Earth Moon Activity

This activity helps students understand the size of and distance between Earth and the Moon. Students work in pairs using different-sized spherical objects to represent Earth and the Moon. They use the diameter of the objects to establish this scale.

What Students Will Learn

Students will be able to state the size of and distance between Earth and the Moon and to demonstrate this relationship with spherical objects.

Materials

- A box containing spheres of differing diameters, such as softballs, golf balls, marbles, tennis balls, table tennis balls, and beads
- Small round balloons, not inflated (optional)
- Paper and pencils

Before the Activity

Clear space for students to stand and move about as they work through this activity. This activity requires 1 to 2 class periods.

Scientific Concepts

The Moon's diameter is a quarter the size of Earth's diameter. The Moon orbits at an average distance of 240,000 miles (roughly 387,000 kilometers) from Earth.

Setting the Stage

Ask students what size they think the Moon is relative to Earth and how far away it is. Explain that they will use spherical objects to represent the size of and the distance between Earth and the Moon. Be sure that students understand the term "diameter": the length of a straight line through the center of an object.

The Activity

1. Hand out the spheres (or the balloons) so that each student has one object.
2. Tell students that the object (or balloon) they are holding can represent either Earth or the Moon. Tell them to find partners so that they can make what they believe is an accurate scale model of Earth and the Moon. (Students with balloons can blow them up to whatever size they think will accurately represent the size of Earth or the Moon.)
3. Once each student has found a partner, look around to see how similar the pairings are. Did students pair correctly? Ask students for their observations about the pairing. Can they draw a conclusion?
4. Ask students how many Moons they need to place in a straight line to equal the diameter of one Earth. After several guesses, tell the class that four Moons laid in a straight line equal the diameter of one Earth. With this new information, have the students select different partners, pick other objects from the box, or adjust the size of their balloons until in each pairing four Moon diameters equal one Earth diameter. (Suggest students use paper and pencils to mark a scale of the diameters.)
5. When each pair of students has the correct set of Earth and Moon objects (you will need to check each pairing), have all the "Earths" line up in the front of the classroom. Ask them to lift their objects above their heads so that others can see them.
6. Have the "Moons" stand facing their partners. Tell the partners to separate the two objects until they believe they are accurately displaying the distance between Earth and the Moon.
7. Have the students estimate how many of their Earth objects when laid in a straight line would be necessary to reach their Moon object. Write their guesses on the board.
8. Tell students that 30 Earth objects laid in a straight line represent the actual distance between Earth and the Moon. Have the partners separate their objects so that the distance between their Earth and Moon objects is correct. Are they surprised?
9. Lead a class discussion in which students can express their new understandings about the Moon's size and its distance from Earth. Then give students the opportunity to record their new understandings in a science journal or, if they wish to be more creative, in a story, poem, or artwork.

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