NATIONAL GEOGRAPHIC

GIANT MAPS

SOLAR SYSTEM

HOW MANY MOONS?

RECOMMENDED GRADES: 4-8

TIME NEEDED: 15-20 MINUTES

Description

Students identify the planets in the solar system that have known moons and will demonstrate the number of known moons found around each planet using blocks. Students describe the phases of the moon that may be observed from Earth.

Learning Objectives

Students will:

- define a moon
- observe that the giant gaseous outer planets have more moons than the inner terrestrial planets
- use blocks to compare number of moons for all planets
- model how the moon revolves around Earth and appears as different moon phases

Materials

- Blocks, any color (173)
- Moon Cards (8)

Preparation

5 minutes

- Put blocks in a pile where students will have access to them.

Tips/Modifications

Tip

- The two parts of this activity can be done on the same day or different days, time on the map permitting.

Rules

Have students remove shoes before walking on the map.

DIRECTIONS

1. Gather students around edge of the map to have them observe the scale and size of the planet illustrations. Explain that some of the planets have moons, which are not pictured on the giant map. Ask students to describe what they know about Earth's moon. Define the term 'moon' using the definition found in the vocabulary section of the guide.

2. Divide the class into five planet groups. Assign one group to the inner planets (Mercury, Venus, Earth, and Mars) since these planets do not have many known moons. Assign the remaining groups to each of the outer planets (Jupiter, Saturn, Uranus, and Neptune) since each of these planets has many known moons.

3. Provide each group with a Moon Card that describes the number of moons found around each planet they are assigned.

4. Ask students to build a tower of blocks to represent the number of moons around their assigned planet. Each block represents one moon. For example, the planet Mars would have a two block tower; Jupiter would have a sixty-seven block tower.

5. After students have finished building, ask them to stand around the edge of the map. Have students observe the entire solar system of known moons; discuss the number of moons found around the inner planets (Mercury, Venus, Earth, and Mars) versus the number of moons found around the outer planets. Ask: *Why do inner planets and outer planets have such different numbers of moons?* (The outer planets have more mass and were able to draw in more as they were forming). Ask students to share some of the names of moons of the planets using information found on their Moon Cards. Do they recognize some of the names from any of their studies?

Tip

Have older students create a bar graph of the number of moons found around each planet.

EXTENDING THE LEARNING

- This activity might lead some to believe the moon is only "above" the Earth as all the moon phase-students are standing over the sitting students. Show students an image or animation of the moon orbiting the Earth to show that it dips both above and below the plane of our orbit around the Sun.

- Have students investigate cultural ties to the moon. Ask them to do research to determine the dates of the new moon phases and the full moon phases for the coming year and match it to the holidays of: Rosh Hashanah (new moon), Ramadan (new moon), Chinese New Year (second new moon after winter solstice), and Easter (first Sunday after first full moon after vernal equinox). Ask students to share their family's traditions and how/if they relate to the moon. Have a discussion on why the moon has important cultural ties.