

Math 8

Our Goal: To learn to find the volume of a sphere

Warm Up: Put your study guide in the basket, please

Today's homework

- 8.3 Exercises, p. 352-353: 3-15
- iready due Friday

Previous Homework

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Essential Question

How can you find the volume of a sphere?

$$V = \frac{4}{3} \pi r^3$$

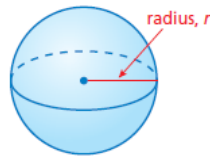
You need to know

Key Idea

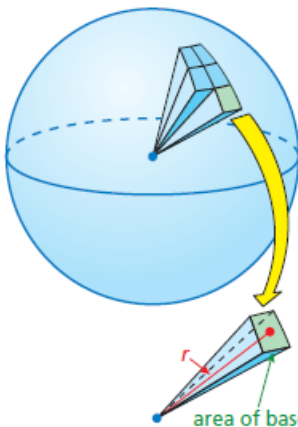
Volume of a Sphere

Words The volume V of a sphere is the product of $\frac{4}{3}\pi$ and the cube of the radius of the sphere.

Algebra $V = \frac{4}{3}\pi r^3$
Cube of radius of sphere



Work with a partner. Imagine filling the inside of a sphere with n small pyramids. The vertex of each pyramid is at the center of the sphere. The height of each pyramid is approximately equal to r , as shown. Complete the steps. (The surface area of a sphere is equal to $4\pi r^2$.)



$$V = \frac{1}{3}Bh$$

Write formula for volume of a pyramid.

$$= n \frac{1}{3}B \text{ []}$$

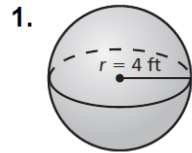
Multiply by the number of small pyramids n and substitute [] for h .

$$= \frac{1}{3}(4\pi r^2) \text{ []}$$

$$4\pi r^2 \approx n \cdot \text{[]}$$

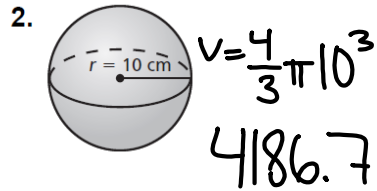
Show how this result is equal to the result in Activity 2.

Find the volume of the sphere (use 3.14 for pi).
Round your answer to the nearest tenth (one decimal place).



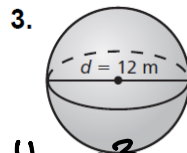
$$V = \frac{4}{3}\pi 4^3$$

$$267.9$$



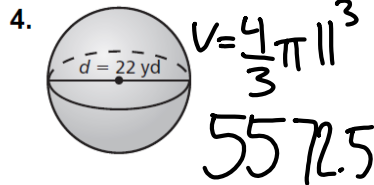
$$V = \frac{4}{3}\pi 10^3$$

$$4186.7$$



$$V = \frac{4}{3}\pi 6^3$$

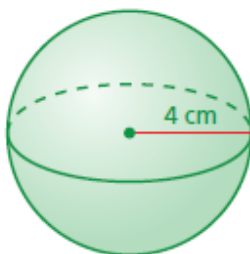
$$904.3$$



$$V = \frac{4}{3}\pi 11^3$$

$$5572.5$$

Find the volume of the sphere. Round your answer to the nearest tenth.



Find the radius of the sphere.

Volume = 288π in.³

$$V = \frac{4}{3}\pi r^3$$

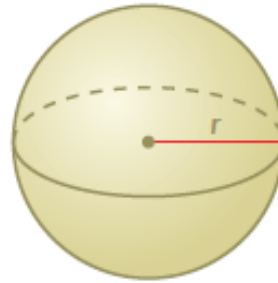
$$288\pi = \frac{4}{3}\pi r^3$$

$$288 = \frac{4}{3}r^3$$

$$\times \frac{3}{4} \quad \times \frac{3}{4}$$

$$216 = r^3$$

$$6 = r$$

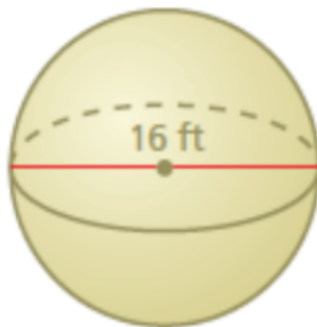


$$\sqrt[3]{216}$$

$$3 \sqrt[3]{\quad}$$

Find the volume V of the sphere. Round your answer to the nearest tenth, if necessary.

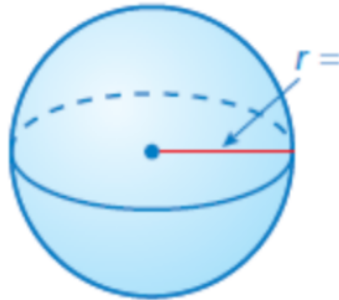
1.



$V \approx$

Find the radius r of the sphere. Round your answer to the nearest tenth, if necessary.

2.



Volume = $36\pi \text{ m}^3$

3

$$V = \frac{4}{3} \pi r^3$$

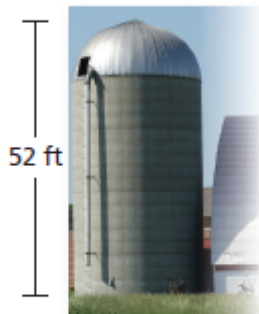
$$36\pi = \frac{4}{3} \pi r^3$$

$$36 = \frac{4}{3} r^3$$

$$\times \frac{3}{4} \quad \times \frac{3}{4}$$

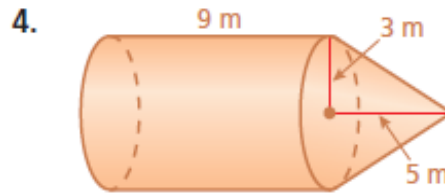
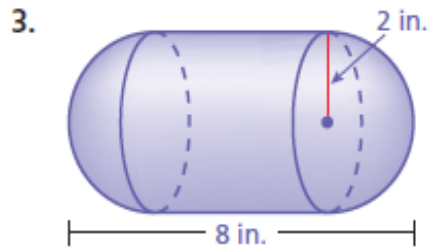
$$27 = r^3$$

$$\sqrt[3]{27}$$



A hemisphere is one-half of a sphere. The top of the silo is a hemisphere with a radius of 12 feet. What is the volume of the silo? Round your answer to the nearest thousand.

Find the volume of the composite solid. Round your answer to the nearest tenth.



Have students answer the following question:

You have an ice cream scoop with a 2-inch diameter. You have an ice cream cone with a 2-inch diameter and a height of 5 inches. If you place one scoop of ice cream on the cone and let the ice cream melt, will it spill over the cone? Explain.