

# MOON PHASES

## Overview:

This activity has two parts. The first part involves students recording their observations of the moon's appearance and relation to the sun in the sky (beginning three or four days after the full moon). They will compare their observations to the phases of the moon listed on the monthly calendar.

The second part has the students in groups acting out the phases of the moon using a flashlight to represent the sun and a basketball to represent the moon.

## Supplies:

Part 1 - Astronomy Journal to record observations  
- Calendar with phases of the moon

Part 2 - flashlight  
- basketball  
- Astronomy Journal

## Procedure: Part 1

1. The students will record their observations of the moon over several weeks in their journal.
2. An observation will consist of a sketch of the moon with a date and time for the observation.
1. These observations will be compared to the moon phases on the calendar.

## Objective:

To explain how the relative positions of the Earth, moon and Sun are responsible for the moon phases.

## Key Concepts:

- To know where the moon is in relation to the Sun and the Earth during each of the following moon phases:
  - New Moon
  - Waxing Crescent
  - First Quarter
  - Waxing Gibbous
  - Full Moon
  - Waning Gibbous
  - Third Quarter
  - Waning Crescent
- To recognize that the moon does not produce its own light, but reflects the light of the Sun.
- The amount of the moon's face that is illuminated by the Sun depends on where the moon is in relation to the earth and Sun.

## Part 2

1. Divide the class into groups of three.
2. Take the basketball and put a small piece of tape on one side of it.
3. Try to darken the classroom as much as possible.
4. One student will be the Earth. This person will stand in place.
5. A second student will be the Moon. This person will hold the basketball and stand about 2 meters from the Earth. This person must make sure that the piece of tape is always facing the Earth.
6. The third student will be the Sun. This person will stand about 4 meters from the Earth and shine the flashlight on the Moon.
7. The Moon will then slowly orbit the Earth taking care to keep the piece of tape always facing the Earth.
8. The Earth will make a note of the pattern of the shadow on the Moon. Making a brief sketch of the Moon every quarter revolution.

9. The person representing the Sun should make note that he/she sees all sides of the Moon while the Earth only sees the side with the piece of tape on it. The students should realize that from the Earth's perspective, the Moon doesn't appear to rotate. However, from the Sun's perspective the Moon does rotate once each month.
10. Groups compare findings and connect findings to the phases of the moon.
11. In their Astronomy Journal, students create a chart showing where the moon and sun are in relation to each other at different phases.