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# Measures and units

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**L.O. To be able to**

- Select appropriate units to use for a variety of measures
- Convert between metric units

**Key Words**

length, distance, weight, mass, volume, capacity, area

**These videos will help you with this learning:**

**Length:**

[https://www.youtube.com/watch?v=1az6Gjb2wtk&feature=emb\\_logo](https://www.youtube.com/watch?v=1az6Gjb2wtk&feature=emb_logo)

**Mass:** [https://www.youtube.com/watch?v=u6SX-BjU2Wg&feature=emb\\_logo](https://www.youtube.com/watch?v=u6SX-BjU2Wg&feature=emb_logo)

**Capacity:**

[https://www.youtube.com/watch?v=zGBN0ofKYpQ&feature=emb\\_logo](https://www.youtube.com/watch?v=zGBN0ofKYpQ&feature=emb_logo)

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## CONTENTS – Click to go to...

METRIC SYSTEM

LENGTH

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CAPACITY

MIXED QUESTIONS

IMPERIAL UNITS

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# THE METRIC SYSTEM

## The metric measures system

- Based on powers of 10 so it is as simple as possible
- Units are made from two parts
  - PREFIX – The most common prefixes are

<b>Kilo-</b>	meaning 1000
<b>Centi-</b>	meaning one hundredth
<b>Milli-</b>	meaning one thousandth

- BASE UNIT – The most common base units are

The base unit for length is **metre.**  
The base unit for mass is **gram.**  
The base unit for capacity is **litre.**

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To remember the prefixes...



A mnemonic for your  
memory!



**“King**

**Homer**

**Dashed**

**My**

**Dreams”**

**Cried**

**Marge**

i

e

e

e

e

e

i

l

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l

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a

r

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o

e

i

i

1000

100

10

1

1/10

1/100

1/1000

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# LENGTH

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## Length

The MOST COMMON metric units used for length are kilometres, metres, centimetres and millimetres.



1 kilometre (km) = 1000 metres (m)

1 metre (m) = 100 centimetres (cm)

1 metre (m) = 1000 millimetres (mm)

1 centimetre (cm) = 10 millimetres (mm)

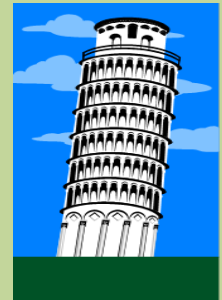
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Task – Sort these images into the correct columns

kilometres	metres	centimetres	millimetres





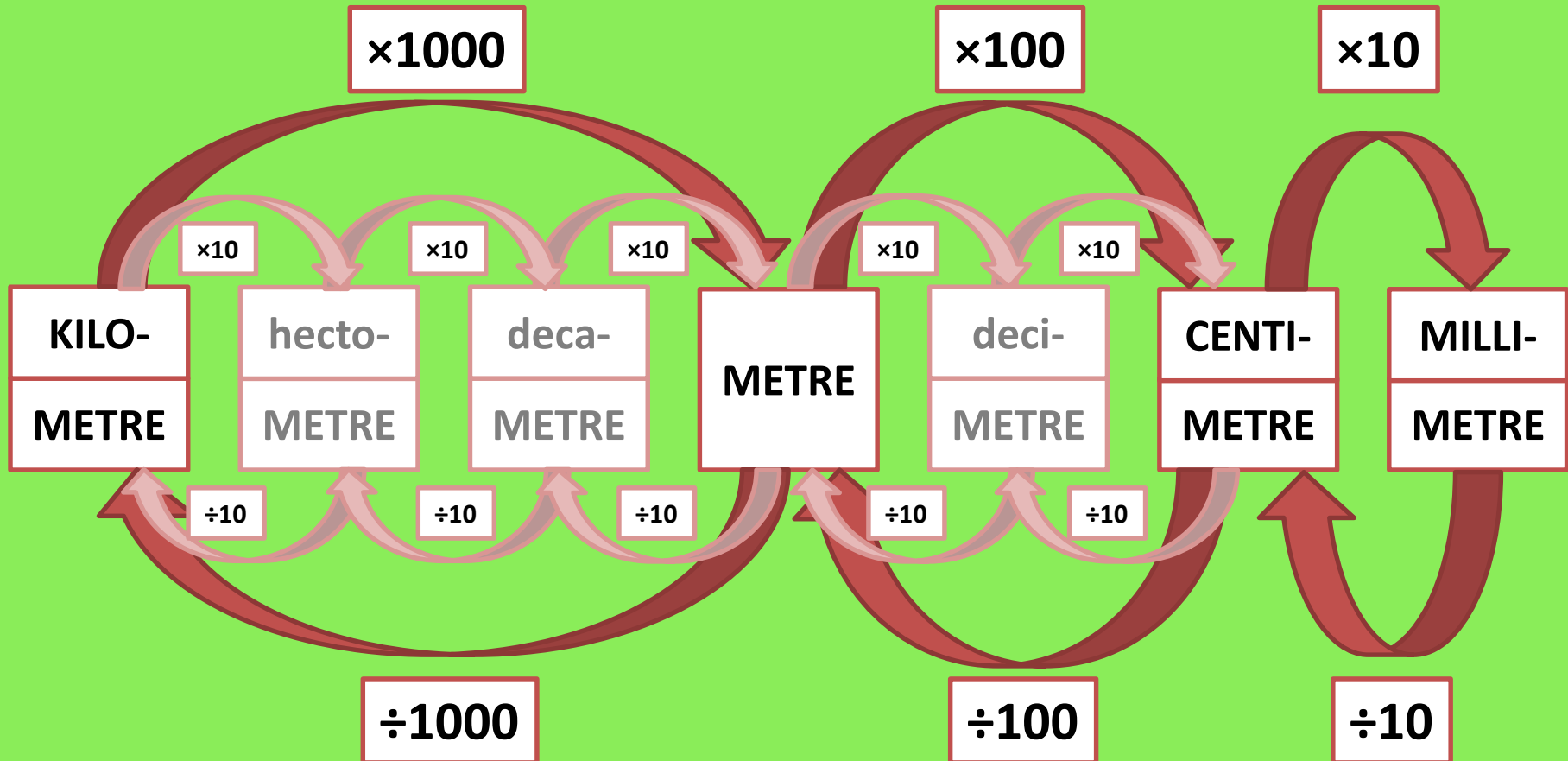
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## Units for distance

- Use this diagram to convert between metric units of length
- Click to see only the most common ones...

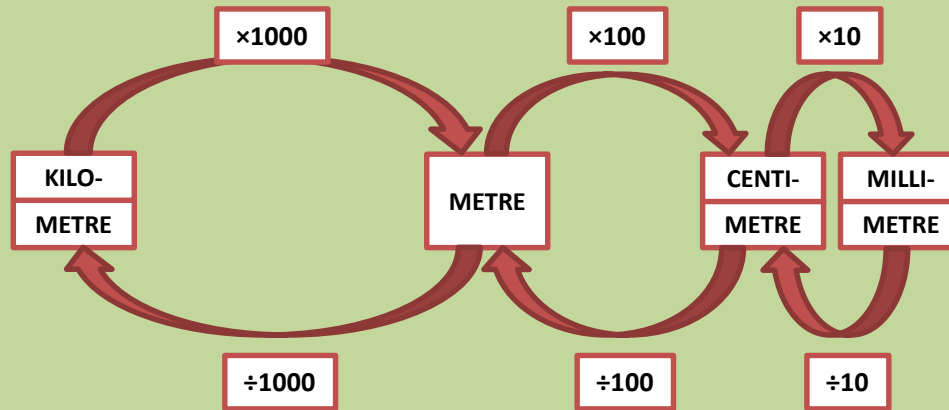


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## Example



How many metres to London?

London 5 km

km  $\rightarrow$  m... I need to  $\times 1000$

So  $5 \times 1000 =$

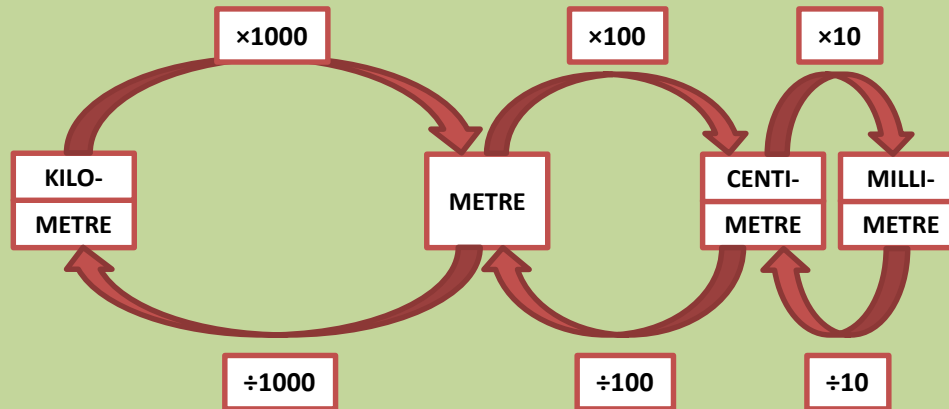


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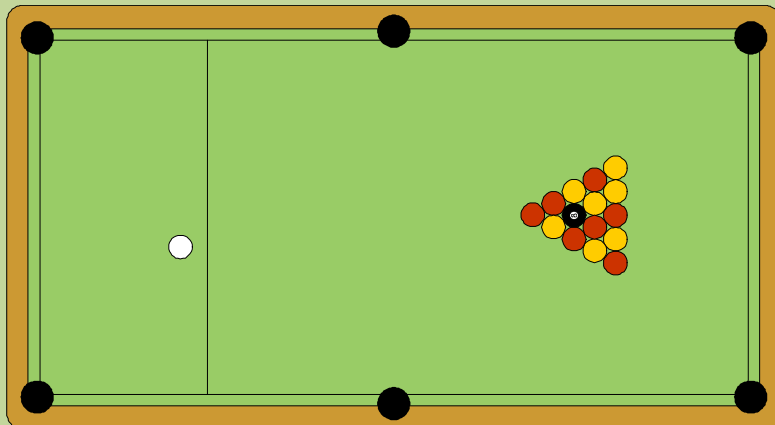
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## Example



Find the length and width of the pool table in cm.

2.15 m



0.9 m

m  $\rightarrow$  cm... I need to  $\times 100$

So  $2.15 \times 100 =$

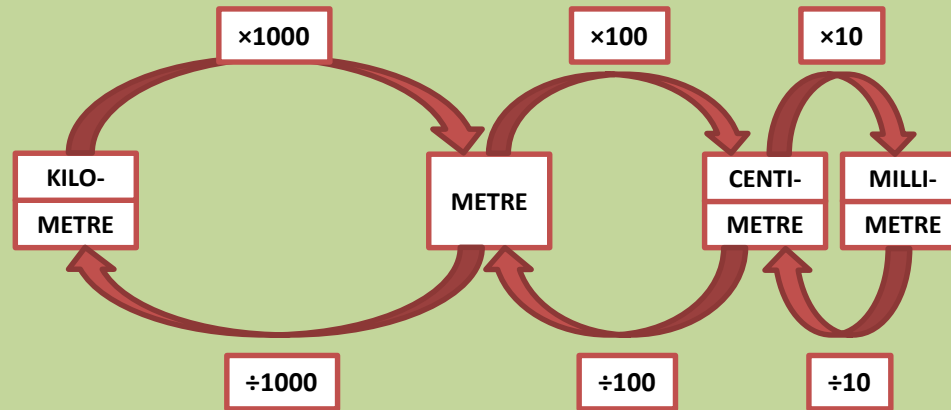
and  $0.9 \times 100 =$

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## Example



Find the height of the Russian Doll in metres.



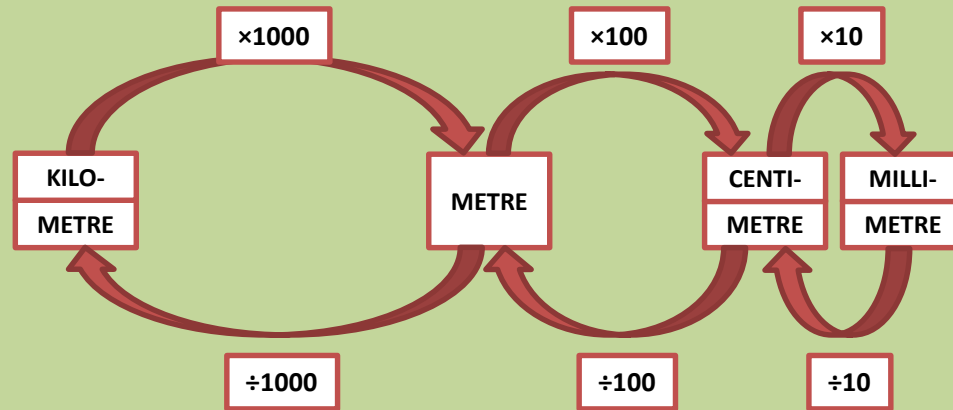
cm  $\rightarrow$  m... I need to  $\div 100$

So  $27 \div 100 =$

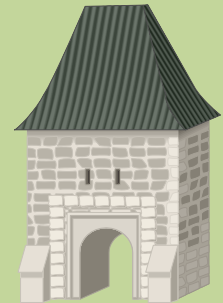
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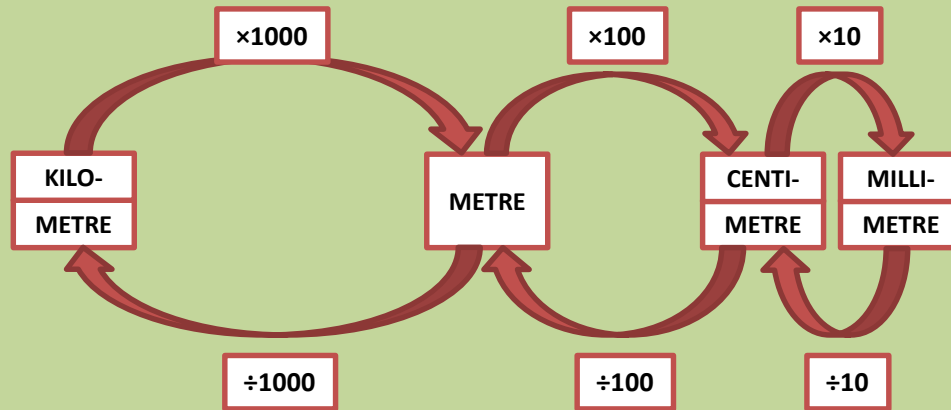
How many metres to Prague?



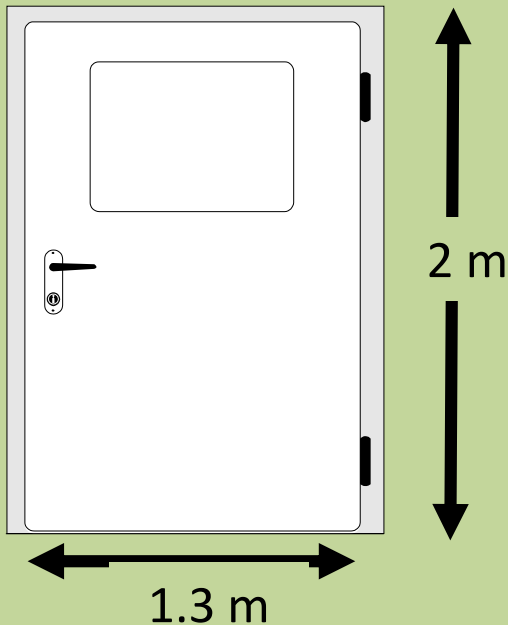
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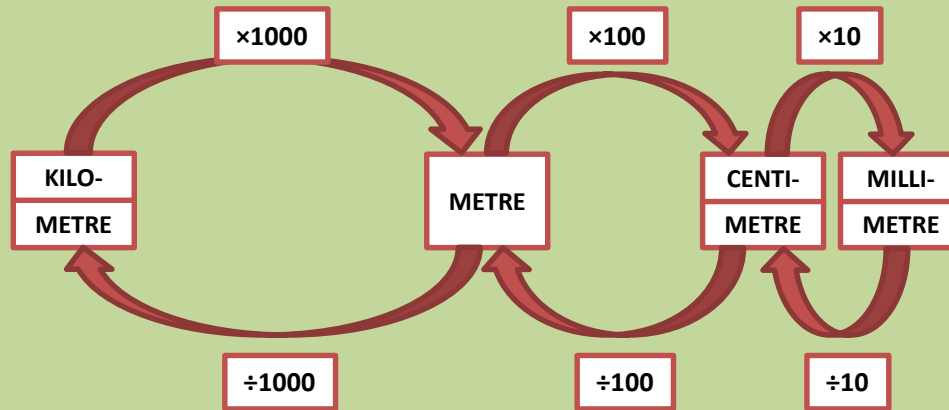
Find the height and width of the door in cm.



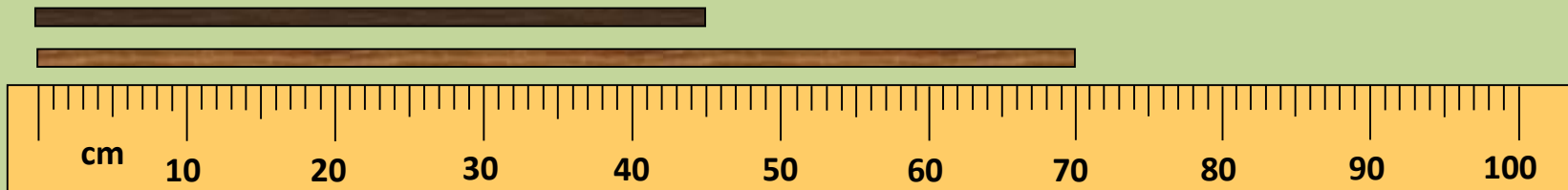
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Find the length of the strips of wood in metres.



Metre Stick

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How many metres to Milan?

Milan 6.4 km

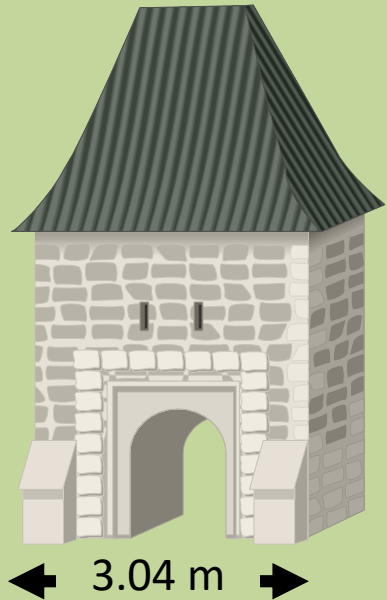




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Find the height and width of the tower in cm.

height =

width =

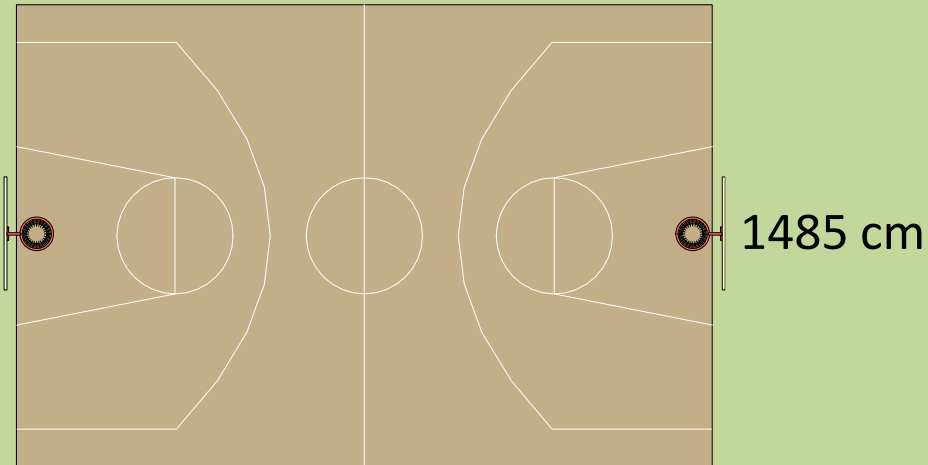
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Find the length and width of the court in metres.

2520 cm



length =

width =

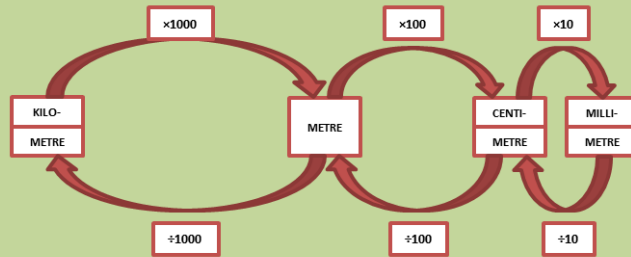
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Task – Convert the metric lengths into different units

Complete the conversions for the tables below...



	km	m
1	1	
2	4	
3	3.5	
4		500
5		750
6	9.75	
7	6.258	
8		5300
9		6840
10	3.782	

	m	cm
1	1	1
2	2	4
3	3	3.5
4	4	
5	5	
6	6	9.75
7	7	4.28
8	8	
9	9	
10	10	3.08

	m	cm	mm
1	1		
2		50	
3	1.5		
4			3000
5	$\frac{3}{4}$		
6			2400
7		786	
8			150
9	9.1		
10			5340

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# MASS

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## Mass

The most common metric units used for mass are kilograms, grams and milligrams.



1 kilogram (kg) = 1000 grams (g)

1 gram (g) = 1000 milligrams (mg)

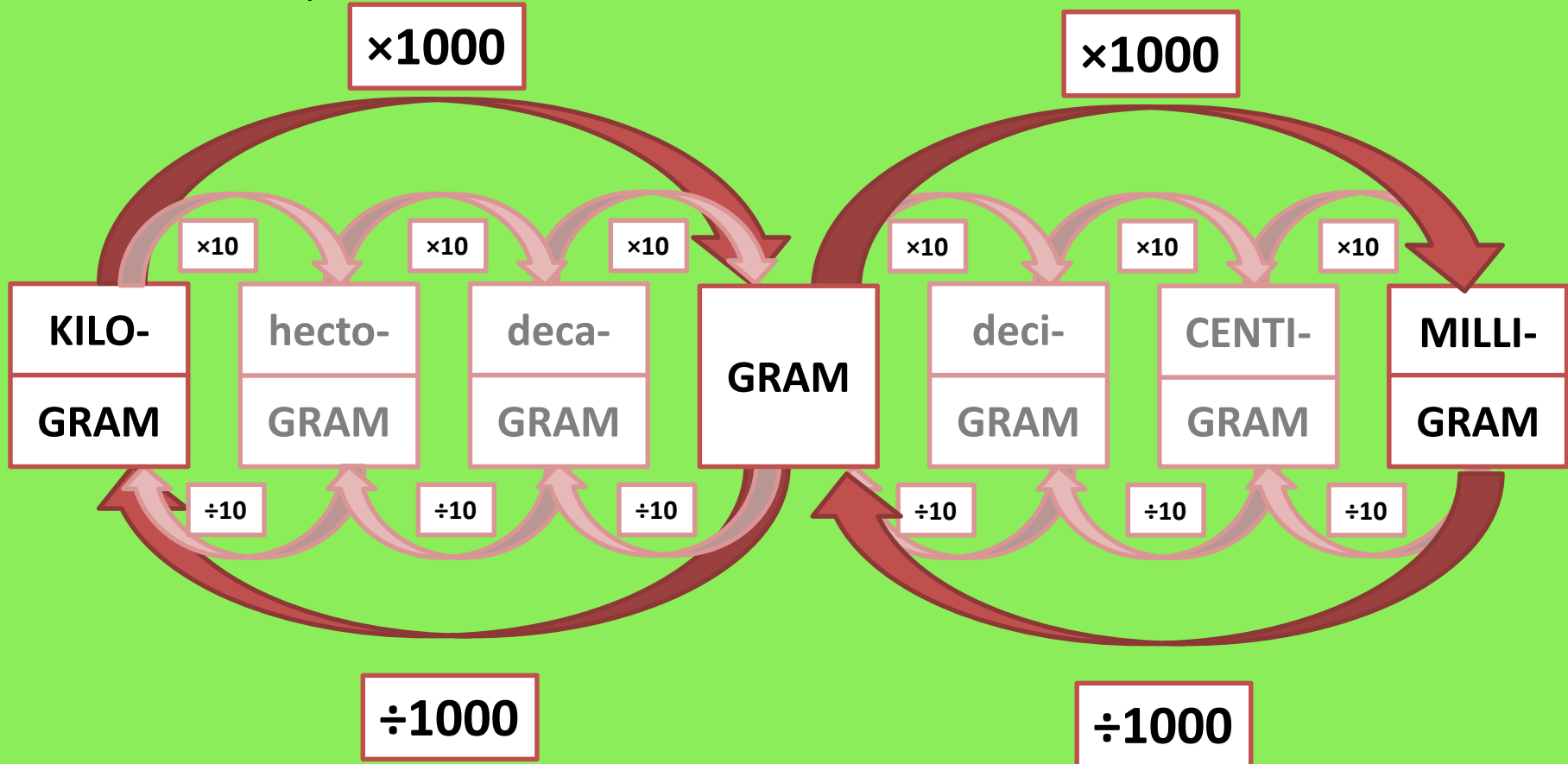
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## Units for mass

- Use this diagram to convert between metric units of mass
- Click to see only the most common ones...

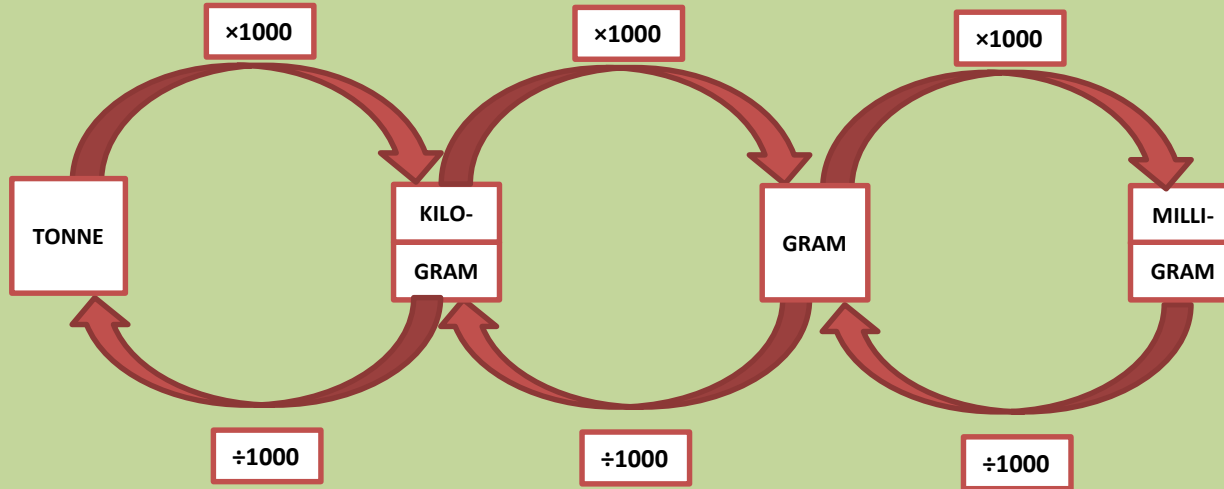


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## Example



Find the mass of the bag of sugar in g.



1 kg

kg  $\rightarrow$  g... I need to  $\times 1000$

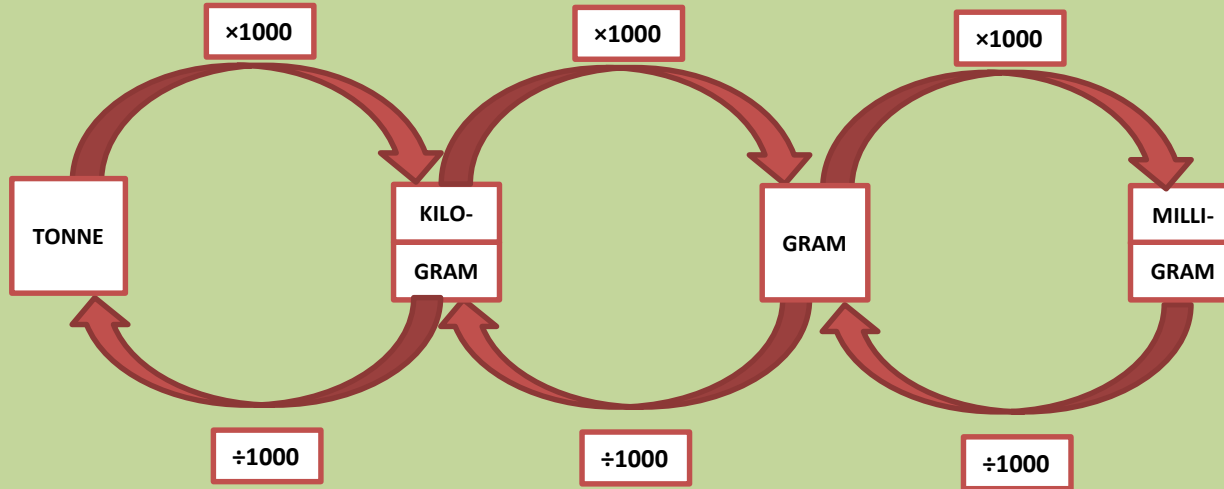
So  $1 \times 1000 =$

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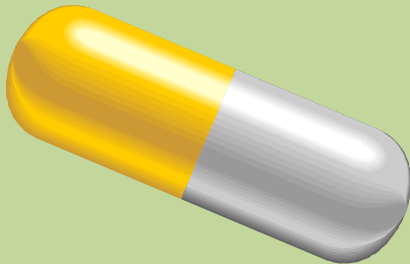
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## Example



Find the mass of the mass of the capsule in g.



mg  $\rightarrow$  g... I need to  $\div 1000$

So  $1 \div 1000 =$

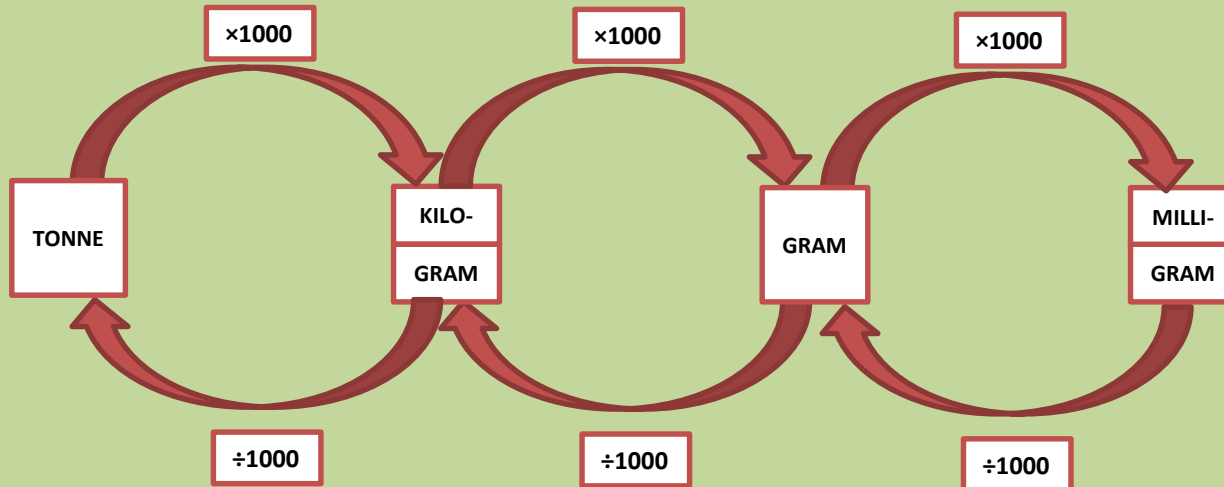
285 mg



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Find the mass of the box in g.

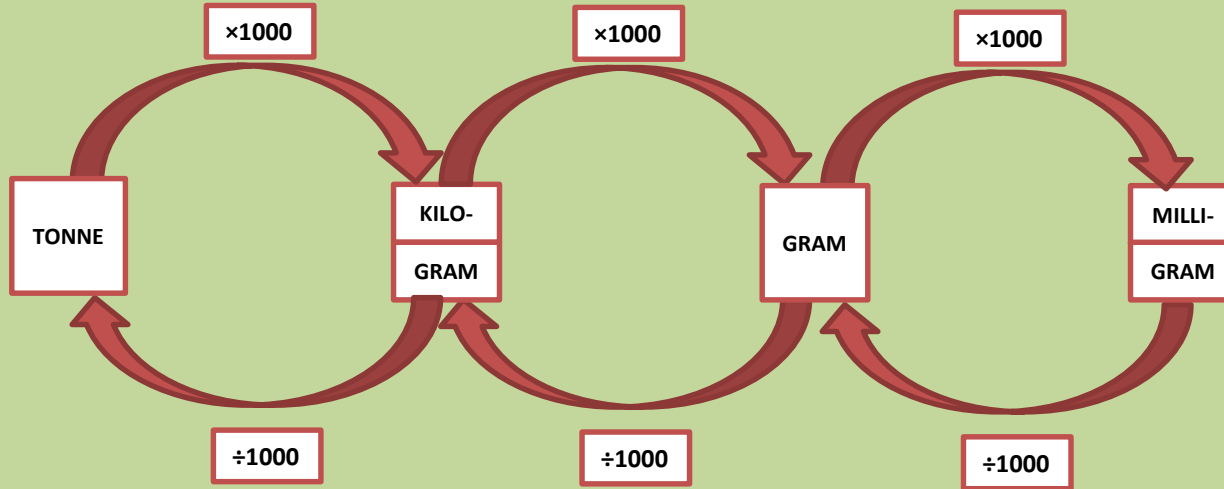


$4\frac{3}{4}$  kg

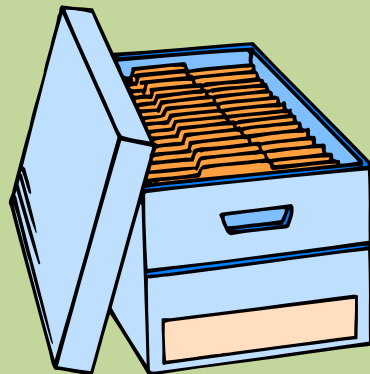
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Find the mass of the box files in kg.

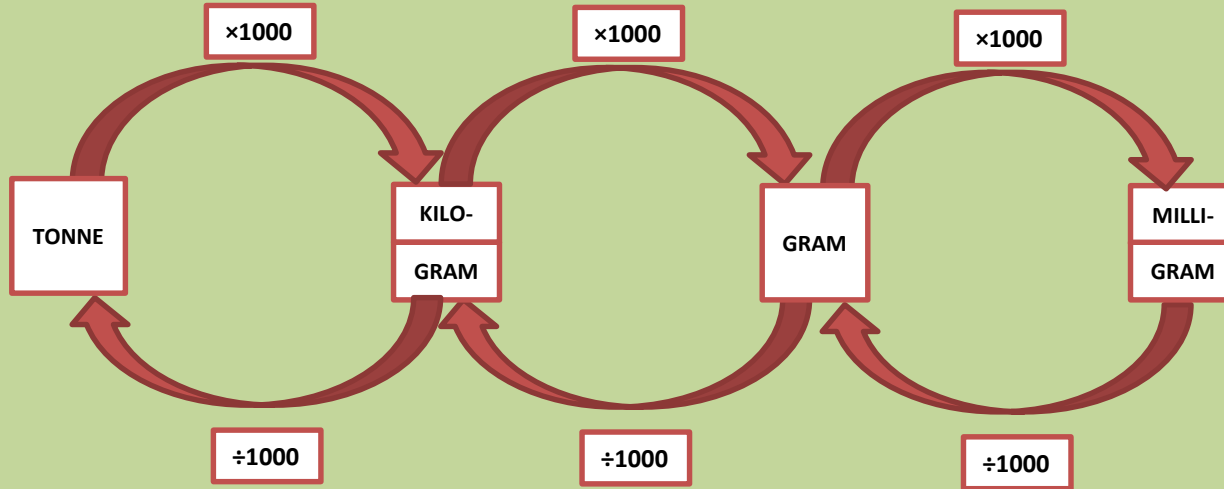


2300 g

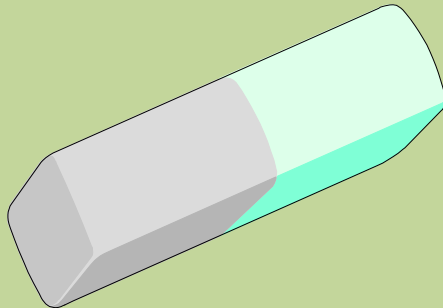
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Find the mass of the eraser in mg.

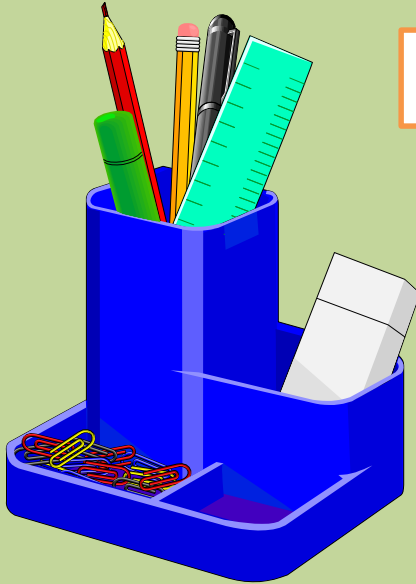


32g

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180 g

Find the mass of the pencil tidy in kg.

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3000 mg

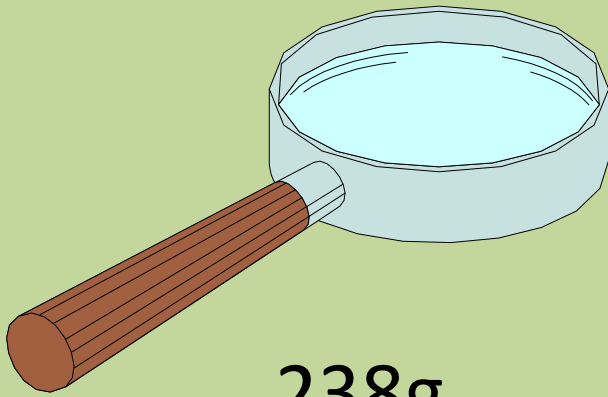
Find the mass of the five tablets in g.

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Find the mass of the magnifying glass in kg.



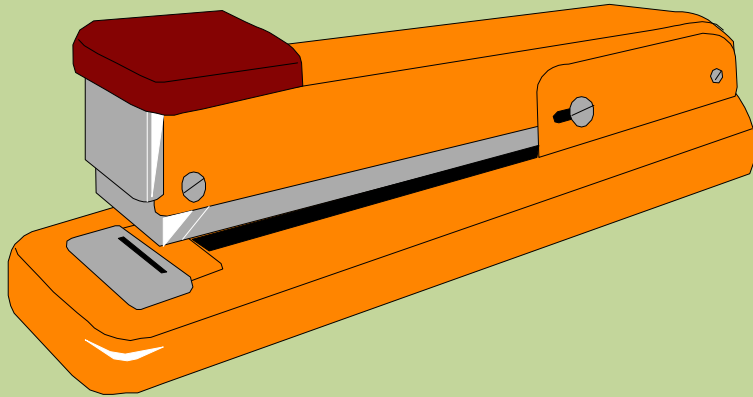
238g

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# Measures and units

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Find the mass of the stapler in mg.



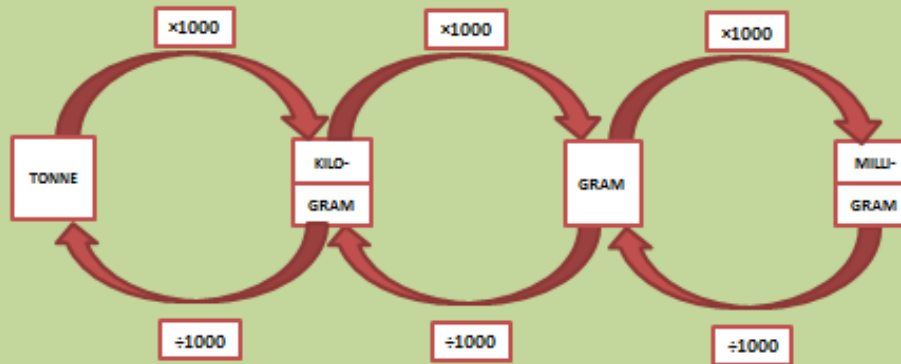
225g

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# Measures and units

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Task – Convert the metric masses into different units



	tonnes	kg
1	1	
2	4	
3	3.5	
4		500
5		750
6	9.75	
7	6.258	
8		
9		6840
10	3.782	

	kg	g
1	1	
2	3	
3	4.5	
4		500
5		750
6	5.75	
7	7.86	
8		6300
9		9040
10	8.342	

	g	mg
1	1	
2	4	
3	6.5	
4		250
5		500
6	0.375	
7	7.86	
8		184
9		950
10	8.34	



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# CAPACITY

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## Capacity

Capacity is a measure of the amount of liquid that a 3-D object (for example a glass) can hold.

The most common metric units of capacity are litres (l), centilitres (cl) and millilitres (ml).



1 litre (l) = 100 centilitres (cl)

1 litre (l) = 1000 millilitres (ml)

1 centilitre (cl) = 10 millilitres (ml)



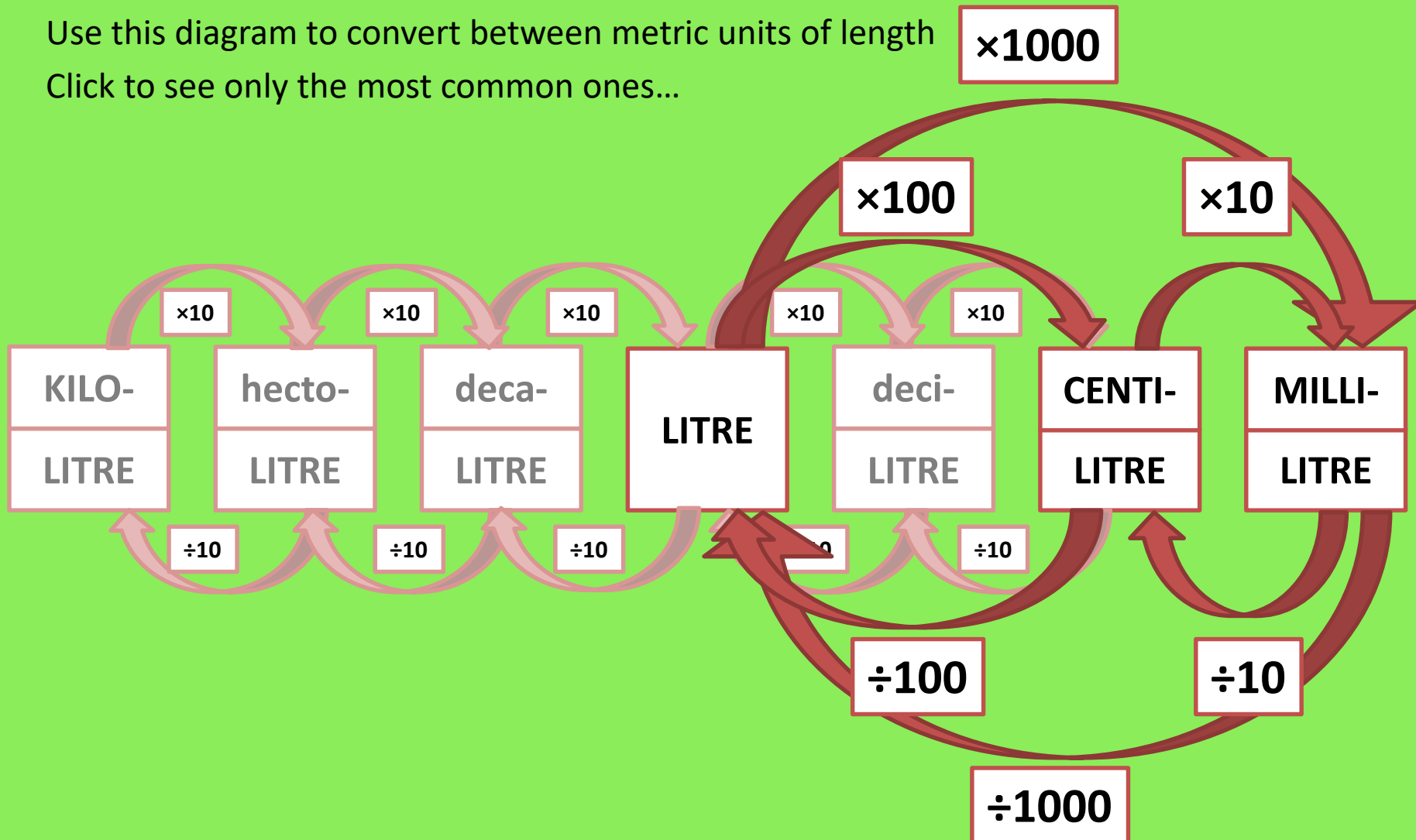
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## Units for capacity

- Use this diagram to convert between metric units of length
- Click to see only the most common ones...

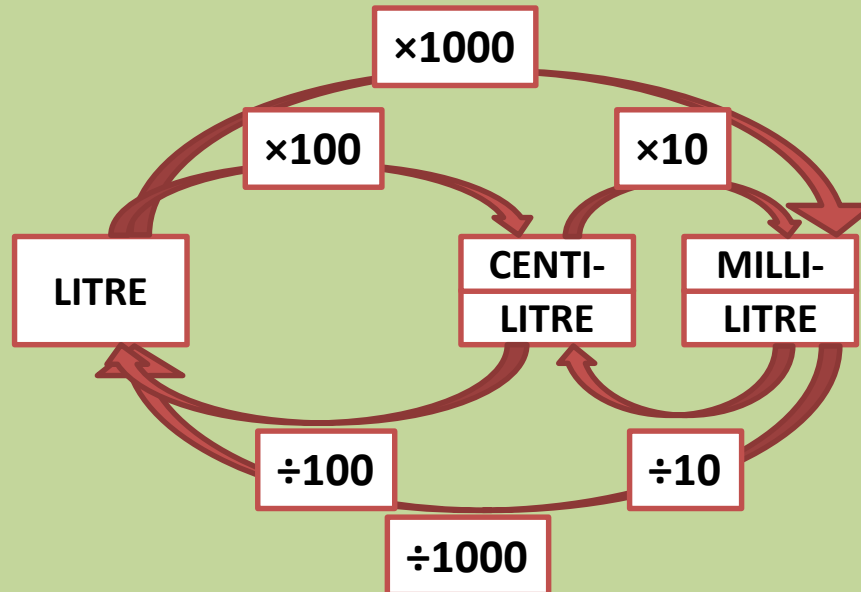


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## Example



Work out the number of (a) ml and (b) cl in total.



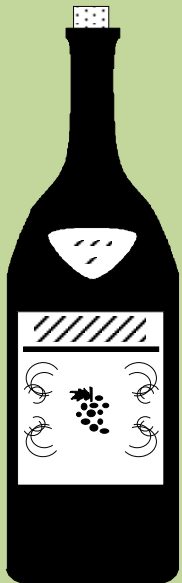
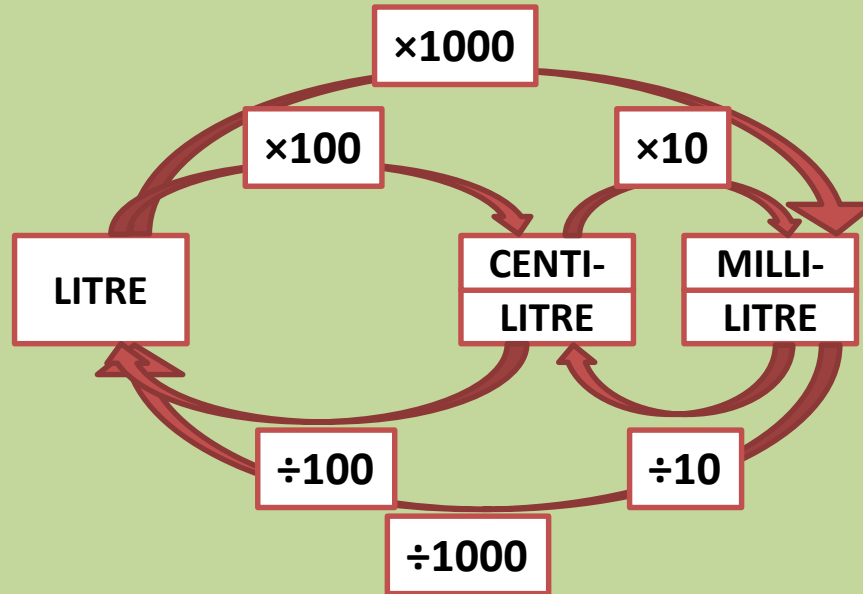
l  $\rightarrow$  ml... I need to  $\times 1000$   
So  $2 \times 1000 =$

l  $\rightarrow$  cl... I need to  $\times 100$   
So  $2 \times 100 =$

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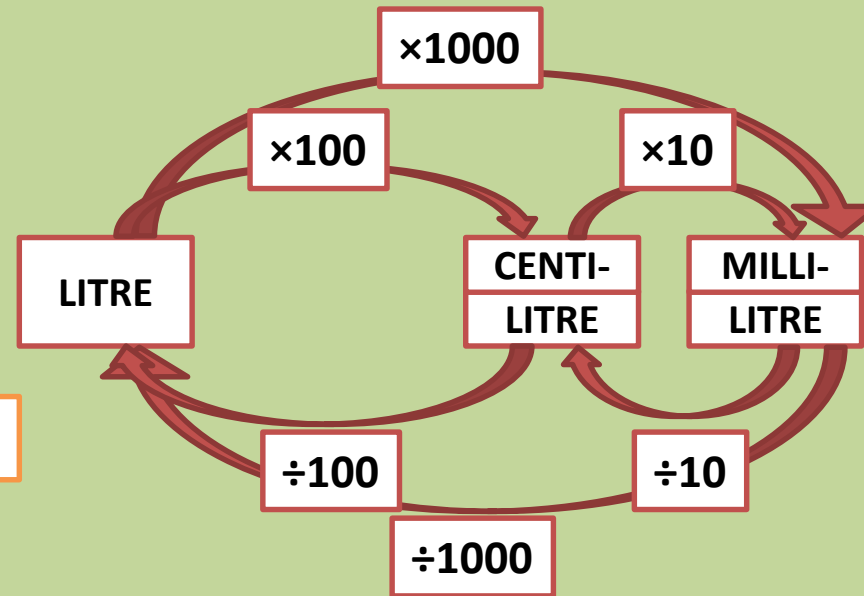
70 cl

Work out the number of (a) l and (b) ml in each case.

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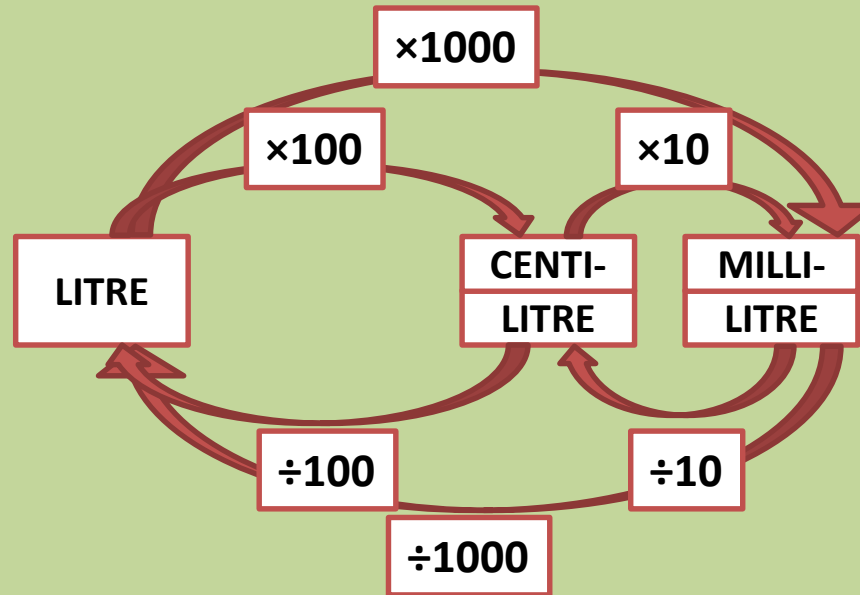
Work out the number of (a) m/ and (b) c/



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16 c/

Work out the number of (a) l and (b) ml in each case.

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95 m/

Work out the number of (a) *l* and (b) *cl* in each case.

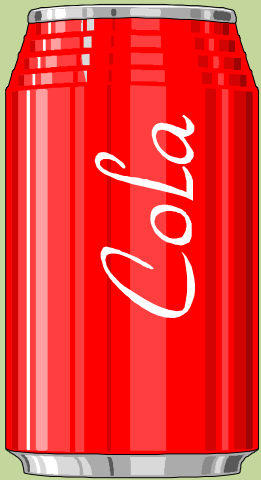


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Work out the number of (a) *l* and (b) *ml* in each case.



33 *cl*

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Work out the number of (a) l and (b) cl in each case.



250 ml

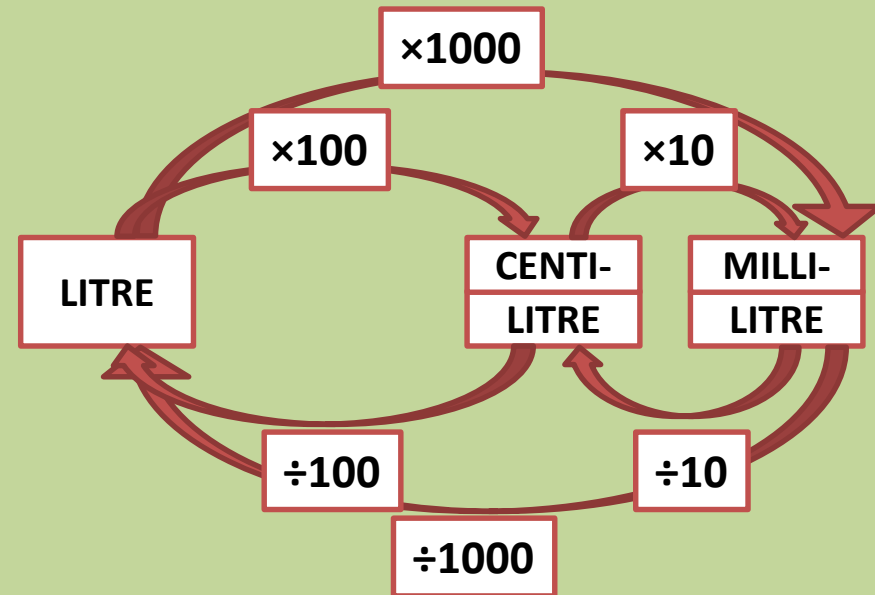
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Task – Fill in the gaps in the table

	<i>l</i>	<i>cl</i>	<i>ml</i>
1	1		
2		50	
3	1.5		
4			3000
5	$\frac{3}{4}$		750
6			2400
7		786	
8			150
9	9.1		
10			25



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# MIXED QUESTIONS

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How large is a millimetre?

The width  
of a pin head



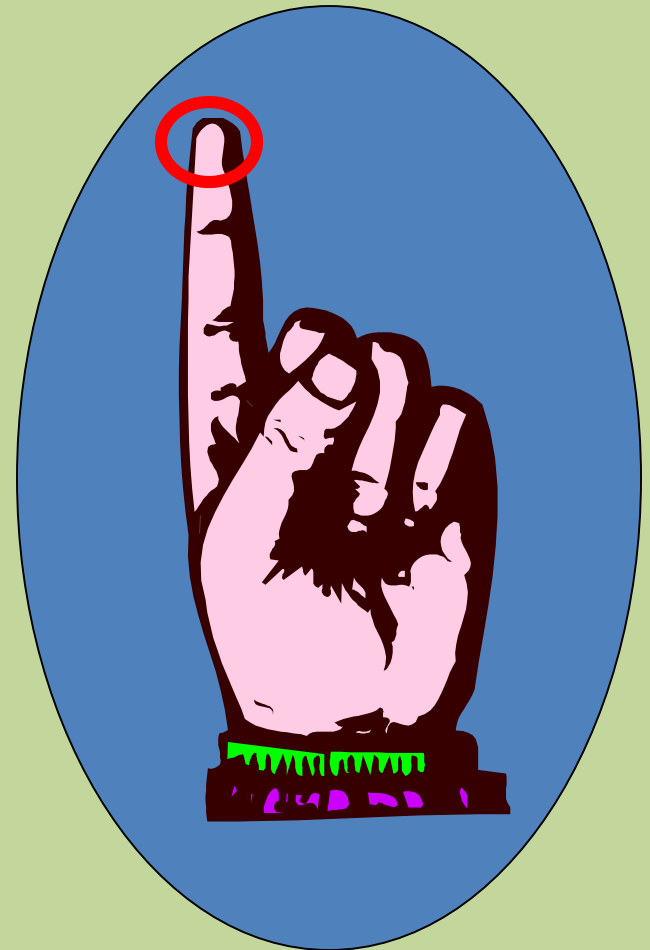
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How large is a centimetre?

The width  
of the top  
of your finger



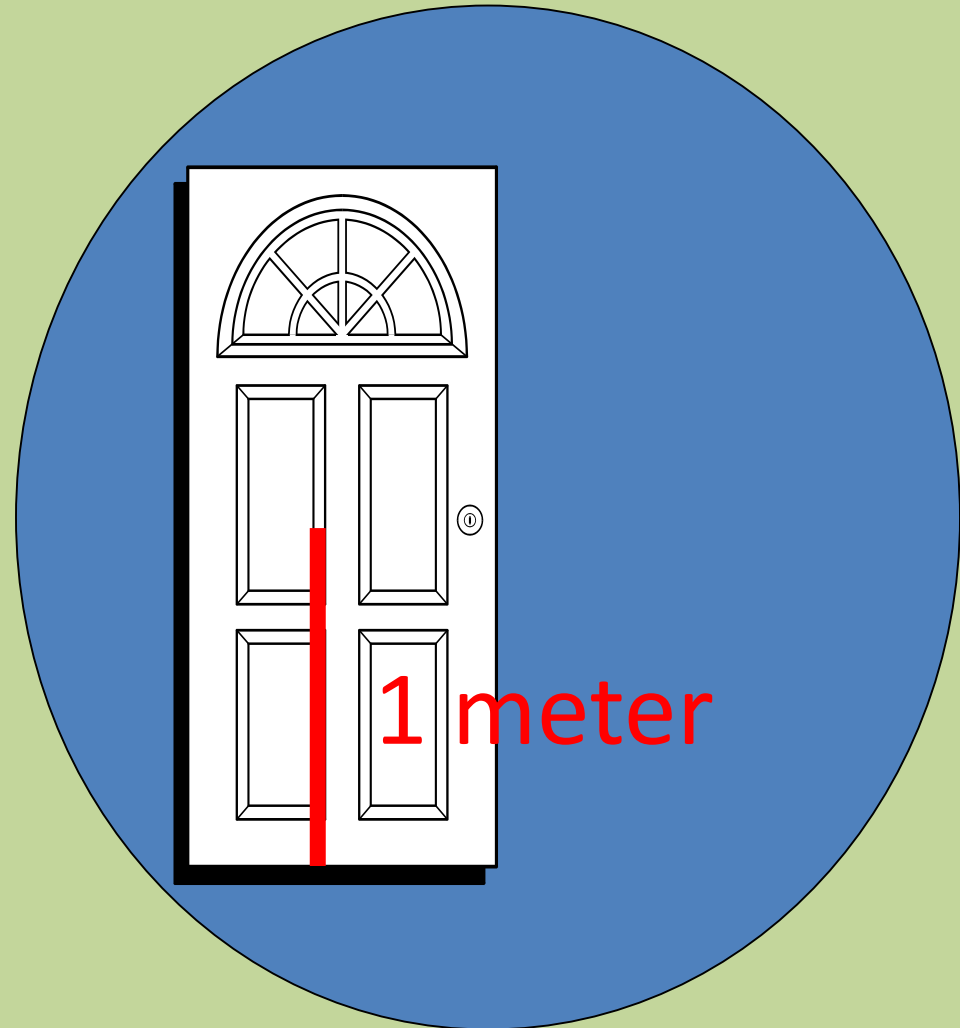
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## How large is a metre?

About  $\frac{1}{2}$  the height  
of a door

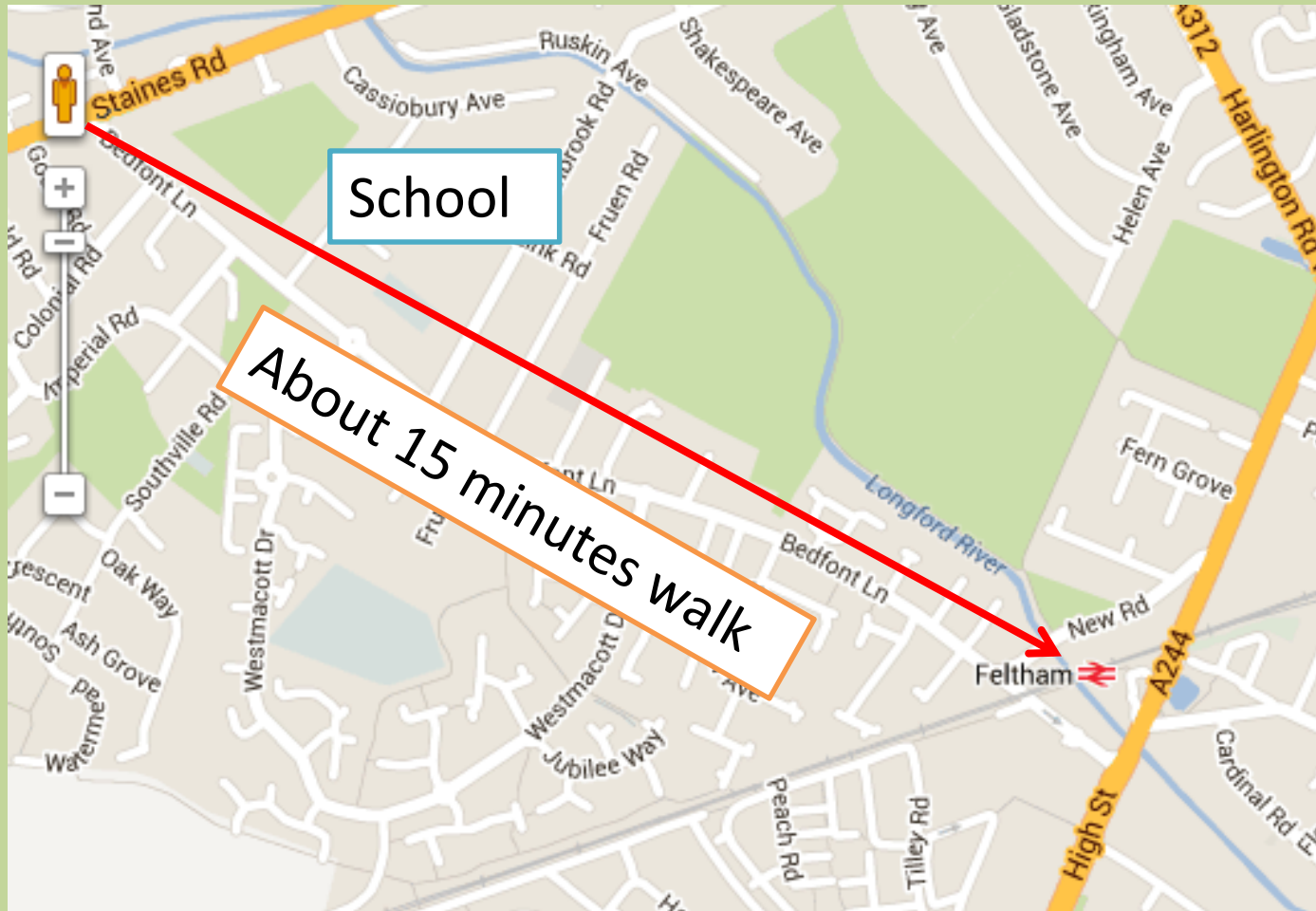


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## How long is a kilometre?





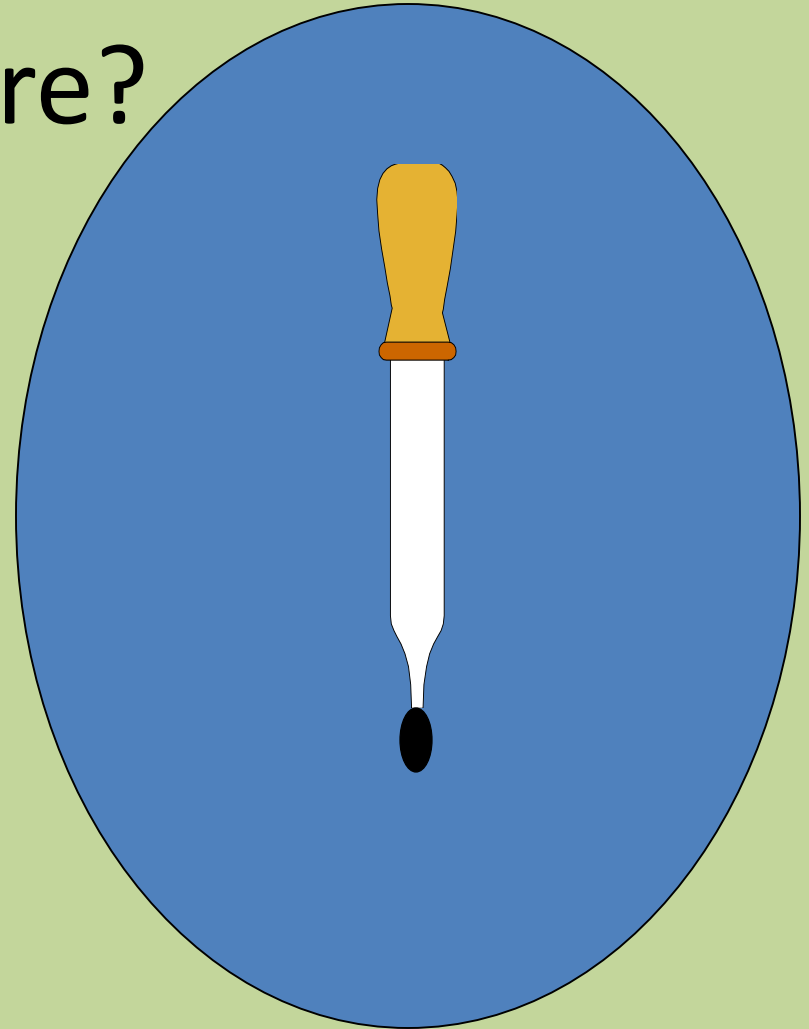
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How much is a millilitre?

**About a  
drop of  
liquid**



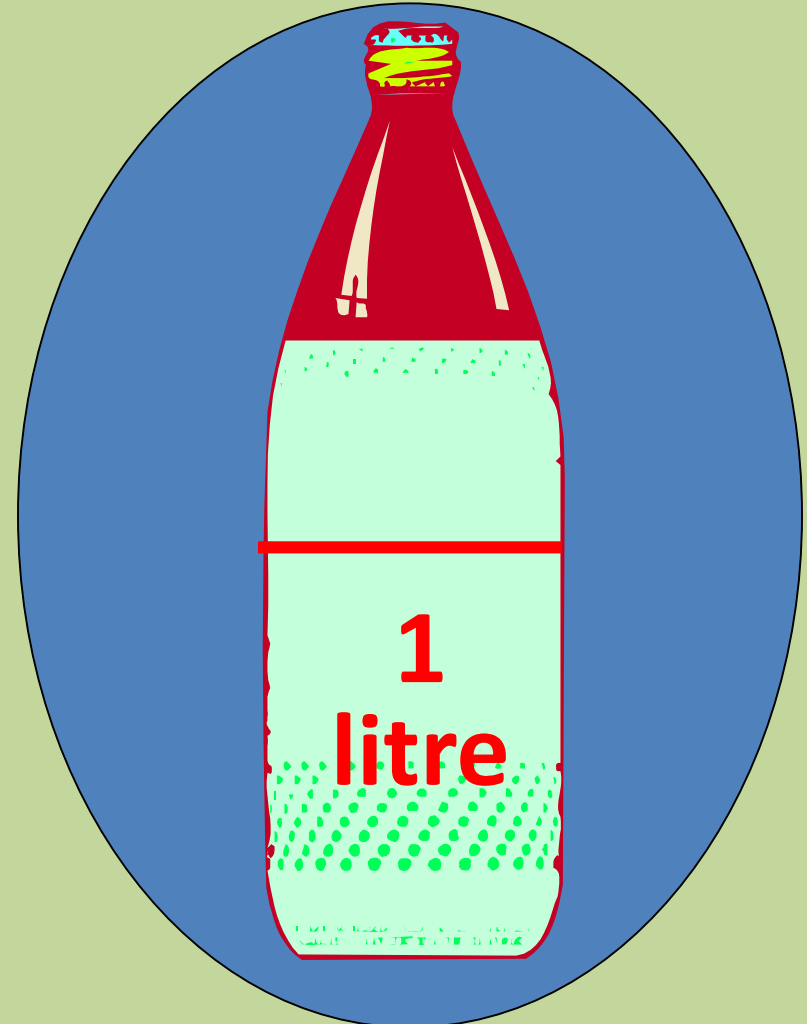
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How large is a litre?

Half of a  
large lemonade  
bottle



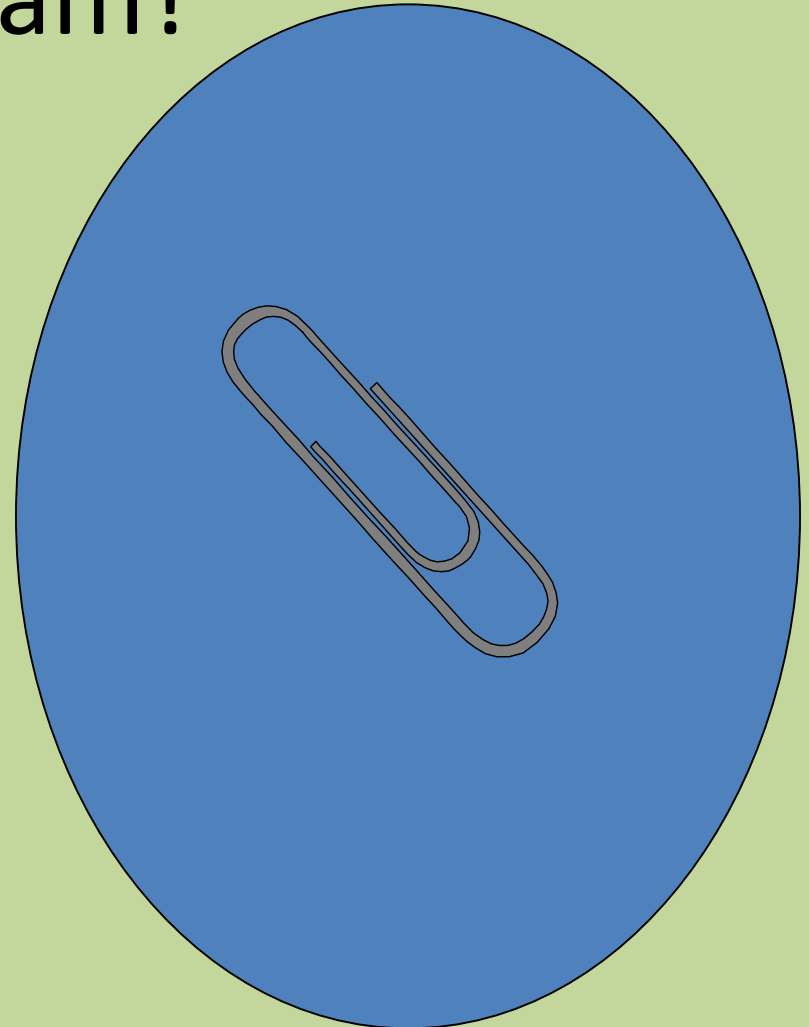
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How heavy is a gram?

**A paper clip  
weighs  
about 1  
gram**



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## How heavy is a kilogram?

**A kitten  
weighs  
about 1  
kilogram**



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## How long is an inch?

The top of a  
thumb is about  
an inch long

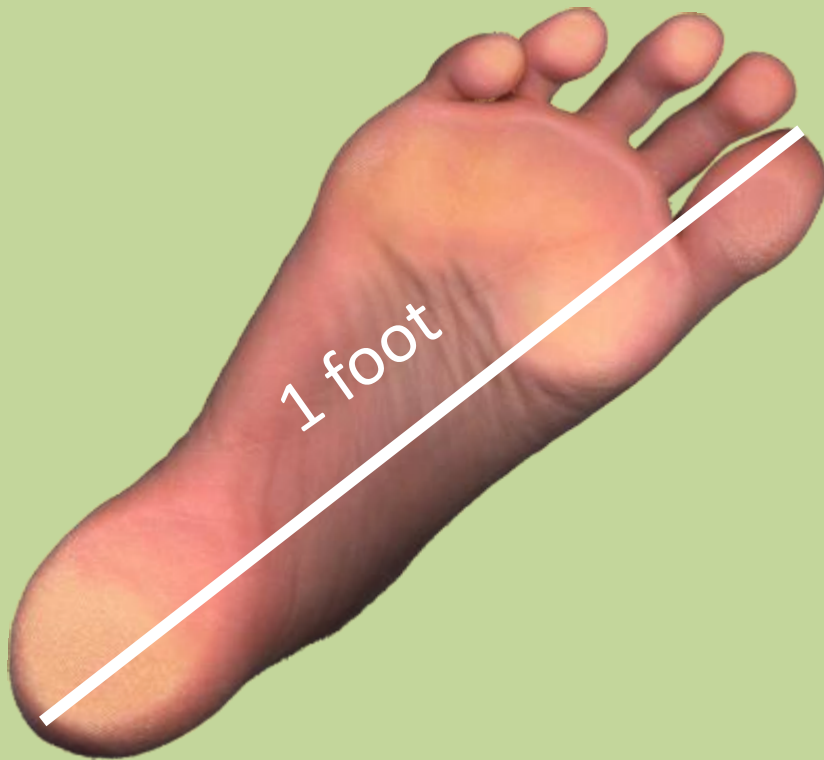


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How long is a foot?



**A large man's  
foot is about a  
foot long**

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# IMPERIAL MEASURES

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# Measures and units

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Imperial units are still frequently used and you should be aware of the following imperial conversions:

1 foot = \_\_\_ inches

1 yard = \_\_\_ feet

1 pound = \_\_\_ ounces

1 stone = \_\_\_ pounds

1 gallon = \_\_\_ pints



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# Measures and units

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We can convert between metric and imperial units using the following approximate conversions:

5 miles is about \_\_\_ kilometres

1 foot is about \_\_\_ centimetres

1 inch is about \_\_\_ centimetres

1 kilogram is about \_\_\_ pounds

25 g is about \_\_\_ ounce

1 gallon is about \_\_\_ litres

1 litre is about \_\_\_\_\_ pints