

CURIOSITY AT HOME

GOING THROUGH A PHASE



A cycle is a repeating pattern. The movement of the Moon, Earth, and Sun cause a cycle of Moon phases. Create a model of how the phases of the Moon, or a cycle, are created using objects and your own eyes to represent the Moon, the Sun, and the Earth.

MATERIALS

- A lamp (without a lamp shade) or other single source of light.
- Ball that you can balance in the palm of your hand (about 5" in diameter)
- Paper or a science notebook
- Pen or pencil

PROCEDURE

- Turn on the lamp or light source.
- Turn off all other lights in the room.
- Stand facing the lamp or light source.
- With one arm outstretched and your palm flat, place the ball on the palm of your hand.
- Carefully observe where the light is hitting the ball. Where on the ball is the light not able to shine?
- Keeping your arm extended, slowly turn counterclockwise. Pay close attention to the light and shadows on the ball.
- Pause and make note of the light after turning 45°, 90°, 135°, 180°, 225°, and 270°. You will have to raise your arm slightly above your head as you turn.
- As you finishing turning around completely, does the light hitting on the ball look the same or different from when you started?



Experiment continued on next page...



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K-2 GRADE EXPLORATION

Here are some questions you can explore together.

- Before doing the activity, draw the different shapes you have seen when you have looked up at the moon.
- Do you see the shapes you drew in the shadows as the light moved across the ball?
- Do you see light and shadow shapes on the ball that you didn't draw earlier?
- If so, draw them now.
- If the ball is the moon, and you are the Earth, what is the lamp or light source?
- Where do you think the light that makes the moon shine come from?



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TRY THIS

Find two people to help you. One person will represent the Sun, one person will represent the Earth, and one person will represent the Moon.

- Both the Moon and the Earth **rotate**. To practice rotating, pick an object to look at. Spin around in place until you can see that object again. You have now rotated once.
 - The Earth rotates once every 24 hours. The person representing the Earth should stand facing the person representing the Sun. The Earth will slowly turn clockwise until they are looking towards the Sun again. How many days did you just represent?
 - The Moon rotates once about every 27 days. The individual that represents the Moon will rotate much slower than the individual representing the Earth will. The Moon should stand facing the Moon. Rotate by turning counterclockwise one full time until you are facing the Earth again. By the time you have spun around completely, almost a month has passed.
- Both the Moon and the Earth **revolve**. To practice revolution, you would walk in a circle around the Sun (if you are the Earth) or the Earth (if you are the Moon) one complete time.
 - The Earth revolves or makes one full circle around the Sun about every 365 days. The individual representing the Earth should stand in front of the person representing the Sun. To revolve around the Sun once, the Earth should move around the Sun counterclockwise until the Earth is once again standing in stand in front of the Sun. This revolution of the Earth is about one year. (Imagine spinning 365 times before you are able to complete the circle around the Sun.
 - The Moon revolves or makes one full circle around the Earth about every 27 days. The individual representing the Moon should stand directly in front of the person who represents the Earth. To revolve around the Earth once, the Moon should move around the Earth counterclockwise until the Moon is once again standing in front of the Earth. This revolution of the Moon is about 27 days. Imagine spinning 27 times before you are able to complete the circle around the Earth.
 - The Moon takes about 27 days to both rotate and revolve. Try to simulate this, but spinning slowly as you move in a circle around the Earth. You should have spun a quarter of the way around for each quarter of the circle you move around the Earth. Have the Earth pay attention to the position of the Moon. Does the Earth ever see a different part of the Moon?



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