

Geometry and Another Dimension

Standards: CC 5GB3; 7GB4



Objective:

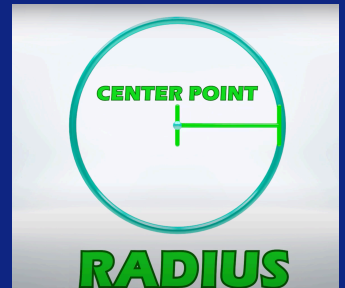
Students will use principles of geometry to make a solid object pass through another object.

Vocabulary

Circumference - the distance around the outside of a circle.

Diameter - the distance of a straight line from one side of a circle to the opposite side through the center point.

Radius - the distance of a straight line from the center point of a circle to the edge of the circle ($\frac{1}{2}$ of the diameter).



Procedure:

1. Gather students in a circle and have them pass a ball of string from one student to the next around the circle until it gets back to the first student.
2. Cut the string and have students measure it using measuring tape. Explain that the distance around the circle, or the length of the string, represents the circumference.
3. Have one student toss the string directly across the circle to the person across from them. Explain the distance from

Materials:

- round coaster or lid for each student (can be different sizes)
- paper (2 pieces per student)
- ruler or tape measure
- a ball of string
- Dry Erase Marker

one side of the circle to the opposite side is the diameter.

4. Cut the string and have a student fold it in half, stand in the middle holding it at the fold, and have a student on the edge of the circle pull the ends of the string to the edge. Explain that one half of the diameter, or the distance from the center point to the edge, is the radius.
5. Have a student record the three measurements (circumference, diameter, and radius) with a dry erase marker on the floor (if it can be wiped off).
6. Review definitions and have students copy them into their notebooks.
7. Tell students that while understanding these practical geometry principles will help them with many tasks in life, today they will use their knowledge to perform magic.
8. Show students the coaster and paper and tell them that today they will learn how to pass the coaster through the hole, even though it seems impossible.
9. Hand out paper, rulers, and coasters, and have students brainstorm how they could pass the coaster through a small hole.
10. Pause students and show Geometry & Another Dimension: Pass One Object Through Another!
11. Pause at 2:51 and have students measure the radius and diameter of their lids.
12. Show video to 3:13 and have students draw and cut a square that measures the distance of the radius on each side.

Assessment:

Have students recreate the experiment using an object of a different size. If done in class, provide students with a variety of different sized circular objects and fresh paper. If being done virtually, have students come to the next class with their supplies. Ask students to record the radius and diameter on their paper as well.

Have students write a paragraph explaining how geometry is used in the experiment to pass one object through another.