
9301.5 Mar 28 SUN Clocks forward 1 hour (Europe)
9302.284 Mar 28 SUN 18:49 Full Moon
9302.600 Mar 29 Mon 2  Venus brightest; magnitude -3.91°
9303.375 Mar 29 Mon 21 Moon 5.9° NNE of Spica; 164° and 165° from the Sun in the morning sky
9303.667 Mar 30 Tue 4  Mercury 1.28° SE of Neptune; 18° from the Sun in the morning sky; magnitudes -0.4 and 8.0
9303.761 Mar 30 Tue 6:16 Moon at perigee; distance 56.49 Earth-radii

9305.5 Apr 1 Thu  All Fools’ Day
9306.5 Apr 2 Fri  Good Friday
9306.613 Apr 2 Fri 3  Moon at descending node; longitude 252.6°
9307.831 Apr 3 SAT 8  Mercury at southernmost latitude from the ecliptic plane, -7.0°

9308.5 Apr 4 SUN  Last Quarter Moon
9308.919 Apr 4 SUN 10:03 Pluto at northernmost declination, -22.15°
9310.938 Apr 6 Tue 11 Saturn 3.9° NNW of Moon; 65° from the Sun in the morning sky; magnitudes 0.8 and -9.0
9311.938 Apr 7 Wed 11 Jupiter 4.2° NNW of Moon; 53° from the Sun in the morning sky; magnitudes -2.1 and -8.4
9314.104 Apr 9 Fri 15 Neptune 4.0° NNW of Moon; 28° from the Sun in the morning sky; magnitudes 8.0 and -6.6
9315.896 Apr 11 SUN 10 Mercury 2.71° NNW of Moon; 8° and 9° from the Sun in the morning sky; magnitudes -1.2 and -4.8
9316.605 Apr 12 Mon 2:32 New Moon; beginning of lunation 1216
9317.042 Apr 12 Mon 13 Venus 2.61° NNW of Moon; 5° and 6° from the Sun in the evening sky; magnitudes -3.9 and -4.4
9317.042 Apr 12 Mon 13 Moon, Venus, and Pleiade within circle of diameter 2.61°; only about 5° from the Sun; magnitudes -4, -4, 3

9317.5 Apr 13 Tue 1st day of Ramadan (1442 A.H.)
9318.083 Apr 13 Tue 14 Uranus 2.31° NNW of Moon; 16° from the Sun in the evening sky; magnitudes 5.9 and -5.5
9319.239 Apr 14 Wed 18 Moon at apogee; distance 63.68 Earth-radii
9319.854 Apr 15 Thu 9 Moon 5.0° SE of the Pleiades; 35° from the Sun in the evening sky
9319.887 Apr 15 Thu 9 The equation of time is 0.
9320.604 Apr 16 Fri 3 Moon 5.3° NNW of Aldebaran; 43° and 44° from the Sun in the evening sky
9320.746 Apr 16 Fri 6 Moon at ascending node; longitude 71.4°
9322.021 Apr 17 SAT 13 Mars 0.20° NW of Moon; 59° from the Sun in the evening sky; magnitudes 1.5 and -8.6
9322.521 Apr 18 SUN 1 Moon 0.99° NNE of M35 cluster; 64° from the Sun in the evening sky
9323.453 Apr 18 SUN 23 Sun enters Aries, at longitude 29.12° on the ecliptic
9323.567 Apr 19 Mon 2 Mercury at superior conjunction with the Sun; 1.331 AU from Earth; latitude -2.33°
9324.063 Apr 19 Mon 14 Moon 6.8° S of Castor; 82° and 81° from the Sun in the evening sky
9324.271 Apr 19 Mon 19 Moon 3.2° S of Pollux; 84° from the Sun in the evening sky
9324.358 Apr 19 Mon 21 Sun enters the astrological sign Taurus, i.e. its longitude is 30°
9324.791 Apr 20 Tue 6:59 First Quarter Moon
9325.375 Apr 20 Tue 21 Moon 3.0° NNE of Beehive Cluster; 97° from the Sun in the evening sky
9326.5 Apr 22 Thu Lyrid meteors; ZHR 18; peak Apr 22 6h; 2 days after First Quarter
9326.889 Apr 22 Thu 9 Mercury at ascending node through the ecliptic plane
9327.063 Apr 22 Thu 14 Moon 4.6° NNE of Regulus; 117° from the Sun in the evening sky
9327.399 Apr 22 Thu 22 Mars at northernmost declination, 24.90°
9327.5 Apr 23 Fri Pi Puppid meteors; ZHR 10; peak Apr 23 11h; 3 days after First Quarter
9327.563 Apr 23 Fri 2 Venus 0.24° SE of Uranus; 7° from the Sun in the evening sky; magnitudes -3.9 and 5.9
9328.771 Apr 24 SAT 7 Mercury 0.74° NNW of Uranus; 6° from the Sun in the evening sky; magnitudes -1.7 and 5.9
9328.875 Apr 24 SAT 9 Mercury, Venus, and Uranus within circle of diameter 1.68"; about 7° from the Sun in the evening sky; magnitudes -2, -4, 6
9330.229 Apr 25 SUN 18 Mercury 1.16° NNE of Venus; 8° from the Sun in the evening sky; magnitudes -1.6 and -3.9
9330.833 Apr 26 Mon 8 Moon 5.9° NNE of Spica; 168° from the Sun in the evening sky
9331.559 Apr 27 Tue 1 Mercury at perihelion, 0.3075 AU from the Sun
9331.647 Apr 27 Tue 3:32 Full Moon
9331.745 Apr 27 Tue 6 Pluto stationary in longitude; starts retrograde motion
9331.771 Apr 27 Tue 7 Mars 0.55° N of M35 cluster; 55° from the Sun in the evening sky; magnitudes 1.5 and 5.3
9332.139 Apr 27 Tue 15:20 Moon at perigee; distance 56.03 Earth-radii
9332.139 Apr 27 Tue 15:20 Perigee only 11.8 hours after Full Moon
9332.732 Apr 28 Wed 6 Pluto stationary in right ascension; starts retrograde motion
9333.875 Apr 29 Thu 9 Moon 4.7° NNE of Antares; 148° and 149° from the Sun in the morning sky
9333.888 Apr 29 Thu 9 Moon at descending node; longitude 251.0°
9335.332 Apr 30 Fri 20 Uranus at conjunction with the Sun; 20.764 AU from Earth; latitude -0.43°
9337.916 May 3 Mon 10 Saturn at west quadrature, 90° from the Sun
9338.313 May 3 Mon 20 Saturn 4.1° NNW of Moon; 90° from the Sun in the morning sky; magnitudes 0.8 and -10.1
9338.327 May 3 Mon 19:51 Last Quarter Moon
9338.875 May 4 Tue 9 Mercury 2.12° SE of Pleiades; 16° and 17° from the Sun in the evening sky; magnitudes -0.8 and 2.9
9339.5  May  5 Wed  Eta Aquarid meteors; ZHR 50; peak May 5 19h; 2 days after Last Quarter
9339.521 May  5 Wed  1  Jupiter 4.4° NNW of Moon; 76° from the Sun in the morning sky; magnitudes -2.2 and -9.5
9341.417 May  6 Thu  22  Neptune 4.0° NNW of Moon; 54° from the Sun in the morning sky; magnitudes 7.9 and -8.3
9341.768 May  7 Fri  6  Mercury at northernmost latitude from the ecliptic plane, 7.0°
9342.5  May  8 SAT  Eta Lyrid meteors; ZHR 3; peak May 8 9h; 3 days before New
9342.792 May  8 SAT  7  Mars and Saturn at heliocentric opposition; longitudes 127.5° and 307.5°
9343.938 May  9 SUN 11  Venus 4.1° SE of the Pleiades; 11° and 12° from the Sun in the evening sky; magnitudes -3.9 and 2.9
9344.135 May  9 SUN 15  Venus at ascending node through the ecliptic plane
9344.667 May 10 Mon  4  Mercury 7.9° N of Aldebaran; 20° and 21° from the Sun in the evening sky; magnitudes -0.3 and 0.9
9345.479 May 10 Mon 24  Uranus 2.20° NNW of Moon; 9° from the Sun in the morning sky; magnitudes 5.9 and -4.7
9346.292 May 11 Tue 19:00 New Moon; beginning of lunation 1217
9346.421 May 11 Tue 22  Moon at apogee; distance 63.73 Earth-radii; farthest in year
9347.104 May 12 Wed 15  Moon 5.0° SE of the Pleiades; 9° from the Sun in the evening sky
9347.458 May 12 Wed 23  Venus 0.71° NNW of Moon; 12° and 13° from the Sun in the evening sky; magnitudes -3.9 and -5.1
9347.854 May 13 Thu  9  Moon 5.4° NNW of Aldebaran; 17° and 18° from the Sun in the evening sky
9347.939 May 13 Thu 11  Moon at ascending node; longitude 70.7°
9348.313 May 13 Thu 20  Mercury 2.09° NNW of Moon; 22° from the Sun in the evening sky; magnitudes 0.1 and -6.0
9348.353 May 13 Thu 20  The equation of time is at a maximum of 3.65 minutes.
9348.570 May 14 Fri  2  Sun enters Taurus, at longitude 53.50° on the ecliptic
9349.771 May 15 SAT  7  Moon 1.07° N of M35 cluster; 38° from the Sun in the evening sky
9350.729 May 16 SUN  6  Mars 1.50° SSW of Moon; 48° and 49° from the Sun in the evening sky; magnitudes 1.7 and -8.0
9351.313 May 16 SUN 20  Moon 6.7° S of Castor; 55° from the Sun in the evening sky
9351.542 May 17 Mon  1  Moon 3.1° S of Pollux; 58° and 57° from the Sun in the evening sky
9351.646 May 17 Mon  4  Venus 5.8° N of Aldebaran; 13° and 15° from the Sun in the evening sky; magnitudes -3.9 and 0.9
9351.740 May 17 Mon  6  Mercury at easternmost elongation; 22.0° from Sun in evening sky
9352.332 May 17 Mon 20  Mercury at northernmost declination, 25.25°
9352.646 May 18 Tue  4  Moon 3.1° NNE of Beehive Cluster; 70° from the Sun in the evening sky
9354.300 May 19 Wed 19:12 First Quarter Moon
9354.396 May 19 Wed 22 Moon 4.7° NNE of Regulus; 91° from the Sun in the evening sky
9355.318 May 20 Thu 20 Sun enters the astrological sign Gemini, i.e. its longitude is 60°
9356.126 May 21 Fri 15 Jupiter at west quadrature, 90° from the Sun
9357.5 May 23 SUN Whit Sunday
9357.849 May 23 SUN Saturn stationary in longitude; starts retrograde motion
9358.271 May 23 SUN Moon 5.9° NNE of Spica; 142° and 141° from the Sun in the evening sky
9358.287 May 23 SUN Saturn stationary in right ascension; starts retrograde motion
9360.574 May 26 Wed 1:46 Moon at perigee; distance 56.02 Earth-radii
9360.574 May 26 Wed 1:46 Perigee only 9.5 hours before Full Moon
9360.968 May 26 Wed 11:14 Full Moon. Total eclipse of the Moon
9361.313 May 26 Wed 20 Moon 4.6° NNE of Antares; 175° and 174° from the Sun in the midnight sky
9361.317 May 26 Wed 20 Moon at descending node; longitude 250.7°
9361.583 May 27 Thu 2 Mars 8.7° S of Castor; 44° and 45° from the Sun in the evening sky; magnitudes 1.7 and 1.5
9363.646 May 29 SAT 4 Mercury 0.40° SE of Venus; 17° from the Sun in the evening sky; magnitudes 2.2 and -3.9
9364.167 May 29 SAT 16 Mercury 7.6° W of M35 cluster; 16° and 24° from the Sun in the evening sky; magnitudes 2.3 and 5.3; quasi-conjunction
9364.437 May 29 SAT 22 Mercury stationary in longitude; starts retrograde motion
9364.573 May 30 SUN 2 Mercury stationary in right ascension; starts retrograde motion
9365.171 May 30 SUN 16 Mercury at descending node through the ecliptic plane
9365.646 May 31 Mon 4 Saturn 4.1° NNW of Moon; 116° from the Sun in the morning sky; magnitudes 0.6 and -11.0
9366.479 May 31 Mon 24 Mars 5.3° S of Pollux; 43° from the Sun in the evening sky; magnitudes 1.7 and 1.2
9366.620 Jun 1 Tue 3 Middle of eclipse season: Sun is at same longitude as Moon's ascending node, 70.9°
9367.021 Jun 1 Tue 13 Jupiter 4.4° NNW of Moon; 100° and 99° from the Sun in the morning sky; magnitudes -2.4 and -10.4
9367.809 Jun 2 Wed 7:25 Last Quarter Moon
9368.708 Jun 3 Thu 5 Neptune 4.1° NNW of Moon; 80° from the Sun in the morning sky; magnitudes 7.9 and -9.6
9369.938 Jun 4 Fri 11 Venus 0.11° NNE of M35 cluster; 18° from the Sun in the evening sky; magnitudes -3.9 and 5.3
9370.237 Jun 4 Fri 18 Mars at northernmost latitude from the ecliptic plane, 1.8°
9370.998 Jun 5 SAT 12 Venus at northernmost declination, 24.43°
9372.045 Jun 6 SUN 13 Asteroid 3 Juno at opposition in longitude
9372.344 Jun 6 SUN 20  Mars and Jupiter at heliocentric opposition; longitudes 140.7° and 320.7°
9372.5 Jun 7 Mon  Daytime Arietid meteors; ZHR 30; peak Jun 7 3h; 3 days before New
9372.854 Jun 7 Mon 9  Uranus 2.09° NNW of Moon; 34° from the Sun in the morning sky; magnitudes 5.9 and -6.9
9373.588 Jun 8 Tue 2  Moon at apogee; distance 63.69 Earth-radii
9374.375 Jun 8 Tue 21  Moon 5.0° SE of the Pleiades; 17° and 18° from the Sun in the morning sky
9375.125 Jun 9 Wed 15  Moon 5.4° N of Aldebaran; 9° and 10° from the Sun in the morning sky
9375.197 Jun 9 Wed 17  Moon at ascending node; longitude 70.8°
9375.543 Jun 10 Thu 1  Mercury at aphelion, 0.4667 AU from the Sun
9375.953 Jun 10 Thu 10:53  New Moon; beginning of lunation 1218. Annular eclipse of the Sun
9376.021 Jun 10 Thu 13  Mercury 3.9° S of Moon; 3° and 1° from the Sun in the evening sky; magnitudes 5.4 and -3.8
9376.546 Jun 11 Fri 1  Mercury at inferior conjunction with the Sun; 0.551 AU from Earth; latitude -3.70°
9377.021 Jun 11 Fri 13  Moon 1.10° NNE of M35 cluster; 12° from the Sun in the evening sky
9377.813 Jun 12 SAT 8  Venus 1.51° SSW of Moon; 20° and 21° from the Sun in the evening sky; magnitudes -3.9 and -5.9
9378.233 Jun 12 SAT 18  Venus at perihelion, 0.7184 AU from the Sun
9378.362 Jun 12 SAT 21  The equation of time is 0.
9378.563 Jun 13 SUN 2  Moon 6.7° S of Castor; 29° and 30° from the Sun in the evening sky
9378.771 Jun 13 SUN 7  Moon 3.1° S of Pollux; 32° from the Sun in the evening sky
9379.396 Jun 13 SUN 22  Mars 2.79° SSW of Moon; 38° and 39° from the Sun in the evening sky; magnitudes 1.8 and -7.4
9379.688 Jun 14 Mon 4:31  Earliest sunrise, at latitude 40° north
9379.875 Jun 14 Mon 9  Moon 3.1° NNE of Beehive Cluster; 44° from the Sun in the evening sky
9381.646 Jun 16 Wed 4  Moon 4.7° NNE of Regulus; 65° from the Sun in the evening sky
9383.662 Jun 18 Fri 3:54  First Quarter Moon
9385.042 Jun 19 SAT 13  Venus 8.7° S of Castor; 22° and 24° from the Sun in the evening sky; magnitudes -3.9 and 1.5
9385.646 Jun 20 SUN 4  Moon 5.9° NNE of Spica; 116° and 115° from the Sun in the evening sky
9386.106 Jun 20 SUN 15  Jupiter stationary in longitude; starts retrograde motion
9386.648 Jun 21 Mon 3:32  Sun enters the astrological sign Cancer, i.e. its longitude is 90°
9386.648 Jun 21 Mon 3:32  June or summer solstice
9386.663 Jun 21 Mon 4  Jupiter stationary in right ascension; starts retrograde motion
9387.129 Jun 21 Mon 15  Sun enters Gemini, at longitude 90.46° on the ecliptic
9387.417 Jun 21 Mon 22  Venus 5.2° S of Pollux; 23° and 24° from the Sun in the evening sky; magnitudes -3.9 and 1.2
9388.396 Jun 22 Tue 22  Mercury 6.1° ENE of Aldebaran; 16° and 22° from the Sun in the morning sky; magnitudes 2.3 and 0.9; quasi-conjunction
9388.413 Jun 22 Tue 22  Mercury stationary in longitude; resumes direct motion
9388.440 Jun 22 Tue 23  Mercury stationary in right ascension; resumes direct motion
9388.5 Jun 23 Wed  June Boötid meteors; ZHR 5; peak Jun 23 0h; 2 days before Full
9388.750 Jun 23 Wed 6  Moon shows minimum libration for the year, 0.05°
9388.754 Jun 23 Wed 6  Moon at descending node; longitude 250.7°
9388.771 Jun 23 Wed 7  Moon 4.6° NNE of Antares; 159° and 158° from the Sun in the evening sky
9388.911 Jun 23 Wed 9:52 Moon at perigee; distance 56.44 Earth-radii
9389.438 Jun 23 Wed 23 Mars 0.03° SE of Beehive Cluster; 35° from the Sun in the evening sky; magnitudes 1.8 and 3.7 Full Moon
9390.277 Jun 24 Thu 18:39 Neptune stationary in longitude; starts retrograde motion
9391.042 Jun 25 Fri 13 Neptune stationary in right ascension; starts retrograde motion
9392.979 Jun 27 SUN 12 Saturn 3.9° NNW of Moon; 143° from the Sun in the morning sky; magnitudes 0.5 and -11.8
9393.315 Jun 27 SUN 19:33 Latest sunset, at latitude 40° north
9394.417 Jun 28 Mon 22 Jupiter 4.2° NNW of Moon; 125° from the Sun in the morning sky; magnitudes -2.6 and -11.2
9395.800 Jun 30 Wed 7 Mercury at southernmost latitude from the ecliptic plane, -7.0°
9396.042 Jun 30 Wed 13 Neptune 4.0° NNW of Moon; 106° and 105° from the Sun in the morning sky; magnitudes 7.9 and -10.6

9397.383 Jul 1 Thu 21:11 Last Quarter Moon
9399.000 Jul 3 SAT 12 Venus 0.35° NNE of Beehive Cluster; 26° from the Sun in the evening sky; magnitudes -3.9 and 3.7
9399.637 Jul 4 SUN 3 Venus at northernmost latitude from the ecliptic plane, 3.4°
9400.229 Jul 4 SUN 18 Uranus 1.94° NNW of Moon; 59° from the Sun in the morning sky; magnitudes 5.8 and -8.6
9400.317 Jul 4 SUN 20 Mercury at westernmost elongation; 21.5° from Sun in morning sky
9401.115 Jul 5 Mon 15 Moon at apogee; distance 63.55 Earth-radii
9401.483 Jul 5 Mon 24 Earth at aphelion; 1.0167 AU from the Sun
9401.646 Jul 6 Tue 4 Moon 5.0° SE of the Pleiades; 43° and 44° from the Sun in the morning sky
9402.396 Jul 6 Tue 22 Moon 5.4° N of Aldebaran; 35° from the Sun in the morning sky
9402.447 Jul 6 Tue 23 Moon at ascending node; longitude 70.5°
9403.667 Jul 8 Thu 4  Mercury 3.7° S of Moon; 21° from the Sun in the morning sky; magnitudes 0.1 and -5.9
9404.271 Jul 8 Thu 19 Moon 1.04° N of M35 cluster; 15° from the Sun in the morning sky
9405.553 Jul 10 SAT 1:17 New Moon; beginning of lunation 1219
9405.813 Jul 10 SAT 8 Moon 6.7° S of Castor; 5° and 10° from the Sun in the evening sky
9406.042 Jul 10 SAT 13 Moon 3.2° S of Pollux; 7° and 8° from the Sun in the evening sky
9407.125 Jul 11 SUN 15 Moon 3.1° NNE of Beehive Cluster; 19° and 18° from the Sun in the evening sky
9407.979 Jul 12 Mon 12 Venus 3.1° SSW of Moon; 28° and 29° from the Sun in the evening sky; magnitudes -3.9 and -6.6
9408.000 Jul 12 Mon 12 Moon, Venus, and Mars within circle of diameter 3.63°; about 29° from the Sun in the evening sky; magnitudes -7, -4, 2
9408.042 Jul 12 Mon 13 Mars 3.6° SSW of Moon; 29° from the Sun in the evening sky; magnitudes 1.8 and -6.7
9408.521 Jul 13 Tue 0 Mars at aphelion, 1.6660 AU from the Sun
9408.875 Jul 13 Tue 9 Moon 4.6° NNE of Regulus; 39° from the Sun in the evening sky
9409.083 Jul 13 Tue 14 Venus 0.47° NNE of Mars; 29° and 28° from the Sun in the evening sky; magnitudes -3.9 and 1.8
9409.125 Jul 13 Tue 15 Mercury 2.15° S of M35 cluster; 19° from the Sun in the morning sky; magnitudes -0.5 and 5.3
9412.896 Jul 17 SAT 10 First Quarter Moon
9412.924 Jul 17 SAT 10:10 Pluto at opposition in longitude; magnitude 14.3
9414.858 Jul 19 Mon 9 Mercury at ascending node through the ecliptic plane
9415.492 Jul 19 Mon 24 Mercury at northernmost declination, 22.86°
9416.056 Jul 20 Tue 13 Moon at descending node; longitude 249.8°
9416.125 Jul 20 Tue 15 Moon 4.5° NNE of Antares; 133° and 132° from the Sun in the evening sky
9416.306 Jul 20 Tue 19 Sun enters Cancer, at longitude 118.29° on the ecliptic
9416.933 Jul 21 Wed 10:24 Moon at perigee; distance 57.15 Earth-radii
9417.646 Jul 22 Thu 4 Venus 1.09° NNE of Regulus; 31° from the Sun in the evening sky; magnitudes -3.9 and 1.4
9418.102 Jul 22 Thu 14 Sun enters the astrological sign Leo, i.e. its longitude is 120°
9419.354 Jul 23 Fri 21 Mercury 9.3° S of Castor; 10° and 15° from the Sun in the morning sky; magnitudes -1.4 and 1.5
9419.528 Jul 24 SAT 1 Mercury at perihelion, 0.3075 AU from the Sun
9419.609 Jul 24 SAT 2:36 Full Moon
9420.271 Jul 24 SAT 19 Saturn 3.7° NNW of Moon; 171° and 170° from the Sun in the midnight sky; magnitudes 0.3 and -12.5
9420.646 Jul 25 SUN 4 Mercury 5.7° S of Pollux; 9° and 11° from the Sun in the morning sky; magnitudes -1.5 and 1.2
The equation of time is at a minimum of -6.55 minutes.

Jupiter 3.9° NNW of Moon; 153° and 152° from the Sun in the morning sky; magnitudes -2.8 and -12.0

Piscid Austrinid meteors; ZHR 5; peak Jul 27 20h; 4 days before Last Quarter

Neptune 3.8° NNW of Moon; 132° from the Sun in the morning sky; magnitudes 7.8 and -11.4

Southern Delta Aquarid meteors; ZHR 25; peak Jul 29 22h; 2 days before Last Quarter

Alpha Capricornid meteors; ZHR 5; peak Jul 29 22h; 2 days before Last Quarter

Mars 0.63° NNE of Regulus; 23° from the Sun in the evening sky; magnitudes 1.8 and 1.4

Last Quarter Moon

Mercury 0.35° NNE of Beehive Cluster; 2° from the Sun in the morning sky; magnitudes -2.0 and 3.7

Uranus 1.72° NNW of Moon; 84° from the Sun in the morning sky; magnitudes 5.8 and -9.7

Mercury at superior conjunction with the Sun; 1.342 AU from Earth; latitude 6.92°

Saturn at opposition in longitude; magnitude 0.2

Moon at apogee; distance 63.41 Earth-radii

Moon 4.8° SE of the Pleiades; 70° from the Sun in the morning sky

Moon at ascending node; longitude 68.9°

Moon 5.6° N of Aldebaran; 61° from the Sun in the morning sky

Mercury at northernmost latitude from the ecliptic plane, 7.0°

Moon 1.13° N of M35 cluster; 41° from the Sun in the morning sky

Moon 6.7° S of Castor; 23° and 26° from the Sun in the morning sky

Moon 3.1° S of Pollux; 21° and 22° from the Sun in the morning sky

Uranus at west quadrature, 90° from the Sun

Moon 3.0° NNE of Beehive Cluster; 9° and 8° from the Sun in the morning sky

New Moon; beginning of lunation 1220

Mercury 3.2° SSW of Moon; 8° and 10° from the Sun in the evening sky; magnitudes -1.2 and -4.9

Moon 4.5° NNE of Regulus; 14° and 13° from the Sun in the evening sky

1st day of Muslim year (1443 A.H.)

Mars 4.0° SSW of Moon; 19° and 20° from the Sun in the evening sky; magnitudes 1.8 and -5.9

Sun enters Leo, at longitude 138.21° on the ecliptic
9437.958 Aug 11 Wed 11  Venus 3.9° SSW of Moon; 35° and 36° from the Sun in the evening sky; magnitudes -4.0 and -7.3
9438.5  Aug 12 Thu  Perseid meteors; ZHR 110; peak Aug 12 12h; 3 days before First Quarter
9438.521 Aug 12 Thu 1  Mercury 1.08° NNE of Regulus; 11° from the Sun in the evening sky; magnitudes -0.9 and 1.4
9440.125 Aug 13 Fri  Moon 5.5° NNE of Spica; 64° and 63° from the Sun in the evening sky
9442.139 Aug 15 SUN 15:20  First Quarter Moon
9443.058 Aug 16 Mon 13  Mars and Neptune at heliocentric opposition; longitudes 171.6° and 351.6°
9443.170 Aug 16 Mon 16  Moon at descending node; longitude 247.6°
9443.396 Aug 16 Mon 22  Moon 4.4° NNE of Antares; 107° and 106° from the Sun in the evening sky
9443.5  Aug 17 Tue  Kappa Cygnid meteors; ZHR 3; peak Aug 17 17h; 2 days after First Quarter
9444.889 Aug 17 Tue 9:20  Moon at perigee; distance 57.87 Earth-radii
9445.667 Aug 19 Thu 4  Mercury 0.08° S of Mars; 16° from the Sun in the evening sky; magnitudes -0.5 and 1.8
9446.427 Aug 19 Thu 22  Uranus stationary in longitude; starts retrograde motion
9446.510 Aug 20 Fri 0  Uranus stationary in right ascension; starts retrograde motion
9446.513 Aug 20 Fri 0  Jupiter at opposition in longitude; magnitude -2.9
9447.5  Aug 21 SAT 0  Saturn 3.6° NNW of Moon; 161° and 160° from the Sun in the evening sky; magnitudes 0.3 and -12.2
9448.813 Aug 22 SUN 8  Jupiter 3.7° NNW of Moon; 177° and 175° from the Sun in the midnight sky; magnitudes -2.9 and -12.6
9449.001 Aug 22 SUN 12:01  Full Moon
9449.400 Aug 22 SUN 22  Sun enters the astrological sign Virgo, i.e. its longitude is 150°
9450.729 Aug 24 Tue 6  Neptune 3.7° NNW of Moon; 159° and 158° from the Sun in the morning sky; magnitudes 7.8 and -12.1
9451.510 Aug 25 Wed 0  Summer solstice on Mars
9453.141 Aug 26 Thu 15  Mercury at descending node through the ecliptic plane
9454.938 Aug 28 SAT 11  Uranus 1.44° NNW of Moon; 111° and 110° from the Sun in the morning sky; magnitudes 5.7 and -10.7
9455.688 Aug 29 SUN 5  Venus at descending node through the ecliptic plane
9456.271 Aug 29 SUN 19  Moon 4.6° SE of the Pleiades; 96° from the Sun in the morning sky
9456.596 Aug 30 Mon 2  Moon at apogee; distance 63.36 Earth-radii
9456.719 Aug 30 Mon 5  Moon at ascending node; longitude 66.2°
9456.801 Aug 30 Mon 7:14  Last Quarter Moon
9457.021 Aug 30 Mon 13  Moon 5.8° NNW of Aldebaran; 88° and 87° from the Sun in the morning sky
9457.5  Aug 31 Tue  Auriguid meteors; ZHR 5; peak Aug 31 19h; 2 days after Last Quarter
9458.828 Sep  1 Wed 8  The equation of time is 0.
9458.938 Sep 1 Wed 11 Moon 1.36° N of M35 cluster; 67° from the Sun in the morning sky
9460.458 Sep 2 Thu 23 Moon 6.6° S of Castor; 50° and 51° from the Sun in the morning sky
9460.688 Sep 3 Fri 5 Moon 2.98° S of Pollux; 47° and 48° from the Sun in the morning sky
9461.771 Sep 4 SAT 7 Moon 3.1° NNE of Beehive Cluster; 34° from the Sun in the morning sky
9463.375 Sep 5 SUN 21 Venus 1.57° NNE of Spica; 41° from the Sun in the evening sky; magnitudes -4.1 and 1.0
9463.5 Sep 6 Mon 0 Moon 4.5° NNE of Regulus; 14° from the Sun in the morning sky
9464.535 Sep 7 Tue 0:51 New Moon; beginning of lunation 1221
9465.333 Sep 7 Tue 20 Mars 3.8° SSW of Moon; 10° and 11° from the Sun in the evening sky; magnitudes 1.8 and -5.1
9466.5 Sep 9 Thu September Epsilon Perseid meteors; ZHR 10; peak Sep 9 4h; 2 days after New
9466.583 Sep 9 Thu 2 Mercury 5.9° SSW of Moon; 26° and 27° from the Sun in the evening sky; magnitudes 0.1 and -6.6
9467.396 Sep 9 Thu 22 Moon 5.3° NNE of Spica; 38° and 37° from the Sun in the evening sky
9467.750 Sep 10 Fri 6 Venus 3.7° SSW of Moon; 42° from the Sun in the evening sky; magnitudes -4.1 and -7.8
9468.218 Sep 10 Fri 17 Asteroid 2 Pallas at opposition in longitude
9468.912 Sep 11 SAT 9:53 Moon at perigee; distance 57.77 Earth-radii
9470.191 Sep 12 SUN 17 Moon at descending node; longitude 244.7°
9470.604 Sep 13 Mon 3 Moon 4.1° NNE of Antares; 80° from the Sun in the evening sky
9471.361 Sep 13 Mon 20:40 First Quarter Moon
9471.677 Sep 14 Tue 4 Mercury at easternmost elongation; 26.8° from Sun in evening sky
9471.881 Sep 14 Tue 9 Neptune at opposition in longitude; magnitude 7.8
9474.354 Sep 16 Thu 20 Sun enters Virgo, at longitude 174.19° on the ecliptic
9474.688 Sep 17 Fri 5 Saturn 3.7° NNW of Moon; 133° from the Sun in the evening sky; magnitudes 0.5 and -11.5
9475.335 Sep 17 Fri 20 Jupiter 3.8° NNW of Moon; 148° from the Sun in the evening sky; magnitudes -2.8 and -11.9
9475.896 Sep 18 SAT 10 Neptune 3.7° NNW of Moon; 174° and 173° from the Sun in the midnight sky; magnitudes 7.8 and -12.5
9478.021 Sep 20 Mon 13 Full Moon
9478.496 Sep 20 Mon 23:54 Mercury 1.42° SSW of Spica; 25° from the Sun in the evening sky; magnitudes 0.4 and 1.0
9479.125 Sep 21 Tue 15 September or fall or autumn equinox
9480.307 Sep 22 Wed 19:22 Sun enters the astrological sign Libra, i.e. its longitude is 180°
9480.307 Sep 22 Wed 19:22 Uranus 1.26° NNW of Moon; 138° and 137° from the Sun in the morning sky; magnitudes 5.7 and -11.5
9483.604 Sep 26 SUN 3  Moon 4.3° SE of the Pleiades; 122° and 123° from the Sun in the morning sky
9483.769 Sep 26 SUN 6  Mercury at southernmost latitude from the ecliptic plane, -7.0°
9483.816 Sep 26 SUN 8  Moon at ascending node; longitude 63.4°
9484.354 Sep 26 SUN 21 Moon 6.0° N of Aldebaran; 114° from the Sun in the morning sky
9484.402 Sep 26 SUN 22 Moon at apogee; distance 63.44 Earth-radii
9484.668 Sep 27 Mon 4 Mercury stationary in right ascension; starts retrograde motion
9484.711 Sep 27 Mon 5 Mercury stationary in longitude; starts retrograde motion
9486.271 Sep 28 Tue 19 Moon 1.59° N of M35 cluster; 93° and 94° from the Sun in the morning sky
9486.581 Sep 29 Wed 1:57 Last Quarter Moon
9487.833 Sep 30 Thu 8 Moon 6.3° S of Castor; 76° and 77° from the Sun in the morning sky
9488.042 Sep 30 Thu 13 Moon 2.76° S of Pollux; 74° from the Sun in the morning sky

9489.146 Oct 1 Fri 16 Moon 3.3° NNE of Beehive Cluster; 61° from the Sun in the morning sky
9489.896 Oct 2 SAT 10 Mercury 1.49° SSW of Spica; 15° from the Sun in the evening sky; magnitudes 1.9 and 1.0
9490.522 Oct 3 SUN 1 Venus at aphelion, 0.7282 AU from the Sun
9490.896 Oct 3 SUN 10 Moon 4.7° NNE of Regulus; 40° from the Sun in the morning sky
9492.5 Oct 5 Tue October Camelopardalid meteors; ZHR 5; peak Oct 5 13h; 1 day before New
9493.435 Oct 5 Tue 22 Pluto stationary in right ascension; resumes direct motion
9493.765 Oct 6 Wed 6 Pluto stationary in longitude; resumes direct motion
9493.962 Oct 6 Wed 11:05 New Moon; beginning of Lunation 1222
9494.042 Oct 6 Wed 13 Mars 3.2° SSW of Moon; 1° and 4° from the Sun in the evening sky; magnitudes 1.7 and -4.4
9494.458 Oct 6 Wed 23 Mercury 6.2° SSW of Moon; 6° and 8° from the Sun in the evening sky; magnitudes 3.8 and -4.8
9494.5 Oct 7 Thu Rosh Hashanah, 1st say of Hebrew year 5782 A.M.
9494.750 Oct 7 Thu 6 Moon 5.3° NNE of Spica; 11° and 4° from the Sun in the evening sky
9495.5 Oct 8 Fri Draconid meteors; ZHR 20; peak Oct 8 11h; 2 days after New
9495.683 Oct 8 Fri 4 Mars at conjunction with the Sun; 2.628 AU from Earth; latitude 1.05°
9496.227 Oct 8 Fri 17:28 Moon at perigee; distance 56.97 Earth-radii
9497.175 Oct 9 SAT 16 Mercury at inferior conjunction with the Sun; 0.662 AU from Earth; latitude -3.72°
9497.316 Oct 9 SAT 20 Moon at descending node; longitude 242.5°
9497.354 Oct 9 SAT 21 Venus 2.74° SSW of Moon; 46° from the Sun in the evening sky; magnitudes -4.2 and -8.1
9497.5 Oct 10 SUN Southern Taurid meteors; ZHR 5; peak Oct 10 2h; 3 days before First Quarter
9497.708 Oct 10 SUN 5 Mercury 2.41° SW of Mars; 2° and 1° from the Sun in the morning sky; magnitudes 5.2 and 1.6
9497.875 Oct 10 SUN 9 Moon 3.9° NNE of Antares; 53° from the Sun in the evening sky
9498.292 Oct 10 SUN 19 Mercury, Mars, and Antares within circle of diameter 4.29°; only about 2° from the Sun; magnitudes 5, 2, 1
9498.5 Oct 11 Mon Delta Aurigid meteors; ZHR 2; peak Oct 11 3h; 2 days before First Quarter
9498.562 Oct 11 Mon 1 Saturn stationary in longitude; resumes direct motion
9498.568 Oct 11 Mon 2 Saturn stationary in right ascension; resumes direct motion
9500.643 Oct 13 Wed 3:26 First Quarter Moon
9501.149 Oct 13 Wed 16 Pluto at southernmost declination, -22.88°
9501.875 Oct 14 Thu 9 Saturn 3.8° NNW of Moon; 106° from the Sun in the evening sky; magnitudes 0.6 and -10.7
9502.828 Oct 15 Fri 8 Mercury at ascending node through the ecliptic plane
9503.042 Oct 15 Fri 13 Jupiter 4.0° NNW of Moon; 120° from the Sun in the evening sky; magnitudes -2.6 and -11.1
9504.354 Oct 16 SAT 21 Venus 1.44° NNE of Antares; 47° from the Sun in the evening sky; magnitudes -4.3 and 1.0
9505.229 Oct 17 SUN 18 Neptune 3.7° NNW of Moon; 146° from the Sun in the evening sky; magnitudes 7.8 and -11.8
9505.5 Oct 18 Mon Epsilon Geminid meteors; ZHR 3; peak Oct 18 4h; 2 days before Full
9505.533 Oct 18 Mon 1 Mercury stationary in right ascension; resumes direct motion
9505.693 Oct 18 Mon 5 Jupiter stationary in longitude; resumes direct motion
9505.919 Oct 18 Mon 10 Jupiter stationary in right ascension; resumes direct motion
9506.133 Oct 18 Mon 15 Mercury stationary in longitude; resumes direct motion
9507.498 Oct 19 Tue 24 Mercury at perihelion, 0.3075 AU from the Sun
9508.123 Oct 20 Wed 14:56 Full Moon
9508.5 Oct 21 Thu Orionid meteors; ZHR 25; peak Oct 21 5h; 1 day after Full
9509.375 Oct 21 Thu 21 Mars 2.60° NNE of Spica; 5° from the Sun in the morning sky; magnitudes 1.6 and 1.0
9509.458 Oct 21 Thu 23 Uranus 1.24° NNW of Moon; 165° from the Sun in the morning sky; magnitudes 5.7 and -12.2
9510.702 Oct 23 SAT 5 Sun enters the astrological sign Scorpius, i.e. its longitude is 210°
9510.917 Oct 23 SAT 10 Moon 4.2° SE of the Pleiades; 149° and 150° from the Sun in the morning sky
9510.993 Oct 23 SAT 12 Moon at ascending node; longitude 61.9°
9511.5 Oct 24 SUN  Leo Minorid meteors; ZHR 2; peak Oct 24 5h; 4 days after Full
9511.667 Oct 24 SUN 4  Moon 6.2° N of Aldebaran; 141° from the Sun in the morning sky
9512.149 Oct 24 SUN 16  Moon at apogee; distance 63.60 Earth-radii
9512.539 Oct 25 Mon 1  Venus at southernmost latitude from the ecliptic plane, -3.4°
9512.723 Oct 25 Mon 5  Mercury at westernmost elongation; 18.4° from Sun in morning sky
9513.583 Oct 26 Tue 2  Moon 1.77° N of M35 cluster; 120° from the Sun in the morning sky
9515.146 Oct 27 Wed 16  Moon 2.58° S of Pollux; 101° from the Sun in the morning sky
9516.100 Oct 28 Thu 14  Venus dichotomy (D-shape)
9516.337 Oct 28 Thu 20:06 Last Quarter Moon
9517.358 Oct 29 Fri 21  Venus at easternmost elongation; 47.1° from Sun in evening sky
9517.707 Oct 30 SAT 5  Mercury at northernmost latitude from the ecliptic plane, 7.0°
9517.909 Oct 30 SAT 10  Saturn at east quadrature, 90° from the Sun
9518.292 Oct 30 SAT 19  Moon 4.8° NNE of Regulus; 67° from the Sun in the morning sky
9518.5 Oct 31 SUN 1  Halloween
9518.551 Oct 31 SUN 1  Sun enters Libra, at longitude 217.83° on the ecliptic

9520.771 Nov 2 Tue 7  Mercury 4.1° NNE of Spica; 16° from the Sun in the morning sky; magnitudes -0.8 and 1.0
9521.616 Nov 3 Wed 3  The equation of time is at a maximum of 16.49 minutes.
9522.188 Nov 3 Wed 17  Moon 5.3° NNE of Spica; 17° from the Sun in the morning sky
9522.333 Nov 3 Wed 20  Mercury 1.12° SW of Moon; 15° from the Sun in the morning sky; magnitudes -0.9 and -5.6
9522.742 Nov 4 Thu 6  Moon, Mercury, and Mars within circle of diameter 5.99°; about 11° from the Sun in the morning sky; magnitudes -5, -1, 2
9522.792 Nov 4 Thu 7  Mars 2.13° SW of Moon; 9° from the Sun in the morning sky; magnitudes 1.6 and -5.0
9523.385 Nov 4 Thu 21:14 New Moon; beginning of lunation 1223
9523.489 Nov 4 Thu 24  Uranus at opposition in longitude; magnitude 5.6
9524.436 Nov 5 Fri 22:28  Moon at perigee; distance 56.26 Earth-radii
9524.653 Nov 6 SAT 4  Moon at descending node; longitude 241.8°
9525.150 Nov 6 SAT 16  Venus at southernmost declination, -27.24°
9525.250 Nov 6 SAT 18  Moon 3.8° NNE of Antares; 26° from the Sun in the evening sky
9525.5 Nov 7 SUN  Clocks back 1 hour (America)
9526.750 Nov 8 Mon 6  Venus 1.14° SSW of Moon; 47° from the Sun in the evening sky; magnitudes -4.5 and -8.2
9529.167 Nov 10 Wed 16  Mercury 0.96° NNE of Mars; 11° from the Sun in the morning sky; magnitudes -0.9 and 1.6
9529.188 Nov 10 Wed 17  Saturn 4.0° NNW of Moon; 79° from the Sun in the evening sky; magnitudes 0.7 and -9.8
9529.5 Nov 11 Thu  Armistice Day
9530.033 Nov 11 Thu 12:47  First Quarter Moon
9530.354 Nov 11 Thu 21  Jupiter 4.2° NNW of Moon; 94° from the Sun in the evening sky; magnitudes -2.4 and -10.3
9530.5 Nov 12 Fri  Northern Taurid meteors; ZHR 5; peak Nov 12 4h; 1 day after First Quarter
9532.438 Nov 13 SAT 23  Neptune 3.9° NNW of Moon; 119° from the Sun in the evening sky; magnitudes 7.9 and -11.1
9534.329 Nov 15 Mon 20  Jupiter at east quadrature, 90° from the Sun
9535.5 Nov 17 Wed  Leonid meteors; ZHR 15; peak Nov 17 10h; 2 days before Full
9536.646 Nov 18 Thu 4  Uranus 1.37° NNW of Moon; 166° and 167° from the Sun in the evening sky; magnitudes 5.7 and -12.3
9537.874 Nov 19 Fri 8:58  Full Moon. Partial eclipse of the Moon
9538.188 Nov 19 Fri 17  Moon 4.2° SE of the Pleiades; 177° and 175° from the Sun in the midnight sky
9538.250 Nov 19 Fri 18  Moon at ascending node; longitude 61.7°
9538.938 Nov 20 SAT 11  Moon 6.2° N of Aldebaran; 168° and 167° from the Sun in the morning sky
9539.5 Nov 21 SUN  Alpha Monocerotid meteors; ZHR 8; peak Nov 21 10h; 2 days after Full
9539.600 Nov 21 SUN 2  Moon at apogee; distance 63.70 Earth-radii
9540.606 Nov 22 Mon 3  Sun enters the astrological sign Sagittarius, i.e. its longitude is 240°
9540.854 Nov 22 Mon 9  Moon 1.81° N of M35 cluster; 148° from the Sun in the morning sky
9541.110 Nov 22 Mon 15  Mercury at descending node through the ecliptic plane
9541.458 Nov 22 Mon 23  Moon at northernmost declination in year, 26.34°
9541.763 Nov 23 Tue 6  Sun enters Scorpius, at longitude 241.17° on the ecliptic
9542.145 Nov 23 Tue 15  Middle of eclipse season: Sun is at same longitude as Moon's descending node, 241.6°
9542.438 Nov 23 Tue 23  Moon 6.1° S of Castor; 130° and 131° from the Sun in the morning sky
9542.667 Nov 24 Wed 4  Moon 2.54° S of Pollux; 128° from the Sun in the morning sky
9543.813 Nov 25 Thu 8  Moon 3.6° NNE of Beehive Cluster; 115° and 116° from the Sun in the morning sky
9545.357 Nov 26 Fri 21  Dwarf planet 1 Ceres at opposition in longitude
9545.625 Nov 27 SAT 3  Moon 4.8° NNE of Regulus; 95° from the Sun in the morning sky
9546.020 Nov 27 SAT 12:29  Last Quarter Moon
9546.5 Nov 28 SUN  November Orionid meteors; ZHR 3; peak Nov 28 0h; near Last Quarter
9547.682 Nov 29 Mon 4  Mercury at superior conjunction with the Sun; 1.451 AU from Earth; latitude -2.24°
9548.580 Nov 30 Tue 2  Sun enters Ophiuchus, at longitude 248.07° on the ecliptic

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9549.5 Dec 1 Wed  Phoenicid meteors; ZHR 5; peak Dec 1 24h; 2 days before New
9549.646 Dec 1 Wed 4  Moon 5.3° NNE of Spica; 44° and 45° from the Sun in the morning sky
9549.688 Dec 1 Wed 5  Mercury 3.7° NNE of Antares; 1° and 5° from the Sun in the evening sky; magnitudes -1.2 and 1.0
9549.876 Dec 1 Wed 9  Neptune stationary in longitude; resumes direct motion
9550.259 Dec 1 Wed 18 Neptune stationary in right ascension; resumes direct motion
9551.483 Dec 2 Thu 24  Mercury at aphelion, 0.4667 AU from the Sun
9551.563 Dec 3 Fri 2 Mars 0.75° SW of Moon; 18° from the Sun in the morning sky; magnitudes 1.6 and -5.9
9552.125 Dec 3 Fri 15 Moon at descending node; longitude 241.8°
9552.708 Dec 4 SAT 5 Moon 3.8° NNE of Antares; 2° and 5° from the Sun in the morning sky
9552.809 Dec 4 SAT 7 Venus shows greatest illuminated extent, 55.4 square seconds
9552.822 Dec 4 SAT 7:43 New Moon; beginning of lunation 1224. Total eclipse of the Sun
9552.925 Dec 4 SAT 10:12 Moon at perigee; distance 55.94 Earth-radii; nearest in year
9552.925 Dec 4 SAT 10:12 Perigee only 2.5 hours after New Moon
9553.063 Dec 4 SAT 14 Mercury 0.42° WNW of Moon; 3° and 4° from the Sun in the evening sky; magnitudes -1.0 and -4.5
9554.625 Dec 6 Mon 3 Moon at southernmost declination in year, -26.33°
9554.943 Dec 6 Mon 11 Mars and Uranus at heliocentric opposition; longitudes 223.1° and 43.1°
9555.5 Dec 7 Tue Puppid-Velid meteors; ZHR 10; peak Dec 7 0h; 3 days after New
9555.563 Dec 7 Tue 2 Venus 1.88° NNW of Moon; 39° from the Sun in the evening sky; magnitudes -4.7 and -7.6
9556.169 Dec 7 Tue 16 Venus brightest; magnitude -4.67°
9556.191 Dec 7 Tue 16:35 Earliest sunset, at latitude 40° north
9556.5 Dec 8 Wed Monocerotid meteors; ZHR 3; peak Dec 8 21h; 2 days before First Quarter
9556.667 Dec 8 Wed 4 Saturn 4.1° NNW of Moon; 53° and 54° from the Sun in the evening sky; magnitudes 0.8 and -8.5
9557.896 Dec 9 Thu 10 Jupiter 4.2° NNW of Moon; 69° from the Sun in the evening sky; magnitudes -2.2 and -9.3
Moon shows maximum libration for the year, 10.39°
Sigma Hydrid meteors; ZHR 3; peak Dec 11 20h; 1 day after First Quarter Moon
First Quarter Moon
Neptune 3.9° NNW of Moon; 91° from the Sun in the evening sky; magnitudes 7.9 and -10.2
Geminid meteors; ZHR 120; peak Dec 13 24h; 3 days after First Quarter Moon
Coma Berenicid meteors; ZHR 3; peak Dec 15 18h; 3 days before Full Moon
Uranus 1.43° NNW of Moon; 138° from the Sun in the evening sky; magnitudes 5.7 and -11.5
Moon 4.2° SE of the Pleiades; 156° and 155° from the Sun in the evening sky
Moon at ascending node; longitude 61.7°
Moon 6.2° NNW of Aldebaran; 164° and 163° from the Sun in the evening sky
Moon at apogee; distance 63.70 Earth-radii
Sun enters Sagittarius, at longitude 266.63° on the ecliptic
Venus stationary in right ascension; starts retrograde motion
December Leo Minorid meteors; ZHR 5; peak Dec 19 17h; 1 day after Full Moon
Venus stationary in longitude; starts retrograde motion
Moon 1.78° N of M35 Cluster; 175° and 176° from the Sun in the midnight sky
Mars at descending node through the ecliptic plane
Venus at ascending node through the ecliptic plane
Moon 6.2° S of Castor; 158° and 157° from the Sun in the morning sky
Moon 2.59° S of Pollux; 155° from the Sun in the morning sky
December or winter solstice
Sun enters the astrological sign Capricornus, i.e. its longitude is 270°
Ursid meteors; ZHR 15; peak Dec 22 8h; 3 days after Full Moon
Moon 3.5° NNE of Beehive Cluster; 143° from the Sun in the morning sky
Mercury at southernmost latitude from the ecliptic plane, -7.0°
Moon 4.7° NNE of Regulus; 122° and 123° from the Sun in the morning sky
Christmas
The equation of time is 0.
Last Quarter Moon
<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Event Description</th>
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<tbody>
<tr>
<td>9576.313</td>
<td>Dec 27</td>
<td>Mars 4.5° N of Antares; 26° and 27° from the Sun in the morning sky; magnitudes 1.5 and 1.0</td>
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<tr>
<td>9577.021</td>
<td>Dec 28</td>
<td>Moon 5.2° NNE of Spica; 72° and 73° from the Sun in the morning sky</td>
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<tr>
<td>9577.729</td>
<td>Dec 29</td>
<td>Mercury 4.2° S of Venus; 17° from the Sun in the evening sky; magnitudes -0.7 and -4.4</td>
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<tr>
<td>9579.548</td>
<td>Dec 31</td>
<td>Moon at descending node; longitude 241.2°</td>
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