

This booklet has been produced for bilingual pupils whose first language is Thai. It may be used as a reference book or in bilingual support.

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1. Signs and Symbols

Addition



add
plus
and
total of
increase by
sum of
altogether

Subtraction



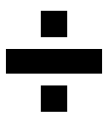
subtract
minus
take away
decrease by
reduce by
take away from
difference between

Multiplication



multiply
times
by
product of
groups of
lots of

Division



divide by
into
over
out of
share
each
part of
portion of

=

equals
is
is the same as
makes
has the same value as

≈
≈

is approximately
about
roughly
close to
nearly
around
almost the same as

>

is more than
is greater than
is bigger than

<

is less than
is smaller than
is not as big as

\geq Bigger than or equal to

\leq Smaller than or equal to

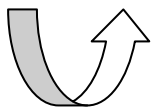
% Per cent
Out of one hundred

:

Ratio
To



Clockwise



Anticlockwise
Counter clockwise



Root



Infinity

2. Area

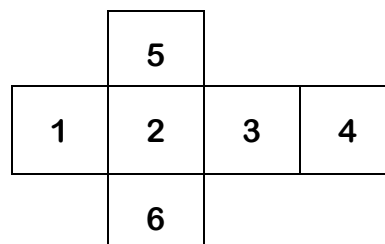
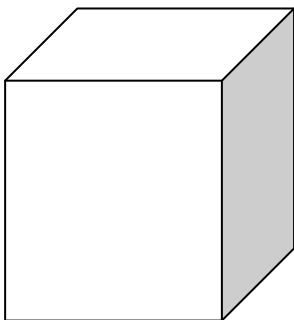
Area means how much space a flat (two dimensional) shape takes up. We measure area in squares e.g.

Square centimetres (cm^2)

1	2	3	4
5	6	7	8

$$\begin{aligned}\text{Area} &= \text{length} \times \text{width} \\ &= 4 \text{ cm} \times 2 \text{ cm} \\ &= 8 \text{ cm}^2\end{aligned}$$

A cube has six faces. The surface area of a cube may be drawn like this:-

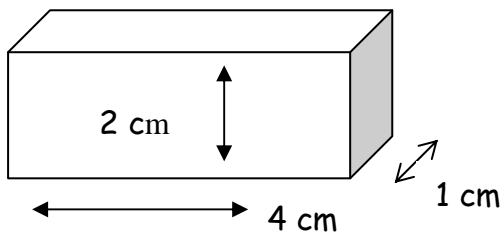


3. Volume

Volume means how much space a solid (3 dimensional) shape takes up. We measure volume in cubes e.g.

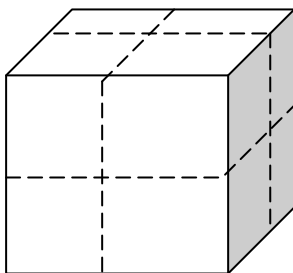
Cubic centimetre (cm³)

Volume = length x width x height



$$V = 4 \times 1 \times 2$$

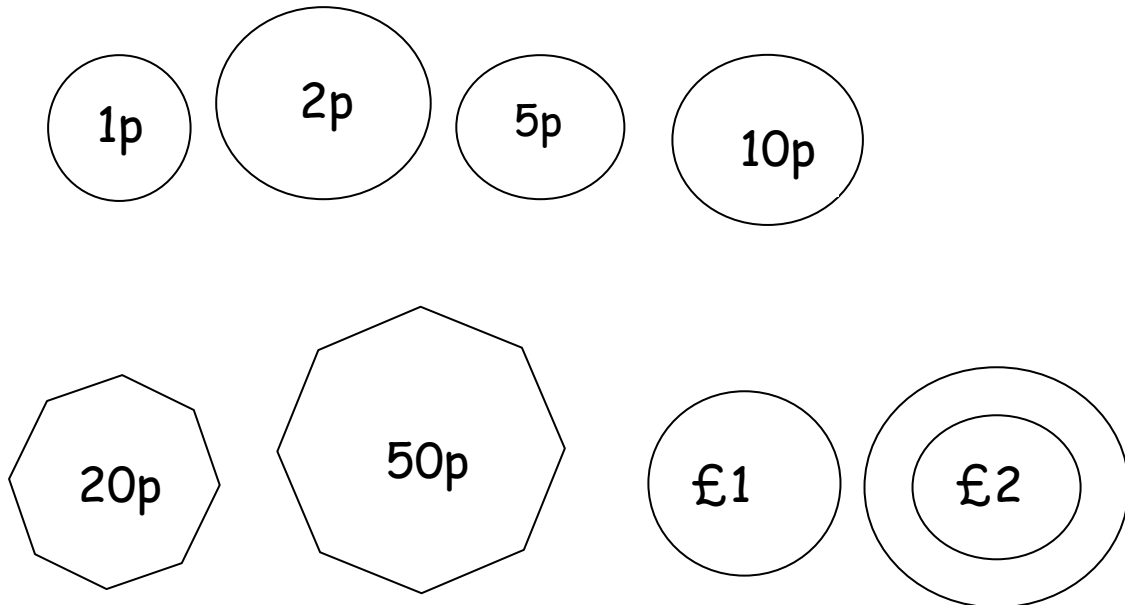
$$V = 8 \text{ cm}^3$$



This cube is made of eight centimetre cubes.
Its volume is 8cm³

4. Money

These are the coins used in Britain:-



One pound (£1) is 100 pence.

These are the notes in use:-



We usually write prices like this:-

£2.99 £3.25

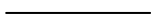
5. Lines



Straight line



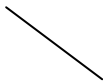
Curved line



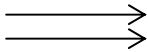
Horizontal line



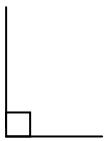
Vertical line



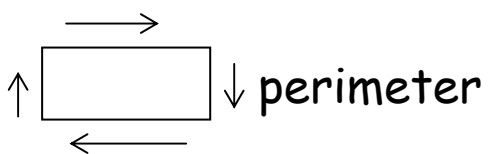
Diagonal line



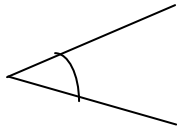
Parallel lines



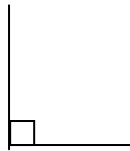
Perpendicular lines
(right angle)



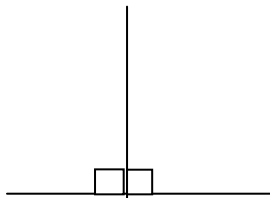
6. Angles



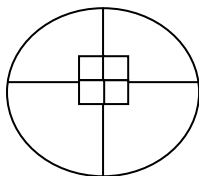
These two lines meet at an angle. An angle is measured in degrees ($^{\circ}$)



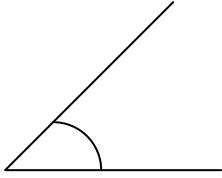
This is a right-angle. It is 90° .



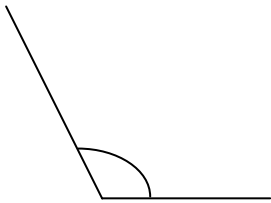
A straight line is made of two right angles. It is 180°



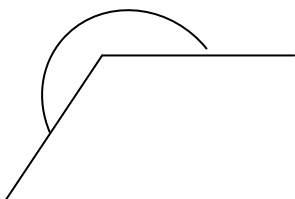
A circle is made of four right angles. It has 360°



An angle that measures less than 90° is called an acute angle

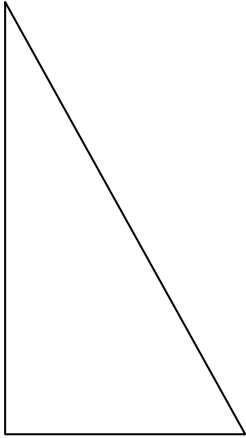


An angle which measures more than 90° is called an obtuse angle.



An angle that measures more than 180° is called a reflex angle.

7. Triangles

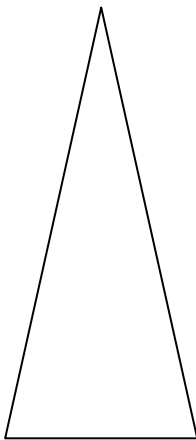


A triangle is a shape with 3 straight sides. It also has 3 angles.

The points of a triangle are called the vertices.

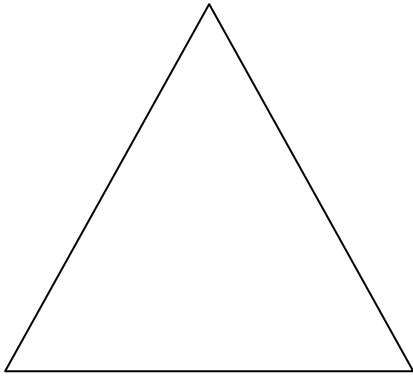
There are different types of triangles :-

Isosceles



Two sides are the same length.
The two angles at the base are equal

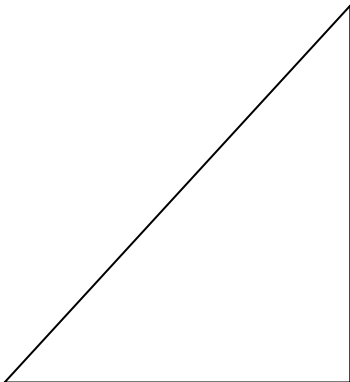
Equilateral



All three angles are equal.

All three sides are the same length.

Right-angle

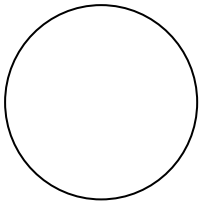


One of the angles measures 90° .

The longest side is called the hypotenuse

The angles of a triangle always add up to 180° .

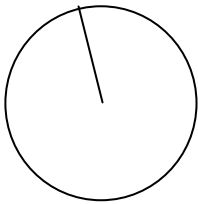
8. Circles



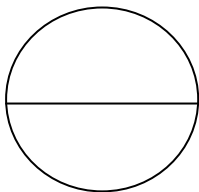
The perimeter of a circle is called the circumference.



Half of a circle is called a semi-circle.

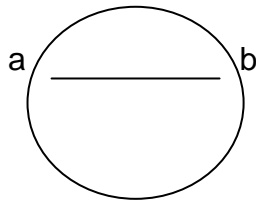


Any line from the centre of a circle to the circumference is called the radius.

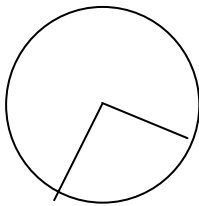


A straight line from one side of a circle to the other side through the centre is the diameter.

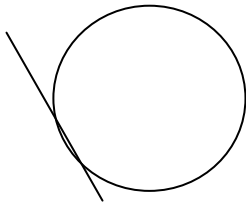
The diameter is twice the length of the radius.



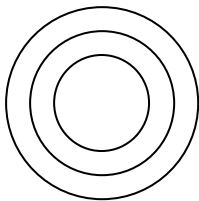
Part of the circumference is an arc. The straight line ab is a chord. The shaded area is a segment



An area of a circle enclosed by two radii and an arc is a sector

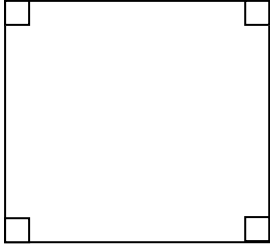


A line which touches the circumference at only one point is a tangent



Circles which have the same centre are called concentric circles

9. Shapes



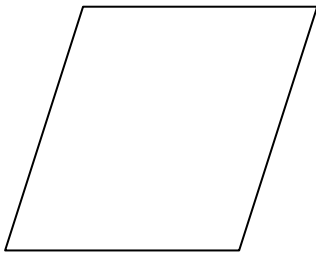
Square

It has four equal sides and four right angles



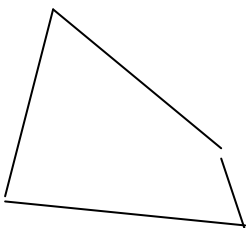
Rectangle

It has four right angles and opposite sides are equal



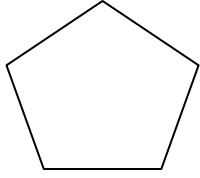
Parallelogram

Opposite sides are parallel



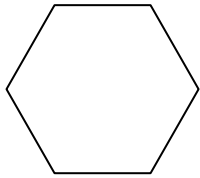
Quadrilateral

Any shape with four straight sides



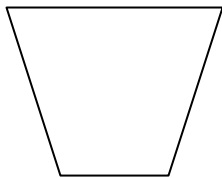
Pentagon

It has five sides and five angles



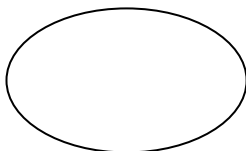
Hexagon

It has six sides and six angles



Trapezium

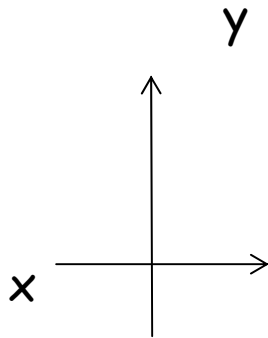
One set of sides is parallel



Ellipse

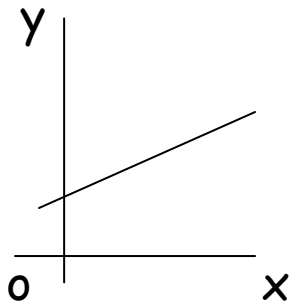
This is shaped like an egg

10. Graphs

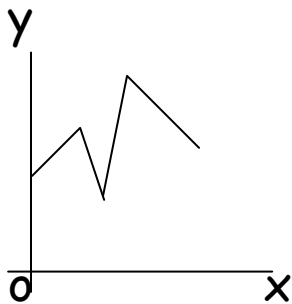


A graph has a vertical axis (y) and a horizontal axis (x).

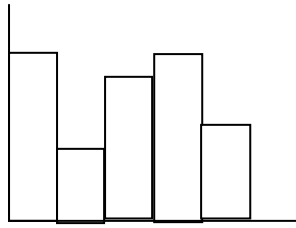
There are many different types of graphs or charts:-



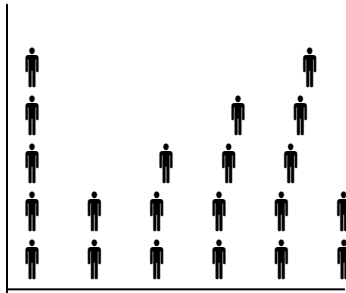
A straight-line graph



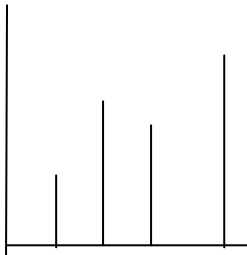
A graph plotting points



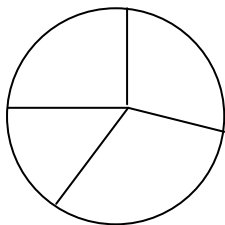
A bar chart or block graph



A pictogram



A column graph

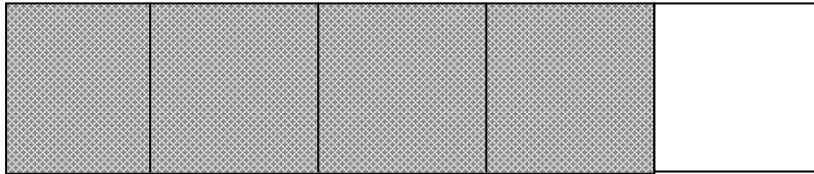


A pie-chart is a circle divided into different sectors

11. Fractions

A fraction is a part of a whole.

$\frac{4}{5}$ is a fraction. It may be shown like this:-



$\frac{4}{5}$

$\frac{1}{5}$

Here is another fraction: $\frac{2}{3}$

This means two parts out of three. We say two-thirds.

The number at the top is called the Numerator.

The number at the bottom is called the

Denominator.

This is a mixed number $3\frac{1}{2}$

It is made of a whole number and a fraction. It may be written as an Improper Fraction:-

$$3\frac{1}{2} = \frac{7}{2}$$

(mixed number) (improper fraction)

Equivalent (equal) Fractions

$\frac{1}{2}$				$\frac{1}{2}$			
$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$	
$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$

12. Decimals

Parts of a whole number can also be written as decimals:

$1/10$ is the same as 0.1

$\frac{1}{4}$ is the same as 0.25

$4 \frac{1}{5}$ is the same as 4.2

Percentages

1% is one in every 100

1% is 1p in every pound

1% is $1/100$

1% is 0.01

Conversion Table

	Fraction	Decimal	Percentage
Half	$\frac{1}{2}$	0.5	50%
Quarter	$\frac{1}{4}$	0.25	25%
Three-Quarters	$\frac{3}{4}$	0.75	75%
One tenth	1/10	0.1	10%
One fifth	1/5	0.2	20%
One third	1/3	0.33	33.33%
Two thirds	2/3	0.66	66.66%
One eighth	1/8	0.125	12.5%

13. Distance

Metric System

mm - millimetre

cm - centimetre

m - metre

km - kilometre

10mm = 1cm 100cm = 1m 1000m = 1km

Imperial System

abbreviations

in - inch

ft - foot

yd - yard

mile - mile

12 ins = 1ft 3ft = 1yd 1760 yds = 1mile

Conversions

$2\frac{1}{2}$ cm = 1 in .9m = 1 yd 1km = $\frac{5}{8}$ mile

14. Capacity

Metric System

ml - millilitre

cc - cubic centimetre

l./li - litre

$$1\text{cc} = 1\text{ml} \quad 1\text{l} = 1000\text{ ml}$$

Imperial System

fl.oz - fluid ounce

pt. - pint

gal. - gallon

$$20\text{ fl oz.} = 1\text{ pt} \quad 8\text{ pts} = 1\text{ gal}$$

Conversions

$$1\text{ litre} = 1\frac{3}{4}\text{ pints} \quad 1\text{ gal} = 4\frac{1}{2}\text{ litres}$$

15. Weight

Metric System

mg. - milligram

g. - gram

kg. - kilogram (kilo)

1000 mg = 1 g 1000 g = 1kg

1000 kg = 1 tonne

Imperial System

oz. - ounce

lb. - pound

st. - stone

16 oz = 1lb 14lb = 1 st

Conversions

1 oz = 28 g 1 kg = 2 1/5 lb

16. Time

Units of Time

sec - second

wk - week

min - minute

yr - year

hr - hour

p.a. - per annum

60 sec = 1 min

60 mins = 1hr

24 hrs = 1 day

7 days = 1 wk

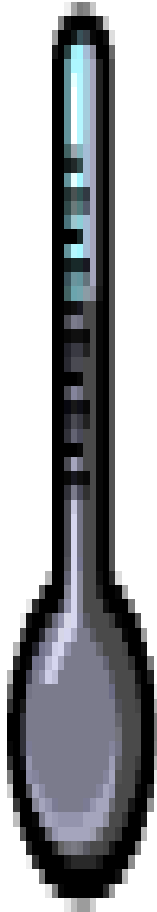
52 wks = 1 yr

12 months = 1 yr

Calendar Months

30 days has September,
April, June and November.
All the rest have 31,
Except February all alone
Which has 28 days clear
And 29 each leap year.

17. Temperature



- 100° boiling point
- 37° body temperature
- 0° freezing point

Temperature is usually measured in °C
(degrees Celsius).

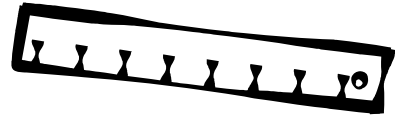
Sometimes °F (Fahrenheit) is used

$$0^{\circ}\text{C} = 32^{\circ}\text{F}$$

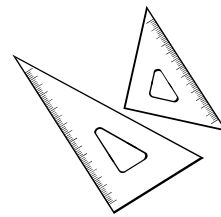
$$100^{\circ}\text{C} = 212^{\circ}\text{F}$$

18. Instruments

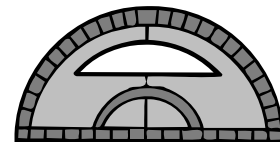
Ruler



Set square



Protractor



compass

