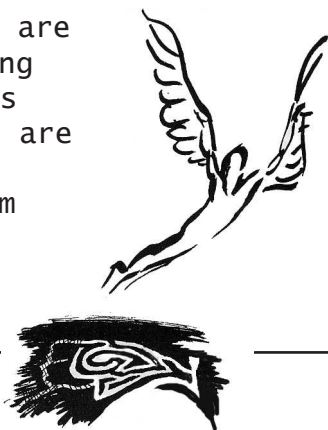


The left column gives Julian Dates (number of days from 4713 B.C. Jan. 1 noon), useful for finding time spans between events by subtraction. The first 3 digits of the Julian date (245) are omitted.

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 UT day.)

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 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!*

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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 topic in *The Astronomical Companion*. And events in this list can be traced in the large *Zodiac Wavy Charts* for the year. For all these, see

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2018

8120.021	Jan	1	Mon	13	Moon 4.5° s of M35 cluster; 171° from the Sun in the midnight sky
8120.325	Jan	1	Mon	20	<b>Mercury at westernmost elongation</b> ; 22.6° from Sun in morning sky
8120.409	Jan	1	Mon	21:49	Perigee only 4.6 hours before Full Moon
8120.409	Jan	1	Mon	21:49	Moon at perigee; distance 55.91 Earth-radii; nearest in year
8120.600	Jan	2	Tue	2:24	<b>Full Moon</b>
8121.030	Jan	2	Tue	13	Uranus stationary in longitude; resumes direct motion

8121.298	Jan	2	Tue	19	Uranus stationary in right ascension; resumes direct motion
8121.438	Jan	2	Tue	23	Moon 8.6° S of Pollux; 168° and 167° from the Sun in the morning sky
8121.5	Jan	3	wed		Quadrantid meteors; ZHR 110; peak Jan 3 15h; 2 days after Full
8121.779	Jan	3	wed	7	<b>Earth at perihelion;</b> */p AU from the Sun
8122.354	Jan	3	wed	21	Moon 2.03° S of Beehive Cluster; 155° and 156° from the Sun in the morning sky
8122.807	Jan	4	Thu	7:22	Latest sunrise, at latitude 40° north
8122.826	Jan	4	Thu	8	Moon at ascending node; longitude 135.2°
8123.854	Jan	5	Fri	9	Moon 0.89° NNE of Regulus; 135° from the Sun in the morning sky
8125.542	Jan	7	SUN	1	Mars 0.20° SSW of Jupiter; 59° from the Sun in the morning sky; magnitudes 1.4 and -1.8
8127.434	Jan	8	Mon	22:25	<b>Last Quarter Moon</b>
8127.651	Jan	9	Tue	4	Pluto at conjunction with the Sun; 34.465 AU from Earth; latitude 0.45°
8127.764	Jan	9	Tue	6	Venus at superior conjunction with the Sun; 1.711 AU from Earth; latitude -1.81°
8127.875	Jan	9	Tue	9	Moon 6.9° NNE of Spica; 85° from the Sun in the morning sky
8129.875	Jan	11	Thu	9	Moon 4.2° NNE of Jupiter; 62° from the Sun in the morning sky
8129.958	Jan	11	Thu	11	Moon, Mars, and Jupiter within circle of diameter 4.54°; about 61° from the Sun in the morning sky; magnitudes -9, 1, -2
8130.042	Jan	11	Thu	13	Moon 4.4° NNE of Mars; 60° and 61° from the Sun in the morning sky
8131.688	Jan	13	SAT	5	Moon 9.3° NNE of Antares; 42° and 43° from the Sun in the morning sky
8131.750	Jan	13	SAT	6	Mercury 0.64° S of Saturn; 20° from the Sun in the morning sky; magnitudes -0.3 and 0.5
8133.361	Jan	14	SUN	21	Uranus at east quadrature, 90° from the Sun
8133.592	Jan	15	Mon	2	Moon at apogee; distance 63.73 Earth-radii; farthest in year
8133.604	Jan	15	Mon	3	Moon 2.63° N of Saturn; 22° from the Sun in the morning sky
8133.606	Jan	15	Mon	3	Mercury at descending node through the ecliptic plane
8133.742	Jan	15	Mon	6	Moon, Mercury, and Saturn within circle of diameter 3.61°; about 21° from the Sun in the morning sky; magnitudes -6, 0, 1
8133.833	Jan	15	Mon	8	Moon 3.4° N of Mercury; 19° from the Sun in the morning sky
8135.595	Jan	17	wed	2:17	<b>New Moon;</b> beginning of lunation 1176
8135.813	Jan	17	wed	8	Moon 2.46° N of Venus; 3° and 2° from the Sun in the evening sky
8137.104	Jan	18	Thu	15	Moon at descending node; longitude 314.9°
8137.499	Jan	18	Thu	24	Mercury at southernmost declination, -23.48°

8138.338	Jan 19	Fri	20	Sun enters Capricornus, at longitude $299.70^\circ$ on the ecliptic
8138.632	Jan 20	SAT	3	Sun enters the astrological sign Aquarius, i.e. its longitude is $300^\circ$
8139.375	Jan 20	SAT	21	Moon $1.55^\circ$ SE of Neptune; $42^\circ$ from the Sun in the evening sky
8142.102	Jan 23	Tue	14	Venus at aphelion, 0.7283 AU from the Sun
8142.688	Jan 24	Wed	5	Moon $4.4^\circ$ SE of Uranus; $81^\circ$ from the Sun in the evening sky
8143.430	Jan 24	Wed	22:19	<b>First Quarter Moon</b>
8143.973	Jan 25	Thu	11	Mercury at aphelion, 0.4667 AU from the Sun
8145.292	Jan 26	Fri	19	Moon $9.2^\circ$ SE of the Pleiades; $114^\circ$ and $113^\circ$ from the Sun in the evening sky
8145.958	Jan 27	SAT	11	Moon $0.77^\circ$ NNE of Aldebaran; $123^\circ$ and $122^\circ$ from the Sun in the evening sky
8147.479	Jan 28	SUN	24	Moon $4.5^\circ$ S of M35 cluster; $144^\circ$ and $143^\circ$ from the Sun in the evening sky
8148.878	Jan 30	Tue	9	Mars and Uranus at heliocentric opposition; longitudes $207.6^\circ$ and $27.6^\circ$
8148.908	Jan 30	Tue	9:48	Moon at perigee; distance 56.28 Earth-radii
8148.917	Jan 30	Tue	10	Moon $8.6^\circ$ S of Pollux; $164^\circ$ and $162^\circ$ from the Sun in the evening sky
8149.833	Jan 31	Wed	8	Moon $2.02^\circ$ S of Beehive Cluster; $177^\circ$ and $176^\circ$ from the Sun in the midnight sky
8150.060	Jan 31	Wed	13:27	<b>Full Moon. Total eclipse of the Moon</b>
8150.282	Jan 31	Wed	19	Moon at ascending node; longitude $134.9^\circ$
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8151.313	Feb 1	Thu	20	Moon $0.93^\circ$ NNE of Regulus; $163^\circ$ from the Sun in the morning sky
8151.5	Feb 2	Fri		Ground Hog Day
8153.485	Feb 3	SAT	24	Middle of eclipse season: Sun is at same longitude as Moon's descending node, $315.1^\circ$
8155.208	Feb 5	Mon	17	Moon $7.0^\circ$ NNE of Spica; $113^\circ$ from the Sun in the morning sky
8157.163	Feb 7	Wed	15:55	<b>Last Quarter Moon</b>
8157.438	Feb 7	Wed	23	Moon $4.1^\circ$ NNE of Jupiter; $87^\circ$ from the Sun in the morning sky
8157.5	Feb 8	Thu		Alpha Centaurid meteors; ZHR 6; peak Feb 8 1h; near Last Quarter
8158.813	Feb 9	Fri	8	Moon $4.3^\circ$ NNE of Mars; $72^\circ$ from the Sun in the morning sky
8158.958	Feb 9	Fri	11	Moon $9.4^\circ$ NNE of Antares; $70^\circ$ and $71^\circ$ from the Sun in the morning sky
8160.471	Feb 10	SAT	23	Jupiter at west quadrature, $90^\circ$ from the Sun
8160.909	Feb 11	SUN	10	The equation of time is at a minimum of -14.24 minutes.
8161.095	Feb 11	SUN	14	Moon at apogee; distance 63.61 Earth-radii
8161.125	Feb 11	SUN	15	Moon $2.47^\circ$ N of Saturn; $47^\circ$ from the Sun in the morning sky

8161.604	Feb 12	Mon	3	Mars 5.1° N of Antares; 73° from the Sun in the morning sky; magnitudes 1.0 and 1.0
8163.5	Feb 14	Wed		St. Valentine's Day
8163.5	Feb 14	Wed		Ash Wednesday
8164.234	Feb 14	Wed	18	Mercury at southernmost latitude from the ecliptic plane, -7.0°
8164.348	Feb 14	Wed	20	Venus at southernmost latitude from the ecliptic plane, -3.4°
8164.383	Feb 14	Wed	21	Moon at descending node; longitude 315.0°
8165.292	Feb 15	Thu	19	Moon 1.09° N of Mercury; 1° and 2° from the Sun in the morning sky
8165.379	Feb 15	Thu	21:06	<b>New Moon</b> ; beginning of lunation 1177. Partial eclipse of the Sun
8166.115	Feb 16	Fri	15	Sun enters Aquarius, at longitude 327.87° on the ecliptic
8166.208	Feb 16	Fri	17	Moon 0.57° SE of Venus; 10° and 9° from the Sun in the evening sky
8166.642	Feb 17	SAT	3	Moon, Venus, and Neptune within circle of diameter 5.65°; about 13° from the Sun in the evening sky; magnitudes -5, -4, 8
8166.708	Feb 17	SAT	5	Moon 1.64° SE of Neptune; 15° from the Sun in the evening sky
8167.009	Feb 17	SAT	12	Mercury at superior conjunction with the Sun; 1.384 AU from Earth; latitude -6.89°
8168.221	Feb 18	SUN	17	Sun enters the astrological sign Pisces, i.e. its longitude is 330°
8169.979	Feb 20	Tue	12	Moon 4.4° SE of Uranus; 54° from the Sun in the evening sky
8171.292	Feb 21	Wed	19	Venus 0.54° SE of Neptune; 11° and 10° from the Sun in the evening sky; magnitudes -3.9 and 8.0
8172.563	Feb 23	Fri	2	Moon 9.1° SE of the Pleiades; 86° from the Sun in the evening sky
8172.839	Feb 23	Fri	8:08	<b>First Quarter Moon</b>
8173.250	Feb 23	Fri	18	Moon 0.80° NNE of Aldebaran; 95° from the Sun in the evening sky
8174.833	Feb 25	SUN	8	Moon 4.5° S of M35 cluster; 116° from the Sun in the evening sky
8175.000	Feb 25	SUN	12	Mercury, Venus, and Neptune within circle of diameter 4.54°; about 8° from the Sun in the evening sky; magnitudes -1, -4, 8
8175.042	Feb 25	SUN	13	Mercury 0.43° SE of Neptune; 7° from the Sun in the evening sky; magnitudes -1.4 and 8.0
8176.313	Feb 26	Mon	20	Moon 8.6° S of Pollux; 136° and 135° from the Sun in the evening sky
8177.108	Feb 27	Tue	14:36	Moon at perigee; distance 57.06 Earth-radii
8177.250	Feb 27	Tue	18	Moon 1.98° S of Beehive Cluster; 149° and 148° from the Sun in the evening sky
8177.711	Feb 28	Wed	5	Moon at ascending node; longitude 134.9°

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8178.771	Mar	1	Thu	7	Moon $0.97^\circ$ NE of Regulus; $170^\circ$ and $169^\circ$ from the Sun in the evening sky
8179.535	Mar	2	Fri	0:51	<b>Full Moon</b>
8181.408	Mar	3	SAT	22	Mars and Jupiter at heliocentric conjunction; longitude $223.3^\circ$
8181.750	Mar	4	SUN	6	Mercury $1.06^\circ$ NW of Venus; $13^\circ$ from the Sun in the evening sky; magnitudes $-1.2$ and $-3.9$
8182.081	Mar	4	SUN	14	Neptune at conjunction with the Sun; 30.935 AU from Earth; latitude $-0.94^\circ$
8182.625	Mar	5	Mon	3	Moon $7.0^\circ$ NNE of Spica; $140^\circ$ from the Sun in the morning sky
8183.290	Mar	5	Mon	19	Mercury at ascending node through the ecliptic plane
8184.896	Mar	7	Wed	10	Moon $4.0^\circ$ NNE of Jupiter; $113^\circ$ and $114^\circ$ from the Sun in the morning sky
8186.292	Mar	8	Thu	19	Moon $9.3^\circ$ NNE of Antares; $97^\circ$ and $98^\circ$ from the Sun in the morning sky
8186.671	Mar	9	Fri	4	Jupiter stationary in longitude; starts retrograde motion
8186.877	Mar	9	Fri	9	Jupiter stationary in right ascension; starts retrograde motion
8186.973	Mar	9	Fri	11:22	<b>Last Quarter Moon</b>
8187.583	Mar	10	SAT	2	Moon $3.8^\circ$ N of Mars; $83^\circ$ and $84^\circ$ from the Sun in the morning sky
8187.958	Mar	10	SAT	11	Mercury at perihelion, 0.3075 AU from the Sun
8188.5	Mar	11	SUN		Clocks forward 1 hour (America)
8188.625	Mar	11	SUN	3	Moon $2.24^\circ$ N of Saturn; $72^\circ$ from the Sun in the morning sky
8188.888	Mar	11	SUN	9	Moon at apogee; distance 63.45 Earth-radii
8189.706	Mar	12	Mon	5	Sun enters Pisces, at longitude $351.56^\circ$ on the ecliptic
8191.5	Mar	14	Wed		Gamma Normid meteors; ZHR 6; peak Mar 14 16h; 3 days before New
8191.658	Mar	14	Wed	4	Moon at descending node; longitude $314.5^\circ$
8193.126	Mar	15	Thu	15	<b>Mercury at easternmost elongation</b> ; $18.4^\circ$ from Sun in evening sky
8194.083	Mar	16	Fri	14	Moon $1.69^\circ$ SE of Neptune; $12^\circ$ from the Sun in the morning sky
8194.287	Mar	16	Fri	19	Mars at descending node through the ecliptic plane
8194.5	Mar	17	SAT		St. Patrick's Day
8195.051	Mar	17	SAT	13:13	<b>New Moon</b> ; beginning of lunation 1178
8196.417	Mar	18	SUN	22	Moon $3.5^\circ$ SE of Venus; $17^\circ$ from the Sun in the evening sky
8196.479	Mar	18	SUN	24	Moon $7.3^\circ$ SE of Mercury; $18^\circ$ from the Sun in the evening sky
8196.854	Mar	19	Mon	9	Mercury $3.8^\circ$ NNW of Venus; $18^\circ$ and $17^\circ$ from the Sun in the evening sky; magnitudes $0.5$ and $-3.9$
8197.333	Mar	19	Mon	20	Moon $4.4^\circ$ SE of Uranus; $28^\circ$ from the Sun in the evening sky
8198.170	Mar	20	Tue	16	Mercury at northernmost latitude from the ecliptic plane, $7.0^\circ$

8198.177	Mar	20	Tue	16:15	<b>March or spring or vernal equinox</b>
8198.177	Mar	20	Tue	16:15	Sun enters the astrological sign Aries, i.e. its longitude is 0°
8199.792	Mar	22	Thu	7	Moon 9.0° SE of the Pleiades; 59° from the Sun in the evening sky
8200.210	Mar	22	Thu	17	Mercury stationary in right ascension; starts retrograde motion
8200.458	Mar	22	Thu	23	Moon 0.87° N of Aldebaran; 68° from the Sun in the evening sky
8200.509	Mar	23	Fri	0	Mercury stationary in longitude; starts retrograde motion
8202.063	Mar	24	SAT	14	Moon 4.3° S of M35 cluster; 89° and 88° from the Sun in the evening sky
8202.149	Mar	24	SAT	15:35	<b>First Quarter Moon</b>
8202.167	Mar	24	SAT	16	Mars at west quadrature, 90° from the Sun
8202.5	Mar	25	SUN		Palm Sunday.
8202.5	Mar	25	SUN		Clocks forward 1 hour (Europe)
8203.604	Mar	26	Mon	3	Moon 8.4° S of Pollux; 109° and 108° from the Sun in the evening sky
8204.230	Mar	26	Mon	17:32	Moon at perigee; distance 57.87 Earth-radii
8204.563	Mar	27	Tue	2	Moon 1.88° S of Beehive Cluster; 122° and 121° from the Sun in the evening sky
8204.957	Mar	27	Tue	11	Moon at ascending node; longitude 133.7°
8205.118	Mar	27	Tue	15	Mars at southernmost declination, -23.55°
8206.125	Mar	28	wed	15	Moon 1.02° NNE of Regulus; 142° from the Sun in the evening sky
8206.542	Mar	29	Thu	1	Venus 0.07° SE of Uranus; 19° from the Sun in the evening sky; magnitudes -3.9 and 5.9
8207.091	Mar	29	Thu	14	Saturn at west quadrature, 90° from the Sun
8207.5	Mar	30	Fri		Good Friday
8209.025	Mar	31	SAT	12:37	<b>Full Moon</b>
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8209.5	Apr	1	SUN		Easter
8209.5	Apr	1	SUN		All Fools' Day
8210.021	Apr	1	SUN	13	Moon 6.9° NNE of Spica; 167° from the Sun in the morning sky
8210.241	Apr	1	SUN	18	Mercury at inferior conjunction with the Sun; 0.597 AU from Earth; latitude 4.19°
8211.063	Apr	2	Mon	14	Mars 1.27° S of Saturn; 94° from the Sun in the morning sky; magnitudes 0.3 and 0.6
8212.188	Apr	3	Tue	17	Moon 3.8° NNE of Jupiter; 141° and 142° from the Sun in the morning sky
8213.646	Apr	5	Thu	4	Moon 9.1° NNE of Antares; 125° from the Sun in the morning sky
8216.042	Apr	7	SAT	13	Moon 1.93° N of Saturn; 98° and 99° from the Sun in the morning sky
8216.158	Apr	7	SAT	16	Moon, Mars, and Saturn within circle of diameter 3.45°; about 97° from the Sun in the morning sky; magnitudes -10, 0, 1



8216.271	Apr	7	SAT	19	Moon 3.1° N of Mars; 96° from the Sun in the morning sky
8216.731	Apr	8	SUN	6	Moon at apogee; distance 63.36 Earth-radii
8216.805	Apr	8	SUN	7:20	<b>Last Quarter Moon</b>
8218.840	Apr	10	Tue	8	Moon at descending node; longitude 312.6°
8220.638	Apr	12	Thu	3	Venus at ascending node through the ecliptic plane
8221.521	Apr	13	Fri	1	Moon 1.85° SE of Neptune; 38° from the Sun in the morning sky
8221.575	Apr	13	Fri	2	Mercury at descending node through the ecliptic plane
8222.657	Apr	14	SAT	4	Mercury stationary in right ascension; resumes direct motion
8223.021	Apr	14	SAT	13	Moon 3.6° SE of Mercury; 20° from the Sun in the morning sky
8223.886	Apr	15	SUN	9	Mercury stationary in longitude; resumes direct motion
8224.156	Apr	15	SUN	16	The equation of time is 0.
8224.582	Apr	16	Mon	1:59	<b>New Moon</b> ; beginning of lunation 1179
8224.771	Apr	16	Mon	7	Moon 4.4° SE of Uranus; 5° and 2° from the Sun in the evening sky
8226.438	Apr	17	Tue	23	Moon 5.2° SE of Venus; 25° and 24° from the Sun in the evening sky
8226.496	Apr	17	Tue	24	Saturn at aphelion, 10.0657 AU from the Sun
8226.513	Apr	18	wed	0	Saturn stationary in right ascension; starts retrograde motion
8226.521	Apr	18	wed	0	Saturn stationary in longitude; starts retrograde motion
8227.063	Apr	18	wed	14	Moon 8.8° SE of the Pleiades; 33° and 32° from the Sun in the evening sky
8227.085	Apr	18	wed	14	Uranus at conjunction with the Sun; 20.895 AU from Earth; latitude -0.55°
8227.686	Apr	19	Thu	4	Sun enters Aries, at longitude 29.07° on the ecliptic
8227.729	Apr	19	Thu	6	Moon 1.11° N of Aldebaran; 41° from the Sun in the evening sky
8228.633	Apr	20	Fri	3	Sun enters the astrological sign Taurus, i.e. its longitude is 30°
8229.109	Apr	20	Fri	14:36	Moon at perigee; distance 57.81 Earth-radii
8229.292	Apr	20	Fri	19	Moon 4.1° S of M35 cluster; 62° from the Sun in the evening sky
8230.5	Apr	22	SUN		<b>Lyrid meteors</b> ; ZHR 18; peak Apr 22 12h; near First Quarter
8230.582	Apr	22	SUN	2	Pluto stationary in longitude; starts retrograde motion
8230.813	Apr	22	SUN	8	Moon 8.2° S of Pollux; 82° and 81° from the Sun in the evening sky
8231.116	Apr	22	SUN	15	Pluto stationary in right ascension; starts retrograde motion
8231.407	Apr	22	SUN	21:46	<b>First Quarter Moon</b>
8231.5	Apr	23	Mon		Pi Puppis meteors; ZHR 10; peak Apr 23 17h; 1 day after First Quarter

8231.792	Apr 23	Mon	7	Moon 1.66° S of Beehive Cluster; 95° from the Sun in the evening sky
8231.942	Apr 23	Mon	11	Mercury at aphelion, 0.4667 AU from the Sun
8232.015	Apr 23	Mon	12	Moon at ascending node; longitude 131.2°
8233.375	Apr 24	Tue	21	Moon 1.18° NNE of Regulus; 116° and 115° from the Sun in the evening sky
8233.521	Apr 25	Wed	1	Venus 3.5° SE of the Pleiades; 26° from the Sun in the evening sky; magnitudes -3.9 and 2.9
8237.354	Apr 28	SAT	21	Moon 6.9° NNE of Spica; 165° from the Sun in the evening sky
8238.261	Apr 29	SUN	18	<b>Mercury at westernmost elongation</b> ; 27.0° from Sun in morning sky
8238.540	Apr 30	Mon	0:58	<b>Full Moon</b>
8239.333	Apr 30	Mon	20	Moon 3.7° NNE of Jupiter; 169° and 171° from the Sun in the morning sky
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8241.000	May 2	Wed	12	Moon 8.9° NNE of Antares; 151° and 152° from the Sun in the morning sky
8241.292	May 2	Wed	19	Venus 6.4° N of Aldebaran; 28° from the Sun in the evening sky; magnitudes -3.9 and 0.9
8243.375	May 4	Fri	21	Moon 1.73° NNE of Saturn; 125° from the Sun in the morning sky
8244.5	May 6	SUN		<b>Eta Aquarid meteors</b> ; ZHR 50; peak May 6 2h; 2 days before Last Quarter
8244.517	May 6	SUN	0	Moon at apogee; distance 63.41 Earth-radii
8244.813	May 6	SUN	8	Moon 2.74° N of Mars; 109° and 110° from the Sun in the morning sky
8245.932	May 7	Mon	10	Moon at descending node; longitude 309.6°
8246.5	May 8	Tue		Eta Lyrid meteors; ZHR 3; peak May 8 16h; 1 day after Last Quarter
8246.591	May 8	Tue	2:10	<b>Last Quarter Moon</b>
8247.520	May 9	Wed	0	<b>Jupiter at opposition</b> ; magnitude -2.5
8248.938	May 10	Thu	11	Moon 2.07° SE of Neptune; 64° from the Sun in the morning sky
8252.042	May 13	SUN	13	Mercury 2.20° SE of Uranus; 23° from the Sun in the morning sky; magnitudes -0.2 and 5.9
8252.203	May 13	SUN	17	Mercury at southernmost latitude from the ecliptic plane, -7.0°
8252.242	May 13	SUN	18	Moon, Mercury, and Uranus within circle of diameter 4.44°; about 23° from the Sun in the morning sky; magnitudes -6, 0, 6
8252.271	May 13	SUN	19	Moon 4.4° SE of Uranus; 23° from the Sun in the morning sky
8252.313	May 13	SUN	20	Moon 2.29° SE of Mercury; 23° from the Sun in the morning sky
8252.638	May 14	Mon	3	The equation of time is at a maximum of 3.65 minutes.
8252.803	May 14	Mon	7	Sun enters Taurus, at longitude 53.45° on the ecliptic
8253.992	May 15	Tue	11:49	<b>New Moon</b> ; beginning of lunation 1180



8254.417	May	15	Tue	22	Moon 8.7° SE of the Pleiades; 7° from the Sun in the evening sky
8254.463	May	15	Tue	23	Venus at perihelion, 0.7184 AU from the Sun
8254.5	May	16	Wed		1st day of Ramadan (1439 A.H.)
8255.063	May	16	Wed	14	Moon 1.18° N of Aldebaran; 15° from the Sun in the evening sky
8256.313	May	17	Thu	20	Moon 4.8° S of Venus; 32° and 31° from the Sun in the evening sky
8256.379	May	17	Thu	21:05	Moon at perigee; distance 57.04 Earth-radii
8256.442	May	17	Thu	23	Moon, Venus, and M35 clu within circle of diameter 5.41°; about 33° from the Sun in the evening sky; magnitudes -7, -4, 5
8256.604	May	18	Fri	3	Moon 3.9° S of M35 cluster; 36° and 35° from the Sun in the evening sky
8258.083	May	19	SAT	14	Moon 8.0° S of Pollux; 56° and 55° from the Sun in the evening sky
8258.5	May	20	SUN		Whit Sunday
8259.021	May	20	SUN	13	Moon 1.38° S of Beehive Cluster; 69° and 68° from the Sun in the evening sky
8259.052	May	20	SUN	13	Moon at ascending node; longitude 128.4°
8259.594	May	21	Mon	2	Sun enters the astrological sign Gemini, i.e. its longitude is 60°
8259.938	May	21	Mon	11	Venus 0.73° N of M35 cluster; 32° from the Sun in the evening sky; magnitudes -4.0 and 5.3
8260.604	May	22	Tue	3	Moon 1.44° NNE of Regulus; 89° from the Sun in the evening sky
8260.622	May	22	Tue	3	Autumn equinox on Mars
8260.622	May	22	Tue	3	Autumn equinox on Mars
8260.659	May	22	Tue	3:50	<b>First Quarter Moon</b>
8260.739	May	22	Tue	6	Venus at northernmost declination, 25.06°
8263.271	May	24	Thu	19	Autumn equinox on Mars
8263.271	May	24	Thu	19	Autumn equinox on Mars
8264.625	May	26	SAT	3	Moon 7.0° NNE of Spica; 139° from the Sun in the evening sky
8266.354	May	27	SUN	21	Moon 3.8° NNE of Jupiter; 159° and 160° from the Sun in the evening sky
8268.097	May	29	Tue	14:20	<b>Full Moon</b>
8268.313	May	29	Tue	20	Moon 8.9° NNE of Antares; 175° from the Sun in the midnight sky
8268.813	May	30	Wed	8	Mercury 4.5° SE of the Pleiades; 8° and 10° from the Sun in the morning sky; magnitudes -1.5 and 2.9
8270.563	Jun	1	Fri	2	Moon 1.65° N of Saturn; 152° and 153° from the Sun in the morning sky
8271.259	Jun	1	Fri	18	Mercury at ascending node through the ecliptic plane
8272.191	Jun	2	SAT	17	Moon at apogee; distance 63.55 Earth-radii
8272.979	Jun	3	SUN	12	Moon 3.1° N of Mars; 126° and 127° from the Sun in the morning sky
8272.979	Jun	3	SUN	12	Mercury 5.8° NNW of Aldebaran; 3° and 6° from the Sun in the morning sky; magnitudes -2.0 and 0.9

8273.026	Jun	3	SUN	13	Moon at descending node; longitude 307.1°
8275.396	Jun	5	Tue	22	Venus 8.1° S of Castor; 35° and 37° from the Sun in the evening sky; magnitudes -4.0 and 1.5
8275.576	Jun	6	Wed	2	Mercury at superior conjunction with the Sun; 1.322 AU from Earth; latitude 3.17°
8275.927	Jun	6	Wed	10	Mercury at perihelion, 0.3075 AU from the Sun
8276.139	Jun	6	Wed	15	Venus at northernmost latitude from the ecliptic plane, 3.4°
8276.273	Jun	6	Wed	18:33	<b>Last Quarter Moon</b>
8276.313	Jun	6	Wed	20	Moon 2.32° SE of Neptune; 90° from the Sun in the morning sky
8276.5	Jun	7	Thu		Daytime Arietid meteors; ZHR 30; peak Jun 7 10h; 1 day after Last Quarter
8277.875	Jun	8	Fri	9	Venus 4.7° S of Pollux; 36° from the Sun in the evening sky; magnitudes -4.0 and 1.2
8278.667	Jun	9	SAT	4	Mars and Saturn at heliocentric conjunction; longitude 275.3°
8279.771	Jun	10	SUN	7	Moon 4.6° SE of Uranus; 48° from the Sun in the morning sky
8281.854	Jun	12	Tue	9	Moon 8.8° SE of the Pleiades; 21° from the Sun in the morning sky
8282.479	Jun	12	Tue	24	Moon 1.17° N of Aldebaran; 13° from the Sun in the morning sky
8282.668	Jun	13	Wed	4	The equation of time is 0.
8283.322	Jun	13	Wed	19:44	<b>New Moon</b> ; beginning of lunation 1181
8283.396	Jun	13	Wed	22	Mercury 0.81° N of M35 cluster; 10° and 9° from the Sun in the evening sky; magnitudes -1.3 and 5.3
8283.688	Jun	14	Thu	4:31	Earliest sunrise, at latitude 40° north
8284.000	Jun	14	Thu	12	Moon 3.8° S of M35 cluster; 10° and 9° from the Sun in the evening sky
8284.058	Jun	14	Thu	13	<b>Moon, Mercury, and M35 clu within circle of diameter 4.57°</b> ; about 10° from the Sun in the evening sky; magnitudes -5, -1, 5
8284.104	Jun	14	Thu	15	Moon 4.6° S of Mercury; 11° and 10° from the Sun in the evening sky
8284.435	Jun	14	Thu	22	Mercury at northernmost declination, 25.15°
8284.495	Jun	14	Thu	23:53	Moon at perigee; distance 56.37 Earth-radii
8285.438	Jun	15	Fri	23	Moon 7.8° S of Pollux; 30° and 29° from the Sun in the evening sky
8286.042	Jun	16	SAT	13	Moon 2.32° S of Venus; 38° from the Sun in the evening sky
8286.139	Jun	16	SAT	15	Mercury at northernmost latitude from the ecliptic plane, 7.0°
8286.244	Jun	16	SAT	18	Moon at ascending node; longitude 126.5°
8286.283	Jun	16	SAT	19	Moon, Venus, and Beehive within circle of diameter 4.31°; about 40° from the Sun in the evening sky; magnitudes -8, -4, 4
8286.354	Jun	16	SAT	21	Moon 1.26° S of Beehive Cluster; 42° from the Sun in the evening sky

8287.875	Jun 18	Mon	9	Moon 1.63° NNE of Regulus; 63° from the Sun in the evening sky
8288.322	Jun 18	Mon	20	Neptune stationary in longitude; starts retrograde motion
8288.860	Jun 19	Tue	9	Neptune stationary in right ascension; starts retrograde motion
8289.952	Jun 20	wed	10:51	<b>First Quarter Moon</b>
8289.958	Jun 20	wed	11	Venus 0.69° NNE of Beehive Cluster; 39° from the Sun in the evening sky; magnitudes -4.0 and 3.7
8290.922	Jun 21	Thu	10:08	<b>June or summer solstice</b>
8290.922	Jun 21	Thu	10:08	Sun enters the astrological sign Cancer, i.e. its longitude is 90°
8291.360	Jun 21	Thu	21	Sun enters Gemini, at longitude 90.42° on the ecliptic
8291.854	Jun 22	Fri	9	Moon 7.1° NNE of Spica; 113° from the Sun in the evening sky
8292.5	Jun 23	SAT		June Boötid meteors; ZHR 5; peak Jun 23 0h; 3 days after First Quarter
8292.833	Jun 23	SAT	8	Mercury 8.2° S of Castor; 19° and 21° from the Sun in the evening sky; magnitudes -0.5 and 1.5
8293.417	Jun 23	SAT	22	Moon 4.0° NNE of Jupiter; 132° and 131° from the Sun in the evening sky
8294.563	Jun 25	Mon	2	Mercury 4.8° SSW of Pollux; 20° and 21° from the Sun in the evening sky; magnitudes -0.4 and 1.2
8295.563	Jun 26	Tue	2	Moon 8.9° NNE of Antares; 156° and 155° from the Sun in the evening sky
8296.380	Jun 26	Tue	21	Mars stationary in longitude; starts retrograde motion
8297.054	Jun 27	wed	13	<b>Saturn at opposition</b> ; magnitude 0.0
8297.315	Jun 27	wed	19:33	Latest sunset, at latitude 40° north
8297.688	Jun 28	Thu	5	Moon 1.81° NNE of Saturn; 177° and 179° from the Sun in the midnight sky
8297.704	Jun 28	Thu	4:53	<b>Full Moon</b>
8298.077	Jun 28	Thu	14	Mars stationary in right ascension; starts retrograde motion
8299.634	Jun 30	SAT	3	Moon at apogee; distance 63.66 Earth-radii
8300.198	Jun 30	SAT	17	Moon at descending node; longitude 306.0°
8300.521	Jul 1	SUN	1	Moon 4.7° N of Mars; 149° and 150° from the Sun in the morning sky
8303.604	Jul 4	wed	3	Moon 2.45° SE of Neptune; 116° from the Sun in the morning sky
8304.063	Jul 4	wed	14	Mercury 0.39° SSW of Beehive Cluster; 25° from the Sun in the evening sky; magnitudes 0.1 and 3.7
8305.828	Jul 6	Fri	7:52	<b>Last Quarter Moon</b>
8306.207	Jul 6	Fri	17	<b>Earth at aphelion</b> ; */p AU from the Sun
8307.208	Jul 7	SAT	17	Moon 4.7° SE of Uranus; 73° from the Sun in the morning sky
8309.271	Jul 9	Mon	19	Moon 8.9° SE of the Pleiades; 47° from the Sun in the morning sky

8309.544	Jul 10	Tue	1	Mercury at descending node through the ecliptic plane
8309.729	Jul 10	Tue	6	Venus $0.99^\circ$ NNE of Regulus; $42^\circ$ from the Sun in the evening sky; magnitudes $-4.1$ and $1.4$
8309.917	Jul 10	Tue	10	Moon $1.13^\circ$ N of Aldebaran; $38^\circ$ from the Sun in the morning sky
8310.194	Jul 10	Tue	17	Jupiter stationary in longitude; resumes direct motion
8310.646	Jul 11	wed	3	Jupiter stationary in right ascension; resumes direct motion
8311.438	Jul 11	wed	23	Moon $3.8^\circ$ S of M35 cluster; $17^\circ$ from the Sun in the morning sky
8311.636	Jul 12	Thu	3	<b>Pluto at opposition</b> ; magnitude $14.2$
8311.722	Jul 12	Thu	5	<b>Mercury at easternmost elongation</b> ; $26.4^\circ$ from Sun in evening sky
8312.617	Jul 13	Fri	2:48	<b>New Moon</b> ; beginning of lunation 1182. Partial eclipse of the Sun
8312.852	Jul 13	Fri	8:27	Perigee only 5.6 hours after New Moon
8312.852	Jul 13	Fri	8:27	Moon at perigee; distance 56.04 Earth-radii
8312.875	Jul 13	Fri	9	Moon $7.8^\circ$ S of Pollux; $4^\circ$ and $7^\circ$ from the Sun in the evening sky
8313.619	Jul 14	SAT	3	Moon at ascending node; longitude $125.9^\circ$
8313.750	Jul 14	SAT	6	Moon $1.15^\circ$ S of Beehive Cluster; $16^\circ$ from the Sun in the evening sky
8314.479	Jul 14	SAT	24	Moon $2.18^\circ$ NNE of Mercury; $26^\circ$ from the Sun in the evening sky
8315.250	Jul 15	SUN	18	Moon $1.73^\circ$ NNE of Regulus; $37^\circ$ from the Sun in the evening sky
8315.708	Jul 16	Mon	5	Moon $1.60^\circ$ NNE of Venus; $43^\circ$ from the Sun in the evening sky
8319.104	Jul 19	Thu	15	Moon $7.2^\circ$ NNE of Spica; $87^\circ$ from the Sun in the evening sky
8319.328	Jul 19	Thu	19:53	<b>First Quarter Moon</b>
8319.913	Jul 20	Fri	10	Mercury at aphelion, 0.4667 AU from the Sun
8320.537	Jul 21	SAT	1	Sun enters Cancer, at longitude $118.24^\circ$ on the ecliptic
8320.625	Jul 21	SAT	3	Moon $4.2^\circ$ NNE of Jupiter; $105^\circ$ from the Sun in the evening sky
8322.376	Jul 22	SUN	21	Sun enters the astrological sign Leo, i.e. its longitude is $120^\circ$
8322.813	Jul 23	Mon	8	Moon $9.0^\circ$ NNE of Antares; $130^\circ$ and $129^\circ$ from the Sun in the evening sky
8324.271	Jul 24	Tue	19	Mercury $7.6^\circ$ W of Regulus; $22^\circ$ and $28^\circ$ from the Sun in the evening sky; magnitudes $1.5$ and $1.4$ ; quasi-conjunction
8324.771	Jul 25	wed	7	Moon $2.01^\circ$ N of Saturn; $152^\circ$ from the Sun in the evening sky
8324.803	Jul 25	wed	7	Mercury stationary in right ascension; starts retrograde motion
8324.979	Jul 25	wed	12	Uranus at west quadrature, $90^\circ$ from the Sun

8325.706	Jul 26	Thu	5	Mercury stationary in longitude; starts retrograde motion
8325.753	Jul 26	Thu	6	The equation of time is at a minimum of -6.54 minutes.
8326.716	Jul 27	Fri	5	<b>Mars at opposition</b> ; magnitude -2.8
8326.724	Jul 27	Fri	5	Moon at apogee; distance 63.69 Earth-radii
8327.348	Jul 27	Fri	20:21	<b>Full Moon. Total eclipse of the Moon</b>
8327.354	Jul 27	Fri	21	Moon 6.6° N of Mars; 180° and 173° from the Sun in the midnight sky
8327.445	Jul 27	Fri	23	Moon at descending node; longitude 305.9°
8327.5	Jul 28	SAT		Piscid Austrinid meteors; ZHR 5; peak Jul 28 3h; near Full
8328.475	Jul 28	SAT	23	Middle of eclipse season: Sun is at same longitude as Moon's ascending node, 125.8°
8329.5	Jul 30	Mon		Southern Delta Aquarid meteors; ZHR 25; peak Jul 30 5h; 2 days after Full
8329.5	Jul 30	Mon		Alpha Capricornid meteors; ZHR 5; peak Jul 30 5h; 2 days after Full
8330.813	Jul 31	Tue	8	Moon 2.43° SE of Neptune; 142° from the Sun in the morning sky
8330.833	Jul 31	Tue	8	Mars nearest to Earth, 0.385 AU
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8332.193	Aug 1	Wed	17	Venus at descending node through the ecliptic plane
8334.542	Aug 4	SAT	1	Moon 4.7° SE of Uranus; 99° from the Sun in the morning sky
8335.263	Aug 4	SAT	18:19	<b>Last Quarter Moon</b>
8336.625	Aug 6	Mon	3	Moon 8.9° SE of the Pleiades; 73° from the Sun in the morning sky
8337.292	Aug 6	Mon	19	Moon 1.10° N of Aldebaran; 64° from the Sun in the morning sky
8337.475	Aug 6	Mon	23	Jupiter at east quadrature, 90° from the Sun
8338.052	Aug 7	Tue	13	Uranus stationary in longitude; starts retrograde motion
8338.206	Aug 7	Tue	17	Uranus stationary in right ascension; starts retrograde motion
8338.854	Aug 8	Wed	9	Moon 3.8° S of M35 cluster; 43° and 44° from the Sun in the morning sky
8339.583	Aug 9	Thu	2	Mercury at inferior conjunction with the Sun; 0.604 AU from Earth; latitude -7.00°
8340.173	Aug 9	Thu	16	Mercury at southernmost latitude from the ecliptic plane, -7.0°
8340.313	Aug 9	Thu	20	Moon 7.8° S of Pollux; 23° and 25° from the Sun in the morning sky
8341.071	Aug 10	Fri	14	Moon at ascending node; longitude 125.9°
8341.083	Aug 10	Fri	14	Moon shows minimum libration for the year, 0.08°
8341.208	Aug 10	Fri	17	Moon 1.18° S of Beehive Cluster; 10° and 11° from the Sun in the morning sky
8341.257	Aug 10	Fri	18:10	Moon at perigee; distance 56.14 Earth-radii
8341.257	Aug 10	Fri	18:10	Perigee only 15.8 hours before New Moon
8341.368	Aug 10	Fri	21	Sun enters Leo, at longitude 138.17° on the ecliptic



8341.667	Aug 11	SAT	4	Moon 5.4° NNE of Mercury; 4° and 6° from the Sun in the morning sky
8341.915	Aug 11	SAT	9:58	<b>New Moon</b> ; beginning of lunation 1183. Partial eclipse of the Sun
8342.5	Aug 12	SUN		<b>Perseid meteors</b> ; ZHR 110; peak Aug 12 19h; 1 day after New
8342.688	Aug 12	SUN	5	Moon 1.74° NNE of Regulus; 11° from the Sun in the evening sky
8345.250	Aug 14	Tue	18	Moon 5.9° NNE of Venus; 46° from the Sun in the evening sky
8345.712	Aug 15	wed	5	Venus dichotomy (D-shape)
8346.438	Aug 15	wed	23	Moon 7.2° NNE of Spica; 61° from the Sun in the evening sky
8346.984	Aug 16	Thu	12	Mars at southernmost declination, -26.50°
8347.375	Aug 16	Thu	21	Moon shows maximum libration for the year, 10.20°
8347.5	Aug 17	Fri		Kappa Cygnid meteors; ZHR 3; peak Aug 17 24h; near First Quarter
8348.063	Aug 17	Fri	14	Moon 4.3° NNE of Jupiter; 81° from the Sun in the evening sky
8348.217	Aug 17	Fri	17	<b>Venus at easternmost elongation</b> ; 45.9° from Sun in evening sky
8348.826	Aug 18	SAT	7:49	<b>First Quarter Moon</b>
8349.011	Aug 18	SAT	12	Mercury stationary in right ascension; resumes direct motion
8349.680	Aug 19	SUN	4	Mercury stationary in longitude; resumes direct motion
8350.063	Aug 19	SUN	14	Moon 8.9° NNE of Antares; 104° and 103° from the Sun in the evening sky
8351.603	Aug 21	Tue	2	Mars at southernmost latitude from the ecliptic plane, -1.8°
8351.625	Aug 21	Tue	3	Mercury 5.4° SE of Beehive Cluster; 16° and 20° from the Sun in the morning sky; magnitudes 1.1 and 3.7
8351.938	Aug 21	Tue	11	Moon 2.15° N of Saturn; 125° and 124° from the Sun in the evening sky
8353.673	Aug 23	Thu	4	Sun enters the astrological sign virgo, i.e. its longitude is 150°
8353.968	Aug 23	Thu	11	Moon at apogee; distance 63.62 Earth-radii
8354.167	Aug 23	Thu	16	Moon 6.7° N of Mars; 149° and 148° from the Sun in the evening sky
8354.703	Aug 24	Fri	5	Moon at descending node; longitude 305.9°
8356.998	Aug 26	SUN	11:57	<b>Full Moon</b>
8357.351	Aug 26	SUN	20	<b>Mercury at westernmost elongation</b> ; 18.3° from Sun in morning sky
8358.021	Aug 27	Mon	13	Moon 2.37° SE of Neptune; 168° and 169° from the Sun in the morning sky
8358.084	Aug 27	Mon	14	Mars stationary in longitude; resumes direct motion
8358.925	Aug 28	Tue	10	Mars stationary in right ascension; resumes direct motion
8359.229	Aug 28	Tue	17	Mercury at ascending node through the ecliptic plane



8361.771	Aug 31	Fri	7	Moon 4.7° SE of Uranus; 125° from the Sun in the morning sky
8362.5	Sep 1	SAT		Aurigid meteors; ZHR 5; peak Sep 1 2h; 2 days before Last Quarter
8363.021	Sep 1	SAT	13	Venus 1.23° SSW of Spica; 45° from the Sun in the evening sky; magnitudes -4.4 and 1.0
8363.089	Sep 1	SAT	14	The equation of time is 0.
8363.896	Sep 2	SUN	10	Moon 8.8° SE of the Pleiades; 99° and 100° from the Sun in the morning sky
8363.897	Sep 2	SUN	10	Mercury at perihelion, 0.3075 AU from the Sun
8364.583	Sep 3	Mon	2	Moon 1.20° N of Aldebaran; 90° from the Sun in the morning sky
8364.610	Sep 3	Mon	2:38	<b>Last Quarter Moon</b>
8366.208	Sep 4	Tue	17	Moon 3.8° S of M35 cluster; 69° and 70° from the Sun in the morning sky
8366.848	Sep 5	Wed	8	Venus at aphelion, 0.7282 AU from the Sun
8367.646	Sep 6	Thu	4	Mercury 1.00° NNE of Regulus; 14° and 13° from the Sun in the morning sky; magnitudes -1.1 and 1.4
8367.708	Sep 6	Thu	5	Moon 7.7° S of Pollux; 49° and 50° from the Sun in the morning sky
8367.888	Sep 6	Thu	9	Saturn stationary in right ascension; resumes direct motion
8367.916	Sep 6	Thu	10	Saturn stationary in longitude; resumes direct motion
8368.447	Sep 6	Thu	23	Moon at ascending node; longitude 125.4°
8368.625	Sep 7	Fri	3	Moon 1.15° S of Beehive Cluster; 36° and 37° from the Sun in the morning sky
8369.260	Sep 7	Fri	18	<b>Neptune at opposition</b> ; magnitude 7.8
8369.558	Sep 8	SAT	1:24	Moon at perigee; distance 56.65 Earth-radii
8370.125	Sep 8	SAT	15	Moon 1.74° NNE of Regulus; 16° from the Sun in the morning sky
8370.142	Sep 8	SAT	15	Moon, Mercury, and Regulus within circle of diameter 4.72°; about 14° from the Sun in the morning sky; magnitudes -6, -1, 1
8370.479	Sep 8	SAT	24	Moon 0.97° NE of Mercury; 11° from the Sun in the morning sky
8370.5	Sep 9	SUN		September Epsilon Perseid meteors; ZHR 10; peak Sep 9 11h; near New
8371.251	Sep 9	SUN	18:02	<b>New Moon</b> ; beginning of lunation 1184
8371.5	Sep 10	Mon		Rosh Hashanah, 1st say of Hebrew year 5779 A.M.
8373.5	Sep 12	Wed		1st day of Muslim year (1440 A.H.)
8373.854	Sep 12	Wed	9	Moon 7.1° NNE of Spica; 35° from the Sun in the evening sky
8374.108	Sep 12	Wed	15	Mercury at northernmost latitude from the ecliptic plane, 7.0°
8374.458	Sep 12	Wed	23	Moon 9.9° NNE of Venus; 43° from the Sun in the evening sky
8375.729	Sep 14	Fri	6	Moon 4.2° NNE of Jupiter; 58° from the Sun in the evening sky

8377.375	Sep 15	SAT 21	Moon 8.8° NNE of Antares; 78° and 77° from the Sun in the evening sky
8378.028	Sep 16	SUN 13	Mars at perihelion, 1.3814 AU from the Sun
8378.469	Sep 16	SUN 23:15	<b>First Quarter Moon</b>
8378.584	Sep 17	Mon 2	Sun enters Virgo, at longitude 174.14° on the ecliptic
8379.229	Sep 17	Mon 18	Moon 2.09° NNE of Saturn; 98° from the Sun in the evening sky
8381.548	Sep 20	Thu 1	Moon at apogee; distance 63.48 Earth-radii
8381.750	Sep 20	Thu 6	Moon 4.7° N of Mars; 126° and 125° from the Sun in the evening sky
8381.899	Sep 20	Thu 10	Moon at descending node; longitude 304.8°
8382.568	Sep 21	Fri 2	Mercury at superior conjunction with the Sun; 1.387 AU from Earth; latitude 5.42°
8382.899	Sep 21	Fri 10	Venus shows greatest illuminated extent, 50.9 square seconds
8384.579	Sep 23	SUN 1:54	Sun enters the astrological sign Libra, i.e. its longitude is 180°
8384.579	Sep 23	SUN 1:54	<b>September of fall or autumn equinox</b>
8385.229	Sep 23	SUN 18	Moon 2.29° SE of Neptune; 164° from the Sun in the evening sky
8386.621	Sep 25	Tue 2:54	<b>Full Moon</b>
8386.679	Sep 25	Tue 4	Venus brightest; magnitude -4.56°
8387.491	Sep 25	Tue 24	Saturn at east quadrature, 90° from the Sun
8388.938	Sep 27	Thu 11	Moon 4.5° SE of Uranus; 152° and 153° from the Sun in the morning sky
8389.044	Sep 27	Thu 13	Venus at southernmost latitude from the ecliptic plane, -3.4°
8391.125	Sep 29	SAT 15	Moon 8.6° SE of the Pleiades; 125° and 126° from the Sun in the morning sky
8391.700	Sep 30	SUN 5	Pluto stationary in right ascension; resumes direct motion
8391.813	Sep 30	SUN 8	Moon 1.40° N of Aldebaran; 117° from the Sun in the morning sky
8391.843	Sep 30	SUN 8	Mars and Neptune at heliocentric conjunction; longitude 345.2°
8392.226	Sep 30	SUN 17	Pluto stationary in longitude; resumes direct motion
8393.458	Oct 1	Mon 23	Moon 3.6° S of M35 cluster; 96° from the Sun in the morning sky
8393.907	Oct 2	Tue 9:46	<b>Last Quarter Moon</b>
8395.000	Oct 3	Wed 12	Moon 7.6° S of Pollux; 76° and 77° from the Sun in the morning sky
8395.633	Oct 4	Thu 3	Moon at ascending node; longitude 123.5°
8395.938	Oct 4	Thu 11	Moon 0.96° S of Beehive Cluster; 63° and 64° from the Sun in the morning sky
8396.5	Oct 5	Fri	October Camelopardalid meteors; ZHR 5; peak Oct 5 19h; 3 days before New
8396.675	Oct 5	Fri 4	Venus stationary in right ascension; starts retrograde motion

8397.293	Oct	5	Fri	19	Venus stationary in longitude; starts retrograde motion
8397.438	Oct	5	Fri	22:31	Moon at perigee; distance 57.45 Earth-radii
8397.479	Oct	5	Fri	24	Moon 1.81° NNE of Regulus; 43° from the Sun in the morning sky
8397.513	Oct	6	SAT	0	Mercury at descending node through the ecliptic plane
8397.896	Oct	6	SAT	10	Mercury 2.02° NNE of Spica; 11° from the Sun in the evening sky; magnitudes -0.6 and 1.0
8399.5	Oct	8	Mon		<b>Draconid meteors</b> ; ZHR 20; peak Oct 8 18h; near New
8400.657	Oct	9	Tue	3:47	<b>New Moon</b> ; beginning of lunation 1185
8401.271	Oct	9	Tue	19	Moon 7.0° NNE of Spica; 9° and 8° from the Sun in the evening sky
8401.5	Oct	10	Wed		Southern Taurid meteors; ZHR 5; peak Oct 10 9h; 1 day after New
8401.708	Oct	10	Wed	5	Moon 5.5° NNE of Mercury; 15° and 13° from the Sun in the evening sky
8402.5	Oct	11	Thu		Delta Aurigid meteors; ZHR 2; peak Oct 11 9h; 2 days after New
8403.5	Oct	12	Fri	0	Moon 4.0° NNE of Jupiter; 36° from the Sun in the evening sky
8404.750	Oct	13	SAT	6	Moon 8.6° NNE of Antares; 51° and 50° from the Sun in the evening sky
8406.646	Oct	15	Mon	4	Moon 1.82° N of Saturn; 72° from the Sun in the evening sky
8407.625	Oct	16	Tue	3	Mercury 6.2° NNE of Venus; 17° and 18° from the Sun in the evening sky; magnitudes -0.3 and -4.3
8407.882	Oct	16	Tue	9	Mercury at aphelion, 0.4667 AU from the Sun
8408.251	Oct	16	Tue	18:01	<b>First Quarter Moon</b>
8409.006	Oct	17	Wed	12	Moon at descending node; longitude 302.2°
8409.306	Oct	17	Wed	19	Moon at apogee; distance 63.38 Earth-radii
8409.5	Oct	18	Thu		Epsilon Geminid meteors; ZHR 3; peak Oct 18 11h; 2 days after First Quarter
8409.735	Oct	18	Thu	6	winter solstice on Mars
8409.735	Oct	18	Thu	6	winter solstice on Mars
8410.021	Oct	18	Thu	13	Moon 1.91° N of Mars; 109° from the Sun in the evening sky
8412.338	Oct	20	SAT	20	Saturn at southernmost declination, -22.77°
8412.5	Oct	21	SUN		Orionid meteors; ZHR 25; peak Oct 21 11h; 3 days before Full
8412.521	Oct	21	SUN	1	Moon 2.39° SE of Neptune; 137° and 136° from the Sun in the evening sky
8414.974	Oct	23	Tue	11	Sun enters the astrological sign Scorpius, i.e. its longitude is 210°
8415.5	Oct	24	Wed		Leo Minorid meteors; ZHR 2; peak Oct 24 11h; near Full
8415.523	Oct	24	Wed	1	<b>Uranus at opposition</b> ; magnitude 5.7
8416.167	Oct	24	Wed	16	Moon 4.5° SE of Uranus; 175° and 179° from the Sun in the midnight sky
8416.199	Oct	24	Wed	16:46	<b>Full Moon</b>
8417.343	Oct	25	Thu	20	Pluto at descending node through the ecliptic plane

8418.091	Oct 26	Fri	14	Venus at inferior conjunction with the Sun; 0.272 AU from Earth; latitude $-2.35^\circ$
8418.375	Oct 26	Fri	21	Moon $8.4^\circ$ SE of the Pleiades; $152^\circ$ and $153^\circ$ from the Sun in the morning sky
8419.063	Oct 27	SAT	14	Moon $1.60^\circ$ N of Aldebaran; $144^\circ$ from the Sun in the morning sky
8419.5	Oct 28	SUN		Clocks back 1 hour (Europe)
8420.688	Oct 29	Mon	5	Moon $3.3^\circ$ S of M35 cluster; $123^\circ$ from the Sun in the morning sky
8420.792	Oct 29	Mon	7	Mercury $3.1^\circ$ SSW of Jupiter; $22^\circ$ from the Sun in the evening sky; magnitudes $-0.2$ and $-1.7$
8422.208	Oct 30	Tue	17	Moon $7.3^\circ$ S of Pollux; $103^\circ$ and $104^\circ$ from the Sun in the morning sky
8422.657	Oct 31	wed	4	Moon at ascending node; longitude $120.6^\circ$
8422.782	Oct 31	wed	7	Sun enters Libra, at longitude $217.79^\circ$ on the ecliptic
8423.167	Oct 31	wed	16	Moon $0.70^\circ$ S of Beehive Cluster; $90^\circ$ and $91^\circ$ from the Sun in the morning sky
8423.195	Oct 31	wed	16:41	<b>Last Quarter Moon</b>
8423.350	Oct 31	wed	20:24	Moon at perigee; distance 58.05 Earth-radii
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8424.750	Nov 2	Fri	6	Moon $2.02^\circ$ NNE of Regulus; $70^\circ$ from the Sun in the morning sky
8425.881	Nov 3	SAT	9	The equation of time is at a maximum of 16.48 minutes.
8426.5	Nov 4	SUN		Clocks back 1 hour (America)
8428.142	Nov 5	Mon	15	Mercury at southernmost latitude from the ecliptic plane, $-7.0^\circ$
8428.625	Nov 6	Tue	3	Moon $7.1^\circ$ NNE of Spica; $20^\circ$ from the Sun in the morning sky
8428.875	Nov 6	Tue	9	Moon $8.8^\circ$ NNE of Venus; $17^\circ$ from the Sun in the morning sky
8429.140	Nov 6	Tue	15	<b>Mercury at easternmost elongation</b> ; $23.3^\circ$ from Sun in evening sky
8430.168	Nov 7	wed	16:02	<b>New Moon</b> ; beginning of lunation 1186
8431.333	Nov 8	Thu	20	Moon $3.7^\circ$ NNE of Jupiter; $15^\circ$ and $14^\circ$ from the Sun in the evening sky
8432.021	Nov 9	Fri	13	Mercury $1.81^\circ$ N of Antares; $23^\circ$ from the Sun in the evening sky; magnitudes $-0.1$ and $1.0$
8432.125	Nov 9	Fri	15	Moon $6.6^\circ$ NNE of Mercury; $24^\circ$ and $23^\circ$ from the Sun in the evening sky
8432.125	Nov 9	Fri	15	Moon $8.4^\circ$ NNE of Antares; $24^\circ$ and $23^\circ$ from the Sun in the evening sky
8433.5	Nov 11	SUN		Armistice Day
8434.167	Nov 11	SUN	16	Moon $1.46^\circ$ N of Saturn; $47^\circ$ from the Sun in the evening sky
8434.5	Nov 12	Mon		Northern Taurid meteors; ZHR 5; peak Nov 12 11h; 3 days before First Quarter
8435.060	Nov 12	Mon	13	Mercury at southernmost declination, $-24.82^\circ$
8436.088	Nov 13	Tue	14	Moon at descending node; longitude $299.2^\circ$

8436.631	Nov 14	Wed	3	Venus stationary in right ascension; resumes direct motion
8437.163	Nov 14	Wed	16	Moon at apogee; distance 63.40 Earth-radii
8437.354	Nov 14	Wed	21	Venus 1.25° E of Spica; 27° and 28° from the Sun in the morning sky; magnitudes -4.5 and 1.0; quasi-conjunction
8438.120	Nov 15	Thu	14:53	<b>First Quarter Moon</b>
8438.729	Nov 16	Fri	6	Moon 0.99° SE of Mars; 97° and 96° from the Sun in the evening sky
8438.951	Nov 16	Fri	11	Venus stationary in longitude; resumes direct motion
8439.5	Nov 17	SAT		<b>Leonid meteors</b> ; ZHR 15; peak Nov 17 17h; 2 days after First Quarter
8439.561	Nov 17	SAT	1	Mercury stationary in longitude; starts retrograde motion
8439.705	Nov 17	SAT	5	Mercury stationary in right ascension; starts retrograde motion
8439.854	Nov 17	SAT	9	Moon 2.61° SE of Neptune; 109° from the Sun in the evening sky
8443.479	Nov 20	Tue	24	Moon 4.5° SE of Uranus; 151° from the Sun in the evening sky
8443.5	Nov 21	Wed		Alpha Monocerotid meteors; ZHR 5; peak Nov 21 17h; 2 days before Full
8444.667	Nov 22	Thu	4	Mercury 4.0° NNE of Antares; 12° and 11° from the Sun in the evening sky; magnitudes 2.0 and 1.0
8444.876	Nov 22	Thu	9	Sun enters the astrological sign Sagittarius, i.e. its longitude is 240°
8445.335	Nov 22	Thu	20	Venus at ascending node through the ecliptic plane
8445.736	Nov 23	Fri	5:40	<b>Full Moon</b>
8445.750	Nov 23	Fri	6	Moon 8.4° SE of the Pleiades; 176° from the Sun in the midnight sky
8445.992	Nov 23	Fri	12	Sun enters Scorpius, at longitude 241.13° on the ecliptic
8446.396	Nov 23	Fri	22	Moon 1.68° N of Aldebaran; 171° and 170° from the Sun in the morning sky
8447.198	Nov 24	SAT	17	Mercury at ascending node through the ecliptic plane
8447.447	Nov 24	SAT	23	Neptune stationary in longitude; resumes direct motion
8447.745	Nov 25	SUN	6	Neptune stationary in right ascension; resumes direct motion
8447.979	Nov 25	SUN	12	Moon 3.2° SE of M35 cluster; 150° and 151° from the Sun in the morning sky
8448.778	Nov 26	Mon	7	Jupiter at conjunction with the Sun; 6.347 AU from Earth; latitude 0.78°
8449.005	Nov 26	Mon	12:07	Moon at perigee; distance 57.48 Earth-radii
8449.479	Nov 26	Mon	24	Moon 7.1° S of Pollux; 130° and 131° from the Sun in the morning sky
8449.720	Nov 27	Tue	5	Moon at ascending node; longitude 118.0°
8449.881	Nov 27	Tue	9	Mercury at inferior conjunction with the Sun; 0.678 AU from Earth; latitude 2.00°



8450.396	Nov 27	Tue 22	Mercury 0.42° NNE of Jupiter; 2° and 1° from the Sun in the morning sky; magnitudes 5.2 and -1.7
8450.417	Nov 27	Tue 22	Moon 0.58° SE of Beehive Cluster; 118° from the Sun in the morning sky
8450.5	Nov 28	Wed	November Orionid meteors; ZHR 3; peak Nov 28 0h; 2 days before Last Quarter
8451.866	Nov 29	Thu 9	Mercury at perihelion, 0.3075 AU from the Sun
8451.979	Nov 29	Thu 12	Moon 2.28° NNE of Regulus; 97° from the Sun in the morning sky
8452.514	Nov 30	Fri 0:20	<b>Last Quarter Moon</b>
8452.600	Nov 30	Fri 2	Venus brightest; magnitude -4.65°
8452.811	Nov 30	Fri 7	Sun enters Ophiuchus, at longitude 248.02° on the ecliptic
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8454.484	Dec 1	SAT 24	Venus shows greatest illuminated extent, 54.3 square seconds
8454.5	Dec 2	SUN	Phoenicid meteors; ZHR 5; peak Dec 2 6h; 5 days before New
8455.523	Dec 3	Mon 1	Mars at east quadrature, 90° from the Sun
8455.917	Dec 3	Mon 10	Moon 7.2° NNE of Spica; 47° from the Sun in the morning sky
8456.396	Dec 3	Mon 22	Moon 3.4° NNE of Venus; 41° from the Sun in the morning sky
8458.438	Dec 5	Wed 23	Moon 1.82° NNE of Mercury; 17° from the Sun in the morning sky
8459.146	Dec 6	Thu 16	Moon 3.4° NNE of Jupiter; 9° and 8° from the Sun in the morning sky
8459.345	Dec 6	Thu 20	Mercury stationary in right ascension; resumes direct motion
8459.387	Dec 6	Thu 21	Mercury stationary in longitude; resumes direct motion
8459.458	Dec 6	Thu 23	Moon 8.4° NNE of Antares; 6° and 7° from the Sun in the morning sky
8459.5	Dec 7	Fri	Puppis-Velid meteors; ZHR 10; peak Dec 7 0h; near New
8459.806	Dec 7	Fri 7:21	<b>New Moon</b> ; beginning of lunation 1187
8460.104	Dec 7	Fri 15	Mars 0.04° N of Neptune; 88° from the Sun in the evening sky; magnitudes 0.1 and 7.9
8461.191	Dec 8	SAT 16:35	Earliest sunset, at latitude 40° north
8461.5	Dec 9	SUN	Monocerotid meteors; ZHR 3; peak Dec 9 4h; 2 days after New
8461.750	Dec 9	SUN 6	Moon 1.17° NNE of Saturn; 22° from the Sun in the evening sky
8461.958	Dec 9	SUN 11	Moon at southernmost declination in year, -21.54°
8462.077	Dec 9	SUN 14	Mercury at northernmost latitude from the ecliptic plane, 7.0°
8463.250	Dec 10	Mon 18	Moon at descending node; longitude 297.2°
8464.5	Dec 12	Wed	Sigma Hydrid meteors; ZHR 3; peak Dec 12 3h; 3 days before First Quarter
8465.015	Dec 12	Wed 12	Moon at apogee; distance 63.53 Earth-radii



8466.345	Dec 13	Thu	20	Mars and Uranus at heliocentric conjunction; longitude $31.1^\circ$
8466.5	Dec 14	Fri		<b>Geminid meteors</b> ; ZHR 120; peak Dec 14 6h; 1 day before First Quarter
8467.188	Dec 14	Fri	17	Moon $2.82^\circ$ SE of Neptune; $81^\circ$ from the Sun in the evening sky
8467.358	Dec 14	Fri	21	Moon, Mars, and Neptune within circle of diameter $4.89^\circ$ ; about $83^\circ$ from the Sun in the evening sky; magnitudes -10, 0, 8
8467.604	Dec 15	SAT	3	Moon $3.4^\circ$ SE of Mars; $86^\circ$ from the Sun in the evening sky
8467.971	Dec 15	SAT	11	<b>Mercury at westernmost elongation</b> ; $21.3^\circ$ from Sun in morning sky
8467.992	Dec 15	SAT	11:48	<b>First Quarter Moon</b>
8468.5	Dec 16	SUN		Coma Berenicid meteors; ZHR 3; peak Dec 16 1h; 1 day after First Quarter
8470.833	Dec 18	Tue	8	Moon $4.7^\circ$ SE of Uranus; $123^\circ$ and $122^\circ$ from the Sun in the evening sky
8471.086	Dec 18	Tue	14	Sun enters Sagittarius, at longitude $266.59^\circ$ on the ecliptic
8471.5	Dec 19	Wed		December Leo Minorid meteors; ZHR 5; peak Dec 19 23h; 3 days before Full
8473.167	Dec 20	Thu	16	Moon $8.4^\circ$ SE of the Pleiades; $152^\circ$ and $151^\circ$ from the Sun in the evening sky
8473.833	Dec 21	Fri	8	Moon $1.68^\circ$ N of Aldebaran; $161^\circ$ and $160^\circ$ from the Sun in the evening sky
8474.354	Dec 21	Fri	21	Mercury $0.83^\circ$ NNE of Jupiter; $20^\circ$ from the Sun in the morning sky; magnitudes -0.4 and -1.8
8474.434	Dec 21	Fri	22:25	<b>December or winter solstice</b>
8474.434	Dec 21	Fri	22:25	Sun enters the astrological sign Capricornus, i.e. its longitude is $270^\circ$
8474.5	Dec 22	SAT		Ursid meteors; ZHR 15; peak Dec 22 15h; near Full
8475.042	Dec 22	SAT	13	<b>Mercury, Jupiter, and Antares within circle of diameter <math>5.97^\circ</math></b> ; about $21^\circ$ from the Sun in the morning sky; magnitudes 0, -2, 1
8475.042	Dec 22	SAT	13	Mercury $6.0^\circ$ NNE of Antares; $20^\circ$ and $21^\circ$ from the Sun in the morning sky; magnitudes -0.4 and 1.0
8475.243	Dec 22	SAT	17:49	<b>Full Moon</b>
8475.375	Dec 22	SAT	21	Moon $3.1^\circ$ S of M35 cluster; $177^\circ$ and $178^\circ$ from the Sun in the midnight sky
8476.000	Dec 23	SUN	12	Moon at northernmost declination in year, $21.55^\circ$
8476.292	Dec 23	SUN	19	Jupiter $5.2^\circ$ N of Antares; $22^\circ$ from the Sun in the morning sky; magnitudes -1.8 and 1.0
8476.833	Dec 24	Mon	8	Moon $7.0^\circ$ S of Pollux; $158^\circ$ from the Sun in the morning sky
8476.915	Dec 24	Mon	9:57	Moon at perigee; distance 56.61 Earth-radii
8476.997	Dec 24	Mon	12	Moon at ascending node; longitude $116.9^\circ$
8477.5	Dec 25	Tue		Christmas
8477.750	Dec 25	Tue	6	Moon $0.54^\circ$ SE of Beehive Cluster; $145^\circ$ and $146^\circ$ from the Sun in the morning sky

8477.904	Dec 25	Tue	10	The equation of time is 0.
8479.179	Dec 26	Wed	16	Venus at perihelion, 0.7185 AU from the Sun
8479.250	Dec 26	Wed	18	Moon 2.42° NNE of Regulus; 125° from the Sun in the morning sky
8481.900	Dec 29	SAT	9:36	<b>Last Quarter Moon</b>
8483.125	Dec 30	SUN	15	Moon 7.3° NNE of Spica; 75° from the Sun in the morning sky