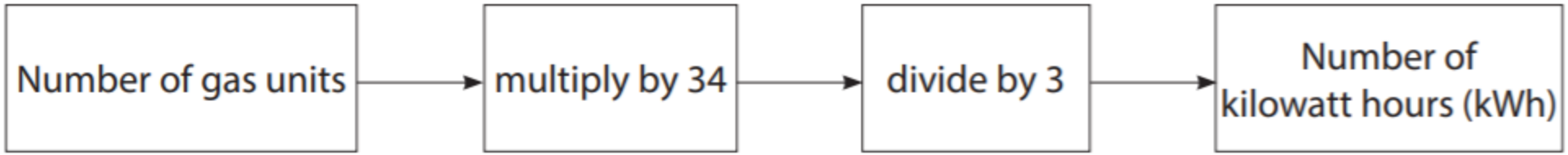
Conversion

Learning objective
Convert between units of length, weight, capacity, money and time, in the same system

Recap

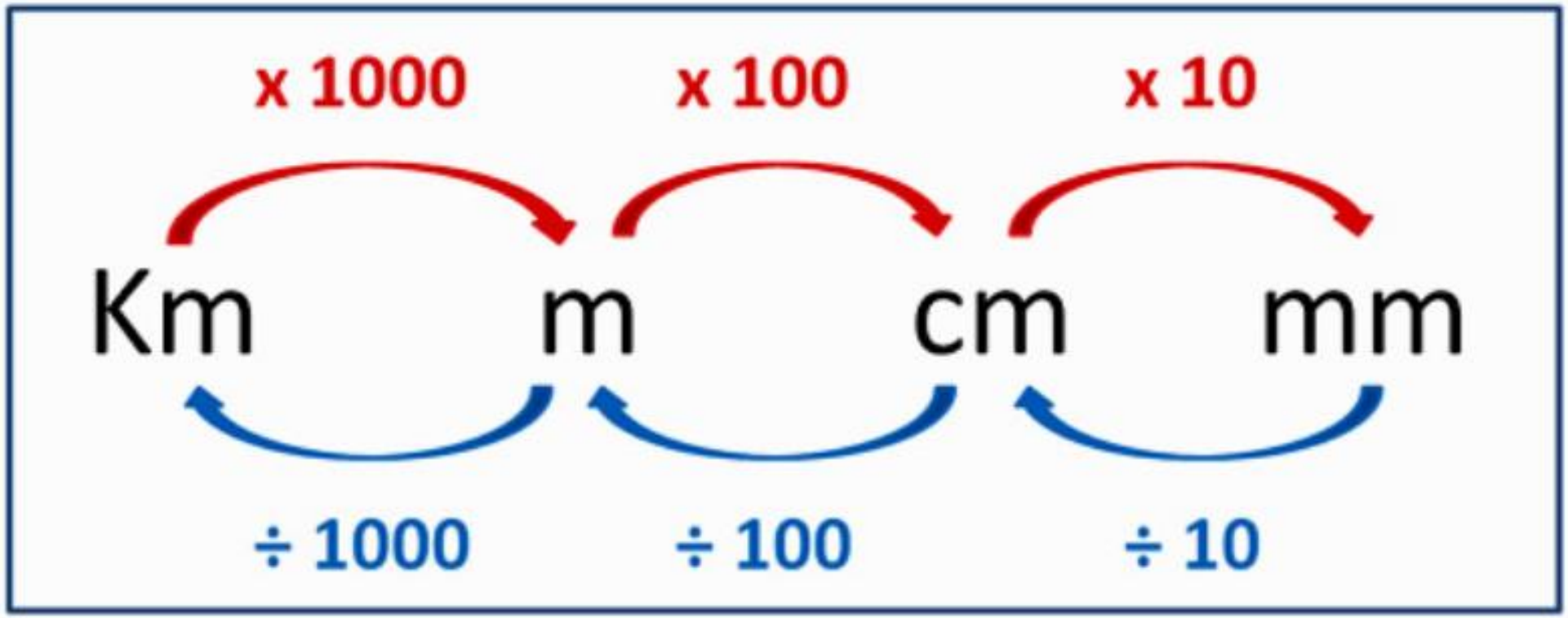
Zoe checks her last gas bill.
It states that she used 135 gas units.

The energy company uses this rule to convert gas units to kilowatt hours (KWh)



The energy company converted 135 gas units to 1530 KWh on her bill.
Zoe thinks the energy company make a mistake
Show why you think this

Conversion Length Units



5km = ? m **Need to x 1000** 5 **x 1000** = **5000m** ✓

120cm = ? m **Need to ÷ 100** 120 **÷ 100** = **1.2m** ✓

Practice Questions

100cm = _____m

____ml = 1L

____mm = 1cm

1000g = _____kg

1000m = _____km

50cm = _____m

250ml = ____L

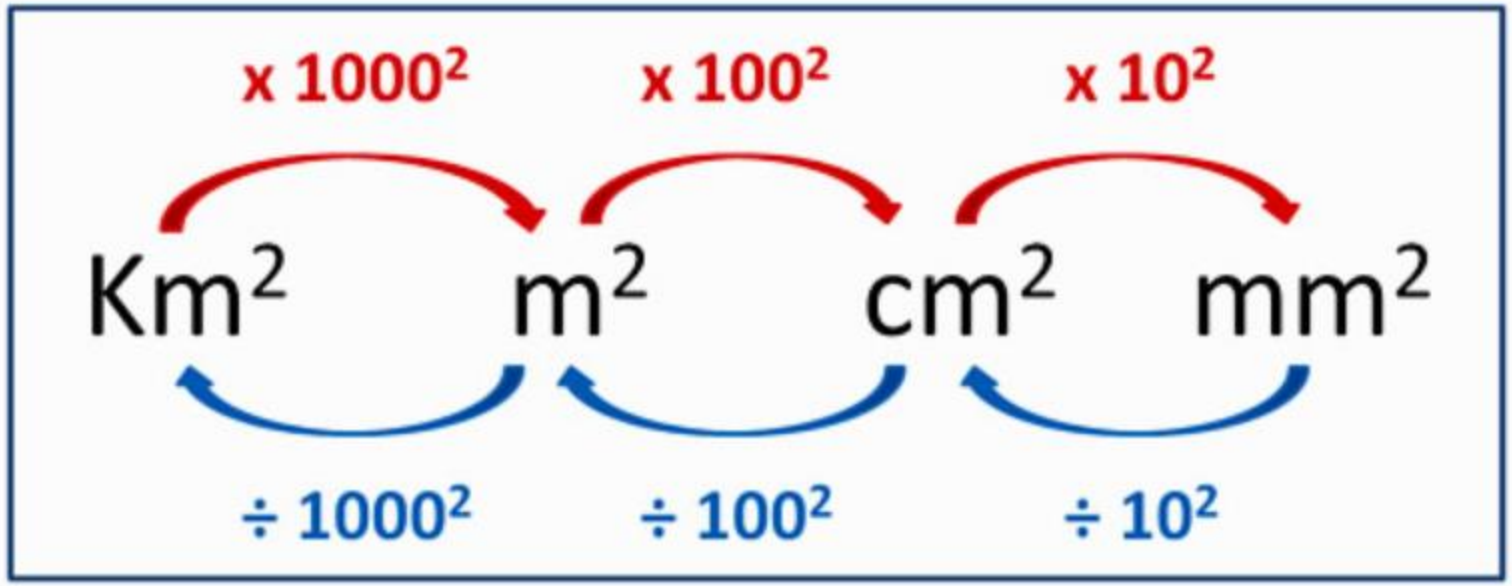
____mm = 4.8cm

750g = ____kg

____m = 7.5km

Converting AREA Units

AREA consists of Square Units, so we need to SQUARE all our Lengths.



$5km^2 = ?\ m^2$ **Need to x 1000^2** $5 \times 1000 \times 1000 = 5\,000\,000\ m^2$ ✓

$1200cm^2 = ?\ m^2$ **Need to ÷ 100^2** $1200 \div 100 \div 100 = 0.12\ m^2$ ✓

Practice Questions

1. Change 9 m^2 into cm^2

2. Change 4cm^2 into mm^2

3. How many square meters are there in 5 square kilometers?

1. Convert 6.5m^2 into mm^2

2. Change 2m^3 into cm^3

3. How many cubic millimeters are there in 3 cubic centimeters?

Grapes cost £4.80 per kilogram
Blueberries cost £8 per kilogram

Work out the **total cost** of 4kg of grapes and 2 kgs of blueberries

Work out the **total cost** of 250g of grapes and 100g of blueberries

EXAM QUESTION

Mahir is the cleaner at The Palace restaurant.
He is going to clean the floor with a mixture of floor cleaner and water.

Mahir knows

- to use 30 ml of floor cleaner for every 1 litre of water
- 1 capful of floor cleaner is 20 ml.

Mahir puts 4 litres of water in a bucket.
He thinks he needs to add 5 capfuls of floor cleaner to the water.

Is Mahir correct?
Show why you think this. (3)

EXAM QUESTION

Mr Smith wants to fill the empty hot tub with water.
He will use 1350 litres of water.

Mr Smith fills up the hot tub with 18 litres of water every minute.

(c) How long will it take to fill the hot tub with 1350 litres of water?
Show a check of your working. (3)

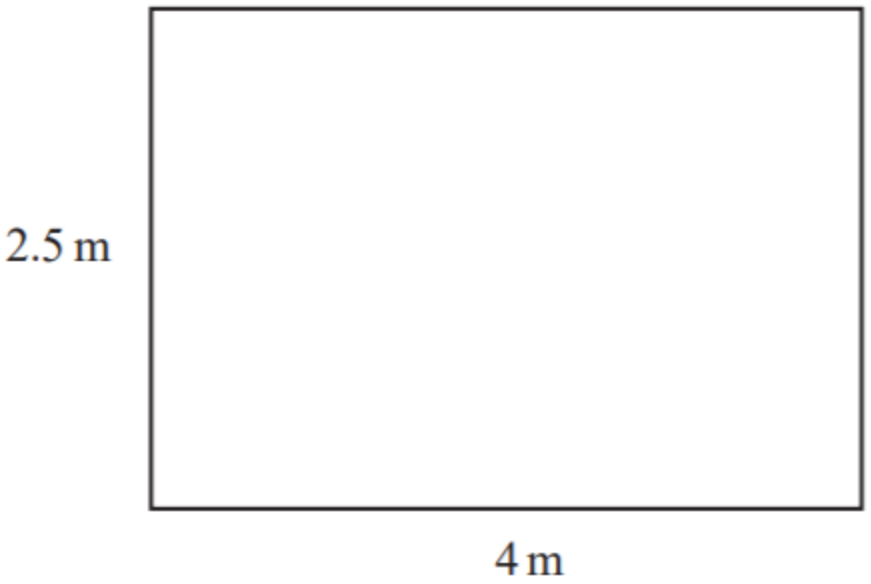
FSM01/01 Nov., 2017

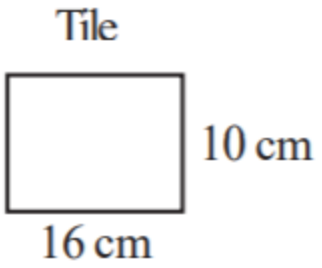
EXAM QUESTION

A tiler wants to tile a rectangular wall which measures 4 m by 2.5 m.

Each tile measures 16 cm by 10 cm.

How many tiles will he need for the wall?



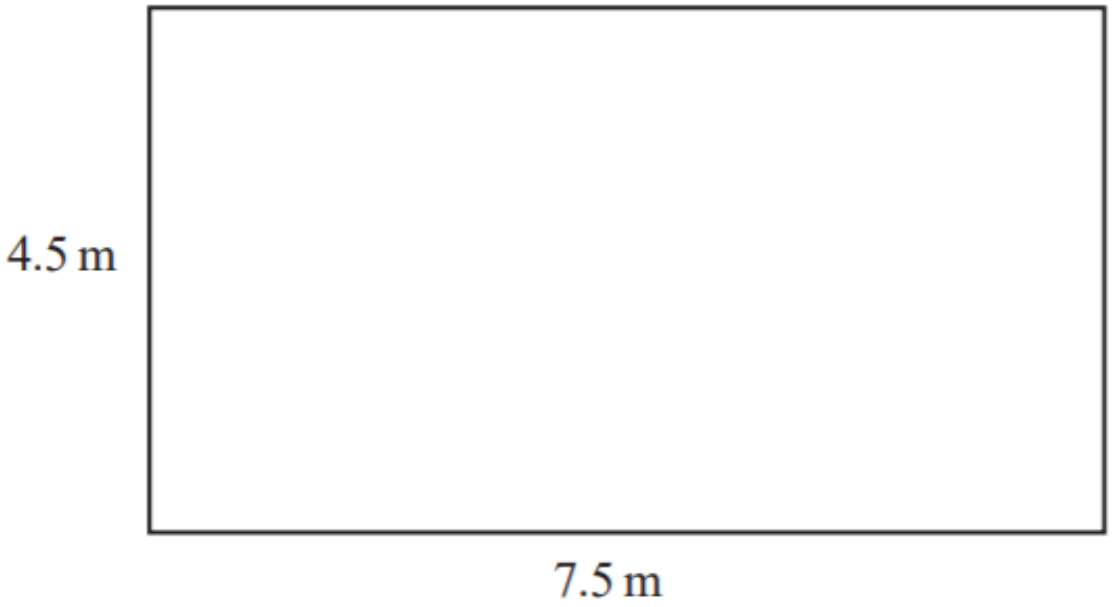


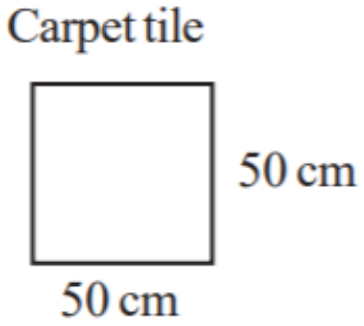
EXAM QUESTION

A carpet-fitter is laying carpet tiles on a rectangular floor which measures 7.5 m by 4.5 m.

Each carpet tile measures 50 cm by 50 cm.

How many carpet tiles will he need for the floor?





EXAM QUESTION

Mr Smith draws a sketch of the platform.

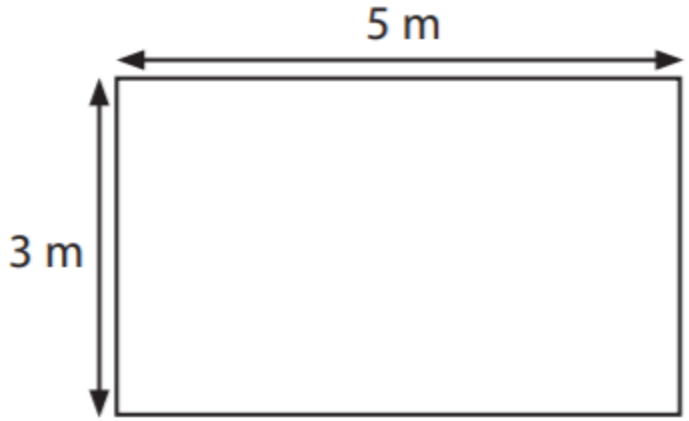


Diagram **not** accurately drawn

Mr Smith wants to put border fencing around the edge of the platform.
He can buy border fencing in lengths of 200 cm.

Mr Smith can cut and join the lengths of border fencing.
He thinks he needs 7 lengths of border fencing.

(b) Is Mr Smith correct?
Show why you think this. **(4)**

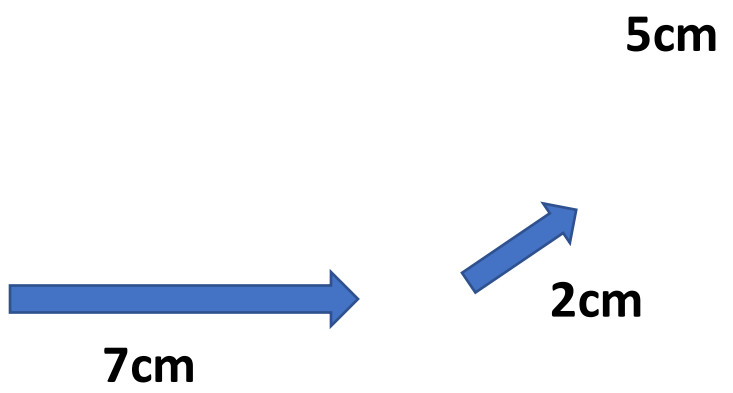
Using cubes to find the volume

Example 2

2.

3. Count how many cubes up for the height.

Volume = 7 x 2 x 5



Using cubes to find the volume

Example 3

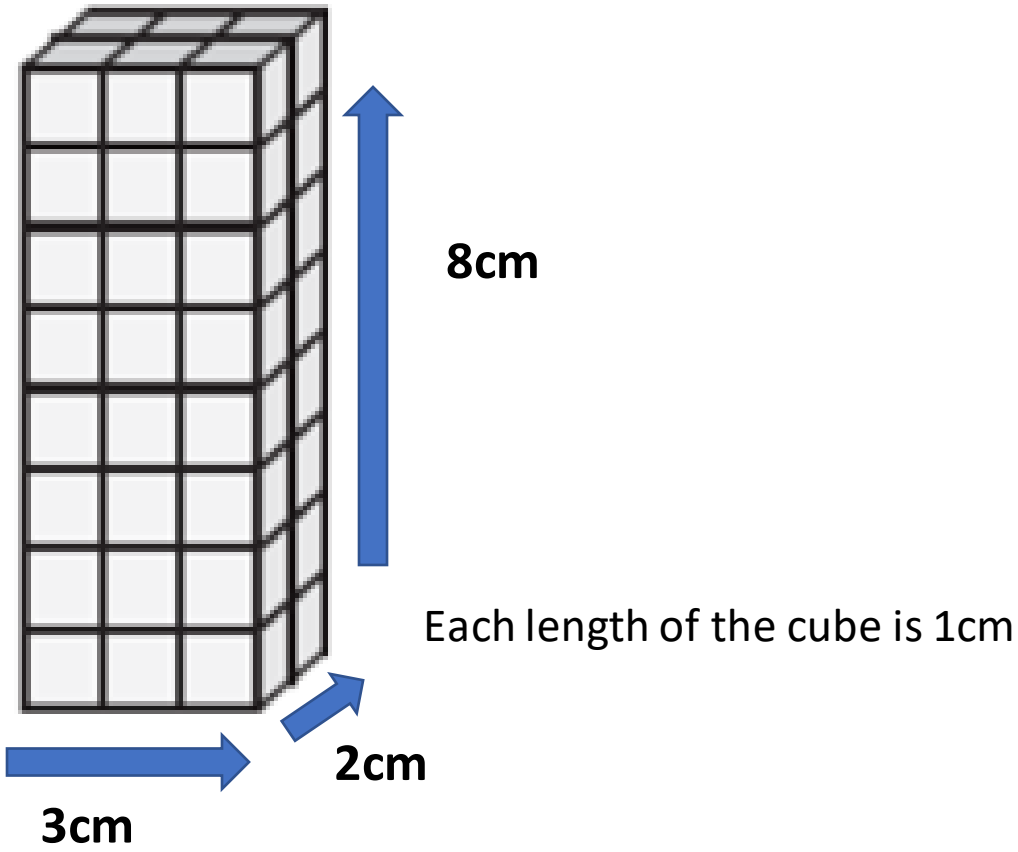
1. Count how many cubes across for the length.

2. Count how many cubes for the width.

3. Count how many cubes up for the height.

Volume = 3 x 2 x 8

3 x 2 = 6 → 6 x 8 = 42cm³

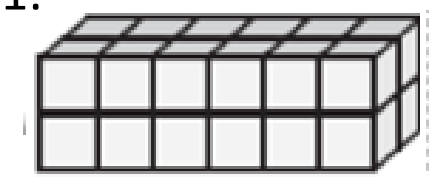


Each length of the cube is 1cm

Practice Questions

Use the cubes to find the volume of these 3-D shapes.

1.



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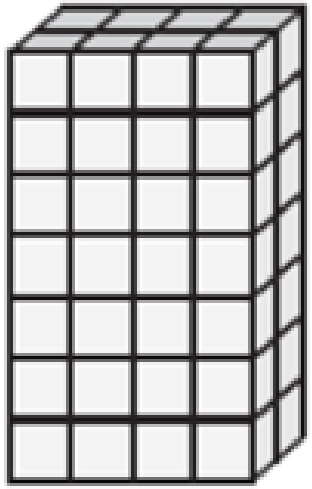

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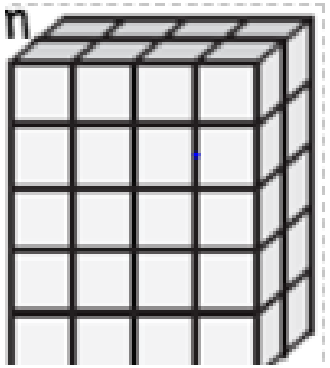

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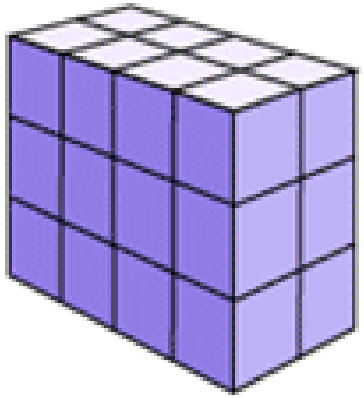

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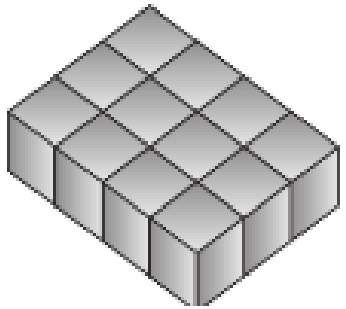

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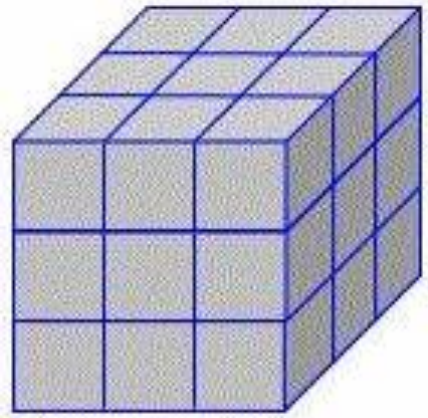
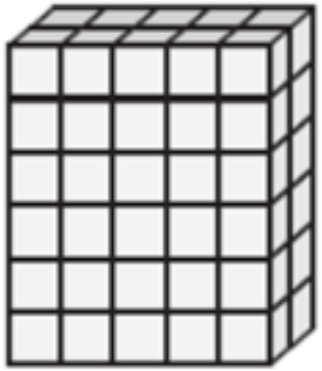


Practice Questions

Use the cubes to find the volume of these 3-D shapes.

1.



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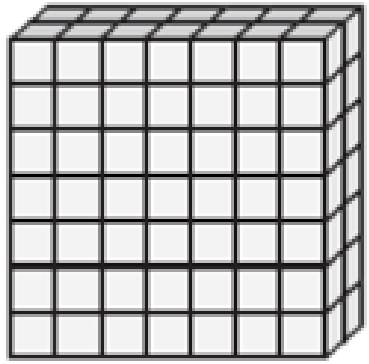

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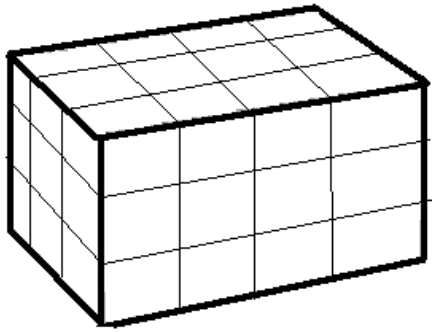

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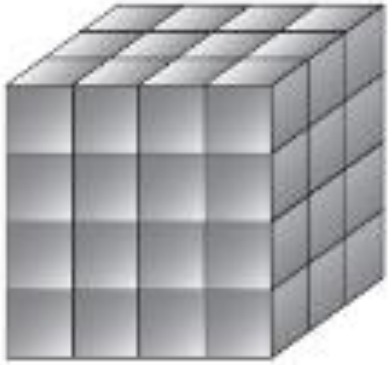

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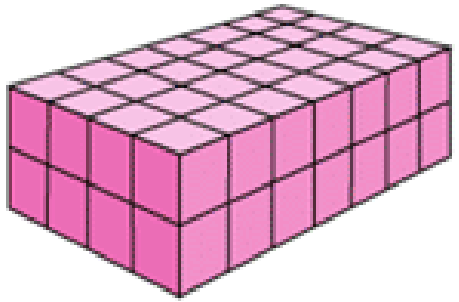

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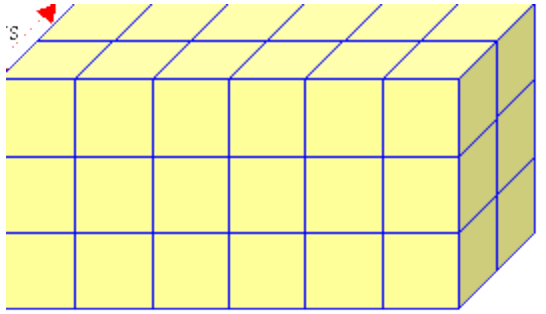
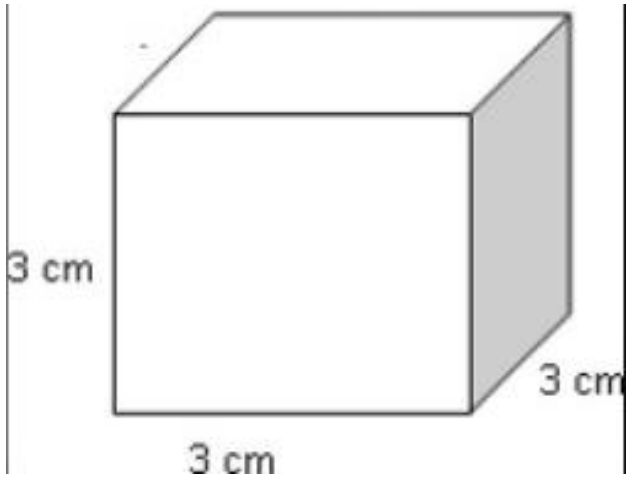


Example 4

Work out the volume of this cube.



Length = 3cm

Width = 3cm

Height = 3cm

Volume = 3 x 3 x 3

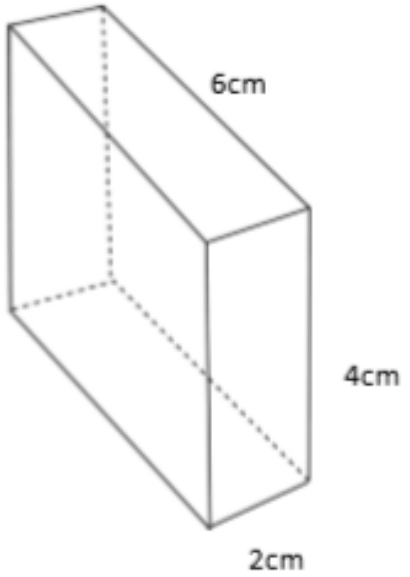
Again we can break this down into 2 stages

3 x 3 = 9

9 x 3 = 27 cm^3

Example 5

Work out the volume of this cuboid.



Length = 6cm

Width = 2cm

Height = 4cm

Volume = 6 x 2 x 4

Again we can break this down into 2 stages

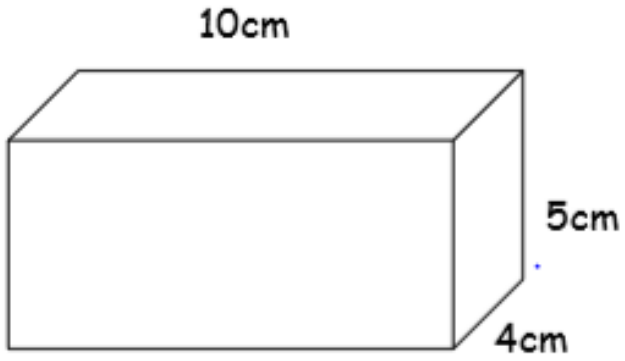
6 x 2 = 12

12 x 4 = 48 cm^3

Practice Questions

Find the volume of these cuboids

1.



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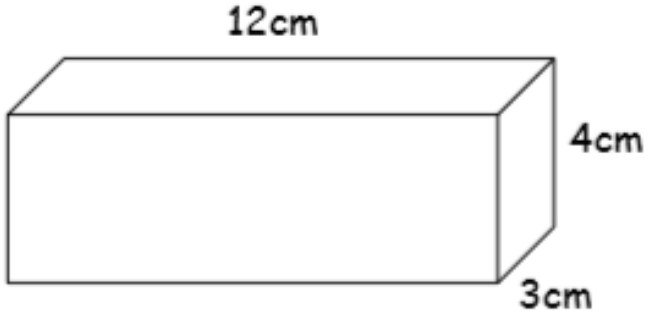

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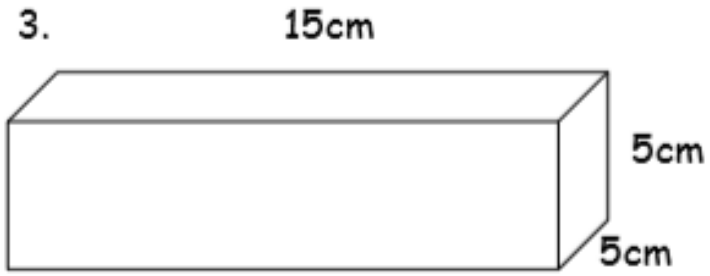

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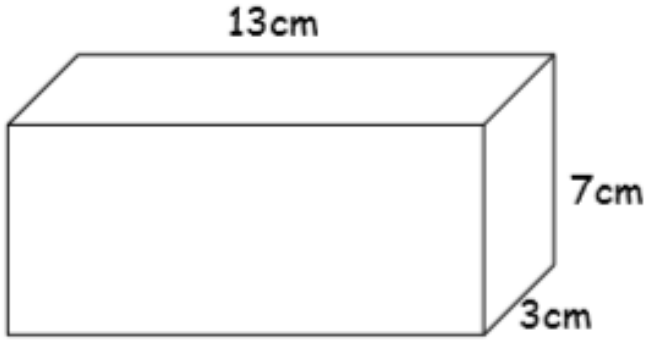
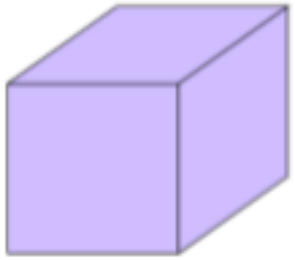


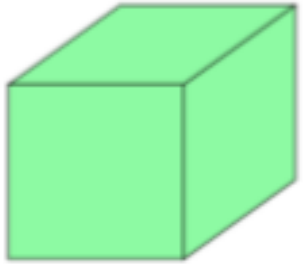
Calculate the volume of these cubes

(a)



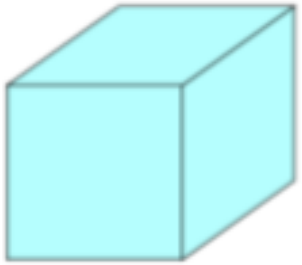
3cm

(b)



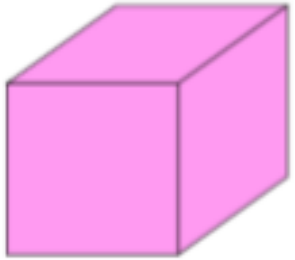
5m

(c)



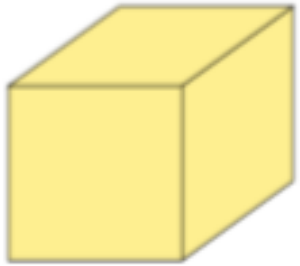
7mm

(d)



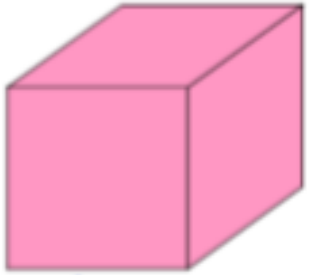
8cm

(e)



6cm

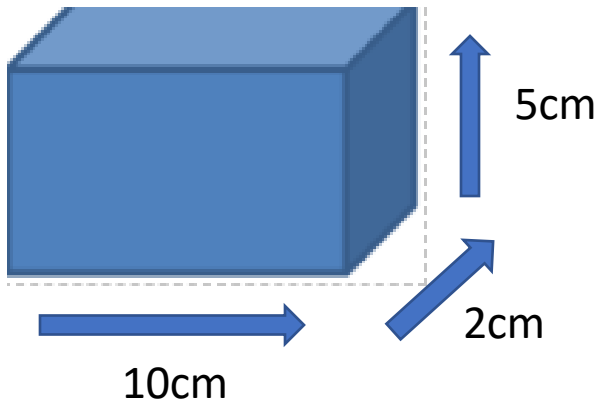
(f)



4cm

Calculate the volume of these 3-D shapes

1.



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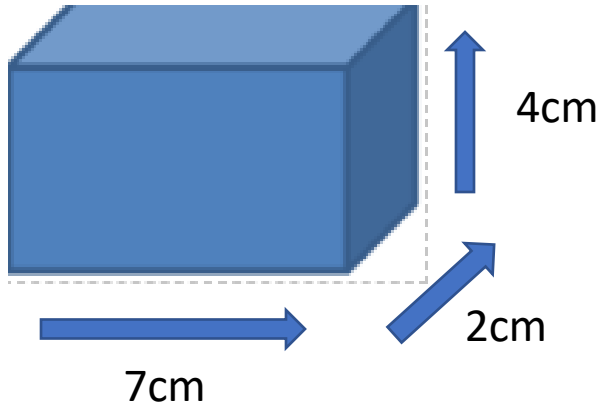

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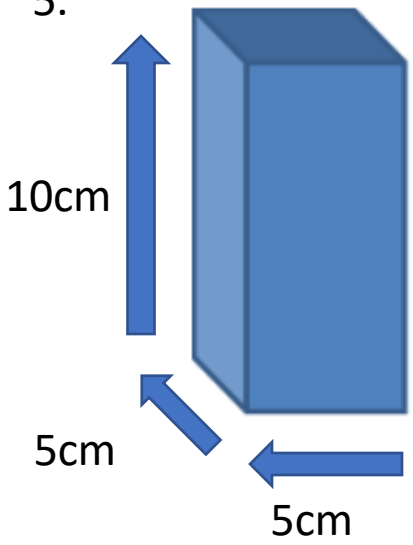
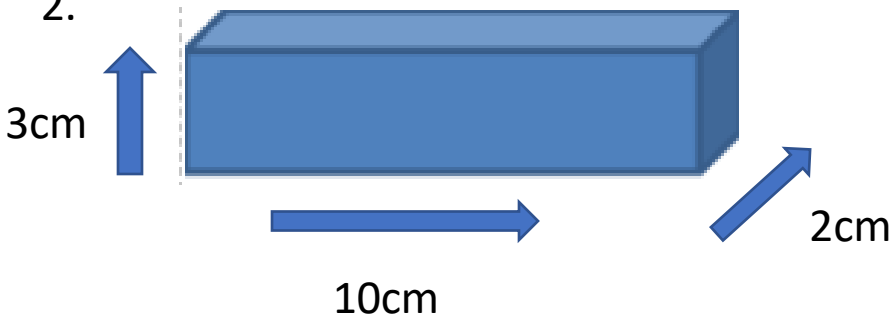
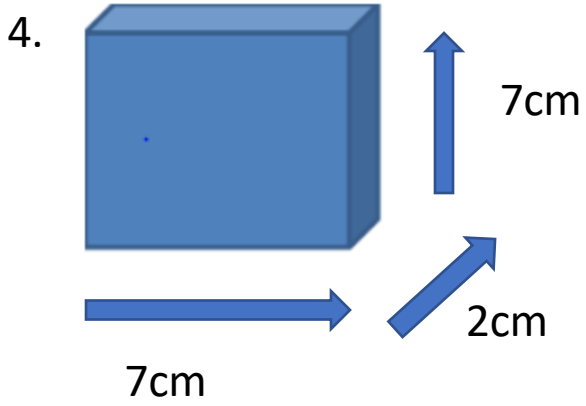


2.



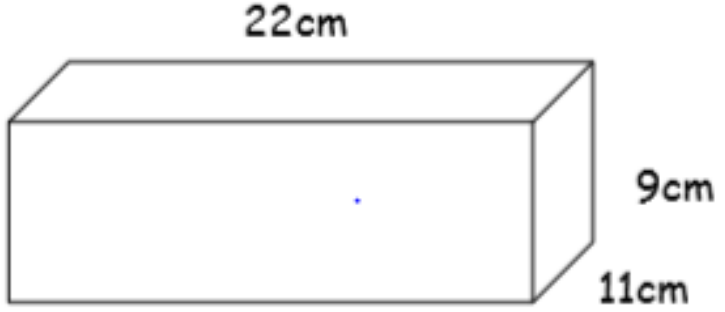
4.



Calculate the volume of these 3-D shapes

5.

6.



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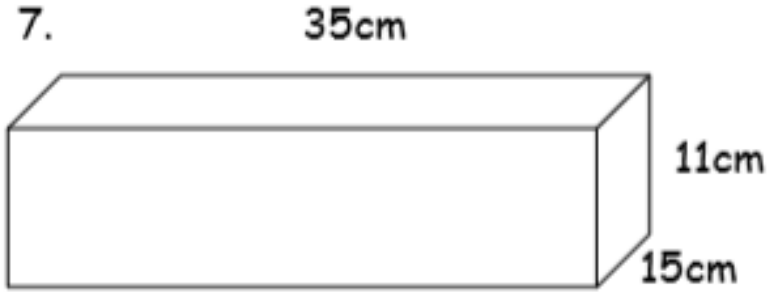

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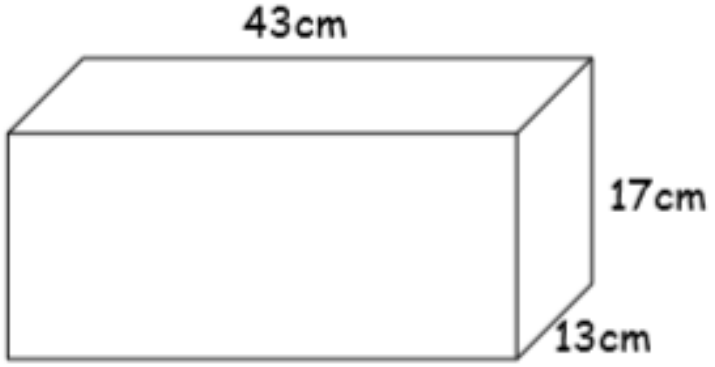
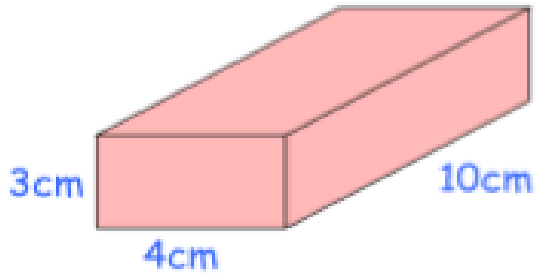
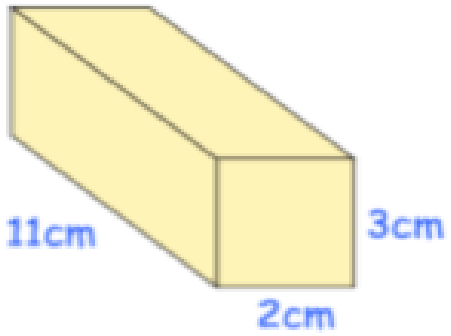


Calculate the volume of these 3-D shapes

(a)



(b)



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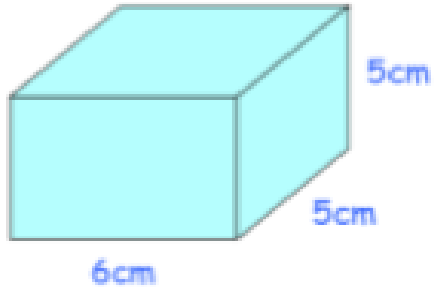

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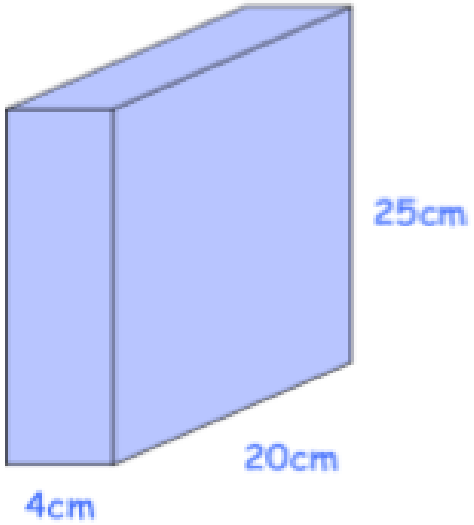

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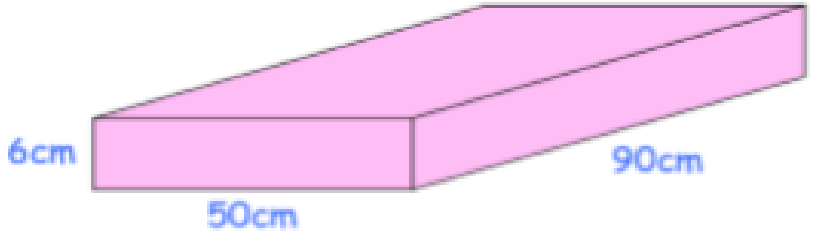

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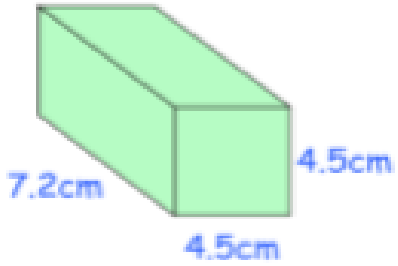
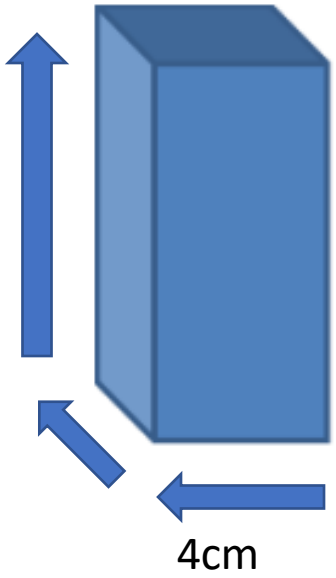


Calculate the volume of these 3-D shapes

1.



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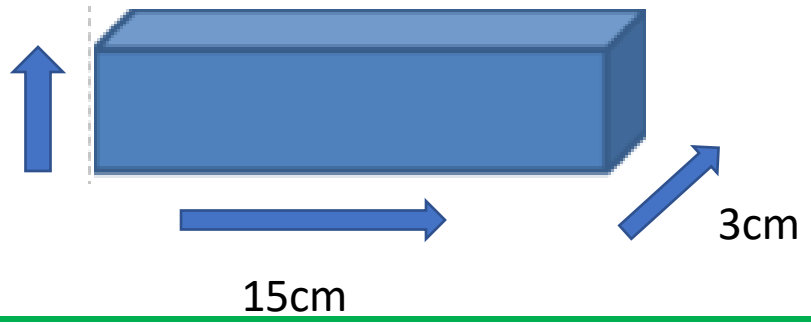

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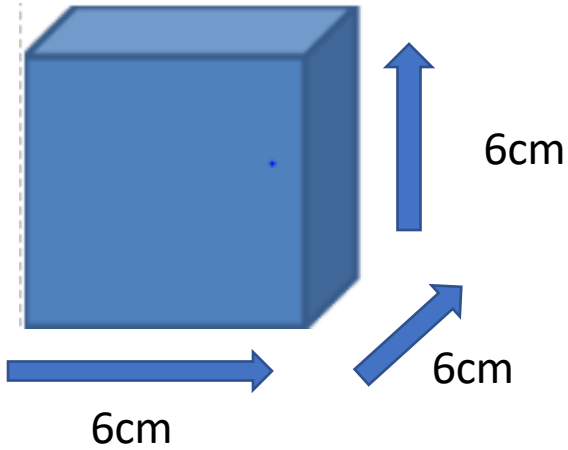

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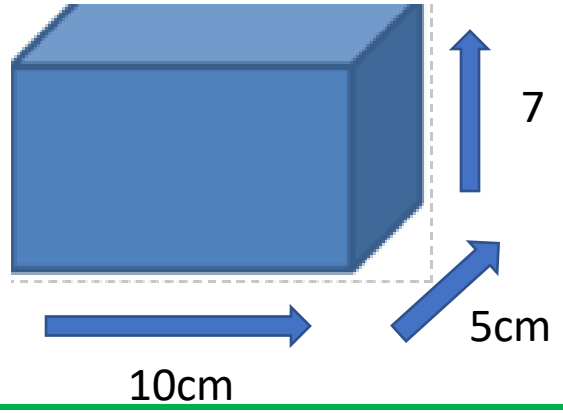
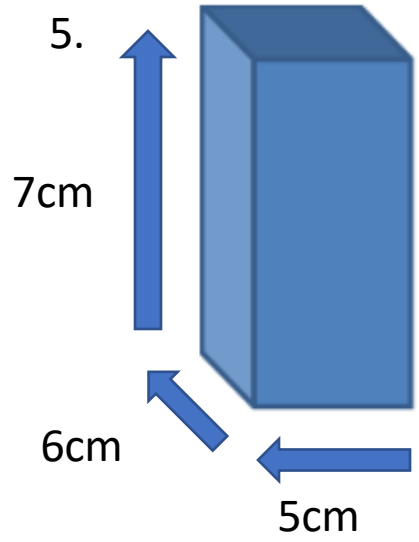


5.



Practice Questions

1. The length, width and height of a cuboid are: 5cm, 2cm and 3cm. What is the volume?
2. A sides of a cube is 5m. What is the volume?
3. The dimensions of a cuboid are: 50m, 3m, 2m. Find the volume.
4. The sides of a cube are 4cm. Find the volume.
5. The length, width and height of a cuboid are: 10cm, 4cm and 3cm. What is the volume?
6. The length, width and height of a cuboid are: 7m, 3m and 10m. What is the volume?

Practice Questions

1. The length, width and height of a cuboid are: 5cm, 12cm and 7cm. What is the volume?
2. A sides of a cube is 9m. What is the volume?
3. The dimensions of a cuboid are: 8m, 12m, 6m. Find the volume.
4. The sides of a cube are 15mm. Find the volume.
5. The length, width and height of a cuboid are: 20cm, 7cm and 6cm. What is the volume?
6. The length, width and height of a cuboid are: 11m, 8m and 8m. What is the volume?

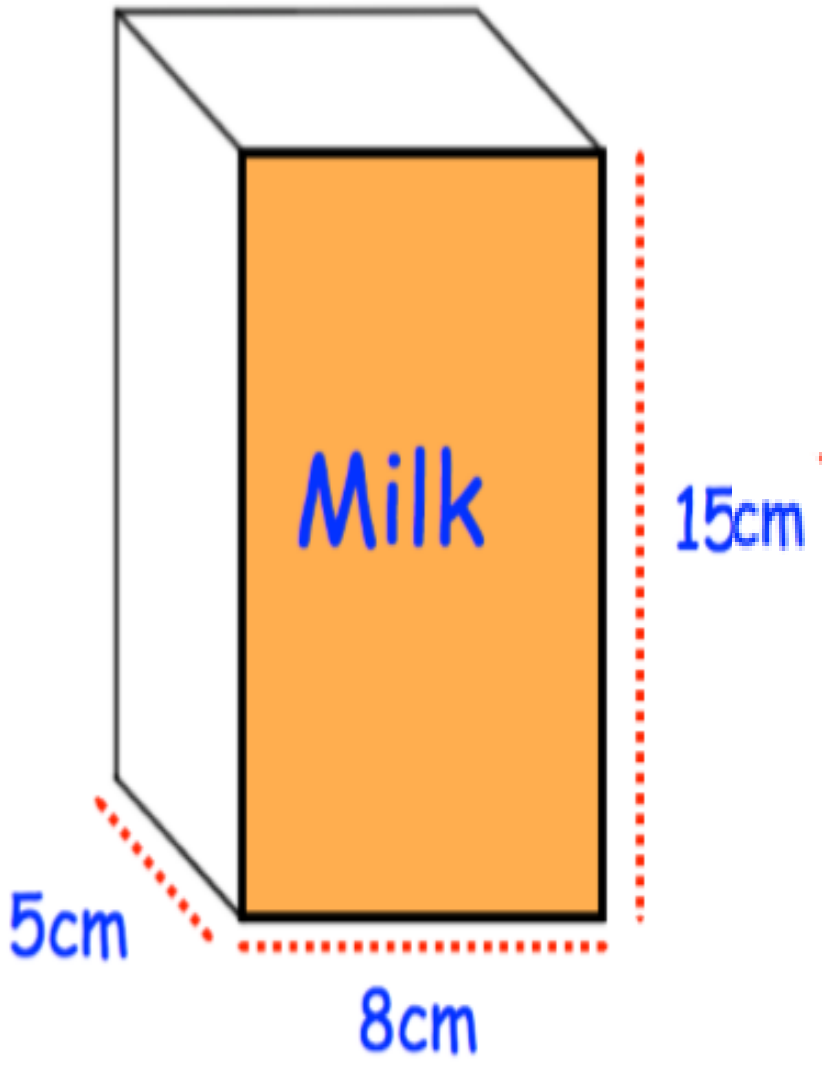
Don’t forget to write your units!

Exam questions

1. A carton of milk is shown below. The carton is in the shape of a cuboid.

Work out the volume of the milk carton.

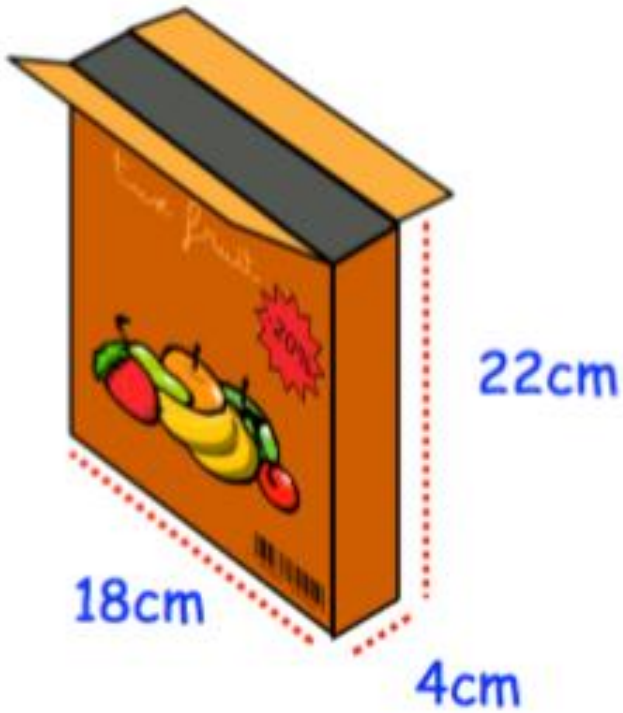
3 marks



Shown is a cereal box.

Calculate the volume of the box

3 marks



EXAM QUESTION

Eric wants to buy shampoo for the salon.

He finds out that, on average, 250 ml of shampoo is used each day in the salon.
He needs to buy enough shampoo for at least 30 days.

Eric finds this information on a website.

Eric has £75 to spend on the shampoo he needs.

Is £75 enough to buy all the shampoo Eric needs?
Show why you think this. (5)

Erin built a hut for her farm.
The hut's dimensions are
13m by 5m and 7m tall.

a) What is the volume of the hut?

2 marks

It cost £10 per cubic meter.

b) How much does it cost her to built the hut?

2 marks

Eric made a fort by connecting 2 boxes

The first box is 5 meters long, 9 meters wide and 9 meters high.

The second box is 3 meters long, 8 meters wide and 2 meters high.

How many cubic of space does my fort have?

4 marks