

How Big, How Far: The Earth and Moon



The Earth and Moon have been called a “double planet”. In this activity you will discover how big (or small) and how close (or far away) the moon really is.

Materials

Earth globe - as large as you have available

Ball of string - with individual strings about 5 times the diameter of the globe for each student

Balloons (round) - can be inflated to at least a fourth of the diameter of the globe you have chosen.

Measuring tape or meter stick for each group of students

Activity

1. Inflate your balloon until you think it is the size that the Moon would be if the Earth were only as big as the globe in the classroom. Do not tie your balloon, but hold onto it tightly.
2. Watch as your teacher stretches a string around the equator of the Earth globe. The length of this string equals the globe's circumference.
4. The moon's diameter is a fourth of the diameter of the Earth. So the moon's circumference is also a fourth of the Earth's circumference. Watch as your teacher folds the Earth circumference string in fourths. The result is the circumference of the moon balloon. Your teacher will measure the length of the folded string to find the circumference of the moon balloons. Use your string to measure the circumferences of your balloon. Use a measuring tape or meter stick to determine how long your circumference is. Then calculate the difference between your circumference and the correct answer. Record your answers below.
6. Adjust the size of your balloon until it is the correct size compared to the Earth globe,
7. Now place your balloon at the correct scale distance from the Earth globe. Make your best guess about how far away the moon should be. Using a measuring tape, measure how far away your balloon is from the Earth globe. Record it below.
8. The moon balloon should be at a distance that it 9.5 times the circumference of the Earth globe. Multiply the Earth circumference string length by 9.5. Now use a measuring tape to measure how far your balloon is from the Earth globe. Subtract to find the difference between your distance and the correct distance. Record it on the table below.



Your balloon circumference: _____ The correct circumference: _____ Difference: _____

Your balloon distance: _____ The correct distance: _____ Difference: _____

9. Make a drawing on notebook paper showing the Earth and moon at the correct relative sizes and distances.