

**LEARNING OBJECTIVE:** We will find the volume of right prisms.  
(G7M3L23)

**ACTIVATING PRIOR KNOWLEDGE**

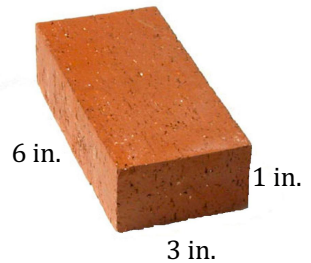
We know how to multiply fractions and mixed numbers (multiply numerators and multiply denominators)

|   |   |
|---|---|
| <p style="font-size: small;">- Improper fraction<br/>- Mult. numerators<br/>Mult. denominators</p> $\left(1\frac{1}{2}\right) \times \left(2\frac{1}{4}\right) \times \frac{3}{4}$ $\frac{3}{2} \times \frac{9}{4} \times \frac{3}{4} = \frac{81}{32}$ $\boxed{\frac{81}{32}} = 2\frac{17}{32}$ | $\frac{1}{3} \times 2\frac{1}{2} \times \frac{4}{3}$ $\frac{1}{3} \times \frac{5}{2} \times \frac{4}{3} = \frac{1 \times 5 \times 4}{3 \times 2 \times 3} = \frac{20}{18}$ $\frac{20}{18} = 1\frac{2}{18} = 1\frac{1}{9}$ |
|---|---|

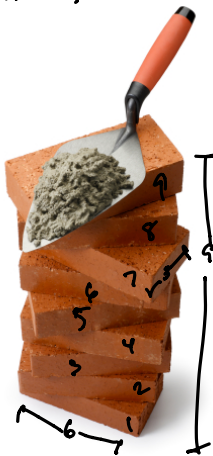
**CONCEPT DEVELOPMENT**

**Volume:** The measurement of the amount of space inside a solid figure, like a cube, or prism. This is measured in cubic units, or units cubed ( $un^3$ ).

Picture a brick that is 1 inch tall, 3 inches wide and 6 inches long. The volume would be length x width x height, or 18 cubic inches.



Volume  
cubic m., cubic ft., cubic cm.  
fluid ounces, gallons, liters,



Now picture 9 bricks stacked on top of one another. How would you calculate the volume of 9 bricks?

$$9 \times \underbrace{3 \times 6}_{\text{Area of base}} = 162 \text{ cu. in.}$$

height

**VOLUME OF RIGHT PRISM:**

$$V = B h$$

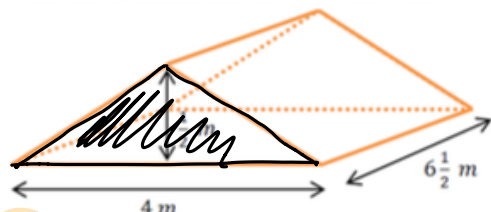
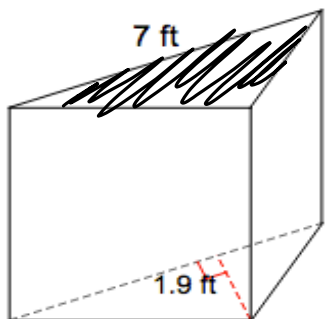
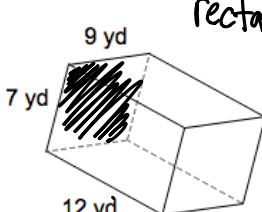

Area of  
the base

Height of  
prism

### GUIDED PRACTICE

#### Steps for Finding the Volume of Right Prisms

1. Identify the base of the shape and find the area of the base.
2. Multiply the area of the base and the height.
3. Express answer in correct cubic units.

|  |  |   |     |    |     |   |  |    |   |    |   |    |   |    |   |    |   |    |   |    |   |
|--|--|---|-----|----|-----|---|--|----|---|----|---|----|---|----|---|----|---|----|---|----|---|
| <p><b>TRIANGULAR PRISM</b></p>  <p>Area of <math>\Delta</math><br/> <math>A = \frac{1}{2}bh</math></p> <p><math>A_{TRI} \times h</math><br/> <math>\frac{1}{2} \cdot 4 \cdot \frac{1}{2} \times 6\frac{1}{2}</math><br/> <math>2 \cdot \frac{1}{2} \times 6\frac{1}{2}</math><br/> <math>1 \times 6\frac{1}{2}</math></p> <p><math>6\frac{1}{2}</math> cubic meters</p> |  <p><math>7 \cdot 1.9 \cdot \frac{1}{2}</math><br/> <math>\frac{13 \cdot 3}{2} = 6.65 \rightarrow</math> Area of triangle<br/> <math>6.65 \times 10 = 66.5 \text{ ft.}^3</math><br/>     66.5 cubic feet</p> |   |     |    |     |   |  |    |   |    |   |    |   |    |   |    |   |    |   |    |   |
| <p><b>rectangular prism</b></p>  <p>Base = <math>9 \times 7 = 63</math><br/> <math>63 \times \text{height}</math><br/> <math>63 \times 12 = 756 \text{ cu. yds.}</math></p> <table border="1" data-bbox="568 1553 730 1659"> <tr><td>60</td><td>3</td></tr> <tr><td>600</td><td>30</td></tr> <tr><td>120</td><td>6</td></tr> </table>                                 | 60   | 3 | 600 | 30 | 120 | 6 |  <p><math>8 \times 7 = 56</math><br/> <math>56 \times 12\frac{1}{2} = 700 \text{ cm.}^3</math></p> <table border="1" data-bbox="1153 1659 1380 1851"> <tr><td>50</td><td>6</td></tr> <tr><td>10</td><td>6</td></tr> <tr><td>20</td><td>6</td></tr> </table> <table border="1" data-bbox="958 1851 1185 2000"> <tr><td>50</td><td>6</td></tr> <tr><td>10</td><td>6</td></tr> <tr><td>20</td><td>6</td></tr> <tr><td>50</td><td>6</td></tr> </table> | 50 | 6 | 10 | 6 | 20 | 6 | 50 | 6 | 10 | 6 | 20 | 6 | 50 | 6 |
| 60   | 3  |   |     |    |     |   |  |    |   |    |   |    |   |    |   |    |   |    |   |    |   |
| 600  | 30   |   |     |    |     |   |  |    |   |    |   |    |   |    |   |    |   |    |   |    |   |
| 120  | 6  |   |     |    |     |   |  |    |   |    |   |    |   |    |   |    |   |    |   |    |   |
| 50   | 6  |   |     |    |     |   |  |    |   |    |   |    |   |    |   |    |   |    |   |    |   |
| 10   | 6  |   |     |    |     |   |  |    |   |    |   |    |   |    |   |    |   |    |   |    |   |
| 20   | 6  |   |     |    |     |   |  |    |   |    |   |    |   |    |   |    |   |    |   |    |   |
| 50   | 6  |   |     |    |     |   |  |    |   |    |   |    |   |    |   |    |   |    |   |    |   |
| 10   | 6  |   |     |    |     |   |  |    |   |    |   |    |   |    |   |    |   |    |   |    |   |
| 20   | 6  |   |     |    |     |   |  |    |   |    |   |    |   |    |   |    |   |    |   |    |   |
| 50   | 6  |   |     |    |     |   |  |    |   |    |   |    |   |    |   |    |   |    |   |    |   |

Volume triangular prism + Volume rectangular prism

$4 \times 6\frac{1}{2} \times 6\frac{1}{2}$   
 $26 \times 6\frac{1}{2} = 169 \text{ m}^3$

|     |               |
|-----|---------------|
| 6   | $\frac{1}{2}$ |
| 120 | 10            |
| 36  | 3             |

$\frac{1}{2} \cdot 4 \cdot \frac{1}{2} = 1 \times 6\frac{1}{2} = 6.5 \text{ m}^3$

175.5 m<sup>3</sup>

$A_{\text{tri}} = \frac{3}{4} \cdot \frac{3}{2} = \frac{9}{8} \times \frac{3}{1} = \frac{27}{8} \text{ in}^2$

$A_{\text{rect}} = \frac{9}{4} \cdot \frac{3}{2} = \frac{27}{8} \times \frac{3}{1} = \frac{81}{8}$

$V = \frac{81}{8} + \frac{27}{8} = \frac{108}{8} = 13.5 \text{ in}^3$

$A_{\text{rect}} = 4 \times 9 = 36$

$A_{\text{tri}} = \frac{1}{2} \cdot 4 \cdot 1\frac{1}{4} = 2.5$

$23.5 \times 9 = 211.5 \text{ cm}^3$

211.5 cm<sup>3</sup>

d)

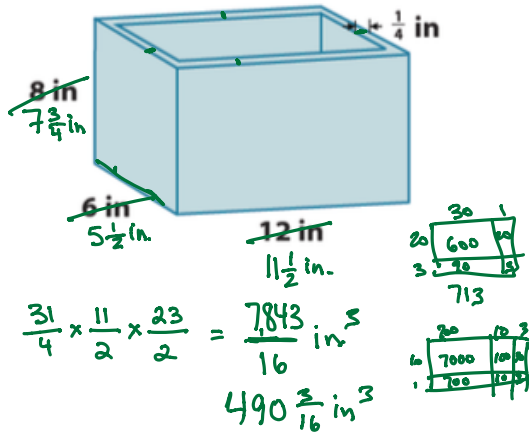
$\text{Rectangle} \cdot 4 \times 9 = 36 \text{ cm}^2 \times 6 = 216$

$\text{Triangle} \cdot \frac{3 \times 4}{2} = 6 \text{ cm}^2 \times 6 = 36$

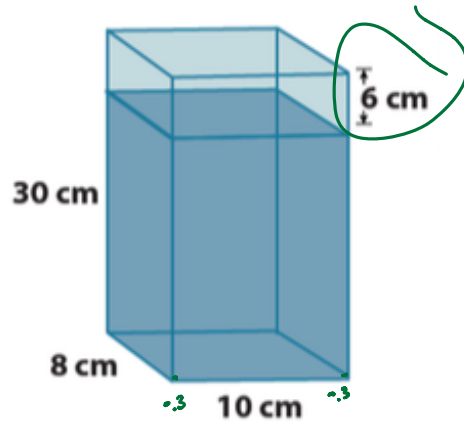
$216 + 36 = 252$

252 cm<sup>3</sup>

A box in the shape of a right rectangular prism has a length of 12in. a width of 6in. and a height of 8in. The base and the walls of the container are  $\frac{1}{4}$ in. thick and the top is open. What is the capacity of the box?



A glass contained is in the form of a right rectangular prism. The contained is 10cm long, 8cm wide, and 30cm high. The top of the contained is open and the base and walls are 3mm (0.3cm) thick. The water in the container is 6cm from the top as shown in the picture below. What is the volume of the water in the container?



- ①  $10 \times 8 \times 24$
- ②  $9.4 \times 7.4 \times 23.7$

$$1648.572 \text{ cm}^3$$

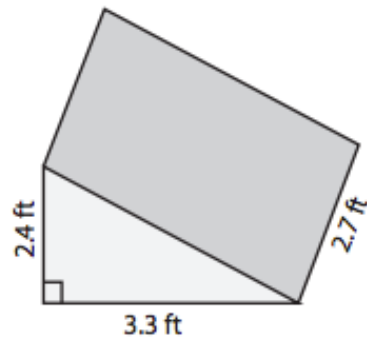
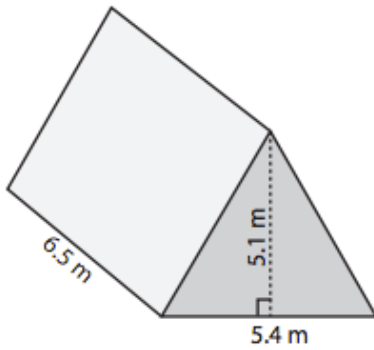
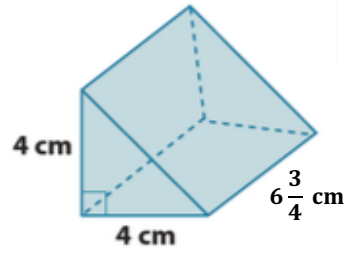
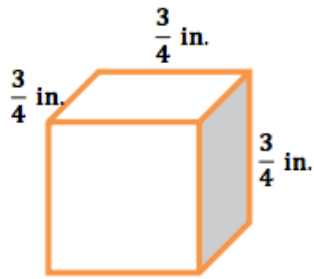
Name: \_\_\_\_\_

Math 7.1

Mr. Rogove

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

## INDEPENDENT PRACTICE

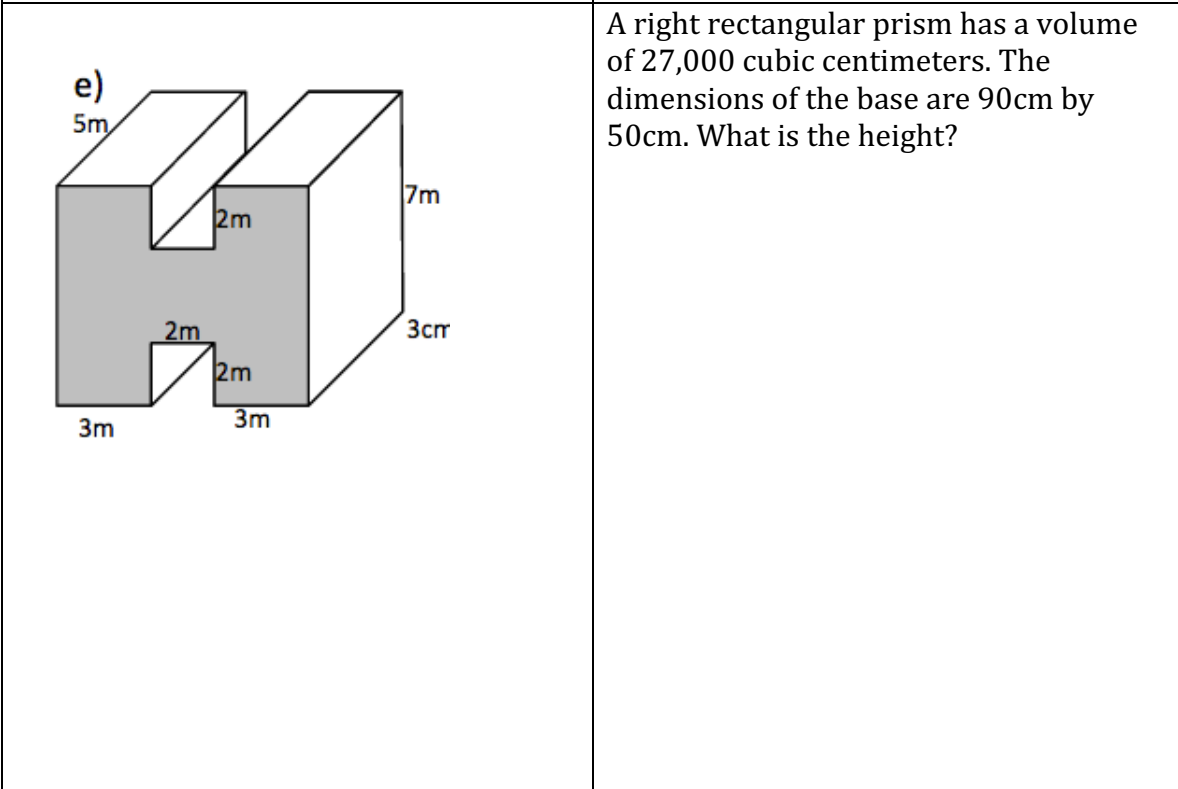
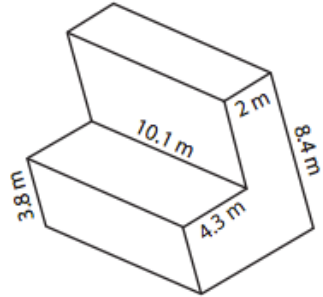
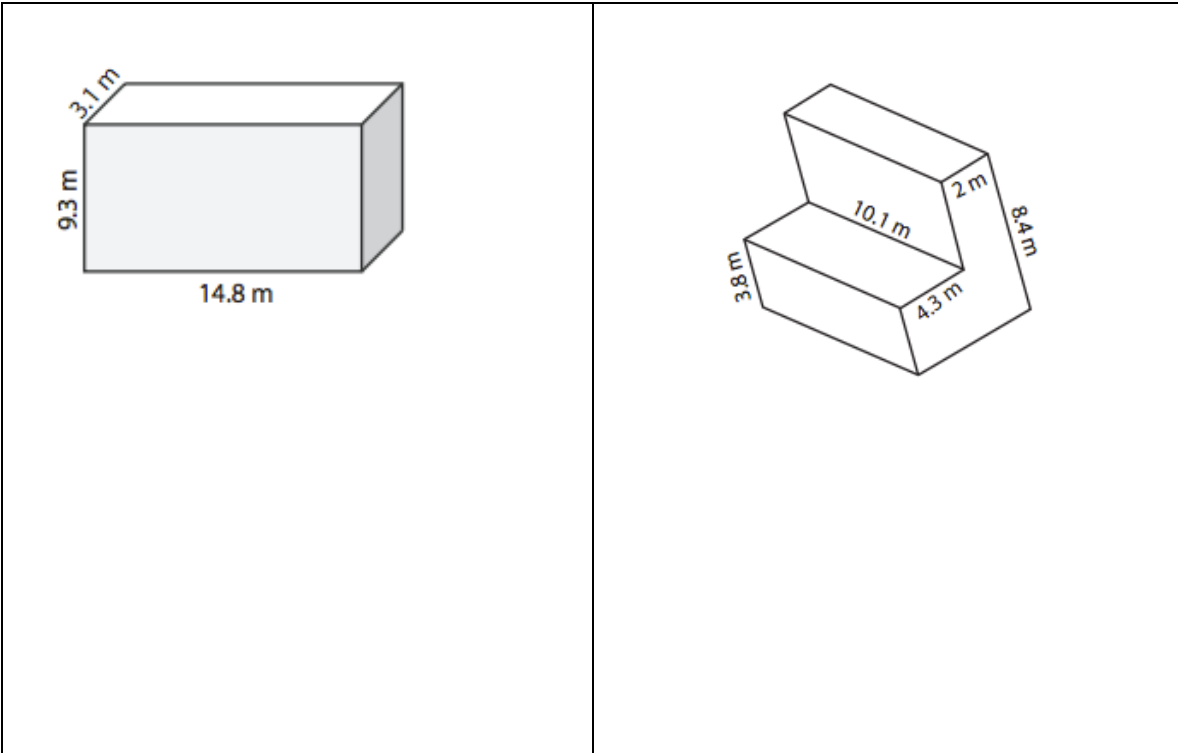


Name: \_\_\_\_\_

Math 7.1

Mr. Rogove

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



A right rectangular prism has a volume of 27,000 cubic centimeters. The dimensions of the base are 90cm by 50cm. What is the height?

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

Math 7.1

Mr. Rogove

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

## **CLOSURE**

Coffee Traveler three Act Task and PoW Garden Statue

## **NOTES**