



Maths

Measurement

Calculating and Estimating Volume



twinkl

Aim

- I can estimate and calculate the volume of cubes and cuboids.

Success Criteria

- I can count cubes in a layer to help me estimate the volume of cubes and cuboids.
- I can use a formula to calculate volume of cubes and cuboids.

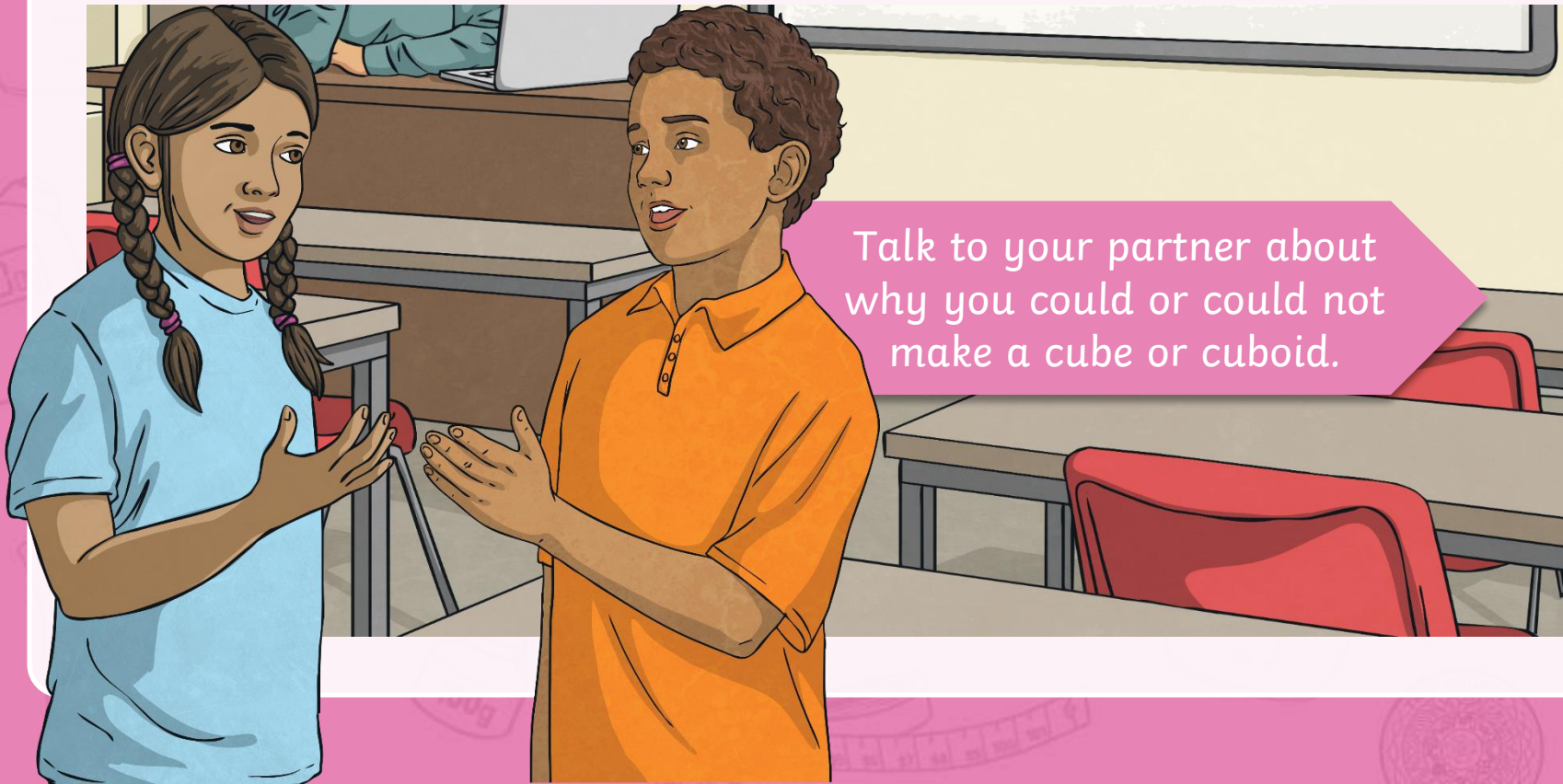
Make the Shape

Roll a dice 3 times. Multiply the numbers you roll.
Make a 3D shape with this number of small cubes.



?

Were you able to make a cube or a cuboid?

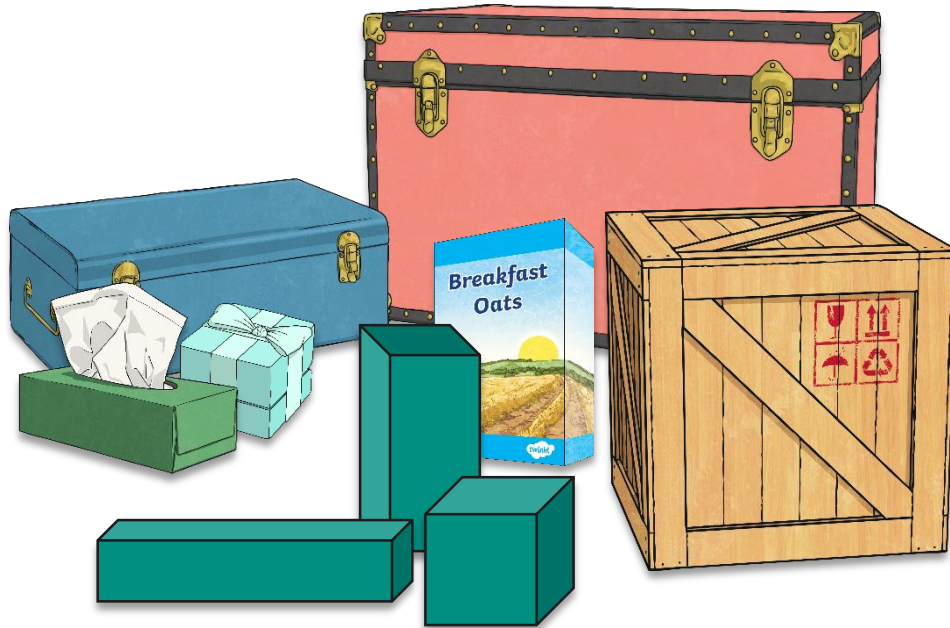


Talk to your partner about why you could or could not make a cube or cuboid.

What Is Volume?

With your partner, write a definition for volume.

Volume = the amount of 3D space taken up by something.

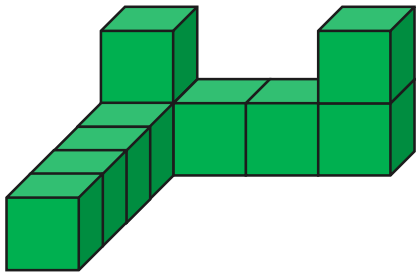


When measuring the volume of a fixed object (where the shape doesn't change), we use cubic units. Today we are going to use cubic centimetres and cubic metres to measure and estimate the volume of cubes and cuboids.

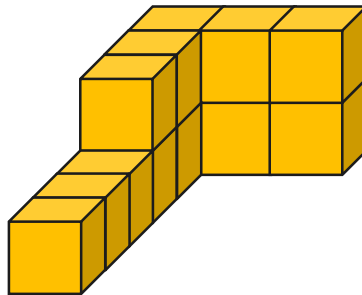
What Is Volume?

We can find the volume of these shapes made from 1cm^3 multilink cubes by counting the number of 1cm^3 cubes that make up each shape.

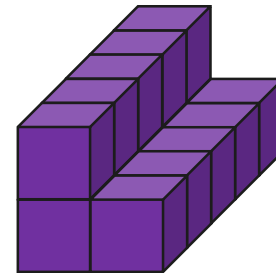
Remember that some shapes have cubes that are hidden from sight!



10cm^3



13cm^3

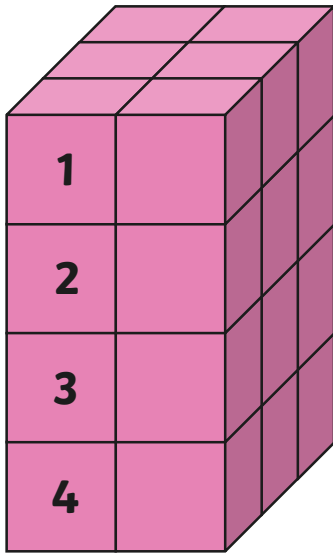


15cm^3

Calculating Volume of Cubes and Cuboids



We can calculate the volume of cubes and cuboids by counting cubes in layers:



In the top layer, there are 6 cubes (3×2).

There are 4 layers.

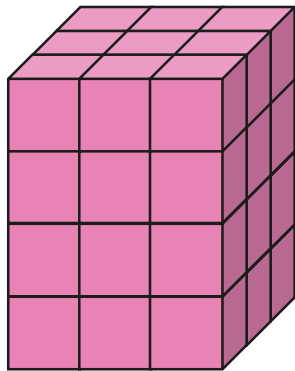
$$3 \times 2 \times 4 = 24$$

If each cube were a cubic centimetre, this would be 24 cubic centimetres, which we could write as 24cm^3 .

Calculating Volume of Cubes and Cuboids

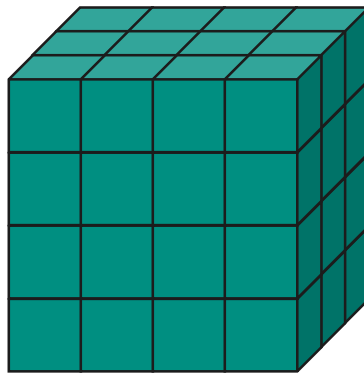


Count the top layer of each shape and calculate the volume.
The unit measurement is shown underneath.



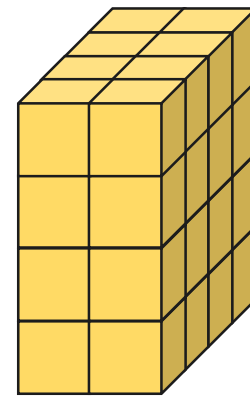
cubic
centimetres

$$36\text{cm}^3$$



cubic metres

$$48\text{m}^3$$



cubic
centimetres

$$32\text{cm}^3$$

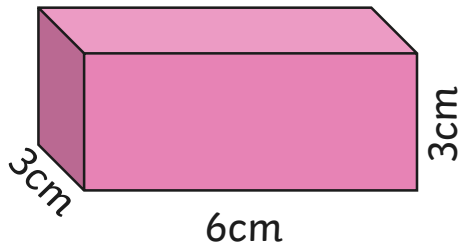
Calculating Volume of Cubes and Cuboids



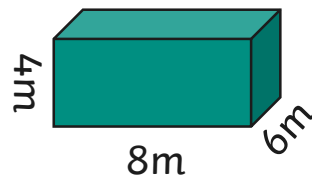
Do you know another way to calculate the volume of cubes

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

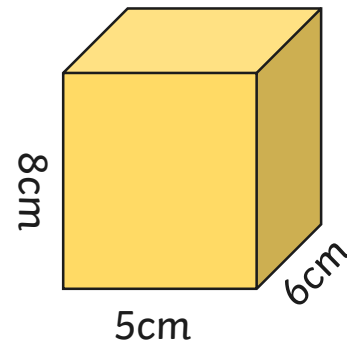
Use the formula to calculate the volume of the following shapes.



$$54\text{cm}^3$$



$$192\text{m}^3$$

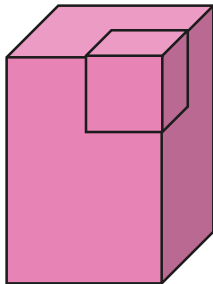


$$240\text{cm}^3$$

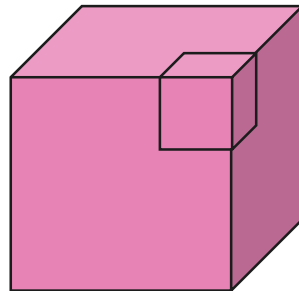
Calculating Volume of Cubes and Cuboids



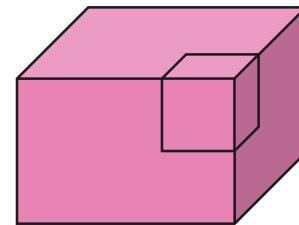
On these shapes, one cube has been drawn.
Each cube is a cubic centimetre. Estimate the volume.



12cm^3

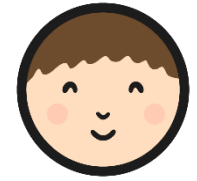


27cm^3



18cm^3

Calculating and Estimating Volume



Use your fabulous calculation and estimation skills to complete these activity sheets.

Calculating and Estimating Volume

I can estimate and calculate the volume of cubes and cuboids.

1. Calculate the volume of these shapes.

a) Each small cube is a cubic centimetre. volume = <input type="text"/> cm ³	b) Each small cube is a cubic centimetre. volume = <input type="text"/> cm ³
c) 4cm 3cm volume = <input type="text"/> cm ³	d) 4m 6m 8m volume = <input type="text"/> m ³
e) 8cm 4cm 1cm volume = <input type="text"/> cm ³	f) 8m 10m 10m volume = <input type="text"/> m ³

twinkl planit Midday Year 5 Measurement Volume of Cubes and Cuboids Lesson 1 of 3 Calculating and Estimating Volume

Calculating and Estimating Volume

I can estimate and calculate the volume of cubes and cuboids.

1. Calculate the volume of these shapes.

a) Each small cube is a cubic centimetre. volume = <input type="text"/> cm ³	b) Each small cube is a cubic centimetre. volume = <input type="text"/> cm ³
c) 2cm 7cm 9cm volume = <input type="text"/> cm ³	d) 4m 14m 18m volume = <input type="text"/> m ³
e) 4m 4m 18m volume = <input type="text"/> m ³	f) 10m 6m 16m volume = <input type="text"/> m ³

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Calculating and Estimating Volume

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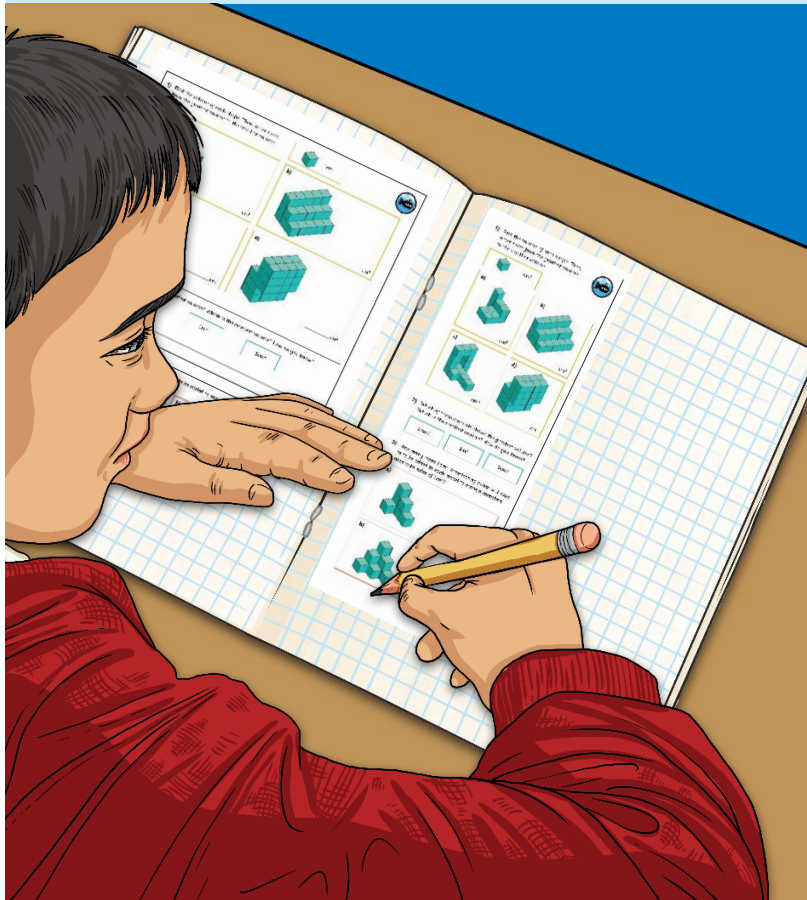
1. Calculate the volume of these shapes.

a) Each small cube is a cubic centimetre. volume = <input type="text"/>	b) Each small cube is a cubic centimetre. volume = <input type="text"/>
c) 6cm 2cm 15cm volume = <input type="text"/>	d) 10cm 20cm 9cm volume = <input type="text"/>
e) 10cm 3cm 4.4cm volume = <input type="text"/>	f) 5cm 18cm 3.6cm volume = <input type="text"/>

twinkl planit Midday Year 5 Measurement Volume of Cubes and Cuboids Lesson 1 of 3 Calculating and Estimating Volume

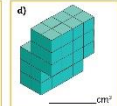
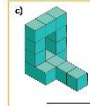
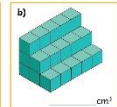
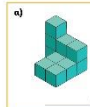
Diving into Mastery

Dive in by completing your own activity!



1) Find the volume of each shape. Then, order them from the greatest volume to the smallest volume.

 = 1cm^3



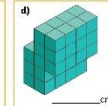
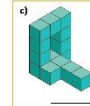
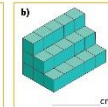
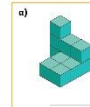
2) Which of these amounts shows the greatest volume? Which is the smallest volume? How do you know?

3) How many more 1cm^3 interlocking cubes will need to be added to each model to make a complete cube with sides of 3cm ?



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 = 1cm^3



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