Lesson 8.2:

Volumes of Cones

Jan 24-12:51 PM

Essential Question

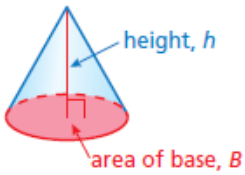
How can you find the volume of a cone?

Essential Question

Key Idea

Volume of a Cone

Words The volume V of a cone is one-third the product of the area of the base and the height of the cone.



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

Area of base

Height of cone

Like a circular pyramid

Key Idea

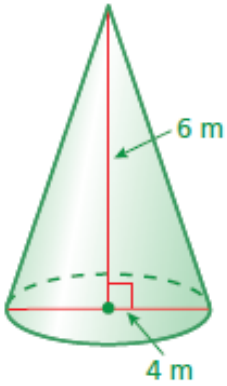
Find the volume of the cone. Round your answer to the nearest tenth.

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

$\frac{1}{3} \cdot 3.14 \cdot (2\text{m})^2 \cdot 6\text{m}$

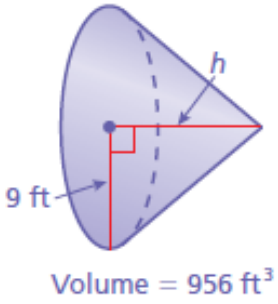
$3.14 \cdot 8\text{m}^3$

$25.12\text{m}^3 \rightarrow 25.1\text{m}^3$



Example 1

Find the height of the cone. Round your answer to the nearest tenth.



Volume = 956 ft³

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

$956\,ft^3 = \frac{1}{3} \cdot 3.14 (9\,ft)^2 \cdot h$

$956\,ft^3 = \frac{1}{3} \cdot 3.14 \cdot 81\,ft^2 \cdot h$

$956\,ft^3 = 84.78\,ft^2 \cdot h$

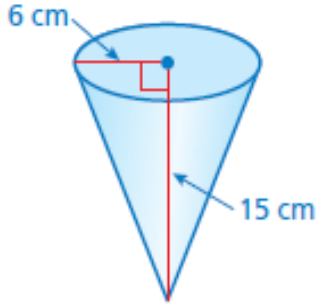
$\div 84.78\,ft^2 \quad \div 84.78\,ft^2$

$11.3\,ft \approx h$

Example 2

Find the volume *V* or height *h* of the cone. Round your answer to the nearest tenth.

1.



$V \approx$ ☐

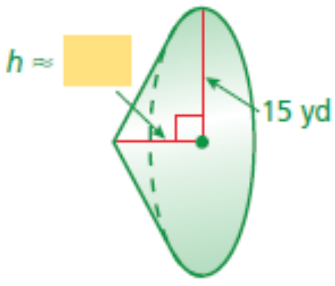
$\frac{1}{3} \cdot 3.14 \cdot (6\,cm)^2 \cdot 15\,cm$

$3.14 \cdot 36\,cm^2 \cdot 5\,cm$

$113.04\,cm^2 \cdot 5\,cm$

$563.2\,cm^3$

2.



Volume = 7200 yd³

$7200\,yd^3 = \frac{1}{3} \cdot 3.14 \cdot (15\,yd)^2 \cdot h$

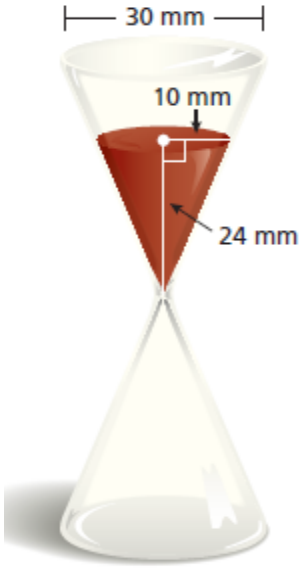
$7200\,yd^3 = \frac{1}{3} \cdot 3.14 \cdot 225\,yd^2 \cdot h$

$7200\,yd^3 = 235.5\,yd^2 \cdot h$

$30.6\,yd \approx h$

On your own 1-2

You must answer a trivia question before the sand in the timer falls to the bottom. The sand falls at a rate of 50 cubic millimeters per second. How much time do you have to answer the question?



$\frac{1}{3} \cdot 3.14 \cdot (10mm)^2 \cdot 24mm$

$3.14 \cdot 100mm^2 \cdot 8mm$

$314mm^2 \cdot 8mm$

$2512mm^3 \div 50mm^3/s$

$= 50.24s$

Example 3