

Lesson 4. The Science of Moon Phases

The light we typically know as Moonlight, does not actually come from the Moon itself. The Sun is the only object in our solar system that shines with its own light. The Moonlight we see, is actually the light beaming from the sun and reflecting off of the surface of the Moon. This process is similar to how we experience night and day on Earth. As the Earth rotates, one side is facing the Sun and is experiencing day, the side that is experiencing night. When Earth makes one full rotation, one day has gone by. When Earth has made one complete trip around the sun, a year has passed. Similar to the Earth, the Moon is also in motion and experiences its own day and night. How much of the Moon we are able to see from Earth, will change as the Moon travels through its orbit. It will take about one month for the Moon to orbit the Earth.

Moon Phase Simulation

This activity will help you to see the process of how the phases of the Moon change

Materials

Styrofoam ball
Chopstick or Skewer
Lamp (No shade)
Dark Room

Procedure

1. Place the Styrofoam ball on the chopstick or skewer so it looks like a lollipop.
2. Place the lamp in the middle of the room
3. Turn off the lights and cover up any windows.
 - a. The only light in the room should be coming from the lamp.

The light bulb - the Sun.

Your head - the Earth.

Your nose - your current location.

Your left ear/shoulder - East

Your right ear/shoulder - West

The Styrofoam ball - Moon

Discussion Questions

Discuss the questions on the next page with people around you and write down your thoughts as you go through the simulation. You may move around and use the materials given, but you may not touch the lamp, turn on the lights, or interfere with others. Support any claims with information from the passage or experiences from the simulation.

What would one day on Earth look like?

What would one year on Earth look like?

If facing the Sun with the Moon in front of you is noon (12:00 PM), which phase of the Moon do you see?

Position yourself at midnight (12:00 AM) and hold your Moon up so it catches the light. Which phase of the Moon do you see?



Mahope O Ke Kula Ke A'o Mau Ana Program

Return to the noon position and move the Moon slightly to the left and then right, which Moon phases do you see?

Experiment with other motions and describe the different Moon phases you observed. Keep in mind that as you move your Moon, the Earth (your head) would also be rotating. Also, the Earth rotates twenty-nine times in the amount of time it takes the Moon to make one full rotation.