Lesson 11: Volume of a Sphere

Classwork

Exercises 1–3

1. What is the volume of a cylinder?

2. What is the height of the cylinder?

3. If \( \text{volume(sphere)} = \frac{2}{3} \text{volume(cylinder with same diameter and height)} \), what is the formula for the volume of a sphere?

Example 1

Compute the exact volume for the sphere shown below.
Example 2

A cylinder has a diameter of 16 inches and a height of 14 inches. What is the volume of the largest sphere that will fit into the cylinder?

Exercises 4–8

4. Use the diagram and the general formula to find the volume of the sphere.

5. The average basketball has a diameter of 9.5 inches. What is the volume of an average basketball? Round your answer to the tenths place.
6. A spherical fish tank has a radius of 8 inches. Assuming the entire tank could be filled with water, what would the volume of the tank be? Round your answer to the tenths place.

7. Use the diagram to answer the questions.

a. Predict which of the figures shown above has the greater volume. Explain.
b. Use the diagram to find the volume of each, and determine which has the greater volume.

8. One of two half spheres formed by a plane through the sphere’s center is called a hemisphere. What is the formula for the volume of a hemisphere?