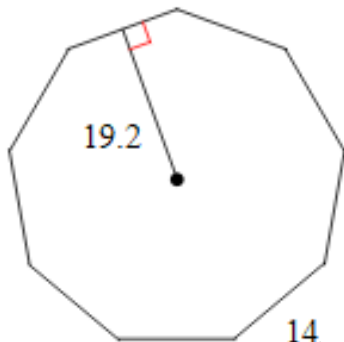


### Warm Up

1)

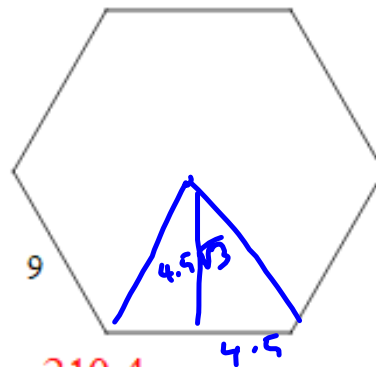


1209.6

$$A = \frac{1}{2} a s n$$

$$A = \frac{1}{2} (19.2) (14) (8)$$

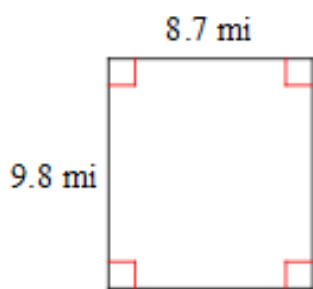
2)



210.4

$$A = \frac{1}{2} (4.5) 9 (6)$$

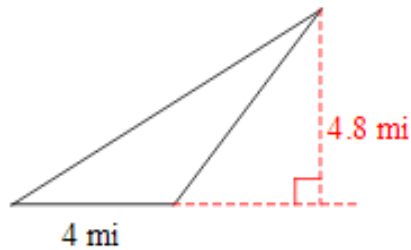
3)



85.26 mi<sup>2</sup>

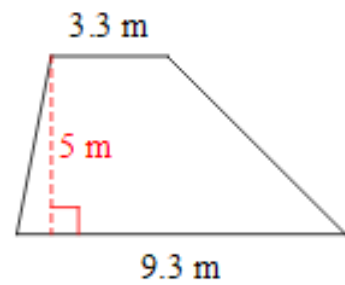
$$9.8(8.7)$$

4)



9.6 mi<sup>2</sup>

5)



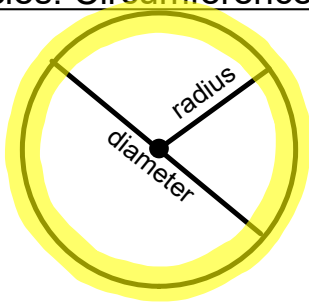
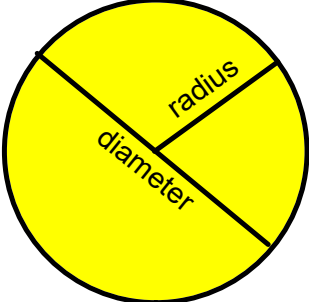
31.5 m<sup>2</sup>

$$A = \frac{1}{2} (3.3 + 9.3) 5$$

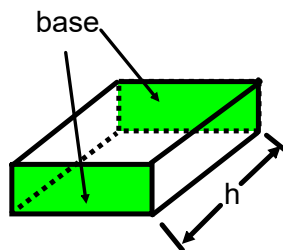
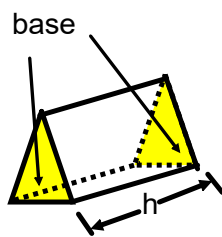
**Learning Goal:** Today I will practice how to find the volume of prisms.

**Success Criteria:** I am able to find the volume of prisms.

## Area and Volume book

<p>11 <u>Circles: Circumference</u></p>  <p><math>r = \text{radius}</math> <math>d = \text{diameter}</math></p> <p>Circumference = <math>\pi \cdot d = \pi \cdot 2 \cdot r</math></p> <p>Example: The radius of a circle is 6 cm. What is its circumference?</p> $C = 2\pi r$ $C = 2\pi(6)$ $C = 12\pi \text{ cm}$	<p style="text-align: right;">12 <u>Circles: Area</u></p>  <p>Area = <math>\pi \cdot r^2</math></p> <p>Example: The radius of a circle is 6 cm. What is its area?</p> $A = \pi r^2$ $A = \pi(6)^2$
--	---

$$A = 26\pi \text{ cm}^2$$

13 Volume of a Prism

14

- 2 congruent, parallel faces or bases
- named using base shape

$B$  = area of the base

$h$  = height (distance between bases)

Volume

$$V = B \bullet h$$

Example:

A rectangular-base prism has a base that is 4 inches by 5 inches. The height is 7 inches. What is the volume?

$$V = Bh$$

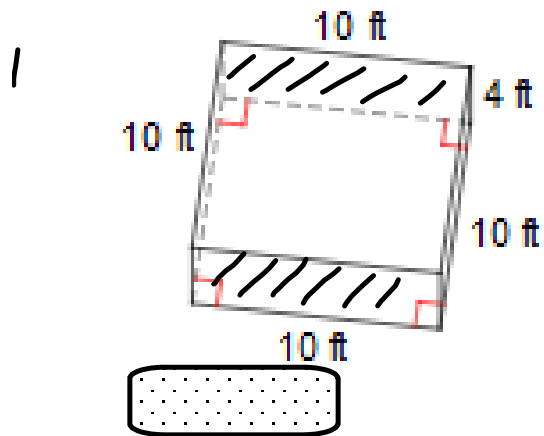
$$B = b \cdot h$$

$$B = 4 \cdot 5 = 20$$

$$V = 20 \cdot 7 = 140 \text{ in}^3$$

## Volume

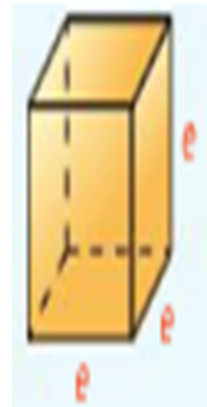
The space that a figure occupies. It is measured in cubic units such as cubic inches  $in.^3$



$$B = 40ft^2$$

$$40(10)$$

$$400ft^3$$



Find the area of the square.

What is the height of the prism?

Volume:  $V = Bh$

A blue ribbon-like icon with the text "Take note" written inside it in white.

### Theorem 11-5 Cavalieri's Principle

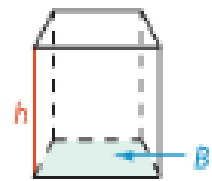
If two space figures have the same height and the same cross-sectional area at every level, then they have the same volume.

take note

**Theorem 11-6 Volume of a Prism**

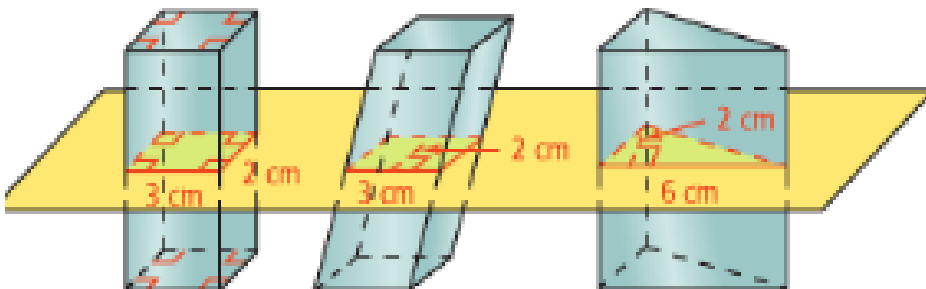
The volume of a prism is the product of the area of the base and the height of the prism.

$$V = Bh$$



B is the area of the base.

h is the height of the prism



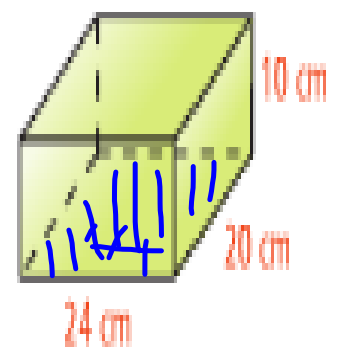
## Problem 1 Finding the Volume of a Rectangular Prism

What is the volume of the rectangular prism at the right?

$V = Bh$  Use the formula for the volume of a prism.

$= 480 \cdot 10$  The area of the base  $B$  is  $24 \cdot 20$ , or  $480 \text{ cm}^2$ , and the height is 10 cm.

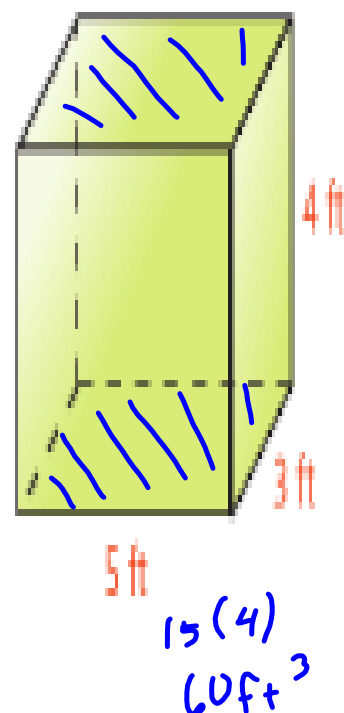
$= 4800$  Simplify.

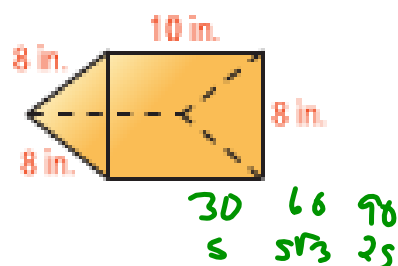


The volume of the rectangular prism is  $4800 \text{ cm}^3$ .



1. a. What is the volume of the rectangular prism at the right?
- b. **Reasoning** Suppose the prism at the right is turned so that the base is 4 ft by 5 ft and the height is 3 ft. Does the volume change? Explain.





**Step 1** Find the area of the base of the prism.

Each base of the triangular prism is an equilateral triangle, as shown at the right. An altitude of the triangle divides it into two  $30^\circ$ - $60^\circ$ - $90^\circ$  triangles. The height of the triangle is  $\sqrt{3} \cdot$  shorter leg, or  $4\sqrt{3}$ .

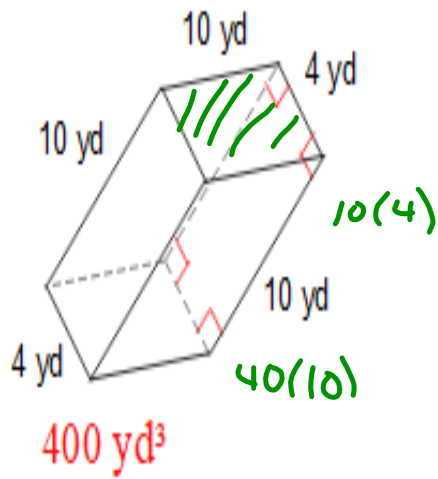
$$\begin{aligned}
 B &= \frac{1}{2}bh && \text{Use the formula for the area of a triangle.} \\
 &= \frac{1}{2}(8)(4\sqrt{3}) && \text{Substitute 8 for } b \text{ and } 4\sqrt{3} \text{ for } h. \\
 &= 16\sqrt{3} && \text{Simplify.}
 \end{aligned}$$

**Step 2** Find the volume of the prism.

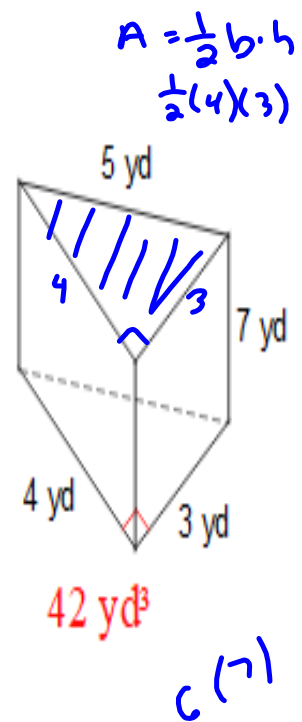
$$\begin{aligned}
 V &= Bh && \text{Use the formula for the volume of a prism.} \\
 &= 16\sqrt{3} \cdot 10 && \text{Substitute } 16\sqrt{3} \text{ for } B \text{ and } 10 \text{ for } h. \\
 &= 160\sqrt{3} && \text{Simplify.} \\
 &\approx 277.1281292 && \text{Use a calculator.}
 \end{aligned}$$

Partner Practice: To be handed in.

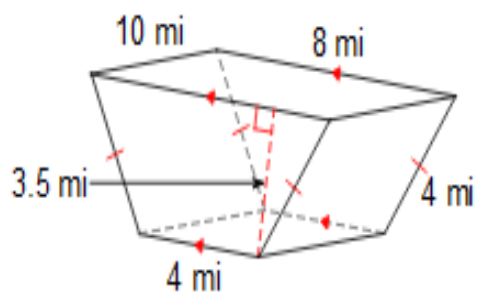
1)



2)



3)



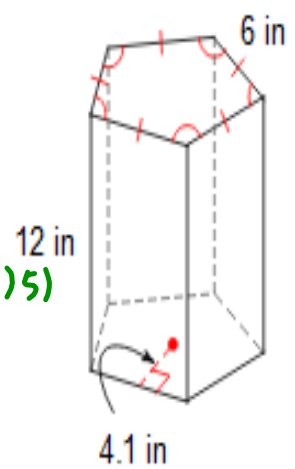
$$210 \text{ mi}^3$$

$$A = \frac{1}{2}(b_1 + b_2)h$$

$$B = \frac{1}{2}(8 + 4)(3.5) =$$

$$B(10)$$

4)



$$A = \frac{1}{2}as_n$$

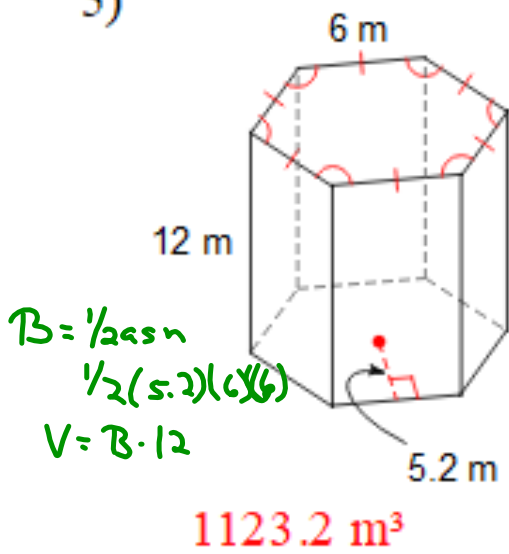
$$B = \frac{1}{2}(4.1)(6)5$$

$$V = B \cdot 12$$

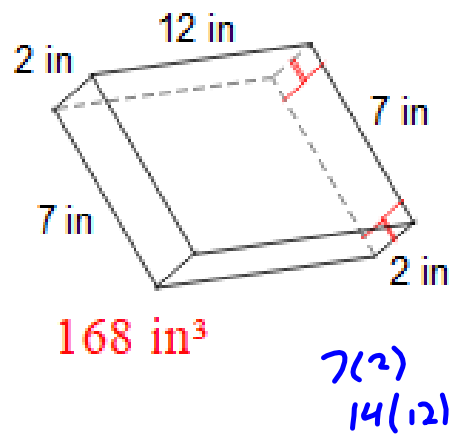
$$V =$$

$$738 \text{ in}^3$$

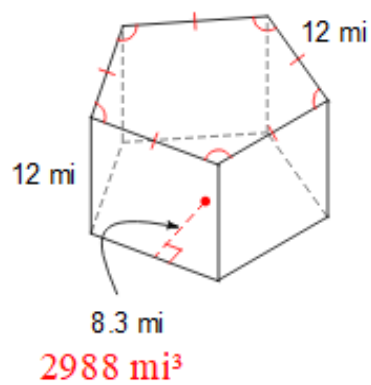
5)



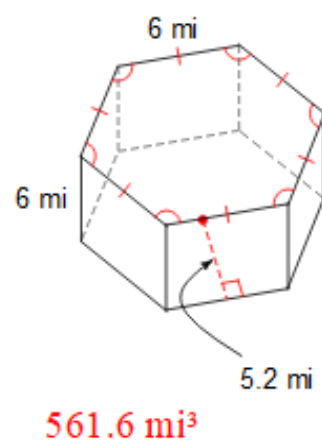
6)



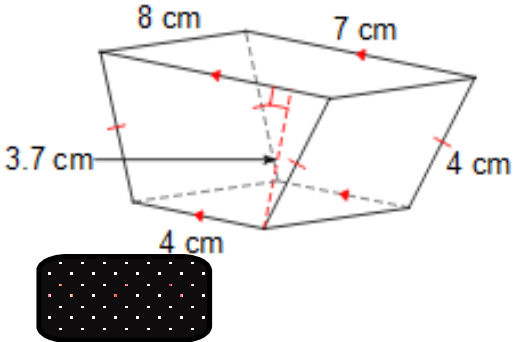
7)



8)



9)



10)

