

Start with a Book: Space Rangers

Phases of the Moon



Introduction

When we look at the Moon over the course of many days, it seems to change its shape — from a full circle to a half-circle to a crescent shape and then gradually back to a full circle again.

The Moon isn't really changing shape — it just appears that way from Earth. Here's why: It takes about four weeks for the Moon to orbit once around the Earth. During this time, the Moon's position in relationship to the Earth and the Sun is constantly changing. As the Moon orbits around the Earth, the part of the Moon that faces the Sun will be lit up. We call the different shapes that are lit up during orbit the "phases of the Moon."

What we sometimes call "moonlight" is really sunlight reflecting off the Moon's surface. The Moon itself puts out no light at all!

Get kids thinking

Invite the kids to describe what the Moon looks like to them and how it changes.

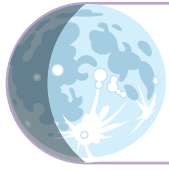
It takes 27 days for the Moon to revolve around the Earth. Talk about how the Moon's phases are an example in nature of a recurring and predictable cycle.

ASK KIDS: What is the lunar calendar? The lunar calendar is based on the monthly phases of the Moon. Lunar calendars are still used by many cultures for religious festivals and holidays. Examples include Ramadan, Easter, and Chinese New Year.

Show kids the composite photograph of the 8 phases of the Moon (see the next page). Talk about the position of the Earth in relationship to the Moon and why we always see the same side of the Moon (and never the far side).

WATCH: An animation of the phases of the Moon from NASA's Jet Propulsion Lab:
jpl.nasa.gov/edu/teach/activity/moon-phases/

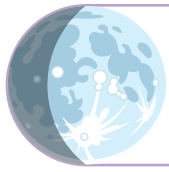




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Ask questions about Moon phases. What makes the Moon shine? How light or dark is it on a full Moon night versus a new Moon/no Moon night? Do you know any stories about the Moon?

Kids can try one or both of these activities to learn about the phases of the Moon.

Supplies

- Lamp (at least 100 watts) with the lampshade removed
- Ball (a basketball works well) or white Styrofoam® ball on a stick or pencil

This activity needs a darkened room.

Let's get started!

Try this whole-group demonstration to see the phases of the Moon in action! Before trying this with the kids, watch this video:

[youtube.com/watch?v=wz01pTvuMa0](https://www.youtube.com/watch?v=wz01pTvuMa0)

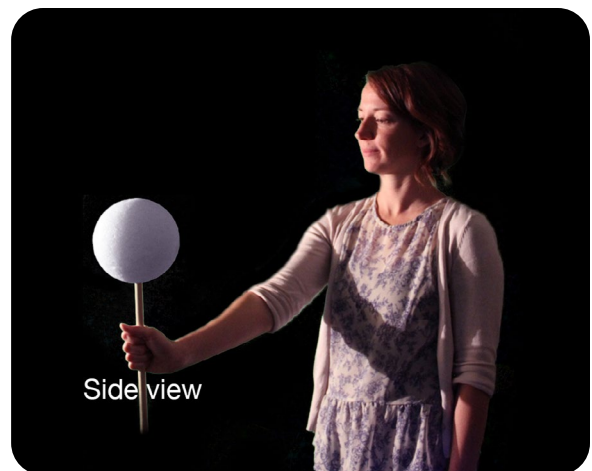
Place the lamp in the center of the room. The lamp is the Sun. Have one of the kids hold the ball in her hand. The ball is the "Moon" and her head is the Earth. Darken the room except for the lamp.

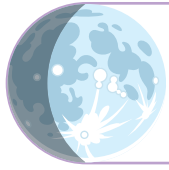
Have the child with the ball (the "Moon") stand several feet away from the lamp. Ask her to hold the ball straight out in front of her and face the lamp.

The ball will appear dark because the lighted side of the ball is facing away from her. This position represents the New Moon.

The other kids will need to stand right behind her and move with her to see the phases.

Holding the Moon straight in front of her, tell the child to turn her body a little bit to the left. Everyone will see a small crescent of light on the right side of the ball. This is called the New (Waxing) Crescent.





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Now have the child turn to the left a little more until the ball is half lit up. This is called the First Quarter Moon, since the Moon has traveled one-quarter of the way around the Earth.

Have the child continue turning around the circle until she is halfway around with her back to the lamp. At this point, the whole ball is lit — that's a Full Moon. If the child's head is in the way, she's created a lunar eclipse — just have her raise the ball up a bit to see the Full Moon.

Tell the child to continue slowly around the circle until she returns to where she started, while you name the other Moon phases as they appear.

You can then give other kids a chance to be the Moon and rotate through all the phases.

