

Phases of the Moon

Phases of the Moon are not caused by the Earth's shadow. They are due to a change in our viewing perspective as the Moon orbits around us as it is lit by the Sun. We are looking down at the Earth, Moon, and Sun in the diagram below. The Sun lights up half of the Earth and Moon, drawn here as the white side, just the same way a flashlight lights up one half of a ball. The Earth spins in the light, so that the entire Earth gets to be lit at some point each day. Even though the Moon is always half-lit like the Earth is, sometimes we on the Earth see only a tiny bit lit, other times completely lit, depending on where the Moon is in its orbit around the Earth.

The Moon's orbit is a little bit tilted, so sunlight shining around the Earth reaches the Moon when the Moon's tilt puts it above or below the plane of the Earth's orbit. Otherwise, the Moon would be eclipsed every month when it moved into the Earth's shadow! You can demonstrate phases by turning a ball around in a circle above your head as you stand in the beam of an overhead projector.

A question to think about is can you see the Moon in the daytime? Look at Day 7. What time of day is it for our little guy? Is he in light? Could he see the Moon in the light? Where would the Moon be in the sky?

