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In a move towards offering an even more versatile spread of resources, some of our worksheets feature <u>interactive fields</u> that can be filled in on computers and smart devices, without having to print the page. Follow the guidance in the next column for a smooth, stress-free means of accessing this content using free-to-download PDF reading software.

Step 1: Click the following link to download   for PC/Mac (or search 'Adobe Acrobat Reader' on G   ). Open the downloaded file and Acrobat Reader will install automatically. For the best experience, we recommend using PC/Mac.

Step 2: Open your interactive resource using Adobe Acrobat Reader DC.

If you are a PC/Mac user and your downloaded PDF resource does not open using Acrobat Reader by default, simply right-click your PDF file, go to 'Open with' and select Adobe   DC from the drop-down list.

Step 3: Complete the resource!

For PC/Mac users: To fill in the resource, click the text fields and type your answers as needed. Check boxes and radio buttons can simply be clicked on to make the selection of your choice and for anything else you will see the question mark icon which, upon being clicked, will reveal specific instructions to help you respond to the corresponding question or activity. When you are finished with the resource, go to File > Save As... and save your file in a memorable location.

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We hope you have found this information useful. If you experience any problems in following the instructions above, please contact the Beyond team at   and we will do our best to help with your query.
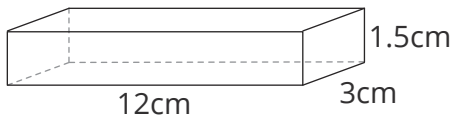
Your Turn

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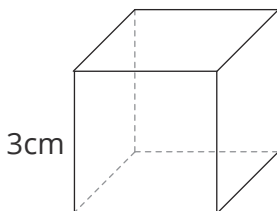

10cm
2cm
4cm
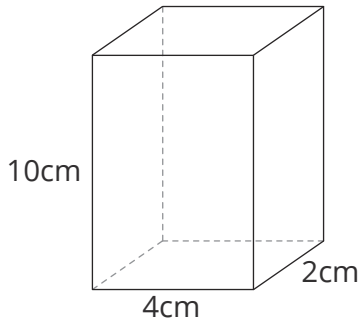
4 × 2 × 10 = 80cm^3

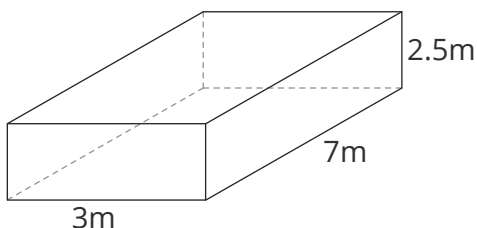2. Calculate the volume of the cuboid, stating the units in your answer.

1.5cm
3cm
12cm

12 × 3 × 1.5 = 54cm^3

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

3cm

3 × 3 × 3 = 27cm^3

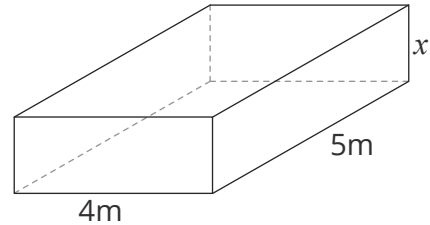4. Calculate the volume of the cuboid, stating the units in your answer.

2.5m
7m
3m

3 × 7 × 2.5 = 52.5m^3

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

5 × 5 × 5 = 125cm^3

6. The volume of the cuboid is 40m^3. Calculate the height (x) of the cuboid.

x
5m
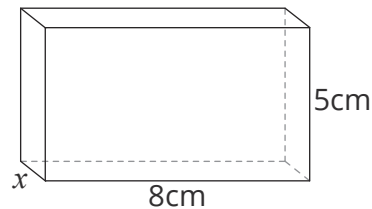4m

4 × 5 × x = 40

20 × x = 40

40 ÷ 20 = 2

x **= 2m**

7. The volume of the cuboid is 20cm^3. Calculate the width (x) of the cuboid.

5cm
x
8cm

8 × 5 × x = 20

40 × x = 20

20 ÷ 40 = 0.5

x **= 0.5cm**

8. The volume of a cube is 216cm^3. Calculate the length of the cube.

$\sqrt[3]{216}$ = 6cm

9. The volume of the cuboid is 54cm^3. Calculate the missing length of the side marked x.
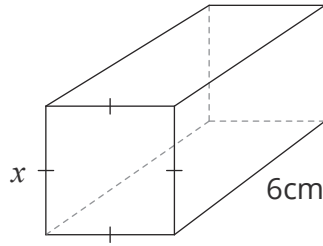
6 × x × x = 54

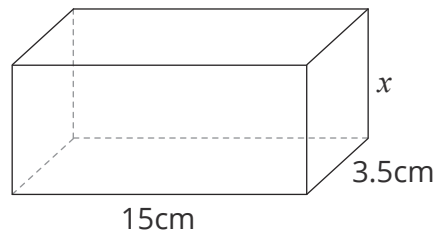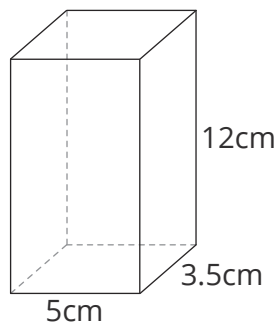**6 × x^2 = 54**

54 ÷ 6 = 9

$\sqrt{9}$ = 3

x = 3cm

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

5 × 3.5 × 12 = 210cm^3

15 × 3.5 = 52.5

210 ÷ 52.5 = 4

x = 4cm

Challenge

The volume of a box is 0.6m^3. Find its volume in cm^3.

1m = 100cm

0.6 × 100 × 100 × 100 = 600 000

0.6m^3 = 600 000 cm^3

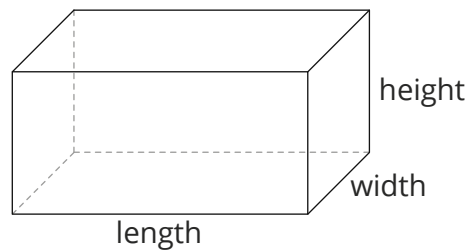# Volume of Cubes and Cuboids

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 cm^3 or m^3.
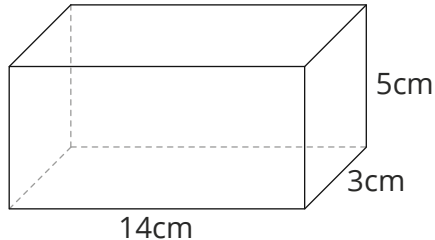
To calculate the volume of a cube or cuboid, learn this formula by heart.

Volume of a cube or cuboid = length × width × height

Example 1:

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

1. **Write out the formula**

   Volume = length × width × height

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

   Volume = 14 × 3 × 5 = 210
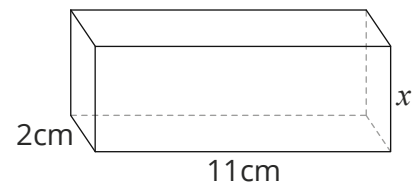
   Don't forget the units!

   Volume = 210cm^3

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

Example 2:

The volume of the cuboid is 66cm^3. Calculate the height (x) of the cuboid.

Start by following the same first steps as before.

1. **Write out the formula**

   Volume = length × width × height

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

   66 = 11 × 2 × x

   66 = 22 × x
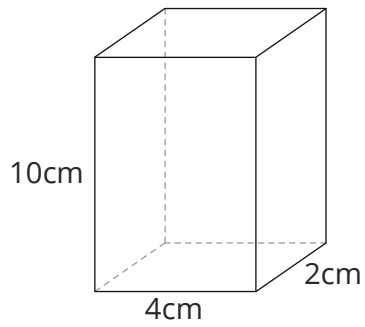
3. Use the **inverse** to find the height (the value of x). The inverse of multiplication is division.
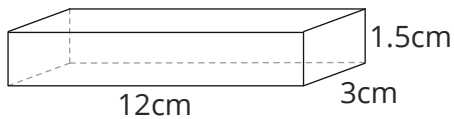
   66 ÷ 22 = 3

   x = 3cm

Your Turn

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

10cm

2cm

4cm

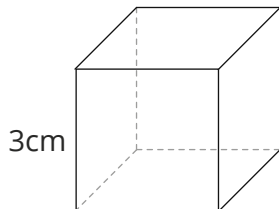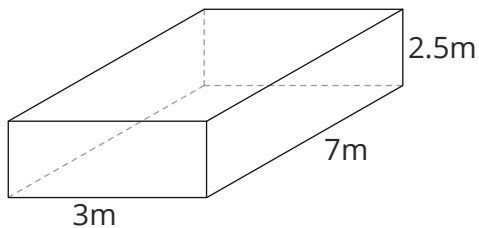2. Calculate the volume of the cuboid, stating the units in your answer.

1.5cm

12cm

3cm

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

3cm

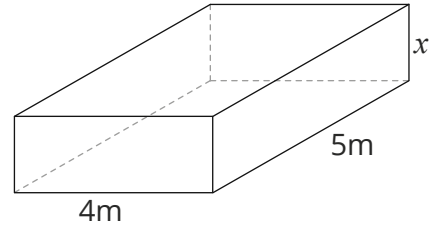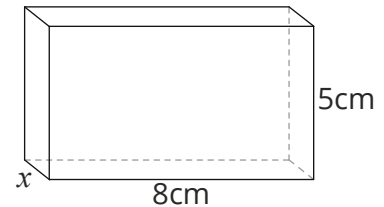4. Calculate the volume of the cuboid, stating the units in your answer.

2.5m

7m

3m

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

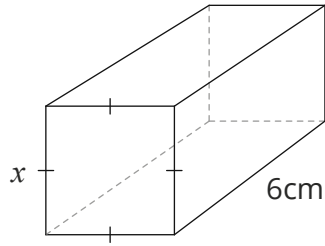6. The volume of the cuboid is $40m^3$. Calculate the height (x) of the cuboid.

x

5m

4m

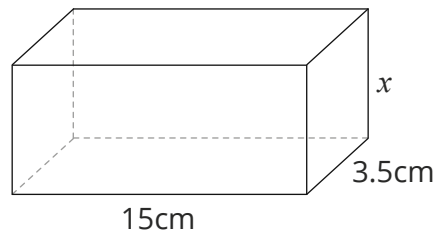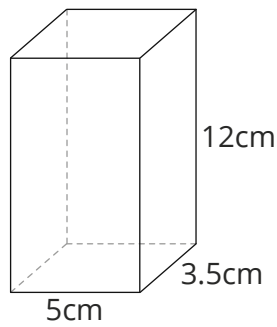7. The volume of the cuboid is $20cm^3$. Calculate the width (x) of the cuboid.

5cm

x

8cm

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

9. The volume of the cuboid is 54cm³. Calculate the missing length of the side marked x.

x

6cm

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

12cm

3.5cm

5cm

x

3.5cm

15cm

Challenge

The volume of a box is 0.6m³. Find its volume in cm³.
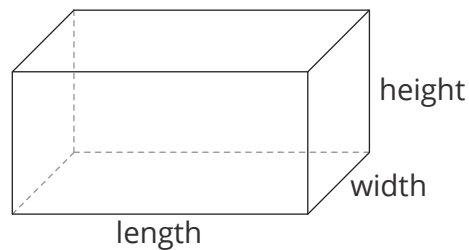
Volume of Cubes and Cuboids

> **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 cm^3 or m^3.
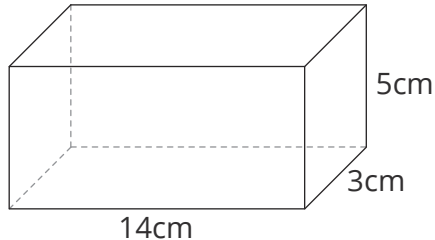
To calculate the volume of a cube or cuboid, learn this formula by heart.

> **Volume of a cube or cuboid = length × width × height**

Example 1:

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

1. **Write out the formula**

   Volume = length × width × height

2. **Substitute** the words with the measurements you have been given.
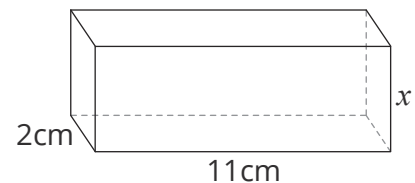
   Volume = 14 × 3 × 5 = 210

   Don't forget the units!

   Volume = $210cm^3$

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

Example 2:

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

Start by following the same first steps as before.

1. **Write out the formula**

   Volume = length × width × height

2. **Substitute** the words with the measurements you have been given.
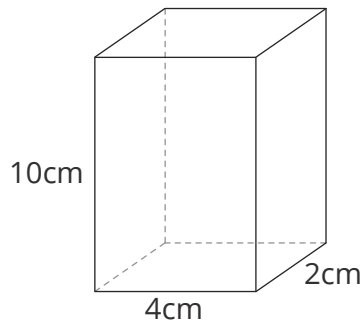
   $66 = 11 \times 2 \times x$

   $66 = 22 \times x$

3. Use the **inverse** to find the height (the value of x). The inverse of multiplication is division.
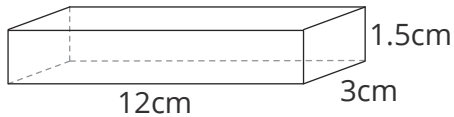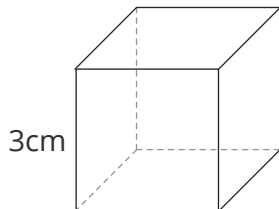
   $66 \div 22 = 3$

   $x = 3cm$

Your Turn

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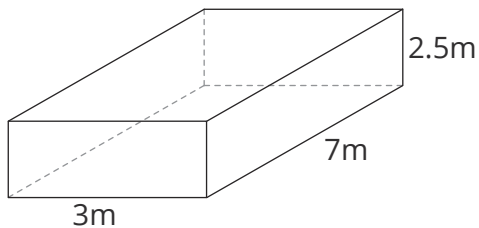

10cm

2cm

4cm

_____

_____

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

1.5cm

12cm   3cm

_____

_____

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

3cm

_____

_____

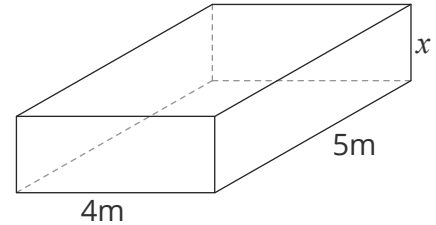4. Calculate the volume of the cuboid, stating the units in your answer.

2.5m

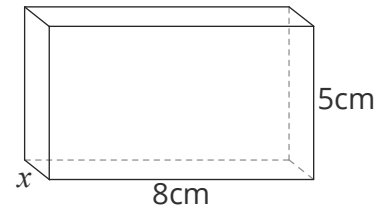7m

3m

_____

_____

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

_____

_____

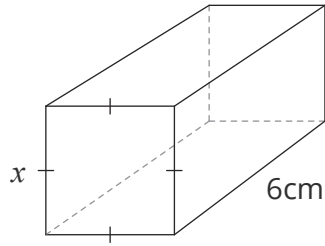6. The volume of the cuboid is $40m^3$. Calculate the height (x) of the cuboid.

x

5m

4m

_____

_____

_____

_____

_____

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

5cm

x 8cm

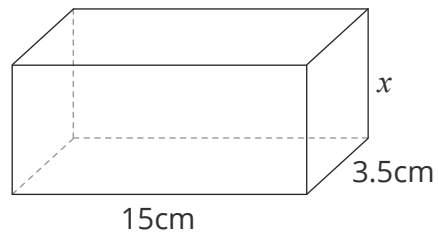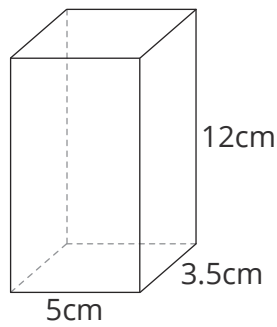_____

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

_____

_____

9. The volume of the cuboid is 54cm^3. Calculate the missing length of the side marked x.

x 6cm

_____

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_____

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

12cm

3.5cm

5cm

x

3.5cm

15cm

_____

_____

_____

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_____

Challenge

The volume of a box is 0.6m^3. Find its volume in cm^3.

_____

_____

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_____

_____