Using a Formula to Calculate Volume

I can use a formula to calculate volume.
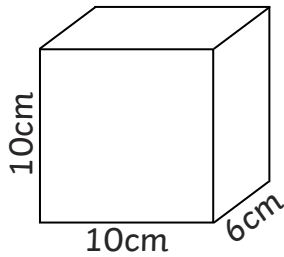
In this activity, use the formula
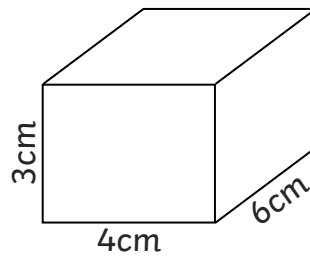
volume = length × width × height

1. Calculate the volume of the following shapes.

a) _____

10cm
10cm
6cm

b) _____

3cm
4cm
6cm

c) _____

3cm
8cm
4cm

d) _____

4cm
9cm
7cm

e) _____

8cm
10cm
5cm
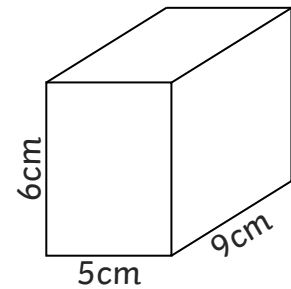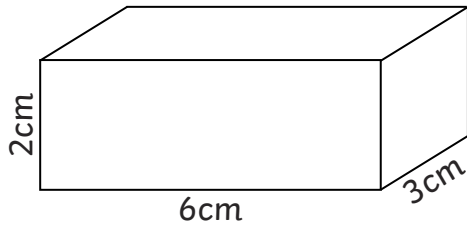
f) _____

6cm
5cm
9cm

2. Is there enough information to calculate the volume of these shapes?
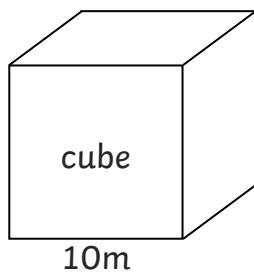   If there is, calculate the volume.

a)

2cm

6cm

3cm

○ Yes
○ No

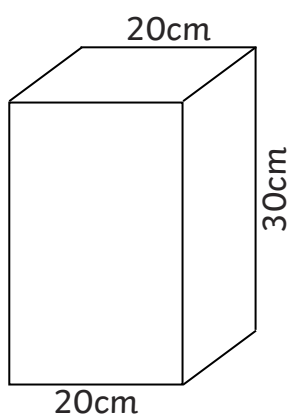If there is enough information, calculate the volume.

b)

cube

10m

○ Yes
○ No

If there is enough information, calculate the volume.
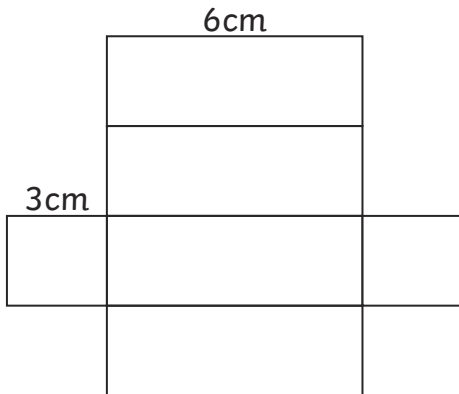
c)

20cm

30cm

20cm

○ Yes
○ No

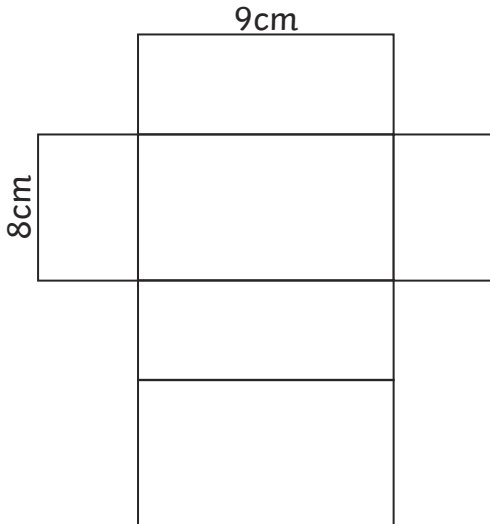If there is enough information, calculate the volume.

3. Here is the net of a cuboid. The faces of the cuboid are 4 identical rectangles and 2 squares.
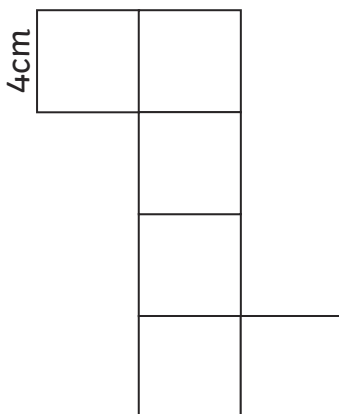
6cm

3cm

Is there enough information to calculate the volume? If there is, what would the volume of the shape be if it were made into a 3D shape?

4. Here is the net of a cuboid. The faces of the cuboid are 3 pairs of identical rectangles.

9cm

8cm

Is there enough information to calculate the volume? If there is, what would the volume of the shape be if it were made into a 3D shape?

5. Here is a net of a cube.

4cm

Is there enough information to calculate the volume? If there is, what would the volume of the shape be if it were made into a 3D shape?

Using a Formula to Calculate Volume
Answers

1.
    a) **600cm³**

    b) **72cm³**

    c) **96cm³**

    d) **252cm³**

    e) **400cm³**

    f) **270cm³**

2.
    a) **6cm × 3cm × 2cm = 36cm³**

    b) **10m × 10m × 10m = 1000m³**

    c) **No, there is not enough information.**

3. **6cm × 3cm × 3cm = 54cm³**

4. **No, there is not enough information.**

5. **4cm × 4cm × 4cm = 64cm³**

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Maths | Year 6 | Measurement | Formulae for Area and Volume | Lesson 2 of 3: Calculating Volume

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Using a Formula to Calculate Volume

I can use a formula to calculate volume.

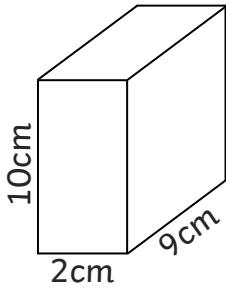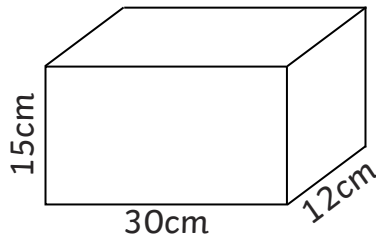In this activity, use the formula

$$v = lwh$$

(v = volume, l = length, w = width, h = height).
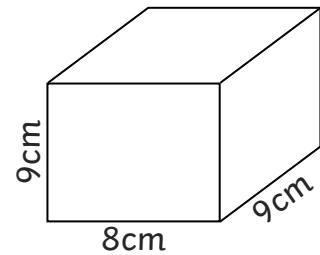
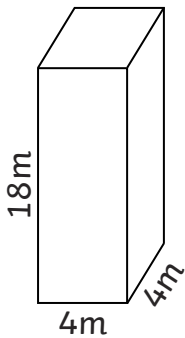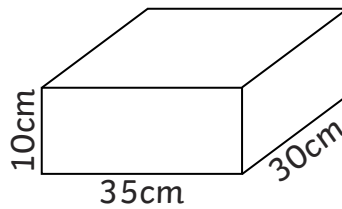1. Calculate the volume of the following shapes.

a) _____

10cm   9cm   2cm

b) _____

15cm   30cm   12cm

c) _____

9cm   8cm   9cm

d) _____

18m   4m   4m

e) _____

10cm   35cm   30cm
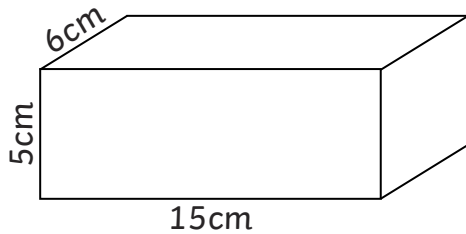
f) _____

20cm   10cm   60cm

2. Is there enough information to calculate the volume of these shapes?
   If there is, calculate the volume.
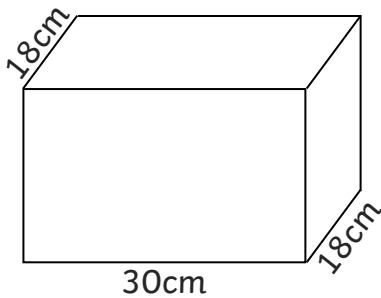
a)

6cm
5cm
15cm

○ Yes
○ No

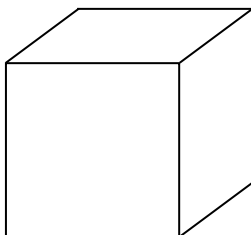If there is enough information, calculate the volume.

b)

18cm
30cm
18cm

○ Yes
○ No
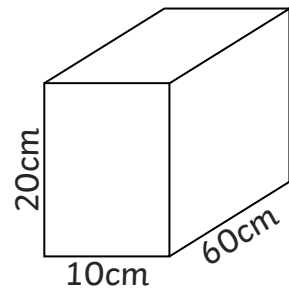
If there is enough information, calculate the volume.
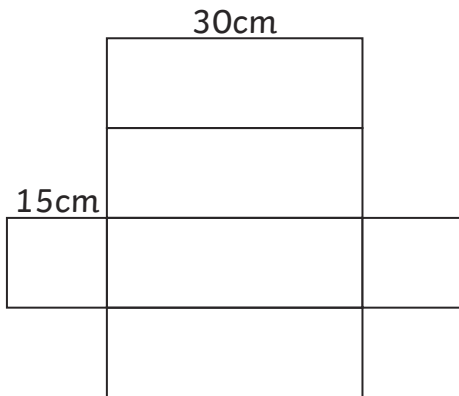
c) The area of each face of this cube is 49cm².

○ Yes
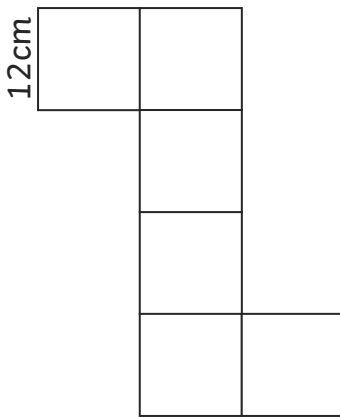○ No

If there is enough information, calculate the volume.

3. Here is the net of a cuboid. The faces of the cuboid are 4 identical rectangles and 2 squares.
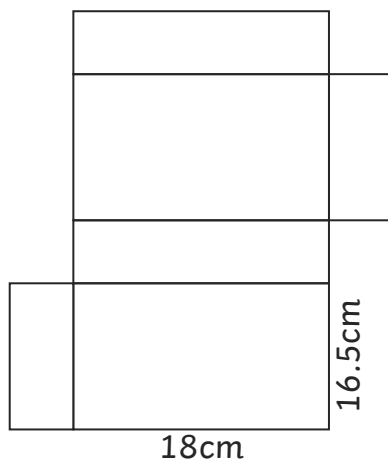
30cm

15cm

Is there enough information to calculate the volume? If there is, what would the volume of the shape be if it were made into a 3D shape?

4. Here is a net of a cube.

12cm

Is there enough information to calculate the volume? If there is, what would the volume of the shape be if it were made into a 3D shape?

5. Here is the net of a cuboid. The faces of the cuboid are 3 pairs of identical rectangles.

16.5cm

18cm

Is there enough information to calculate the volume? If there is, what would the volume of the shape be if it were made into a 3D shape?

Using a Formula to Calculate Volume
Answers

1.

    a) **180cm³**

    b) **5400cm³**

    c) **648cm³**

    d) **288m³**

    e) **10 500cm³**

    f) **12 000cm³**

2.

    a) **6cm × 5cm × 15cm = 450cm³**

    b) **No, there is not enough information.**

    c) **7cm × 7cm × 7cm = 343cm³**

3. **30cm × 15cm × 15cm = 6750cm³**

4. **12cm × 12cm × 12cm = 1728cm³**

5. **No, there is not enough information.**

Using a Formula to Calculate Volume
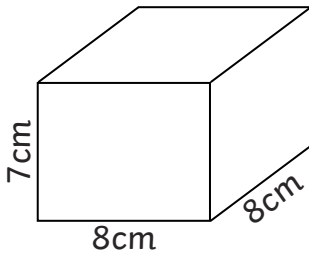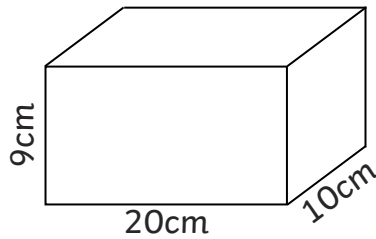
I can use a formula to calculate volume.

$$v = lwh$$

(v = volume, l = length, w = width, h = height).
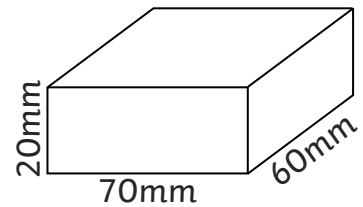
1. Calculate the volume of the following shapes.

a) _____

7cm
8cm
8cm

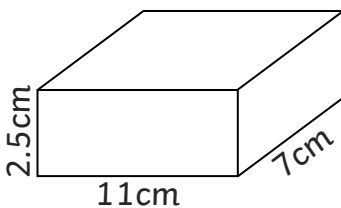b) _____

9cm
20cm
10cm

c) _____

20mm
70mm
60mm

d) _____

2.5cm
11cm
7cm

e) _____

3.4cm
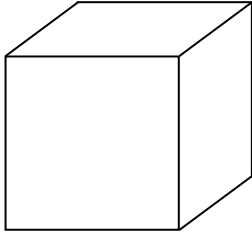1cm
6cm

f) _____

5cm
3.1cm
10cm

2. Is there enough information to calculate the volume of these shapes?
   If there is, calculate the volume.

   a) The total surface area of the faces of this cube is 384cm².

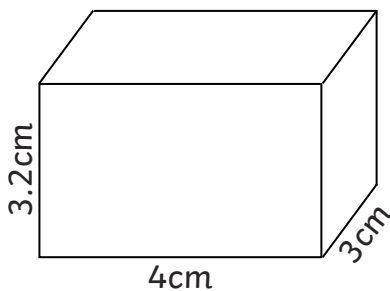 | ○ Yes | If there is enough information, calculate the volume. |
   | ○ No | |

   b)

   14.5m

   9m

   14.5m

   | ○ Yes | If there is enough information, calculate the volume. |
   | ○ No | |

   c)

   3.2cm

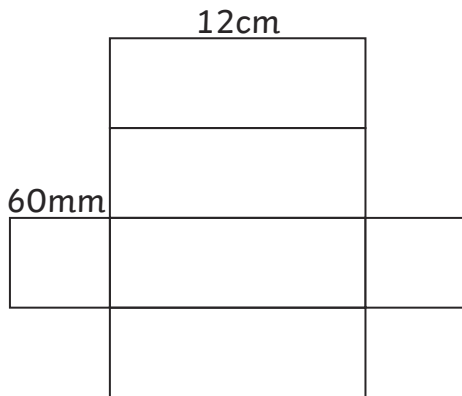   4cm

   3cm

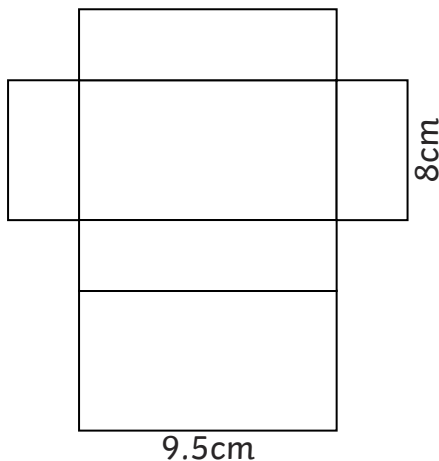 | ○ Yes | If there is enough information, calculate the volume. |
   | ○ No | |

3. Here is the net of a cuboid. The faces of the cuboid are 4 identical rectangles and 2 squares.

12cm

60mm

Is there enough information to calculate the volume? If there is, what would the volume of the shape be if it were made into a 3D shape?

4. Here is the net of a cuboid. The faces of the cuboid are 3 pairs of identical rectangles.
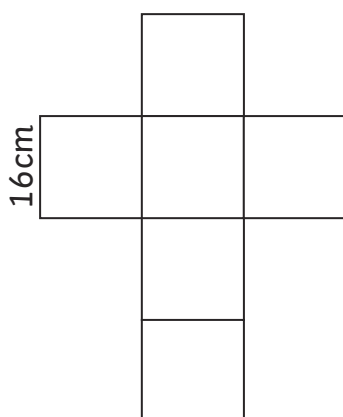
8cm

9.5cm

Is there enough information to calculate the volume? If there is, what would the volume of the shape be if it were made into a 3D shape?

5. Here is a net of a cube.

16cm

Is there enough information to calculate the volume? If there is, what would the volume of the shape be if it were made into a 3D shape?

Using a Formula to Calculate Volume
Answers

1.

    a) **448cm³**   d) **192.5cm³**

    b) **1800cm³**   e) **20.4cm³**

    c) **84 000mm³**   f) **155cm³**

2.

    a) *To find the area of each face, 384 ÷ 6 = 64*
        8 × 8 = 64. Each side is 8cm.
        8cm × 8cm × 8cm = 512cm³

    b) *No, there is not enough information.*

    c) *3.2cm × 4cm × 3cm = 38.4cm³*

3. **12cm × 6cm × 6cm = 432cm³**
   or
   120mm × 60mm × 60mm = 432 000m³

4. *No, there is not enough information.*

5. **16cm × 16cm × 16cm = 4096cm³**

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