



*Enrichment*

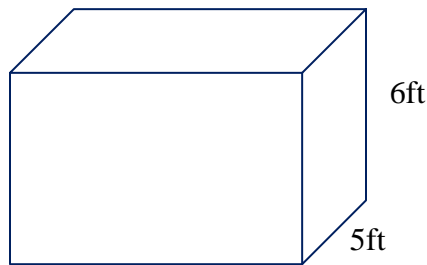
**Lesson:** volume

**Sixth Grade Objective:** 2.01 Estimate and measure length, perimeter, area, angles, weight and mass of two- and three dimensions figures, using appropriate tools.

**Lesson**

The volume (V) of a rectangular solid is the product of the measure of its length (l), the measure of its width(w), and the measure of its height (h).

$$V = l \times w \times h$$



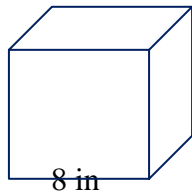
$$\begin{aligned} V &= l \times w \times h \\ &= 10 \times 5 \times 6 \\ &= 50 \times 6 \\ &= 300 \end{aligned}$$

The volume is 300 cubic feet.

10 ft.

The volume (V) of a cube is the product of the length, width and height also. However since a cube's sides by definition are all equivalent,  $V = s^3$ .

$$V_{\text{cube}} = s^3$$



$$V = s^3$$

$$\begin{aligned} V &= 8 \times 8 \times 8 \\ &= 512 \end{aligned}$$

The volume is 512 cubic inches

Now that you know how to compute the volume of a cube and rectangular solid we can solve other problems.

Allie has many beads that are each one cubic cm. They are all over the house and her mother told her she needs to find a small box to put them in or they will be thrown out! Allie found a box that is 12 cm long, 6 cm wide and 6 cm high. How many beads will the box hold?

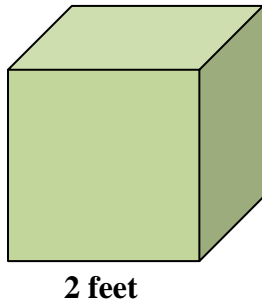
$$\begin{aligned} V &= l \times w \times h \\ V &= 12 \times 6 \times 6 \\ &= 432 \end{aligned}$$

The volume is 432 cubic cm. The box can hold 432 beads.

**Try these on your own.**

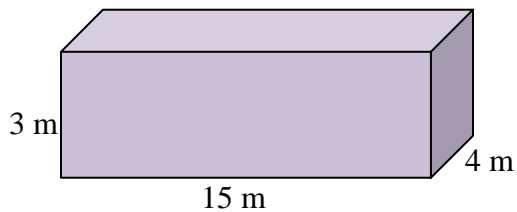
Find the volume. Make sure you label your answers.

1.



$V = \underline{\hspace{2cm}}$

2.



$V = \underline{\hspace{2cm}}$

3. Benjamin has dice collection. Each dice is 1 cubic cm. How many dice can fit into a box that is 8 cm long, 6 cm wide and 10 cm high?

**Check your answers**

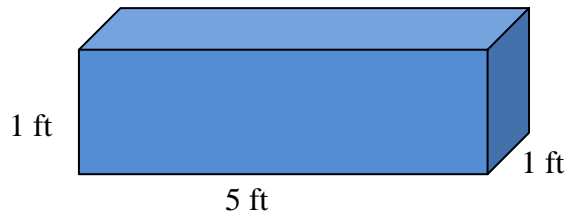
1.  $V = s^3$   
 $= 2 \times 2 \times 2$   
 $= 8$   
 $V = 8 \text{ cubic feet}$

1.  $V = l \times w \times h$   
 $= 15 \times 4 \times 3$   
 $= 180$   
 $V = 180 \text{ cubic feet}$

2.  $V = l \times w \times h$   
 $= 8 \times 6 \times 10$   
 $= 480$   
 $V = 480 \text{ cubic cm...The box can hold 480 dice}$

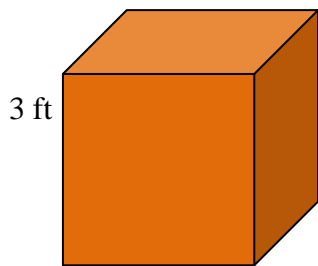
**Quiz Yourself**

1.



$$V = \underline{\hspace{2cm}}$$

2.



$$V = \underline{\hspace{2cm}}$$

3. The Smiths are moving. They ordered 100 boxes that are each one cubic meter. They want to know if they will all fit into the back of the truck they have rented. The back of the truck is 3 meters wide, 10 meters long and 3 meters in height. Will all of the boxes fit? If not, how many will not fit?



### Check Your Answers

1.  $V = l \times w \times h$   
 $V = 5 \times 1 \times 1$   
 $= 5$

The volume is 5 cubic feet.

2.  $V = s^3$   
 $V = 3 \times 3 \times 3$   
 $= 27$

The volume of the cube is 27 cubic feet.

3.  $V = l \times w \times h$

$$= 10 \times 3 \times 3$$

$$= 90$$

90 boxes will fit on the truck.

No, all the boxes will not fit on the truck. They will have 10 boxes left off the truck.