

CALENDAR



The 2017 solar eclipse as viewed in Bruceville.
Photo by Jason Kaechler (CC).



MORNING AND EVENING STARS

SEASONS, ECLIPSES, METEOR SHOWERS

CHRONOLOGICAL ERAS AND CYCLES

CALENDARS FOR 2020 AND 2021

Eras and Events for 2020 & 2021

Sources: McDonald Observatory; U.S. Naval Observatory's website (<https://aa.usno.navy.mil/index.php>) and publications, Astronomical Phenomena For The Year 2020 and Astronomical Phenomena For The Year 2021; In-The-Sky.org

The Year 2020

The year 2020 CE comprises the latter part of the 244th and the beginning of the 245th year of the independence of the United States of America. All dates in this book are given in terms of the Gregorian calendar.

The Seasons

Spring begins on Thursday, March 19, at 10:13 pm (CDT);

Summer begins on Saturday, June 20, at 4:07 pm (CDT);

Autumn begins on Tuesday, Sept. 22, at 7:54 am (CDT);

Winter begins on Monday, Dec. 21, at 3:25 am (CST).

Chronological Eras, 2020		
Era	Year	Begins
Julian	6733	Jan. 14
Byzantine	7529	Sept. 14
Jewish (A.M.)*	5781	Sept. 18
Chinese (gēng zǐ)	—	Jan. 25
Roman (A.U.C.)	2773	Jan. 14
Nabonassar	2769	April 18
Japanese	2680	Jan. 1
Seleucidæ (Grecian)	2332	Sept. 14 or Oct. 14
Saka (Indian)	1942	March 21
Diocletian (Coptic)	1737	Sept. 11
Islamic (Hegira)*	1442	Aug. 19

*Year begins at sunset.

Chronological Cycles, 2020			
Dominical Letter	ED	Golden Number (Lunar Cycle)	VII
Epact	5		
Roman Indiction	13	Solar Cycle	13

Morning & Evening Stars, 2020	
Morning Stars	
Venus	June 11—Dec. 31
Mars	Jan. 1—Oct. 13
Jupiter	Jan. 10—July 14
Saturn	Jan. 31—July 20
Evening Stars	
Venus	Jan. 1—May 28
Mars	Oct. 13—Dec. 31
Jupiter	July 14—Dec. 31
Saturn	July 20—Dec. 31

Eclipses 2020

January 10: Lunar, partial. Visible in N.W. North America, W. Pacific Ocean, most of Australasia, Asia, Europe, Africa, E. South America, N.E. North America.

June 5: Lunar, partial. Visible in W. Pacific Ocean, Australasia, Asia (except parts of Russia), Antarctica, most of Europe, Africa, E. and S. South America.

June 21: Solar, partial. Visible in most of Africa, S.E. Europe, Middle East, Asia (except parts of Russia), Indonesia, Micronesia.

July 5: Lunar, partial. Visible in North America except for Alaska and westernmost parts of Canada, most of Africa, S. and W. Europe, Antarctica, most of Polynesia, New Zealand.

November 30: Lunar, partial. Visible in N.W. Europe, North and South America Oceania, Australasia, most of Asia.

December 14: Solar, total. Visible in Southern Pacific Ocean, Galapagos Islands, most of South America, part of Antarctica, parts of S.W. Africa.

The Year 2021

The year 2021 CE comprises the latter part of the 245th and the beginning of the 246th year of the independence of the United States of America.

The Seasons

Spring begins on Saturday, March 20, at 4:00 am (CDT);

Summer begins on Sunday, June 20, at 9:55 pm (CDT);

Autumn begins on Wednesday, Sept. 22, at 1:44 pm (CDT);

Winter begins on Tuesday, Dec. 21, at 9:22 am (CST).

Chronological Eras, 2021		
Era	Year	Begins
Julian	6734	Jan. 14
Byzantine	7530	Sept. 14
Jewish (A.M.)*	5782	Sept. 6
Chinese (xīn chōu)	—	Feb. 12
Roman (A.U.C.)	2774	Jan. 14
Nabonassar	2770	April 18
Japanese	2681	Jan. 1
Seleucidæ (Grecian)	2333	Sept. 14 or Oct. 14
Saka (Indian)	1943	March 22
Diocletian (Coptic)	1738	Sept. 11
Islamic (Hegira)*	1443	Aug. 9

*Year begins at sunset.

Chronological Cycles, 2021			
Dominical Letter	C	Golden Number (Lunar Cycle)	VIII
Epact	16		
Roman Indiction	14	Solar Cycle	14

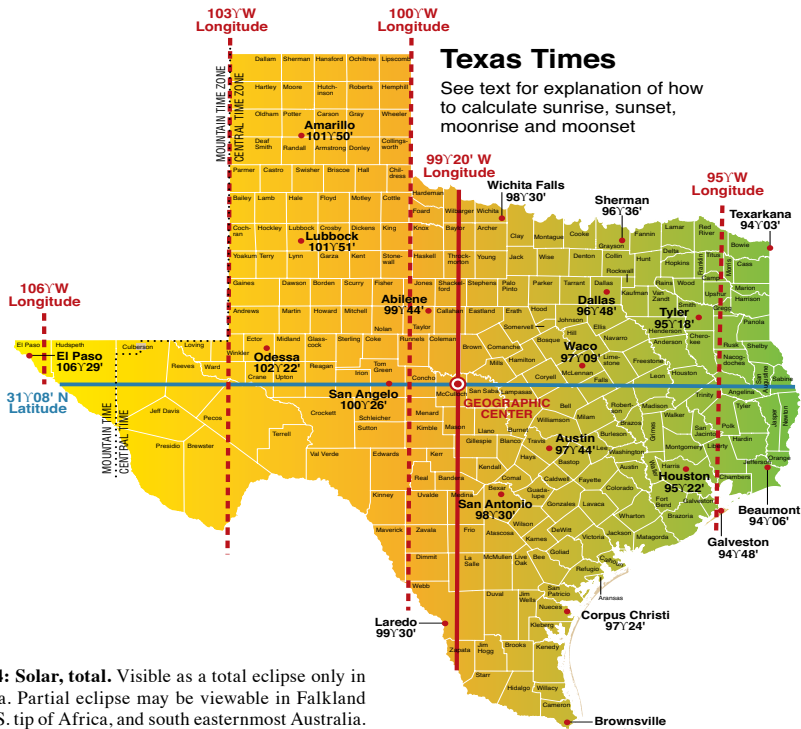
Morning & Evening Stars, 2021	
Morning Stars	
Venus	Jan. 1—Feb. 14
Mars	Nov. 23—Dec. 31
Jupiter	Feb. 11—Aug. 20
Saturn	Feb. 10—Aug. 2
Evening Stars	
Venus	May 5—Dec. 31
Mars	Jan. 1—Aug. 23
Jupiter	Jan. 1—Jan. 16, Aug. 20—Dec. 31
Saturn	Jan. 1—Jan. 7, Aug. 2—Dec. 31

Eclipses 2021

May 26: Lunar, total. Visible to W. South America, W. North America, Pacific Ocean, Australasia, E. Asia.

June 10: Solar, partial. Visible to N. and N.E. North America, Greenland, most of Europe, most of Russia, N. and W. China.

November 19: Lunar, partial. Visible to N.W. Europe, the Americas, Oceania, Australasia, most of Asia.



December 4: Solar, total. Visible as a total eclipse only in Antarctica. Partial eclipse may be viewable in Falkland Islands, S. tip of Africa, and south easternmost Australia.

An Explanation of Texas Time

Times listed here are **Central Standard Time**, except for the period from 2:00 a.m. on the second Sunday in March until 2:00 a.m. on the first Sunday in November, when **Daylight Saving Time**, which is one hour later than Central Standard Time, is in effect.

All of Texas is in the Central Time Zone, except El Paso and Hudspeth counties and the northwest corner of Culberson County, which observe **Mountain Time**. Mountain Time is one hour earlier than Central Time.

All times are calculated for the intersection of **99° 20' west longitude** and **31° 08' north latitude**, which is **closest to the town of Mercury** and about 15 miles northeast of Brady, McCulloch County. This point is the **approximate geographical center of the state**.

How to Adjust Rise & Set Times

To adjust the time of sunrise or sunset, moonrise or moonset for any point in Texas, apply the following rules:

- For each degree of longitude that the place lies **west** of the 99th meridian, **add four minutes** to the times given in the calendar.
- For each degree of longitude the place lies **east** of the 99th meridian, **subtract four minutes**.

At times there will be considerable variation for distances north and south of the line of 31° 08' north latitude, but this formula will give sufficiently close results.

The map above shows the intersection for which all times given in this chapter are calculated, with some major cities and longitudes to aid in calculating times.

Astronomical Calendars

The calendars on the following pages feature phenomena and planetary configurations of the heavens for 2020 and 2021 in the center columns. The table to the right is a key to those symbols. You'll find find additional keys below the calendars.

Aspects: Conjunction & Opposition

This symbol, appearing between symbols for heavenly bodies, means they are "in conjunction," that is, having the same longitude in the sky and appearing near each other. For example, means Venus is north or south of the moon by a few degrees. Conjunctions listed in this calendar are separated by 10 degrees or less. Inferior and superior conjunctions mean an inner planet, Venus or Mercury, is in line with the Sun, either between the Earth and the Sun (inferior) or on the opposite side of the Sun (superior).

This symbol means that the heavenly body listed is in "opposition" to the Sun, or that they differ by 180 degrees of longitude.

Common Astronomical Terms

- Aphelion:** Point at which a planet's orbit is farthest from the sun.
- Perihelion:** Point at which a planet's orbit is nearest the sun.
- Apogee:** Point of the moon's orbit farthest from the earth.
- Perigee:** Point of the moon's orbit nearest the earth.

Symbol	Meaning
	The Sun
	Mercury
	Venus
	The Earth
	The Moon
	Mars
	Jupiter
	Saturn
	Uranus
	Neptune
	conjunction
	opposition

Times are Central Standard Time, except from March 8 to Nov. 1, during which Daylight Saving Time is observed. Boldface times for moonrise and moonset indicate p.m. Times are figured for the point 31° 08' N 99° 20' W, the approximate geographical center of the state. See page 122 for explanation of how to get the approximate time at any other Texas point.

1st Month			January 2020			31 Days		
Moon Phases — First Qtr., Jan. 2, 10:08 pm.; Full, Jan. 10, 12:44 pm.; Last Qtr., Jan. 17, 6:21 pm.; New, Jan. 24, 3:05 pm								
Day of			Planetary Configurations and Phenomena			Hour of		
Year	Month	Week				Sunrise	Sunset	Moon-rise
						Sunrise	Sunset	Moon-set
1	1	We.	at apogee (8 pm)			7:36	5:46	12:01
2	2	Th.	First qtr.			7:36	5:47	12:30
3	3	Fr.				7:36	5:47	12:59
4	4	Sa.	(12 pm)			7:36	5:48	1:29
5	5	Su.	perihelion (2 am)			7:37	5:49	2:01
6	6	Mo.				7:37	5:50	2:37
7	7	Tu.				7:37	5:50	3:17
8	8	We.				7:37	5:51	4:04
9	9	Th.				7:37	5:52	4:58
10	10	Fr.	Full ; in superior			7:37	5:53	5:58
11	11	Sa.	stationary (1 am)			7:37	5:54	7:04
12	12	Su.				7:37	5:55	8:12
13	13	Mo.	at perigee (2 pm)			7:37	5:55	9:20
14	14	Tu.				7:36	5:56	10:27
15	15	We.				7:36	5:57	11:32
16	16	Th.				7:36	5:58	11:57
17	17	Fr.	Last qtr.			7:36	5:59	12:37
18	18	Sa.				7:36	6:00	1:41
19	19	Su.				7:35	6:01	2:44
20	20	Mo.	(1 pm)			7:35	6:02	3:47
21	21	Tu.				7:35	6:03	4:49
22	22	We.	(9 pm)			7:35	6:03	5:48
23	23	Th.				7:34	6:04	6:43
24	24	Fr.	New			7:34	6:05	7:32
25	25	Sa.				7:33	6:06	8:16
26	26	Su.				7:33	6:07	8:54
27	27	Mo.				7:32	6:08	9:29
28	28	Tu.	(12 am)			7:32	6:09	10:01
29	29	We.	at apogee (3 pm)			7:31	6:10	10:30
30	30	Th.				7:31	6:11	10:59
31	31	Fr.	(9 pm)			7:30	6:12	11:28

2nd Month			February 2020			29 Days		
Moon Phases — First Qtr., Feb. 1, 7:05 pm; Full, Feb. 9, 12:56 am; Last Qtr., Feb. 15, 3:40 pm; New Qtr., Feb. 23, 8:55 am								
Day of	Week	Planetary Configurations and Phenomena	Hour of					
Year	Month		Sunrise	Sunset	Moon-rise	Moon-set		
32	1	Sa. First qtr.	7:30 6:12	11:59	12:22			
33	2	Su. Vesta (3 am)	7:29 6:13	12:32	1:17			
34	3	Mo.	7:28 6:14	1:09	2:14			
35	4	Tu.	7:28 6:15	1:52	3:12			
36	5	We.	7:27 6:16	2:41	4:12			
37	6	Th.	7:26 6:17	3:38	5:12			
38	7	Fr.	7:26 6:18	4:42	6:10			
39	8	Sa.	7:25 6:19	5:50	7:04			
40	9	Su. Full	7:24 6:19	7:00	7:53			
41	10	Mo. at perigee (2 pm)	7:23 6:20	8:10	8:37			
42	11	Tu.	7:22 6:21	9:19	9:17			
43	12	We.	7:21 6:22	10:26	9:55			
44	13	Th. Juno (4 am)	7:21 6:23	11:32	10:32			
45	14	Fr.	7:20 6:24		11:09			
46	15	Sa. Last qtr.	7:19 6:24	12:37	11:48			
47	16	Su. stationary (4 am)	7:18 6:25	1:41	12:30			
48	17	Mo.	7:17 6:26	2:44	1:16			
49	18	Tu.	7:16 6:27	3:43	2:06			
50	19	We. (2 pm)	7:15 6:28	4:39	2:59			
51	20	Th. (8 am)	7:14 6:29	5:29	3:55			
52	21	Fr.	7:13 6:29	6:14	4:51			
53	22	Sa.	7:12 6:30	6:54	5:47			
54	23	Su. New	7:11 6:31	7:29	6:43			
55	24	Mo.	7:10 6:32	8:01	7:37			
56	25	Tu. in inferior (8 pm)	7:09 6:32	8:31	8:30			
57	26	We. at apogee (6 am)	7:08 6:33	9:00	9:22			
58	27	Th. (6 am)	7:07 6:34	9:29	10:15			
59	28	Fr. (6 am)	7:06 6:35	9:59	11:09			
60	29	Sa.	7:04 6:35	10:30				

3rd Month			March 2020			31 Days		
Moon Phases			— First Qtr., March 2, 1:20 pm.; Full, March 9, 12:11 pm.; Last Qtr., March 16, 3:57 am.; New, March 24, 3:51 am					
Day of		Planetary Configurations and Phenomena	Hour of			Moon set		
Year	Month		Week	Sunrise	Sunset		Moon rise	
61	1	Su.	Vesta (12 am)	7:03	6:36	11:05	12:04	
62	2	Mo.	First qtr.	7:02	6:37	11:44	1:00	
63	3	Tu.		7:01	6:38	12:29	1:58	
64	4	We.		7:00	6:38	1:21	2:57	
65	5	Th.		6:59	6:39	2:20	3:54	
66	6	Fr.		6:58	6:40	3:25	4:49	
67	7	Sa.		6:56	6:40	4:34	5:39	
68	8	Su.	DST begins (2 am)	7:55	7:41	6:45	7:25	
69	9	Mo.	Full ; (3 am)	7:54	7:42	7:55	8:08	
70	10	Tu.	at perigee (1 am)	7:53	7:43	9:05	8:47	
71	11	We.		7:52	7:43	10:15	9:26	
72	12	Th.		7:50	7:44	11:23	10:04	
73	13	Fr.		7:49	7:45		10:44	
74	14	Sa.		7:48	7:45	12:30	11:26	
75	15	Su.		7:47	7:46	1:36	12:12	
76	16	Mo.	Last qtr.	7:45	7:47	2:38	1:02	
77	17	Tu.		7:44	7:47	3:35	1:55	
78	18	We.	(3 am)	7:43	7:48	4:27	2:50	
79	19	Th.	Equinox (10:13 pm)	7:42	7:49	5:14	3:46	
80	20	Fr.		7:40	7:49	5:55	4:42	
81	21	Sa.	(1 pm)	7:39	7:50	6:31	5:37	
82	22	Su.		7:38	7:51	7:04	6:32	
83	23	Mo.	gr. elongation W. (9 pm)	7:37	7:51	7:34	7:25	
84	24	Tu.	New at apogee (10 am)	7:35	7:52	8:03	8:18	
85	25	We.		7:34	7:53	8:32	9:10	
86	26	Th.	(4 pm)	7:33	7:53	9:01	10:04	
87	27	Fr.		7:32	7:54	9:31	10:58	
88	28	Sa.	(6 am)	7:30	7:54	10:05	11:54	
89	29	Su.	Vesta (2 am)	7:29	7:55	10:42		
90	30	Mo.		7:28	7:56	11:24	12:51	
91	31	Tu.	(6 am)	7:27	7:56	12:12	1:48	

Astronomical Calendar for 2020

4th Month										5th Month										6th Month									
April 2020										May 2020										June 2020									
Moon Phases — First Qtr., April 1, 4:44 am; Full, April 7, 10:58 pm; Last Qtr., April 14, 5:19 pm; New, April 22, 8:49 pm; First Qtr., April 30, 3:01 pm										Moon Phases — Full, May 7, 5:08 am; Last Qtr., May 14, 8:26 am; New, May 22, 12:02 pm; First Qtr., May 29, 9:53 pm										Moon Phases — Full, June 5, 1:35 pm; Last Qtr., June 13, 12:47 am; New, July 21, 1:04 am; First Qtr., July 28, 2:39 am									
Day of		Planetary Configurations and Phenomena		Hour of		Day of		Planetary Configurations and Phenomena		Hour of		Day of		Planetary Configurations and Phenomena		Hour of		Day of		Planetary Configurations and Phenomena		Hour of		Day of		Planetary Configurations and Phenomena		Hour of	
Year	Month	Week	Year	Month	Week	Year	Month	Week	Year	Month	Week	Year	Month	Week	Year	Month	Week	Year	Month	Week	Year	Month	Week	Year	Month	Week	Year	Month	Week
92	1	We.	101	10	Fr.	132	1	Fr.	122	1	Fr.	132	1	Fr.	153	1	Mo.	153	1	Mo.	160	8	Mo.	161	9	Tu.	162	10	We.
93	2	Th.	102	11	Sa.	133	2	Sa.	123	2	Sa.	133	2	Sa.	154	2	Tu.	154	2	Tu.	161	9	Tu.	162	10	We.	163	11	Th.
94	3	Fr.	103	12	Su.	134	3	Su.	124	3	Su.	134	3	Su.	155	3	We.	155	3	We.	162	11	Th.	163	12	Fr.	164	13	Sa.
95	4	Sa.	104	13	Mo.	135	4	Mo.	125	4	Mo.	135	4	Mo.	156	4	Th.	156	4	Th.	163	12	Fr.	164	13	Sa.	165	14	Su.
96	5	Su.	105	14	Tu.	136	5	Tu.	126	5	Tu.	136	5	Tu.	157	5	Fr.	157	5	Fr.	164	13	Sa.	165	14	Su.	166	15	Mo.
97	6	Mo.	106	15	We.	137	6	We.	127	6	We.	137	6	We.	158	6	Sa.	158	6	Sa.	165	15	Mo.	166	15	Mo.	167	16	Tu.
98	7	Tu.	107	16	Th.	138	7	Th.	128	7	Th.	138	7	Th.	159	7	Su.	159	7	Su.	166	16	Tu.	167	16	Tu.	168	17	We.
99	8	We.	108	17	Fr.	139	8	Fr.	129	8	Fr.	139	8	Fr.	160	8	Mo.	160	8	Mo.	167	16	Tu.	168	17	We.	169	18	Th.
100	9	Th.	109	18	Sa.	140	9	Sa.	130	9	Sa.	140	9	Sa.	161	9	Tu.	161	9	Tu.	168	16	Tu.	169	17	We.	170	18	Th.
101	10	Fr.	110	19	Su.	141	10	Su.	131	10	Su.	141	10	Su.	162	10	We.	162	10	We.	169	17	We.	170	18	Th.	171	19	Fr.
102	11	Sa.	111	20	Mo.	142	11	Mo.	132	11	Mo.	142	11	Mo.	163	11	Th.	163	11	Th.	170	18	Th.	171	19	Fr.	172	20	Sa.
103	12	Su.	112	21	Tu.	143	12	Tu.	133	12	Tu.	143	12	Tu.	164	12	Fr.	164	12	Fr.	171	19	Fr.	172	20	Sa.	173	21	Su.
104	13	Mo.	113	22	We.	144	13	We.	134	13	We.	144	13	We.	165	13	Sa.	165	13	Sa.	172	20	Sa.	173	21	Su.	174	22	Mo.
105	14	Tu.	114	23	Th.	145	14	Th.	135	14	Th.	145	14	Th.	166	14	Su.	166	14	Su.	173	21	Su.	174	22	Mo.	175	23	Tu.
106	15	We.	115	24	Fr.	146	15	Fr.	136	15	Fr.	146	15	Fr.	167	15	Mo.	167	15	Mo.	174	22	Mo.	175	23	Tu.	176	24	We.
107	16	Th.	116	25	Sa.	147	16	Sa.	137	16	Sa.	147	16	Sa.	168	16	Tu.	168	16	Tu.	175	23	Tu.	176	24	We.	177	25	Th.
108	17	Fr.	117	26	Su.	148	17	Fr.	138	17	Fr.	148	17	Fr.	169	17	We.	169	17	We.	176	24	We.	177	25	Th.	178	26	Fr.
109	18	Sa.	118	27	Mo.	149	18	Sa.	139	18	Sa.	149	18	Sa.	170	18	Th.	170	18	Th.	177	25	Th.	178	26	Fr.	179	27	Sa.
110	19	Su.	119	28	Tu.	150	19	Su.	140	19	Tu.	150	19	Su.	171	19	Fr.	171	19	Fr.	178	26	Fr.	179	27	Sa.	180	28	Su.
111	20	Mo.	120	29	We.	151	20	Mo.	141	20	We.	151	20	Mo.	172	20	Sa.	172	20	Sa.	179	27	Sa.	180	28	Su.	181	29	Mo.
112	21	Tu.	121	30	Th.	152	21	Tu.	142	21	Th.	152	21	Tu.	173	21	Su.	173	21	Su.	180	28	Su.	181	29	Mo.	182	30	Tu.
113	22	We.																											
114	23	Th.																											
115	24	Fr.																											
116	25	Sa.																											
117	26	Su.																											
118	27	Mo.																											
119	28	Tu.																											
120	29	We.																											
121	30	Th.																											

The Sun The Earth The Moon Mercury Venus Mars Jupiter Saturn Neptune Uranus
= in conjunction = opposition to the

Astronomical Calendar for 2020

7th Month			July 2020			31 Days		
Moon Phases — Full, July 4, 11:07 pm; Last Qtr., July 12 5:52 pm; New, July 20, 11:56 am; First Qtr., July 27, 6:56 am								
Year	Month	Week	Planetary Configurations and Phenomena		Hour of		Moon rise	Moon set
			Sunrise	Sunset	Sunrise	Sunset		
183	1	We.	6:37 8:45	5:26	6:37 8:45	5:26	3:35	
184	2	Th.	6:38 8:45	6:33	6:38 8:45	6:33	4:18	
185	3	Fr.	6:38 8:45	7:38	6:38 8:45	7:38	5:06	
186	4	Sa.	aphelion (7 am)	6:39 8:45	8:39	5:59		
187	5	Su.	(5 pm)	6:39 8:45	9:33	6:56		
188	6	Mo.	(4 am)	6:40 8:45	10:21	7:57		
189	7	Tu.		6:40 8:45	11:02	8:57		
190	8	We.		6:41 8:44	11:38	9:56		
191	9	Th.		6:41 8:44	10:54			
192	10	Fr.	gr. illumination (3 am)	6:42 8:44	12:10	11:49		
193	11	Sa.	(3 pm)	6:42 8:44	12:40	12:42		
194	12	Su.	at apogee (2 pm)	6:43 8:43	1:09	1:35		
195	13	Mo.		6:43 8:43	1:37	2:28		
196	14	Tu.	(3 am);	6:44 8:43	2:06	3:23		
197	15	We.		6:44 8:42	2:38	4:18		
198	16	Th.		6:45 8:42	3:13	5:16		
199	17	Fr.	(2 am)	6:45 8:41	3:54	6:15		
200	18	Sa.	(11 pm)	6:46 8:41	4:40	7:13		
201	19	Su.		6:47 8:40	5:33	8:10		
202	20	Mo.	New ; (5 pm)	6:47 8:40	6:32	9:02		
203	21	Tu.		6:48 8:39	7:36	9:50		
204	22	We.	gr. elongation W (10 am)	6:48 8:39	8:43	10:32		
205	23	Th.		6:49 8:38	9:50	11:11		
206	24	Fr.		6:50 8:38	10:56	11:48		
207	25	Sa.	at perigee (12 am)	6:50 8:37	12:01			
208	26	Su.		6:51 8:36	1:06	12:23		
209	27	Mo.	First qtr.	6:52 8:36	2:12	12:58		
210	28	Tu.		6:52 8:35	3:17	1:35		
211	29	We.		6:53 8:34	4:23	2:16		
212	30	Th.		6:53 8:34	5:27	3:01		
213	31	Fr.		6:54 8:33	6:28	3:51		

8th Month			August 2020			31 Days		
Moon Phases — Full, Aug. 3, 10:22 am; Last Qtr., Aug. 11, 11:08 am; New, Aug. 18, 9:05 pm; First Qtr., Aug. 25, 12:21 pm								
Year	Month	Week	Planetary Configurations and Phenomena		Hour of		Moon rise	Moon set
			Sunrise	Sunset	Sunrise	Sunset		
214	1	Sa.	(7 pm)	6:55 8:32	7:24	4:46		
215	2	Su.	(8 am)	6:55 8:31	8:14	5:44		
216	3	Mo.	Full	6:56 8:31	8:58	6:44		
217	4	Tu.		6:57 8:30	9:36	7:44		
218	5	We.		6:57 8:29	10:09	8:42		
219	6	Th.	(10 am)	6:58 8:28	10:40	9:38		
220	7	Fr.		6:59 8:27	11:09	10:33		
221	8	Sa.		6:59 8:26	11:37	11:26		
222	9	Su.	at apogee (9 am)	7:00 8:25	12:19			
223	10	Mo.	(4 pm)	7:00 8:24	12:06	1:13		
224	11	Tu.	Last qtr.	7:01 8:23	12:36	2:07		
225	12	We.	gr. elongation W (7 pm)	7:02 8:22	1:10	3:03		
226	13	Th.		7:02 8:21	1:47	4:01		
227	14	Fr.		7:03 8:20	2:30	4:59		
228	15	Sa.	stationary (12 pm)	7:04 8:19	3:16	5:56		
229	16	Su.		7:04 8:18	4:16	6:50		
230	17	Mo.	in superior (3 pm)	7:05 8:17	5:18	7:40		
231	18	Tu.	New	7:05 8:16	6:25	8:26		
232	19	We.		7:06 8:15	7:33	9:07		
233	20	Th.		7:07 8:14	8:41	9:46		
234	21	Fr.	at perigee (6 am)	7:07 8:13	9:49	10:22		
235	22	Sa.		7:08 8:12	10:56	10:58		
236	23	Su.		7:08 8:11	12:03	11:35		
237	24	Mo.		7:09 8:09	1:10			
238	25	Tu.	First qtr.	7:10 8:08	2:16	12:15		
239	26	We.		7:10 8:07	3:21	12:59		
240	27	Th.		7:11 8:06	4:23	1:47		
241	28	Fr.	(9 pm)	7:11 8:05	5:20	2:40		
242	29	Sa.	(2 pm)	7:12 8:04	6:11	3:37		
243	30	Su.		7:13 8:02	6:55	4:36		
244	31	Mo.		7:13 8:01	7:35	5:35		

9th Month			September 2020			30 Days		
Moon Phases — Full, Sept. 1, 11:45 pm; Last Qtr., Sept. 10, 3:49 am; New, Sept. 17 5:23 am; First Qtr., Sept. 23, 8:18 pm								
Year	Month	Week	Planetary Configurations and Phenomena		Hour of		Moon rise	Moon set
			Sunrise	Sunset	Sunrise	Sunset		
245	1	Tu.	Full	7:14 8:00	8:09	6:33		
246	2	We.	(4 pm)	7:14 7:59	8:41	7:30		
247	3	Th.		7:15 7:57	9:10	8:25		
248	4	Fr.		7:16 7:56	9:38	9:19		
249	5	Sa.		7:16 7:55	10:07	10:12		
250	6	Su.	at apogee (1 am)	7:17 7:54	10:36	11:05		
251	7	Mo.		7:17 7:52	11:08	11:59		
252	8	Tu.		7:18 7:51	11:43	12:54		
253	9	We.	stationary (1 pm)	7:18 7:50		1:50		
254	10	Th.	Last qtr.	7:19 7:49	12:23	2:47		
255	11	Fr.	(3 pm)	7:20 7:47	1:08	3:43		
256	12	Sa.	stationary (7 pm)	7:20 7:46	2:00	4:38		
257	13	Su.		7:21 7:45	2:59	5:29		
258	14	Mo.	(12 am)	7:21 7:43	4:03	6:16		
259	15	Tu.		7:22 7:42	5:10	6:59		
260	16	We.		7:22 7:41	6:19	7:39		
261	17	Th.	New	7:23 7:40	7:29	8:18		
262	18	Fr.	at perigee (9 am)	7:24 7:38	8:38	8:53		
263	19	Sa.		7:24 7:37	9:47	9:31		
264	20	Su.		7:25 7:36	10:57	10:11		
265	21	Mo.		7:25 7:34	12:06	10:55		
266	22	Tu.	Equinox (7:54 am)	7:26 7:33	1:13	11:43		
267	23	We.	First qtr.	7:27 7:32	2:18			
268	24	Th.		7:27 7:31	3:17	12:35		
269	25	Fr.	(2 am)	7:28 7:29	4:09	1:31		
270	26	Sa.		7:28 7:28	4:56	2:30		
271	27	Su.		7:29 7:27	5:36	3:29		
272	28	Mo.	stationary (10 pm)	7:30 7:25	6:11	4:27		
273	29	Tu.	(9 pm)	7:30 7:24	6:43	5:24		
274	30	We.		7:31 7:23	7:13	6:19		

Bright stars: Aldebaran, Antares, Spica, Pollux, Regulus, Minor planets or asteroids: Pluto, Ceres, Pallas, Juno, Vesta.

= in conjunction by 10° or < = opposition to the

Astronomical Calendar for 2020

11th MonthNovember 202030 Days

Moon Phases — Last Qtr., Nov. 8, 7:09 am; New, Nov. 14, 10:30 pm; First Qtr., Nov. 21, 10:08 pm; Full, Nov. 30, 2:53 am

Day of		Planetary Configurations and Phenomena	Hour of	
Year	Month		Sunrise	Sunset
306	1 Su.	DST ends (2 am)	6:53 5:48	6:43 7:42
307	2 Mo.		6:54 5:47	7:19 8:38
308	3 Tu.	stationary (2 am)	6:55 5:47	8:00 9:34
309	4 We.		6:56 5:46	8:46 10:30
310	5 Th.		6:56 5:45	9:38 11:24
311	6 Fr.		6:57 5:44	10:35 12:16
312	7 Sa.		6:58 5:44	11:36 1:03
313	8 Su.	Last qtr.	6:59 5:43	1:47
314	9 Mo.		7:00 5:42	12:39 2:26
315	10 Tu.	gr. elongation W (11 am)	7:01 5:42	1:44 3:03
316	11 We.		7:01 5:41	2:50 3:39
317	12 Th.	(3 pm)	7:02 5:40	3:58 4:15
318	13 Fr.	(3 pm)	7:03 5:40	5:07 4:52
319	14 Sa.	New at perigee (6 am)	7:04 5:39	6:18 5:33
320	15 Su.	stationary (1 pm)	7:05 5:39	7:30 6:19
321	16 Mo.		7:06 5:38	8:42 7:10
322	17 Tu.		7:07 5:38	9:51 8:07
323	18 We.		7:08 5:38	10:54 9:07
324	19 Th.	(3 am)	7:08 5:37	11:48 10:10
325	20 Tu.		7:09 5:37	12:35 11:11
326	21 Sa.	First qtr.	7:10 5:36	1:14
327	22 Su.		7:11 5:36	1:49 12:11
328	23 Mo.	(6 am)	7:12 5:36	2:19 1:08
329	24 Tu.		7:13 5:35	2:48 2:02
330	25 We.	(2 pm)	7:13 5:35	3:16 2:56
331	26 Th.	at apogee (6 pm)	7:14 5:35	3:43 3:49
332	27 Fr.	(11 am)	7:15 5:35	4:12 4:42
333	28 Sa.		7:16 5:35	4:44 5:36
334	29 Su.	stationary (3 am)	7:17 5:35	5:19 6:32
335	30 Mo.	Full	7:18 5:35	5:58 7:28

12th MonthDecember 202031 Days

Moon Phases — Last Qtr., Dec. 7, 6:00 pm; New, Dec. 14, 9:40 am; First Qtr., Dec. 21, 5:04 pm; Full, Dec. 29, 8:51 pm

Day of		Planetary Configurations and Phenomena	Hour of	
Year	Month		Sunrise	Sunset
336	1 Tu.		7:18 5:35	6:43 8:25
337	2 We.		7:19 5:35	7:34 9:21
338	3 Th.		7:20 5:35	8:29 10:13
339	4 Fr.		7:21 5:35	9:29 11:02
340	5 Sa.		7:22 5:35	10:31 11:46
341	6 Su.		7:22 5:35	11:34 12:26
342	7 Mo.	Last qtr.	7:23 5:35	1:03
343	8 Tu.		7:24 5:35	12:38 1:38
344	9 We.		7:25 5:35	1:42 2:12
345	10 Th.		7:25 5:35	2:47 2:47
346	11 Fr.		7:26 5:36	3:55 3:24
347	12 Sa.	at perigee (3 pm)	7:27 5:36	5:04 4:06
348	13 Su.		7:27 5:36	6:16 4:53
349	14 Mo.	New	7:28 5:37	7:26 5:47
350	15 Tu.		7:29 5:37	8:33 6:47
351	16 We.	(10 pm)	7:29 5:37	9:33 7:50
352	17 Th.		7:30 5:38	10:25 8:54
353	18 Fr.		7:30 5:38	11:09 9:57
354	19 Sa.	in superior (9 pm)	7:31 5:39	11:47 10:56
355	20 Su.	(2 pm)	7:31 5:39	12:20 11:53
356	21 Mo.	Solstice (3:25 am);	7:32 5:40	12:50
357	22 Tu.		7:32 5:40	1:18 12:48
358	23 We.	(1 pm)	7:33 5:41	1:45 1:41
359	24 Th.	at apogee (11 am)	7:33 5:41	2:14 2:34
360	25 Fr.		7:34 5:42	2:44 3:28
361	26 Sa.		7:34 5:42	3:17 4:23
362	27 Su.		7:35 5:43	3:55 5:19
363	28 Mo.		7:35 5:44	4:38 6:16
364	29 Tu.	Full	7:35 5:44	5:28 7:13
365	30 We.		7:35 5:45	6:22 8:08
366	31 Th.		7:36 5:46	7:22 8:59

= in conjunction = opposition to the

The Sun The Earth The Moon Mercury Venus Mars Jupiter Saturn Neptune Uranus

Times are Central Standard Time, except from March 10 to Nov. 3, during which Daylight Saving Time is observed. Boldface times for moonrise and moonset indicate p.m. Times are figured for the point 99° 20' West and 31° 08' North, the approximate geographical center of the state. See page 161 for explanation of how to get the approximate time at any other Texas point.

approximate geographical center of the state. See page 161 for explanation of how to get the approximate time at any other Texas point.

1st Month			January 2021			31 Days		
Moon Phases — Last Qtr., Jan. 6, 3:00 am; New, Jan. 12, 10:23 pm; First Qtr., Jan. 20, 2:25 pm; Full, Jan. 28, 12:39 pm								
Year	Month	Week	Planetary Configurations and Phenomena		Hour of			
					Sunrise	Moon-rise	Moon-set	
1	1	Fr.			7:36 5:46	7:47	9:08	
2	2	Sa.	perihelion (8 am)		7:36 5:47	8:50	9:50	
3	3	Su.			7:36 5:48	9:53	10:28	
4	4	Mo.			7:36 5:49	10:57	11:03	
5	5	Tu.			7:37 5:49		11:36	
6	6	We.	Last qtr.		7:37 5:50	12:00	12:10	
7	7	Th.			7:37 5:51	1:05	12:45	
8	8	Fr.			7:37 5:52	2:11	1:23	
9	9	Sa.	at perigee (10 am)		7:37 5:53	3:19	2:06	
10	10	Su.			7:37 5:54	4:28	2:55	
11	11	Mo.	(2 pm)		7:37 5:54	5:36	3:51	
12	12	Tu.	New		7:37 5:55	6:39	4:53	
13	13	We.	(7 pm)		7:37 5:56	7:35	5:57	
14	14	Th.	(2 am)		7:36 5:57	8:23	7:01	
15	15	Fr.			7:36 5:58	9:04	8:03	
16	16	Sa.			7:36 5:59	9:40	9:02	
17	17	Su.	(12 am)		7:36 6:00	10:12	9:59	
18	18	Mo.			7:36 6:01	10:41	10:54	
19	19	Tu.	First qtr.		7:35 6:01	11:09	11:47	
20	20	We.			7:35 6:02	11:37		
21	21	Th.	at apogee (7 am)		7:35 6:03	12:06	12:41	
22	22	Fr.			7:34 6:04	12:38	1:35	
23	23	Sa.	gr. elongation E (8 pm)		7:34 6:05	1:14	2:31	
24	24	Su.			7:33 6:06	1:54	3:27	
25	25	Mo.			7:33 6:07	2:41	4:24	
26	26	Tu.			7:33 6:08	3:34	5:20	
27	27	We.			7:32 6:09	4:32	6:13	
28	28	Th.	Full ; (8 pm)		7:32 6:09	5:35	7:02	
29	29	Fr.	stationary (8 pm)		7:31 6:10	6:39	7:47	
30	30	Sa.			7:30 6:11	7:44	8:27	
31	31	Su.			7:30 6:12	8:49	9:03	

2nd Month			February 2021			28 Days		
Moon Phases — Last Qtr., Feb. 4, 11:00 am; New, Feb. 11, 12:29 pm; First Qtr., Feb. 19, 12:10 pm; Full, Feb. 27, 1:40 pm								
Year	Month	Week	Planetary Configurations and Phenomena		Hour of			
					Sunrise	Moon-rise	Moon-set	
32	1	Mo.			7:29 6:13	9:54	9:38	
33	2	Tu.			7:29 6:14	10:58	10:12	
34	3	We.	at perigee (1 pm)		7:28 6:15		10:46	
35	4	Th.	Last qtr.		7:27 6:16	12:04	11:23	
36	5	Fr.			7:26 6:17	1:10	12:03	
37	6	Sa.			7:26 6:17	2:18	12:49	
38	7	Su.			7:25 6:18	3:24	1:41	
39	8	Mo.	in inferior (8 am)		7:24 6:19	4:27	2:39	
40	9	Tu.			7:23 6:20	5:24	3:41	
41	10	We.	(5 am)		7:23 6:21	6:15	4:45	
42	11	Th.	New ; (6 am)		7:22 6:22	6:58	5:47	
43	12	Fr.			7:21 6:23	7:36	6:48	
44	13	Sa.	(11 am)		7:20 6:23	8:09	7:46	
45	14	Su.			7:19 6:24	8:40	8:42	
46	15	Mo.			7:18 6:25	9:08	9:37	
47	16	Tu.			7:17 6:26	9:36	10:11	
48	17	We.	(10 am)		7:16 6:27	10:05	11:25	
49	18	Th.	at apogee (4 am)		7:15 6:28	10:36		
50	19	Fr.	First qtr.		7:14 6:29	11:09	12:20	
51	20	Sa.	stationary (7 am)		7:13 6:29	11:47	1:15	
52	21	Su.			7:12 6:30	12:31	2:12	
53	22	Mo.			7:11 6:31	1:20	3:08	
54	23	Tu.			7:10 6:31	2:16	4:02	
55	24	We.			7:09 6:32	3:17	4:52	
56	25	Th.			7:08 6:33	4:21	5:39	
57	26	Fr.			7:07 6:34	5:27	6:21	
58	27	Sa.	Full		7:06 6:34	6:34	7:00	
59	28	Su.			7:05 6:35	7:41	7:36	

3rd Month			March 2021			31 Days		
Moon Phases — Last Qtr., March 5, 6:53 pm; New, March 13, 12:29 pm; First Qtr., March 21, 9:03 am; Full, March 28, 1:11 pm;								
Year	Month	Week	Planetary Configurations and Phenomena		Hour of			
					Sunrise	Moon-rise	Moon-set	
60	1	Mo.			7:04 6:36	8:47	8:11	
61	2	Tu.	at perigee (11 pm)		7:02 6:37	9:55	8:46	
62	3	We.			7:01 6:37	11:03	9:22	
63	4	Th.	Vesta (12 pm)		7:00 6:38		10:02	
64	5	Fr.	(1 am)		6:59 6:39	12:11	10:47	
65	6	Sa.	gr. elongation W		6:58 6:40	1:18	11:37	
66	7	Su.			6:57 6:40	2:21	12:33	
67	8	Mo.			6:55 6:41	3:20	1:33	
68	9	Tu.	(5 pm)		6:54 6:42	4:11	2:35	
69	10	We.	(10 am)		6:53 6:42	4:56	3:37	
70	11	Th.			6:52 6:43	5:35	4:37	
71	12	Fr.			6:51 6:44	6:09	5:36	
72	13	Sa.	New		6:49 6:44	6:40	6:32	
73	14	Su.	DST begins (2 am)		7:48 7:45	8:09	8:27	
74	15	Mo.			7:47 7:46	8:37	9:22	
75	16	Tu.	(9 pm)		7:46 7:46	9:05	10:16	
76	17	We.			7:44 7:47	9:35	11:11	
77	18	Th.	at apogee (12 am)		7:43 7:48	10:07		
78	19	Fr.	(1 pm)		7:42 7:48	10:43	12:06	
79	20	Sa.	Equinox (4:00 am)		7:41 7:49	11:23	1:02	
80	21	Su.	First qtr.		7:39 7:50	12:09	1:57	
81	22	Mo.	Aldebaran (7 pm)		7:38 7:50	1:01	2:51	
82	23	Tu.			7:37 7:51	1:59	3:42	
83	24	We.			7:36 7:52	3:01	4:30	
84	25	Th.			7:34 7:52	4:06	5:13	
85	26	Fr.	in superior (2 am)		7:33 7:53	5:12	5:53	
86	27	Sa.	Full		7:32 7:54	6:19	6:30	
87	28	Su.			7:31 7:54	7:27	7:05	
88	29	Mo.			7:29 7:55	8:37	7:41	
89	30	Tu.	at perigee (1 am)		7:28 7:56	9:47	8:17	
90	31	We.			7:27 7:56	10:58	8:57	

Astronomical Calendar for 2021

4th Month			April 2021			30 Days		
Moon Phases — Last Qtr., April 4, 4:25 am; New, April 11, 8:54 pm; First Qtr. April 20, 1:22 am; Full, April 26, 9:55 pm								
Year	Month	Week	Planetary Configurations and Phenomena		Hour of			Moon set
					Sunrise	Sunset	Moon rise	
91	1	Th.			7:26 7:57			9:41
92	2	Fr.			7:24 7:57	12:08	10:31	
93	3	Sa.			7:23 7:58	1:15	11:26	
94	4	Su.	Last qtr.		7:22 7:59	2:16	12:26	
95	5	Mo.			7:21 7:59	3:10	1:28	
96	6	Tu.	(3 am)		7:20 8:00	3:57	2:30	
97	7	We.	(2 am)		7:18 8:01	4:36	3:31	
98	8	Th.			7:17 8:01	5:11	4:29	
99	9	Fr.	(6 am)		7:16 8:02	5:42	5:26	
100	10	Sa.			7:15 8:03	6:11	6:21	
101	11	Su.	New		7:14 8:03	6:39	7:15	
102	12	Mo.			7:12 8:04	7:07	8:09	
103	13	Tu.	(7 am)		7:11 8:05	7:36	9:04	
104	14	We.	at apogee (1 pm)		7:10 8:05	8:07	9:59	
105	15	Th.			7:09 8:06	8:41	10:55	
106	16	Fr.			7:08 8:07	9:20	11:50	
107	17	Sa.	(7 am)		7:07 8:07	10:03		
108	18	Su.	in superior (9 pm)		7:06 8:08	10:52	12:44	
109	19	Mo.			7:05 8:09	11:47	1:36	
110	20	Tu.	First qtr.		7:03 8:09	12:46	2:23	
111	21	We.			7:02 8:10	1:47	3:07	
112	22	Th.			7:01 8:11	2:51	3:47	
113	23	Fr.			7:00 8:11	3:57	4:24	
114	24	Sa.			6:59 8:12	5:03	4:59	
115	25	Su.			6:58 8:13	6:12	5:34	
116	26	Mo.	Full		6:57 8:13	7:22	6:10	
117	27	Tu.	at perigee (10 am)		6:56 8:14	8:34	6:48	
118	28	We.			6:55 8:15	9:48	7:31	
119	29	Th.			6:54 8:15	10:59	8:20	
120	30	Fr.	in (3 pm)		6:53 8:16		9:15	

5th Month			May 2021			31 Days		
Moon Phases — Last Qtr., May 3, 2:13 pm; New, May 11, 1:23 pm; First Qtr., May 19, 1:36 pm; Full, May 26, 5:37 am								
Year	Month	Week	Planetary Configurations and Phenomena		Hour of			Moon set
					Sunrise	Sunset	Moon rise	
121	1	Sa.			6:52 8:17	12:06	10:15	
122	2	Su.			6:52 8:17	1:05	11:19	
123	3	Mo.	Last qtr.		6:51 8:18	1:55	12:23	
124	4	Tu.	(4 pm)		6:50 8:19	2:38	1:25	
125	5	We.			6:49 8:19	3:14	2:24	
126	6	Th.	(1 pm)		6:48 8:20	3:46	3:21	
127	7	Fr.			6:47 8:21	4:15	4:16	
128	8	Sa.			6:47 8:21	4:43	5:10	
129	9	Su.			6:46 8:22	5:11	6:04	
130	10	Mo.	Aldebaran (10 pm)		6:45 8:23	5:39	6:58	
131	11	Tu.	New at apogee (5 pm)		6:44 8:24	6:09	7:53	
132	12	We.	(5 pm)		6:44 8:24	6:42	8:49	
133	13	Th.	(1 pm)		6:43 8:25	7:19	9:45	
134	14	Fr.			6:42 8:26	8:01	10:39	
135	15	Sa.			6:42 8:26	8:48	11:32	
136	16	Su.	(12 am)		6:41 8:27	9:40		
137	17	Mo.	gr. elongation E		6:40 8:28	10:37	12:20	
138	18	Tu.			6:40 8:28	11:36	1:05	
139	19	We.	First qtr.		6:39 8:29	12:38	1:45	
140	20	Th.			6:39 8:30	1:40	2:22	
141	21	Fr.			6:38 8:30	2:44	2:56	
142	22	Sa.			6:38 8:31	3:50	3:29	
143	23	Fr.	stationary (3 pm)		6:37 8:31	4:57	4:03	
144	24	Mo.			6:37 8:32	6:07	4:39	
145	25	Tu.	at perigee (9 pm)		6:36 8:33	7:21	5:19	
146	26	We.	Full		6:36 8:33	8:34	6:05	
147	27	Th.			6:36 8:34	9:46	6:57	
148	28	Fr.			6:35 8:34	10:51	7:57	
149	29	Sa.	stationary (9 pm)		6:35 8:35	11:47	9:02	
150	30	Su.	(8 pm)		6:35 8:36		10:08	
151	31	Mo.			6:34 8:36	12:34	11:13	

6th Month			June 2021			30 Days		
Moon Phases — Last Qtr., June 2, 1:47 am; New, June 10, 5:16 am; First Qtr., June 17, 10:17 pm; Full, June 24, 1:03 pm								
Year	Month	Week	Planetary Configurations and Phenomena		Hour of			Moon set
					Sunrise	Sunset	Moon rise	
152	1	Tu.	(4 am)		6:34 8:37	1:14	12:15	
153	2	We.	Last qtr.		6:34 8:37	1:48	1:14	
154	3	Th.			6:34 8:38	2:19	2:11	
155	4	Fr.			6:33 8:38	2:47	3:05	
156	5	Sa.			6:33 8:39	3:14	3:59	
157	6	Su.			6:33 8:39	3:42	4:53	
158	7	Mo.	at apogee (9 pm)		6:33 8:40	4:11	5:48	
159	8	Tu.			6:33 8:40	4:43	6:43	
160	9	We.			6:33 8:41	5:19	7:39	
161	10	Th.	New ; in inferior		6:33 8:41	5:59	8:35	
162	11	Fr.			6:33 8:41	6:45	9:28	
163	12	Sa.	(2 am)		6:33 8:42	7:36	10:18	
164	13	Su.	(3 pm)		6:33 8:42	8:31	11:04	
165	14	Mo.			6:33 8:43	9:30	11:45	
166	15	Tu.			6:33 8:43	10:31		
167	16	We.			6:33 8:43	11:32	12:22	
168	17	Th.	First qtr.		6:33 8:43	12:33	12:57	
169	18	Fr.			6:34 8:44	1:36	1:29	
170	19	Sa.			6:34 8:44	2:40	2:35	
171	20	Su.	Solstice (9:55 pm)		6:34 8:44	3:47	2:02	
172	21	Mo.	stationary (12 am)		6:34 8:45	4:56	3:12	
173	22	Tu.	stationary (6 pm)		6:34 8:45	6:09	3:53	
174	23	We.	at perigee (5 am)		6:35 8:45	7:21	4:41	
175	24	Th.	Full		6:35 8:45	8:30	5:37	
176	25	Fr.			6:35 8:45	9:32	6:40	
177	26	Sa.	stationary (5 am)		6:35 8:45	10:24	7:47	
178	27	Su.	(4 am)		6:36 8:45	11:09	8:55	
179	28	Mo.	(2 pm)		6:36 8:45	11:46	10:01	
180	29	Tu.			6:36 8:45		11:03	
181	30	We.	(4 am)		6:37 8:45	12:19	12:01	

The Sun The Earth The Moon Mercury Venus Mars Jupiter Saturn Neptune Uranus

= in conjunction = opposition to the

Astronomical Calendar for 2021

7th Month		July 2021		31 Days	
Moon Phases — <i>Last Qtr.</i> , July 1, 3:34 pm; <i>New</i> , July 9, 7:40 pm; <i>First Qtr.</i> , July 17, 4:34 am; <i>Full</i> , July 23, 9:00 pm; <i>Last Qtr.</i> , July 31, 7:39 am					
Year	Month	Week	Planetary Configurations and Phenomena		Hour of
			Sunrise	Sunset	Moon rise set

182	1	Th.	Last qtr.	6:37 8:45	12:49	12:58
183	2	Fr.		6:38 8:45	1:17	1:52
184	3	Sa.		6:38 8:45	1:44	2:46
185	4	Su.	gr. elongation W	6:39 8:45	2:13	3:41
186	5	Mo.	gr. aphelion (5 pm)	6:39 8:45	2:44	4:36
187	6	Tu.		6:39 8:45	3:18	5:32
188	7	We.		6:40 8:45	3:57	6:28
189	8	Th.	(12 am)	6:40 8:44	4:41	7:23
190	9	Fr.	New	6:41 8:44	5:31	8:14
191	10	Sa.	gr. illumination (3 am)	6:41 8:44	6:25	9:02
192	11	Su.		6:42 8:44	7:24	9:45
193	12	Mo.	(4 am)	6:43 8:43	8:25	10:24
194	13	Tu.	(2 am)	6:43 8:43	9:26	10:59
195	14	We.		6:44 8:43	10:28	11:32
196	15	Th.		6:44 8:42	11:29	
197	16	Fr.		6:45 8:42	12:31	12:03
198	17	Sa.	First qtr.	6:45 8:41	1:35	12:36
199	18	Mo.		6:46 8:41	2:42	1:10
200	19	Tu.		6:47 8:41	3:51	1:48
201	20	We.		6:47 8:40	5:01	2:31
202	21	Th.	at perigee (5 am)	6:48 8:40	6:10	3:22
203	22	Fr.		6:48 8:39	7:14	4:21
204	23	Sa.	Full	6:49 8:38	8:11	5:26
205	24	Su.	(12 pm)	6:50 8:38	9:00	6:34
206	25	Mo.	(8 pm)	6:50 8:37	9:41	7:41
207	26	Tu.		6:51 8:37	10:16	8:46
208	27	We.	(1 pm)	6:51 8:36	10:47	9:48
209	28	Th.		6:52 8:35	11:17	10:46
210	29	Fr.	Regulus (11 am)	6:53 8:35	11:45	11:42
211	30	Sa.		6:53 8:34		12:37
212	31	Su.	Last qtr.	6:54 8:33	12:13	1:32

8th Month	August 2021	31 Days
Moon Phases — New, Aug. 8, 8:13 am; First Qtr., Aug. 15, 9:43 am; Full, Aug. 22, 6:25 am; Last Qtr., Aug. 30, 1:36 am		

213	1	Su.	in superior (9 am)	6:55 8:32	12:44	2:28
214	2	Mo.	at apogee (3 am)	6:55 8:32	1:17	3:23
215	3	Tu.		6:56 8:31	1:53	4:19
216	4	We.		6:56 8:30	2:35	5:15
217	5	Th.		6:57 8:29	3:23	6:08
218	6	Fr.		6:58 8:28	4:16	6:57
219	7	Sa.		6:58 8:27	5:14	7:42
220	8	Su.	New	6:59 8:26	6:15	8:23
221	9	Mo.	(8 pm)	7:00 8:25	7:17	8:59
222	10	Tu.		7:00 8:25	8:20	9:33
223	11	We.	(2 am)	7:02 8:24	9:23	10:06
224	12	Th.		7:02 8:23	10:25	10:38
225	13	Fr.		7:02 8:22	11:29	11:11
226	14	Sa.		7:03 8:21	12:34	11:47
227	15	Su.	First qtr.	7:03 8:20	1:41	
228	16	Mo.		7:04 8:19	2:50	12:28
229	17	Tu.	at perigee (4 am)	7:05 8:17	3:58	1:15
230	18	We.	(11 pm)	7:05 8:16	5:02	2:09
231	19	Th.	(7 pm); stationary	7:06 8:15	6:01	3:10
232	20	Fr.	(5 pm)	7:06 8:14	6:51	4:16
233	21	Sa.		7:07 8:13	7:35	5:23
234	22	Su.	Full	7:08 8:12	8:12	6:29
235	23	Mo.	(9 pm)	7:08 8:11	8:45	7:32
236	24	Tu.		7:09 8:10	9:15	8:32
237	25	We.		7:09 8:09	9:44	9:30
238	26	Th.		7:10 8:07	10:13	10:26
239	27	Fr.		7:11 8:06	10:42	11:22
240	28	Sa.	(4 am)	7:11 8:05	11:14	12:17
241	29	Su.	at apogee (9 pm)	7:12 8:04	11:49	1:13
242	30	Mo.	Last qtr.	7:12 8:03		2:09
243	31	Tu.		7:13 8:01	12:29	3:05

9th Month	September 2021	30 Days
Moon Phases — <i>New</i> , Sept. 6, 7:15 pm; <i>First Qtr.</i> , Sept. 13, 3:02 pm; <i>Full</i> , Sept. 20, 6:18 pm; <i>Last Qtr.</i> , Sept. 28, 8:20 pm		

244	1	We.		7:14 8:00	1:14	3:59
245	2	Th.		7:14 7:59	2:05	4:49
246	3	Fr.		7:15 7:58	3:01	5:36
247	4	Sa.		7:15 7:57	4:01	6:18
248	5	Su.	Spica (1 am)	7:16 7:55	5:03	6:57
249	6	Mo.	New	7:17 7:54	6:07	7:32
250	7	Tu.		7:17 7:53	7:11	8:05
251	8	We.	(3 pm)	7:18 7:51	8:15	8:38
252	9	Th.	(9 pm)	7:18 7:50	9:20	9:12
253	10	Fr.		7:19 7:49	10:26	9:47
254	11	Sa.	at perigee (5 am)	7:19 7:48	11:34	10:27
255	12	Su.		7:20 7:46	12:43	11:12
256	13	Mo.	First qtr.	7:21 7:45		1:51
257	14	Tu.	in (4 am)	7:21 7:44	2:56	12:04
258	15	We.		7:22 7:43	3:55	1:02
259	16	Th.	(9 pm)	7:22 7:41	4:47	2:05
260	17	Fr.		7:23 7:40	5:32	3:11
261	18	Sa.	(2 am)	7:23 7:39	6:10	4:16
262	19	Su.		7:24 7:37	6:44	5:19
263	20	Mo.	Full	7:25 7:36	7:15	6:20
264	21	Tu.		7:25 7:35	7:44	7:18
265	22	We.	Equinox (1:44 pm)	7:26 7:33	8:12	8:15
266	23	Th.	Spica (7 am)	7:26 7:32	8:41	9:11
267	24	Fr.	(11 am)	7:27 7:31	9:12	10:07
268	25	Sa.		7:28 7:30	9:46	11:03
269	26	Su.	at apogee (5 pm)	7:28 7:28	10:24	12:00
270	27	Mo.		7:29 7:27	11:06	12:55
271	28	Tu.	Last qtr.	7:29 7:26	11:54	1:50
272	29	We.		7:30 7:24		2:41
273	30	Th.	Spica (10 am)	7:31 7:23	12:48	3:29

= in conjunction by 10° or < = opposition to the

Bright stars: Aldebaran, Antares, Spica, Pollux, Regulus, **Minor planets or asteroids:** Pluto, Ceres, Pallas, Juno, Vesta

Astronomical Calendar for 2021

10th Month			October 2021			31 Days		
Moon Phases — <i>New</i> , Oct. 6, 5:28 am; <i>First Qtr.</i> , Oct. 12, 9:48 pm; <i>Full</i> , Oct. 20, 9:20 am; <i>Last Qtr.</i> , Oct. 28, 2:28 pm								
Year	Month	Day of Week	Planetary Configurations and Phenomena		Hour of		Moon	
			Sunrise	Sunset	Sunrise	Sunset	rise	set

274	1	Fr.	7:31	7:22	1:45	4:12		
275	2	Sa.	7:32	7:21	2:46	4:52		
276	3	Su.	7:32	7:19	3:49	5:28		
277	4	Mo.	7:33	7:18	4:52	6:02		
278	5	Tu.	7:34	7:17	5:57	6:35		
279	6	We.	7:34	7:16	7:03	7:09		
280	7	Th.	7:35	7:15	8:10	7:44		
281	8	Fr.	at perigee (12 pm)		9:20	8:23		
282	9	Sa.	(2 pm)		10:31	9:07		
283	10	Su.	stationary (9 pm)		11:42	9:58		
284	11	Mo.			12:50	10:56		
285	12	Tu.	First qtr.		1:52	11:58		
286	13	We.			2:46			
287	14	Th.	(2 am)		3:32	1:03		
288	15	Fr.	(5 am)		4:12	2:08		
289	16	Sa.	Antares (9 am)		4:46	3:11		
290	17	Su.	stationary (8 pm)		5:17	4:11		
291	18	Mo.	stationary (6 am)		5:46	5:10		
292	19	Tu.			6:14	6:06		
293	20	We.	Full		6:42	7:02		
294	21	Th.	(5 pm)		7:12	7:58		
295	22	Fr.			7:45	8:54		
296	23	Sa.			8:21	9:51		
297	24	Su.	at apogee (10 am)		9:01	10:47		
298	25	Mo.	gr. elongation W (1 am)		9:47	11:42		
299	26	Tu.			10:38	12:34		
300	27	We.			11:33	1:23		
301	28	Th.	Last qtr.		12:07	2:07		
302	29	Fr.	gr. elongation E (4 pm)		12:31	2:47		
303	30	Sa.			1:31	3:24		
304	31	Su.	Spica (9 pm)		2:33	3:58		

11th Month			November 2021			30 Days		
Moon Phases — New, Nov. 4, 3:28 pm; First Qtr., Nov. 11, 6:09 am; Full, Nov. 19, 2:20 am; Last Qtr., Nov. 27, 5:51 am								
Year	Month	Day of Week	Planetary Configurations and Phenomena		Hour of		Moon	
			Sunrise	Sunset	Sunrise	Sunset	rise	set

305	1	Mo.	7:53	6:48	3:36	4:30		
306	2	Tu.	7:54	6:48	4:40	5:03		
307	3	We.	7:55	6:47	5:47	5:37		
308	4	Th.	New ; in (7 pm)		6:56	6:15		
309	5	Fr.	at perigee (5 pm)		8:08	6:58		
310	6	Sa.			9:22	7:47		
311	7	Su.	DST ends (2 am)		9:35	7:44		
312	8	Mo.			10:42	8:47		
313	9	Tu.	(8 am)		11:41	9:54		
314	10	We.			12:31	11:00		
315	11	Th.	First qtr.		1:13			
316	12	Fr.			1:49	12:05		
317	13	Sa.	(1 pm)		2:21	1:06		
318	14	Su.			2:50	2:04		
319	15	Mo.			3:17	3:01		
320	16	Tu.			3:45	3:56		
321	17	We.	(8 pm)		4:14	4:52		
322	18	Th.			4:45	5:47		
323	19	Fr.	Full		5:20	6:44		
324	20	Sa.	at apogee (8 pm)		5:59	7:40		
325	21	Su.			6:43	8:36		
326	22	Mo.			7:32	9:29		
327	23	Tu.			8:25	10:19		
328	24	We.			9:21	11:04		
329	25	Th.			10:20	11:45		
330	26	Fr.			11:20	12:22		
331	27	Sa.	Last qtr.		12:56			
332	28	Su.	in superior (11 pm)		12:20	1:27		
333	29	Mo.			1:21	1:59		
334	30	Tu.			2:25	2:31		

12th Month	December 2021	31 Days
Moon Phases — <i>New</i> , Dec. 4, 1:06 am; <i>First Qtr.</i> , Dec. 10, 6:59 pm; <i>Full</i> , Dec. 18, 9:58 pm; <i>Last Qtr.</i> , Dec. 26, 7:47 pm		

335	1	We.	stationary (4 pm)		7:18	5:35	3:31	3:06
336	2	Th.	(6 pm)		7:19	5:35	4:40	3:45
337	3	Fr.			7:20	5:35	5:53	4:31
338	4	Sa.	New at perigee (4 am)		7:21	5:35	7:08	5:25
339	5	Su.			7:21	5:35	8:21	6:27
340	6	Mo.	(7 pm)		7:22	5:35	9:26	7:35
341	7	Tu.	(8 pm)		7:23	5:35	10:23	8:45
342	8	We.			7:24	5:35	11:10	9:53
343	9	Th.	(12 am)		7:24	5:35	11:49	10:57
344	10	Fr.	First qtr.		7:25	5:35	12:23	11:58
345	11	Sa.			7:26	5:36	12:53	
346	12	Su.			7:27	5:36	1:21	12:56
347	13	Mo.			7:27	5:36	1:49	1:51
348	14	Tu.			7:28	5:36	2:17	2:47
349	15	We.	(12 am)		7:28	5:37	2:47	3:42
350	16	Th.			7:29	5:37	3:20	4:38
351	17	Fr.	at apogee (8 pm)		7:30	5:38	3:58	5:34
352	18	Sa.	Full ; stationary		7:30	5:38	4:40	6:30
353	19	Su.			7:31	5:38	5:28	7:24
354	20	Mo.			7:31	5:39	6:20	8:16
355	21	Tu.	Solstice (9:22 am)		7:32	5:39	7:16	9:03
356	22	We.			7:32	5:40	8:14	9:45
357	23	Th.	gr. elongation E		7:33	5:41	9:12	10:23
358	24	Fr.			7:33	5:41	10:11	10:57
359	25	Sa.			7:34	5:42	11:11	11:28
360	26	Su.	Last qtr.		7:34	5:43	12:11	12:29
361	27	Mo.			7:35	5:43	1:13	1:01
362	28	Tu.	(7 pm)		7:35	5:44	2:18	1:36
363	29	We.			7:35	5:45	3:27	2:17
364	30	Th.			7:36	5:46	4:39	3:06
365	31	Fr.	(2 pm)					

= in conjunction = opposition to the

The Sun The Earth The Moon Mercury Venus Mars Jupiter Saturn Neptune Uranus