

# Volume of Cubes and Cuboids

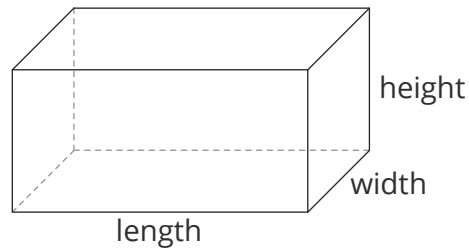
## Prior Knowledge:

Before attempting this sheet, students should be familiar with cubes and cuboids, and their properties.

The volume of a shape is the measure of the **three-dimensional** space it covers. The units of measurement for volume are **cubic units**, for example  $\text{cm}^3$  or  $\text{m}^3$ .

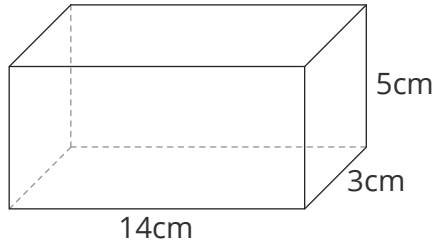
To calculate the volume of a cube or cuboid, learn this formula by heart.

$$\text{Volume of a cube or cuboid} = \text{length} \times \text{width} \times \text{height}$$



### Example 1:

Find the volume of the cuboid, stating the units in your answer.



#### 1. Write out the formula

$$\text{Volume} = \text{length} \times \text{width} \times \text{height}$$

#### 2. Substitute the words with the measurements you have been given.

$$\text{Volume} = 14 \times 3 \times 5 = 210$$

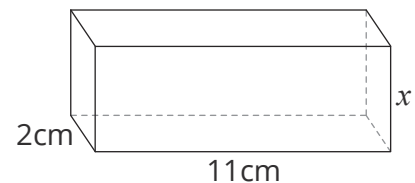
Don't forget the units!

$$\text{Volume} = 210\text{cm}^3$$

Sometimes, you will be asked to find a missing measurement.

### Example 2:

The volume of the cuboid is  $66\text{cm}^3$ . Calculate the height ( $x$ ) of the cuboid.



Start by following the same first steps as before.

#### 1. Write out the formula

$$\text{Volume} = \text{length} \times \text{width} \times \text{height}$$

#### 2. Substitute the words with the measurements you have been given.

$$66 = 11 \times 2 \times x$$

$$66 = 22 \times x$$

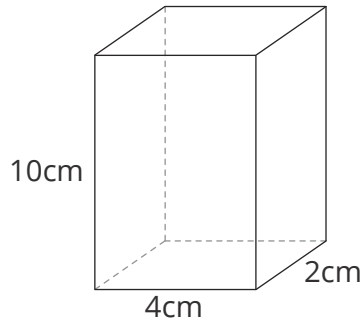
#### 3. Use the **inverse** to find the height (the value of $x$ ). The inverse of multiplication is division.

$$66 \div 22 = 3$$

$$x = 3\text{cm}$$

**Your Turn**

1. Calculate the volume of the cuboid, stating the units in your answer.

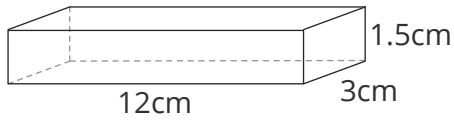



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2. Calculate the volume of the cuboid, stating the units in your answer.

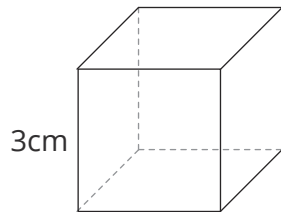



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3. Calculate the volume of the cube, stating the units in your answer.

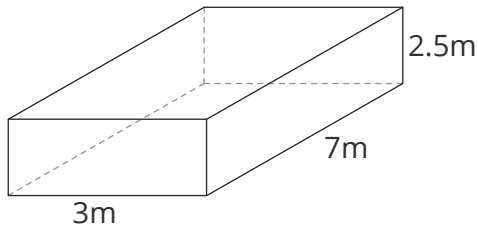



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4. Calculate the volume of the cuboid, stating the units in your answer.




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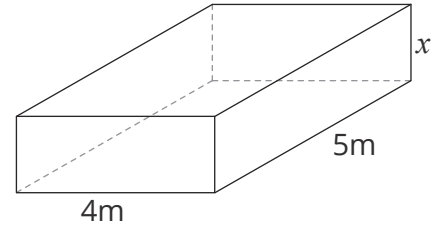
5. Calculate the volume of a cube with a height of 5cm.

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6. The volume of the cuboid is  $40\text{m}^3$ . Calculate the height ( $x$ ) of the cuboid.




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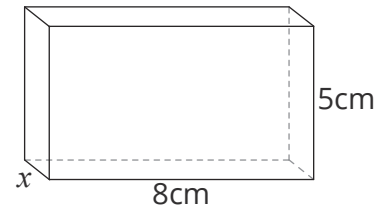


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7. The volume of the cuboid is  $20\text{cm}^3$ . Calculate the width ( $x$ ) of the cuboid.




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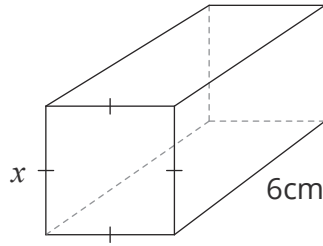
8. The volume of a cube is  $216\text{cm}^3$ . Calculate the length of the cube.

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9. The volume of the cuboid is  $54\text{cm}^3$ . Calculate the missing length of the side marked  $x$ .




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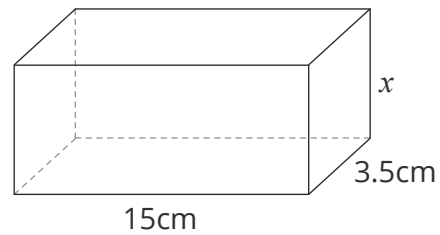
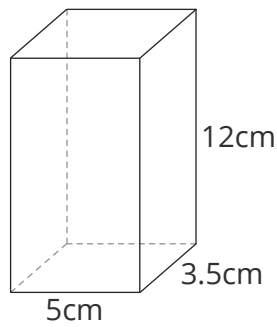


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10. Shown below are two cuboids. Both cuboids have the same volume. Calculate the value of the measurement marked  $x$ .




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**Challenge**

The volume of a box is  $0.6\text{m}^3$ . Find its volume in  $\text{cm}^3$ .

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