

# TRB 6:1 - Activity 2 - Phases of the Moon

## Summary

At the conclusion of two weeks of observation and comparison, students will understand that the moon orbits the Earth in a predictable cycle.

## Materials

phase sheet for each student (2 are included -teacher select)  
glue  
paper  
the moon as seen from Earth model.

## Background for Teachers

The moon orbits around Earth once every 27-30 days. During this time, the moon moves eastward about  $13^\circ$  per day (just bigger than a fist at arm's length), making the time of moonrise later each day. From Earth, we see it as the moon changing position in the sky and changing the percent of the illuminated side we are able to see (called phases). At any given time, half of the moon has sunlight hitting it (the day side of the moon) and the half not facing the sun is dark. How much of the illuminated side of the sun we can see from Earth determines the phase of the moon. The basic phases are New, First Quarter, Full, Last Quarter, and back to New. First Quarter occurs and we continue to see more of the moon until we can see the entire illuminated side at Full Moon. The phases move to Last Quarter, and then the New Moon and we begin the cycle all over again. As the moon orbits around Earth, it also rotates on its axis. We only see one side of the moon because it keeps the same side facing Earth. If it didn't rotate as it orbited Earth, we would see both sides of the moon. The side we see from Earth is the "nearside of the moon" and the side we never see from Earth is the "far side of the moon."

## Intended Learning Outcomes

- 1-Use science process and thinking skills
- 2-Manifest Scientific Attitudes and Interests
- 3-Understand Science Concepts and Principles
- 4-Communicate effectively using science language and reasoning
- 6-Understand the nature of science

## Instructional Procedures

### Invitation to Learn:

Give the students phase sheets and have them cut out the moons pictured along the bottom. Next they should glue the pictures into the boxes in the location they think is correct.

This activity will take at least two weeks and must begin in the evenings beginning a day or so after the New Moon.

Have the students pick a spot in their backyards or near their houses where they can observe the moon at the same time each evening.

Students will draw the foreground objects they see from their observation spot on a piece of paper.

A quick sketch of what the moon looks like and where it is each night will be drawn in comparison to the foreground objects (house, garage, tall tree, power pole, etc.) on the same paper. Students can use their fists to estimate angles and aid in their placement of the moon. Following the 2-week evening observations, teachers can also do one week of daytime

observing with the entire class a few days after the Full Moon. This will help reinforce the fact that the moon is not always seen in the evening and is orbiting around the Earth.

### Assessment Plan

Have students draw a moon, as seen from Earth, to test their understanding.

### Bibliography

This lesson is part of the Sixth Grade Science Teacher Resource Book (TRB3) <http://www.usoe.org/curr/science/core/6th/TRB6/>. The TRB3 is designed to be your textbook in teaching science curriculum to your students. This book covers all the objectives of each standard and benchmark. If taught efficiently, a student should do well on the End-of-Level (CRT) tests. The TRB3 is designed for teachers who know very little about science, as well as for teachers who have a broad understanding of science.

### Authors

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