S1 Home Learning 1A4 1L4

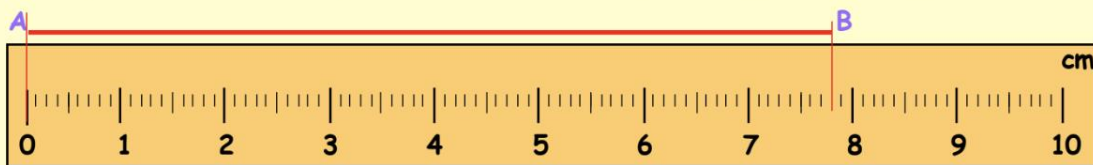## Measure

Centimetres & Millimetres on a Ruler

Each **centimetre (cm)** is split into equal parts called **millimetres (mm)**.
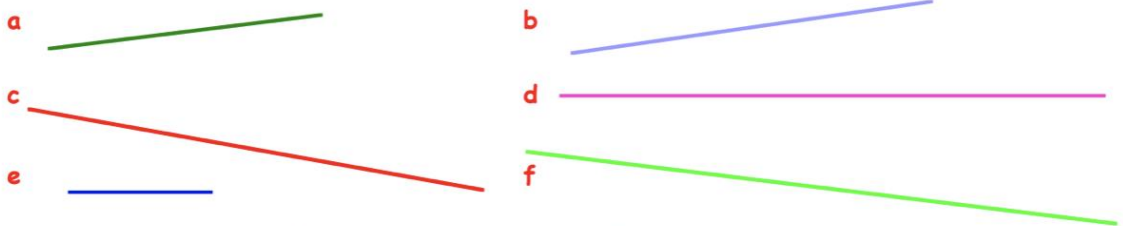
1 cm = 10 mm.

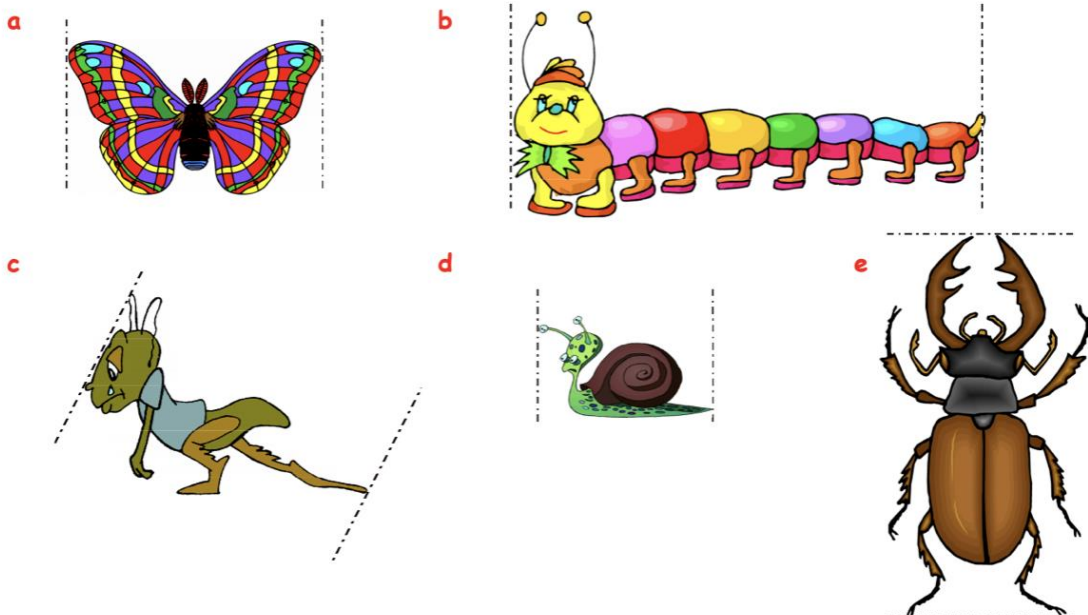The length of the line **AB** using the ruler below is **7·8 cm** or **78 mm** or **7 cm 8 mm**.
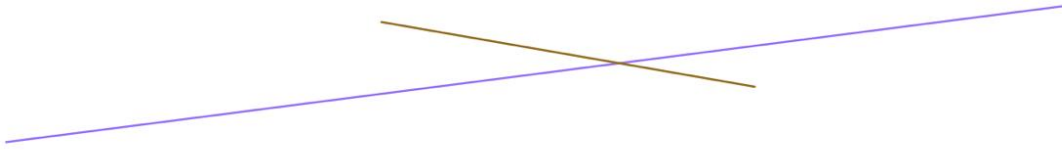
draw using cm and mm.

A _____ B

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

cm

1. Use your ruler to measure the length of these lines **in centimetres**. (e.g. 2·7 cm).

   a

   b

   c

   d

   e

   f

2. Measure the dimension of these cartoon insects **in millimetres**.

   a

   b

   c

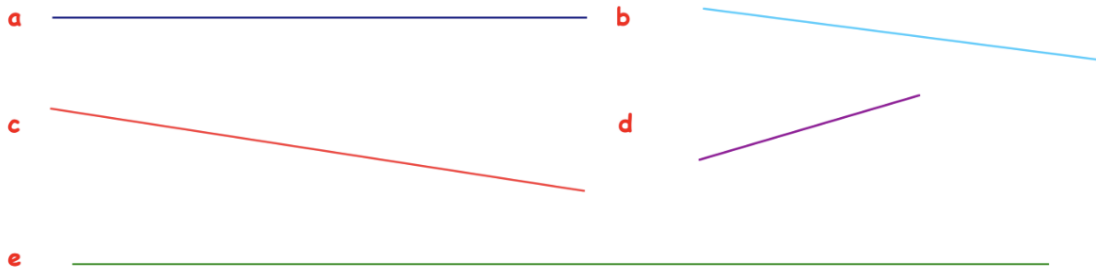   d

   e

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How many **millimetres** is the **purple** line longer than the **brown** line ?

Estimate, then measure the length of each line and write down its length in :-

(i)   millimetres

(ii)   centimetres

(iii)   centimetres and millimetres.

example :-   24 mm = 2·4 cm = 2 cm 4 mm

a

b

c

d

e

Use your ruler to **draw** :-

a   a line of length 45 mm

b   a line of length 80 mm

c   a line of length 7·5 cm

d   a line of length 10·7 cm

e   a square of side 65 mm

f   a rectangle measuring 8·5 cm by 2·5 cm.

Some children are wearing badges (shown below) because it is their friend's birthday.

(i)   Write down an estimate of each measurement asked for, in centimetres.

(ii)   Now use your ruler to measure the length, in centimetres.

(iii)   Compare your answers to (i) and (ii). Were you far out ?

a   The diameter of this circle.

b   A side of this square.
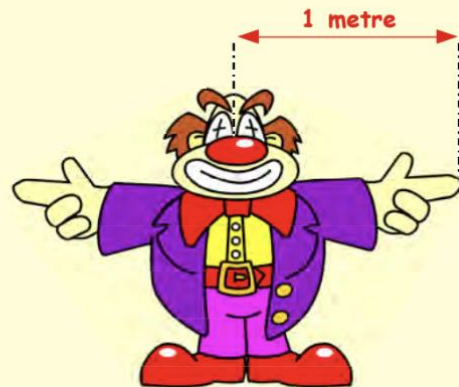
c   The length of a diagonal of this rectangle.

Units of length

There are 4 units of length used in the **METRIC** system.
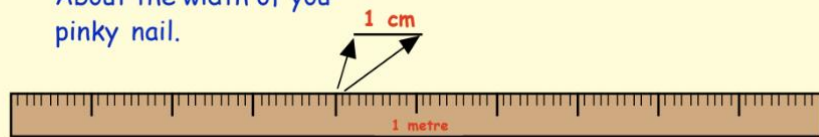
1 metre

The METRE — This is the standard unit of length - it is about the distance from your nose to the end of your out-stretched arm.

The centimetre — This is $\frac{1}{100}$ of a metre.

About the width of you pinky nail.

1 cm

1 metre

The millimetre — This is $\frac{1}{10}$ of a centimetre.

About the width of a sewing needle.

1 cm

The kilometre — This is equal to 1000 metres.

To change :-

kilometres —> metres (× 1000)	metres —> kilometres (÷ 1000)
metres —> centimetres (× 100)	centimetres —> metres (÷ 100)
centimetres —> millimetres (× 10)	millimetres —> centimetres (÷ 10)

Remember :- **1 metre = 100 cm**. How many **cm** in :-

a	1 m	b	5 m	c	8 m	d	3 m
e	9 m	f	7 m	g	6 m	h	10 m
i	4 m	j	11 m	k	12 m	l	15 m ?

100 cm = 1 metre. How many **metres** are in :-

a	400 cm	b	800 cm	c	200 cm	d	500 cm
e	700 cm	f	1000 cm	g	300 cm	h	900 cm ?

Copy and **complete** :-

a 1 metre 20 centimetres   =   1 m 20 cm   = ... **cm**

b 2 metres 50 centimetres   =   2 m ...... cm   = ... **cm**

c 5 metres 40 centimetres   = ... m ..... cm = ... **cm**

d 6 metres 90 centimetres   = ... m ..... cm = ... **cm**

e 1 metre 35 centimetres   = ... m ..... cm = ... **cm**

f 8 metres 25 centimetres   = ... m ..... cm = ... **cm**

g 4 metres 5 centimetres   = ... m ..... cm = ... **cm**

h 8 metres 7 centimetres   = ... m ..... cm = ... **cm**

Copy and **complete** :-

a 210 cm   =   2 m 10 cm = 2 metres .... centimetres

b 314 cm   =   3 m ...... cm = ... metres ...... centimetres

c 684 cm   = ... m ...... cm = ... metres ...... centimetres

d 490 cm   = ... m ...... cm = ... metres ...... centimetres

e 536 cm   = ... m ...... cm = ... metres ...... centimetres

f 761 cm   = ... m ...... cm = ... metres ...... centimetres

g 301 cm   = ... m ...... cm = ... metres ...... centimetres

h 905 cm   = ... m ...... cm = ... metres ...... centimetres

Since **1 cm = 10 mm**, how many millimetres are there in :-

a	4 cm	**b**	7 cm	**c**	18 cm	**d**	half a cm
e	8 cm 5 mm	**f**	12 cm 2 mm	**g**	17 cm 8 mm	**h**	6 cm 6 mm
i	2·5 cm	**j**	8·3 cm	**k**	14·6 cm	**l**	59·9 cm ?

Since **10 mm = 1 cm**, how many centimetres are equal to :-

a	30 mm	**b**	60 mm	**c**	80 mm	**d**	140 mm
e	65 mm	**f**	78 mm	**g**	300 mm	**h**	800 mm
i	450 mm	**j**	5000 mm	**k**	2 mm	**l**	9 mm ?

4. Since **1 m = 100 cm**, how many centimetres are there in :-

a	4 m	**b**	7 m	**c**	16 m	**d**	quarter of a metre
e	23 m	**f**	67 m	**g**	300 m	**h**	$\frac{3}{4}$ of a metre
i	3 m 70 cm	**j**	6·02 m	**k**	0·8 m	**l**	0·03 m ?

5. Remember, **100 cm = 1 m**. How many metres are there in :-

a	600 cm	**b**	900 cm	**c**	1200 cm	**d**	100 000 cm
e	330 cm	**f**	840 cm	**g**	60 cm	**h**	35 cm ?

6. **1 km = 1000 m**. Write down how many metres there are in :-

a	4 km	**b**	15 km	**c**	27 km	**d**	half a kilometre
e	50 km	**f**	4 km 250 m	**g**	6 km 900 m	**h**	1 km 80 m
i	8·3 km	**j**	14·7 km	**k**	4·95 km	**l**	0·4 km.

7. **1000 m = 1 km**. Write down how many kilometres there are in :-

a	3000 m	**b**	16 000 m	**c**	400 m	**d**	9500 m
e	16 200 m	**f**	3750 m	**g**	4820 m	**h**	8750 m
i	510 m	**j**	820 m	**k**	13 800 m	**l**	700 000 m.

Capacity

Examples of Volume

Cup holds **200 ml**

Spoon holds **5 ml**

Jug holds **1 litre**
Jug holds **1000 millilitres (ml)**

1 litre = 1000 ml

a

1 litre	1000 ml
	900
	800
	700
	600
	500
	400
	300
	200
	100

Orange

b

1 litre	1000 ml
	900
	800
	700
	600
	500
	400
	300
	200
	100

Lime

c

1 litre	1000 ml
	900
	800
	700
	600
	500
	400
	300
	200
	100

Blackcurrant

d

1 litre	1000 ml
	900
	800
	700
	600
	500
	400
	300
	200
	100
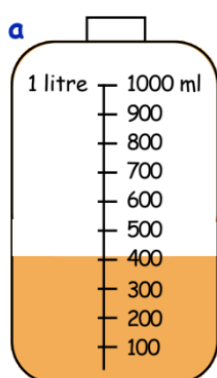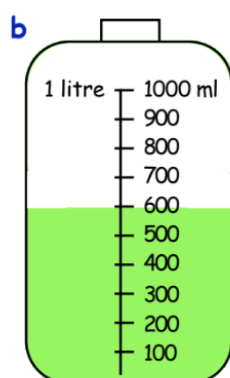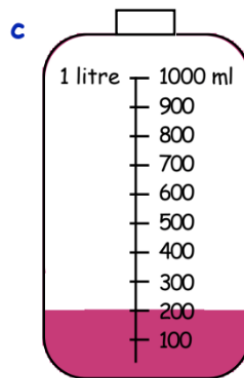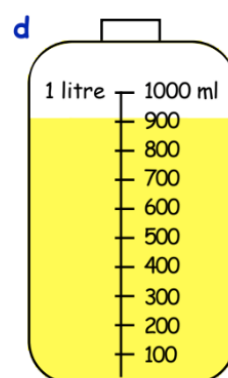
Lemon

Litres and Millilitres.

To change from one to the other we **multiply** or **divide** by **1000**.

litres —› (x 1000) —› millilitres   millilitres —› (÷ 1000) —› litres

Examples :-

5·5 l —› (x 1000) = 5500 ml   2750 ml —› (÷ 1000) = 2·75 l

Exercise 3

1. Change the following number of litres to millilitres :-

    a 3 litres   **b** 9 litres   **c** 15 litres   **d** 20 litres

    e 1·5 litres **f** 6·8 litres **g** 7·4 litres   **h** 5·25 litres

2. Change from millilitres to litres :-

    a 4000 ml   **b** 7000 ml   **c** 12 000 ml   **d** 25 000 ml

    e 7500 ml   **f** 8200 ml   **g** 40 000 ml   **h** 2850 ml

Problems involving length

A tortoise walks **950 cm** to a piece of lettuce.

Write this in **metres** and **centimetres**.
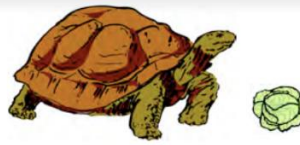
A toy car runs round a track of length **408 cm**.

Write this in **metres** and **centimetres**.

A piece of rope is **6 m 75 cm** long.

Write its length in **centimetres**.
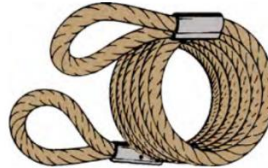
A ball bounced along a path for **8 metres** and **5 centimetres**.

For how many **centimetres** did it bounce ?

A giraffe is **5 m 32 cm** tall.

Write its height in **centimetres**.

Madeleine placed some tins of "HAUNDS" hand cream on top of each other.

The tins were 36 mm, 47 mm, 59 mm and 60 mm in height.

a   How high did the four tins reach ?

b   Write this height in centimetres.

Ben was working on a 2 metre door. He sawed 75 mm off one end.

a   Change 2 metres to mm.

b   Now write down the length of the door which remained (**in mm**).

A piece of metal is 12·7 cm long. When it is heated its length increases by 4 mm.

What length is the heated piece of metal (**in cm**) ?

A stack of 8 counters is 45 mm in height.

If 6 of these stacks are placed one on top of the other what is the total height of the new stack, in **centimetres** ?

Twelve Rolos are placed in a row, making a total length of 18 cm.

Calculate the thickness one Rolo, in **millimetres**.

18 cm
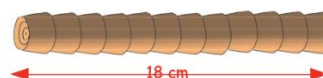
Seb came first in the Argyll & Bute Sports high jump competition with a best jump of 1·98 metres. The world record high jump is 2·45 metres.

How many centimetres below the world record was he ?

2D Shapes

Shapes which are drawn on paper or on a blackboard or interactive whiteboard are called

FLAT shapes   or   **2-DIMENSIONAL** shapes.

2-Dimensions
2-D

Examples :-

triangle

rectangle

circle

pentagon

kite
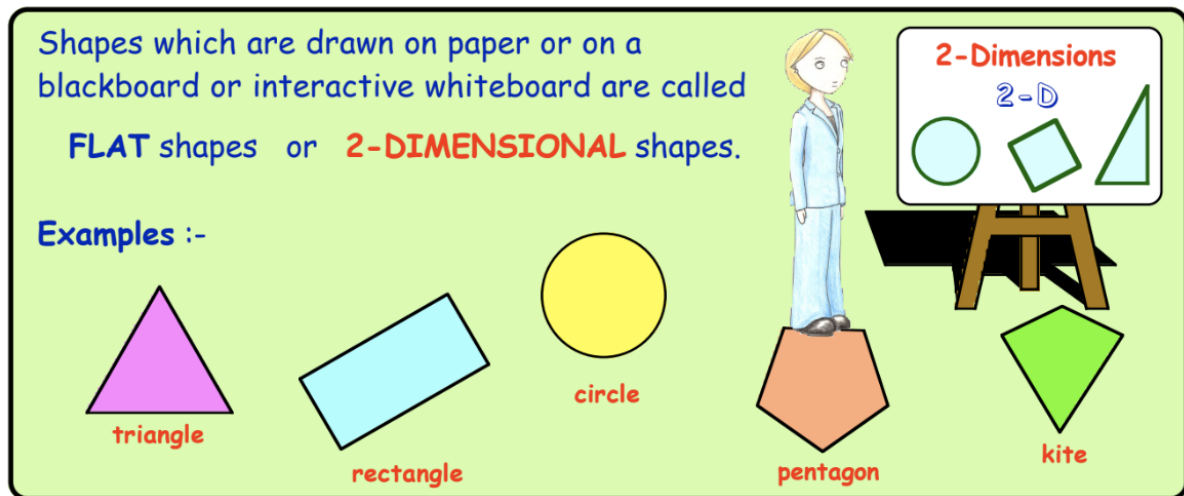
Look at the figures drawn below :-

A

B

C

D

E

F

G

H

I

J

K

L

M
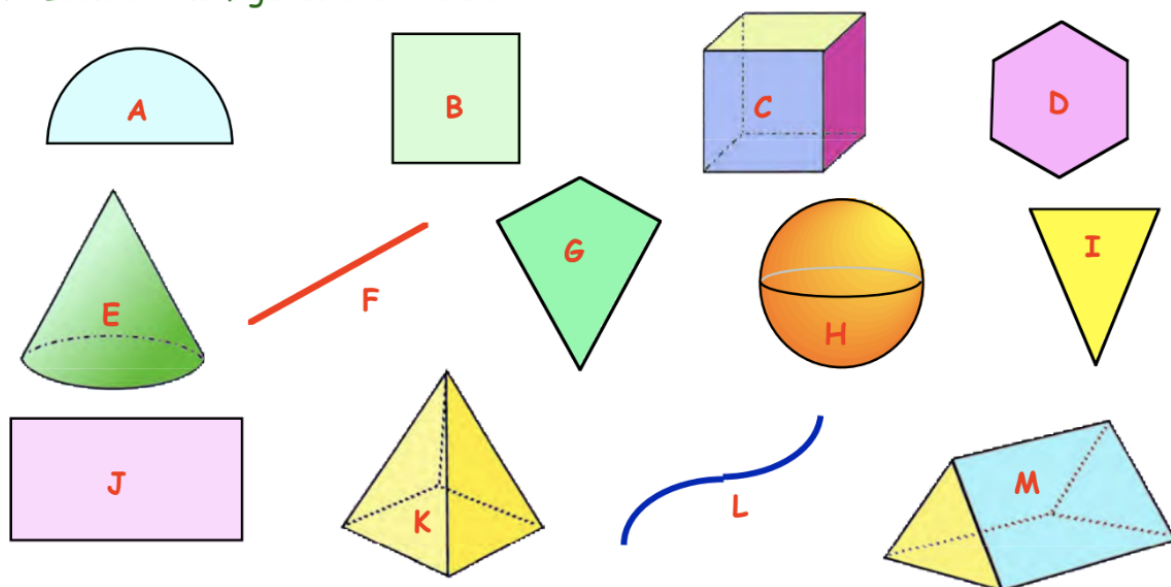
a   Which of them are **2-dimensional** shapes ?

b   Make a neat sketch of each 2-dimensional shape - write its name beside it.

c   There are FIVE **3-dimensional** shapes (solid shapes). Can you name them ?

d   Shape **F** is a **1-dimensional** shape. Which other shape is 1 dimensional ?

Look at this shape.

a   Name this type of shape.

b   How many **edges** does it have ?

c   How many **corners** does it have ?
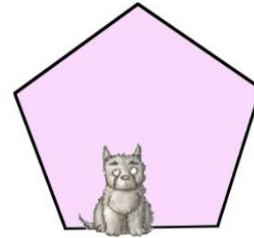
Write down how many **edges** and **corners** each shape below has :-

a   **b**   **c**   **d**
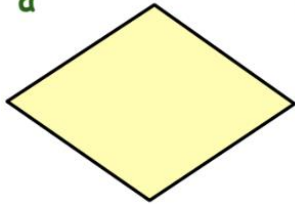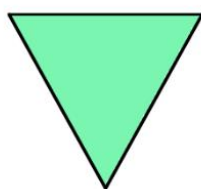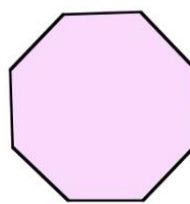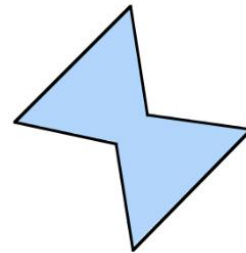
This 3 dimensional shape is called a **CUBOID**.

a   How many **faces** has it ?

b   What shape is the **blue** face ?

c   What shape is the **red** face ?
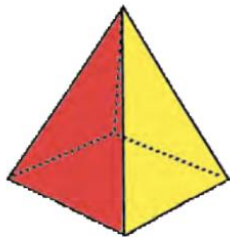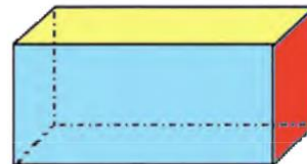
This shape is called a **square based Pyramid**.

a   What shape is the **bottom** face ?

b   What shape is the **red** face ?

a   Name this shape.

b   What shape is the **green** face ?

c   What shape is the **pink** face ?
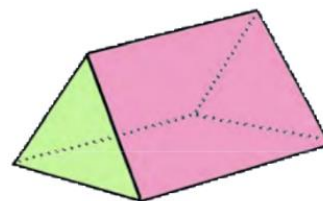
Look at these shapes found in everday life.

Write down the **2 dimensional shapes** (squares, circles, triangles, ...)
that you think are in each shape.
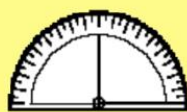
Listed below are eight mathematical shapes.

Write down the **four** which are **2–dimensional**.

Circle   Cube   Rectangle   Sphere   Kite   Pentagon   Pyramid   Line.

Look at this shape.

a   Name the shape.

b   How many **edges** does it have ?

c   How many **corners** does it have ?
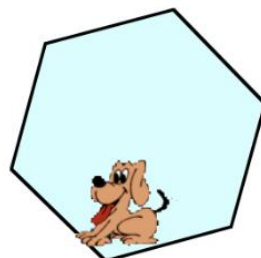
Think of a **cube** !

a   How many **faces** does it have ?

b   What **shape** are all of these faces ?

Here is a **triangular prism**.

a   How many **faces** does it have ?

b   How many of these **faces** are rectangles ?

c   How many of the **faces** are triangles ?
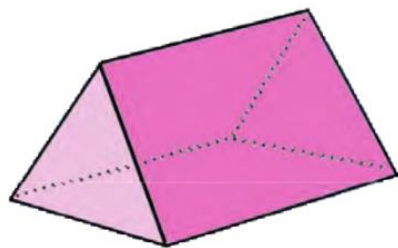
The **CIRCLE** is the most perfect of all mathematical shapes.

It has lots of lines of symmetry and looks the same no matter which way you view it.

The **RED** line right through the centre is called the **diameter** of the circle.

The **BLUE** line from the centre to the edge is called the **radius** of the circle.
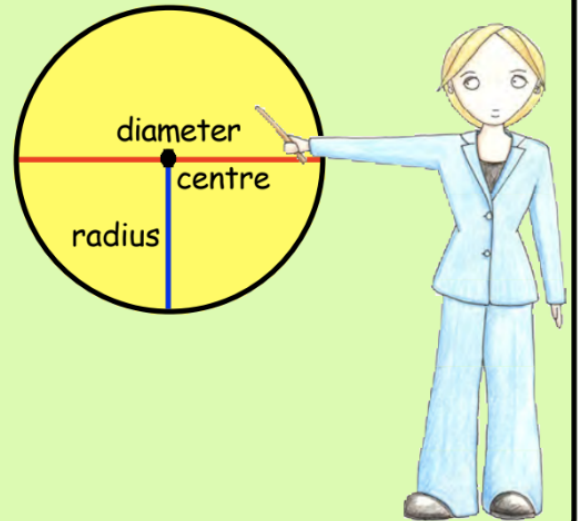
Make a list of 10 objects, in the classroom, outside or at home which are **circular**.

(*Circular means "in the shape of a circle"*).

a   Use a **2 pence** or **10 pence** coin to draw round and form a circle.

b   Draw a line through its centre and write in the word "**diameter**".

c   Measure the **diameter** of your circle (in mm).
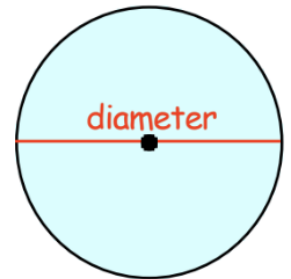
a   Use a **coin** and a **ruler** to draw this pattern.
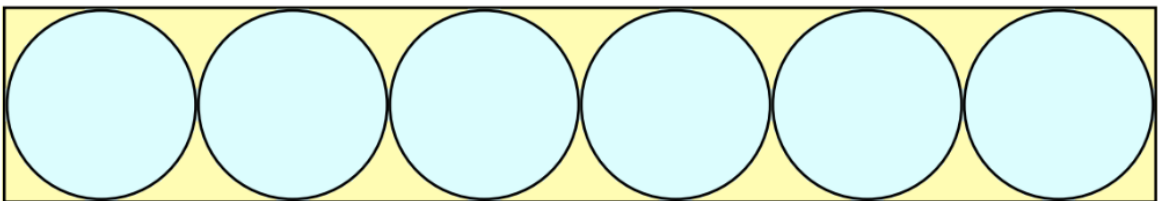
b   Colour your shape.

c   Measure and write down the **length** and the **breadth** of your shape.

3D Shape

- video notes

2 Dimensional
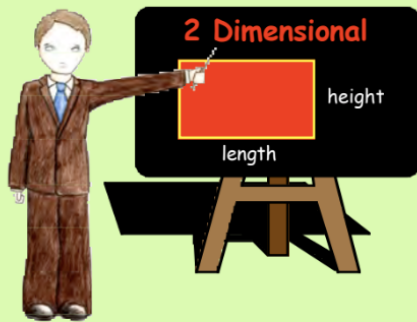
height

length

Flat shapes, drawn on paper, like squares, circles or triangles are called **2-dimensional**.

They have 2 "dimensions" or 2 sizes :-
(- **length and height**)

3 Dimensional

height

depth

length

Solid shapes, like cubes, cones and cylinders, are called "**3-dimensional**".

They have 3 "dimensions" or 3 sizes :-
(- **length, height and depth** (or **breadth**))

You should know the words :-

cube, cuboid, cone, cylinder, sphere, triangular prism, square pyramid.

height

depth

length
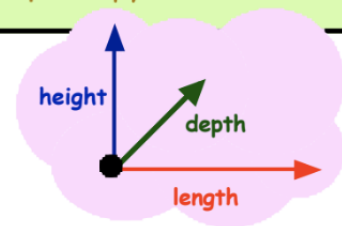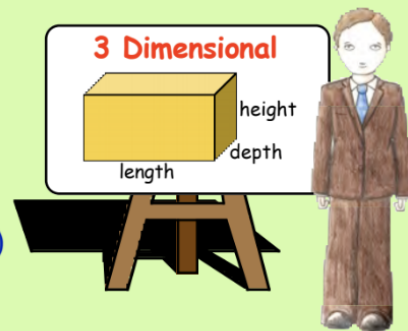
Name each of the following 3-dimensional shapes :-

a

b

c

d

e

f

g

h
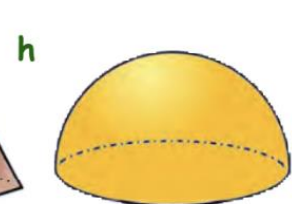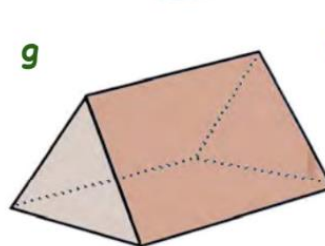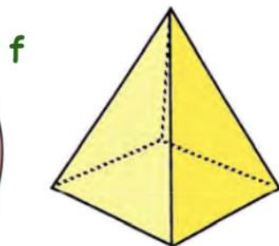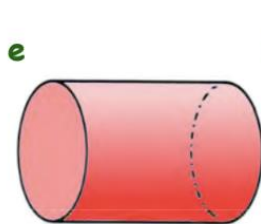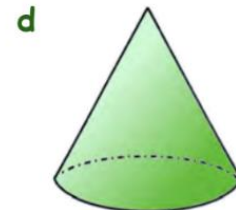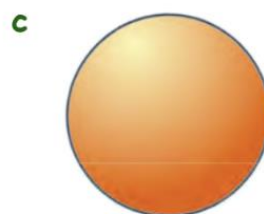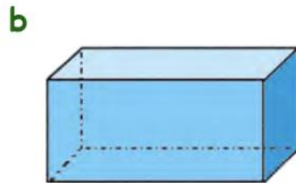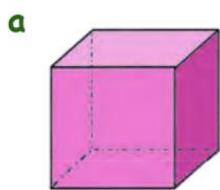
The objects below are made up of more than one 3-dimensional shape.
List the different shapes each time :-
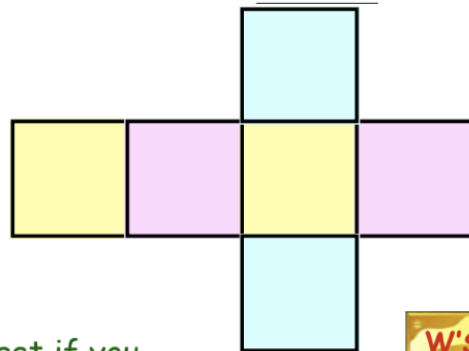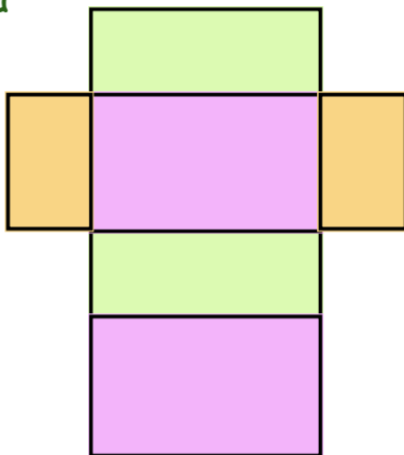
a
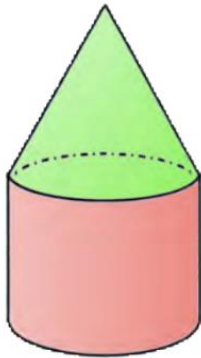
b
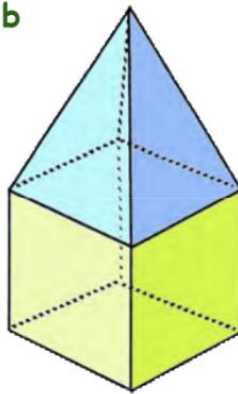
c
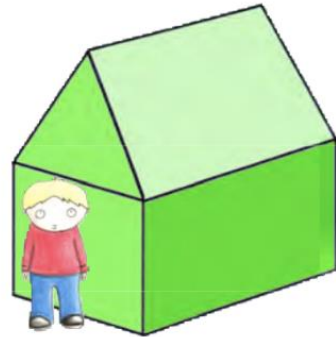
d
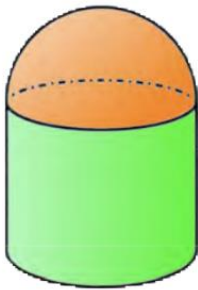
e
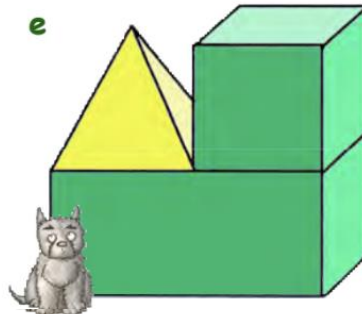
f
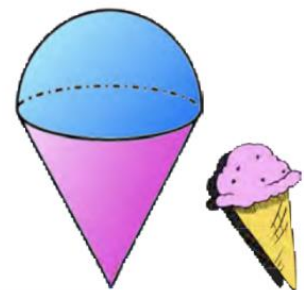
If this flat (**2-dimensional**) shape
was cut out and folded along
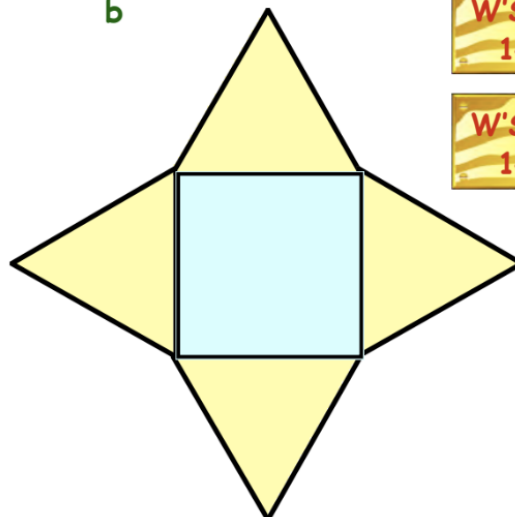the lines, it would make a
3-dimensional shape.

Which shape ?

Which 3-dimensional figures would you get if you
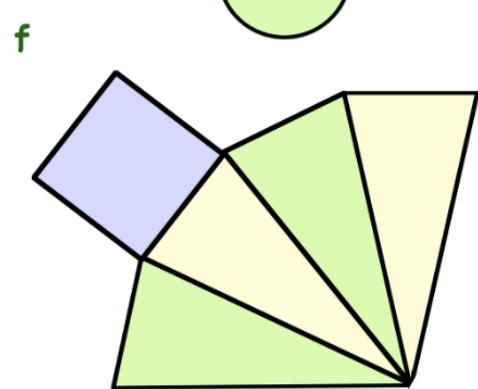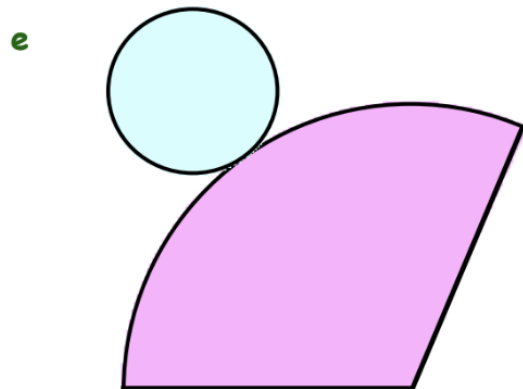cut the following shapes out and folded them up ?

a

b

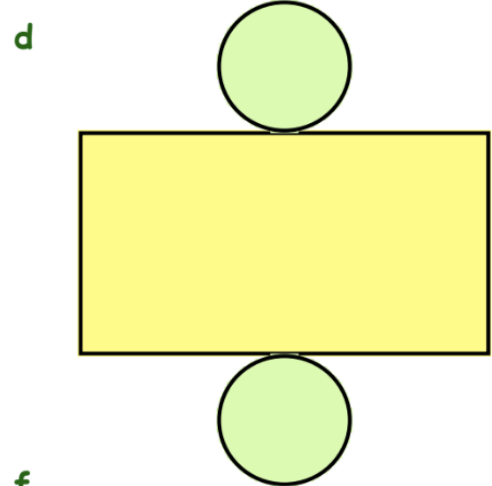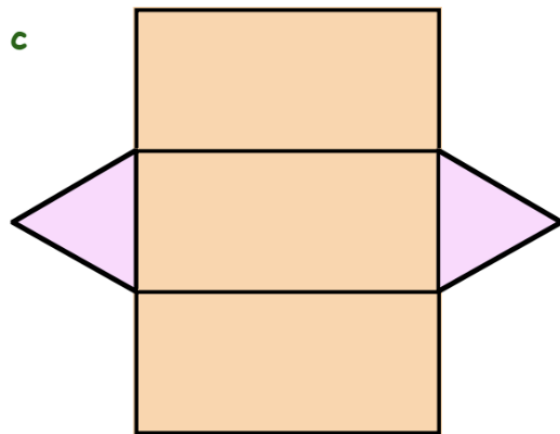W'Sheet
14·1

W'Sheet
14·2

W'Sheet
14·3

c

d

e

f

a   Make a list of as many objects as you can (**at least 4**) in the classroom, outside or at home which are in the shape of a **cube**.
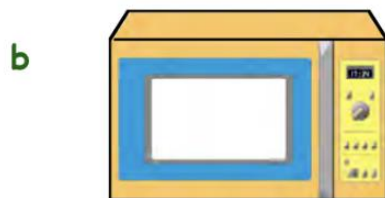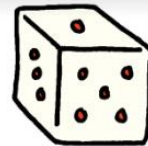
b   Make a list of as many objects as you can (**at least 4**) in the classroom, outside or at home which are in the shape of a **cuboid**.

c   Make a list of as many objects as you can (**at least 4**) in the classroom, outside or at home which are in the shape of a **cylinder**.

d   Make a list of as many objects as you can (**at least 4**) in the classroom, outside or at home which are in the shape of a **sphere**.

e   Make a list of as many objects as you can (**at lease 4**) in the classroom, outside or at home which are in the shape of a **cone**.

Name the 3-dimensional **MATHEMATICAL** shapes shown below:-

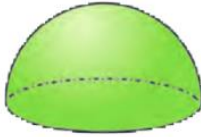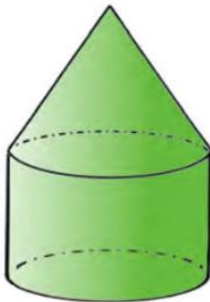a   b   c   d

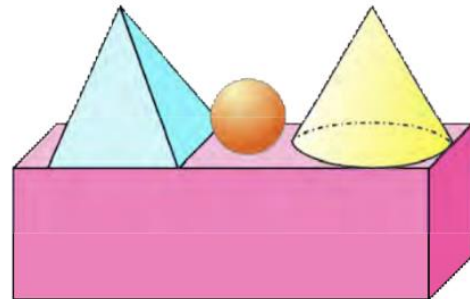e   f   g   h

The two objects shown below are made up of more than one 3-D shape.

List the shapes they are made up of :-

a   b

Additional practice - https://corbettmaths.com/wp-content/uploads/2013/02/3d-shapes-pdf2.pdf