

Grange Observatory

**ASTRONOMICAL ALMANAC
FOR YEAR 2023**

Introduction to Reports Generated by Astronomy Lab 2

In all reports, times and dates are in CET standard time (not daylight savings time or summer time). Times are in 24 hour format.

Abbreviations used in reports:

AU	Astronomical Units
CET	Central European Time
D	Degrees
DEC	Declination
DIST	Distance
DSO	December Solstice
E	East
FM	Full Moon
FQ	First Quarter Moon
H	Hours
ILL FR,	
ILLUM FRAC	Illuminated Fraction
JSO	June Solstice
KM	Kilometers
LE	Lunar Eclipse
LQ	Last Quarter Moon
M	Minutes
MEQ	March Equinox
MR	Moon Rise
MS	Moon Set
N	North
NM	New Moon
RA	Right Ascension
S	South, Seconds
SE	Solar Eclipse
SEQ	September Equinox
SR	Sunrise
SS	Sunset
UT	Universal Time
W	West
ZHR	Zenithal Hourly Rate

Grange Obs. Latitude: 45°08'32" N Longitude: 7°08'26" E
 Local Time = UT + 1,00 hours Elevation: 470 meters

Calendar Report for 01/01/2023 to 31/12/2023

January 2023

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
SR: 08:10	SR: 08:10	SR: 08:10	SR: 08:10	SR: 08:10	SR: 08:10	SR: 08:10
SS: 17:00	SS: 17:01	SS: 17:02	SS: 17:03	SS: 17:04	SS: 17:05	SS: 17:06
MR: 13:19	MR: 13:42	MR: 14:11	MR: 14:46	MR: 15:29	MR: 16:20	MR: 17:19
MS: 02:51	MS: 04:00	MS: 05:09	MS: 06:16	MS: 07:18	MS: 08:12	MS: 08:58
						FM: 00:10
8	9	10	11	12	13	14
SR: 08:10	SR: 08:09	SR: 08:09	SR: 08:09	SR: 08:08	SR: 08:08	SR: 08:07
SS: 17:07	SS: 17:08	SS: 17:09	SS: 17:10	SS: 17:11	SS: 17:13	SS: 17:14
MR: 18:22	MR: 19:27	MR: 20:33	MR: 21:38	MR: 22:43	MR: 23:48	MR: None
MS: 09:35	MS: 10:04	MS: 10:28	MS: 10:49	MS: 11:07	MS: 11:24	MS: 11:42
15	16	17	18	19	20	21
SR: 08:07	SR: 08:06	SR: 08:06	SR: 08:05	SR: 08:04	SR: 08:04	SR: 08:03
SS: 17:15	SS: 17:16	SS: 17:18	SS: 17:19	SS: 17:20	SS: 17:22	SS: 17:23
MR: 00:56	MR: 02:07	MR: 03:23	MR: 04:42	MR: 06:00	MR: 07:12	MR: 08:12
MS: 12:01	MS: 12:23	MS: 12:50	MS: 13:27	MS: 14:16	MS: 15:21	MS: 16:39
LQ: 03:13						NM: 21:56
22	23	24	25	26	27	28
SR: 08:02	SR: 08:01	SR: 08:00	SR: 07:59	SR: 07:58	SR: 07:57	SR: 07:56
SS: 17:24	SS: 17:26	SS: 17:27	SS: 17:28	SS: 17:30	SS: 17:31	SS: 17:33
MR: 08:58	MR: 09:32	MR: 09:59	MR: 10:22	MR: 10:42	MR: 11:02	MR: 11:22
MS: 18:05	MS: 19:31	MS: 20:54	MS: 22:12	MS: 23:27	MS: None	MS: 00:40
						FQ: 16:20
29	30	31				
SR: 07:55	SR: 07:54	SR: 07:53				
SS: 17:34	SS: 17:36	SS: 17:37				
MR: 11:45	MR: 12:12	MR: 12:45				
MS: 01:51	MS: 03:01	MS: 04:09				

April 2023

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1 SR: 06:13 SS: 18:59 MR: 14:01 MS: 04:41
2 SR: 06:11 SS: 19:00 MR: 15:07 MS: 05:05	3 SR: 06:09 SS: 19:01 MR: 16:14 MS: 05:25	4 SR: 06:07 SS: 19:03 MR: 17:20 MS: 05:43	5 SR: 06:05 SS: 19:04 MR: 18:27 MS: 06:00	6 SR: 06:04 SS: 19:05 MR: 19:36 MS: 06:17 FM: 05:37	7 SR: 06:02 SS: 19:06 MR: 20:47 MS: 06:36	8 SR: 06:00 SS: 19:08 MR: 22:02 MS: 06:57
9 SR: 05:58 SS: 19:09 MR: 23:18 MS: 07:24	10 SR: 05:56 SS: 19:10 MR: None MS: 07:58	11 SR: 05:54 SS: 19:12 MR: 00:33 MS: 08:43	12 SR: 05:53 SS: 19:13 MR: 01:41 MS: 09:40	13 SR: 05:51 SS: 19:14 MR: 02:37 MS: 10:51 LQ: 10:13	14 SR: 05:49 SS: 19:15 MR: 03:22 MS: 12:09	15 SR: 05:47 SS: 19:17 MR: 03:56 MS: 13:31
16 SR: 05:46 SS: 19:18 MR: 04:24 MS: 14:52	17 SR: 05:44 SS: 19:19 MR: 04:47 MS: 16:10	18 SR: 05:42 SS: 19:20 MR: 05:07 MS: 17:28	19 SR: 05:40 SS: 19:22 MR: 05:27 MS: 18:44	20 SR: 05:39 SS: 19:23 MR: 05:47 MS: 20:00 NM: 05:16 SE: 05:24	21 SR: 05:37 SS: 19:24 MR: 06:10 MS: 21:16	22 SR: 05:35 SS: 19:26 MR: 06:37 MS: 22:30
23 SR: 05:34 SS: 19:27 MR: 07:10 MS: 23:39	24 SR: 05:32 SS: 19:28 MR: 07:51 MS: None	25 SR: 05:30 SS: 19:29 MR: 08:40 MS: 00:40	26 SR: 05:29 SS: 19:31 MR: 09:38 MS: 01:30	27 SR: 05:27 SS: 19:32 MR: 10:41 MS: 02:11 FQ: 22:21	28 SR: 05:26 SS: 19:33 MR: 11:46 MS: 02:42	29 SR: 05:24 SS: 19:34 MR: 12:52 MS: 03:08
30 SR: 05:23 SS: 19:36 MR: 13:58 MS: 03:29						

May 2023

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
	SR: 05:21	SR: 05:20	SR: 05:18	SR: 05:17	SR: 05:15	SR: 05:14
	SS: 19:37	SS: 19:38	SS: 19:39	SS: 19:41	SS: 19:42	SS: 19:43
	MR: 15:04	MR: 16:11	MR: 17:19	MR: 18:30	MR: 19:45	MR: 21:02
	MS: 03:48	MS: 04:05	MS: 04:22	MS: 04:40	MS: 05:00	MS: 05:25
					FM: 18:37	
7	8	9	10	11	12	13
SR: 05:13	SR: 05:11	SR: 05:10	SR: 05:09	SR: 05:07	SR: 05:06	SR: 05:05
SS: 19:44	SS: 19:46	SS: 19:47	SS: 19:48	SS: 19:49	SS: 19:50	SS: 19:52
MR: 22:20	MR: 23:32	MR: None	MR: 00:34	MR: 01:22	MR: 01:59	MR: 02:28
MS: 05:57	MS: 06:38	MS: 07:33	MS: 08:41	MS: 09:58	MS: 11:19	MS: 12:39
					LQ: 15:29	
14	15	16	17	18	19	20
SR: 05:04	SR: 05:02	SR: 05:01	SR: 05:00	SR: 04:59	SR: 04:58	SR: 04:57
SS: 19:53	SS: 19:54	SS: 19:55	SS: 19:56	SS: 19:57	SS: 19:58	SS: 19:59
MR: 02:52	MR: 03:12	MR: 03:31	MR: 03:51	MR: 04:12	MR: 04:37	MR: 05:07
MS: 13:57	MS: 15:12	MS: 16:27	MS: 17:41	MS: 18:56	MS: 20:10	MS: 21:22
					NM: 16:56	
21	22	23	24	25	26	27
SR: 04:56	SR: 04:55	SR: 04:54	SR: 04:53	SR: 04:53	SR: 04:52	SR: 04:51
SS: 20:01	SS: 20:02	SS: 20:03	SS: 20:04	SS: 20:05	SS: 20:06	SS: 20:07
MR: 05:45	MR: 06:31	MR: 07:25	MR: 08:27	MR: 09:32	MR: 10:38	MR: 11:43
MS: 22:26	MS: 23:22	MS: None	MS: 00:07	MS: 00:42	MS: 01:10	MS: 01:33
						FQ: 16:24
28	29	30	31			
SR: 04:50	SR: 04:50	SR: 04:49	SR: 04:48			
SS: 20:08	SS: 20:09	SS: 20:10	SS: 20:10			
MR: 12:49	MR: 13:54	MR: 15:00	MR: 16:09			
MS: 01:52	MS: 02:09	MS: 02:26	MS: 02:43			

July 2023

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1 SR: 04:48 SS: 20:23 MR: 18:50 MS: 02:23
2 SR: 04:48 SS: 20:22 MR: 20:03 MS: 03:07	3 SR: 04:49 SS: 20:22 MR: 21:06 MS: 04:06 FM: 12:41	4 SR: 04:50 SS: 20:22 MR: 21:54 MS: 05:19	5 SR: 04:50 SS: 20:21 MR: 22:31 MS: 06:43	6 SR: 04:51 SS: 20:21 MR: 22:59 MS: 08:08	7 SR: 04:52 SS: 20:21 MR: 23:23 MS: 09:31	8 SR: 04:52 SS: 20:20 MR: 23:43 MS: 10:51
9 SR: 04:53 SS: 20:20 MR: None MS: 12:07	10 SR: 04:54 SS: 20:19 MR: 00:02 MS: 13:21 LQ: 02:49	11 SR: 04:55 SS: 20:19 MR: 00:22 MS: 14:35	12 SR: 04:56 SS: 20:18 MR: 00:44 MS: 15:48	13 SR: 04:56 SS: 20:18 MR: 01:10 MS: 16:59	14 SR: 04:57 SS: 20:17 MR: 01:42 MS: 18:07	15 SR: 04:58 SS: 20:16 MR: 02:22 MS: 19:07
16 SR: 04:59 SS: 20:15 MR: 03:10 MS: 19:59	17 SR: 05:00 SS: 20:15 MR: 04:07 MS: 20:40 NM: 19:33	18 SR: 05:01 SS: 20:14 MR: 05:10 MS: 21:13	19 SR: 05:02 SS: 20:13 MR: 06:15 MS: 21:39	20 SR: 05:03 SS: 20:12 MR: 07:21 MS: 22:01	21 SR: 05:04 SS: 20:11 MR: 08:26 MS: 22:19	22 SR: 05:05 SS: 20:10 MR: 09:30 MS: 22:36
23 SR: 05:06 SS: 20:09 MR: 10:34 MS: 22:52	24 SR: 05:07 SS: 20:08 MR: 11:38 MS: 23:08	25 SR: 05:08 SS: 20:07 MR: 12:45 MS: 23:27 FQ: 23:08	26 SR: 05:09 SS: 20:06 MR: 13:55 MS: 23:49	27 SR: 05:10 SS: 20:05 MR: 15:08 MS: None	28 SR: 05:11 SS: 20:04 MR: 16:25 MS: 00:17	29 SR: 05:13 SS: 20:03 MR: 17:40 MS: 00:54
30 SR: 05:14 SS: 20:01 MR: 18:48 MS: 01:45	31 SR: 05:15 SS: 20:00 MR: 19:43 MS: 02:51					

August 2023

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
		SR: 05:16	SR: 05:17	SR: 05:18	SR: 05:19	SR: 05:21
		SS: 19:59	SS: 19:58	SS: 19:56	SS: 19:55	SS: 19:54
		MR: 20:26	MR: 20:58	MR: 21:24	MR: 21:46	MR: 22:06
		MS: 04:11	MS: 05:38	MS: 07:05	MS: 08:29	MS: 09:49
		FM: 19:33				
6	7	8	9	10	11	12
SR: 05:22	SR: 05:23	SR: 05:24	SR: 05:25	SR: 05:26	SR: 05:28	SR: 05:29
SS: 19:52	SS: 19:51	SS: 19:49	SS: 19:48	SS: 19:47	SS: 19:45	SS: 19:44
MR: 22:26	MR: 22:48	MR: 23:13	MR: 23:43	MR: None	MR: 00:20	MR: 01:06
MS: 11:07	MS: 12:23	MS: 13:38	MS: 14:51	MS: 16:00	MS: 17:03	MS: 17:57
		LQ: 11:30				
13	14	15	16	17	18	19
SR: 05:30	SR: 05:31	SR: 05:32	SR: 05:34	SR: 05:35	SR: 05:36	SR: 05:37
SS: 19:42	SS: 19:40	SS: 19:39	SS: 19:37	SS: 19:36	SS: 19:34	SS: 19:32
MR: 02:00	MR: 03:01	MR: 04:06	MR: 05:12	MR: 06:18	MR: 07:22	MR: 08:26
MS: 18:41	MS: 19:16	MS: 19:44	MS: 20:06	MS: 20:25	MS: 20:42	MS: 20:58
			NM: 10:39			
20	21	22	23	24	25	26
SR: 05:38	SR: 05:40	SR: 05:41	SR: 05:42	SR: 05:43	SR: 05:44	SR: 05:46
SS: 19:31	SS: 19:29	SS: 19:27	SS: 19:26	SS: 19:24	SS: 19:22	SS: 19:20
MR: 09:30	MR: 10:35	MR: 11:43	MR: 12:54	MR: 14:07	MR: 15:21	MR: 16:30
MS: 21:14	MS: 21:32	MS: 21:52	MS: 22:16	MS: 22:48	MS: 23:32	MS: None
				FQ: 10:58		
27	28	29	30	31		
SR: 05:47	SR: 05:48	SR: 05:49	SR: 05:50	SR: 05:52		
SS: 19:19	SS: 19:17	SS: 19:15	SS: 19:13	SS: 19:11		
MR: 17:30	MR: 18:17	MR: 18:54	MR: 19:23	MR: 19:46		
MS: 00:29	MS: 01:41	MS: 03:04	MS: 04:31	MS: 05:58		
				FM: 02:37		

September 2023

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
					SR: 05:53	SR: 05:54
					SS: 19:09	SS: 19:08
					MR: 20:08	MR: 20:28
					MS: 07:22	MS: 08:43
3	4	5	6	7	8	9
SR: 05:55	SR: 05:56	SR: 05:58	SR: 05:59	SR: 06:00	SR: 06:01	SR: 06:02
SS: 19:06	SS: 19:04	SS: 19:02	SS: 19:00	SS: 18:58	SS: 18:56	SS: 18:55
MR: 20:49	MR: 21:14	MR: 21:42	MR: 22:17	MR: 23:01	MR: 23:53	MR: None
MS: 10:02	MS: 11:20	MS: 12:37	MS: 13:50	MS: 14:57	MS: 15:54	MS: 16:42
			LQ: 23:23			
10	11	12	13	14	15	16
SR: 06:04	SR: 06:05	SR: 06:06	SR: 06:07	SR: 06:08	SR: 06:10	SR: 06:11
SS: 18:53	SS: 18:51	SS: 18:49	SS: 18:47	SS: 18:45	SS: 18:43	SS: 18:41
MR: 00:53	MR: 01:57	MR: 03:03	MR: 04:09	MR: 05:14	MR: 06:18	MR: 07:22
MS: 17:19	MS: 17:49	MS: 18:12	MS: 18:32	MS: 18:49	MS: 19:05	MS: 19:21
					NM: 02:40	
17	18	19	20	21	22	23
SR: 06:12	SR: 06:13	SR: 06:14	SR: 06:16	SR: 06:17	SR: 06:18	SR: 06:19
SS: 18:39	SS: 18:37	SS: 18:36	SS: 18:34	SS: 18:32	SS: 18:30	SS: 18:28
MR: 08:28	MR: 09:35	MR: 10:44	MR: 11:57	MR: 13:09	MR: 14:19	MR: 15:21
MS: 19:38	MS: 19:57	MS: 20:20	MS: 20:49	MS: 21:26	MS: 22:17	MS: 23:21
					FQ: 20:33	
						SEQ:07:49
24	25	26	27	28	29	30
SR: 06:20	SR: 06:22	SR: 06:23	SR: 06:24	SR: 06:25	SR: 06:27	SR: 06:28
SS: 18:26	SS: 18:24	SS: 18:22	SS: 18:20	SS: 18:18	SS: 18:16	SS: 18:15
MR: 16:11	MR: 16:50	MR: 17:21	MR: 17:46	MR: 18:08	MR: 18:29	MR: 18:50
MS: None	MS: 00:37	MS: 02:01	MS: 03:26	MS: 04:50	MS: 06:12	MS: 07:33
					FM: 10:58	

October 2023

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
SR: 06:29	SR: 06:30	SR: 06:31	SR: 06:33	SR: 06:34	SR: 06:35	SR: 06:36
SS: 18:13	SS: 18:11	SS: 18:09	SS: 18:07	SS: 18:05	SS: 18:03	SS: 18:01
MR: 19:13	MR: 19:40	MR: 20:13	MR: 20:54	MR: 21:44	MR: 22:42	MR: 23:46
MS: 08:54	MS: 10:13	MS: 11:31	MS: 12:43	MS: 13:46	MS: 14:39	MS: 15:20
					LQ: 14:49	
8	9	10	11	12	13	14
SR: 06:38	SR: 06:39	SR: 06:40	SR: 06:42	SR: 06:43	SR: 06:44	SR: 06:45
SS: 18:00	SS: 17:58	SS: 17:56	SS: 17:54	SS: 17:52	SS: 17:51	SS: 17:49
MR: None	MR: 00:52	MR: 01:58	MR: 03:03	MR: 04:08	MR: 05:12	MR: 06:18
MS: 15:52	MS: 16:17	MS: 16:38	MS: 16:56	MS: 17:12	MS: 17:28	MS: 17:45
						NM: 18:55
						SE: 18:56
15	16	17	18	19	20	21
SR: 06:47	SR: 06:48	SR: 06:49	SR: 06:51	SR: 06:52	SR: 06:53	SR: 06:55
SS: 17:47	SS: 17:45	SS: 17:44	SS: 17:42	SS: 17:40	SS: 17:39	SS: 17:37
MR: 07:25	MR: 08:35	MR: 09:47	MR: 11:00	MR: 12:12	MR: 13:15	MR: 14:08
MS: 18:03	MS: 18:24	MS: 18:51	MS: 19:26	MS: 20:12	MS: 21:11	MS: 22:23
22	23	24	25	26	27	28
SR: 06:56	SR: 06:57	SR: 06:59	SR: 07:00	SR: 07:01	SR: 07:03	SR: 07:04
SS: 17:35	SS: 17:34	SS: 17:32	SS: 17:30	SS: 17:29	SS: 17:27	SS: 17:26
MR: 14:50	MR: 15:22	MR: 15:48	MR: 16:11	MR: 16:31	MR: 16:51	MR: 17:13
MS: 23:42	MS: None	MS: 01:03	MS: 02:25	MS: 03:45	MS: 05:05	MS: 06:25
FQ: 04:30						FM: 21:24
						LE: 21:13
29	30	31				
SR: 07:06	SR: 07:07	SR: 07:08				
SS: 17:24	SS: 17:23	SS: 17:21				
MR: 17:37	MR: 18:07	MR: 18:45				
MS: 07:45	MS: 09:04	MS: 10:21				

Grange Obs. Latitude: 45°08'32" N Longitude: 7°08'26" E
Local Time = UT + 1,00 hours Elevation: 470 meters

Seasons Report for 2023

MEQ: 20/03/2023 22:22	Winter Length:	88,98 days
JSO: 21/06/2023 15:59	Spring Length:	92,73 days
SEQ: 23/09/2023 07:49	Summer Length:	93,66 days
DSO: 22/12/2023 04:27	Autumn Length:	89,86 days

Dates of Easter Report for 2023

09/04/2023

Grange Obs. Latitude: 45°08'32" N Longitude: 7°08'26" E
Local Time = UT + 1,00 hours Elevation: 470 meters

Lunar Eclipse Report for 2023

Lunar eclipse on 28/10/2023

Moon rise: 17:13

Moon set: 06:25

Magnitude: 0,12

Partial phase begins: 20:35

Time of maximum eclipse: 21:13

Partial phase ends: 21:51

Grange Obs. Latitude: 45°08'32" N Longitude: 7°08'26" E
Local Time = UT + 1,00 hours Elevation: 470 meters

Solar Eclipse Report for 2023

Solar eclipse on 20/04/2023

Sun rise: 05:39

Sun set: 19:23

Time of maximum eclipse: 05:24

Eclipse is annular-total

Eclipse is visible in the southern hemisphere

Solar eclipse on 14/10/2023

Sun rise: 06:45

Sun set: 17:49

Time of maximum eclipse: 18:56

Eclipse is annular

Eclipse is visible in the northern hemisphere

The time of maximum eclipse (above) does not necessarily specify when the eclipse will be maximal when viewed from the specified location.

To see how the eclipse will look at the specified location, run a Planetarium movie of the eclipse.

Grange Obs. Latitude: 45°08'32" N Longitude: 7°08'26" E
 Local Time = UT + 1,00 hours Elevation: 470 meters

Planet View Info Report for 01/01/2023 to 31/12/2023

Mercury

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST (AU)
01/01/2023	08:54	18:03	19h41m37s	-20°30'25"	13°26'10"	0,164	0,74899
08/01/2023	07:49	17:05	19h09m18s	-19°34'32"	3°05'32"	0,007	0,67061
15/01/2023	06:53	16:08	18h38m32s	-19°50'35"	15°49'03"	0,182	0,72571
22/01/2023	06:31	15:38	18h38m02s	-20°44'57"	22°54'15"	0,426	0,84886
29/01/2023	06:29	15:30	18h59m50s	-21°31'38"	24°55'41"	0,601	0,97873
05/02/2023	06:36	15:36	19h33m15s	-21°38'36"	24°19'13"	0,717	1,09358
12/02/2023	06:43	15:52	20h12m35s	-20°50'47"	22°16'30"	0,797	1,18891
19/02/2023	06:49	16:17	20h55m03s	-19°01'54"	19°16'17"	0,857	1,26481
26/02/2023	06:53	16:47	21h39m22s	-16°09'38"	15°27'26"	0,906	1,32162
05/03/2023	06:53	17:23	22h25m00s	-12°13'30"	10°49'35"	0,950	1,35798
12/03/2023	06:52	18:04	23h12m02s	-7°14'45"	5°21'22"	0,986	1,36897
19/03/2023	06:49	18:50	0h00m45s	-1°19'11"	1°59'49"	0,998	1,34390
26/03/2023	06:45	19:39	0h50m46s	5°12'50"	8°37'57"	0,941	1,26645
02/04/2023	06:39	20:25	1h38m57s	11°30'29"	15°09'18"	0,765	1,12758
09/04/2023	06:30	20:57	2h18m39s	16°21'16"	19°04'38"	0,505	0,94965
16/04/2023	06:14	21:02	2h43m03s	18°56'13"	18°38'24"	0,262	0,77757
23/04/2023	05:52	20:37	2h48m50s	19°00'13"	13°09'15"	0,088	0,64580
30/04/2023	05:25	19:47	2h38m55s	16°47'21"	3°23'30"	0,005	0,57257
07/05/2023	04:57	18:51	2h24m24s	13°32'57"	8°00'24"	0,024	0,56279
14/05/2023	04:34	18:09	2h17m38s	11°11'01"	17°14'23"	0,117	0,60723
21/05/2023	04:14	17:48	2h23m43s	10°41'45"	22°48'12"	0,237	0,68993
28/05/2023	04:00	17:46	2h42m05s	11°59'16"	24°50'52"	0,363	0,79787
04/06/2023	03:50	18:00	3h11m08s	14°33'37"	23°59'09"	0,495	0,92272
11/06/2023	03:46	18:28	3h50m24s	17°51'14"	20°39'06"	0,643	1,05688
18/06/2023	03:53	19:08	4h40m28s	21°12'29"	15°03'36"	0,807	1,18698
25/06/2023	04:13	19:55	5h41m07s	23°42'34"	7°33'07"	0,951	1,28732
02/07/2023	04:49	20:37	6h47m47s	24°21'04"	1°40'29"	0,998	1,32788
09/07/2023	05:34	21:03	7h52m01s	22°48'23"	9°16'28"	0,939	1,30377
16/07/2023	06:19	21:14	8h48m15s	19°37'15"	15°59'35"	0,840	1,23690
23/07/2023	06:58	21:13	9h35m30s	15°32'11"	21°12'56"	0,741	1,14901
30/07/2023	07:29	21:04	10h14m34s	11°07'35"	24°55'52"	0,647	1,05187
06/08/2023	07:50	20:49	10h45m57s	6°49'25"	27°02'16"	0,551	0,95079
13/08/2023	08:01	20:29	11h09m10s	3°02'17"	27°11'25"	0,444	0,84888
20/08/2023	07:56	20:02	11h22m10s	0°17'57"	24°40'19"	0,315	0,75096
27/08/2023	07:31	19:30	11h21m21s	-0°36'04"	18°22'37"	0,163	0,66885
03/09/2023	06:39	18:53	11h05m07s	1°10'31"	7°56'10"	0,032	0,62826
10/09/2023	05:35	18:21	10h43m30s	5°01'36"	7°10'52"	0,032	0,66614
17/09/2023	04:51	18:01	10h38m07s	7°58'21"	15°46'10"	0,237	0,79845
24/09/2023	04:46	17:54	10h59m02s	7°42'24"	17°44'13"	0,555	0,98926
01/10/2023	05:11	17:52	11h37m44s	4°25'17"	14°32'22"	0,814	1,17258
08/10/2023	05:48	17:49	12h22m19s	-0°26'59"	9°19'49"	0,946	1,30656
15/10/2023	06:26	17:45	13h07m01s	-5°42'37"	3°58'14"	0,992	1,38803
22/10/2023	07:03	17:40	13h50m44s	-10°44'59"	1°20'57"	0,999	1,42753
29/10/2023	07:39	17:36	14h33m52s	-15°17'22"	5°39'17"	0,988	1,43414
05/11/2023	08:12	17:34	15h17m06s	-19°10'40"	9°41'53"	0,967	1,41285
12/11/2023	08:44	17:36	16h00m50s	-22°17'35"	13°23'18"	0,934	1,36520
19/11/2023	09:12	17:41	16h44m56s	-24°30'36"	16°43'15"	0,885	1,29024
26/11/2023	09:33	17:50	17h28m10s	-25°41'51"	19°31'30"	0,806	1,18540
03/12/2023	09:44	18:01	18h07m08s	-25°45'24"	21°11'33"	0,670	1,04846
10/12/2023	09:36	18:04	18h33m31s	-24°43'45"	20°01'06"	0,441	0,88516
17/12/2023	08:55	17:40	18h31m17s	-22°56'37"	12°26'23"	0,133	0,73232
24/12/2023	07:42	16:45	17h55m38s	-20°59'02"	3°48'26"	0,011	0,67745
31/12/2023	06:45	15:57	17h28m15s	-20°07'44"	16°45'55"	0,229	0,75903

Venus

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
01/01/2023	09:21	18:18	19h58m59s	-22°02'15"	17°09'31"	0,959	1,60744
08/01/2023	09:21	18:37	20h35m43s	-20°11'32"	18°47'34"	0,950	1,58627
15/01/2023	09:18	18:56	21h11m25s	-17°52'15"	20°24'47"	0,941	1,56337
22/01/2023	09:12	19:16	21h46m02s	-15°08'26"	22°01'10"	0,931	1,53867
29/01/2023	09:05	19:35	22h19m38s	-12°04'35"	23°36'51"	0,920	1,51209
05/02/2023	08:56	19:54	22h52m19s	-8°45'13"	25°11'53"	0,908	1,48362
12/02/2023	08:46	20:13	23h24m16s	-5°14'49"	26°46'07"	0,895	1,45330
19/02/2023	08:35	20:31	23h55m43s	-1°37'41"	28°19'25"	0,881	1,42107
26/02/2023	08:24	20:50	0h26m52s	2°01'54"	29°51'51"	0,866	1,38682
05/03/2023	08:13	21:08	0h57m58s	5°39'40"	31°23'18"	0,849	1,35052
12/03/2023	08:02	21:26	1h29m13s	9°11'28"	32°53'27"	0,832	1,31221
19/03/2023	07:52	21:45	2h00m51s	12°33'12"	34°21'55"	0,813	1,27191
26/03/2023	07:42	22:03	2h33m00s	15°40'48"	35°48'29"	0,792	1,22956
02/04/2023	07:34	22:21	3h05m48s	18°30'07"	37°12'47"	0,771	1,18515
09/04/2023	07:28	22:39	3h39m16s	20°57'14"	38°34'05"	0,748	1,13879
16/04/2023	07:24	22:56	4h13m20s	22°58'37"	39°51'33"	0,723	1,09061
23/04/2023	07:23	23:11	4h47m51s	24°31'16"	41°04'28"	0,697	1,04065
30/04/2023	07:24	23:24	5h22m34s	25°32'58"	42°11'52"	0,669	0,98899
07/05/2023	07:29	23:33	5h57m04s	26°02'31"	43°12'17"	0,639	0,93585
14/05/2023	07:35	23:39	6h30m58s	26°00'00"	44°03'55"	0,608	0,88148
21/05/2023	07:44	23:40	7h03m50s	25°26'42"	44°44'51"	0,575	0,82609
28/05/2023	07:53	23:38	7h35m13s	24°25'07"	45°12'39"	0,539	0,76988
04/06/2023	08:03	23:31	8h04m42s	22°58'46"	45°23'48"	0,501	0,71319
11/06/2023	08:12	23:21	8h31m53s	21°11'59"	45°13'41"	0,460	0,65647
18/06/2023	08:19	23:07	8h56m24s	19°09'33"	44°36'47"	0,415	0,60019
25/06/2023	08:23	22:50	9h17m49s	16°56'55"	43°25'43"	0,367	0,54483
02/07/2023	08:23	22:29	9h35m32s	14°40'16"	41°30'05"	0,314	0,49113
09/07/2023	08:19	22:05	9h48m47s	12°26'38"	38°36'25"	0,256	0,44014
16/07/2023	08:07	21:36	9h56m39s	10°24'01"	34°28'59"	0,194	0,39322
23/07/2023	07:48	21:02	9h58m06s	8°42'07"	28°51'37"	0,131	0,35212
30/07/2023	07:19	20:23	9h52m19s	7°32'12"	21°36'07"	0,071	0,31918
06/08/2023	06:41	19:41	9h39m40s	7°03'59"	13°13'42"	0,026	0,29725
13/08/2023	05:55	18:58	9h22m48s	7°19'29"	7°40'24"	0,009	0,28876
20/08/2023	05:08	18:18	9h06m20s	8°08'51"	12°58'09"	0,025	0,29461
27/08/2023	04:25	17:44	8h54m45s	9°13'40"	21°25'55"	0,069	0,31376
03/09/2023	03:49	17:18	8h50m37s	10°15'30"	28°51'53"	0,129	0,34382
10/09/2023	03:22	16:57	8h54m14s	11°01'20"	34°39'53"	0,193	0,38193
17/09/2023	03:03	16:42	9h04m32s	11°24'15"	38°56'53"	0,254	0,42558
24/09/2023	02:51	16:30	9h20m06s	11°21'11"	41°59'37"	0,312	0,47297
01/10/2023	02:45	16:20	9h39m38s	10°51'05"	44°03'56"	0,364	0,52287
08/10/2023	02:44	16:11	10h02m07s	9°54'03"	45°22'51"	0,412	0,57435
15/10/2023	02:47	16:02	10h26m43s	8°31'35"	46°06'56"	0,455	0,62668
22/10/2023	02:53	15:53	10h52m48s	6°46'04"	46°24'09"	0,495	0,67939
29/10/2023	03:01	15:44	11h19m58s	4°40'24"	46°20'00"	0,532	0,73218
05/11/2023	03:11	15:35	11h48m00s	2°17'51"	45°58'40"	0,566	0,78479
12/11/2023	03:23	15:26	12h16m43s	-0°17'49"	45°23'42"	0,599	0,83690
19/11/2023	03:36	15:17	12h46m04s	-3°02'24"	44°37'53"	0,629	0,88832
26/11/2023	03:50	15:08	13h16m05s	-5°51'38"	43°43'02"	0,657	0,93894
03/12/2023	04:04	14:59	13h46m50s	-8°41'11"	42°40'37"	0,684	0,98866
10/12/2023	04:20	14:52	14h18m25s	-11°26'31"	41°32'06"	0,709	1,03729
17/12/2023	04:36	14:46	14h50m54s	-14°02'55"	40°18'41"	0,732	1,08470
24/12/2023	04:53	14:41	15h24m21s	-16°25'41"	39°01'05"	0,755	1,13085
31/12/2023	05:09	14:38	15h58m49s	-18°30'18"	37°39'54"	0,776	1,17572

Mars

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
01/01/2023	14:21	06:10	4h27m35s	24°35'27"	148°39'37"	0,973	0,63842
08/01/2023	13:51	05:39	4h24m11s	24°29'38"	140°46'25"	0,959	0,68276
15/01/2023	13:24	05:10	4h23m38s	24°27'49"	133°32'11"	0,946	0,73334
22/01/2023	12:58	04:45	4h25m46s	24°30'18"	126°54'34"	0,934	0,78913
29/01/2023	12:35	04:23	4h30m19s	24°36'43"	120°50'26"	0,924	0,84911
05/02/2023	12:13	04:03	4h36m57s	24°46'05"	115°15'48"	0,916	0,91232
12/02/2023	11:53	03:45	4h45m22s	24°57'10"	110°06'12"	0,909	0,97802
19/02/2023	11:34	03:28	4h55m19s	25°08'44"	105°17'59"	0,904	1,04563
26/02/2023	11:17	03:13	5h06m35s	25°19'34"	100°48'29"	0,900	1,11458
05/03/2023	11:01	02:59	5h18m58s	25°28'31"	96°35'14"	0,898	1,18430
12/03/2023	10:46	02:45	5h32m17s	25°34'32"	92°35'43"	0,897	1,25439
19/03/2023	10:33	02:32	5h46m22s	25°36'44"	88°47'55"	0,897	1,32454
26/03/2023	10:20	02:19	6h01m07s	25°34'20"	85°10'35"	0,898	1,39441
02/04/2023	10:09	02:06	6h16m24s	25°26'43"	81°42'38"	0,900	1,46363
09/04/2023	09:58	01:53	6h32m07s	25°13'22"	78°22'49"	0,902	1,53193
16/04/2023	09:48	01:39	6h48m10s	24°53'54"	75°09'58"	0,905	1,59917
23/04/2023	09:40	01:26	7h04m29s	24°28'02"	72°03'28"	0,909	1,66512
30/04/2023	09:31	01:12	7h21m00s	23°55'36"	69°02'54"	0,912	1,72950
07/05/2023	09:24	00:57	7h37m37s	23°16'32"	66°07'35"	0,916	1,79214
14/05/2023	09:17	00:42	7h54m18s	22°30'53"	63°16'46"	0,920	1,85297
21/05/2023	09:11	00:27	8h11m01s	21°38'42"	60°30'04"	0,924	1,91185
28/05/2023	09:05	00:11	8h27m44s	20°40'09"	57°47'16"	0,929	1,96855
04/06/2023	08:59	23:52	8h44m23s	19°35'28"	55°08'03"	0,933	2,02296
11/06/2023	08:54	23:36	9h00m58s	18°24'57"	52°31'52"	0,938	2,07506
18/06/2023	08:49	23:19	9h17m29s	17°08'51"	49°58'22"	0,942	2,12477
25/06/2023	08:44	23:01	9h33m55s	15°47'30"	47°27'29"	0,946	2,17192
02/07/2023	08:39	22:43	9h50m16s	14°21'18"	44°59'02"	0,951	2,21642
09/07/2023	08:35	22:25	10h06m32s	12°50'39"	42°32'37"	0,955	2,25828
16/07/2023	08:30	22:07	10h22m44s	11°15'55"	40°07'56"	0,959	2,29749
23/07/2023	08:26	21:49	10h38m54s	9°37'30"	37°44'55"	0,963	2,33390
30/07/2023	08:21	21:30	10h55m02s	7°55'52"	35°23'32"	0,967	2,36747
06/08/2023	08:17	21:12	11h11m09s	6°11'28"	33°03'30"	0,971	2,39822
13/08/2023	08:13	20:53	11h27m18s	4°24'43"	30°44'33"	0,974	2,42618
20/08/2023	08:09	20:34	11h43m31s	2°36'05"	28°26'36"	0,978	2,45125
27/08/2023	08:05	20:16	11h59m48s	0°46'05"	26°09'43"	0,981	2,47339
03/09/2023	08:01	19:57	12h16m13s	-1°04'45"	23°53'46"	0,984	2,49268
10/09/2023	07:58	19:39	12h32m47s	-2°55'56"	21°38'31"	0,987	2,50916
17/09/2023	07:54	19:20	12h49m33s	-4°46'54"	19°23'54"	0,989	2,52279
24/09/2023	07:51	19:02	13h06m32s	-6°37'03"	17°10'04"	0,991	2,53355
01/10/2023	07:48	18:45	13h23m48s	-8°25'43"	14°57'00"	0,993	2,54153
08/10/2023	07:46	18:27	13h41m23s	-10°12'16"	12°44'34"	0,995	2,54684
15/10/2023	07:43	18:10	13h59m19s	-11°56'01"	10°32'43"	0,997	2,54947
22/10/2023	07:41	17:54	14h17m38s	-13°36'11"	8°21'38"	0,998	2,54943
29/10/2023	07:39	17:38	14h36m21s	-15°11'59"	6°11'29"	0,999	2,54685
05/11/2023	07:38	17:23	14h55m30s	-16°42'34"	4°02'12"	0,999	2,54187
12/11/2023	07:36	17:09	15h15m08s	-18°07'07"	1°53'51"	1,000	2,53454
19/11/2023	07:35	16:55	15h35m14s	-19°24'44"	0°15'24"	1,000	2,52491
26/11/2023	07:33	16:42	15h55m48s	-20°34'30"	2°20'02"	1,000	2,51311
03/12/2023	07:32	16:31	16h16m50s	-21°35'31"	4°24'40"	0,999	2,49936
10/12/2023	07:30	16:21	16h38m19s	-22°26'59"	6°27'59"	0,999	2,48374
17/12/2023	07:28	16:12	17h00m12s	-23°08'03"	8°29'46"	0,998	2,46633
24/12/2023	07:25	16:04	17h22m27s	-23°38'00"	10°29'41"	0,996	2,44728
31/12/2023	07:22	15:57	17h45m00s	-23°56'13"	12°27'37"	0,995	2,42683

Jupiter

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
01/01/2023	11:54	23:53	0h06m16s	-0°43'20"	80°51'45"	0,990	5,01024
08/01/2023	11:28	23:31	0h09m33s	-0°20'07"	74°38'27"	0,991	5,11893
15/01/2023	11:03	23:09	0h13m17s	0°05'50"	68°32'22"	0,991	5,22457
22/01/2023	10:38	22:47	0h17m25s	0°34'15"	62°32'59"	0,992	5,32607
29/01/2023	10:12	22:26	0h21m55s	1°04'51"	56°40'02"	0,993	5,42237
05/02/2023	09:48	22:06	0h26m45s	1°37'21"	50°53'14"	0,994	5,51252
12/02/2023	09:23	21:46	0h31m51s	2°11'28"	45°11'58"	0,995	5,59584
19/02/2023	08:58	21:26	0h37m13s	2°46'57"	39°35'37"	0,996	5,67164
26/02/2023	08:34	21:06	0h42m49s	3°23'32"	34°03'57"	0,997	5,73925
05/03/2023	08:10	20:47	0h48m35s	4°00'59"	28°36'45"	0,998	5,79815
12/03/2023	07:45	20:28	0h54m31s	4°39'01"	23°13'32"	0,998	5,84804
19/03/2023	07:21	20:09	1h00m34s	5°17'27"	17°53'46"	0,999	5,88859
26/03/2023	06:57	19:51	1h06m44s	5°56'04"	12°37'17"	1,000	5,91950
02/04/2023	06:33	19:32	1h12m59s	6°34'38"	7°24'39"	1,000	5,94059
09/04/2023	06:10	19:13	1h19m17s	7°12'56"	2°22'50"	1,000	5,95187
16/04/2023	05:46	18:55	1h25m36s	7°50'49"	3°13'36"	1,000	5,95334
23/04/2023	05:22	18:36	1h31m55s	8°28'06"	8°16'22"	1,000	5,94497
30/04/2023	04:58	18:17	1h38m14s	9°04'36"	13°23'21"	0,999	5,92687
07/05/2023	04:34	17:58	1h44m29s	9°40'07"	18°30'43"	0,999	5,89931
14/05/2023	04:11	17:39	1h50m40s	10°14'34"	23°38'36"	0,998	5,86254
21/05/2023	03:47	17:20	1h56m46s	10°47'45"	28°47'30"	0,998	5,81678
28/05/2023	03:23	17:01	2h02m43s	11°19'33"	33°57'43"	0,997	5,76239
04/06/2023	02:59	16:41	2h08m32s	11°49'49"	39°09'38"	0,996	5,69986
11/06/2023	02:35	16:21	2h14m09s	12°18'26"	44°24'01"	0,995	5,62970
18/06/2023	02:11	16:01	2h19m34s	12°45'18"	49°41'39"	0,994	5,55234
25/06/2023	01:47	15:41	2h24m43s	13°10'16"	55°03'06"	0,993	5,46840
02/07/2023	01:22	15:20	2h29m36s	13°33'13"	60°28'50"	0,992	5,37864
09/07/2023	00:58	14:58	2h34m08s	13°54'05"	65°59'39"	0,991	5,28380
16/07/2023	00:33	14:36	2h38m19s	14°12'44"	71°36'31"	0,990	5,18461
23/07/2023	00:08	14:13	2h42m06s	14°29'05"	77°20'11"	0,990	5,08199
30/07/2023	23:39	13:50	2h45m25s	14°43'01"	83°11'08"	0,990	4,97701
06/08/2023	23:14	13:26	2h48m15s	14°54'29"	89°10'09"	0,989	4,87075
13/08/2023	22:48	13:02	2h50m34s	15°03'22"	95°18'15"	0,990	4,76427
20/08/2023	22:21	12:36	2h52m17s	15°09'35"	101°36'11"	0,990	4,65886
27/08/2023	21:55	12:10	2h53m25s	15°13'04"	108°04'17"	0,991	4,55596
03/09/2023	21:28	11:43	2h53m54s	15°13'48"	114°42'58"	0,991	4,45698
10/09/2023	21:00	11:15	2h53m45s	15°11'46"	121°32'51"	0,992	4,36333
17/09/2023	20:32	10:46	2h52m56s	15°06'57"	128°34'12"	0,994	4,27657
24/09/2023	20:03	10:17	2h51m30s	14°59'27"	135°46'34"	0,995	4,19834
01/10/2023	19:35	09:47	2h49m27s	14°49'25"	143°09'18"	0,996	4,13012
08/10/2023	19:05	09:16	2h46m52s	14°37'05"	150°41'46"	0,998	4,07327
15/10/2023	18:36	08:44	2h43m49s	14°22'46"	158°22'49"	0,999	4,02909
22/10/2023	18:06	08:12	2h40m25s	14°06'56"	166°10'07"	0,999	3,99875
29/10/2023	17:36	07:39	2h36m48s	13°50'06"	173°58'13"	1,000	3,98301
05/11/2023	17:06	07:07	2h33m04s	13°32'54"	177°28'53"	1,000	3,98227
12/11/2023	16:36	06:34	2h29m23s	13°15'57"	169°50'57"	1,000	3,99674
19/11/2023	16:07	06:02	2h25m53s	13°00'00"	161°56'57"	0,999	4,02625
26/11/2023	15:37	05:31	2h22m42s	12°45'41"	154°05'07"	0,998	4,07016
03/12/2023	15:08	05:00	2h19m56s	12°33'34"	146°18'21"	0,997	4,12751
10/12/2023	14:38	04:29	2h17m41s	12°24'07"	138°38'11"	0,996	4,19719
17/12/2023	14:10	03:59	2h16m01s	12°17'44"	131°06'08"	0,994	4,27788
24/12/2023	13:41	03:31	2h14m59s	12°14'39"	123°43'26"	0,993	4,36796
31/12/2023	13:14	03:03	2h14m36s	12°14'57"	116°30'37"	0,992	4,46576

Saturn

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
01/01/2023	10:29	20:28	21h41m04s	-15°11'46"	42°13'07"	0,999	10,56207
08/01/2023	10:04	20:05	21h43m52s	-14°57'33"	35°48'30"	0,999	10,63492
15/01/2023	09:38	19:41	21h46m49s	-14°42'32"	29°26'18"	0,999	10,69729
22/01/2023	09:12	19:18	21h49m53s	-14°26'50"	23°06'17"	1,000	10,74844
29/01/2023	08:47	18:55	21h53m03s	-14°10'34"	16°48'38"	1,000	10,78771
05/02/2023	08:21	18:32	21h56m16s	-13°53'52"	10°33'54"	1,000	10,81474
12/02/2023	07:56	18:09	21h59m31s	-13°36'54"	4°25'35"	1,000	10,82932
19/02/2023	07:30	17:45	22h02m48s	-13°19'45"	2°21'09"	1,000	10,83129
26/02/2023	07:05	17:22	22h06m03s	-13°02'35"	8°17'26"	1,000	10,82058
05/03/2023	06:39	16:59	22h09m17s	-12°45'33"	14°26'27"	1,000	10,79741
12/03/2023	06:14	16:36	22h12m26s	-12°28'47"	20°36'17"	1,000	10,76213
19/03/2023	05:48	16:13	22h15m31s	-12°12'26"	26°46'26"	0,999	10,71512
26/03/2023	05:22	15:49	22h18m29s	-11°56'38"	32°56'55"	0,999	10,65685
02/04/2023	04:56	15:26	22h21m19s	-11°41'33"	39°07'43"	0,999	10,58806
09/04/2023	04:31	15:02	22h24m00s	-11°27'19"	45°19'09"	0,999	10,50958
16/04/2023	04:05	14:38	22h26m30s	-11°14'04"	51°31'48"	0,998	10,42227
23/04/2023	03:39	14:13	22h28m49s	-11°01'56"	57°46'04"	0,998	10,32704
30/04/2023	03:12	13:49	22h30m55s	-10°51'04"	64°02'06"	0,998	10,22505
07/05/2023	02:46	13:24	22h32m47s	-10°41'35"	70°20'10"	0,998	10,11755
14/05/2023	02:20	12:58	22h34m25s	-10°33'35"	76°40'54"	0,997	10,00574
21/05/2023	01:53	12:32	22h35m46s	-10°27'11"	83°04'48"	0,997	9,89089
28/05/2023	01:26	12:06	22h36m50s	-10°22'27"	89°32'00"	0,997	9,77450
04/06/2023	00:59	11:40	22h37m37s	-10°19'28"	96°02'39"	0,997	9,65807
11/06/2023	00:32	11:13	22h38m07s	-10°18'16"	102°37'13"	0,997	9,54304
18/06/2023	00:05	10:45	22h38m18s	-10°18'52"	109°16'10"	0,998	9,43089
25/06/2023	23:33	10:18	22h38m10s	-10°21'17"	115°59'30"	0,998	9,32324
02/07/2023	23:06	09:49	22h37m45s	-10°25'25"	122°47'04"	0,998	9,22167
09/07/2023	22:38	09:21	22h37m03s	-10°31'13"	129°38'59"	0,998	9,12760
16/07/2023	22:10	08:52	22h36m04s	-10°38'34"	136°35'27"	0,999	9,04241
23/07/2023	21:42	08:22	22h34m49s	-10°47'18"	143°36'09"	0,999	8,96754
30/07/2023	21:13	07:53	22h33m21s	-10°57'13"	150°40'25"	0,999	8,90424
06/08/2023	20:45	07:23	22h31m42s	-11°08'04"	157°47'45"	1,000	8,85349
13/08/2023	20:16	06:52	22h29m53s	-11°19'37"	164°57'21"	1,000	8,81616
20/08/2023	19:48	06:22	22h27m57s	-11°31'36"	172°05'52"	1,000	8,79300
27/08/2023	19:19	05:52	22h25m58s	-11°43'40"	178°09'53"	1,000	8,78446
03/09/2023	18:51	05:21	22h23m59s	-11°55'33"	172°54'41"	1,000	8,79066
10/09/2023	18:22	04:51	22h22m02s	-12°06'57"	165°43'38"	1,000	8,81149
17/09/2023	17:53	04:21	22h20m10s	-12°17'35"	158°27'47"	1,000	8,84673
24/09/2023	17:25	03:51	22h18m27s	-12°27'11"	151°11'38"	0,999	8,89579
01/10/2023	16:56	03:22	22h16m54s	-12°35'32"	143°56'37"	0,999	8,95774
08/10/2023	16:28	02:52	22h15m36s	-12°42'27"	136°43'15"	0,999	9,03154
15/10/2023	16:00	02:23	22h14m32s	-12°47'47"	129°31'59"	0,998	9,11606
22/10/2023	15:32	01:55	22h13m46s	-12°51'24"	122°23'31"	0,998	9,20989
29/10/2023	15:04	01:27	22h13m18s	-12°53'14"	115°18'22"	0,998	9,31141
05/11/2023	14:36	00:59	22h13m09s	-12°53'14"	108°16'35"	0,998	9,41903
12/11/2023	14:09	00:32	22h13m19s	-12°51'25"	101°18'11"	0,998	9,53119
19/11/2023	13:42	00:05	22h13m49s	-12°47'46"	94°23'26"	0,997	9,64614
26/11/2023	13:14	23:35	22h14m38s	-12°42'19"	87°32'37"	0,997	9,76212
03/12/2023	12:48	23:09	22h15m46s	-12°35'10"	80°45'35"	0,998	9,87748
10/12/2023	12:21	22:44	22h17m11s	-12°26'22"	74°02'05"	0,998	9,99072
17/12/2023	11:54	22:19	22h18m53s	-12°16'01"	67°22'07"	0,998	10,10024
24/12/2023	11:28	21:54	22h20m51s	-12°04'13"	60°45'52"	0,998	10,20452
31/12/2023	11:02	21:30	22h23m03s	-11°51'05"	54°13'08"	0,998	10,30226

Uranus

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
01/01/2023	13:28	03:51	2h51m08s	16°02'15"	124°50'48"	1,000	19,09337
08/01/2023	13:00	03:23	2h50m42s	16°00'30"	117°36'18"	1,000	19,19579
15/01/2023	12:33	02:55	2h50m25s	15°59'27"	110°24'18"	0,999	19,30514
22/01/2023	12:05	02:28	2h50m18s	15°59'08"	103°14'58"	0,999	19,41974
29/01/2023	11:38	02:00	2h50m22s	15°59'36"	96°08'47"	0,999	19,53775
05/02/2023	11:10	01:33	2h50m36s	16°00'48"	89°06'07"	0,999	19,65727
12/02/2023	10:43	01:06	2h51m00s	16°02'45"	82°06'57"	0,999	19,77656
19/02/2023	10:16	00:39	2h51m33s	16°05'25"	75°11'10"	0,999	19,89392
26/02/2023	09:49	00:13	2h52m17s	16°08'45"	68°18'56"	0,999	20,00762
05/03/2023	09:22	23:43	2h53m09s	16°12'44"	61°30'30"	1,000	20,11601
12/03/2023	08:55	23:16	2h54m09s	16°17'16"	54°45'42"	1,000	20,21769
19/03/2023	08:28	22:50	2h55m17s	16°22'19"	48°04'11"	1,000	20,31137
26/03/2023	08:01	22:25	2h56m32s	16°27'49"	41°25'52"	1,000	20,39579
02/04/2023	07:35	21:59	2h57m53s	16°33'43"	34°50'50"	1,000	20,46986
09/04/2023	07:08	21:33	2h59m19s	16°39'54"	28°18'51"	1,000	20,53275
16/04/2023	06:42	21:08	3h00m49s	16°46'20"	21°49'26"	1,000	20,58380
23/04/2023	06:15	20:42	3h02m22s	16°52'57"	15°22'18"	1,000	20,62236
30/04/2023	05:49	20:17	3h03m58s	16°59'39"	8°57'26"	1,000	20,64797
07/05/2023	05:22	19:51	3h05m36s	17°06'23"	2°35'13"	1,000	20,66046
14/05/2023	04:56	19:26	3h07m14s	17°13'05"	3°48'20"	1,000	20,65979
21/05/2023	04:30	19:01	3h08m51s	17°19'41"	10°08'35"	1,000	20,64593
28/05/2023	04:03	18:35	3h10m27s	17°26'08"	16°28'25"	1,000	20,61906
04/06/2023	03:37	18:10	3h12m01s	17°32'21"	22°47'45"	1,000	20,57961
11/06/2023	03:10	17:44	3h13m32s	17°38'19"	29°07'07"	1,000	20,52811
18/06/2023	02:44	17:19	3h14m59s	17°43'57"	35°27'05"	1,000	20,46509
25/06/2023	02:17	16:53	3h16m21s	17°49'14"	41°47'50"	1,000	20,39130
02/07/2023	01:50	16:27	3h17m37s	17°54'05"	48°09'33"	1,000	20,30770
09/07/2023	01:24	16:01	3h18m46s	17°58'29"	54°32'43"	1,000	20,21532
16/07/2023	00:57	15:35	3h19m49s	18°02'24"	60°57'57"	0,999	20,11519
23/07/2023	00:30	15:08	3h20m44s	18°05'48"	67°25'29"	0,999	20,00852
30/07/2023	00:03	14:42	3h21m30s	18°08'38"	73°55'23"	0,999	19,89672
06/08/2023	23:32	14:15	3h22m07s	18°10'54"	80°28'01"	0,999	19,78122
13/08/2023	23:05	13:48	3h22m35s	18°12'34"	87°03'55"	0,999	19,66342
20/08/2023	22:38	13:21	3h22m53s	18°13'37"	93°43'18"	0,999	19,54486
27/08/2023	22:10	12:54	3h23m01s	18°14'04"	100°26'07"	0,999	19,42725
03/09/2023	21:43	12:26	3h22m59s	18°13'53"	107°12'27"	0,999	19,31222
10/09/2023	21:15	11:58	3h22m47s	18°13'06"	114°02'41"	0,999	19,20132
17/09/2023	20:47	11:30	3h22m25s	18°11'43"	120°56'57"	1,000	19,09619
24/09/2023	20:19	11:02	3h21m54s	18°09'46"	127°54'57"	1,000	18,99852
01/10/2023	19:51	10:34	3h21m15s	18°07'16"	134°56'30"	1,000	18,90981
08/10/2023	19:23	10:05	3h20m27s	18°04'16"	142°01'42"	1,000	18,83140
15/10/2023	18:55	09:36	3h19m33s	18°00'50"	149°10'29"	1,000	18,76460
22/10/2023	18:27	09:07	3h18m32s	17°57'00"	156°22'22"	1,000	18,71065
29/10/2023	17:58	08:39	3h17m27s	17°52'53"	163°36'47"	1,000	18,67045
05/11/2023	17:30	08:10	3h16m18s	17°48'32"	170°53'30"	1,000	18,64466
12/11/2023	17:02	07:41	3h15m08s	17°44'03"	178°11'10"	1,000	18,63381
19/11/2023	16:33	07:11	3h13m57s	17°39'32"	174°26'04"	1,000	18,63823
26/11/2023	16:05	06:42	3h12m48s	17°35'04"	167°05'03"	1,000	18,65785
03/12/2023	15:37	06:13	3h11m41s	17°30'47"	159°43'27"	1,000	18,69231
10/12/2023	15:09	05:45	3h10m38s	17°26'45"	152°21'41"	1,000	18,74109
17/12/2023	14:40	05:16	3h09m41s	17°23'05"	145°00'24"	1,000	18,80347
24/12/2023	14:12	04:47	3h08m51s	17°19'51"	137°40'23"	1,000	18,87835
31/12/2023	13:44	04:19	3h08m08s	17°17'09"	130°22'05"	1,000	18,96441

Neptune

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
01/01/2023	11:36	23:09	23h35m43s	-3°55'01"	72°35'35"	1,000	30,19205
08/01/2023	11:09	22:43	23h36m11s	-3°51'52"	65°35'14"	1,000	30,30545
15/01/2023	10:42	22:16	23h36m43s	-3°48'09"	58°36'27"	1,000	30,41286
22/01/2023	10:15	21:49	23h37m21s	-3°43'54"	51°39'13"	1,000	30,51274
29/01/2023	09:48	21:23	23h38m03s	-3°39'10"	44°43'49"	1,000	30,60361
05/02/2023	09:21	20:56	23h38m50s	-3°34'01"	37°50'30"	1,000	30,68419
12/02/2023	08:53	20:30	23h39m40s	-3°28'31"	30°59'10"	1,000	30,75348
19/02/2023	08:26	20:04	23h40m33s	-3°22'43"	24°09'41"	1,000	30,81057
26/02/2023	07:59	19:38	23h41m29s	-3°16'41"	17°22'19"	1,000	30,85464
05/03/2023	07:32	19:12	23h42m26s	-3°10'30"	10°37'48"	1,000	30,88516
12/03/2023	07:05	18:45	23h43m24s	-3°04'15"	4°00'13"	1,000	30,90189
19/03/2023	06:38	18:19	23h44m23s	-2°57'57"	3°06'37"	1,000	30,90466
26/03/2023	06:12	17:53	23h45m21s	-2°51'44"	9°38'26"	1,000	30,89342
02/04/2023	05:45	17:27	23h46m19s	-2°45'38"	16°16'22"	1,000	30,86842
09/04/2023	05:18	17:01	23h47m15s	-2°39'44"	22°53'56"	1,000	30,83016
16/04/2023	04:51	16:35	23h48m09s	-2°34'04"	29°30'54"	1,000	30,77919
23/04/2023	04:24	16:08	23h49m00s	-2°28'44"	36°07'17"	1,000	30,71614
30/04/2023	03:56	15:42	23h49m48s	-2°23'46"	42°43'00"	1,000	30,64195
07/05/2023	03:29	15:15	23h50m33s	-2°19'14"	49°18'08"	1,000	30,55770
14/05/2023	03:02	14:49	23h51m13s	-2°15'10"	55°53'09"	1,000	30,46452
21/05/2023	02:35	14:22	23h51m49s	-2°11'38"	62°28'24"	1,000	30,36357
28/05/2023	02:08	13:55	23h52m19s	-2°08'38"	69°03'52"	1,000	30,25625
04/06/2023	01:41	13:28	23h52m45s	-2°06'14"	75°39'37"	1,000	30,14408
11/06/2023	01:13	13:01	23h53m05s	-2°04'26"	82°16'06"	1,000	30,02851
18/06/2023	00:46	12:34	23h53m19s	-2°03'16"	88°53'42"	1,000	29,91101
25/06/2023	00:19	12:07	23h53m27s	-2°02'44"	95°32'27"	1,000	29,79325
02/07/2023	23:47	11:39	23h53m30s	-2°02'51"	102°12'19"	1,000	29,67689
09/07/2023	23:20	11:11	23h53m27s	-2°03'34"	108°53'37"	1,000	29,56349
16/07/2023	22:52	10:44	23h53m18s	-2°04'55"	115°36'44"	1,000	29,45455
23/07/2023	22:24	10:16	23h53m03s	-2°06'51"	122°21'41"	1,000	29,35169
30/07/2023	21:57	09:48	23h52m43s	-2°09'20"	129°08'20"	1,000	29,25644
06/08/2023	21:29	09:20	23h52m18s	-2°12'19"	135°56'45"	1,000	29,17014
13/08/2023	21:01	08:51	23h51m49s	-2°15'45"	142°47'16"	1,000	29,09402
20/08/2023	20:33	08:23	23h51m16s	-2°19'35"	149°39'50"	1,000	29,02931
27/08/2023	20:05	07:55	23h50m40s	-2°23'44"	156°34'05"	1,000	28,97708
03/09/2023	19:38	07:26	23h50m01s	-2°28'09"	163°29'42"	1,000	28,93810
10/09/2023	19:10	06:58	23h49m20s	-2°32'43"	170°25'59"	1,000	28,91298
17/09/2023	18:42	06:29	23h48m37s	-2°37'22"	177°12'56"	1,000	28,90225
24/09/2023	18:14	06:01	23h47m55s	-2°42'02"	175°16'02"	1,000	28,90621
01/10/2023	17:46	05:32	23h47m13s	-2°46'35"	168°19'09"	1,000	28,92479
08/10/2023	17:18	05:04	23h46m32s	-2°50'58"	161°16'12"	1,000	28,95775
15/10/2023	16:50	04:35	23h45m53s	-2°55'05"	154°11'06"	1,000	29,00474
22/10/2023	16:22	04:07	23h45m17s	-2°58'51"	147°04'51"	1,000	29,06512
29/10/2023	15:54	03:38	23h44m45s	-3°02'13"	139°57'59"	1,000	29,13793
05/11/2023	15:27	03:10	23h44m17s	-3°05'05"	132°50'39"	1,000	29,22206
12/11/2023	14:59	02:42	23h43m53s	-3°07'25"	125°42'53"	1,000	29,31635
19/11/2023	14:31	02:14	23h43m35s	-3°09'08"	118°35'06"	1,000	29,41937
26/11/2023	14:04	01:46	23h43m22s	-3°10'15"	111°27'47"	1,000	29,52947
03/12/2023	13:36	01:19	23h43m16s	-3°10'41"	104°21'03"	1,000	29,64496
10/12/2023	13:08	00:51	23h43m16s	-3°10'28"	97°14'51"	1,000	29,76417
17/12/2023	12:41	00:24	23h43m21s	-3°09'33"	90°09'31"	1,000	29,88530
24/12/2023	12:13	23:53	23h43m34s	-3°07'59"	83°05'28"	1,000	30,00642
31/12/2023	11:46	23:26	23h43m52s	-3°05'44"	76°02'52"	1,000	30,12573

Grange Obs. Latitude: 45°08'32" N Longitude: 7°08'26" E
Local Time = UT + 1,00 hours Elevation: 470 meters

Planet Apsides Report for 2023

Earth

04/01/2023 Perihelion Distance from Sun: 0,98 AU
05/07/2023 Aphelion Distance from Sun: 1,02 AU

Mercury

02/01/2023 Perihelion Distance from Sun: 0,31 AU
31/03/2023 Perihelion Distance from Sun: 0,31 AU
27/06/2023 Perihelion Distance from Sun: 0,31 AU
23/09/2023 Perihelion Distance from Sun: 0,31 AU
20/12/2023 Perihelion Distance from Sun: 0,31 AU
15/02/2023 Aphelion Distance from Sun: 0,47 AU
14/05/2023 Aphelion Distance from Sun: 0,47 AU
10/08/2023 Aphelion Distance from Sun: 0,47 AU
06/11/2023 Aphelion Distance from Sun: 0,47 AU

Venus

17/04/2023 Perihelion Distance from Sun: 0,72 AU
28/11/2023 Perihelion Distance from Sun: 0,72 AU
08/08/2023 Aphelion Distance from Sun: 0,73 AU

Mars

31/05/2023 Aphelion Distance from Sun: 1,67 AU

Jupiter

25/01/2023 Perihelion Distance from Sun: 4,95 AU

Saturn

No Apsis

Grange Obs. Latitude: 45°08'32" N Longitude: 7°08'26" E
Local Time = UT + 1,00 hours Elevation: 470 meters

Planet Conjunction/Opposition Report for 01/01/2023 to 31/12/2023

Mercury

Date	Hour	Event
17/03/2023	10	Superior Conjunction
02/05/2023	0	Inferior Conjunction
01/07/2023	6	Superior Conjunction
06/09/2023	12	Inferior Conjunction
20/10/2023	6	Superior Conjunction
23/12/2023	0	Inferior Conjunction

Venus

Date	Hour	Event
13/08/2023	12	Inferior Conjunction

Mars

Date	Hour	Event
18/11/2023	6	Conjunction (Occultation)

Jupiter

Date	Hour	Event
12/04/2023	0	Conjunction
03/11/2023	4	Opposition

Saturn

Date	Hour	Event
17/02/2023	0	Conjunction
27/08/2023	10	Opposition

Uranus

Date	Hour	Event
10/05/2023	0	Conjunction
14/11/2023	0	Opposition

Neptune

Date	Hour	Event
16/03/2023	0	Conjunction
19/09/2023	12	Opposition
22/07/2023	4	Opposition

Planet Data Report

Planet	Mean Dist From Sun (AU)	Period of Revolution	Inclination	Equatorial Diameter (km)
Mercury	0,39	88 days	7°	4880
Venus	0,72	224,7 days	3,4°	12100
Earth	1,00	365,24 days	0°	12756
Mars	1,52	687 days	1,9°	6794
Jupiter	5,20	11,86 years	1,3°	143200
Saturn	9,54	29,46 years	2,5°	120000
Uranus	19,18	84 years	0,8°	52290
Neptune	30,06	165 years	1,8°	50450

Grange Obs. Latitude: 45°08'32" N Longitude: 7°08'26" E
Local Time = UT + 1,00 hours Elevation: 470 meters

Moon Apsides Report for 01/01/2023 to 31/12/2023

Date	Hour	Apsis	Distance (km)	Diameter
08/01/2023	10	Apogee	406456	0,4900°
21/01/2023	22	Perigee	356595	0,5585°
04/02/2023	10	Apogee	406477	0,4900°
19/02/2023	10	Perigee	358273	0,5559°
03/03/2023	19	Apogee	405911	0,4906°
19/03/2023	16	Perigee	362691	0,5491°
31/03/2023	12	Apogee	404949	0,4918°
16/04/2023	3	Perigee	367974	0,5412°
28/04/2023	8	Apogee	404310	0,4926°
11/05/2023	6	Perigee	369333	0,5392°
26/05/2023	3	Apogee	404517	0,4923°
07/06/2023	0	Perigee	364863	0,5458°
22/06/2023	20	Apogee	405403	0,4913°
04/07/2023	23	Perigee	360168	0,5530°
20/07/2023	8	Apogee	406281	0,4902°
02/08/2023	7	Perigee	357337	0,5573°
16/08/2023	13	Apogee	406621	0,4898°
30/08/2023	17	Perigee	357203	0,5575°
12/09/2023	16	Apogee	406312	0,4902°
28/09/2023	2	Perigee	359920	0,5533°
10/10/2023	5	Apogee	405426	0,4912°
26/10/2023	4	Perigee	364870	0,5458°
06/11/2023	23	Apogee	404561	0,4923°
21/11/2023	22	Perigee	369825	0,5385°
04/12/2023	20	Apogee	404358	0,4925°
16/12/2023	20	Perigee	367904	0,5413°

Grange Obs. Latitude: 45°08'32" N Longitude: 7°08'26" E
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Moon Nodes Report for 01/01/2023 to 31/12/2023

Date	Time	Node	Illuminated Fraction
01/01/2023	16:24	Ascending	0,76
16/01/2023	07:31	Descending	0,37
28/01/2023	17:04	Ascending	0,51
12/02/2023	08:30	Descending	0,64
24/02/2023	19:55	Ascending	0,25
11/03/2023	09:52	Descending	0,86
24/03/2023	03:07	Ascending	0,07
07/04/2023	14:50	Descending	0,98
20/04/2023	12:31	Ascending	0,00
04/05/2023	22:56	Descending	0,99
17/05/2023	20:35	Ascending	0,04
01/06/2023	07:21	Descending	0,90
14/06/2023	01:04	Ascending	0,17
28/06/2023	13:21	Descending	0,72
11/07/2023	02:22	Ascending	0,39
25/07/2023	16:04	Descending	0,48
07/08/2023	03:45	Ascending	0,64
21/08/2023	17:22	Descending	0,24
03/09/2023	08:43	Ascending	0,85
17/09/2023	20:17	Descending	0,07
30/09/2023	17:48	Ascending	0,98
15/10/2023	02:10	Descending	0,00
28/10/2023	04:13	Ascending	0,99
11/11/2023	09:48	Descending	0,04
24/11/2023	12:01	Ascending	0,90
08/12/2023	16:23	Descending	0,19
21/12/2023	14:53	Ascending	0,70

Grange Obs. Latitude: 45°08'32" N Longitude: 7°08'26" E
 Local Time = UT + 1,00 hours Elevation: 470 meters

Meteor Showers Report for 01/01/2023 to 31/12/2023

Date	Meteor Shower	ZHR	RA	DEC	Illum. Frac.	Longitude
04/01/2023	Quadrantids	80	15h28m	50°	0,92	283°
12/04/2023	Virginids	5	14h04m	-9°	0,65	22°
23/04/2023	Lyrids	12	18h08m	32°	0,09	32°
29/04/2023	alpha-Scorpiids	5	16h32m	-24°	0,61	38°
06/05/2023	eta-Aquarids	35	22h20m	-1°	1,00	45°
13/05/2023	alpha-Scorpiids	5	16h04m	-24°	0,45	52°
10/06/2023	Ophiuchids	5	17h56m	-23°	0,59	79°
21/06/2023	Ophiuchids	5	17h20m	-20°	0,08	89°
09/07/2023	Capricornids	5			0,62	106°
16/07/2023	Capricornids	5	20h44m	-15°	0,03	113°
21/07/2023	alpha-Cygnids	5	21h00m	48°	0,10	118°
27/07/2023	Capricornids	5	21h00m	-15°	0,62	123°
30/07/2023	delta-Aquarids	20	22h36m	-17°	0,89	126°
01/08/2023	Piscis Australids	5	22h40m	-30°	0,99	128°
03/08/2023	alpha-Capricornids	5	20h36m	-10°	0,97	130°
07/08/2023	iota-Aquarids	8	22h10m	-15°	0,65	134°
13/08/2023	Perseids	75	3h04m	58°	0,10	140°
22/08/2023	alpha-Cygnids	5	21h00m	48°	0,27	148°
09/09/2023	Piscids	10	0h36m	7°	0,30	166°
22/09/2023	Piscids	5	0h24m	0°	0,42	178°
14/10/2023	Piscids	??	1h44m	14°	0,00	200°
23/10/2023	Orionids	25	6h24m	15°	0,60	209°
04/11/2023	Taurids	8	3h44m	14°	0,63	221°
18/11/2023	Leonids	10	10h08m	22°	0,24	235°
10/12/2023	Puppids-Velids	15	9h00m	-48°	0,10	257°
15/12/2023	Geminids	75	7h28m	32°	0,06	262°
23/12/2023	Ursids	5	14h28m	78°	0,83	271°
26/12/2023	Puppids-Velids	15	9h20m	-65°	0,99	274°

Grange Obs. Latitude: 45°08'32" N Longitude: 7°08'26" E
 Local Time = UT + 1,00 hours Elevation: 470 meters

Twilight Report for 01/01/2023 to 31/12/2023

Date	Sun Rise	Set	Astronomical Begin	End	Nautical Begin	End	Civil Begin	End
01/01/2023	08:10	17:00	06:18	18:52	06:54	18:16	07:31	17:39
08/01/2023	08:10	17:07	06:18	18:58	06:54	18:22	07:31	17:46
15/01/2023	08:07	17:15	06:17	19:05	06:52	18:30	07:29	17:53
22/01/2023	08:02	17:24	06:14	19:13	06:49	18:38	07:24	18:02
29/01/2023	07:55	17:34	06:09	19:21	06:43	18:46	07:19	18:11
05/02/2023	07:47	17:44	06:02	19:29	06:36	18:55	07:11	18:20
12/02/2023	07:38	17:54	05:54	19:38	06:28	19:04	07:02	18:30
19/02/2023	07:27	18:04	05:44	19:47	06:18	19:13	06:52	18:39
26/02/2023	07:15	18:14	05:33	19:56	06:07	19:22	06:41	18:48
05/03/2023	07:03	18:24	05:21	20:06	05:55	19:32	06:29	18:58
12/03/2023	06:50	18:33	05:08	20:16	05:42	19:41	06:16	19:07
19/03/2023	06:37	18:42	04:54	20:26	05:29	19:50	06:03	19:16
26/03/2023	06:24	18:51	04:39	20:36	05:15	20:00	05:50	19:25
02/04/2023	06:11	19:00	04:24	20:47	05:01	20:10	05:36	19:35
09/04/2023	05:58	19:09	04:08	20:59	04:47	20:20	05:23	19:44
16/04/2023	05:46	19:18	03:53	21:11	04:33	20:31	05:10	19:54
23/04/2023	05:34	19:27	03:37	21:24	04:19	20:42	04:57	20:03
30/04/2023	05:23	19:36	03:21	21:37	04:05	20:53	04:45	20:13
07/05/2023	05:13	19:44	03:05	21:52	03:53	21:04	04:34	20:23
14/05/2023	05:04	19:53	02:50	22:06	03:41	21:15	04:24	20:32
21/05/2023	04:56	20:01	02:36	22:20	03:31	21:26	04:16	20:41
28/05/2023	04:50	20:08	02:24	22:34	03:22	21:36	04:09	20:49
04/06/2023	04:46	20:14	02:14	22:46	03:16	21:44	04:04	20:56
11/06/2023	04:44	20:18	02:07	22:56	03:12	21:51	04:01	21:01
18/06/2023	04:44	20:22	02:04	23:01	03:11	21:55	04:00	21:05
25/06/2023	04:45	20:23	02:06	23:03	03:12	21:56	04:02	21:06
02/07/2023	04:48	20:22	02:12	22:59	03:16	21:54	04:06	21:05
09/07/2023	04:53	20:20	02:21	22:52	03:23	21:50	04:11	21:02
16/07/2023	04:59	20:15	02:33	22:41	03:31	21:43	04:18	20:57
23/07/2023	05:06	20:09	02:47	22:29	03:41	21:35	04:26	20:50
30/07/2023	05:14	20:01	03:01	22:14	03:51	21:24	04:34	20:41
06/08/2023	05:22	19:52	03:15	21:59	04:02	21:12	04:43	20:31
13/08/2023	05:30	19:42	03:28	21:43	04:13	20:59	04:53	20:19
20/08/2023	05:38	19:31	03:42	21:27	04:24	20:45	05:02	20:07
27/08/2023	05:47	19:19	03:54	21:11	04:34	20:31	05:11	19:54
03/09/2023	05:55	19:06	04:06	20:55	04:44	20:17	05:20	19:41
10/09/2023	06:04	18:53	04:17	20:40	04:54	20:03	05:29	19:27
17/09/2023	06:12	18:39	04:27	20:24	05:03	19:48	05:38	19:14
24/09/2023	06:20	18:26	04:37	20:09	05:12	19:34	05:46	19:00
01/10/2023	06:29	18:13	04:46	19:55	05:21	19:21	05:55	18:47
08/10/2023	06:38	18:00	04:56	19:42	05:30	19:08	06:04	18:34
15/10/2023	06:47	17:47	05:04	19:29	05:38	18:55	06:12	18:21
22/10/2023	06:56	17:35	05:13	19:18	05:47	18:44	06:21	18:10
29/10/2023	07:06	17:24	05:22	19:08	05:56	18:34	06:30	18:00
05/11/2023	07:15	17:14	05:30	18:59	06:04	18:25	06:39	17:50
12/11/2023	07:25	17:06	05:38	18:52	06:13	18:18	06:48	17:42
19/11/2023	07:34	16:59	05:46	18:47	06:21	18:12	06:57	17:36
26/11/2023	07:43	16:54	05:54	18:43	06:29	18:08	07:05	17:32
03/12/2023	07:52	16:50	06:01	18:41	06:36	18:06	07:13	17:29
10/12/2023	07:59	16:49	06:07	18:41	06:43	18:05	07:20	17:28
17/12/2023	08:04	16:50	06:12	18:43	06:48	18:07	07:25	17:30
24/12/2023	08:08	16:53	06:16	18:46	06:52	18:10	07:29	17:33
31/12/2023	08:10	16:59	06:18	18:51	06:54	18:15	07:31	17:38