Maths

Measurement

Aim

- I can use a formula to calculate volume.

Success Criteria

- I can use a formula to calculate the volume of cubes and cuboids.

- I can identify whether or not I can use a formula to calculate the volume of a shape.

Quick Fire Multiplication

You will have 1 minute to complete as many multiplication facts as you can.

2 × 8 =	2 × 5 × 3 =
3 × 9 =	4 × 4 × 2 =
4 × 8 =	6 × 3 × 5 =
7 × 6 =	6 × 7 × 3 =
9 × 5 =	8 × 2 × 7 =
12 × 7 =	8 × 5 × 3 =
11 × 8 =	10 × 8 × 2 =
8 × 8 =	9 × 3 × 6 =
6 × 8 =	8 × 4 × 3 =
10 × 9 =	8 × 5 × 2 =
3 × 7 =	11 × 3 × 4 =

Go!

Volume of Cubes and Cuboids

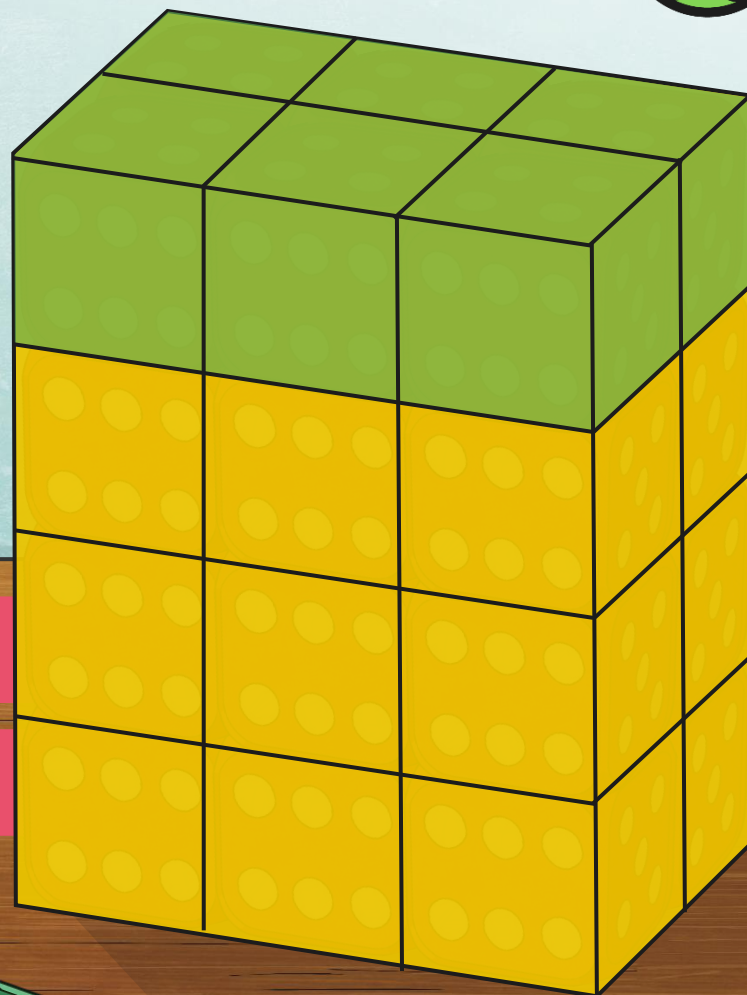To calculate the volume of a cube or cuboid, you could count the cubes in each layer.

Another way to look at this would be to multiply the length × width × height.

6 cubes

6 + 6 + 6 + 6 = **24 cubes**

3 × 2 × 4 = **24 cubes**

If each cube was 1cm³, the volume of this shape would be 24cm³.

Volume of Cubes and Cuboids

To calculate the volume of a cube or cuboid, you could count the cubes in each layer.
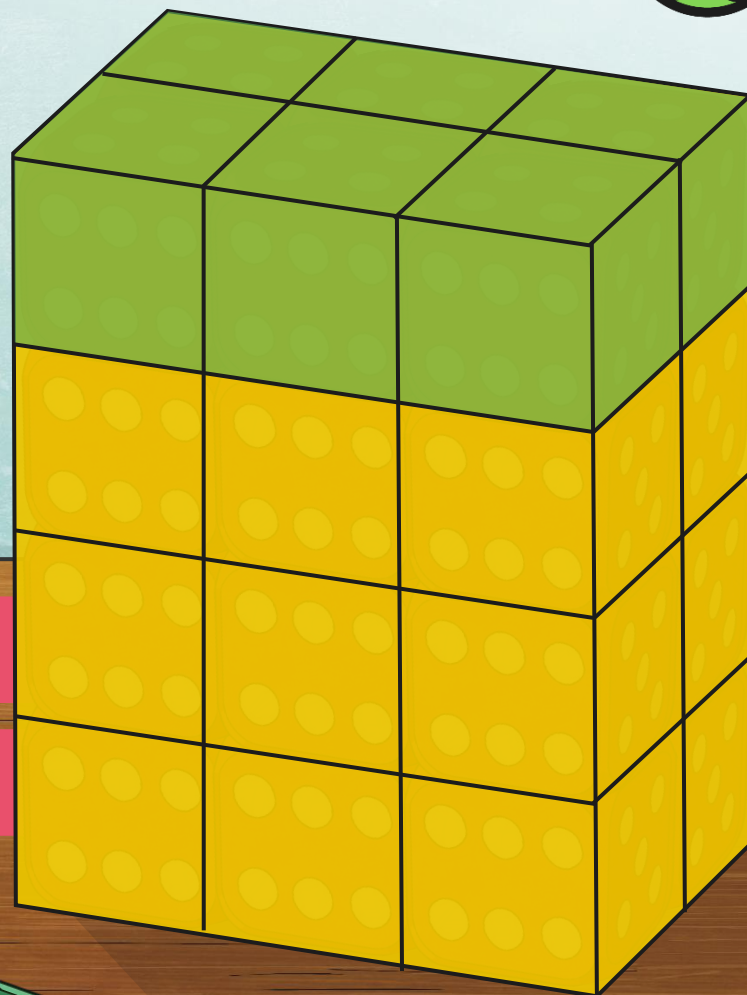
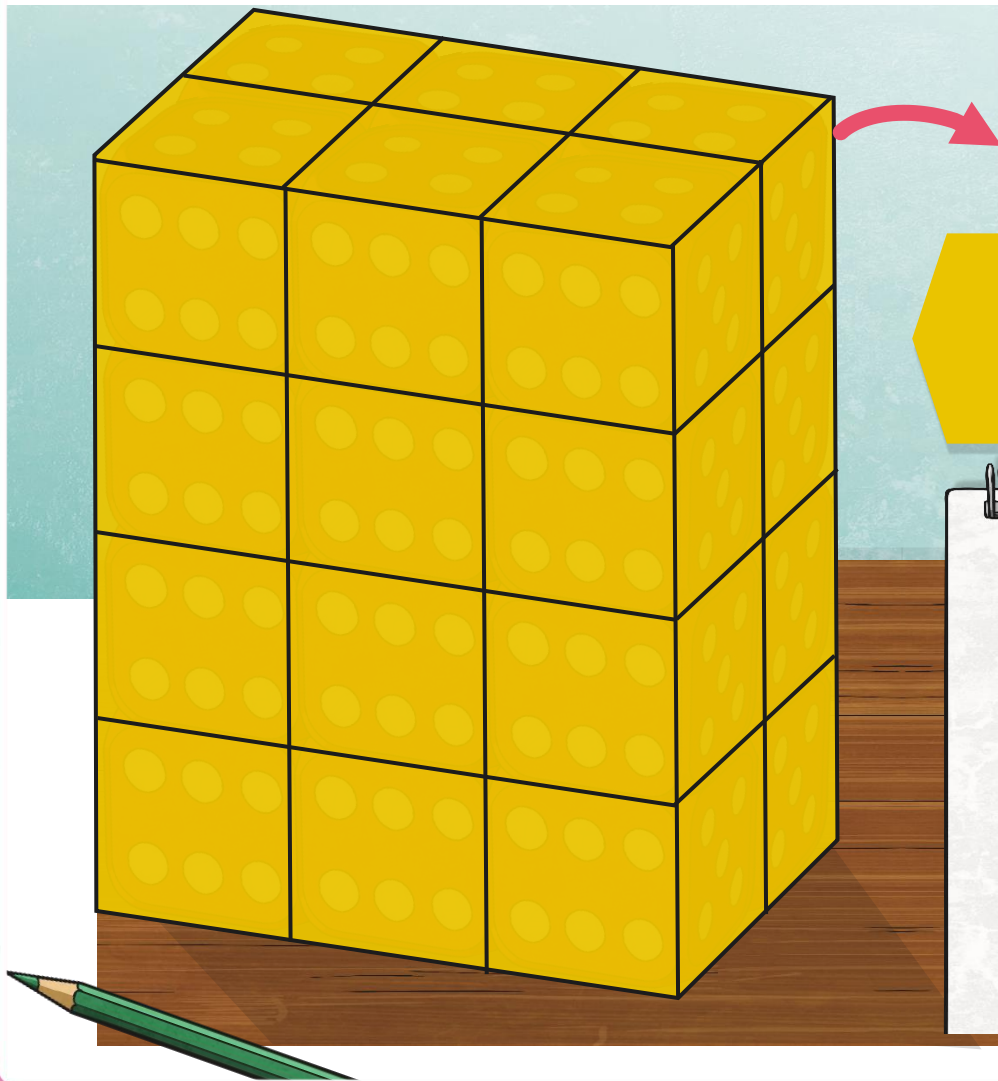Another way to look at this would be to multiply the length × width × height.

6 cubes

6 + 6 + 6 + 6 = **24 cubes**

3 × 2 × 4 = **24 cubes**

If each cube was 1m³, the volume of this shape would be 24m³.

Volume of Cubes and Cuboids

In this cuboid:
l = 3
w = 2
h = 4

How could you write an algebraic statement to show how to calculate the volume of a cube or a cuboid?

volume = length × width × height
We do not use the multiplication symbol, so the formula would be written as:
v = lwh

lwh
3 × 2 × 4 = **24 cubes**
volume = **24cm³**

Volume of Cubes and Cuboids

Whole Class

v = lwh

Calculate the volume of these shapes. Use cm³ or m³ in your answer.

5m

5m

8m

4m

5m

6m

3cm

3cm

6cm

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Volume of Cubes and Cuboids

Whole Class

v = lwh

Calculate the volume of these shapes. Use cm³ or m³ in your answer.

5m

5m

8m

200m³

4m

5m

6m

120m³

3cm

3cm

6cm

54cm³
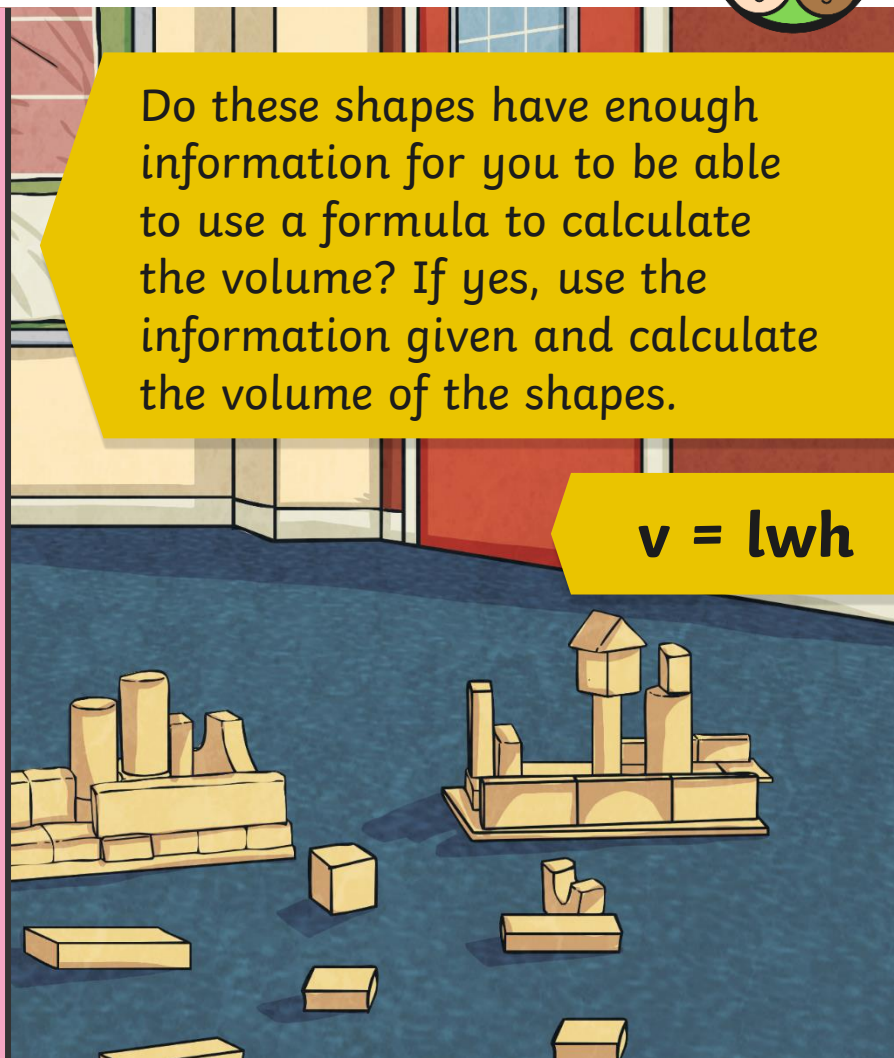
twinkl.com

Volume of Cubes and Cuboids

2m 2.5m

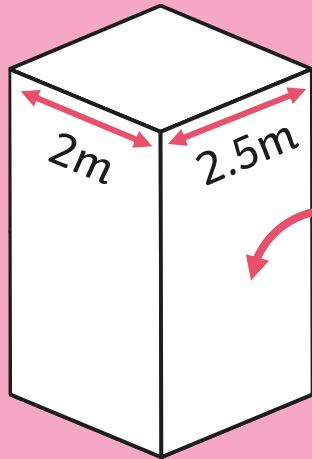Area of face = 12.5m²

8cm

9m 3m
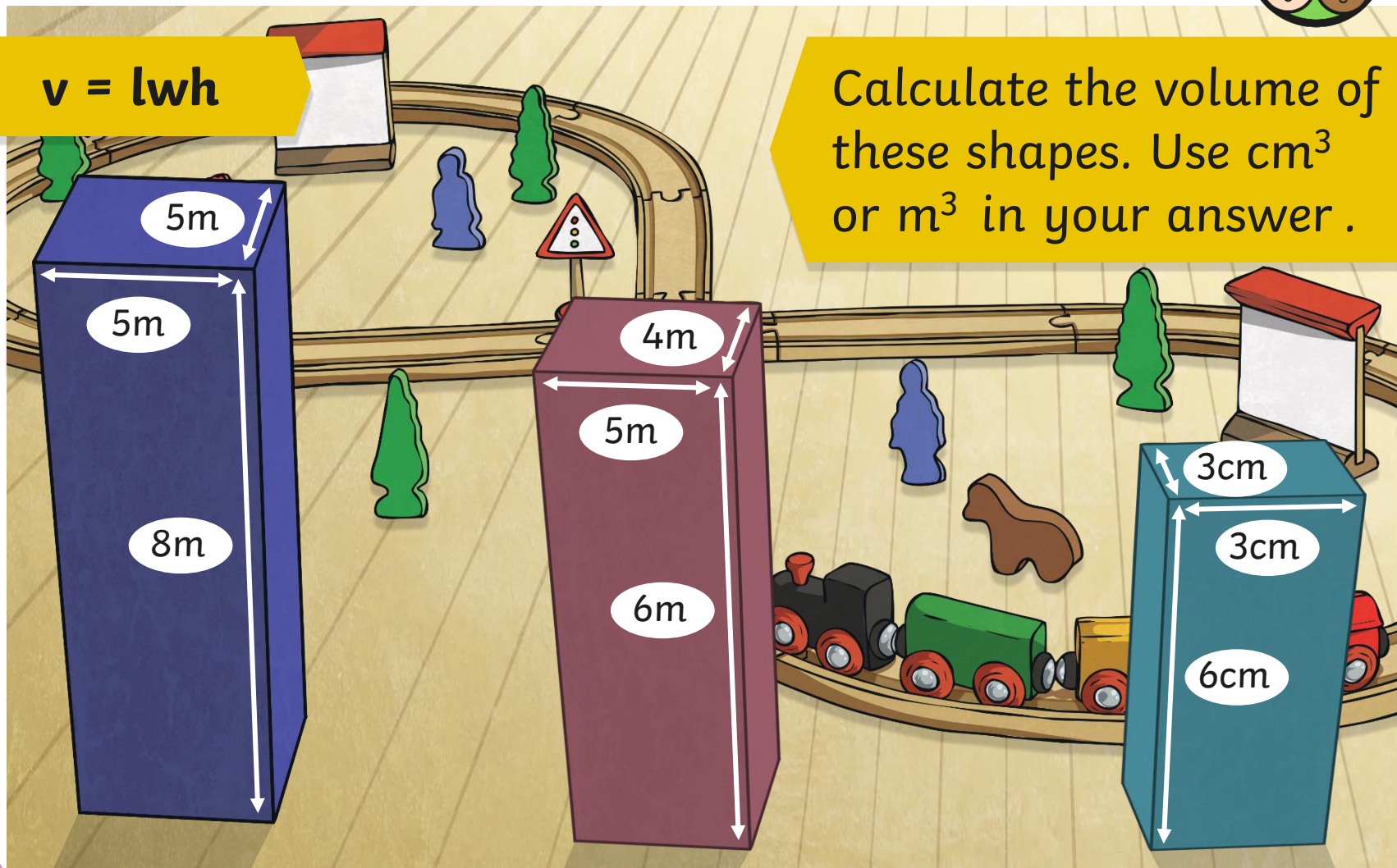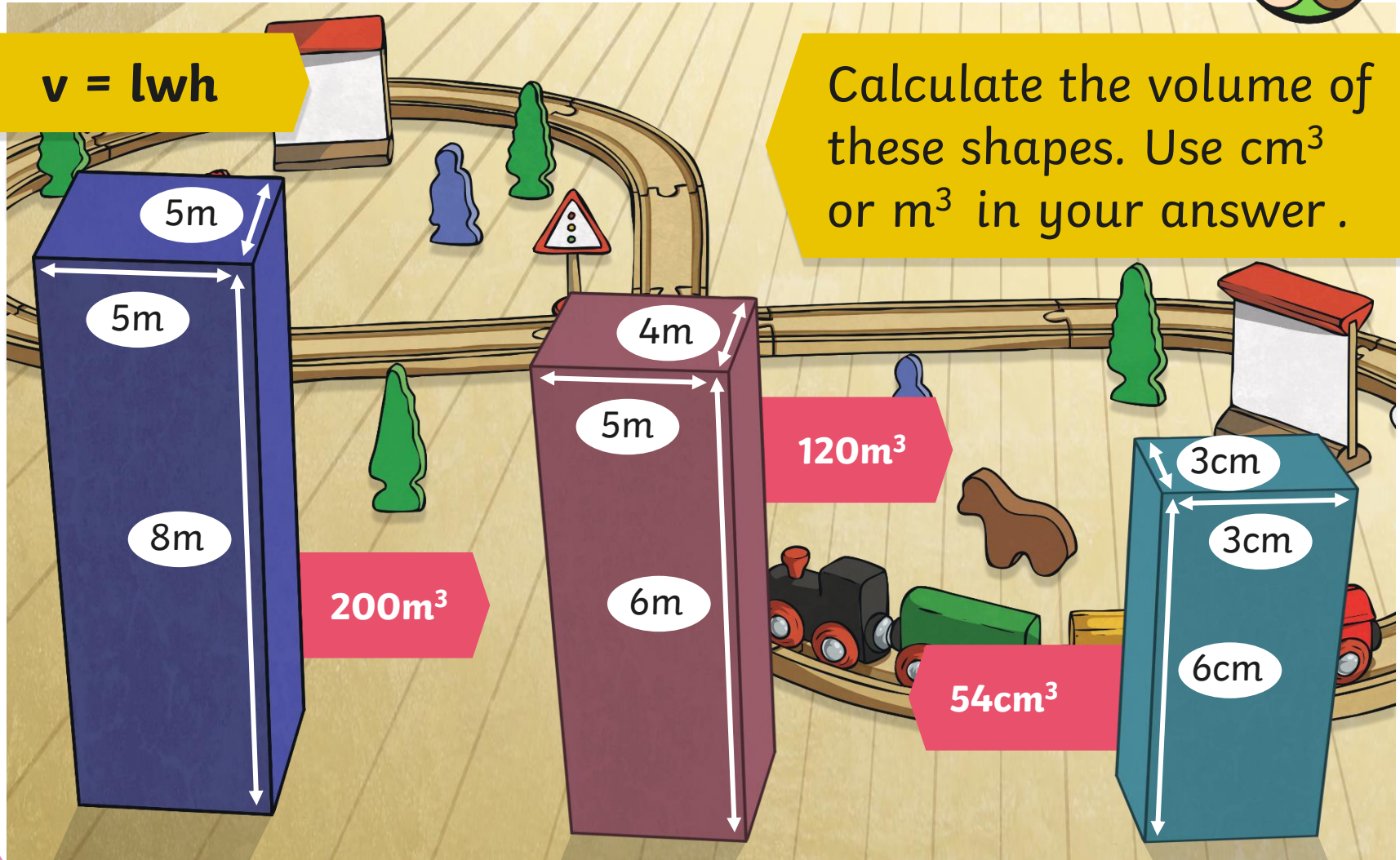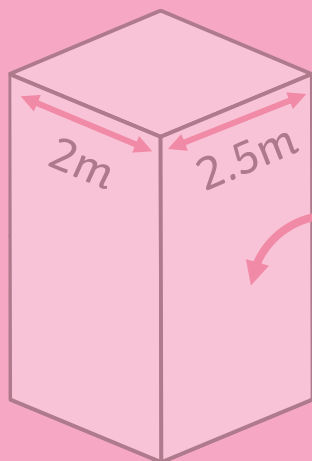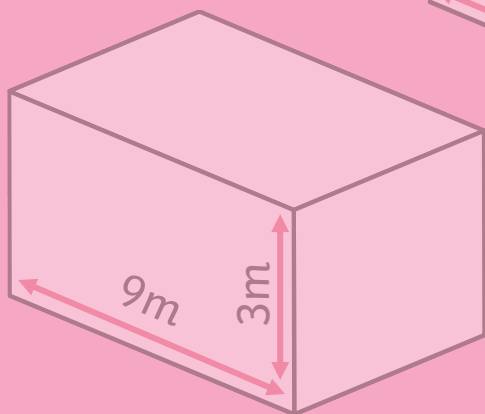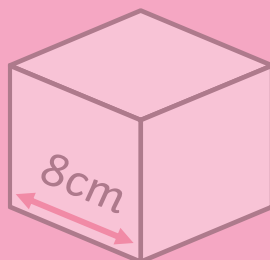
Do these shapes have enough information for you to be able to use a formula to calculate the volume? If yes, use the information given and calculate the volume of the shapes.
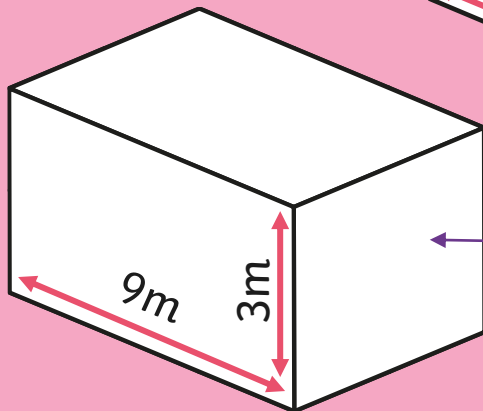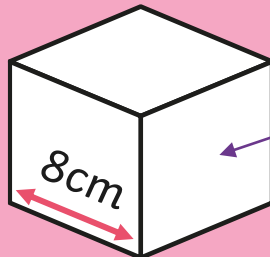
v = lwh

Volume of Cubes and Cuboids
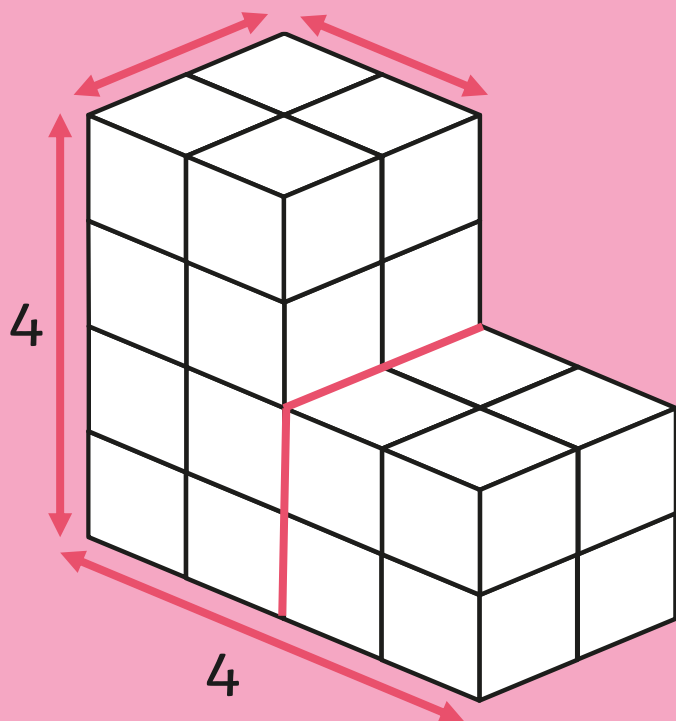
2m
2.5m

Area of face = 12.5m^2

Yes. Although only 2 dimensions are given, you can still work out the volume.

8cm

Yes. The shape is a cube, so all of the dimensions are the same.
8cm × 8cm × 8cm = 512cm³

9m
3m

No. This shape only has 2 measurements. To calculate the volume, you need the measurement of 3 dimensions.

Volume of More Complex Shapes

$$v = lwh$$

Calculate the volumes of these shapes:

4

4

4

The shape can be split into 2 separate shapes.

The cuboid on the left has the dimensions
4m × 2m × 2m = **16m³**.

The cube on the right has the dimensions
2m × 2m × 2m = **8m³**.

Add together the 2 volumes.
16m³ + 8m³ = **24m³**
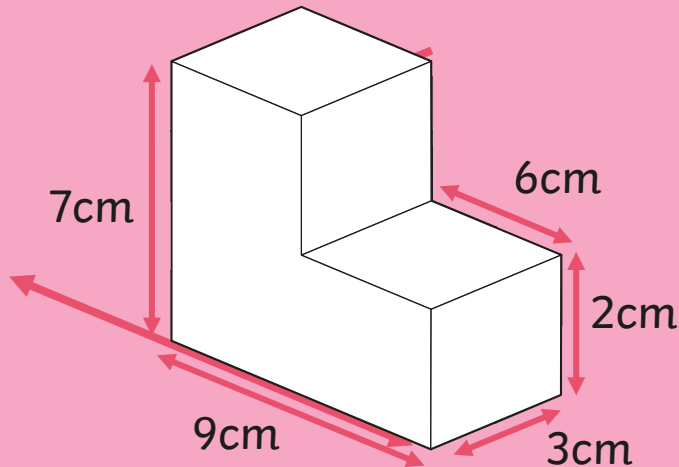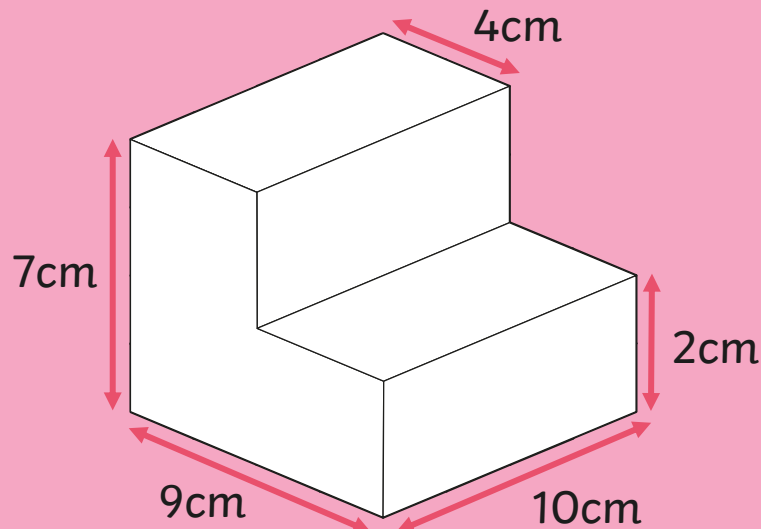
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Volume of More Complex Shapes

4cm

7cm

2cm

9cm

10cm

7cm

6cm

2cm

9cm

3cm

v = lwh

Calculate the volumes of these shapes:

Volume of More Complex Shapes

$v = lwh$

Calculate the volumes of these shapes:

4cm

7cm

360cm³

2cm

9cm   10cm

7cm

99cm³

6cm

2cm

9cm   3cm
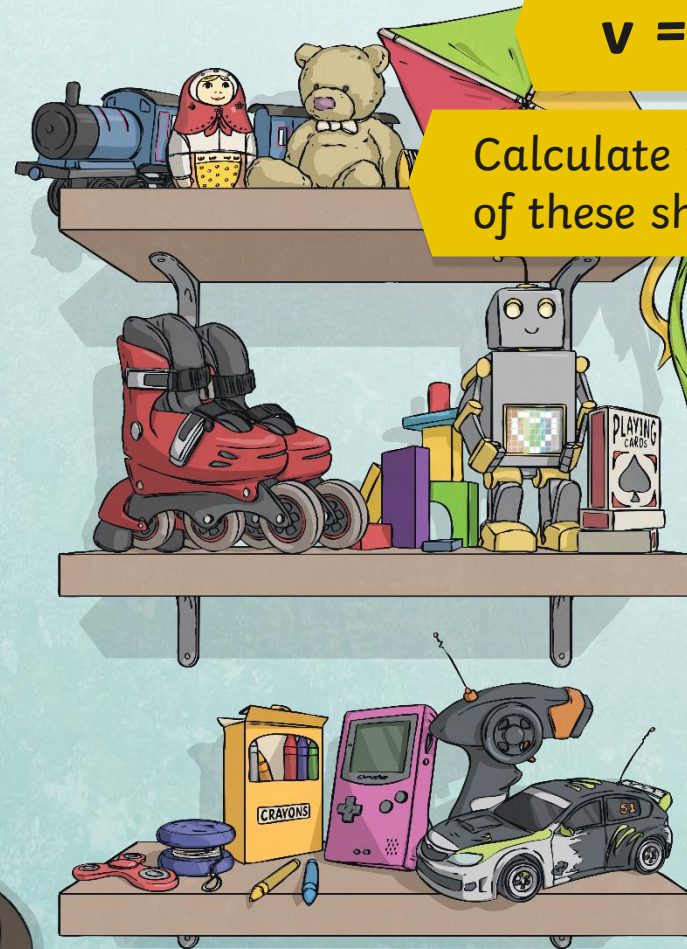
Activities

Red – 1 Star

Yellow – 2 Star

Green – 3 Star

Purple – extra challenge

Mastery – all groups