



Phases of the Moon

Be a selenologist today! This activity is all about learning why we see the moon the way we do, and then you can spend some time observing the moon each night.

Why are we doing this activity?

Look up into the night sky! Think about what you see on a clear night. You might see stars, planets, and the moon. Some nights, the moon is bright and full. Other nights, you only see part of the moon. As you watch the moon each night, you'll see it look successively different each night. These are the phases of the moon.

As the Earth orbits around the Sun, the moon also orbits around the Earth. The moon is lit up by the Sun, and where it is in space, compared to where the Earth is, means we see different shapes of the moon on different nights. The moon travels around the Earth in about 28 days, so within a month we see all the phases of the moon.

When you try this activity, your lamp is the sun, the ball is the moon, and you get to be the Earth! As the Earth, you'll have the same perspective as a person standing on Earth watching the moon, but you'll also easily see how the moon is lit up by the sun throughout its orbit around the Earth.

Supplies Needed

- Lamp
- White foam ball, OR other light-colored ball
- Sharp pencil to poke into the foam ball, OR can, vase, something the ball can balance on
- Pencil, paper, & clipboard or similar



Moon phase cycle, from 1 day to 28 days old (totally dark)



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What to do

1. Bring all of your supplies to a room that be can darkened. Place the lamp at eye level and remove the lampshade (if it has one), then turn it on. Other lights in the room should be turned off. The lamp is your sun.
2. Take your foam ball, and poke the pencil into the bottom of it. If you're using a different ball, balance it on top of the can or similar item that you can hold comfortably. The ball is now your moon, and the pencil or can is for you to be able to hold up the moon.
3. Now, stand facing the light. Hold the moon at arm's length in front of you.
4. Take a moment to look closely at your moon. How much light from the sun is shining on the side of the moon that you can see? Then start rotating slowly to your left. Stop when you have made one quarter turn, and look closely at your moon again to see how much light is shining on the side of the moon you are facing. Continue rotating, stopping again when you are halfway (be careful your shadow doesn't fall on the moon), and then three-quarters of the way, through one full circle.
5. Now draw what you observed, repeating the activity as needed. These are four of the eight main moon phases, the new moon, first quarter moon, full moon, and third quarter moon.
6. After you've completed this activity, start watching the moon. Go outside each night and draw the moon you see. Be sure to label your drawing with the date, and see how the moon changes over a whole month!

Want to go further?

- Repeat the activity, stopping at eight equal intervals in your rotation. Identify and label all eight of the the moon phases on your drawing - look in a book or online (NASA or Wikipedia would be good sources).
- Learn more about the night sky and outer space at the NASA website.
- The moon has inspired a lot of poetry, music, and art. How does it inspire your creative side?