

Warm-Up

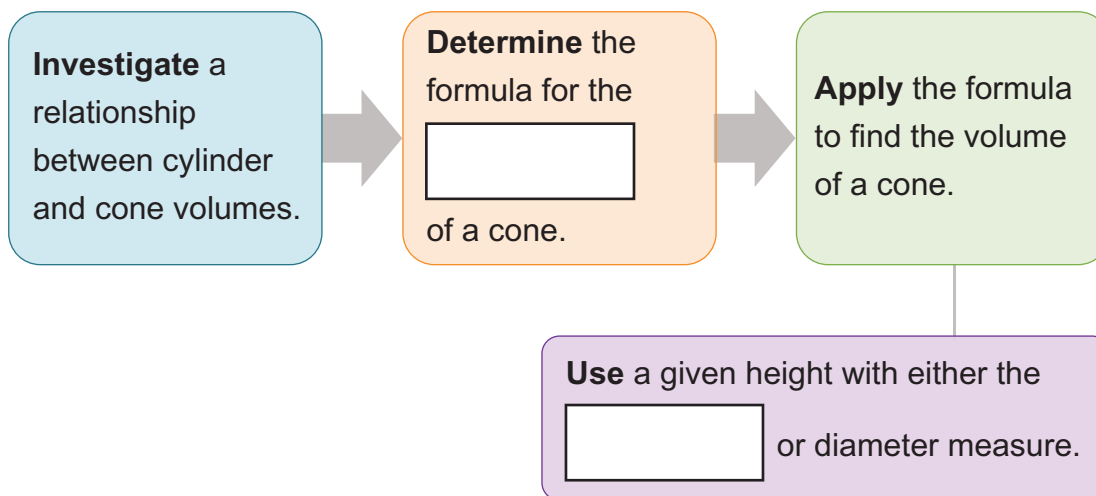
Introduction to the Volume of a Cone



Lesson Question



Lesson Goals



Words to Know

Fill in this table as you work through the lesson. You may also use the glossary to help you.

	a segment that extends from the center of a circle to any point on the circle
	to explain or show the similarities or differences between items or ideas
	the measure of the amount of space occupied by a three-dimensional solid object
	a solid object with a circular base and one vertex
	a chord that passes through the center of a circle

**Circular Base Area**

This construction **cone** has a **radius** of 7 inches. What is the area of the base?

$$A = \boxed{}$$

$$A = \pi(7)^2$$

$$A = \pi(7)(7)$$

$$A = \boxed{} \text{ in.}^2$$



Instruction

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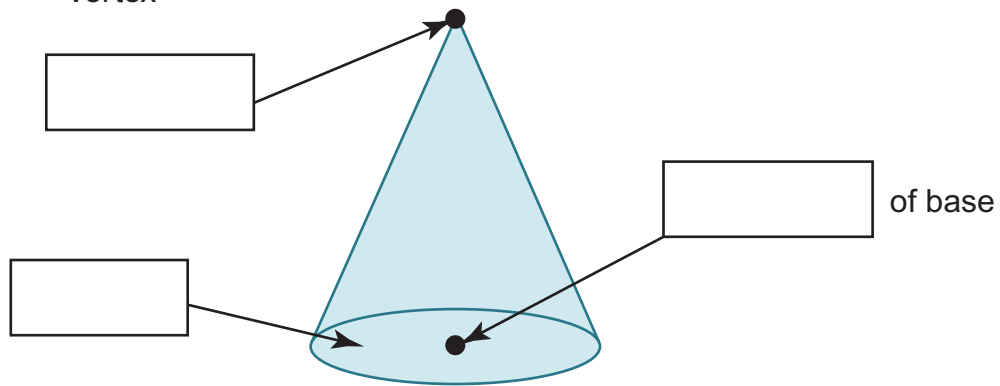
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Identifying Parts of a Cone

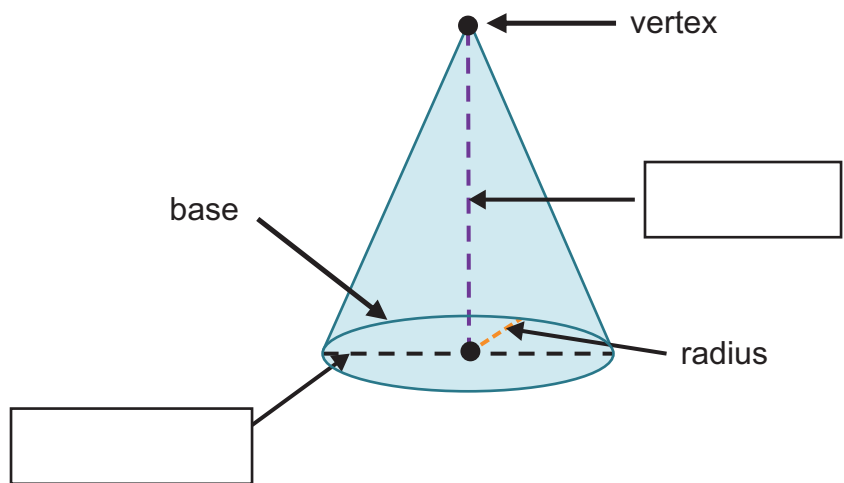
Parts of a cone

- Base
- Center of base
- Vertex



Measurements of a cone

- Height
- **Diameter**
- Radius



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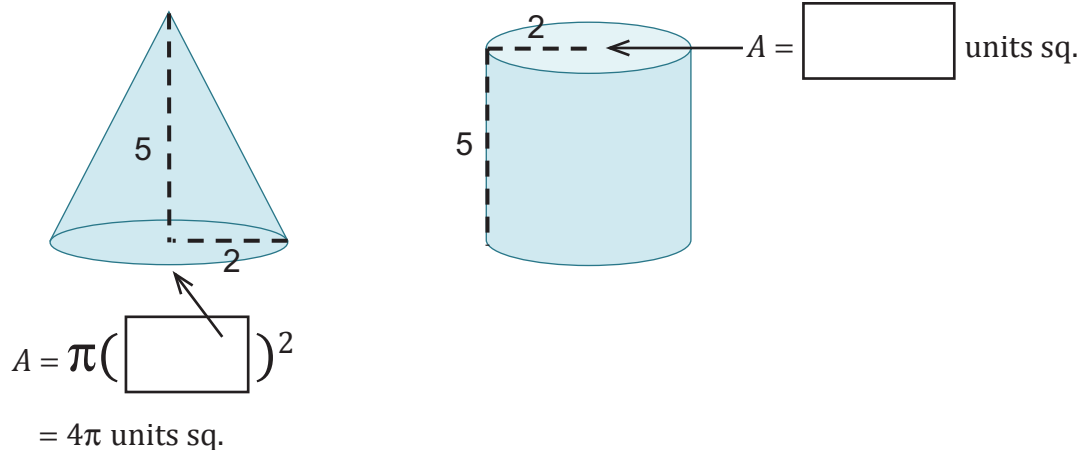
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Relating a Cone to a Cylinder

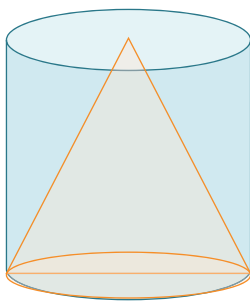
Consider a cone and a cylinder with the same height and radius.



Comparing Cylinder and Cone Volumes

EXAMPLE

Compare the **volume** of each when a cone and a cylinder have the same base area and height.



The [] would actually have the greater volume even though they have the same base area and [] .

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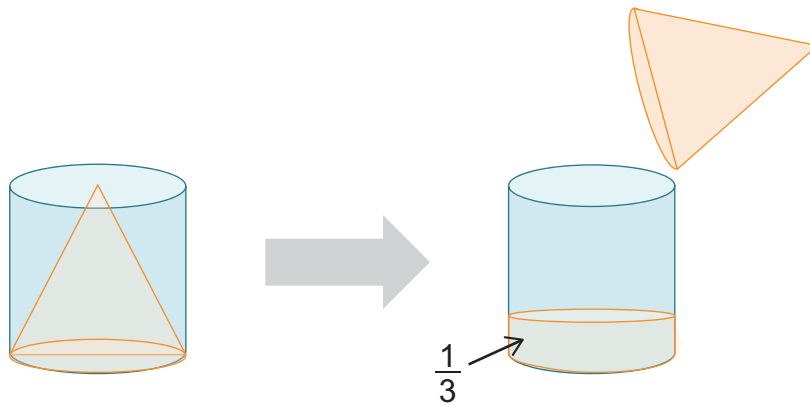
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Comparing Cylinder and Cone Volumes

EXAMPLE

Volume = $\left(\text{input} \right)$ (Volume of cylinder)



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Determining a Formula for the Volume of a Cone

- Volume of a cylinder: $V = Bh$
 - B is the of the circular base
 - h is the height

- Volume of a Cone: $\frac{1}{3}$ (Volume of the cylinder)

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

$$V = \text{input}$$

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Calculating the Volume of a Cone

What is the volume of a cone with a radius of 2 meters and a height of 5 meters?

$$\text{Formula: } V = \frac{1}{3}Bh$$

$$V = \frac{1}{3}\pi r^2 h$$

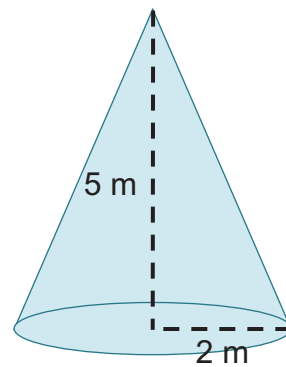
$$V = \frac{1}{3}\pi(2^2)(\text{})$$

$$V = \frac{1}{3}\pi(\text{})(5)$$

$$V = \frac{1}{3}\pi(20)$$

$$V = \text{} \text{ m}^3$$

Using the symbol for π gives an exact value.



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Determining the Volume of a Cone for a Given Diameter

A cone has a diameter of 12 inches and a height of 15 inches. What is its volume?

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

$$V = \frac{1}{3}\pi r^2 h$$

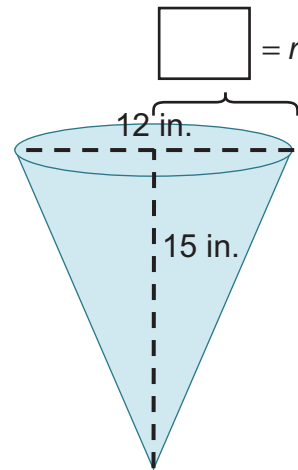
$$V = \frac{1}{3}\pi(6^2)(15)$$

$$V = \frac{1}{3}\pi(\boxed{})(15)$$

$$V = \frac{15}{3}\pi(36)$$

$$V = 5\pi(36)$$

$$V = \boxed{} \text{ in.}^3$$



Summary

Introduction to the Volume of a Cone



Lesson Question

How do you find the volume of a cone?



Answer

Use this space to write any questions or thoughts about this lesson.