



Sun, Planets and Transitions

The **Sun** transits from Leo, the Lion (*Simha*) to Virgo, the Virgin (*Kanya*) on 17 September.

The angular size of the **Sun** increases from $0^{\circ}31'41.30''$ on 1 September to $0^{\circ}31'55.9''$ on 30 September.

Mercury is in Leo on 1 September and is in retrograde motion. It will be at inferior conjunction on 6 September. It crosses over to Sextans, the Sextant on 7 September. After continuing in retrograde motion till 12 September, it then crosses over to Leo again. It appears to be stationary on 14 September and then resumes prograde motion in Leo.

Venus is in Cancer, the Crab (*Karka*) on 1 September. It too is in retrograde motion and appears to be stationary on 3 September. After that it gets into prograde motion. It crosses over to Leo on 26 September.

Mars is in Virgo and continues to travel in that constellation.

Jupiter continues to travel in Aries; and **Saturn** continues in Aquarius, the Water Bearer.

(Disclaimer: we categorically mention here that we do not believe in astrology and believe that the only influence a planet has on us is to give us the viewing pleasure of its beauty. The sole purpose of giving the transition of planets and the Sun is to acquaint the reader with the Indian nomenclature of planets and constellations and also to show that the actual positions of the Sun and planets, which are based on modern computing, are very different from those given in astrology tables.)

List of Events in September 2023

Dt	Dy	Time	Event
03	Su	09:06	Venus stationary
03	Su	13:14	Moon ascending node
04	Mo	02:30	Jupiter stationary
05	Tu	01:14	Moon-Jupiter: 3.4° S
06	We	00:55	Moon-Pleiades: 1.3° N
06	We	16:33	Mercury inferior conjunction
07	Th	03:51	Last quarter
08	Fr	18:48	Moon north declination: 28.2° N
10	Su	09:02	Moon-Pollux: 1.7° N
12	Tu	21:12	Moon apogee: 406300 km
13	We	11:39	Regulus 3.8° S of Moon
14	The	03:29	Mercury 5.4° S of Moon
14	The	05:44	Mercury stationary
15	Fr	07:10	New Moon
17	Su	20:42	Moon-Spica: 2.6° S
18	Mo	00:48	Moon descending node
19	Tu	15:24	Neptune opposition
21	Th	13:20	Moon-Antares: 0.9° S
22	Fr	18:29	Mercury elongation: 17.9° W
23	Sa	01:02	First quarter
23	Sa	09:12	Moon south declination: 28.3° S
23	Sa	12:20	September equinox
27	We	06:55	Moon-Saturn: 2.6° N
28	Th	06:35	Moon perigee: 359900 km
29	Fr	15:27	Full Moon
30	Sa	22:19	Moon ascending node

March of the Moon

On 1 September the almost Full Moon can be seen close to Saturn, almost overhead, shortly after midnight. By dawn both these objects will be above the western horizon. Between 4 and 5 September it passes south of Jupiter. It will be almost overhead at dawn on 5 September. On 6 September it is east of the Pleiades cluster (*Krutika*). On 10 September

it is within the boundaries of the Gateway of Heaven, less than 2° southwest of Pollux.

On 13 September the thin, waning lunar crescent passes less than 4° from Regulus (*Magha*). On 17 September the now waxing crescent Moon passes less than 3° from Spica (*Chitra*).

On 21 September the approximately 37% illuminated Moon can be seen less than 2.5° from Antares (*Jyeshtha*). On 22 September, close to first quarter, the Moon will be right in the direction of the centre of the Milky Way. The next day it is right inside the Teapot asterism of Sagittarius. Between 26 and 27 September the Moon passes south of Saturn.

Equinox Dates

The September equinox will take place on 23 September at 12:20 hours IST. On this day the Sun's rays will fall perpendicular to the polar axis of the Earth or in the plane of the Earth's equator. As the equator divides the northern and southern hemispheres in two equal parts, it is commonly believed that on an equinox the duration of day and night are equal everywhere on the Earth. But that is not correct.

There are two reasons why the duration of daylight and night-time hours are not equal on the same day everywhere on Earth. One is that the Earth is a spherical body. Therefore, even though on the day of the equinox the Sun's rays fall perpendicular to any location on the equator at noon, at other latitudes the rays fall at slanting angles. Therefore, sunrise and sunset timings differ from one latitude time zone to the other.

Secondly, the Sun is not a point source. It has an appreciably large size of about half a degree. The time of sunrise is defined when the Sun's upper edge (or limb, in astronomical terminology) is seen just above the horizon; and the end of the day is when the last rays of the Sun disappear.

But there is a further complication. Because of the bending of the Sun's rays in the atmosphere of the Earth due to a phenomenon called refraction, close to the horizon the rays are seen a few minutes ahead of or after the 'true' sunrise and sunset respectively.

The cumulative effect of these factors is that on the days of the equinox, the daylight hours are about seven to eight minutes longer than the night-time hours. Near and at the poles the rays are almost parallel to the horizon. Therefore, at both the poles the length of daylight is 24 hours.

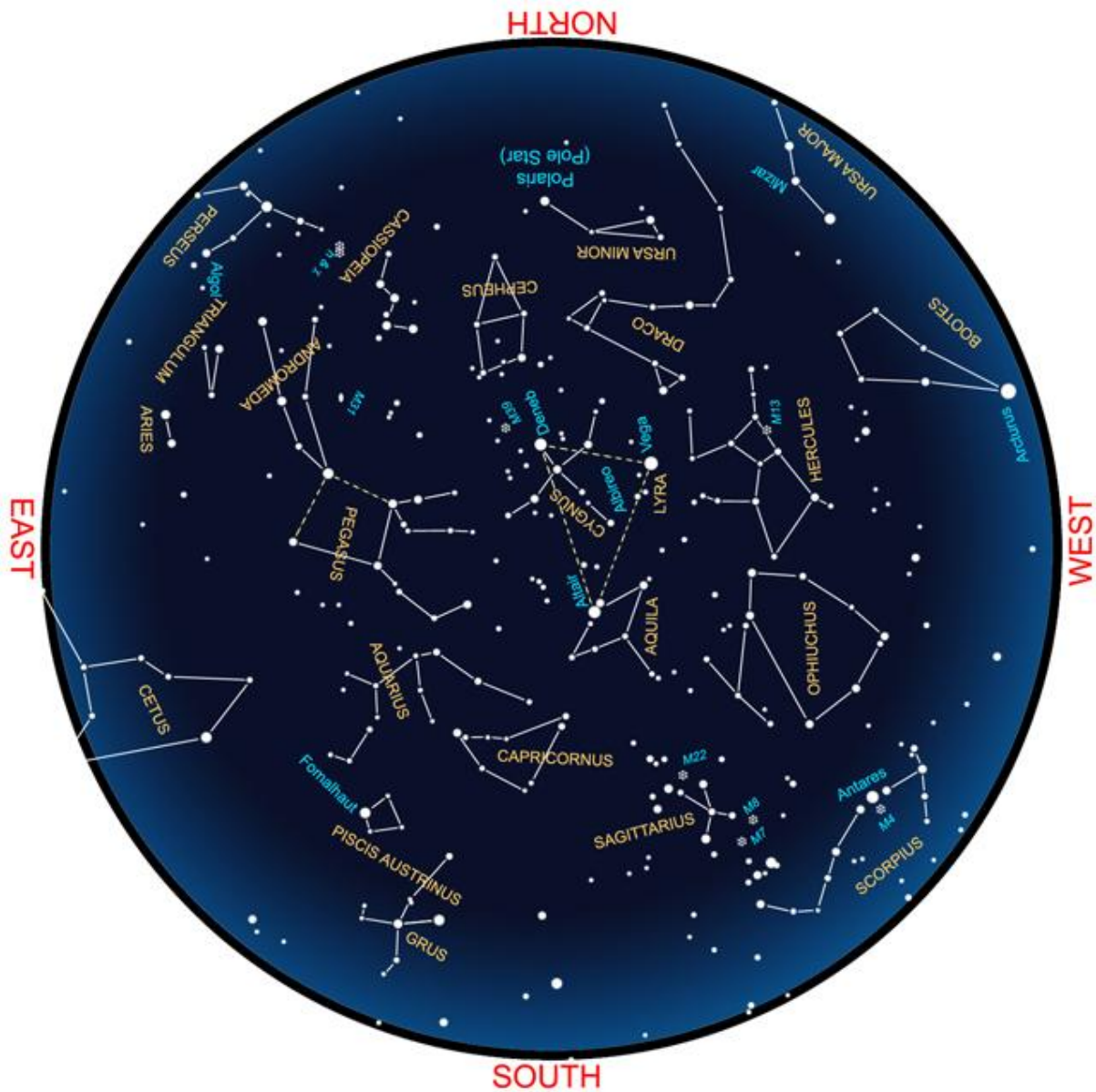
Interestingly, on the equator the daylight hours are always longer than the night-time hours by about 14 minutes throughout the year.

Despite all this, there are days when the daytime hours equal the night-time hours. Such days are different for different latitudes.

The table below gives the sunrise and sunset timings for some locations in India. It also gives the time difference between daylight and night-time hours. The time difference in green font indicates equal day and night hours, and red font indicates that the night hours are longer than day hours.

Location	Date	Sunrise	Sunset	Difference
Kanyakumari	7 Oct	06:07:48	18:08:14	12:00:26
	8 Oct	06:07:44	18:07:44	12:00:00
	9 Oct	06:07:40	18:07:14	11:59:34
Chennai	2 Oct	05:58:06	17:58:18	12:00:12
	3 Oct	05:58:08	17:57:37	11:59:29
Location	Date	Sunrise	Sunset	Difference
Mumbai	29 Sep	06:28:42	18:29:10	12:00:28
	30 Sep	06:28:54	18:28:18	11:59:24
Kolkata	28 Sep	05:26:57	17:27:34	12:00:37
	29 Sep	05:27:15	17:26:35	11:59:20
Delhi	27 Sep	06:11:43	18:12:24	12:00:41
	28 Sep	06:12:13	18:11:13	11:59:00

This sky map for September is drawn for mid-northern latitudes, to be used around 9:30 p.m. local time



Acknowledgements:

<http://www.lunar-occultations.com/iota/occult4.htm>

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<https://eclipse.gsfc.nasa.gov/SKYCAL/SKYCAL.html> by Fred Espenak and Sumit Dutta.

Graphics using GNU Image Manipulation Program (GIMP) a cross-platform image editor,

<https://www.gimp.org/>

For star maps of other months please visit <http://astron-soc.in/outreach/resources/sky-maps/>

For notes on stargazing [click here](#).

Or visit <https://skytonight.wordpress.com/monthly-sky-notes-and-links/>

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