



# LESSON PLAN

## THE MOON AND ITS PHASES GRADES 3-5

### SUMMARY

Learn characteristics of the moon such as relative size and surface features. Then demonstrate how the moon's phases are a result of its orbit around the Earth.



#### Disciplinary Core Ideas

##### ESS1.B: Earth and the Solar System

The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the sun, moon, and stars at different times of the day, month, and year.

Some objects in the solar system can be seen with the naked eye. Planets in the night sky change positions and are not always visible from Earth as they orbit the sun. Stars appear in patterns called constellations, which can be used for navigation and appear to move together across the sky because of Earth's rotation.

#### Connections to Classroom Activity

- Manipulate model of the moon, sun, earth spatial relationships to determine how patterns of rotation cause phases of the moon to be seen on Earth.
- Record diagrams of the pattern of the moon's phases in science notebooks.
- Discuss observations of the relative sizes of the moon and sun to identify misconceptions.
- Extend learning to other planets and their moons through the *GENERATION GENIUS THE MOON AND ITS PHASES* video and class research.

### DURATION

One 50-minute class period.

## PRE-ASSESSMENT QUESTIONS

Please see Discussion Questions located under the video. These can be discussed as a group or answered individually in student science notebooks.

## MATERIALS

- Science notebooks (1 per student)
- Pencils

### DIY Activity

- A light that can stand or clamp on a table
- A pencil
- A foam ball, white, 2-1/2" or 3"
- A camera or phone with camera



## ENGAGE

Ask students if they have seen the moon recently. If they have, ask: What shape was it? Was it completely round? (Answers will vary.) Does anyone remember seeing the moon having different shapes? If so, describe some of those shapes. (Answers may be: crescent, half, partly full.) Ask the students to think why the moon would appear to us as having different shapes, then turn and share their ideas with a partner. Ask several students to share their thoughts.

Explain that those different shapes are called the phases of the moon, and that the moon appears in a consistent pattern of changing phases that takes about a month to complete. Explain that the class will learn about the moon and discover why the moon appears in phases in the activity they are about to do.



## EXPLORE



### WATCH THE *GENERATION GENIUS THE MOON AND ITS PHASES* VIDEO AS A GROUP

Stop at points in the video and discuss the facts about the moon. When the video gets to the DIY Activity, alert students to pay attention to how Zoe conducts her investigation because they will be doing it also. After Zoe shows her investigation, check for understanding and introduce the DIY Moon Model Activity. Divide students into groups of 2-4. Distribute activity materials.

See the DIY Moon Model Activity for further directions.



## EXPLAIN

Now that students have created their own phases of the moon diagrams in their science notebooks, return to the *GENERATION GENIUS THE MOON AND ITS PHASES* video and watch it through the moon phase segment. Have students check in their teams if they conducted the activity correctly and if their diagrams show the same information. Have them label their diagrams with the correct moon phase name. Ask students to talk with their partner and explain why the moon has phases by describing the relationships of the moon, sun and earth. Finish watching the *GENERATION GENIUS THE MOON AND ITS PHASES* video. Use the Discussion Questions to review information learned in the video.



## ELABORATE

The *GENERATION GENIUS MOON AND ITS PHASES* video explained a number of interesting facts about Earth's moon, other moons in our solar system, and about the United States' missions to the moon. Ask students to choose one or more of their areas of interest to research and create a presentation to inform the class of what they discover. Students can work in teams.



## EVALUATE

Have students draw a diagram of the relative positions of the Earth, sun, and moon, placing the Earth and moon in the correct position to the sun to show each specific phases of the moon. Optional: use colored pencils, or paper cut-outs, for the diagram.



## EXTENSIONS

- Recreate other activities from the *GENERATION GENIUS THE MOON AND ITS PHASES* video, such as the relative size demonstrations with the toy car and basketball/ping pong ball, and the moon crater demonstration.
- Contact a local astronomy club to visit with the class.
- Create a class calendar of the moon's phases through observation over a month.