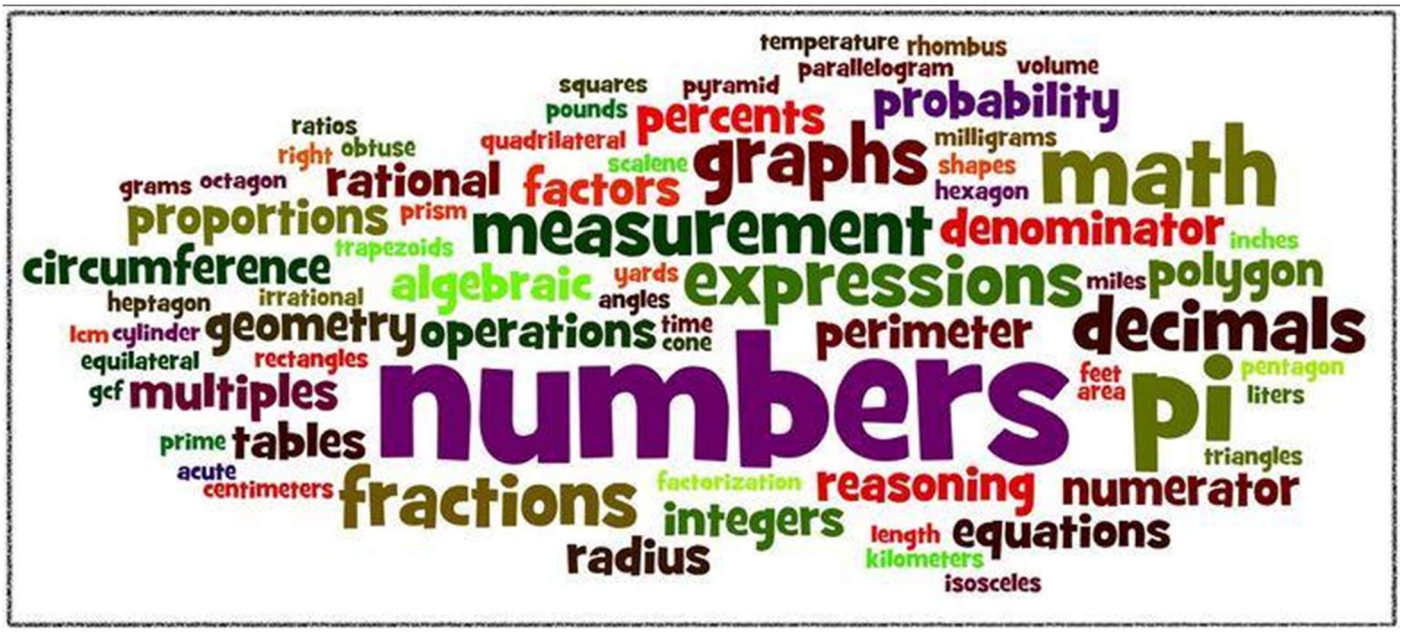

Welcome to Maths at Llantwit Major School Year 6

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We are looking forward to you joining us in September as we have lots of fun activities that you can take part in, such as 'Maths Games Club', 'Rubik's cube masterclasses' and competitions like 'Maths Challenge' where you can complete against pupils in other schools.

During Year 7 you will be practising a lot of the topics that you met in primary school and learning some new ones too! Have a look at the topics in the booklet and see which ones you recognise and can do already!

During the school holiday you can also visit the website https://www.transum.org/Software/Fun_Maths/ for some fun maths activities to do.

See you soon,

Mrs Martin

Leader of Learning Mathematics

Year 7 Mathematical Facts

The Decimal Number System

Millions		Thousands			Ones			Fractions		
Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths

3 245 769 is three million, two hundred and forty five thousand, seven hundred and sixty nine.
In the number 3 245 769 the 5 stands for five thousand and the 2 stands for two hundred thousand.
27.398 is twenty seven point three nine eight; you will note that fractions are read as single numbers.
In the number 27.398 the 3 stands for three tenths, the 9 stands for nine hundredths and the 8 for eight thousandths.

Directed Numbers

Numbers getting smaller

...	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	...

Numbers getting larger

A negative and an operation can lead to two signs being written next to each other e.g. $3 + -4$ and $5 - -7$

When two signs are written next to each other they can be simplified: $- -$ is the same as $+$, $+ -$ is the same as $-$

Proportion

A description of a situation using the total number e.g. In a class of 20 there are 13 boys.

Ratio

A description of a situation using the composite numbers e.g. In a class there are 13 boys and 7 girls.

The ratio of boys to girls is 13:7.

Fractions, decimals and percentages

Are three ways of saying the same thing, they share a common format if expressed in hundredths.

Fraction = $\frac{78}{100}$, Decimal 0.78, Percentage 78%

Fractions are numbers that include part of a whole number, they are written as $\frac{numerator}{denominator}$.
The denominator tells you how many divisions make a whole number .
Decimals are written after a decimal point in decreasing multiples of 10.
Percentages are written as hundredths, the percentage sign means the number is 100 times smaller than it is shown.

Order of operations (BODMAS)

There is an order to operations:
B (Brackets) - any calculation within a bracket is completed first .
O (Order) – any term with a pOwer is completed second.
D
M (Multiplication and Division) – any multiplication or division is completed third
A
S (Addition and subtraction) – completed last and in a left to right order.

Standard units of length, mass and volume

	Length	Area	Volume	Mass
Standard units	kilometre = km metre = m centimetre = cm millimetre = mm	Square kilometres = km^2 Square metres = m^2 Square centimetres = cm^2 Square millimetres = mm^2	Litre = l Millilitre = ml Cubic metre = m^3 Cubic centimetre = cm^3 Cubic millimetre = mm^3	Ton = t Kilogram = kg Gram = g Milligram = mg
Equivalencies	1km = 1000m, 1m = 100cm = 1000mm, 1m = 0.001km 1cm = 10mm, 1cm = 0.01m, 1mm = 0.001m,		1 l = 1000ml 1 ml = 0.001 l 1 ml = 1 cm^3	1t = 1000kg, 1kg = 1000g, 1kg = 0.001t 1g = 1000mg 1g = 0.001kg, 1mg = 0.001g,
Imperial units	Feet = ft. Inch = in.		Gallon = gal.	Pound = lb Ounce = oz
Equivalen-cies	3 ft. ≈ 1 m 1 in. ≈ 2.5 cm		1 gal. ≈ 4.5 l	2.2 lb = 1 kg 1 oz = 30 g

Time

1 day = 24 hours
1 hour = 60 minutes
1 minute = 60 seconds

1 year = 365 days
1 year = 52 weeks (plus 1 day)
1 year = 12 months

9am, 2:15pm – 12 hour clock
09:00, 14:15 – 24 hour clock
02:34.45 – two hours, thirty four minutes and forty five hundredths of a second

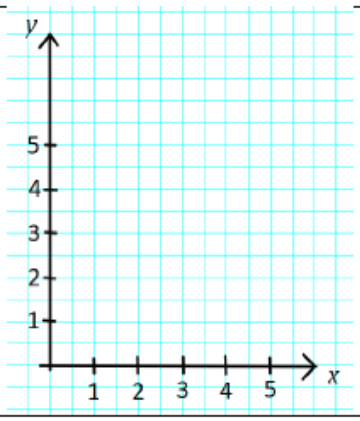
Number Facts

factor	A number that divides another leaving no remainder	e.g. 3 is a factor of 12 because 12 ÷ 3 = 4, no remainder
multiple	A number that is in the times table of another	e.g. 12 is a multiple of 3 because 12 = 3 x 4
prime	A number with only two factors	e.g. 7 because 7 only has 1 and 7 as factors
square	A number that is made from multiplying a number by itself	e.g. 36 because 36 can be made from 6 x 6
cube	A number that is made from multiplying a number by itself and once again	e.g. 27 because 27 can be made from 3 x 3 x 3

Axes for Graphs

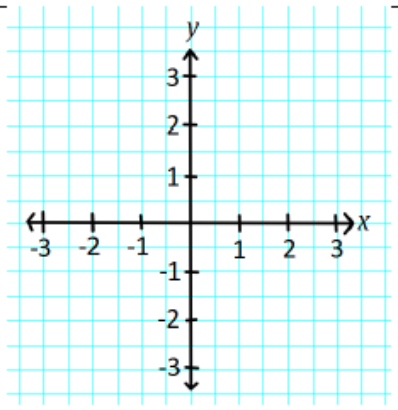
First quadrant

Axis are labelled x and y (x horizontal)
Axis are divided equally
Numbers are written on the lines



Four quadrant

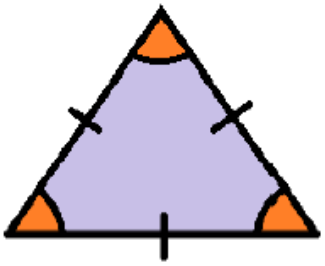
Axis are labelled x and y (x horizontal)
Axis are divided equally
Numbers are written on the lines



Triangles

Equilateral triangle

3 equal sides
3 equal angles

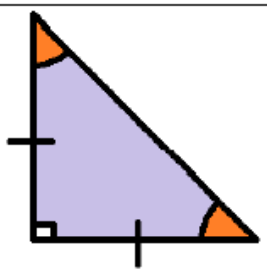


Isosceles triangle

Two sides the same
Two angles the same

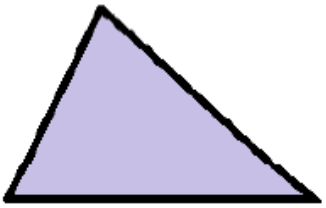
Isosceles right triangle

Two sides the same
Two angles the same
One right angle



Scalene triangle

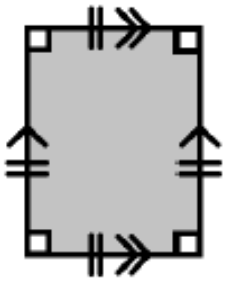
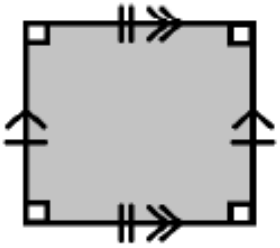
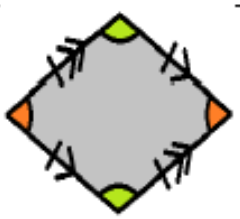
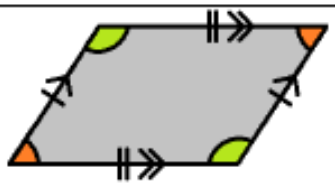
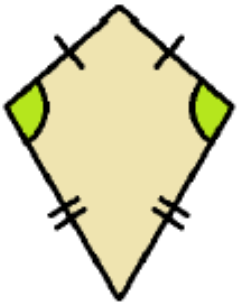
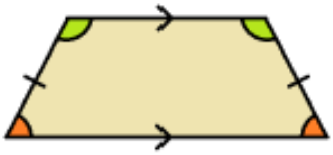
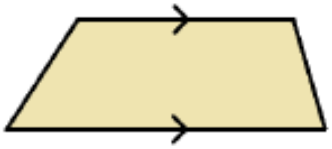
No two sides the same
No angles the same



Scalene right triangle

No two sides the same
No angles the same
One right angle

Quadrilaterals

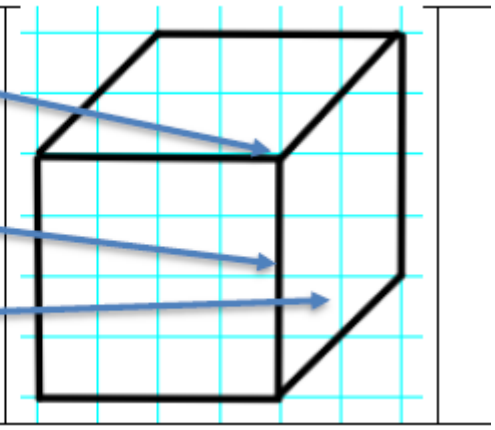
Square Four equal sides Two pairs of parallel sides Four right angles		**Rectangle** Two pairs of equal sides Two pairs of parallel sides Four right angles	
Rhombus Four equal sides Two pairs of parallel sides Two pairs of equal angles		**Parallelogram** Two pairs of equal sides Two pairs of parallel sides Two pairs of equal angles	
Kite Two pairs of equal sides One pair of equal angles No parallel sides		**Arrow head** Two pairs of equal sides One pair of equal angles No parallel sides	
Isosceles Trapezium One pair of parallel sides One pair of equal sides Two pairs of equal angles		**Trapezium** One pair of parallel sides No equal sides No equal angles	

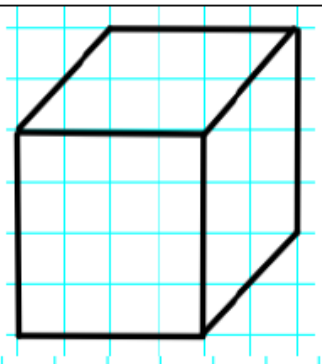
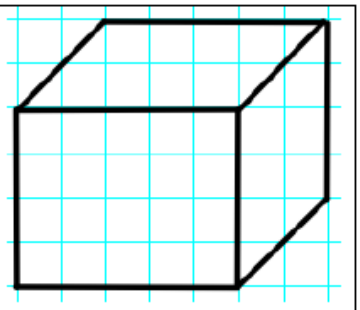
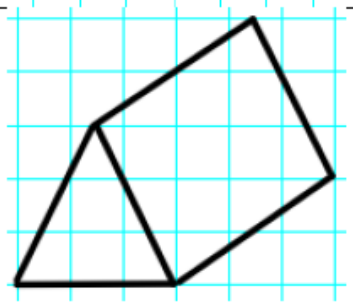
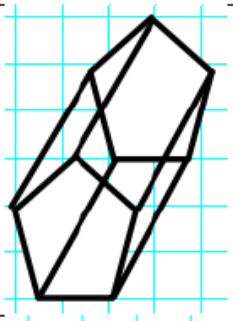
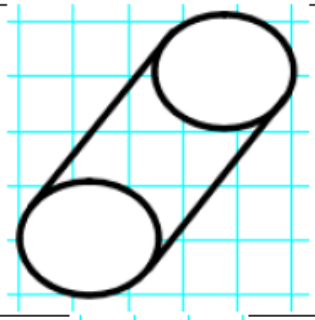
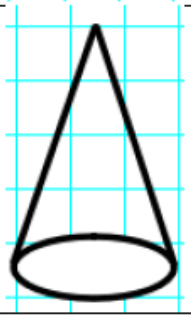
3 Dimensional Solids

Vertex – where three or more faces join

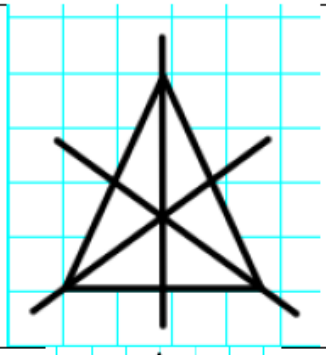
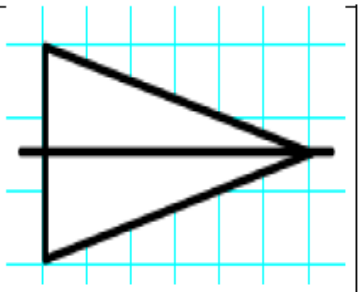
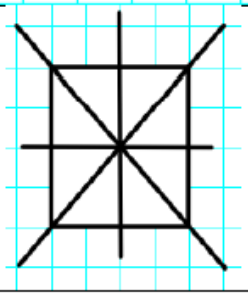
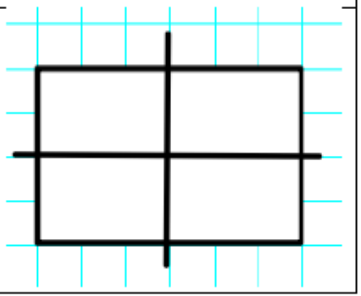
Edge – where two faces join

Face – the 'side' of a solid



Cube There are six faces All faces are squares All faces meet at right angles		**Cuboid** There are six faces All faces are rectangles All faces meet at right angles	
Prism The cross section is always the same			
Pyramid / Cone The base tapers to a point			

Symmetry

Equilateral triangle Three lines of reflective symmetry Rotational symmetry order 3		**Isosceles triangle** One line of reflective symmetry Rotational symmetry order 1	
Square Four lines of reflective symmetry Rotational symmetry order 4		**Square** Two lines of reflective symmetry Rotational symmetry order 2	

Data Types

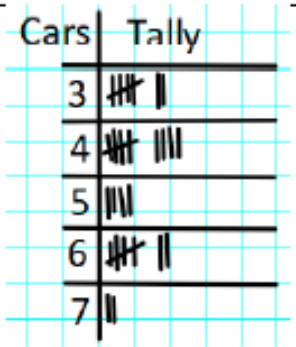
Discrete	Values that cannot be divided e.g. colours, shoe sizes, flavours, children, ...
Continuous	Values that can continually be divided e.g. measurements including time
Primary	Values that you collect personally e.g. the opinions of your friends
Secondary	Values that someone else collects e.g. national surveys

Types of Graph

Tally chart

Data being collected in the left column

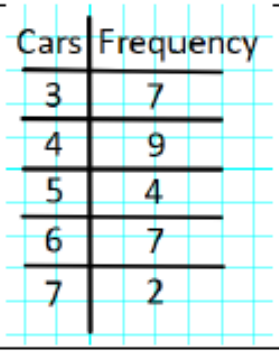
Tally in the right – in groups of up to 5



Frequency table

Data being reported in the left column

Frequency in the right

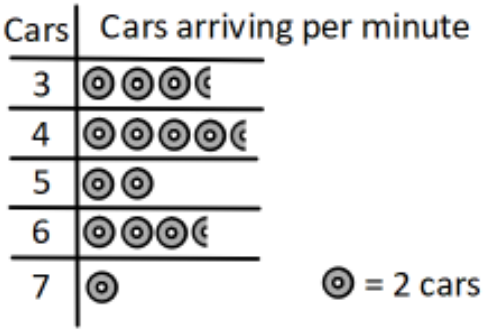


Pictogram

Title of data

Data being reported in the left column

Pictures showing the data and Key



Bar chart (discrete data)

Title of data and axis labelled

Bars separate

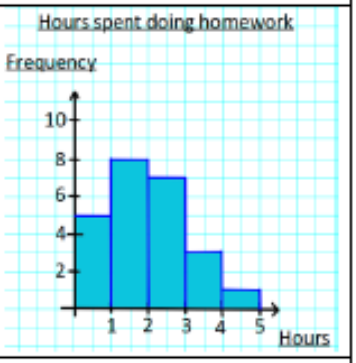
Labels for bars under bars

Bar chart (continuous data)

Title of data and axis labelled

Bars joined

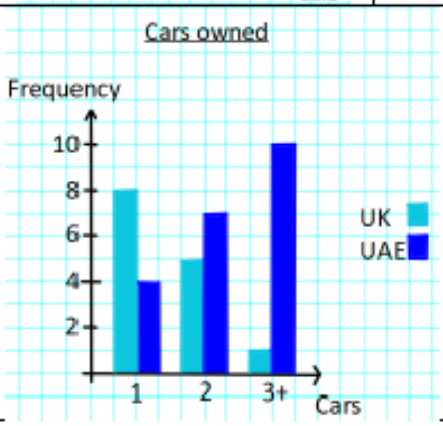
Labels for bars not under bars

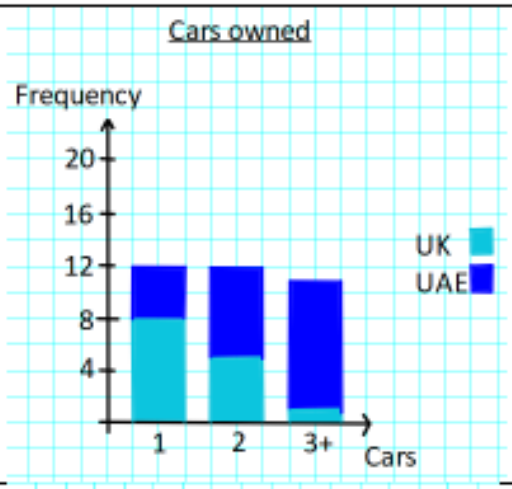
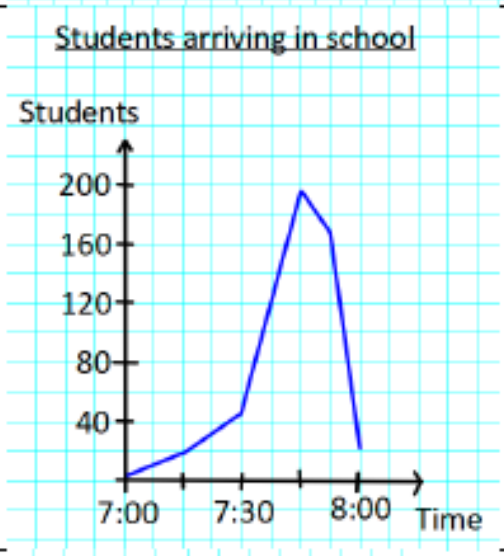


Comparative bar chart

Title of data and axis labelled

Key for bars



Stacked bar chart Title of data and axis labelled Key for bars		
Line graph Title of data and axis labelled Data points plotted on lines Scale used and values interpolated		
Pie chart Title of data Sectors labelled (or a key used)