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Coordinating Seminar
Hands on Activity

Comparing Volume of a cone, cylinder, and sphere

Grade level: 8th grade

<u>Goals:</u>
Students will determine the formula for a sphere using a cone, beans, and a tennis ball with the same radii and height.
Students will compare and identify the difference in volume of a cylinder and cone using the same radii and height.

<u>Objective:</u>
Given a hands-on activity comparing the volume of cylinders and cones of equal radii and height, students will complete an exit ticket with 100% accuracy.

<u>Materials:</u>
Mini party hats
Ruler
Beans
Paw-Patrol cylinder
Tennis ball (cut in half)

<u>Vocabulary:</u>
Volume: The amount of 3-dimensional space something takes up
Radius: The distance from the center to the circumference of a circle

<u>Formulas to remember:</u>

Volume of a cylinder: **V=** $\pi \cdot r^2 \cdot h$

Volume of a cone: **V= (___)** $\pi \cdot r^2 \cdot h$

<u>Prediction time:</u>
I predict that the volume of a cylinder will be _____ times the volume of a cone.

In order for this to be an accurate investigation, we must make sure that both objects have the same radius and height.

Radius of cone: Radius of cylinder:

Height of cone: Height of cylinder:

The volume of a cylinder is ____ times the volume of a cone.

Sphere:

Findings: (   ) + (   ) = volume of a sphere

2 radii= _____ of sphere

How do we replace this in the formula

$$(⅓)πr^2 * (\quad) + (⅓)πr^2 * (\quad) = \text{volume of sphere}$$
$$((⅓)πr^2 * (2r)) + ((⅓)πr^2 * (2r)) = \text{volume of a sphere}$$
$$((2/3)π(\quad) + (2/3)π(\quad) = \text{volume of a sphere}$$

$$*(\quad)πr^3 = \text{volume of a sphere}*$$

Exit ticket:

1) Using the formula for volume of a cylinder, calculate the volume of a cylinder with a radius of 3 inches and a height of 7 inches. What is the volume of a cone with the same radius and height?

2) If the volume of a cone is 10 inches cubed, with a radius of 5 inches, what is the height of the cone? What would the volume be of a cylinder with the same dimensions?