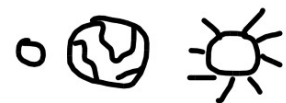


How Does the Moon Affect the Earth?

As the Moon and the Earth move in space, they sometimes block each other from the sun's light. When this happens, we see an eclipse.

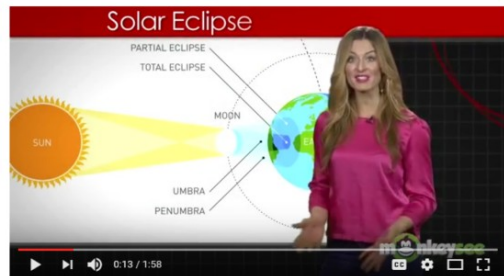
Lunar Eclipse - the Earth blocks the sun's light from reaching the Moon.



total lunar eclipse

Solar Eclipse

Solar Eclipse - the Moon blocks the sun's light from reaching the Earth.



Solar eclipse



Full Solar Eclipse - April 8, 2024

Both solar and lunar eclipses are alike in that one body blocks the sun's light from reaching another body. The shadow of the moon on the Earth in a solar eclipse is very small and only covers a small portion of the Earth, while the shadow of the Earth on the moon in a Lunar eclipse easily covers the whole face of the moon.


Feb. 10, 2017 Lunar Eclipse Pictures

To see a solar eclipse, you have to be on the daylight-facing side of Earth. To see a Lunar Eclipse you can be anywhere on the night-facing side of Earth.

The moon travels around the Earth every 29.5 days BUT we do not have a solar eclipse every month because the plane that the Moon orbits around the Earth is a little tilted, so that the moon is not always perfectly in line with the sun and the Earth. Because of this tilt, the solar eclipses are very rare.

How does the Moon Move?

The Moon is the largest and brightest object in the night sky. The Moon does not give off its own light, it reflects the sun's light.

To us the Moon appears to change shape over the course of several nights. We call these different shapes the phases of the moon.(Look at Page 24 Exploration) 

The Moon, like the Earth, has two kinds of motion.

- 1) revolves around the Earth in an orbit
- 2) rotates on its axis.

(It takes the Moon 29.5 Days to make a complete rotation around the Earth). It takes the Moon the same amount of time to make one rotation on its axis.

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The phase of the moon is how much of the moon appears to us on Earth to be lit up by the sun. Half of the moon is always lit up by the sun, except during an eclipse, but we only see a portion that's lit up. This is the phase of the moon.

Around once per month, **every 29.53 days to be exact, the moon orbits around the Earth**. As the moon circles the Earth, we can only see a portion of the lit up side. When we can see 100% of the lit up side, this is a full moon. When we can't see any of the lit up side, this is called a dark moon or new moon.

What are the different phases of the moon?

As the moon orbits or circles the Earth, the phase changes. We'll start with what is called the New Moon phase. This is where we can't see any of the lit up side of the moon. The moon is between us and the sun (see the picture). As the moon orbits the Earth we can see more and more of the lit up side until finally the moon is on the opposite side of the Earth from the sun and we get a full moon. As the moon continues to orbit the Earth we now see less and less of the lit up side.

Waxing - is when the new moon begins and we see more and more of the moon.

Waning - starts after full moon and we see less and less of the moon.

The phases of the moon starting with the New Moon

- > New Moon → don't see moon
- > Waxing Crescent
- > First Quarter
- > Waxing Gibbous
- > Full
- > Waning Gibbous
- > Third Quarter
- > Waning Crescent
- > Dark Moon



[Moon Phases: Waxing, Waning and Lunar Cycle - Video & Lesson Transcript | Study.com](#)

Waxing or Waning?

As the New moon begins its orbit and we see more and more of the moon, this is called Waxing.

After the moon gets to its Full phase, we start to see less and less of the moon. This is called Waning.

Tides

The Moon is the main cause of our tides

Tides and the Moon

While the Sun and the rotation of the Earth both have some tidal impact, the location of the Moon has the biggest affect on the tide. The gravity of the Moon causes a high tide both on the side of the Earth directly below the Moon (sublunar tide) and the opposite side of the Earth (antipodal). Low tides are on the sides of the Earth 90 degrees away from the Moon. See the picture below.

