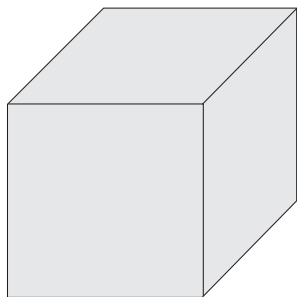


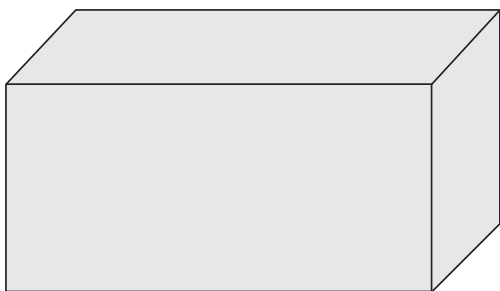
Unit 9 : Volume

Friendly Notes

Cubic Units



All the edges of a **cube** are of equal length.
The sides are all squares.



A **cuboid** has rectangular and/or square sides.

Cubes and cuboids are called
rectangular prisms.

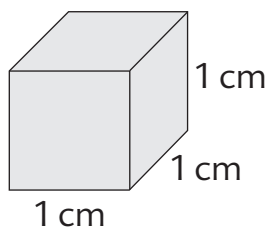
Rectangular prisms are
solid figures.



Volume of Rectangular Prisms

The **volume** of a solid is the amount of space it occupies.
The volume of a unit cube is 1 cubic unit.

Each edge of the cube is 1 cm long.
The volume of the cube is 1 cubic centimeter (cm^3).



The cubic centimeter (cm^3) is a unit of volume.
The cubic inch (in.^3), cubic foot (ft^3), and cubic meter (m^3) are other units of volume.

Volume of rectangular prism = length $\times$ width $\times$ height

1. Find the volume of the rectangular prism which measures 18 cm by 20 cm by 10 cm.

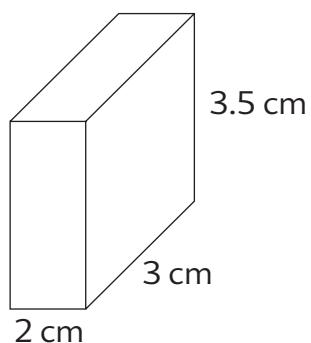
$$\begin{aligned}\text{Volume of rectangular prism} &= 18 \times 20 \times 10 \\ &= 3,600 \text{ cm}^3\end{aligned}$$

2. Find the height of the rectangular prism which has a base area of 24 m^2 and a volume of 120 m^3 .

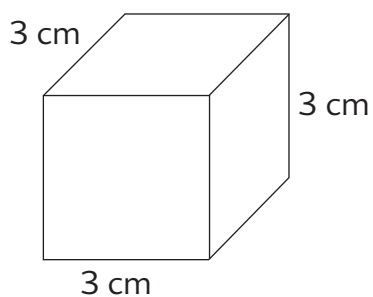
$$\begin{aligned}\text{Height of rectangular prism} &= \frac{\text{volume}}{\text{base area}} \\ &= \frac{120}{24} \\ &= 5 \text{ m}\end{aligned}$$

2. Find the volume of each rectangular prism.

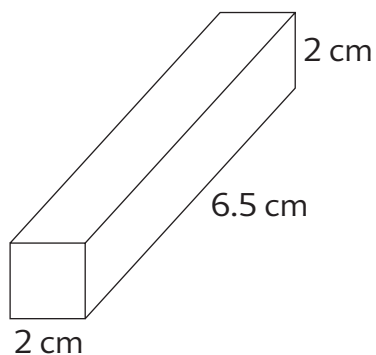
(a)



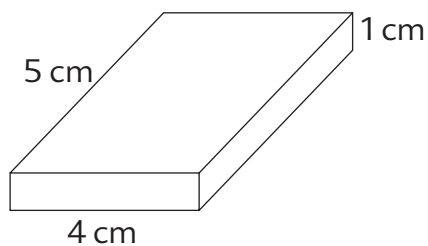
(b)



(c)

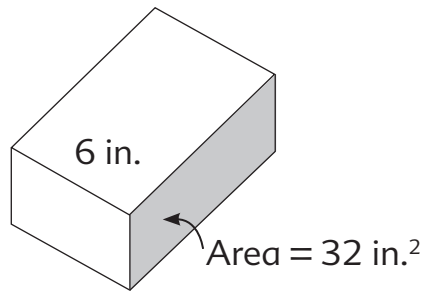


(d)

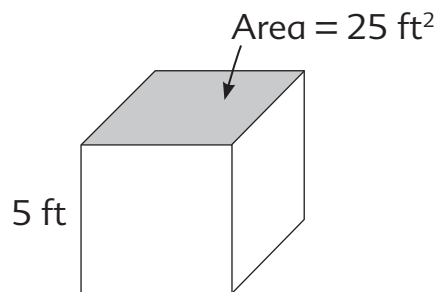


3. Find the volume of each rectangular prism.

(a)

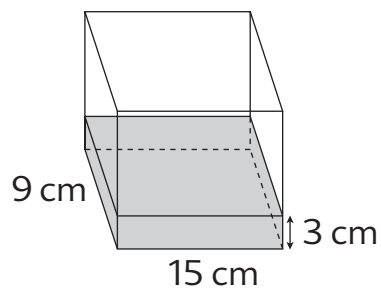


(b)

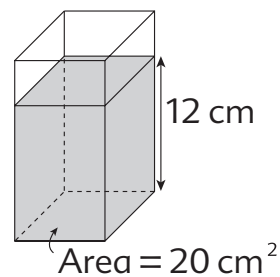


4. Find the volume of the water in each container in cubic centimeters.

(a)



(b)



9. Solve. Show all your work clearly.

(a) The volume of a rectangular prism is 189 in.^3 . What is its length if its height is 7 in. and its width is 3 in.?

(b) A rectangular tank is 25 cm long, 16 cm wide, and 30 cm high. It contains 8 L of water. How many more liters of water can it contain? ($1 \text{ L} = 1,000 \text{ cm}^3$)

(c) The volume of a wooden block is $1,200 \text{ cm}^3$. Its length is 5 cm more than its width. If its length is 10 cm, find its height.

