

Name: _____

Section: _____

Modeling the Phases of the Moon

Directions: For this activity you will use a model of the Earth, Moon, and Sun system to help you create images of the moon's phases.

Model Key

Sun → the lamp/light

Earth → your head

(Hometown → your nose)

Moon → the Styrofoam ball

Preliminary Procedures & Questions:

1. Stand in front of the Sun (the light) and have the Earth (your head) rotate properly. What direction did you rotate your head? _____
2. Place your hands on the side of your head, with your palms facing forward. This should look like you have given yourself large ears. Now completely rotate the Earth (your head) relative to the Sun (the light). What did you just model? _____
3. Stand in front of the Sun (the light) so that it is noon in your hometown. What part of the Earth (your head) would be facing the Sun? _____

4. Stand in front of the Sun (the light) so that it is midnight in your hometown. What part of the Earth (your head) would be facing the Sun? _____

5. Stand in front of the Sun (the light) so that it is sunrise. What part of the Earth (your head) would be facing the Sun? _____

6. Stand in front of the Sun (the light) so that it is sunset. What part of the Earth (your head) would be facing the Sun? _____

Procedures:

1. Obtain a Styrofoam ball.

2. Hold the moon model at arms length and experiment with how the Sun's light reflects off the moon as you place it in different positions around the Earth (your head).

3. Complete the visual on the attached sheet by shading in the moons to represent the appropriate phases relative to Earth (your head) and the Sun (the light). Additionally, try to name the phase of the moon. Please be sure to shade the darkened parts of the moon and not the parts that are reflecting the Sun's (the light's) light.

Questions:

1. What causes the phases of the moon?
2. In which direction does the real moon travel around the Earth to create the phases in the correct order?
3. In which direction must you turn to **accurately** create a waxing moon? A waning moon?
4. How could you simulate an eclipse in this modeling activity? Why do we not experience two eclipses a month?
5. Consider this model and describe how it is a somewhat misleading (or inaccurate), particularly as it shows the rotation of Earth during one lunar cycle.
6. Working with your classmates, try to model and explain why the moon can be seen during the daytime as well as during the nighttime during a lunar cycle.

