

Name: \_\_\_\_\_ # \_\_\_\_\_

Geometry: Period \_\_\_\_\_

Ms. Pierre

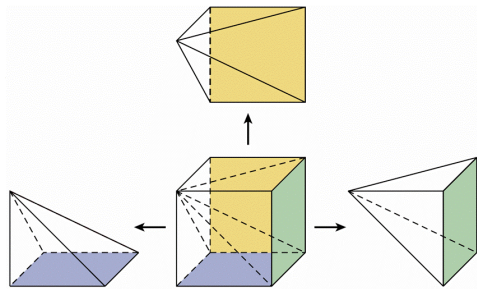
Date: \_\_\_\_\_

## Volume of Pyramids & Cones

### Today's Objective

SWBAT learn and apply the formula for the volume of a pyramid and a cone.

The volume of a pyramid is related to the volume of a prism with the same base and height. The relationship can be verified by dividing a cube into three congruent square pyramids, as shown.

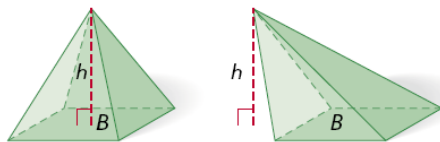


The square pyramids are congruent, so they have the same volume. The volume of each pyramid is one third the volume of the cube.

### Volume of a Pyramid

The volume of a pyramid with base area  $B$  and height  $h$

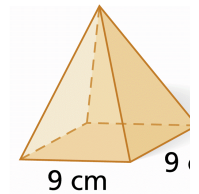
$$\text{is } V = \frac{1}{3}Bh.$$



### Example 1

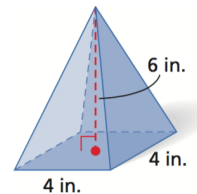
a. Find the volume a rectangular pyramid with length 11 m, width 18 m, and height 23 m.

b. Find the volume of the square pyramid with base edge length 9 cm and height 14 cm.



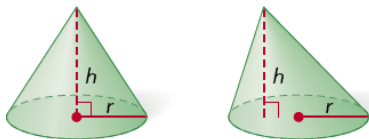
### ☑ Check for Understanding

Find the volume of the square pyramid.



## Volume of Cones

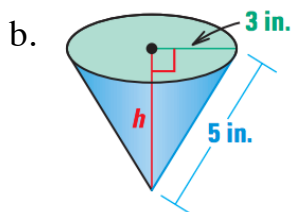
The volume of a cone with base area  $B$ , radius  $r$ , and height  $h$  is  $V = \frac{1}{3}Bh$ ,  
or  $V = \frac{1}{3}\pi r^2h$ .



### Example 2

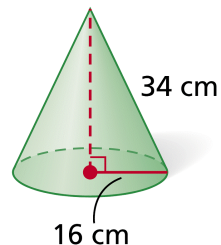
Find the volume of each cone. Give your answers both in terms of  $\pi$  and rounded to the nearest tenth.

a. Radius 7cm, height 15cm



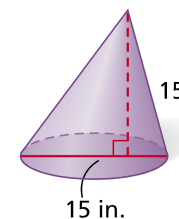
## Check for Understanding

Find the volume of the cone. Give your answers both in terms of  $\pi$  and rounded to the nearest tenth.



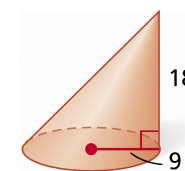
### Example 3

The radius and height of the cone are divided by 5. Describe the effect on the volume.



## Check for Understanding

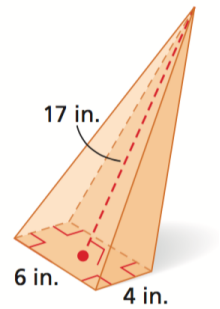
The radius and height of the cone are doubled. Describe the effect on the volume.



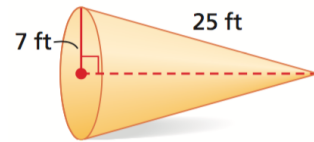


## Guided Practice

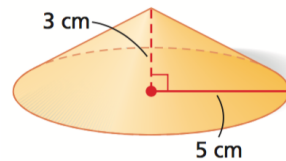
1. Find the volume of the pyramid.



2. Find the volume of the cone. Give your answers in terms of  $\pi$  and rounded to the nearest tenth.

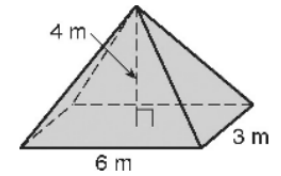


3. Describe the effect of change on the volume of the figure if the dimensions are tripled.

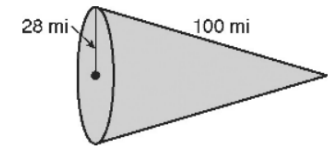


## Independent Practice

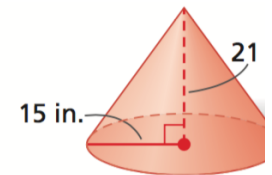
1. Find the volume of the pyramid.



2. Find the volume of the cone. Give your answers in terms of  $\pi$  and rounded to the nearest tenth.



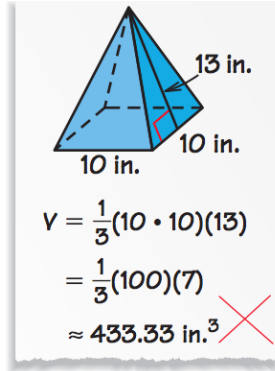
3. Describe the effect of change on the volume of the figure if the dimensions are multiplied by  $\frac{1}{3}$ .



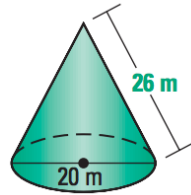


## Home Work

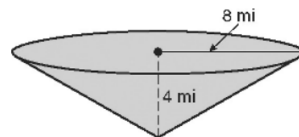
1. Explain the student's error and correct it.



2. Find the volume of the cone. Give your answers in terms of  $\pi$  and rounded to the nearest tenth.

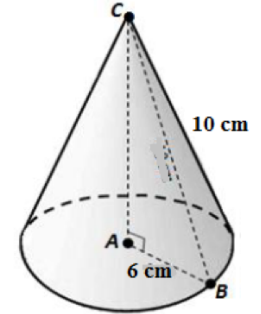


3. Describe the effect of change on the volume of the figure if the dimensions are halved.



## Enrichment

1. The cone shown has a base with a radius of AB. The length of radius AB is 6 cm and the length of slant height BC is 10 cm. What is the volume of the cone?



2. What is the volume of the square pyramid shown?

