Demonstrating Moon Phases

Name: _____

Adapted from The Universe at Your Fingertips p.82

You have a light to act as the Sun and a Styrofoam ball with a chopstick to act as the Moon.

1. **Stand facing the Sun. What time of day does this represent?**
   _____

2. **How can you tell? Discuss with your group, explain how you know what time it is.**

3. **What direction are you facing? Again, discuss before answering.**

4. **Which directions are to your left and to your right? How do you know?**

5. **Now turn so the Sun sets in the correct part of the sky. In which direction did you have to turn (left to right or right to left)?**

Motion and Phase of the Moon

Draw a picture below showing how you and your partners will set yourselves up to create and Earth-Moon-Sun system that allows one of you at a time to see the phases of the Moon.

6. **The Sun shines on the Moon and lights up what percent of its**

surface?

7. Now have the Moon rotate halfway around the Earth. Based on the new location, is more, less, or the same amount of the Moon covered with light?

8. Now move the Moon to be directly in between the Earth and the Sun. From the perspective of the Earth, do you see any of the light that is falling on the Moon?

9. Move the Moon slowly to the left of the Earth (counterclockwise). What do you see on Earth?

10. How far must the Moon be moved before half of the lighted side is visible?

11. How long before all of the lighted side is visible? Where is the Moon in relation to the Sun and Earth?

12. Take a moment to rotate the Moon around the Earth and think through what time it must be on Earth during each phase, and where the Moon would be located in the Earth sky. Describe where and when you are looking at the Moon during these phases. (example: looking east a few hours past sunrise)

    a. a crescent?

    b. first quarter?

    c. full moon?

    d. third quarter?

e. new moon?

13. What phase will the moon be in this weekend?

14. What phase will it be one week later?

15. When will you look for it next week? Where will you look, what part of the sky?

16. Why do we have lunar and solar eclipses? What are the locations of the 3 bodies during these events?

17. Why aren't there eclipses every month?

18. Write a short note explaining something about the moon's motion, phases, eclipses or anything else to someone you know – a sibling, cousin, grandparent, friend, etc.