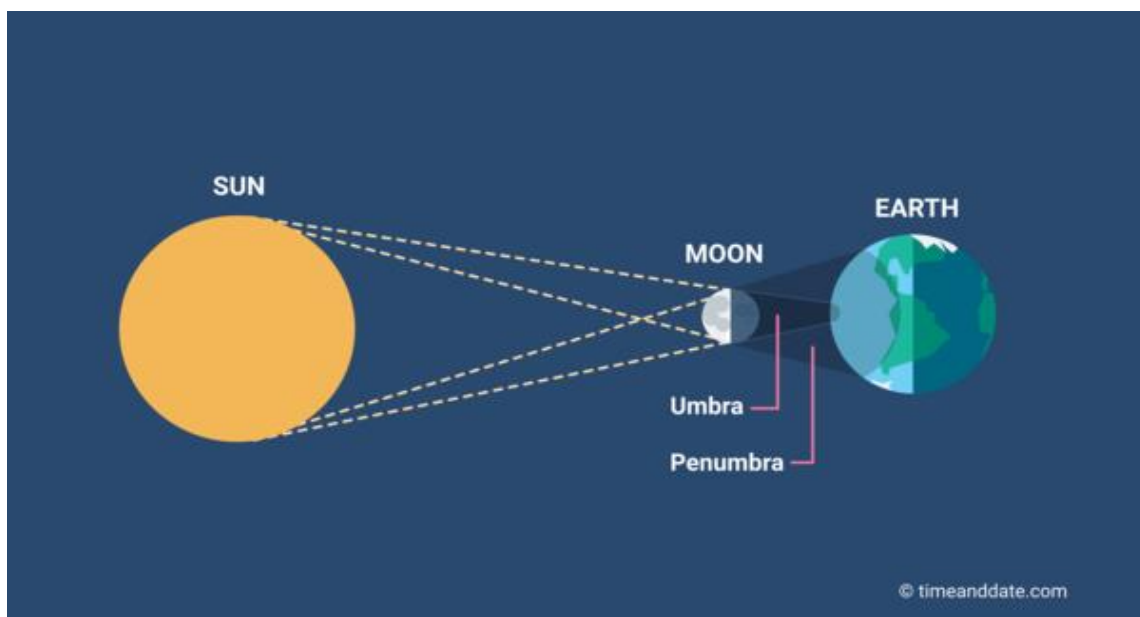


# SOLAR & LUNAR ECLIPSE

An eclipse happens when a planet or a moon gets in the way of the Sun's light. Here on Earth, we can experience two kinds of eclipses: solar eclipses and lunar eclipses.

## **SOLAR ECLIPSE**

A solar eclipse happens when the Moon gets in the way of the Sun's light and casts its shadow on Earth. That means during the day, the Moon moves over the Sun and it gets dark. Isn't it strange that it gets dark in the middle of the day? This total eclipse happens about every year and a half somewhere on Earth. A partial eclipse, when the Moon doesn't completely cover the Sun, happens at least twice a year somewhere on Earth. But not everyone experiences every solar eclipse. Getting a chance to see a total solar eclipse is rare. The Moon's shadow on Earth isn't very big, so only a small portion of places on Earth will see it. You have to be on the sunny side of the planet when it happens. You also have to be in the path of the Moon's shadow. On average, the same spot on the Earth only gets to see a solar eclipse for a few minutes about every 375 years.



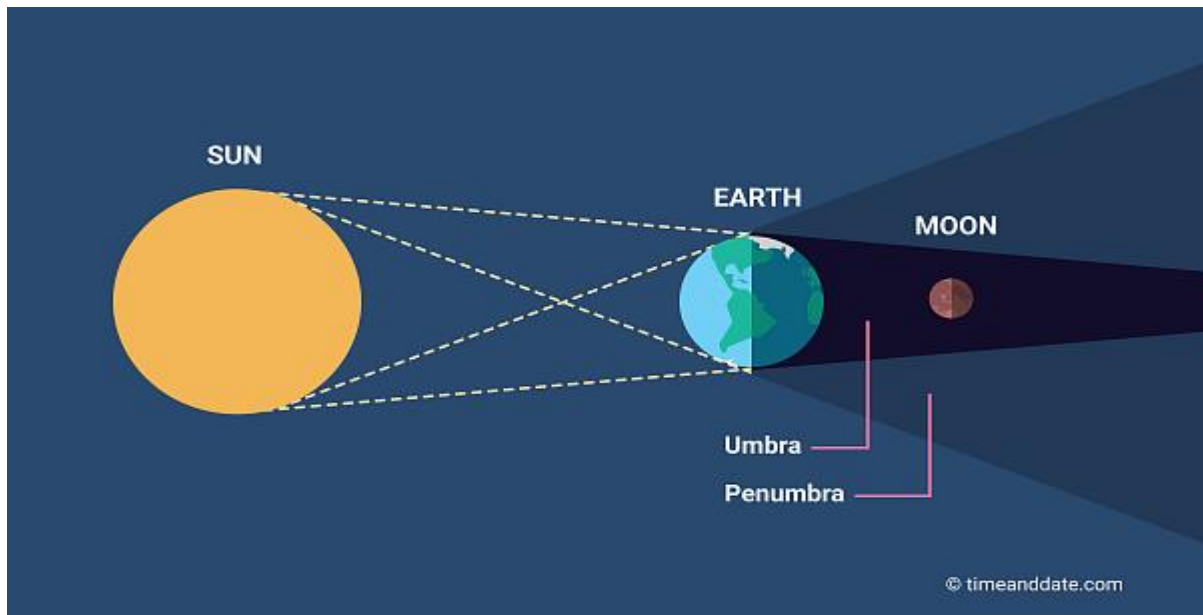
Also known as the eclipse of the sun, it occurs when the moon comes in between the sun and the earth. As a result, the moon blocks the light of the sun from reaching the earth's surface and casts a shadow on it. This occurs in a new moon phase. We can observe up to 5 solar eclipses per year.

There are four types of solar eclipses:

- A total eclipse occurs when the dark silhouette of the Moon completely obscures the intensely bright light of the Sun, allowing the much fainter solar corona to be visible. During any one eclipse, totality occurs at best only in a narrow track on the surface of Earth. This narrow track is called the path of totality.
- An annular eclipse occurs when the Sun and Moon are exactly in line with the Earth, but the apparent size of the Moon is smaller than that of the Sun. Hence the Sun appears as a very bright ring, or annulus, surrounding the dark disk of the Moon.
- A hybrid eclipse (also called annular/total eclipse) shifts between a total and annular eclipse. At certain points on the surface of Earth, it appears as a total eclipse, whereas at other points it appears as annular. Hybrid eclipses are comparatively rare.
- A partial eclipse occurs when the Sun and Moon are not exactly in line with the Earth and the Moon only partially obscures the Sun. This phenomenon can usually be seen from a large part of the Earth outside of the track of an annular or total eclipse. However, some eclipses can be seen only as a partial eclipse, because the umbra passes above the Earth's polar regions and never intersects the Earth's surface

## **LUNAR ECLIPSE**

During a lunar eclipse, Earth gets in the way of the Sun's light hitting the Moon. That means that during the night, a full moon fades away as Earth's shadow covers it up. The Moon can also look reddish because Earth's atmosphere absorbs the other colours while it bends some sunlight toward the Moon. Sunlight bending through the atmosphere and absorbing other colours is also why sunsets are orange and red. During a total lunar eclipse, the Moon is shining from all the sunrises and sunsets occurring on Earth.



Also known as the eclipse of the moon, it occurs when the earth comes in between the sun and the moon. As a result, the earth blocks the light of the sun from reaching the moon's surface and casts its shadow on the moon. It occurs on a full moon day. We can observe up to 3 lunar eclipses per year.

## LUNAR VERSUS SOLAR ECLIPSE

There is often confusion between a solar eclipse and a lunar eclipse. While both involve interactions between the Sun, Earth, and the Moon, they are very different in their interactions.

The Moon does not completely darken as it passes through the umbra because of the refraction of sunlight by Earth's atmosphere into the shadow cone; if Earth had no atmosphere, the Moon would be completely dark during the eclipse. The reddish coloration arises because sunlight reaching the Moon must pass through a long and dense layer of Earth's atmosphere, where it is scattered. Shorter wavelengths are more likely to be scattered by the air molecules and small particles; thus, the longer wavelengths predominate by the time the light rays have penetrated the atmosphere. Human vision perceives this resulting light as red. This is the same effect that causes sunsets and sunrises to turn the sky a reddish colour. An alternative way of conceiving this scenario is to realize that, as viewed from the Moon, the Sun would appear to be setting (or rising) behind Earth.

The amount of refracted light depends on the amount of dust or clouds in the atmosphere; this also controls how much light is scattered. In general, the dustier the atmosphere, the more that other wavelengths of light will be removed (compared to red light), leaving the resulting light a deeper red colour. This causes the resulting coppery-red hue of the Moon to vary from one eclipse

to the next. Volcanoes are notable for expelling large quantities of dust into the atmosphere, and a large eruption shortly before an eclipse can have a large effect on the resulting colour.

<b>Solar Eclipse</b>	<b>Lunar Eclipse</b>
Solar eclipse is the one in which the moon is in between the earth and the sun.	Lunar eclipse is the one in which the earth is in between the sun and the moon.
It occurs once in 18 months.	It occurs twice a year.
It lasts for about 5-7 minutes.	It lasts for an hour.
It is witnessed in a few places.	It is witnessed in many places.
It occurs during day time.	It occurs during night time.
The solar eclipse happens in the new moon phase.	When the moon is in its full moon phase, a lunar eclipse happens.
If you look directly, then there are high chances of losing vision as it damages the retina.	Witnessing a lunar eclipse with bare eyes is harmless as it does not cause any damage to the eyes.