

# *Solar System Activity Bag*

## **Phases of the Moon: Student Activity Guide**

Have you ever noticed how the moon looks from night to night? Is it the same or different? If it's different, how is it different? This activity will explore the moon and the reasons it looks different.

These directions will get you started. Your teacher will be in contact to guide you and provide information.

### **Materials From The Bag**

- 1 Foam Ball, 3" (Will also be used in the Eclipse activity.)
- 1 Moon Log

### **You Will Supply These Materials**

- Pencil
- A darkened room with a lamp with the shade removed.

### **Part 1: Moon Log**

During this part of the activity, you will observe and record the moon's appearance for a month.

1. Take the Moon Log recording sheet from the bag.
2. On your Moon Log recording sheet, observe and sketch what the moon looks like every day. Use the example in the top right corner. After sketching, record the date and time. Include a.m. or p.m. because sometimes the moon is visible only during the day.

A few tips:

- Start with a full moon if possible. A full moon rises at sunset and is easy to see.
- Sketch the moon whenever you can find it in the sky. Some days, the moon is up during the day.
- If you can't see the moon because of the clouds. It's ok to miss those days but observe as many days as you can. You will need the log to be as complete as possible.
- Make a month of sketches in the log before going on to Part 2.

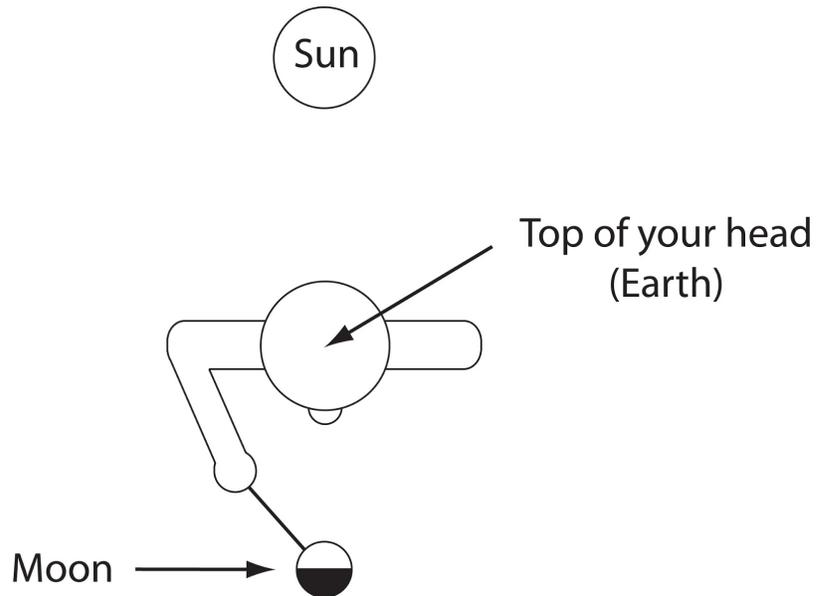
### **Part 2: Phases of the Moon**

This part of the activity helps to understand the moon's changing shape. It uses a lamp as the sun, your head as the Earth, and a foam ball as the moon.

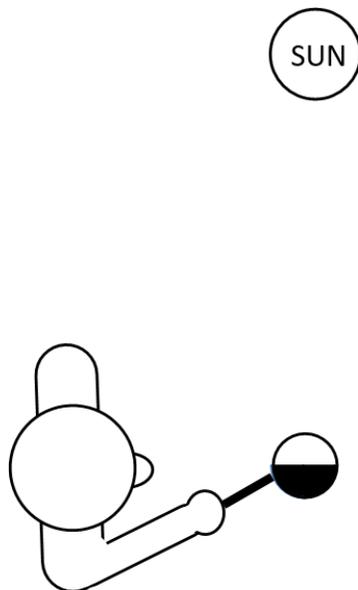
1. Take the foam ball from the bag and get a sharpened pencil.
2. Hold the ball on a table and press the pencil point into it. The ball should be firmly on the end of the pencil. From now on, that ball is your moon.
3. Check with an adult to find a table lamp or floor lamp with a removable shade. Remove the shade so that the light bulb is bare.
4. Turn on the lamp and put it in the center of a room and darken the room. If it's a floor lamp about as tall as you, that's fine. If it's a table lamp, be sure it's up on a table. The light should be about the same height as your eyes. If you do this during the day, block light coming in the windows. If it's night, turn out all lights except the bare bulb. That bulb is your sun.
5. Your head is the Earth.
6. As we go through these phases of the moon, remember that the only time we can see the moon is when it reflects the sun's light.

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7. Stand about 10 feet away from the sun and turn your back to it. Raise the moon in front of you and above your head until the moon is fully lit. What do you see? This is a full moon.

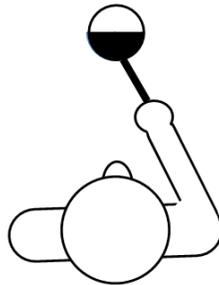


8. Stay in place and rotate a quarter turn to the left so that the sun is on your left. This would be another week of the moon moving around the earth. What do you see? This half moon is lit only on the left-hand side. It is the third quarter moon.

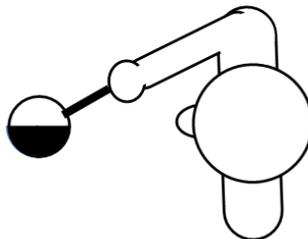


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9. Stay in place and rotate another quarter turn to your left to face the sun. Hold the moon toward the sun so that you can still see the sun. Again, the moon would have moved for about a week around the Earth. What does the moon look like now? This is a new moon. Outside in the sky, the new moon is the only time you can't see the moon even when it's up in the sky. Why do you think that is?



10. Stay in place and rotate a quarter turn to your left so that the sun is directly to your right. The moon would have moved in a circle around the earth for about a week to reach this position. What do you see? This half moon is lit only on the right-hand side. It is called the first quarter moon.



*Get your completed moon log and label the full moon, first quarter, third quarter, and the new moon on the log.*

### *What's happening...*

The only time we can see the moon is when it reflects the sun's light. A full moon is when 100% of light is being reflected and a new moon is when no light is reflected. For all of the other phases, a portion of the light is reflected.

**Save the foam ball for the Eclipse activity.**