

Volume of Prisms

Chapter 8 Lesson 4

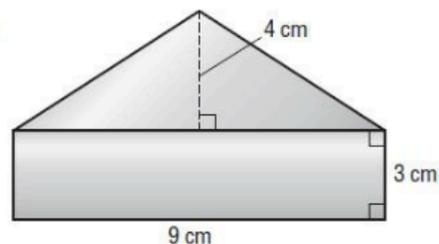


Common Core Quick Check

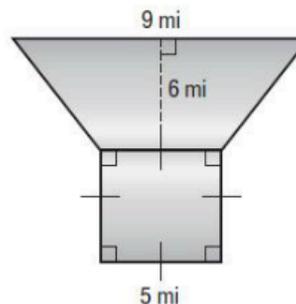
Use with Lesson 4
Standard 7.G.6

Find the area of each figure. Round to the nearest tenth if necessary.

1.

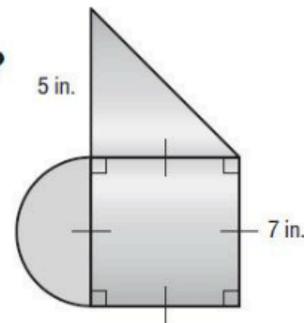


2.



3.  **TEST PRACTICE** What is the area of the figure at the right? Round to the nearest tenth.

- A. 80.5 in^2
- B. 85.7 in^2
- C. 105.0 in^2
- D. 161.0 in^2



ANSWERS

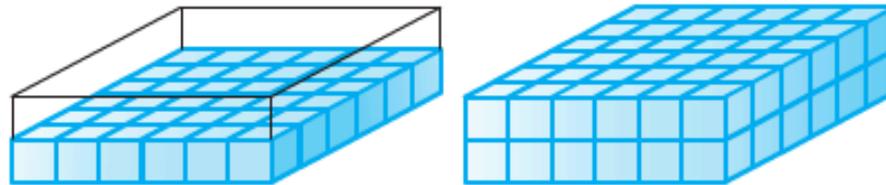
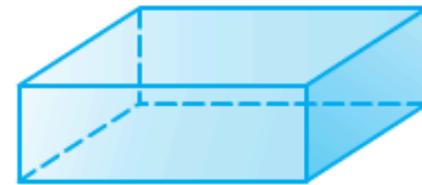
1. 45 cm^2

2. 67 mi^2

3. C

Vocabulary:

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The **volume** of a three-dimensional figure is the measure of space it occupies. It is measured in cubic units such as cubic centimeters (cm^3) or cubic inches (in^3).



It takes 2 layers of 36 cubes to fill the box. So, the volume of the box is 72 cubic centimeters.

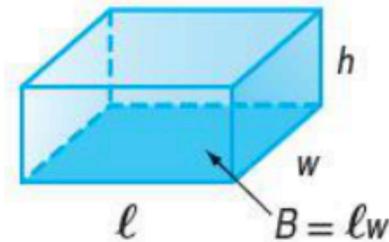
Key Concept

Volume of a Rectangular Prism

Words The volume V of a rectangular prism is the product of the length ℓ , the width w , and the height h . It is also the area of the base B times the height h .

Symbols $V = \ell wh$ or $V = Bh$

Model



Key Concept

Volume of a Triangular Prism

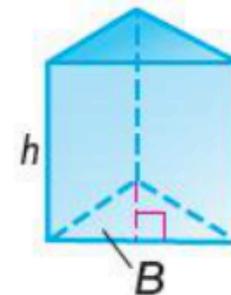
Words

The volume V of a triangular prism is the area of the base B times the height h .

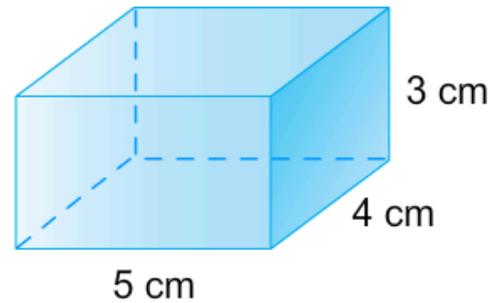
Symbols

$V = Bh$, where B is the area of the base.

Model

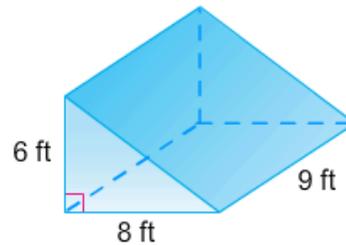


1. Find the volume of the rectangular prism.



- 1 $V = \ell wh$ Volume of a prism
- 2 $V = 5 \cdot 4 \cdot 3$ $\ell = 5$, $w = 4$, and $h = 3$
- 3 $V = 60$ Multiply.
- 4 The volume is 60 cubic centimeters or 60 cm^3 .

2. Find the volume of the triangular prism shown.

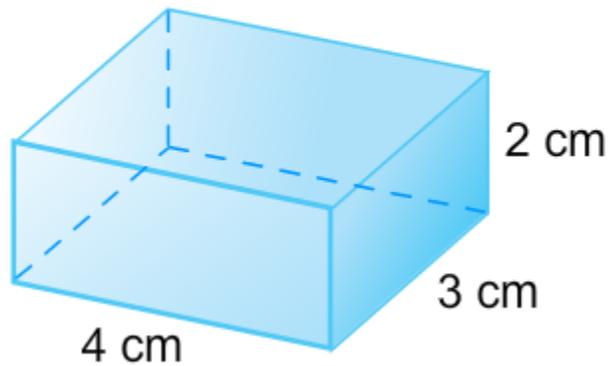


- 1 The area of the triangle is $\frac{1}{2} \cdot 6 \cdot 8$, so replace B with $\frac{1}{2} \cdot 6 \cdot 8$.
- 2 $V = Bh$ Volume of a prism
- 3 $V = \left(\frac{1}{2} \cdot 6 \cdot 8\right)h$ Replace B with $\frac{1}{2} \cdot 6 \cdot 8$.
- 4 $V = \left(\frac{1}{2} \cdot 6 \cdot 8\right)9$ The height of the prism is 9.
- 5 $V = 216$ Multiply.
- 6 The volume is 216 cubic feet or 216 ft^3 .

Practice Problems:

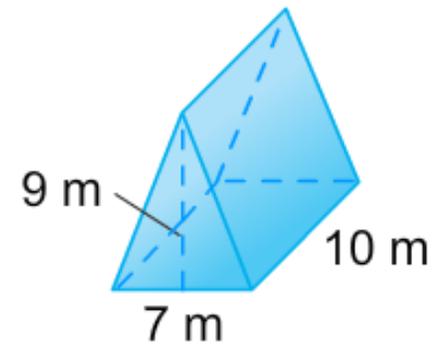
1.

Find the volume of the rectangular prism.



2.

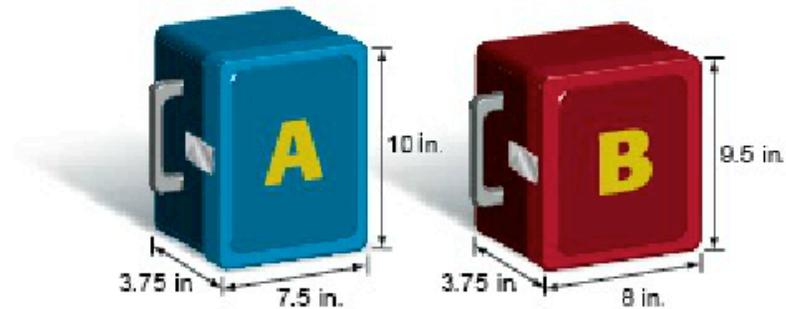
Find the volume of the triangular prism.



Answers:

1. 24 cm^3
2. 315 m^3

3. Which lunch box holds more food?



1 Find the volume of each lunch box. Then compare.

2 **Lunch Box A**

$$V = lwh$$

$$V = 7.5 \cdot 3.75 \cdot 10$$

$$V = 281.25 \text{ in}^3$$

Lunch Box B

$$V = lwh$$

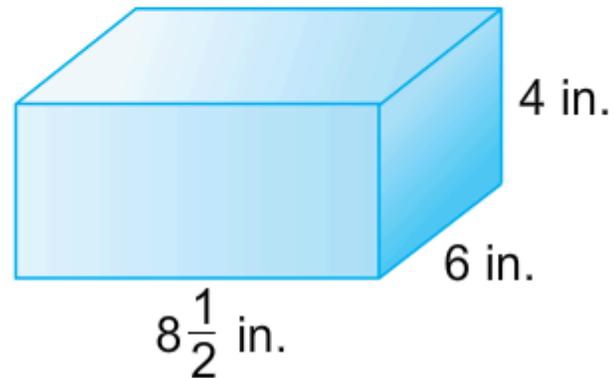
$$V = 8 \cdot 3.75 \cdot 9.5$$

$$V = 285 \text{ in}^3$$

3 Since $285 \text{ in}^3 > 281.25 \text{ in}^3$, Lunch Box B holds more food.

Practice Problem:

The game Planet Bugs comes in the box shown below. The game Fire and Ice comes in a box that measures 9 inches by 5 inches by $4\frac{1}{2}$ inches. Which game box has the greater volume?



Answer: PLANET BUGS

TICKET
Out the Door

Measure the dimensions
of your textbook
and find its volume.