LESSON 12.5

NAME _____ DATE _____

Reteaching with Practice

For use with pages 752–758

GOAL **Find the volume of pyramids and cones**

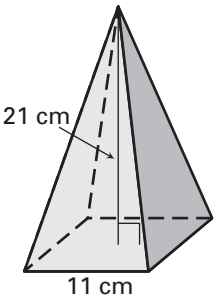
VOCABULARY

Theorem 12.9 Volume of a Pyramid The volume V of a pyramid is $V = \frac{1}{3}Bh$, where B is the area of the base and h is the height.

Theorem 12.10 Volume of a Cone The volume V of a cone is $V = \frac{1}{3}Bh = \frac{1}{3}\pi r^2 h$, where B is the area of the base, h is the height, and r is the radius of the base.

EXAMPLE 1 *Finding the Volume of a Pyramid*

Find the volume of the pyramid with the square base shown to the right.



SOLUTION

The area B of the base of the pyramid is the area of the square. Using the formula for the area of a square, s^2, $B = 11^2$, or 121 square centimeters. Using $h = 21$, you can find the volume.

$V = \frac{1}{3}Bh$ Formula for volume of pyramid

$= \frac{1}{3}(121)(21)$ Substitute.

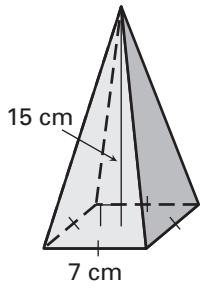
$= 847$ Simplify.

So, the volume of the pyramid is 847 cubic centimeters.

Exercises for Example 1

In Exercises 1–3, find the volume of the pyramid.

1.



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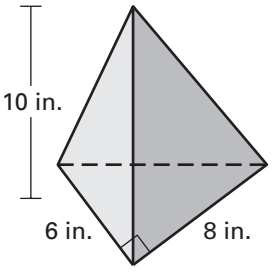
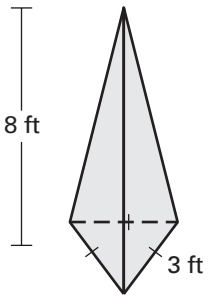


3.



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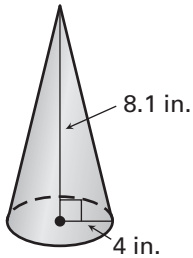
EXAMPLE 2 Finding the Volume of a Cone

Find the volume of the cone.



SOLUTION

$V = \frac{1}{3}Bh = \frac{1}{3}(\pi r^2)h$ Formula for volume of cone

$= \frac{1}{3}(\pi \cdot 4^2)(8.1)$ Substitute.

$= 43.2\pi$ Simplify.

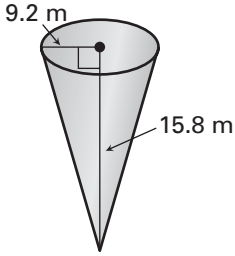
So, the volume of the cone is 43.2π in.^{3}, or about 135.7 in.^{3}.

Exercises for Example 2

Find the volume of the cone.

4.

5.



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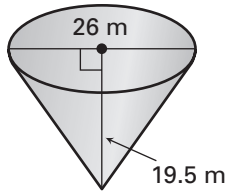
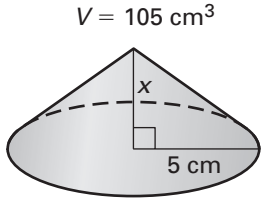


EXAMPLE 3 Using the Volume of a Cone

Use the given measurements to solve for x.



SOLUTION

$V = \frac{1}{3}\pi r^2 h$ Formula for volume of cone

$105 = \frac{1}{3}\pi \cdot 5^2 \cdot x$ Substitute.

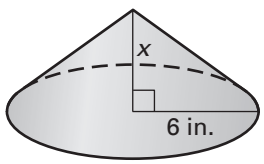
$4 \approx x$ Simplify and solve for x.

The height of the cone is about 4 centimeters.

Exercises for Example 3

In Exercises 7–9, find the value of *x*.

7.



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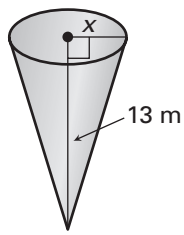

9.