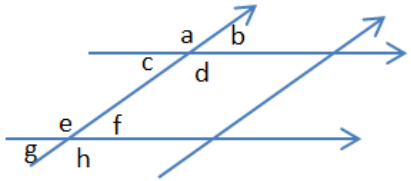
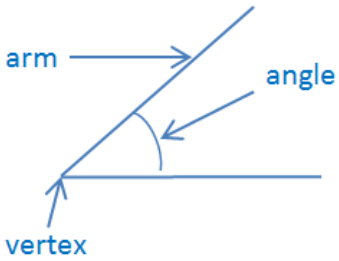
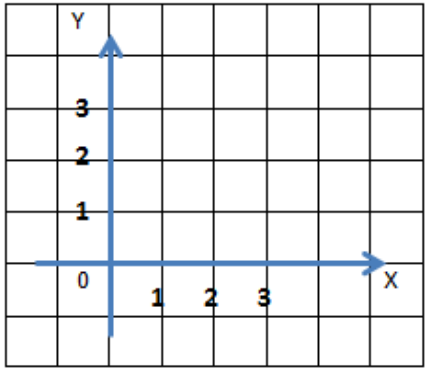
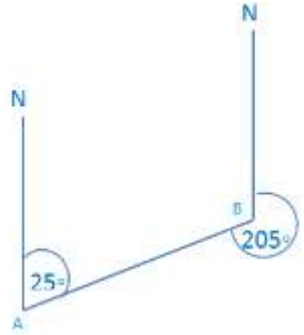
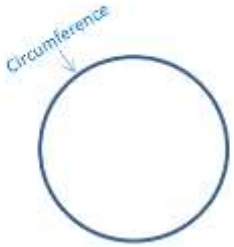
Angle, symmetry and transformation

Terms	Illustrations	Definition
Acute angle		An angle greater than 0° and less than 90°.
Alternate angles		Where two straight lines are cut by a third, as in the diagrams, the angles d and f (also c and e) are alternate. Where the two straight lines are parallel, alternate angles are equal.
Angle		An angle measures the amount of 'turning' between two straight lines that meet at a vertex (point). Angles are classified by their size e.g. can be obtuse, acute, right angle etc. They are measured in degrees (°) using a protractor.

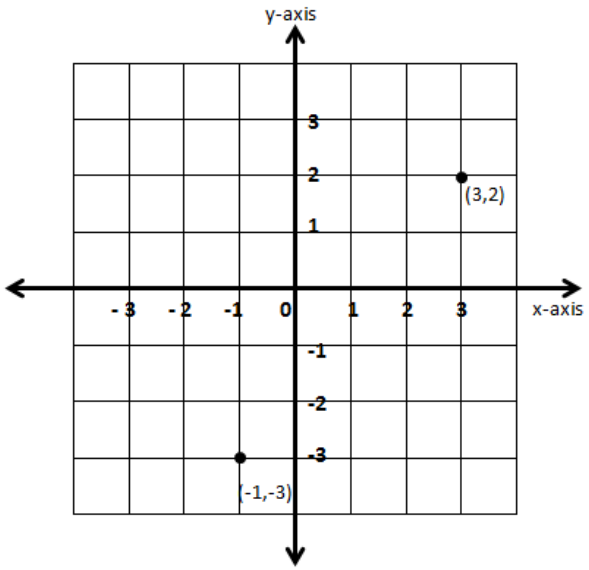
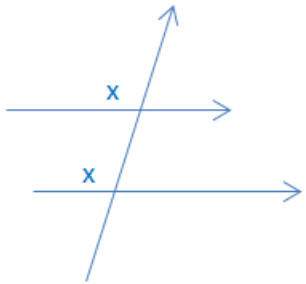
Angle, symmetry and transformation

Axis		A fixed, reference line from which locations, distances or angles are taken. Usually grids have an x axis and y axis.
Bearings		A bearing is used to represent the direction of one point relative to another point. It is the number of degrees in the angle measured in a clockwise direction from the north line. In this example, the bearing of NBA is 205°. Bearings are commonly used in ship navigation.
Circumference		The distance around a circle (or other curved shape).

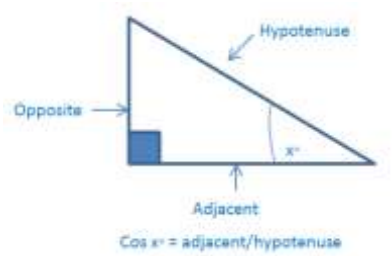
Angle, symmetry and transformation

Compass (in directions)		An instrument containing a magnetised pointer which shows the direction of magnetic north and bearings from it. Used to help with finding location and directions.
Compass points		Used to help with finding location and directions. North, South, East, West, (N, S, E, W), North East (NE), South West (SW), North West (NW), South East (SE) as well as: • NNE (north-north-east), • ENE (east-north-east), • ESE (east-south-east), • SSE (south-south-east), • SSW (south-south-west), • WSW (west-south-west), • WNW (west-north-west), • NNW (north-north-west)
Complementary angles		Two angles which add together to 90°. Each is the 'complement' of the other.

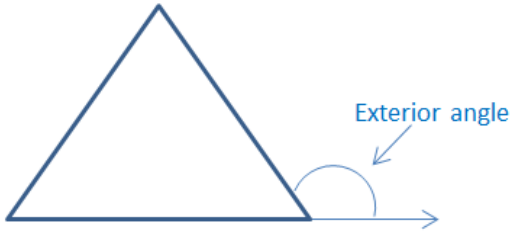
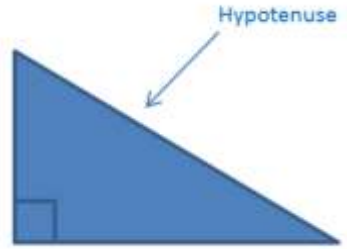
Angle, symmetry and transformation

Coordinate system		A system which uses one or more numbers, or coordinates, to determine the position of a point in space e.g. (4,8) on a grid with a horizontal and vertical axis. The y axis is vertical and the x axis is horizontal.
Corresponding angles		When two lines are crossed by another line (which is called the transversal), the angles in matching corners are called corresponding angles. When the two lines are parallel corresponding angles are equal.

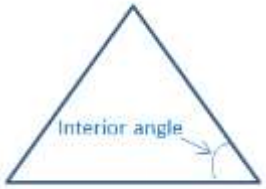
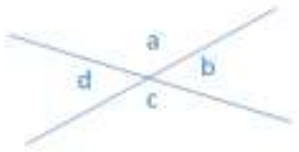
Angle, symmetry and transformation

Cosine function in trigonometry		cos(θ) = Adjacent / Hypotenuse
Degree		The most common unit of measurement for angles. One whole turn is equal to 360 degrees, written 360^{o}
Directional language		Use a variety of words to help with directions such as; • left, right, up, down, forwards, backwards, sideways, across, close, far, along, to, from, over, under • direction, near, through, towards, away from, underneath, quarter turn, half turn, three quarter turn, whole turn, journey, route, clockwise, anti-clockwise, North, South, East, West, (N, S, E, W) • map, plan, compass point, north, south, east, west, (N, S, E, W) • horizontal, vertical , diagonal, clockwise, anti-clockwise, North, South, East, West, (N, S, E, W), North East (NE), South West (SW), North West (NW), South East (SE). • NNE (north-north-east), ENE (east-north-east), ESE (east-south-east), SSE (south-south-east), SSW (south-south-west), WSW (west-south-west), WNW (west-north-west), NNW (north-north-west)

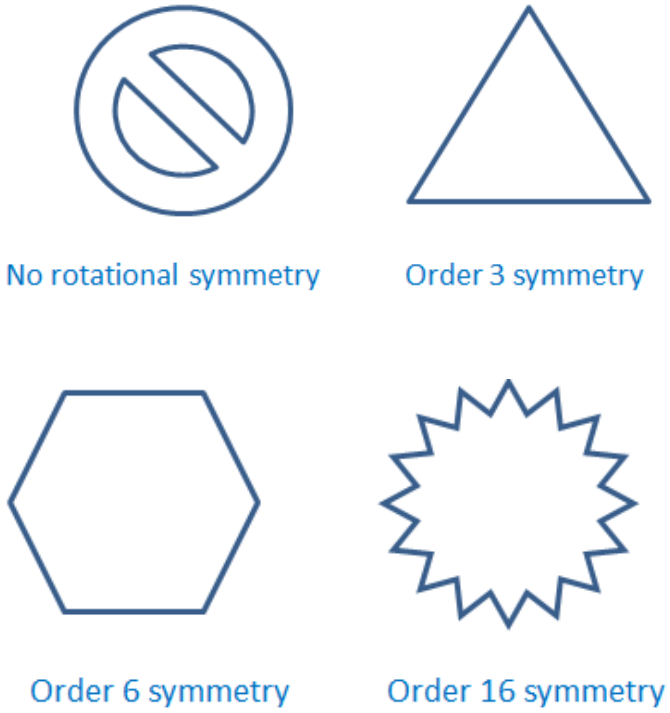
Angle, symmetry and transformation

Exterior angle		In a polygon, exterior angles are formed outside between one side and the adjacent side This is the angle that has to be turned at the vertex if you are travelling around a shape.
Grid References		Helps identify position relative to a scale in the horizontal and vertical directions on a page or screen. The scale can use letters or numbers or a combination of both. In this example here, the grid references are in brackets. The first number in the grid reference refers to the position on the x axis and the second number refers to the position on the y axis.
Half turn		Rotation through 180 ^{o}
Hypotenuse		The longest side of a right-angled triangle. It is the side opposite the right angle.

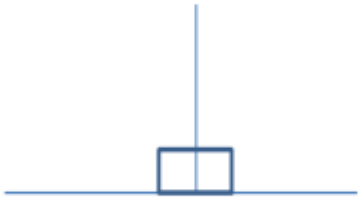
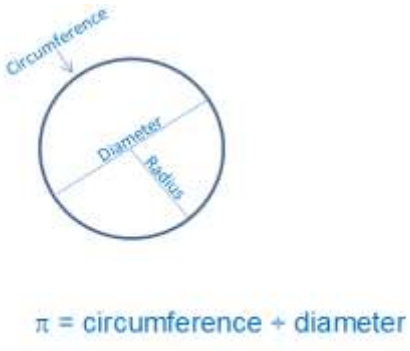
Angle, symmetry and transformation

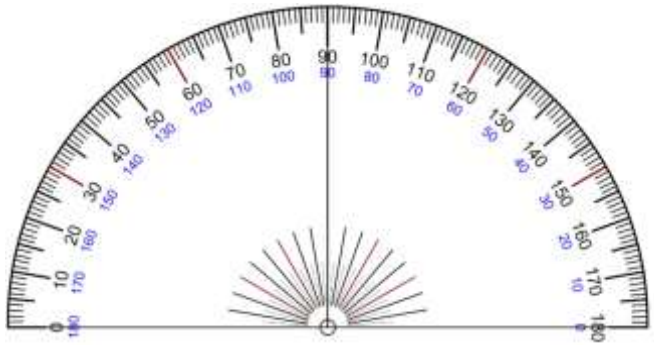
Interior angle		At a vertex of a shape, the angles that lie within it.
Obtuse angle		An angle which is more than 90° but less than 180°.
Opposite angles		Angles formed where two line segments intersect. In the diagram ‘a’ is opposite ‘c’ and ‘b’ is opposite ‘d’. Also called vertically opposite angles.

Angle, symmetry and transformation

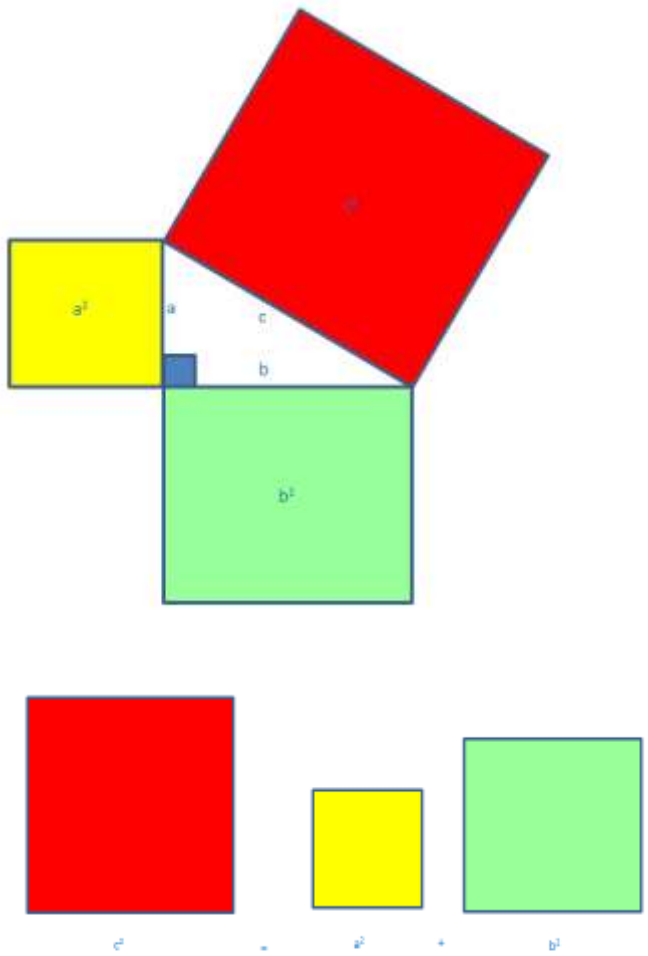
Order (in symmetry)		The number of times a shape can be rotated and fit exactly on top of its original position within a complete turn.
Parallel lines		Lines are parallel if they are always the same distance apart (called "equidistant"), and will never meet. Here ‘m’ and ‘n’ are parallel

Angle, symmetry and transformation

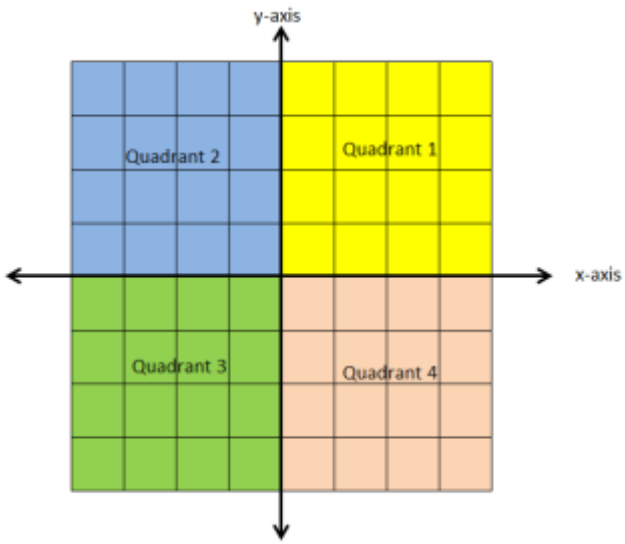
		
Perpendicular lines		Lines that are at right angles (90°) to each other.
Pi		The ratio of a circle's circumference to its diameter. Equal to 3.14159265358979323846... (the digits go on infinitely without repeating). Pi is often rounded to 2 decimal places to 3.14
Positional language		Use a variety of words to help describe position such as;

		• over, under, above, below top, bottom, side on, in, outside, inside • around, in front, behind , front, back, before, after, beside, next to, middle • opposite, apart , between, edge, corner etc.
Protractor		An instrument for measuring or drawing angles, usually in the form of a semi-circle marked with degrees along the curved edge.

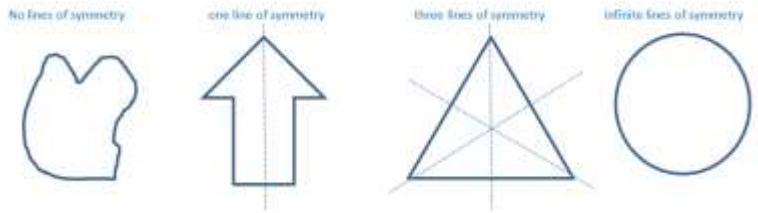
Angle, symmetry and transformation

Pythagoras' Theorem		In a right angled triangle, the square of the long side (**hypotenuse)** is equal to the sum of the squares of the other two sides. It is stated in this formula: $a^2 + b^2 = c^2$ Pythagoras' Theorem was founded by Pythagoras of Samos, a Greek philosopher and mathematician.

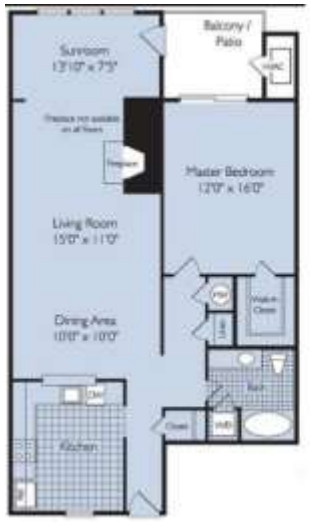
Angle, symmetry and transformation

Quadrant (in a graph)		Any of the 4 areas made when we divide up a graph by an x and y axis.
Quarter Turn		A rotation through 90°. This can be in any direction; clockwise or anti-clockwise.
Ratio		A ratio shows the relative sizes of two or more values. Ratios can be shown in different ways. Using the ":", or as a single number by dividing one value by the total. *E.g. if there is 1 boy and 3 girls you could write the ratio as:* *1:3 (for every one boy there are 3 girls)* *1/4 are boys and 3/4 are girls* *0.25 are boys (by dividing 1 by 4)* *25% are boys (0.25 as a percentage)*

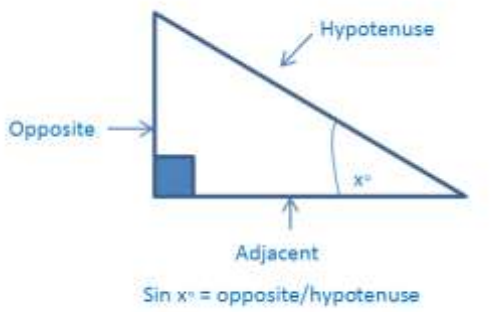
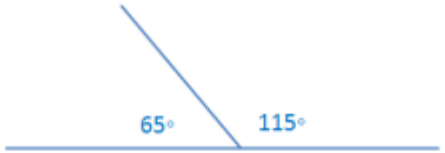
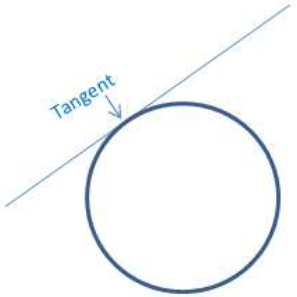
Angle, symmetry and transformation

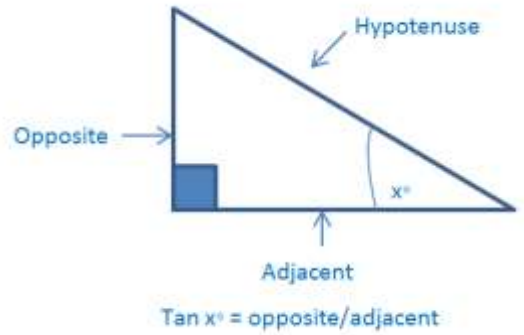
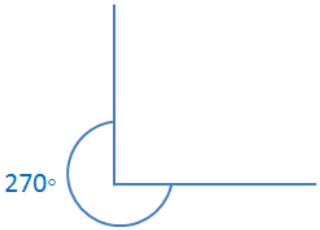
Reflective Symmetry or Line Symmetry		When an image or object has a ‘mirror image’, each side is equal. Symmetry goes beyond simple shapes to explore real images and different forms of symmetry e.g. rotational symmetry.
Right angle		An angle of 90°
Rotational Symmetry		A shape has rotational symmetry when it still looks the same after a rotation. How many times it appears is called the Order. This star shape has ‘Order 5 symmetry’.

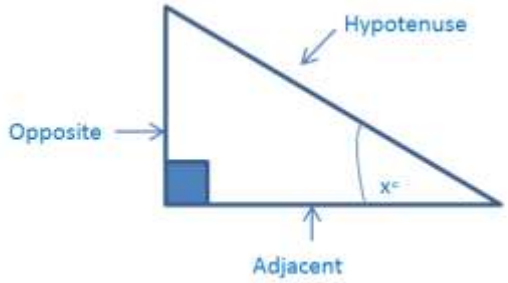
Angle, symmetry and transformation

Scale		The ratio of the length in a drawing (or model) to the length of the real thing. Ratios are used to enlarge or reduce an image, drawing, model etc. E.g. this model car is built in the ratio 1:43 meaning the real car is 43 times bigger.
Scale drawings	 	A drawing that shows a real object with accurate sizes reduced or enlarged by a certain amount. E.g. this floorplan for a house giving accurate measurements as well as the correct proportions for the actual house.
Similarity (in modelling)		Being able to calculate and use a scale factor that connects two similar figures. This helps when making scale models *e.g. models of windmills.*

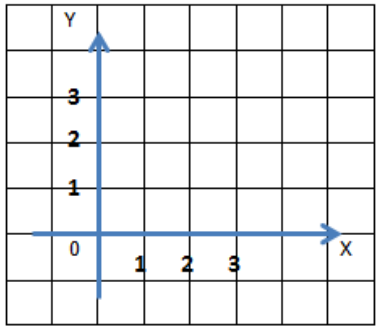
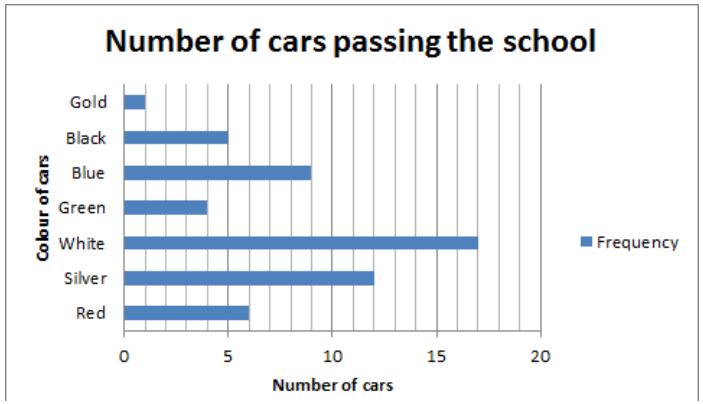
Angle, symmetry and transformation

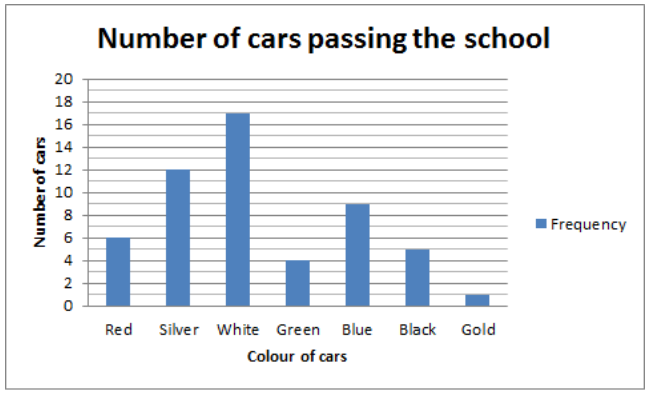
Sine function		sin(θ) = Opposite / Hypotenuse
Straight angle		An angle of 180 degrees. A straight angle is a straight line.
Supplementary angles		Angles which add up to 180 degrees.
Tangent		A tangent is a straight line that touches the diameter of a circle at one point only.

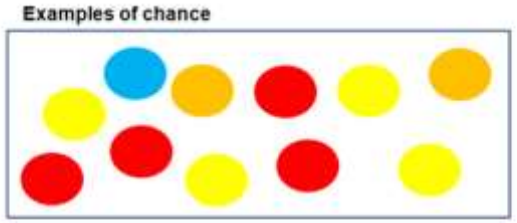
Tangent function in trigonometry		tan(θ) = Opposite / Adjacent
Tessellation or Tiling		A pattern made of identical shapes where the shapes fit together without any gaps and the shapes do not overlap.
Three quarter turn		A rotation through 270 ° This is the same as three right angles (3 x 90 °).
Transformation		Changing a shape using rotation (turns), reflection (flips), translation (slides) or resizing it.
Translation		Otherwise known as ‘sliding’ a shape by moving it without

		rotating or flipping it. The shape still looks exactly the same, just in a different place.
Trigonometry		Trigonometry is the study of triangles. It can help find out unknown values of a triangle's sides or angles if other values are known. Many formulae are used to help with this. The functions of trigonometry are known as sine, cosine, and tangent.
Vertex (singular) or vertices (plural)		A 'corner' or corners on a 3D object. A point(s) where two or more straight lines meet.
Whole turn		A rotation through 360 degrees – a full turn.

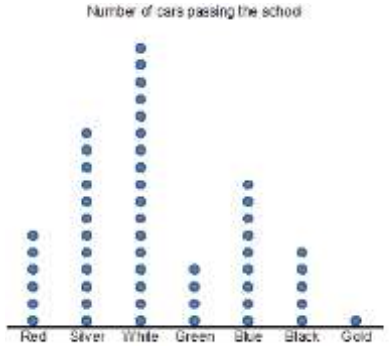
Data and analysis

Terms	Illustrations	Definitions
Analysis of data		To make statements about a set of data based on interpretation of the results.
Average		The average is known as the number typical of a set of numbers. It is also used as another term for the mean.
Axis		A fixed, reference line from which locations, distances or angles are taken. Usually grids have an x axis and y axis
Bar chart / Bar graph		A bar graph (also bar chart) is a graphical display of data using bars of different heights. They can also be displayed horizontally.

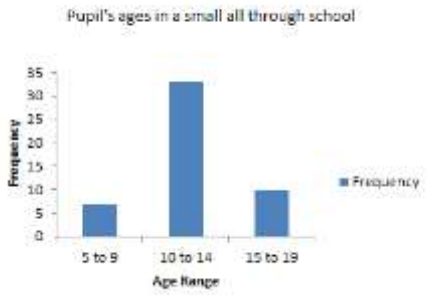
		
Bias		A 'false' or 'invalid' result e.g. when collecting data on Scottish people's favourite supermarket, it would be biased if you conducted the research outside a certain supermarket as it could encourage them to say the one they have just been in to. A systematic built-in error which makes all values wrong by a certain amount, e.g. Always measuring own height wearing shoes with thick soles.
Carroll diagram		A two way table used for grouping items according to characteristics.

Census		When data is collected for every member in a group.
Certainty		The probability that an event will definitely happen.
Chance	 There are 11 balls in this box. The chances of pulling out a red ball is 4/11 The chances of pulling out a yellow ball is 4/11 The chances of pulling out a blue ball is 1/11 The chances of pulling out an orange ball is 2/11 It could be estimated from the calculated chances that: • There is an equal chance of pulling out a red or yellow ball • You are most likely to pick out a red or yellow ball • You are least likely to pick out a blue ball	The number of times an event is likely to happen compared to the number of times it could happen. For example; There is a 1 in 6 chance of throwing a 3 on a dice labelled 1-6. It is likely to happen once as there is only 1 number 3 on the dice but it could happen 6 times.
Consequences		The impact a decision can make on yourself and on others. For example; Reading food labels when shopping for the family – The majority of the food items state it is high in sugar, fat and calories. If this food is eaten each night, consequences for the family may be tooth decay long term, gradual weight gain etc.
Continuous data		Continuous data is measured and can be any value within a range *e.g. the length of a leaf.* The time taken to run a race is continuous as all measurements have meaning.

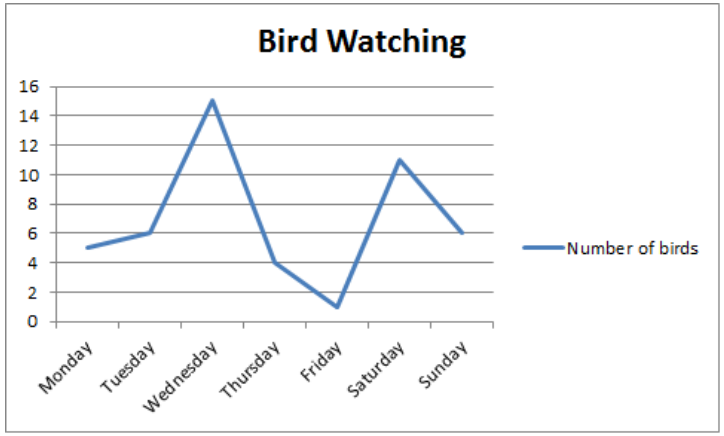
Data and analysis

Data		A collection of facts, such as numbers, words, measurements, observations
Discrete data		Discrete data is counted and can only take certain values - like whole numbers *e.g. the number of cars passing by a school.* Shoe size is an example of discrete data as size 6 and 7 have a meaning however size 6.2 does not.
Distribution		How spread out the set of data is.
Dot plots		A graphical display of data using dots.
Draw conclusions		To make statements about a set of data based on results.
Event		A single result of an experiment.

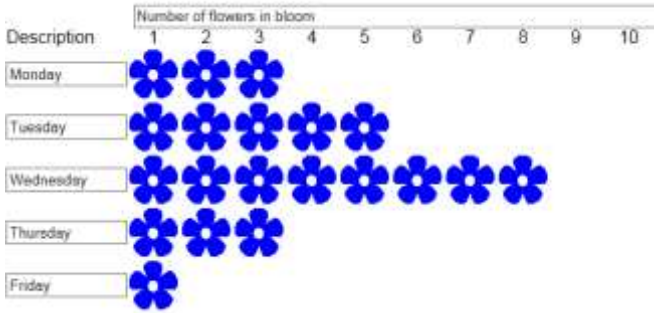
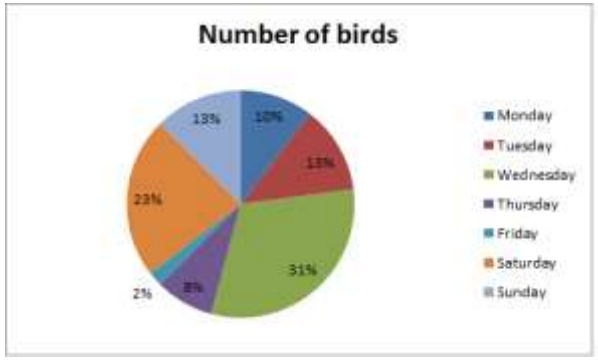
Data and analysis

Frequency table	Number of cars passing the school Colour / Tally Marks / Frequency Red / 𝍸 I / 6 Silver / 𝍸 𝍸 II / 12 White / 𝍸 𝍸 𝍸 II / 17 Green / IIII / 4 Blue / 𝍸 IIII / 9 Black / 𝍸 / 5 Gold / I / 1	A table used to note tally marks and show frequencies of each item.
Grouped data	For example: Data sorted into classes e.g. 11-15, 16-20.	Data is grouped together in equal intervals. For example: Data sorted into classes e.g. 11-15, 16-20.
Histogram		A graphical display of data using bars of different heights, it is similar to a bar chart but a histogram groups numbers into ranges.
Labelling		The labels on a graphical representation which give further information about the data. E.g. if gathering data on minibeasts in the school garden, the y axis would be labelled 'number of minibeasts' and the x axis would be labelled 'types of minibeasts'.

Data and analysis

Least common / least popular		The number or item which appears least often in a set of data.
Likelihood		The chance that an event will happen.
Line Graph		A graph that shows information that is connected in some way – such as change over a period of time
Make predictions		Use data available to suggest what the future may be.
Mean		The mean is the average of the set of data – it is the sum of the numbers divided by how many numbers there are. For example: In the set of numbers 5, 5, 6, 7, 8, 12, 13, 15, 16 the mean would be (5+5+6+7+8+12+13+15+16) / 9 = 87/9 = 9.67 to 2 d.p.
Median		The median is the middle value in a sorted list of numbers. For example: In the set of numbers 5, 5, 6, 7, 8, 12, 13, 15, 16 the median would be 8.
Misleading information		Information which has been adapted by either presentation or selection to give the wrong impression of the true data.

Data and analysis

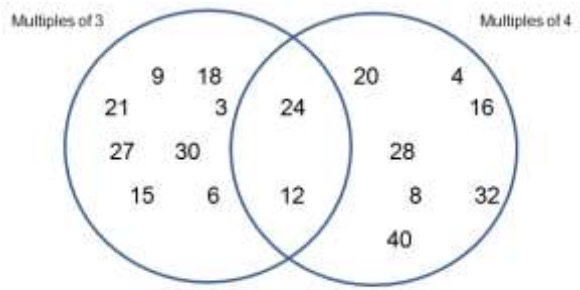
Mode		The mode is the number which appears most often in a set of data. For example: In the set of numbers 5, 5, 6, 7, 8, 12, 13, 15, 16 the mode would be 5.
Most common / most popular		The number or item which appears most often in a set of data.
Pictogram		A Pictogram or Pictograph is a way of showing data using images.
Pie chart		A chart which uses 'pie slices' to show relative sizes of data. The sections of the chart can be recorded in percentages, e.g. half of the pie represented 50% of the data collected.
Predictions		An educated guess at future events based on past experiences. E.g. predicting the weather in December.

Data and analysis

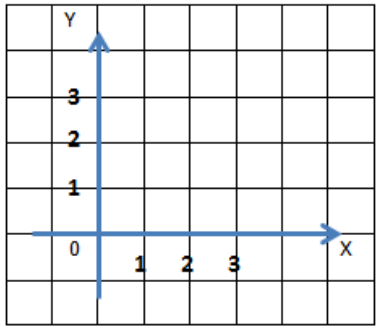
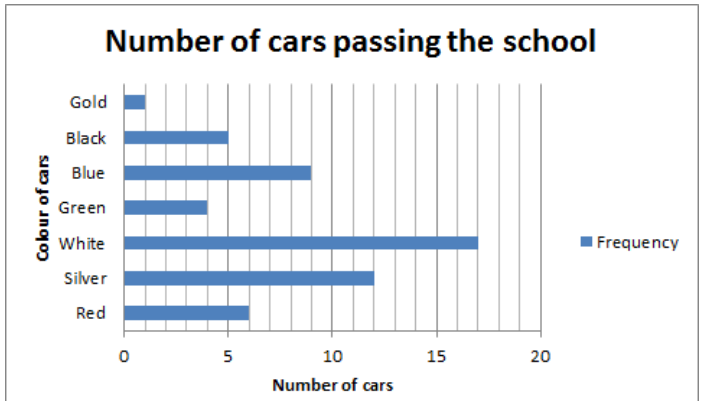
Probability		How likely something is to happen – calculated as the number of times an event actually happened divided by the number of possible events. It can be expressed as a fraction, decimal fraction or percentage.
Qualitative		Descriptive information.
Quantitative		Numerical information.
Questionnaire		A set of questions used to gather information during a survey.
Range		The range is the highest number in the set take away the lowest. For example: In the set of numbers 5, 5, 6, 7, 8, 12, 13, 15, 16 the range would be (highest – lowest) 16 - 5 = 11.
Raw data		Raw data is the data collected for example in a survey.
Robust information		Robust information has been gathered and presented in an appropriate way.
Sample		A selection taken from a larger group (the "population") so that you can examine it to find out something about the larger group.
Sample size		The number of pieces of information gathered from the sample in order to represent the whole “population.” E.g. 100 men were surveyed to find out how many hours they spent exercising each week. (100 is the sample size).
Scale		The intervals that are used on a graphical representation of data e.g. a scale which rises in ones or in tens, etc.

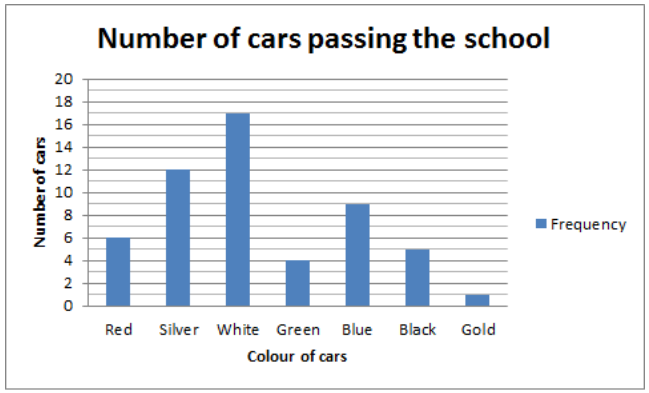
Data and analysis

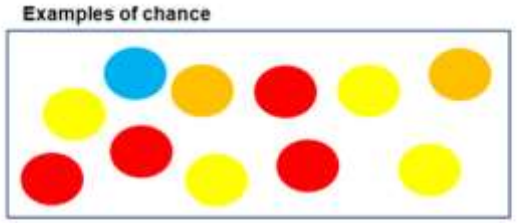
Stem and leaf plots	**Data Set:** 11, 12, 13, 13, 14, 18, 23, 24, 27, 27, 31, 34, 36, 42 **Stem and Leaf Plot:** Stem | Leaf 1 | 1 2 3 3 4 8 2 | 3 4 7 7 3 | 1 4 6 4 | 2	A table where each data value is split into a "leaf" (usually the last digit) and a "stem" (the other digits). For example "32" is split into "3" (stem) and "2" (leaf). The "stem" values are listed down, and the "leaf" values are listed next to them.
Survey		Gathering information about a certain topic or issue for a particular reason. The information can help people make decisions about topics of interest e.g. most popular holiday destinations for young families.
Tally Marks		A visual representation of the number of times an item appears in a set, these are bundled in groups of five. For example: || represents 2 and |||| ~~re~~presents 5
Trends		The overall picture of a set of data over time – e.g. the temperature is rising over time. For example: House prices, over time, in the UK have shown an upward trend.
Uncertainty		The probability that an event may not happen.
Vague information		Vague information is information which is presented without using all available information.

Venn Diagram		A diagram that shows all possible logical relations between a collection of sets of data. For example: Appropriate question would be: What are the common multiples of 3 and 4?

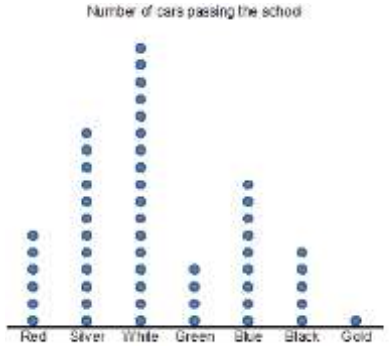
Data and analysis

Terms	Illustrations	Definitions
Analysis of data		To make statements about a set of data based on interpretation of the results.
Average		The average is known as the number typical of a set of numbers. It is also used as another term for the mean.
Axis		A fixed, reference line from which locations, distances or angles are taken. Usually grids have an x axis and y axis
Bar chart / Bar graph		A bar graph (also bar chart) is a graphical display of data using bars of different heights. They can also be displayed horizontally.

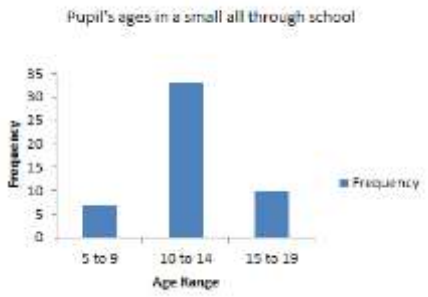
		
Bias		A 'false' or 'invalid' result e.g. when collecting data on Scottish people's favourite supermarket, it would be biased if you conducted the research outside a certain supermarket as it could encourage them to say the one they have just been in to. A systematic built-in error which makes all values wrong by a certain amount, e.g. Always measuring own height wearing shoes with thick soles.
Carroll diagram		A two way table used for grouping items according to characteristics.

Census		When data is collected for every member in a group.
Certainty		The probability that an event will definitely happen.
Chance	 There are 11 balls in this box. The chances of pulling out a red ball is 4/11 The chances of pulling out a yellow ball is 4/11 The chances of pulling out a blue ball is 1/11 The chances of pulling out an orange ball is 2/11 It could be estimated from the calculated chances that: • There is an equal chance of pulling out a red or yellow ball • You are most likely to pick out a red or yellow ball • You are least likely to pick out a blue ball	The number of times an event is likely to happen compared to the number of times it could happen. For example; There is a 1 in 6 chance of throwing a 3 on a dice labelled 1-6. It is likely to happen once as there is only 1 number 3 on the dice but it could happen 6 times.
Consequences		The impact a decision can make on yourself and on others. For example; Reading food labels when shopping for the family – The majority of the food items state it is high in sugar, fat and calories. If this food is eaten each night, consequences for the family may be tooth decay long term, gradual weight gain etc.
Continuous data		Continuous data is measured and can be any value within a range *e.g. the length of a leaf.* The time taken to run a race is continuous as all measurements have meaning.

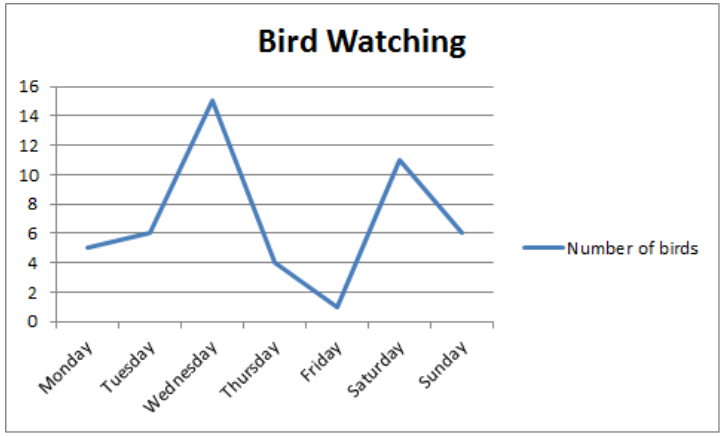
Data and analysis

Data		A collection of facts, such as numbers, words, measurements, observations
Discrete data		Discrete data is counted and can only take certain values - like whole numbers *e.g. the number of cars passing by a school.* Shoe size is an example of discrete data as size 6 and 7 have a meaning however size 6.2 does not.
Distribution		How spread out the set of data is.
Dot plots		A graphical display of data using dots.
Draw conclusions		To make statements about a set of data based on results.
Event		A single result of an experiment.

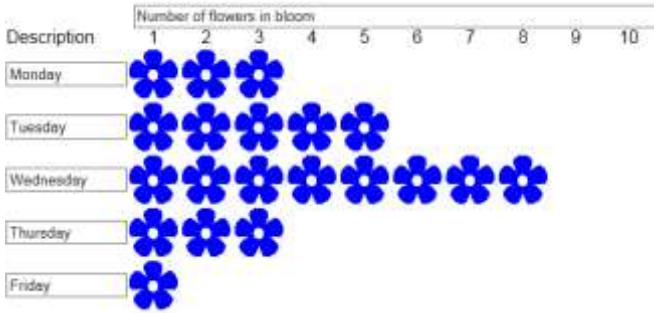
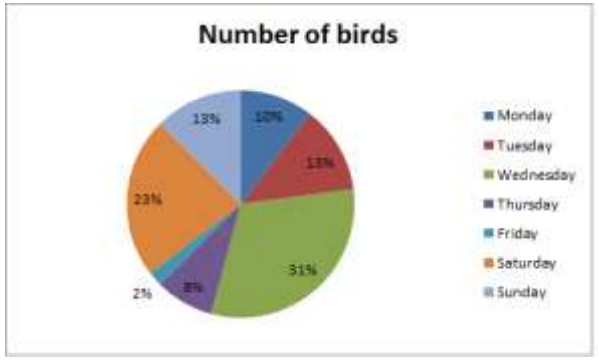
Data and analysis

<table>
<tr>
<td>Frequency table</td>
<td>
<table>
<tr><th colspan="3">Number of cars passing the school</th></tr>
<tr><th>Colour</th><th>Tally Marks</th><th>Frequency</th></tr>
<tr><td>Red</td><td>𝍸 I</td><td>6</td></tr>
<tr><td>Silver</td><td>𝍸 𝍸 II</td><td>12</td></tr>
<tr><td>White</td><td>𝍸 𝍸 𝍸 II</td><td>17</td></tr>
<tr><td>Green</td><td>IIII</td><td>4</td></tr>
<tr><td>Blue</td><td>𝍸 IIII</td><td>9</td></tr>
<tr><td>Black</td><td>𝍸</td><td>5</td></tr>
<tr><td>Gold</td><td>I</td><td>1</td></tr>
</table>
</td>
<td>A table used to note tally marks and show frequencies of each item.</td>
</tr>
<tr>
<td>Grouped data</td>
<td>For example: Data sorted into classes e.g. 11-15, 16-20.</td>
<td>Data is grouped together in equal intervals.
For example: Data sorted into classes e.g. 11-15, 16-20.</td>
</tr>
<tr>
<td>Histogram</td>
<td> 
</td>
<td>A graphical display of data using bars of different heights, it is similar to a bar chart but a histogram groups numbers into ranges.</td>
</tr>
<tr>
<td>Labelling</td>
<td></td>
<td>The labels on a graphical representation which give further information about the data.
E.g. if gathering data on minibeasts in the school garden, the y axis would be labelled ‘number of minibeasts’ and the x axis would be labelled ‘types of minibeasts’.</td>
</tr>
</table>

Data and analysis

Least common / least popular		The number or item which appears least often in a set of data.
Likelihood		The chance that an event will happen.
Line Graph		A graph that shows information that is connected in some way – such as change over a period of time
Make predictions		Use data available to suggest what the future may be.
Mean		The mean is the average of the set of data – it is the sum of the numbers divided by how many numbers there are. For example: In the set of numbers 5, 5, 6, 7, 8, 12, 13, 15, 16 the mean would be (5+5+6+7+8+12+13+15+16) / 9 = 87/9 = 9.67 to 2 d.p.
Median		The median is the middle value in a sorted list of numbers. For example: In the set of numbers 5, 5, 6, 7, 8, 12, 13, 15, 16 the median would be 8.
Misleading information		Information which has been adapted by either presentation or selection to give the wrong impression of the true data.

Data and analysis

Mode		The mode is the number which appears most often in a set of data. For example: In the set of numbers 5, 5, 6, 7, 8, 12, 13, 15, 16 the mode would be 5.
Most common / most popular		The number or item which appears most often in a set of data.
Pictogram		A Pictogram or Pictograph is a way of showing data using images.
Pie chart		A chart which uses 'pie slices' to show relative sizes of data. The sections of the chart can be recorded in percentages, e.g. half of the pie represented 50% of the data collected.
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Data and analysis

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Sample size		The number of pieces of information gathered from the sample in order to represent the whole “population.” E.g. 100 men were surveyed to find out how many hours they spent exercising each week. (100 is the sample size).
Scale		The intervals that are used on a graphical representation of data e.g. a scale which rises in ones or in tens, etc.

Data and analysis

Stem and leaf plots	**Data Set:** 11, 12, 13, 13, 14, 18, 23, 24, 27, 27, 31, 34, 36, 42 **Stem and Leaf Plot:** Stem | Leaf 1 | 1 2 3 3 4 8 2 | 3 4 7 7 3 | 1 4 6 4 | 2	A table where each data value is split into a "leaf" (usually the last digit) and a "stem" (the other digits). For example "32" is split into "3" (stem) and "2" (leaf). The "stem" values are listed down, and the "leaf" values are listed next to them.
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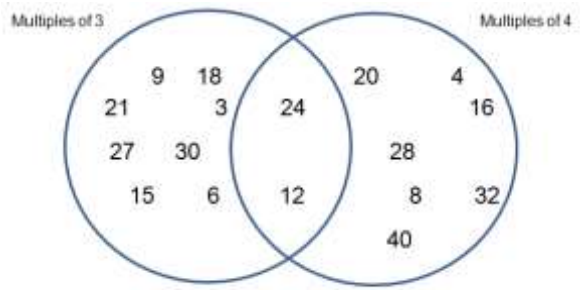
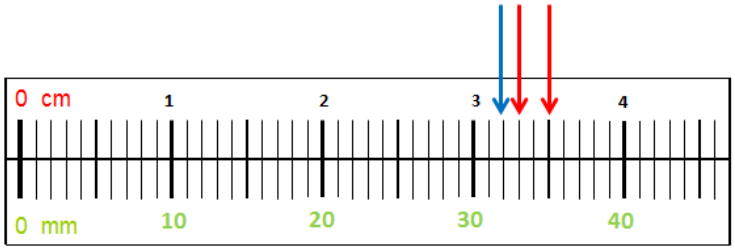
Venn Diagram		A diagram that shows all possible logical relations between a collection of sets of data. For example: Appropriate question would be: What are the common multiples of 3 and 4?

Estimation and rounding

Terms	Illustrations	Definitions
Actual		The correct answer.
Approximate/ Approximating		To give a 'rough answer' that may be slightly more or less than the actual answer.
Degree of accuracy		The level of accuracy to round a number to e.g. • to the nearest 10, 100, 1000. • to 1 decimal place • to 3 significant figures
Estimation		Comparing different sizes and amounts (quantities) using appropriate vocabulary to describe them in relation to each other *e.g. longer/shorter, lightest/heaviest* A 'reasonable' guess. Predicting solutions and checking the accuracy of calculations *e.g. estimating 317 + 498 as approximately 300 + 500 = 800 and comparing estimate to actual solution.*
Rounding		Rounding can make numbers easier to work with e.g. • round a number to the nearest 10 (or multiple of 10) • *when adding 42 and 98, round down 42 to 40 and round up 98 to 100 to get an approximate answer.* • *In context of decimal places, e.g. 5.634 = 5.6 (round up to 1 decimal place) or 5.63 (to 2 decimal places).* • In context of significant figures, *e.g. 0.00421 = 0.0042 (to 2 significant figures).*

Estimation and rounding

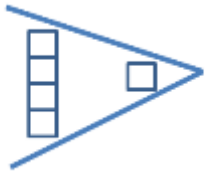
Rounding rules		General rules of rounding are: • If the number you are rounding is followed by 5, 6, 7, 8, or 9, round the number up. Example: 38 rounded to the nearest ten is 40, or 8.6 is rounded to the nearest whole number is 9 or 3.063 is rounded to 3.1 (to 1 decimal place). • If the number you are rounding is followed by 0, 1, 2, 3, or 4, round the number down. Example: 33 rounded to the nearest ten is 30, 5.4 is rounded to the nearest whole number is 5 or 6.324 is rounded to 6.3 (to 1 decimal place)
Significant figures		With the number 368249, the 3 is the most significant digit, because it tells us that the number is 3 hundred thousand and something. It follows that the 6 is the next most significant, and so on. With the number 0.0000058763, the 5 is the most significant digit, because it tells us that the number is 5 millionths and something. The 8 is the next most significant, and so on.

Tolerance	If the task was to mark 3.4cm on this ruler and the tolerance accepted in the measurement was plus or minus 0.1cm (1mm) – **both red arrows** would be correct as they measure 3.3cm and 3.5cm. They are within 0.1cm (1mm) of the actual required measurement. The **blue arrow** would not be accepted as it measures 3.2cm, which is more than 0.1cm (1mm) out with the actual required measurement. It is 0.2cm (or 2mm) out. 	Tolerance is an allowance for error. It is the maximum range of variation in the accuracy of calculations allowed within particular situations and contexts *e.g. in construction, acceptable levels of tolerance will be very small.* *For example;* You may be given a measurement of 3.4 cm with a tolerance of plus or minus 0.1 cm (1 mm). The measurement you make will be acceptable if it is anything from 0.1 cm less than 3.4 cm to 0.1 cm more than 3.4 cm. Any measurement from 3.3 cm to 3.5 cm would be acceptable in this case.

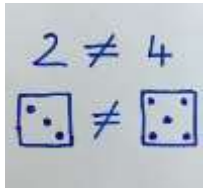
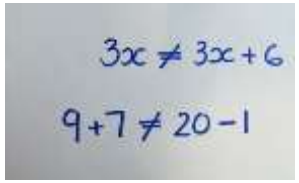
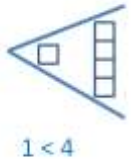
Expressions and equations

Terms	Illustrations	Definitions
Abstract thinking		Thinking logically without the use of concrete material or visual representations.
Algebra		The use of letters and numbers to express information.
Algebraic terms	2x	This is the overall term used for shorthand algebra such as 4t or 5x
Distributive Law	3 x 2 +3 x 4 = 3 x (2+4)	Multiplying a number by a group of numbers added together is the same as doing each multiplication separately
Early / Initial algebraic thinking		Understanding the order of numbers, their place on the number line and how they can be combined. Also understanding that the equal sign '=' shows balance e.g. 2 + 2 = 4.
Equality / Balance		The equal sign indicates that one quantity is the same as another. Visualising the equals sign (=) as a balance point is very useful
Equation	$x + 2 = 6$ $4x - 2 = 10$ $4x = 12$ $x = 3$	Equations use letters, numbers, signs and symbols and allow given situations or conditions to be expressed in the most concise way possible. An equation has an equals sign to show balance.
Evaluating algebraic expressions	2x + 3x + x =6x	Organising an expression in to its simplest form.

Expressions and equations

Expression	 Let's use the letter c to represent 1 car. We therefore have 4c. We can simplify terms: t+t+t+t+t can be written as 5t	Numbers, symbols and operators grouped together that show the value of something.
Factorise		Finding all of the numbers which multiply together to give the number you start with
Factors of algebraic equations		If numbers share one or more factors, then they are called the common factors of those numbers. Common factors can be applied in algebraic equations to organise in to simpler equations. It is best to find the highest common factor.
Formula		A mathematical relationship or rule expressed in symbols *e.g. the formula for volume of a box is V = l x b x h*
Greater than	 4 > 1	The symbol '>' means greater than e.g. 7 > 4. The symbol always points to the lowest number/value.

Expressions and equations

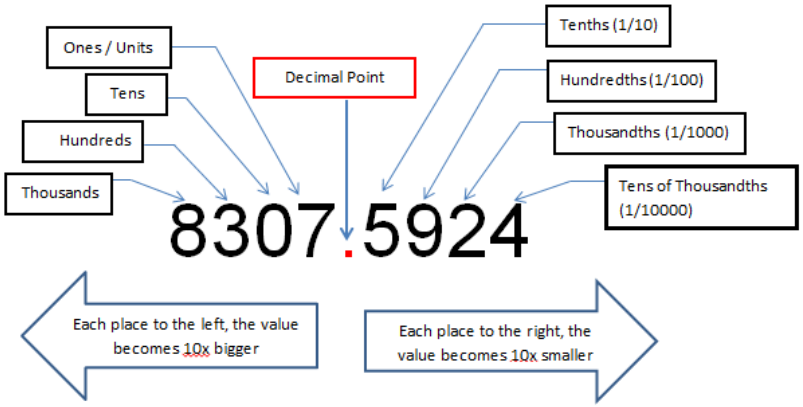
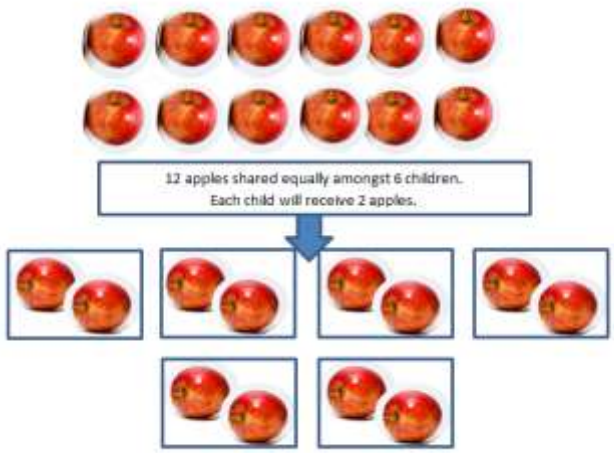
Inequality / Imbalance	 	A symbol for “is not equal to” (≠) is required when quantities on either side do not have the same value.
Inequation / Inequality		An inequality does not have an ‘equality’ sign but instead uses either ‘greater than’ sign, ‘greater than or equal to’ sign, ‘less than’ sign or ‘less than or equal to’ sign.
Less than		The symbol ‘<’ means less than e.g. 2 < 5. The symbol always points to the lowest number/value.
Operators	+ - = ÷	Symbols are part of the universal language of mathematics. The four operators +, –, ×, ÷ are the first set of symbols that learners usually become familiar with.
Pictures and symbols in algebra		Symbols can also replace numbers or operators and can have completely different values e.g. 4 + * = 10 △ x 4 = 20 3?50 – 1?50 = 4700

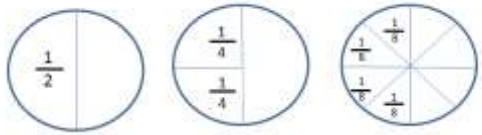
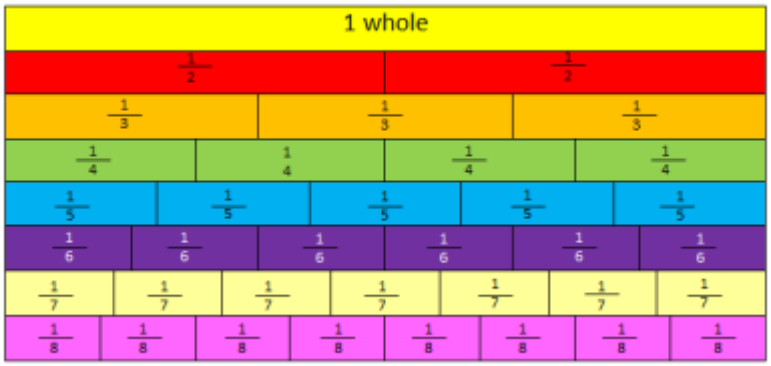
Expressions and equations

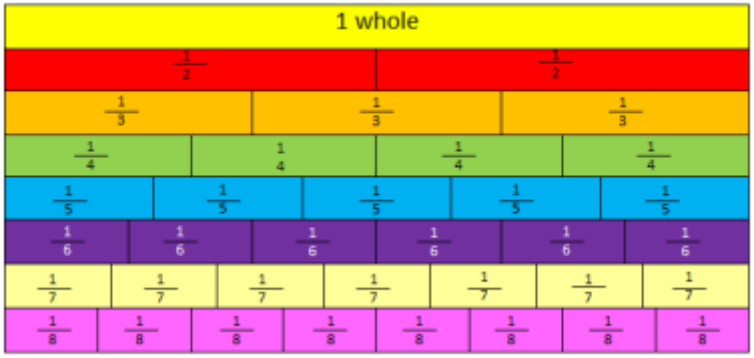
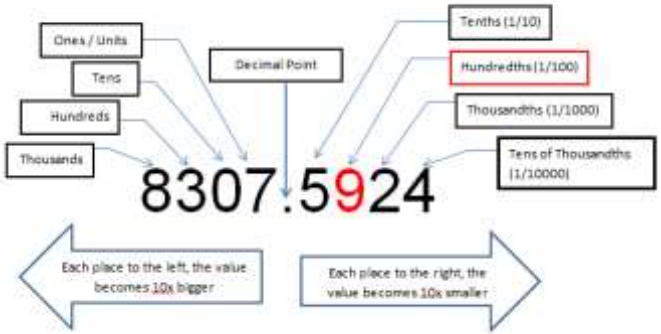
Simplifying equations / collecting like terms	$2x + 3x + x = 6x$	Making similar equations easier to work with. *E.g. knowing* a + a + a = 3a
Solution Sets	$x + 4 > 10$ $x > 6$ Therefore the solution set is any number greater than 6.	A set of numbers that lists all possible solutions to a given mathematical problem.
Substitution	$x + 6$ *where* $x = 2$ We substitute the value of x into our expression. Therefore : $2 + 6 = 8$	Replacing a letter in an algebraic expression with a numerical value. Different letters can be given different numerical values, unless they are constants such as Pi (π). If a letter appears more than once in an expression, the same numerical value is assigned each time.
Variables	$4x - 7 = 5$ Variable	A variable quantity, as its name suggests, can change in value. In algebra, letters can be assigned a number.

Fractions, decimal fractions and percentages

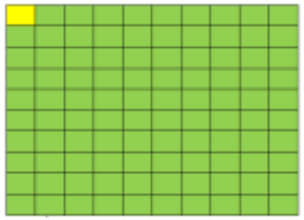
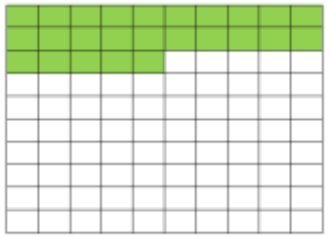
Terms	Illustrations	Definition
Common denominator		When two or more fractions have the same denominator (the number on the bottom) they have a common denominator. You can only add or subtract fractions if they have the same common denominator e.g. 2/5 and 3/5
Decimal fraction		A fraction where the denominator (the bottom number) is a power of ten (such as 10, 100, 1000, etc). They are written with a decimal point. E.g. 7/10 is a decimal fraction and it can be shown as 0.7. This is the equivalent to 7 tenths. 43/100 is a decimal fraction and it can be shown as 0.43. This is the equivalent to 4 tenths and 3 hundredths. 51/1000 is a decimal fraction and it can be shown as 0.051 This is the equivalent to 5 hundredths and 1 thousandth.

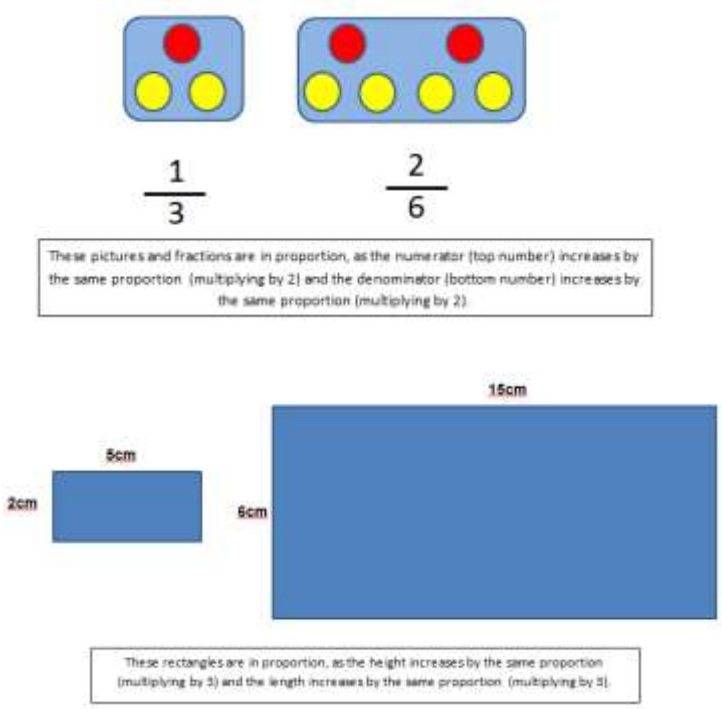
Decimal point		A point or dot used to separate the whole number part from the fractional part of a number. In calculations, the decimal point does not move. Numbers to the right of the point are less than 1 and are represented as tenths, hundredths etc (see diagram). Numbers to the left of the decimal point are whole numbers. Units are often called 'ones'.
Denominator		The bottom number in a fraction, e.g. in' ½' , 2 is the denominator.
Equal sharing / fair sharing		Exploring early division through splitting a group of items equally into a number of smaller groups. This underpins the concept of fractions. *e.g. there are 12 apples and 6 children at the picnic. How many apples will each child receive so it is **fair**?* It is also important to explore sharing unequally and having amounts 'leftover'.

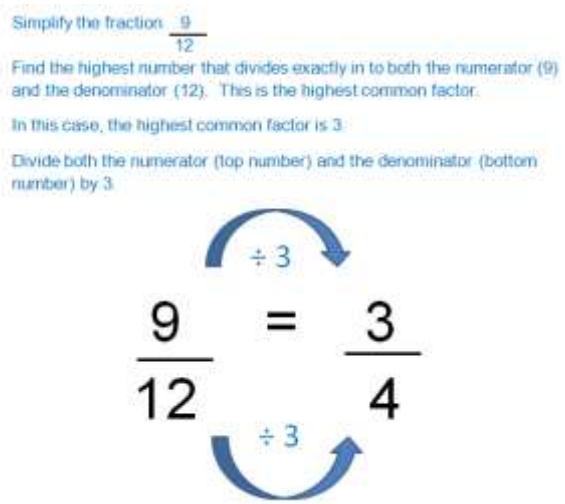
Equivalent fractions	 $\frac{1}{2} = \frac{2}{4} = \frac{4}{8}$ 	Fractions which have equal value are known as equivalent fractions. They may look different but can still have equal value, e.g. one half is equivalent to two quarters which is also equivalent to four eighths. A **fraction wall** is a visual way to understand commonly used equivalent fractions.
Fraction	 The green part is a fraction of a whole. 1 out of 5 parts is shaded green so the fraction of the green part is one fifth or $\frac{1}{5}$ 4 out of 5 parts of the whole are shaded yellow so the fraction of the yellow parts is four fifths or $\frac{4}{5}$	Part of a whole. The bottom number (denominator) in a fraction states how many parts the whole has been split equally in to. The top number (numerator) in a fraction states how many parts you have in that fraction, e.g. 3/5 means the whole has been split into 5 equal parts and you are working with 3 of those parts.

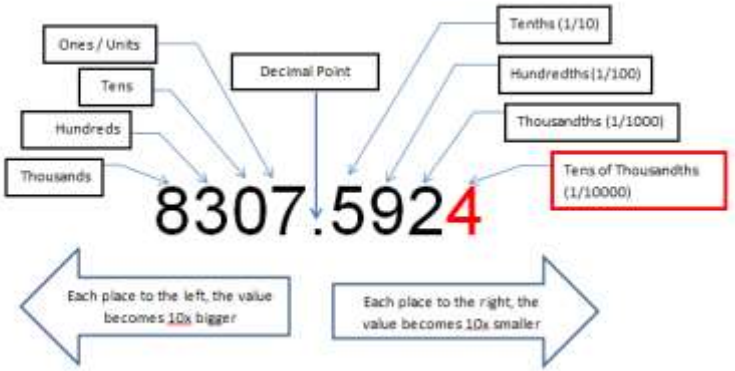
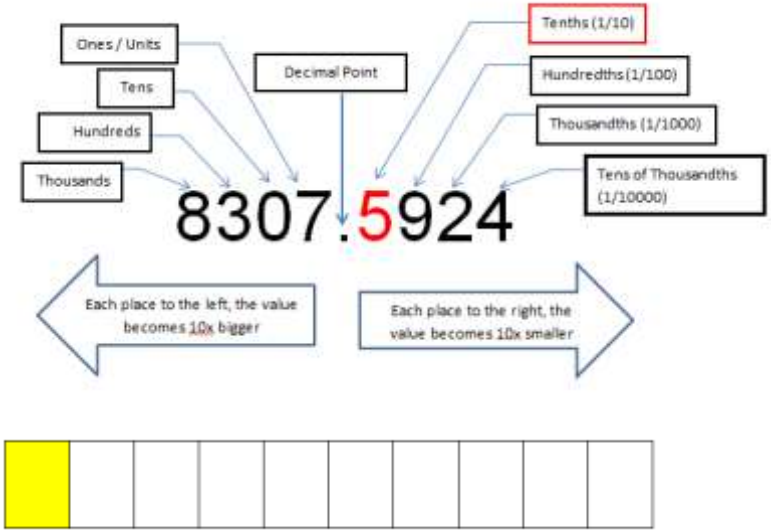
Fraction wall		This is a wall where each row in the wall represents one whole number. Each row is split into different equal parts (fractions of the whole). It can help visualise **equivalent fractions** too. In this image, you can see such relationships as; - two halves equals one whole - two quarters equals one half - four eighths equals two quarters and one half - one third equals two sixths Etc…
Grouping		Understanding that a set of items can be grouped in to a number of smaller groups – sometimes in equal amounts, sometimes in unequal amounts.
Hundredths		1 part of 100 equal parts, e.g. 1/100, 0.01. One hundredth of this 100 block is highlighted.

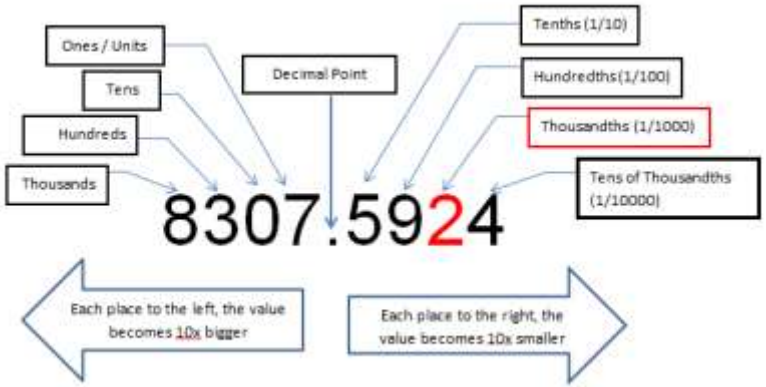
Fractions, decimal fractions and percentages

		
Improper fraction	$\frac{8}{5}$ $\frac{16}{6}$ $\frac{25}{13}$	A fraction where the numerator (the top number) is greater than the denominator (the bottom number).
Mixed number	$2\frac{3}{4}$ $5\frac{1}{2}$	A number which has a whole number and a fraction combined.
Numerator		The top number in a fraction, e.g. in '¼', 1 is the numerator.
Ordering fractions		Ordering fractions by size/value. To do this, it can be helpful to find a common denominator in the fractions and convert them to have the same denominator. You can then compare the fractions and order them by size/value.
Percentage		Percent means parts per 100. The symbol used is % Example: 25% means 25 per 100 (25% of this box is green).

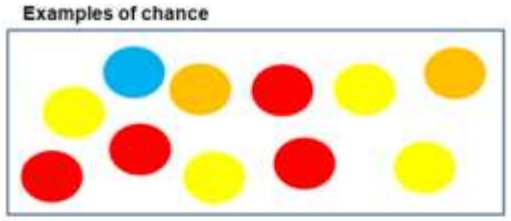
Proper fraction		A fraction where the numerator (the top number) is less than the denominator (the bottom number) e.g. ½ is a proper fraction.
Proportion		'In proportion' means that two ratios or fractions are equal. *E.g. 1/3 = 2/6 are in proportion* – they are 'proportionate' – equal to the same amount. Proportion also means two values are proportionate when a change in one is always accompanied by a change in the other. As one quantity increases or decreases another quantity increases or decreases by the same proportion. Real life situations where proportion is important could be; mixing cement, preparing hair dye, cooking/baking.
Ratio		A ratio shows the relative sizes of two or more values. Ratios can be shown in different ways. Using the ":", or as a single number by dividing one value by the total. *E.g. if there is 1 boy and 3 girls you could write the ratio as:*

		1:3 (for every one boy there are 3 girls) *1/4 are boys and 3/4 are girls* *0.25 are boys (by dividing 1 by 4), 0.75 are girls* *25% are boys (0.25 as a percentage), 75% are girls*
Remainder		The amount “left over” after completing a calculation, e.g. 23 divided by 5 equally would be 4 remainder 3.
Simplify a fraction / Reduce a fraction		Simplifying (or reducing) fractions means to make the fraction as simple as possible, ie. down to the lowest possible denominator. To simplify a fraction, divide the top and bottom by the highest number that can divide into both numbers exactly (highest common factor).

Tens of thousandths		1 part of 10 000 equal parts, e.g. 1/10 000, 0.0001.
Tenths		1 part of 10 equal parts, e.g. 1/10, 0.1. A tenth of these 100 blocks is highlighted.

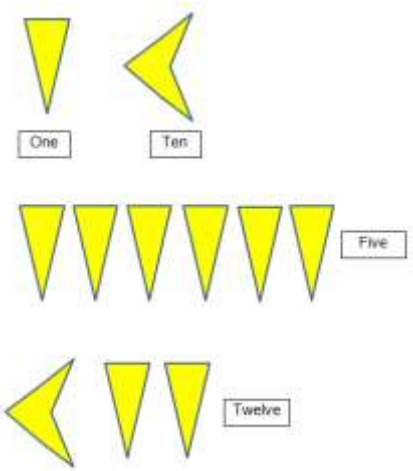
Thousandths		1 part of 1000 equal parts, e.g. 1/1000, 0.001.
Unit fraction		A fraction where the top number (the numerator) is 1. E.g. ¼ is a unit fraction.
Vulgar fraction		A fraction expressed only by a numerator and denominator, not decimally, e.g. '½' Can also be known as a 'common fraction'.

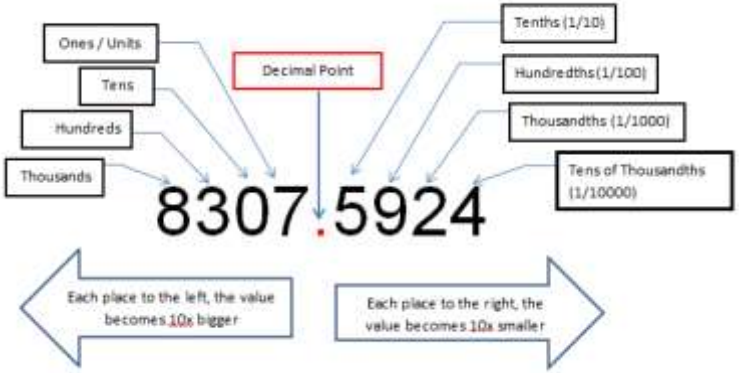
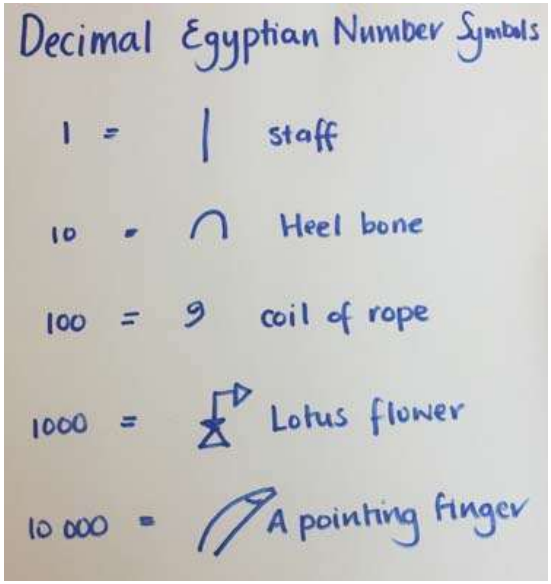
Ideas of chance and uncertainty

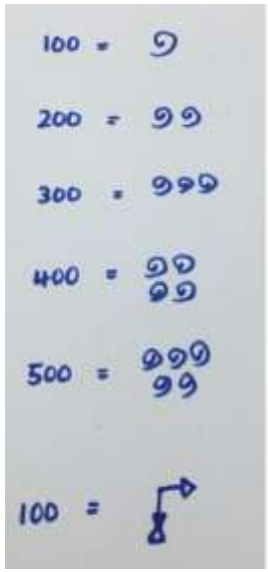
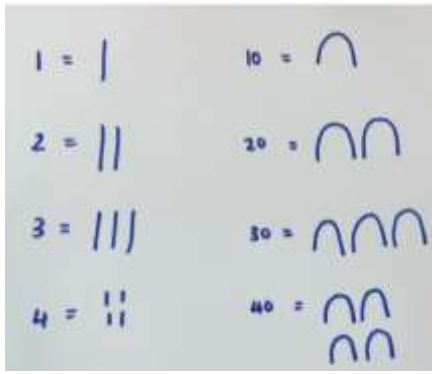
Terms	Illustrations	Definitions
Certainty		The **probability** that an event will definitely happen.
Chance	 There are 11 balls in this box. The chances of pulling out a red ball is 4/11 The chances of pulling out a yellow ball is 4/11 The chances of pulling out a blue ball is 1/11 The chances of pulling out an orange ball is 2/11 It could be estimated from the calculated chances that; • There is an equal chance of pulling out a red or yellow ball • You are most likely to pick out a red or yellow ball • You are least likely to pick out a blue ball	The number of times an event is likely to happen compared to the number of times it could happen. For example; There is a 1 in 6 chance of throwing a 3 on a dice labelled 1-6. It is likely to happen once as there is only 1 number 3 on the dice but it could happen 6 times.
Consequences		The impact a decision can make on yourself and on others. For example; Reading food labels when shopping for the family – The majority of the food items state it is high in sugar, fat and calories. If this food is eaten each night, consequences for the family may be tooth decay long term, gradual weight gain etc.
Draw conclusions		To make statements about a set of **data** based on results.

Ideas of chance and uncertainty

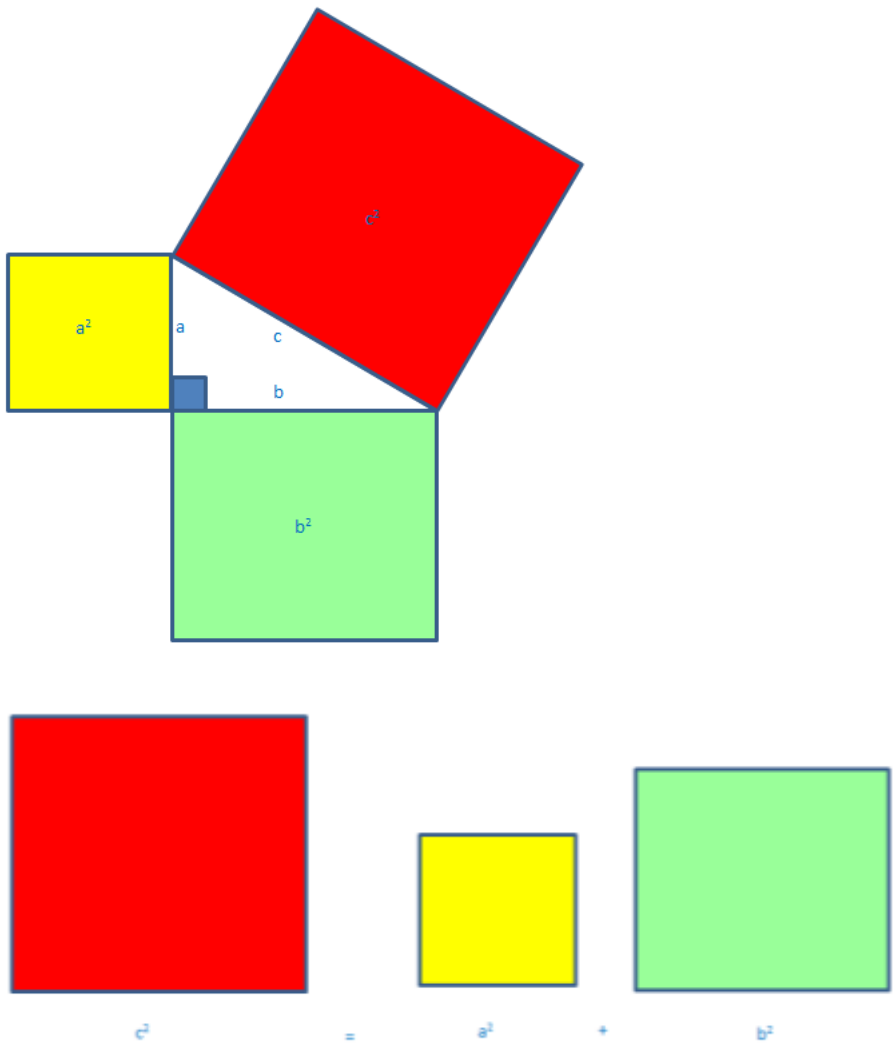
<table>
<tr><td>Event</td><td></td><td>A single result of an experiment.</td></tr>
<tr><td>Frequency table</td><td>
<table>
<tr><th colspan="3">Number of cars passing the school</th></tr>
<tr><th>Colour</th><th>Tally Marks</th><th>Frequency</th></tr>
<tr><td>Red</td><td>𝍸 I</td><td>6</td></tr>
<tr><td>Silver</td><td>𝍸 𝍸 II</td><td>12</td></tr>
<tr><td>White</td><td>𝍸 𝍸 𝍸 II</td><td>17</td></tr>
<tr><td>Green</td><td>IIII</td><td>4</td></tr>
<tr><td>Blue</td><td>𝍸 IIII</td><td>9</td></tr>
<tr><td>Black</td><td>𝍸</td><td>5</td></tr>
<tr><td>Gold</td><td>I</td><td>1</td></tr>
</table>
</td><td>A table used to note tally marks and show frequencies of each item.</td></tr>
<tr><td>Language of probability</td><td></td><td>The words used to describe the likelihood or chance of an event happening. Words can include; never, sometimes, always, likely, unlikely, possible, impossible, certain, uncertain, one in ten chance, 50/50 chance etc.</td></tr>
<tr><td>Likelihood</td><td></td><td>The chance that an event will happen.</td></tr>
<tr><td>Predictions</td><td></td><td>An educated guess at future events based on past experiences. E.g. predicting the weather in December.</td></tr>
<tr><td>Probability</td><td></td><td>How likely something is to happen – calculated as the number of times an event actually happened divided by the number of possible events. It can be expressed as a fraction, decimal fraction or percentage.</td></tr>
<tr><td>Uncertainty</td><td></td><td>The probability that an event may not happen.</td></tr>
</table>

Terms	Illustrations	Definition
Babylonian number system		It used only two numerals or symbols, a one and a ten to represent numbers. The system got trickier with larger numbers and used a base 60 system, rather than our system of base 10.
Binary system		Only made up of only 0's and 1's. There is no 2,3,4,5,6,7,8 or 9. In a binary number each "place" represents a **power** of 2. E.g. $1 = 2^0 = 1$ $10 = 2^1 = 2$ $100 = 2^2 = 4$ $1000 = 2^3 = 8$ $10000 = 2^4 = 16$ Binary numbers are very useful in electronics and computer systems. Regardless of the type of information represented, it is all stored as bit patterns made up from the digits 1 or 0. In other words everything that is stored on the computer is eventually broken down into its simplest form, which is a pattern of 1s and 0s.

Decimal number system		The number system we use every day, based on 10 digits (0, 1, 2, 3, 4, 5, 6, 7, 8, 9). It can also be called 'base 10' system. The value of the digit depends on where it is placed in the number. This is called place value. Zero is used as a place holder which affects the value of the number e.g. 102 and 1002 – the 0 significantly changes the value of the number.
Egyptian number system		Written symbols and hieroglyphics. There was a symbol for every power of ten and the numbers were written from right to left.

	 	
Famous mathematicians		People who have contributed significantly to society through the creative and intelligent use of mathematics. Famous mathematicians have played a huge part in shaping our world as it stands today.
Fibonacci Sequence		Found by adding the two numbers before it together. e.g. 0, 1, 1, 2, 3, 5, 8, 13, 21, 34… The 2 is found by adding the two numbers before it (1+1) The 5 is found by adding the two numbers before it (2+3) The 8 is found by adding the two numbers

		before it ((3+5) The 13 is found by adding the two numbers before it (8+5) The 21 is found by adding the two numbers before it (8+13) The next number in the sequence above would be 55 (21+34) There are many areas of nature where the Fibonacci sequence can be found and some of these areas include, flower petals, plants, fruit, the human face, the human hand and animals (i.e. rabbits) Leonardo Bonacci, known as Fibonacci, founded the sequence so it was named after him.
Greek number system		Originally had 27 symbols. Our own word "alphabet" comes from the first two letters, or numbers of the Greek alphabet -- "alpha" and "beta." Greek letters were also used for writing Greek numerals. The first nine letters (from alpha to theta) were used for the numbers 1 to 9. The next nine letters (from iota to koppa) were used for multiples of 10 from 10 to 90. Finally, the next nine letters (from rho to sampi) were used for 100 to 900. For example, the numbers 1, 2, and 3 are alpha, beta, and gamma.

Pythagoras' Theorem		In a right angled triangle, the square of the long side is equal to the sum of the squares of the other two sides. It is stated in this formula: $a^2 + b^2 = c^2$ Pythagoras' Theorem was founded by Pythagoras of Samos, a Greek philosopher and mathematician.

<table>
<tr>
<td>Roman numerals</td>
<td>
<table>
<tr><th>Base 10 Number</th><th>Roman Numeral</th><th></th><th>Base 10 Number</th><th>Roman Numeral</th></tr>
<tr><td>1</td><td>I</td><td></td><td>10</td><td>X</td></tr>
<tr><td>2</td><td>II</td><td></td><td>20</td><td>XX</td></tr>
<tr><td>3</td><td>III</td><td></td><td>30</td><td>XXX</td></tr>
<tr><td>4</td><td>IV</td><td></td><td>40</td><td>XL</td></tr>
<tr><td>5</td><td>V</td><td></td><td>50</td><td>L</td></tr>
<tr><td>6</td><td>VI</td><td></td><td>60</td><td>LX</td></tr>
<tr><td>7</td><td>VII</td><td></td><td>70</td><td>LXX</td></tr>
<tr><td>8</td><td>VIII</td><td></td><td>80</td><td>LXXX</td></tr>
<tr><td>9</td><td>IX</td><td></td><td>90</td><td>XC</td></tr>
<tr><td>10</td><td>X</td><td></td><td>100</td><td>C</td></tr>
</table>
</td>
<td>Roman numerals were used by the Ancient Romans but we still use them sometimes today e.g. can be seen on some analogue clocks or after kings or queen’s names e.g. Henry VIII (meaning Henry the 8th).

Roman numerals use letters instead of numbers. There are seven letters you need to know:

I = 1

V = 5

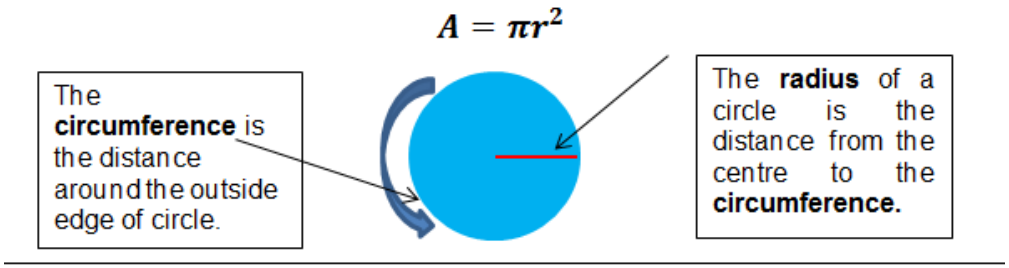
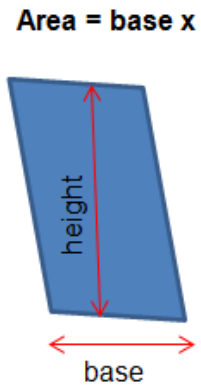
X = 10

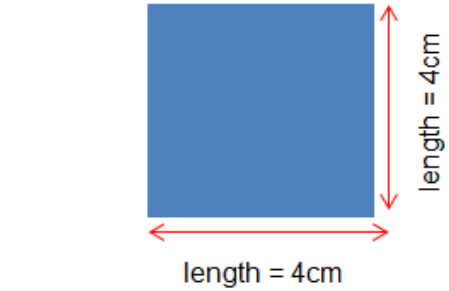
L = 50

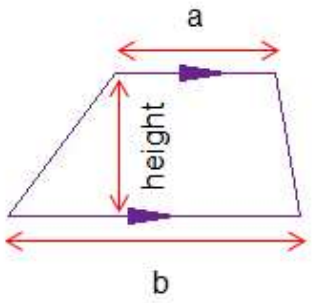
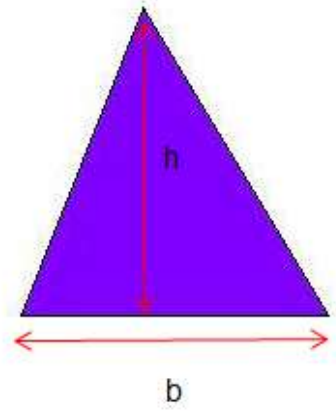
C = 100

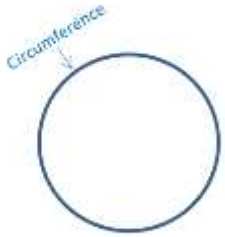
D = 500

M = 1000</td>
</tr>
<tr>
<td>STEM</td>
<td></td>
<td>STEM stands for Science, Technologies, Engineering and Mathematics.</td>
</tr>
</table>

Terms	Illustrations	Definitions
Area		The amount of surface space an object covers, measured using non-standard and standard units. Area is usually measured in square units e.g. square centimetres (cm2), square metres (m2) etc.
Area of a circle		Area = $\pi \times r^2$ r = **radius**, d = **diameter**
Area of a parallelogram		Area = $b \times h$ b = base h = vertical height

Area of a rectangle	**Area = length x breadth** **Area = 8cm x 4cm = 32cm²**  	Can be found by counting the squares or half squares in the rectangle or by using the following formula; Area = $l \times b$ l=length, b = breadth
Area of a square	**Area = length x length** **Area = 4cm x 4cm = 16cm²**  	Can be found by counting the squares or half squares in the square or by using the following formula; Area = l^2 l = length of side

Area of a trapezium		Area = $\frac{1}{2}(a+b) \times h$ h = vertical height
Area of a triangle	**Area = ½ x b x h** 	Area = $\frac{1}{2} \times b \times h$ b = base h = vertical height

Breadth		It is the same as width.
Capacity	 The capacity of the container is 2 litres or 2000ml. The volume of the container is 2000cm^3.	The maximum amount of space an object/container can hold *e.g. its maximum capacity is 2 litres*. Capacity is measured in ml. There are 1000ml in a litre.
Circumference		The distance all the way around a **circle**. Circumference can be measured using the formula; $2 \times \pi \times r \; or \; \pi \times d$

Conservation of volume		Recognise that shapes and objects that look different can have equal volume *e.g. by using different measuring jugs to show the same volume*. In this example shown, there is 150ml of juice in each container. The conservation of volume is knowing that when any object is split into smaller parts then the total volume of the parts is equal to the original volume..
Degree of accuracy		The level of accuracy to round a number to e.g. to the nearest 10, 100, 1000. to 1 decimal place to 3 significant figures. This is particularly important in measurement in order to ensure accurate measurements. See **tolerance in measurement**.

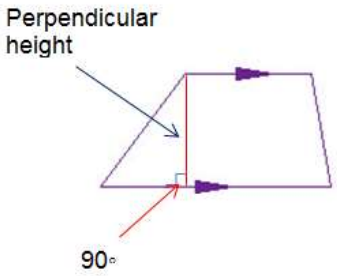
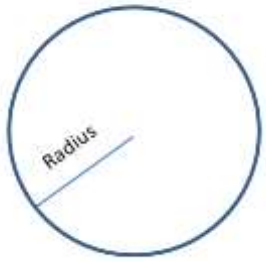
Measurement

Diameter		A straight line which passes through the centre of a circle.
Height		How tall something is from its base to its top. The vertical distance between the top to bottom of an object.
Length		How long something is from end to end. The distance from one point to another.
Length conversions		10mm in 1cm 100cm in 1 metre 1000m in a kilometre Converting between lengths may look like; 4.7m = 4m 70cm or 470cm ½ m = 50cm

Measurement

Mass		A large body of matter with no definite shape. The amount of matter in an object.
Measuring tape / Tape measure		Similar to a metre stick but it is flexible. It is often used to measure around things e.g. body parts when measuring for clothes. It can go beyond 1 metre in length. Most measuring tapes have dual measures showing metric and imperial measurements *e.g. one side is marked in cm and m and the other sides in inches.*
Metre Stick		A straight measuring device that is 1 metre in length, usually marked in centimetres but some can be marked in millimetres too.

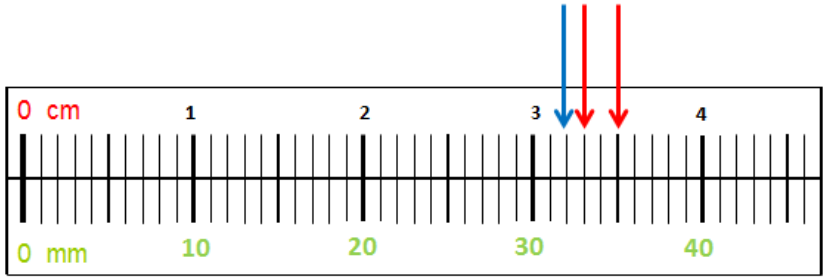
Metric system		The decimal measuring system based on the metre, litre, and gram as units of length, capacity, and weight or mass.
Non-standard units of measurement		Everyday objects which can be used to compare measurements e.g. hands, feet, leaves etc. Any item used to measure items e.g. the tub can hold 13 rubbers (early capacity) or the table is 7 hands long (early length). Children will experiment with these until learning about the need for a set unit of measurement which is more accurate (standard units of measurement).
Pedometer		A measuring device to calculate the distance travelled by the user by measuring the number of steps taken. Can be attached to clothing or some pedometers are now available for the wrist, ankle or smartphone apps.

Perimeter of a shape		The distance all the way around the outside of a 2D shape. To find the perimeter of a shape, add together the lengths of all the sides. The total is the perimeter.
Perpendicular height		The height measured from the base to the **vertex** at the top, creating an angle of 90 degrees with the base.
Radius		The distance from the centre of a circle to any point on its circumference.

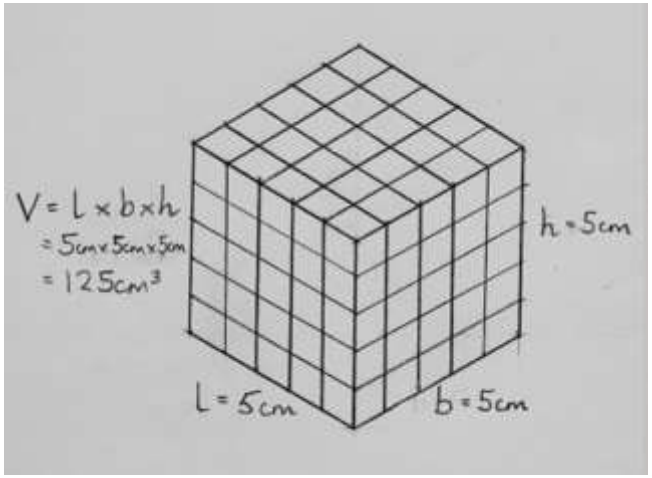
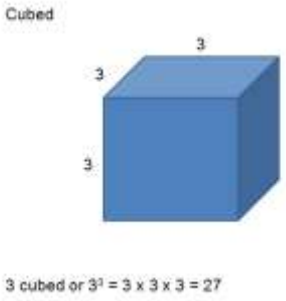
Measurement

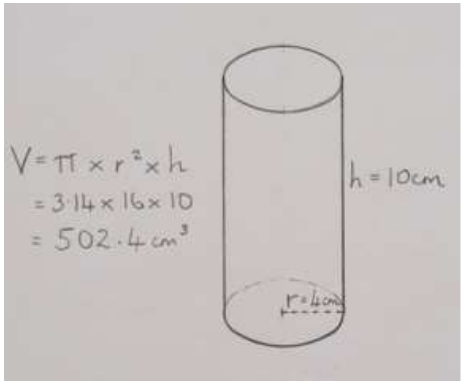
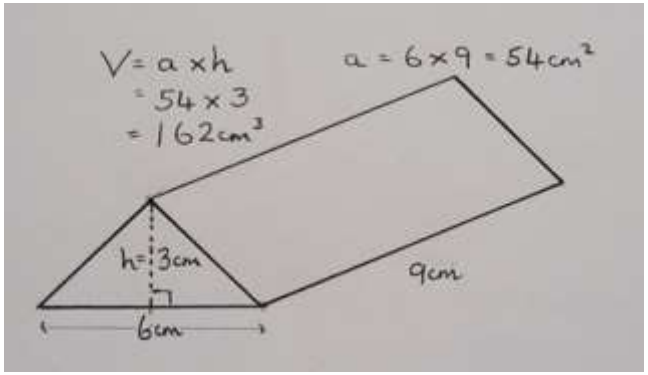
Ruler	 	A straight measuring device, often 30 centimetres in length. It can also be used to draw straight lines.
Scales	   	A measuring device used to measure an object's weight or mass. This can be in the form of digital scales, kitchen scales (analogue) and two pan balance scales

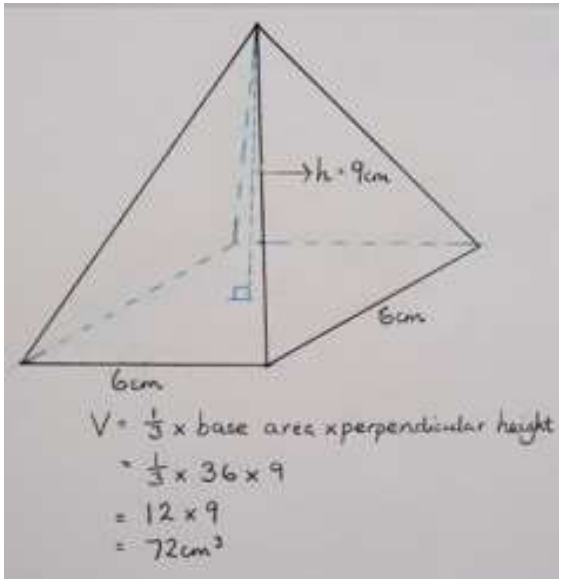
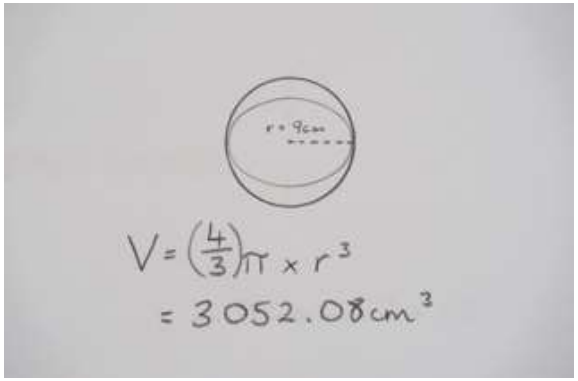
Speedometer		Measuring device to measure the speed travelled by a vehicle. Usually found on the vehicle's dashboard. Speedometers can be analogue or digital.
Standard units of measurement		The universal system of measurement *e.g. mm, cm, ml, litres g, kg etc*
Surface area		The total area of the surface of a three-dimensional object. *E.g. the surface area of a cube is the area of all 6 faces added together.*
Thermometer		A measuring device used to measure temperature. The thermometer reading will rise when the temperature rises and fall when the temperature falls. Temperatures are recorded using the standard units of Degrees Celsius (°C) or Fahrenheit (°F).

Tolerance in measurement	If the task was to mark 3.4cm on this ruler and the tolerance accepted in the measurement was plus or minus 0.1cm (1mm) – **both red arrows** would be correct as they measure 3.3cm and 3.5cm. They are within 0.1cm (1mm) of the actual required measurement. The **blue arrow** would not be accepted as it measures 3.2cm, which is more than 0.1cm (1mm) out with the actual required measurement. It is 0.2cm (or 2mm) out. 	The margins of error acceptable in different contexts and the impact this could have on end the result. The 'degree of tolerance' will vary from context to context.
Trundle Wheel		A measuring device shaped as a wheel with a holding stick. Measures larger distances when a metre stick may be impractical *e.g. measuring a football field or car park length*. One full rotation of the trundle wheel is 1 metre and it clicks to alert the user when rotation has been completed so users need to keep count of the clicks.

Volume	 The capacity of the container is 2 litres or 2000ml The volume of the container is 2000cm³.	The measure of space taken up by a 3D object. Usually measured in cubic units; for example, cubic centimetres (cm3) and cubic metres (m3).
Volume conversions		1000ml in a litre Conversions between volumes may include e.g. 5.8l = 5 litres 800ml or 5800ml, ½ litre = 500ml
Volume of a cone		$V = \frac{1}{3} \times \pi \times r^2 \times h$ **V = volume** **π = 3.14… (pi)** **r = radius** ***h = height***

Volume of a cube or cuboid	 	$V = L\ ^3 or\ V = L \times b \times h$ **V = volume** **L = length** **b = breadth** h **= height**

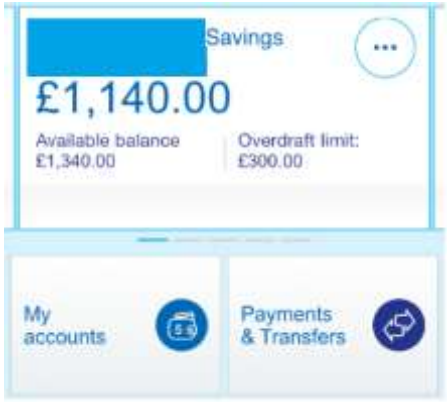
Volume of a cylinder		$V = \pi \times r^2 \times h$ **V = volume** **π = 3.14… (pi)** **r = radius** ***h = height***
Volume of a prism		$V = a \times h$ a = **area** of base h = **height**

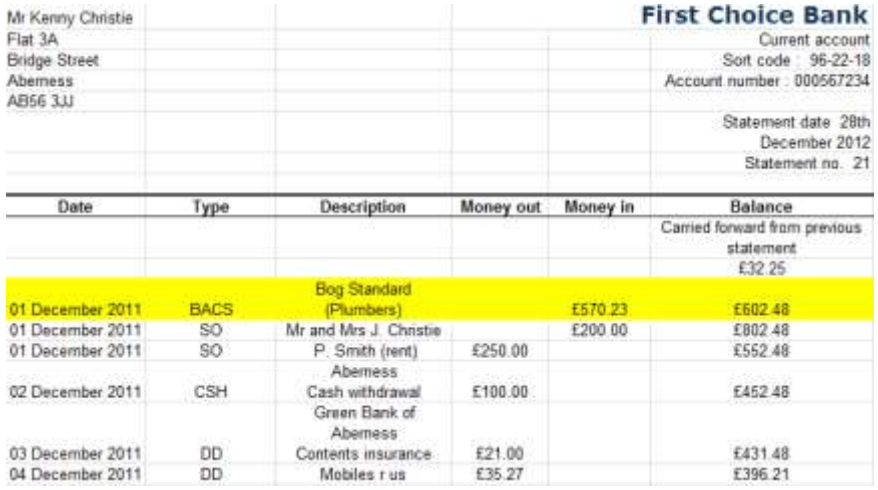
Volume of a pyramid		$V = \frac{1}{3} \times$ *base area* $\times$ ***perpendicular height***
Volume of a sphere		$V = (\frac{4}{3})\pi \times r^3$ **V = volume** **π = 3.14… (pi)** **r = radius**

Measurement

Weight		How heavy something is. A person or object's mass.
Weight conversions		1000g in a kg Conversions between weights may include e.g. 4673g = 4 kg 673g or 4.673kg , ¾ of kg = 750g
Width		How wide something is from side to side.

Money

Terms	Illustrations	Definitions
Affordability		Discussing if you can afford an item *e.g.* • *You have 5p, the apple is 8p, can you buy it?* • *The toy is £2.50 and the tshirt is £4.30. You have £10. Can you afford it?* Taking account of any other important factors *e.g. spending money needed for a trip, is it an essential buy? Is there a better offer?*
ATM		Stands for 'Automated Teller Machine'. Electronic bank machine which allows cash withdrawals. Sometimes referred to as a 'hole in the wall' or cash machine. Some ATM's charge to use their machines. It will usually let you know this on the screen prior to using.
Available balance		This is the amount of money you are able to withdraw, which includes any overdraft amounts. It usually sits underneath the main balance on the account. Some stores can take 3-5 working days to **debit** your account but the available balance will usually include these pending payments whereas the first balance may not. The example shown here illustrates that the available balance is £1340. However, there is a £300 overdraft on the account so the account actually has £1040 of the account holder's own money, even though the first balance states £1140. There is £100 deduction pending (yet to be debited).

BACS		BACS is an electronic system to make payments directly from one bank account to another. It stands for Bankers' Automated Clearing Services. It may appear on a bank statement.

Mr Kenny Christie
Flat 3A
Bridge Street
Abernes s
AB56 3JJ

First Choice Bank
Current account
Sort code : 96-22-18
Account number : 000567234

Statement date 28th December 2012
Statement no. 21

Date	Type	Description	Money out	Money in	Balance
					Carried forward from previous statement
					£32.25
01 December 2011	BACS	Bog Standard (Plumbers)		£570.23	£602.48
01 December 2011	SO	Mr and Mrs J. Chnstie		£200.00	£802.48
01 December 2011	SO	P. Smith (rent)	£250.00		£552.48
02 December 2011	CSH	Abernes s Cash withdrawal	£100.00		£452.48
03 December 2011	DD	Green Bank of Abernes s Contents insurance	£21.00		£431.48
04 December 2011	DD	Mobiles r us	£35.27		£396.21

<table>
<tr>
<td>Balance</td>
<td>
Mr Kenny Christie
Flat 3A
Bridge Street
Aberness
AB56 3JJ

First Choice Bank
Current account
Sort code : 96-22-18
Account number : 000567234

Statement date 28th December 2012
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<tr><td>05 December 2011</td><td>DC</td><td>Abemess Adsa Supermarket</td><td>£132.22</td><td></td><td>£240.35</td></tr>
<tr><td>05 December 2011</td><td>CSH</td><td>Abemess Cash withdrawal</td><td>£31.50</td><td></td><td>£208.85</td></tr>
</table>
</td>
<td>The difference between credits and debits in an account e.g. the money you have deposited and the money you have spent.

You can also request to check your available balance at a given time at an ATM or online.</td>
</tr>
<tr>
<td>Bank</td>
<td></td>
<td>Banks are companies. They are usually listed on the stock market. This means that people and organisations can buy shares in banks.

The shareholders own the banks but don’t necessarily have accounts with them or use any of the other services that banks offer. Instead, the shares they have in banks are an investment. If the bank makes lots of money, the shareholders will benefit from this success because the bank will pay them a share of the earnings made.</td>
</tr>
</table>

Money

<table>
<tr>
<td>Bank statement</td>
<td>
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Statement no. 21
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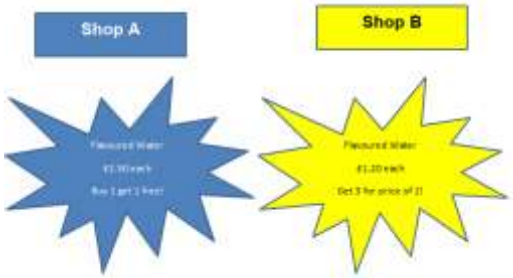
<tr><td>05 December 2011</td><td>CSH</td><td>Abernes Cash withdrawal</td><td>£31.50</td><td></td><td>£208.85</td></tr>
</table>
</td>
<td>An online or printed summary of a bank accounts balance at a point in time. It gives details of all transactions including money paid in out as well as any interest earned, depending on the type of account.

The closing balance is the amount of money within the account at the point of time of the statement.</td>
</tr>
<tr>
<td>Benefit</td>
<td></td>
<td>Payments made by the government to those who are entitled to it. You can receive benefits for lots of things e.g. social security, sick pay, pensions etc.</td>
</tr>
<tr>
<td>Best value</td>
<td> 
</td>
<td>Making comparisons between different websites, shops and online savings accounts e.g. what is best value; buy one get one free or 3 for 2?

In this example of Shop A and Shop B, it is best to shop at Shop B as you will received 3 bottles of water for £2.40 whereas Shop A will cost £2.50 for 2 bottles.</td>
</tr>
</table>

Money

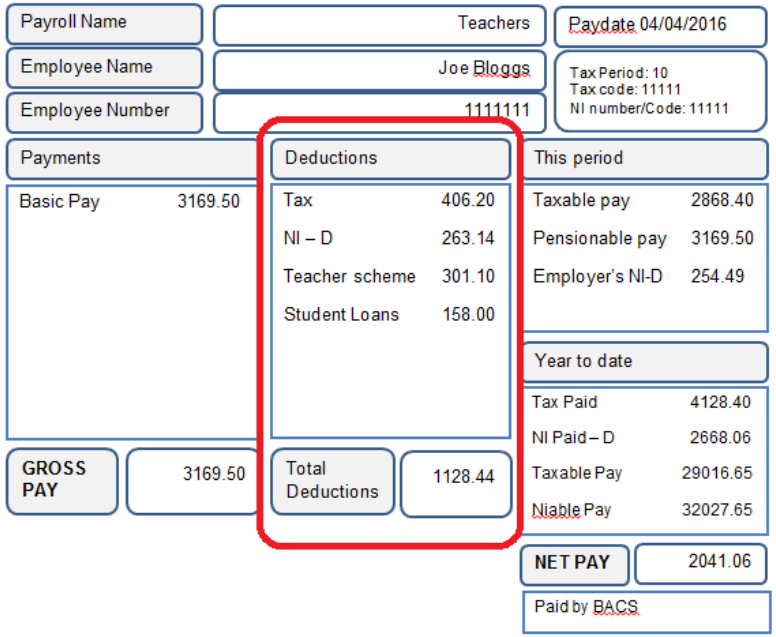
Budgeting		Budgeting is an important process for individuals, families, organisations and government when making financial decisions.
Building society		Offers financial services such as savings and mortgages but differs from a bank, as building societies are owned by its members. Building societies don't have **shareholders** like banks, so they aren't under the same pressure to make lots of money to pass on to them. Each person who has savings or mortgages with a building society is a member of it and has the right to give opinions and vote on key areas of business.

Compound interest	£400 is borrowed for 3 years at **5% compound interest.** Amount borrowed at the start = **£400** Interest in the 1st year = $\frac{5}{100} \times 400 = £20$ After 1 year = **£420 (£20 interest)** Interest in the 2nd year = $\frac{5}{100} \times 420 = £21$ After 2 years = **£441 (£41 interest)** Interest in the 3rd year = $\frac{5}{100} \times 441 = £22.05$ After 3 years = **£463.05 (£63.05 interest)** The total interest charged under compound interest will be **£63.05.**	Where **interest** is calculated on both the amount borrowed and any previous interest. Usually calculated one or more times per year.
Contactless technologies		Being able to make a payment quickly with a device e.g. a card or smartphone, by scanning payment machines without having to enter a pin. See the illustration for the contactless sign highlighted in red.

Contract		A legally binding agreement between two people for payment *e.g. mobile phone contract, electricity and gas contract etc.* The example shown here is a monthly bill sent as part of a contract with an internet service provider.
Credit		Money available to a person before buying goods or services. “In credit” – this is the amount of money or credit available at that point in time. In this example of an energy bill, a monthly direct debit has been set up. Over 3 months, the money builds up and makes the account ‘in credit’. However, the 3 monthly bill has been issued and the credit has not covered the amount, so the account becomes ‘in debit’ – meaning it owes money.

Credit card		A card issued by a **lender** e.g. bank to allow for goods/services to be paid for on **credit** (which needs to be paid back). Credit cards often have charges associated with them. Credit cards can be used to transfer debt. They are an example of a 'finance' deal.
Credit Union		A non-profit making union which is owned by its members. Money can be borrowed from the collection of deposits made by the members at competitive interest rates. Credit unions don't have **shareholders** like banks, so they aren't under the same pressure to make lots of money to pass on to them.
Currency		The system of money generally used in a particular country. For example, in the UK, the currency is Pounds Sterling.
Current account		A current account is probably the most important account you will have, as it enables you to make all the day-to-day banking transactions that you need to. You can pay in money whenever you want and set up standing orders and direct debits to cover any expenses, such as your mortgage, rent, utility bills, council tax etc. You can also go overdrawn if you don't have sufficient funds to pay these expenses, although you should always agree this in advance with your bank first, as fees for unauthorised borrowing are much higher than for authorised overdrafts. Most current accounts come with a **debit card,** so that

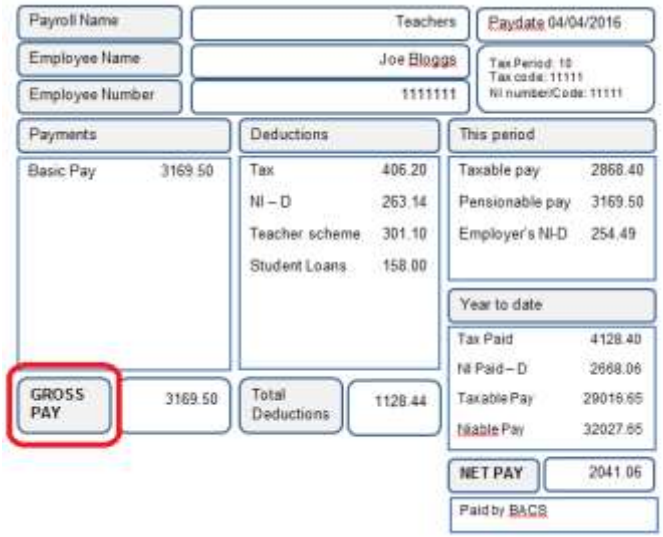
		you can withdraw cash from an **automatic teller machine (ATM)** and pay for goods and services. You also usually get a chequebook with your current account.
Debit		A record of money being removed from an account. When checking a bank statement, the word 'debit' is usually next to the amounts which have been removed from your account. "In debit" – This term is usually seen on utility bills such as gas and electricity. It is a record of the amount of money your account is in '**debt'.**
Debit card		Allows the cardholder to transfer money electronically from their bank account when making a purchase. These are usually used with bank **current accounts.**
Debt		Money that is owed, through having a **bank overdraft, loans, mortgages** and **credit card** or **store card** balances or other financial agreement or contract.

Deductions		An amount taken away from **gross income** to give **net pay**. Deductions can include **national insurance**, **income tax** or **pensions**.
Deposit		You can 'deposit' money in to a savings or current account e.g. **bank** or **credit union**. This means putting money in to it. Money that a buyer gives to a seller as a first payment to prove that they intend to complete a **transaction,** e.g. when buying a house or a vehicle.

Money

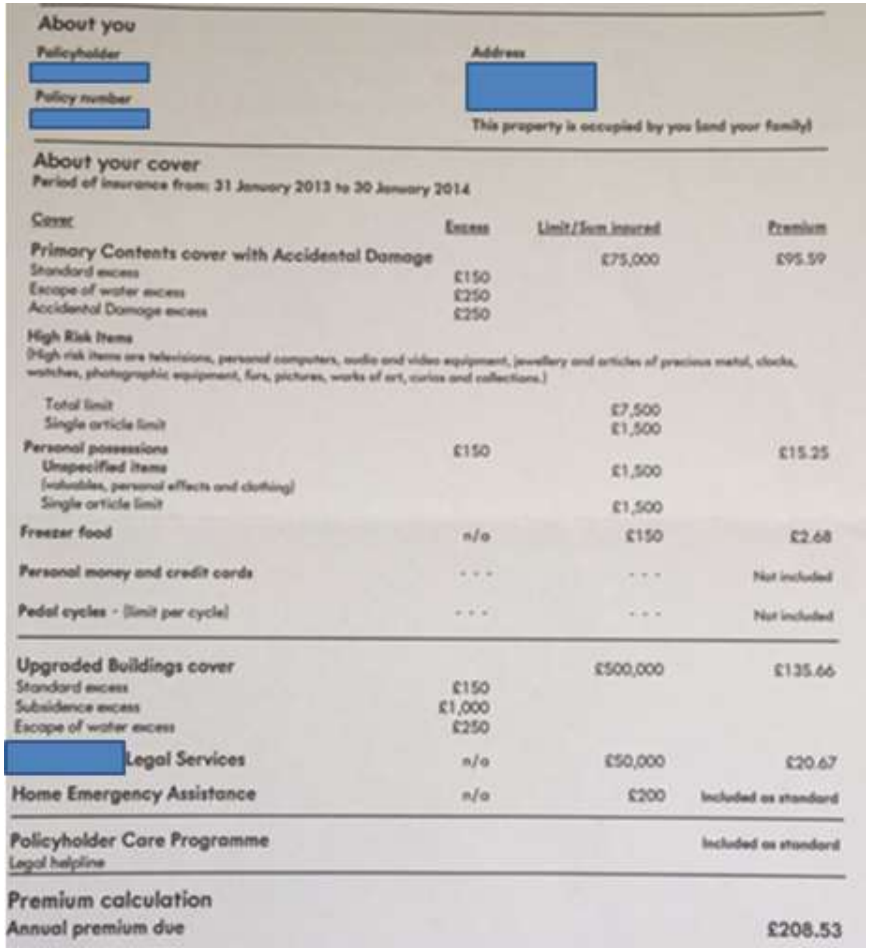
Direct debit	Aberness AB56 3JJ Account number : 000567234 Statement date 28th December 2012 Statement no. 21 **Date** | **Type** | **Description** | **Money out** | **Money in** | **Balance** Carried forward from previous statement £32.25 01 December 2011 | BACS | Bog Standard (Plumbers) | | £570.23 | £602.48 01 December 2011 | SO | Mr and Mrs J. Christie | | £200.00 | £802.48 01 December 2011 | SO | P. Smith (rent) | £250.00 | | £552.48 02 December 2011 | CSH | Aberness Cash withdrawal | £100.00 | | £452.48 03 December 2011 | DD | Green Bank of Aberness Contents insurance | £21.00 | | £431.48 04 December 2011 | DD | Mobiles r us | £35.27 | | £396.21 04 December 2011 | SO | P. Smith (gas/electricity) | £23.64 | | £372.57 05 December 2011 | DC | Adsa Supermarket | £132.22 | | £240.35 05 December 2011 | CSH | Aberness Cash withdrawal | £31.50 | | £208.85 £593.63 Total withdrawals | £770.23 Total pay-ins | £208.85 Closing Balance carried forward	An agreement set up to take money from your account regularly to pay for goods or services, usually bills. E.g. You may have a direct debit set up to pay your phone bill where an amount is taken each month to pay for it. The bill amount may differ each month depending how many extra charges you have. Usually abbreviated to DD on a **bank statement.**
Earnings		Money gained in exchange for working, providing goods or services or from other income such as **investments.**
Exchange		Changing coins or notes for other coins or notes of the same value *e.g.* • *swap 5p for 5 lots of 1p.* • *swap £10 for £5 and 5 £1 coins.*
Exchange rates		The amount you multiply your own **currency** by to change it in to a different currency. For example, the exchange rate for changing pound sterling (£) to American dollars ($) may be 1.39. You would multiply the total of your pound sterling by 1.39 to work out the amount of American dollars you will receive.

Expenditure		The amount of money spent on goods or services. Expenditure needs to be carefully considered when **budgeting.**
Expenses	 Date | Receipt Amount | Expense Type | Original Receipt Required | Reimbursable Amount (GBP) 10-Mar-2016 | 3.35 GBP | Meals Allowance - Elsewhere - Receipted £23.50 | ✔ | 3.35 10-Mar-2016 | 18.60 GBP | Meals Allowance - Elsewhere - Receipted £23.50 | ✔ | 18.60 11-Mar-2016 | 15.90 GBP | Meals Allowance - Elsewhere - Dinner - Receipted £18.60 | ✔ | 15.90 12-Mar-2016 | 4.80 GBP | Meals Allowance - Elsewhere - Lunch - Receipted £4.90 | ✔ | 4.80 16-Mar-2016 | 2.35 GBP | Meals Allowance - Elsewhere - Lunch - Receipted £4.90 | ✔ | 2.35 24-Mar-2016 | 10.90 GBP | Public Transport Rail (Standard Class) - Receipted | ✔ | 10.90 24-Mar-2016 | 3.20 GBP | Meals Allowance - Elsewhere - Lunch - Receipted £4.90 | ✔ | 3.20 Total | 59.10	The amount spent on something e.g. the expenses for a weekend trip to London would include travel costs, food and drinks, local attraction costs, accommodation etc. Some businesses and organisations will pay for an employee's expenses if costs, such as those listed above, are incurred as part of the employee's work. See an example of a business expenses claim.
Finance		Money provided to a person or business, which usually needs to be paid back e.g. car finance loan
Foreign exchange		Changing one currency to another using **exchange rates**. There may be charges for this service.
Gambling		To stake or risk money, or anything of value, on an outcome involving chance, in the hope of gaining something of more value or benefit. For example; • Playing the National Lottery – you risk £2 each week on the chance that your numbers will be drawn in order to win a lot more money • Sports – you may bet an amount of money on the chance of an outcome such as your favourite team winning a football game, in the hope that they will win, earning you more money than you had risked. Online gambling is a form of gambling where bets are placed on websites or apps on the internet once an

		account has been set up.
Gross pay/ Gross profit		The money earned in wages before **deductions** have been made. The **profit** a business makes before taking away the total **expenses** from total **income.** **Gross Profit minus Expenses = Net Profit.**
Identity theft		Identity fraud is the use of a person's stolen identity in criminal activity to obtain money, goods or services through deception (pretending to be that person). Fraudsters can use your identity details to: • Open bank accounts. • Obtain credit cards, loans and state benefits. • Order goods in your name. • Take over your existing accounts. • Take out mobile phone contracts. • Obtain genuine documents such as passports and driving licences in your name.

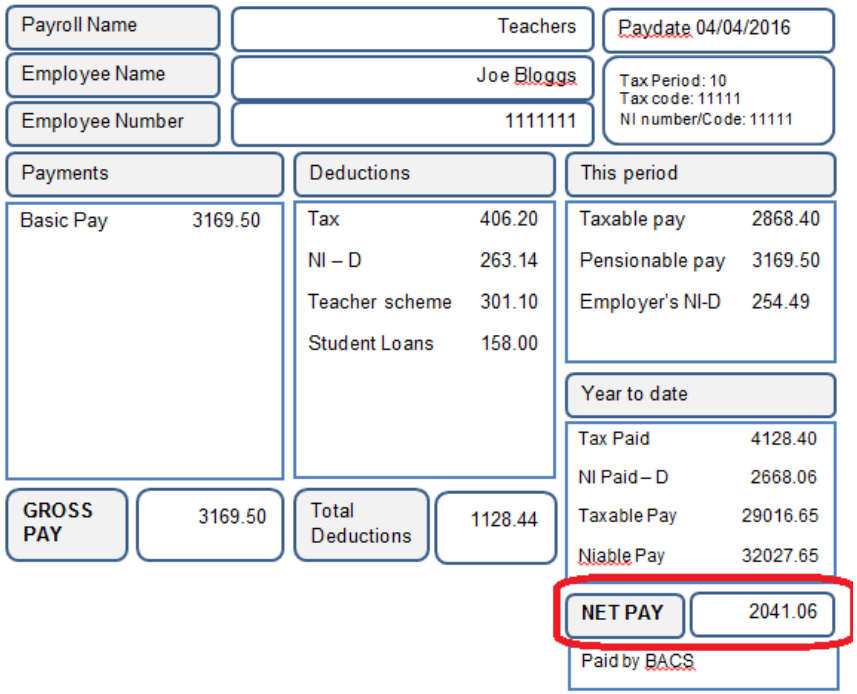
Money

Income		Money received, usually on a regular basis, from providing goods or services or through **investments** *e.g. wages from a job, pensions, social security payments.*
Income Tax		A tax you pay on your **income** such as **wages**, some **savings**, **pensions** etc. The amount of **tax** you pay depends on how much income you receive. Some income is tax free such as lottery wins. Everyone gets a **personal allowance** which they do not have to pay tax on.

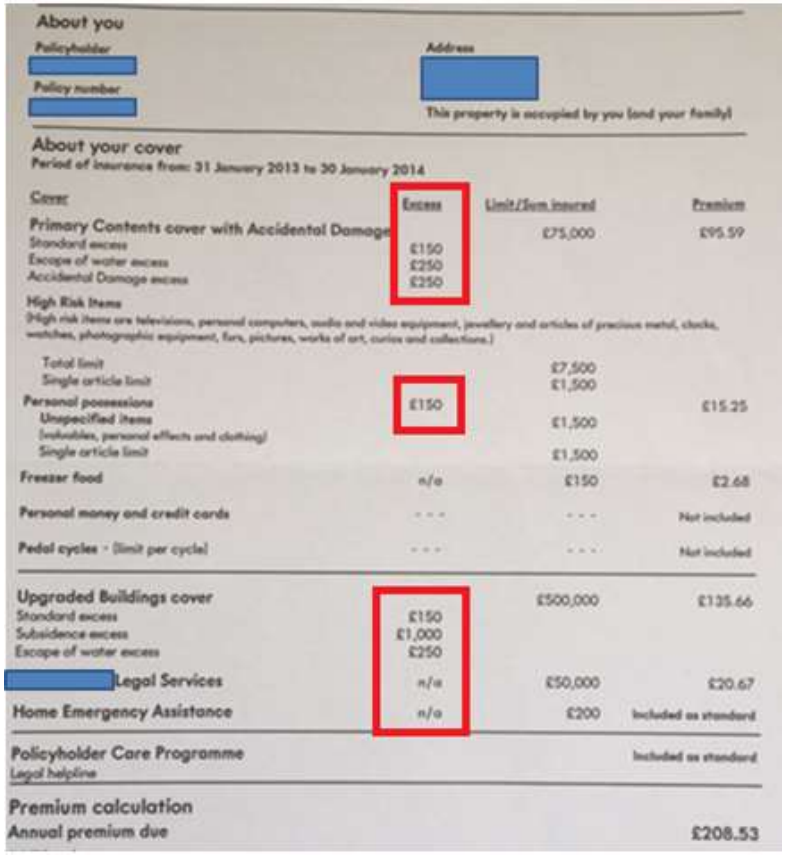
Insurance	 **About you** Policyholder [redacted] Address [redacted] Policy number [redacted] This property is occupied by you (and your family) **About your cover** Period of insurance from: 31 January 2013 to 30 January 2014 Cover / Excess / Limit/Sum insured / Premium Primary Contents cover with Accidental Damage — £75,000 — £95.59 Standard excess £150 Escape of water excess £250 Accidental Damage excess £250 High Risk Items (High risk items are televisions, personal computers, audio and video equipment, jewellery and articles of precious metal, clocks, watches, photographic equipment, furs, pictures, works of art, curios and collections.) Total limit £7,500 Single article limit £1,500 Personal possessions £150 — £15.25 Unspecified items £1,500 (valuables, personal effects and clothing) Single article limit £1,500 Freezer food n/a £150 £2.68 Personal money and credit cards - - - - - - Not included Pedal cycles - (limit per cycle) - - - - - - Not included Upgraded Buildings cover — £500,000 — £135.66 Standard excess £150 Subsidence excess £1,000 Escape of water excess £250 [redacted] Legal Services n/a £50,000 £20.67 Home Emergency Assistance n/a £200 Included as standard Policyholder Care Programme — Included as standard Legal helpline **Premium calculation** Annual premium due £208.53	A formal contract or certificate which promises to cover the cost of items (can include money) lost, damaged and/or stolen in return for a monthly or yearly payment. For example, phone insurance can be taken out on a mobile phone. Depending on the terms and conditions of the insurance certificate, it may replace a lost, damaged or stolen phone. Some companies may charge a fee for making an insurance claim, sometimes known as an **'excess'** e.g. to claim for a new phone, there may be a £50 excess charge to pay before it will be replaced. Here is an example of a house insurance certificate.
Interest		Money charged for borrowing money, or money earned for saving money, usually stated as a percentage *e.g. 4.95%*

Money

Investment		Putting money in to a project, business or account with the aim of making a **profit** back, including making money through **interest**, *e.g. investing through shares in a company or saving money in a high-interest account.*
Lender		A person, business or organisation who provides funds to those who need it, but needs to be paid back.
Loan		Something that is borrowed (usually money) and needs to be paid back, usually with **interest** on top. Loans are an example of a 'finance' deal.
Loss		The amount of money lost by a business or organisation.
Mortgage		Amount of money borrowed to purchase a home, building or business which needs to be paid back with **interest** on top. Mortgages are an example of a **'finance'** deal.
National insurance		Compulsory payments by employees and employers to provide state assistance for people who are unemployed, sick or retired in the UK.

Net Pay / Net Profit		The remaining amount of an employee's pay after deductions have been taken, such as **tax**, **National insurance,** pension contributions etc, are made. This can be known as the 'take home' pay as it is the amount of money you receive and can 'take home' to spend. Net profit is the total **profit** a business makes after taking away the total expenses from total **income**. It shows what the company has earned (or lost) in a given period of time (usually one year).
Overdraft		When more money is taken out of a **current account** than has been paid in, it will make the account go in to its overdraft. This needs to be paid back with possible charges and interest. The overdraft limit should be agreed with the bank. If not charges will be made on the account. Some accounts offer a 'free' overdraft facility or 'planned' and 'unplanned'. Each bank differs.

Pay day loan		A payday loan is a short-term loan of money borrowed by someone who may be struggling for money until their **wages** are received (pay-day). Some payday loan companies allow you to choose the repayment period, rather than basing it on when you receive your wages. The payday loan is usually paid straight into your bank account, often within 24 hours of your application being approved. The payday loan repayment, plus interest, is then taken directly from your bank account on the due date. Pay day loans can have very large interest charges. These should be discussed by the customer and lender before approval.
Pending		Payments which are yet to be debited from your account. When you shop in a store or online, it can take between 1-5 working days to show on your account. This means the payment for it is pending.
Personal allowance (in tax)		An amount of money you do not have to pay **tax** on. There is a standard Personal Allowance limit decided by the government.
Personal Pension		Individuals who join a private pension scheme pay monthly payments to the scheme in order to have a larger amount of savings when retired.

Policy excess		The agreed amount of money which is to be paid in the event of a claim. For example, if your windscreen was broken on your car, the insurance policy may require an excess of perhaps £100 to be paid by you before they will fix it. This excess would be taken off the total cost of repairing the windshield. Some policies have voluntary and compulsory excess payments. Compulsory excess means you must pay it in order to claim and the amount is set by the insurer. Voluntary excess means you can pay an extra amount of your choice. This usually brings down the cost of the monthly insurance premiums but this should be checked at the time of policy purchase. If you make a claim, you'll have to pay both the compulsory and the voluntary excess.
Profit		The difference between the amount earned and the amount spent in buying, operating, or producing something.
Recession		A period of negative economic growth usually lasting more than a few months, which can include high unemployment, reduced trade and industrial activity. This has also been known as the 'credit crunch'.

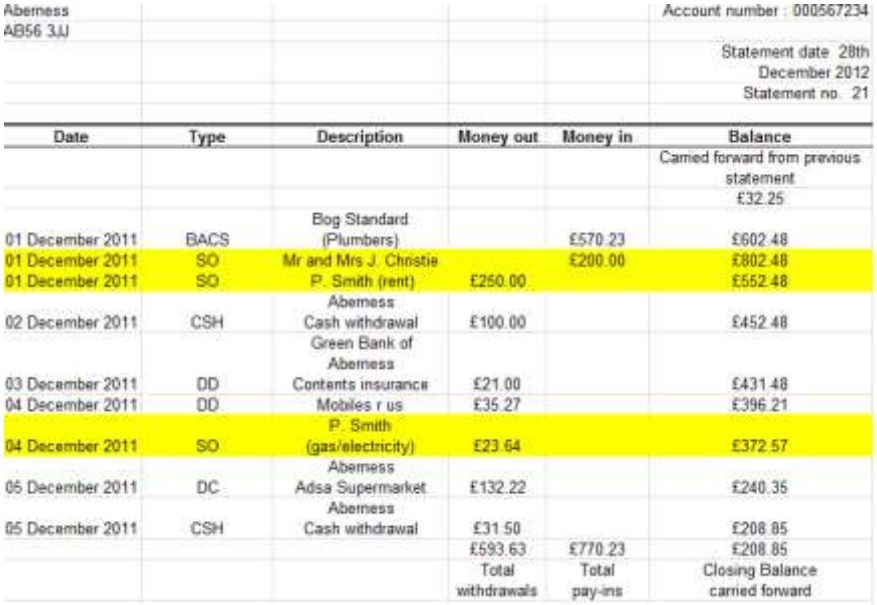
Revenue		The total amount of money made (by a person or business). All costs are then taken away from this total to find the **gross** and **net profits.**
Salary		The total amount of money to be paid to an employee by an employer for a year, usually paid with fixed regular payments on a monthly or sometimes weekly basis.
Savings		Savings is money that is stored away instead of being spent. The savings could be from **wages** or other income, including from monetary gifts. Savings can be informal e.g. piggy bank or can be put in to a savings account in a bank. A savings account is a safer method and some accounts offer **interest** to be earned on savings. Savings may be for a long term or over a shorter term while saving up for something of high value, which is not affordable in a one off payment e.g. savings for a holiday or wedding.
Scams		An illegal and dishonest way of making money or gaining goods/services, usually through deceiving people. For example, you may receive a phone call from someone pretending to be your bank asking for your log in details and/or password. If given over the phone, the anonymous person may access your account and take any money within it. Genuine bank operators should not ask for such details over the phone or via email.

<table>
<tr><td>Shareholder</td><td></td><td>Someone who owns a share or shares in a business or organisation. This may be through buying or inheriting shares. Shares will be worth different values depending on the size and financial success of the business or organisation.

Shareholders can also be people who have a relevant interest in a business or organisation, but not necessarily financially. For example, parents and pupils are important shareholders of their local primary school as decisions made in the school will directly affect them.</td></tr>
<tr><td>Standing order</td><td>Aberness
AB56 3JJ

Account number : 000567234

Statement date 28th December 2012
Statement no. 21

 
<table>
<tr><th>Date</th><th>Type</th><th>Description</th><th>Money out</th><th>Money in</th><th>Balance</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>Carried forward from previous statement</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>£32.25</td></tr>
<tr><td>01 December 2011</td><td>BACS</td><td>Bog Standard (Plumbers)</td><td></td><td>£570.23</td><td>£602.48</td></tr>
<tr><td>01 December 2011</td><td>SO</td><td>Mr and Mrs J. Christie</td><td></td><td>£200.00</td><td>£802.48</td></tr>
<tr><td>01 December 2011</td><td>SO</td><td>P. Smith (rent)</td><td>£250.00</td><td></td><td>£552.48</td></tr>
<tr><td>02 December 2011</td><td>CSH</td><td>Aberness Cash withdrawal</td><td>£100.00</td><td></td><td>£452.48</td></tr>
<tr><td>03 December 2011</td><td>DD</td><td>Green Bank of Aberness Contents insurance</td><td>£21.00</td><td></td><td>£431.48</td></tr>
<tr><td>04 December 2011</td><td>DD</td><td>Mobiles r us</td><td>£35.27</td><td></td><td>£396.21</td></tr>
<tr><td>04 December 2011</td><td>SO</td><td>P. Smith (gas/electricity)</td><td>£23.64</td><td></td><td>£372.57</td></tr>
<tr><td>05 December 2011</td><td>DC</td><td>Aberness Adsa Supermarket</td><td>£132.22</td><td></td><td>£240.35</td></tr>
<tr><td>05 December 2011</td><td>CSH</td><td>Aberness Cash withdrawal</td><td>£31.50</td><td></td><td>£208.85</td></tr>
<tr><td></td><td></td><td></td><td>£593.63</td><td>£770.23</td><td>£208.85</td></tr>
<tr><td></td><td></td><td></td><td>Total withdrawals</td><td>Total pay-ins</td><td>Closing Balance carried forward</td></tr>
</table></td><td>Similar to a direct debit. However, a standing order is usually a fixed amount and only you can change the amount or when it is taken.

Usually abbreviated to SO on a bank statement.</td></tr>
<tr><td>State Pension</td><td></td><td>A regular payment made by the government to people on or above the official retirement age and to some widows and disabled people.</td></tr>
</table>

Store card		Similar to a **credit card**, however, they are limited to use at either a stated store or chain of stores. For example, a Next storecard can only be used for purchases at Next stores and online.
Transaction		Buying or selling something, where goods, services or money is passed from one to another
Transfer		This is the movement of money from one account to another. This may be between a **current account** and a **savings account** or you can also transfer money to another person. Online banking sites and apps provide a quick and simple way to transfer money between accounts and to others. Usually abbreviated to TRF on a **bank statement.**
VAT		VAT stands for value added tax. It is a tax added on to goods or services that need to be taxed e.g. food, clothes, cars etc. Some things do not get VAT added to it like education, health service, postal service. The government decides on the rate of tax and items to be taxed.

Date	Type	Description	Money out	Money in	Balance
					Carried forward from previous statement
					-£233.91
29 November 2012	BACS	Salary Mr J Christie IT Consultants		£2,198.81	£1,964.90
29 November 2012	BACS	Salary Mrs J Christie Teeth4you		£702.41	£2,667.31
03 December 2012	SO	Mr K. Christie	£200.00		£2,467.31
03 December 2012	DD	Mortgage payment National Building Society	£806.21		£1,661.10
03 December 2012	DD	Abernes Council Council Tax	£175.00		£1,486.10
03 December 2012	DD	Scotbank Contents and buildings insurance	£43.88		£1,442.22
03 December 2012	DD	Fuel4u Gas and electricity	£203.27		£1,238.95
03 December 2012	DD	Stronger Life Life insurance	£33.92		£1,205.03
03 December 2012	DD	TV Licencing Authority	£12.12		£1,192.91
03 December 2012	SO	Ms Jenni Christie		£100.00	£1,292.91
04 December 2012	DD	Digital TV	£18.55		£1,274.36
04 December 2012	TRF	Credit Card payment Mistercard	£58.24		£1,216.12
04 December 2012	BACS	Child Benefit HMRC		£53.60	£1,269.72

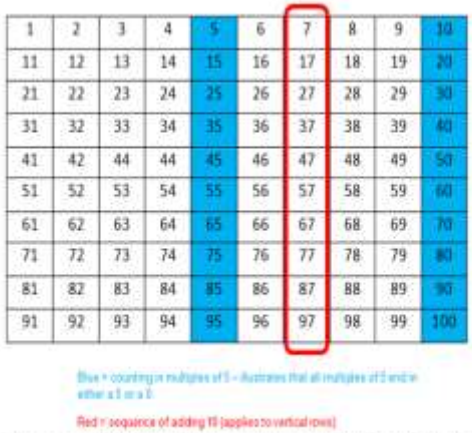
Wages		A regular payment, usually on an hourly, daily, or weekly basis, made by an employer to an employee in return for providing goods or services.
Withdrawal		Money removed from an account. E.g. You can withdraw (take out) money from an ATM cash machine.

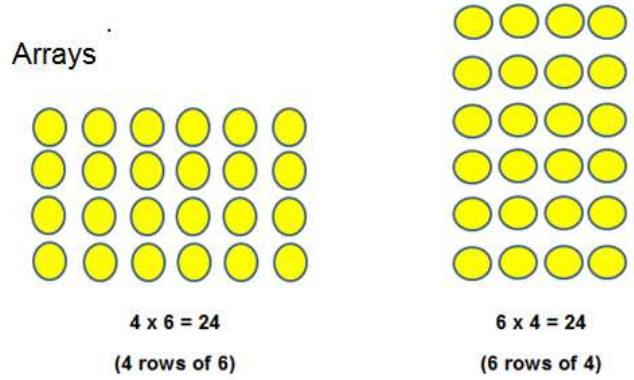
Multiples, factors and primes

Terms	Illustrations	Definition
Common factor		If numbers share one or more **factors**, then they are called the common factors of those numbers. For example: 12 and 30 • The factors of 12 are: 1, 2, 3, 4, 6 and 12 • The factors of 30 are: 1, 2, 3, 5, 6, 10, 15 and 30 So the common factors of 12 and 30 are: 1, 2, 3 and 6
Common multiple		A number that is a multiple common to two or more numbers. For example: • Multiples of 2 are 2, 4, 6, 8, 10, 12, 14, 16, 18, … • Multiples of 3 are 3, 6, 9, 12, 15, 18, … So, common multiples of 2 and 3 are 6, 12, 18,
Factor		A number is a ‘factor’ if it divides exactly into a number e.g. the factors of 10 are 1, 2, 5, 10

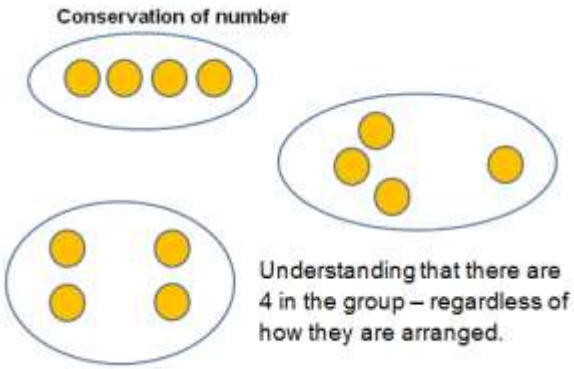
Factorising	**Example of factorising;** Factor 2y + 6 - Both 2y and 6 have a common factor of 2: • 2y is 2 × y • 6 is 2 × 3 - So you can factor the whole expression into: 2(y+3) So **2y + 6** has been "factored into" **2** and **y + 3**	The process of finding the **factors** in an **expression**. It is like "splitting" an expression into a multiplication of simpler expressions.
Highest common factor (HCF)		The highest common factor of two or more numbers. For example: The HCF of 24 and 36 is 12 as it is the highest factor to divide in to both equally.
Lowest common multiple (LCM)		The lowest multiple which two or more numbers have in common. for example: The lowest common multiple of 6 and 12 is 12.
Multiple		Counting in equal steps e.g. multiples of 2 = 2, 4, 6, 8… A multiple is also the result of multiplying a number by a whole or negative number *e.g.* *15 is a multiple of 5 as 5 x 3 = 15 but 16 is not a multiple of 5 as no **integer** can be multiplied by 5 to give 16.*

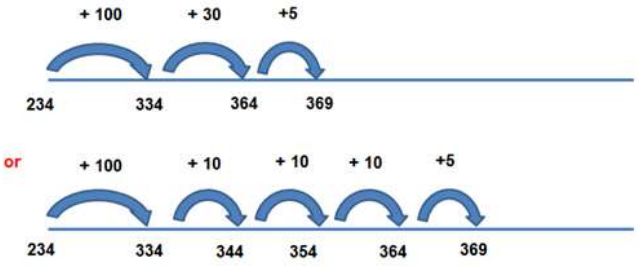
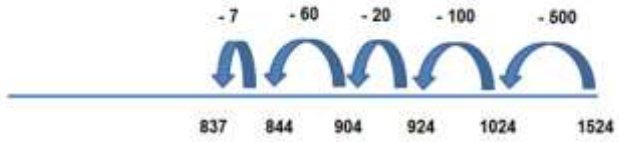
Prime Number		A prime number can be divided evenly only by 1, or itself. It must be a whole number greater than 1 e.g. 5 can only be divided evenly by 1 or 5, so it is a prime number but 6 can be divided evenly by 1, 2, 3 and 6 so it is not a prime number (it is a **composite number**).

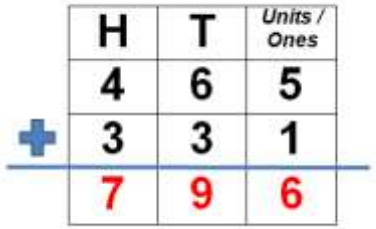
Terms	Illustrations	Definitions
100 Square	 	A square showing numbers from either 0-99 or 1-100. Used to help with the four operations - addition, subtraction, multiplication and division. It can also be used to show a variety of patterns and sequences in numbers e.g. counting in 10's in the vertical rows or the pattern involved in counting in 5's (all multiples end in 0 or 5) etc.

Addition		To find the total of more than one amount, *e.g. 14 + 10 = 24* Addition is the inverse operation of **subtraction.** e.g. 350 + ☐ = 400 could be solved by asking 400 - ☐ = 350
Algorithms		Reading, writing and interrogating mathematical statements involving signs: • + add • - minus • = equals • x multiply • ÷ divide
Arrays		Used to identify quantities and patterns to make quick estimates *e.g. 2 rows of 5 dots recognised as 10.* Used to help calculate or check multiplication problems *e.g. 24 can be shown as 4 rows of 6 or 6 rows of 4.*

Associative law		It doesn't matter how you group the numbers when adding or multiplying. *e.g. (6 + 3) + 4 = 6 + (3 + 4) or (2 × 4) × 3 = 2 × (4 × 3)*
Cardinal number or 'Cardinality'		The number given to the total amount of items in a set. *e.g. there were 14 people in the hall – 14 is the cardinal number*
Commutative law		Numbers can be swapped around (within a calculation) when adding and multiplying and still get the correct answer. *e.g. 4 + 3 is the same as 3 + 4, 4 x 8 = 8 x 4*
Composite number		A whole number that can be divided evenly by numbers other than 1 or itself. *E.g. 9 can be divided evenly by 3 (as well as 1 and 9), so 9 is a composite number.*
Consecutive number		Numbers next to one another in numerical order. *e.g.* • *5 and 6* • *4.2 and 4.3*

Conservation of number		Understanding that the quantity of a set does not change due to how they are arranged. *e.g. in a group or in a row = same amount.*
Digit		The symbols used to make numerals (numbers). 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 are the ten digits used in our number system. E.g. the numeral 153 is made up of 3 digits ("1", "5" and "3").
Distributive law	$3 \times 2 + 3 \times 4 = 3 \times (2+4)$	Multiplying a number by a group of numbers added together is the same as doing each multiplication separately. *e.g. 3 lots of (2+4) is the same as 3 lots of 2 plus 3 lots of 4*
Division		To find the number of groups an amount can be split equally in to, *e.g. 20 ÷ 5 = 4 so 20 can be divided into 5 equal groups of 4. When dividing, the answer does not have to be a whole number e.g. 17 ÷ 2 = 8.5.*

		Division is the inverse operation of **multiplication** *e.g.* *100 divided by 10 could be answered by asking 10 x* ☐ *= 100.*
Double facts		Used to quickly learn and recall addition facts. *e.g. double 4 is 8, double 5 is 10, double 6 is 12 etc.*
Empty number line	**234 + 135**  This is two examples of a method which can be used to solve the calculation but there are other methods. **1524 - 687**  This is an example of a method which can be used to solve the calculation but there are other methods.	A number line which can have any starting number to add or subtract a number in steps that the learner finds comfortable. See the picture here for how 234 add 135 can be broken up in to steps to make the calculation more manageable. Another example is shown of a subtraction problem. They can also be used for multiplication and division.

Even number		A number which can be divided equally by 2 *e.g. 2, 4, 16, 28 etc*
Formal Written Algorithm	 **Simple formal addition algorithm example 1:** • Add the units (ones) first • Add the tens • Add the hundreds  **More complex formal addition algorithm example 2:** • Add the units (ones) first. 8 + 3 = 11 so you need to put 10 in to the tens column and keep the one/unit in the units/ones column • Add the tens. 60 + 70 + 10 = 140 so you need to put the 1 hundred in to the hundreds and keep the 4 tens in the tens column (40 written as 4 as we know it is 4 tens as it is in the tens column) • Add the hundreds. 400 + 600 + 100 = 1100 so you need to put the 1 thousand in to the thousands column and keep the 1 hundred in the hundreds column (100 written as 1 as we know it is 1 hundred as it is in the hundreds column)	A standard written method to calculate problems involving addition, subtraction, multiplication and division. These should only be introduced when learners are confident in calculating a variety of problems mentally. Can also be known as 'standard written algorithm'. Here are some examples of formal written algorithms for addition and subtraction.

	H	T	*Units / Ones*
	6	8	5
−	4	2	3
	2	6	2

Simple formal subtraction algorithm example 1:

- Subtract the units (ones) first
- Subtract the tens
- Subtract the hundreds

	Th	H	T	*Units / Ones*
	~~4~~ ^{3}	^{1}4	6 ^{5}	^{1}8
−	2	6	5	9
	1	8	0	9

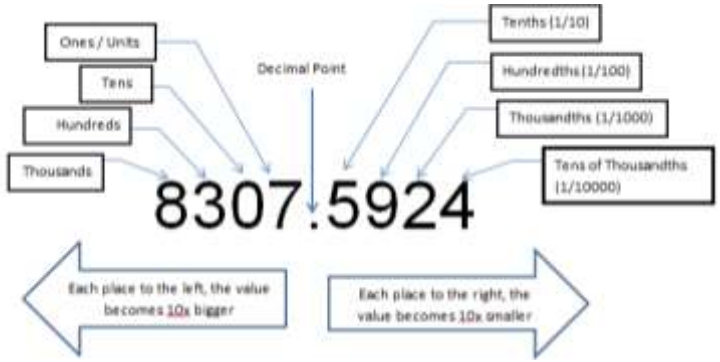
More complex formal standard algorithm example 2:

- Subtract the units/ones. 8 – 9 cannot be done in a formal written algorithm without having to exchange a ten for 10 units/ones.
- 1 ten is exchanged from the tens column into 10 units, then given to the units/ones column. This now makes the units/ones column as 18 – 9 = 9. The tens column now has 5 tens (50).
- Subtract the tens.
- Subtract the hundreds. 400 - 600 cannot be done in a formal written algorithm without having to exchange 1 thousand for 10 hundreds.
- 1 thousand is exchanged from the thousands column to 10 hundreds, then given to the hundreds column. This now makes the hundreds column as 1400 – 600 = 800. The thousands column now has 3 thousands in it (3000).
- Subtract the thousands column.

Formulae		A formula is a special type of equation that shows the relationship between different variables. Using a formula is the most efficient way of solving problems that compare different sets of variables. *E.g. Area of rectangle = length x breadth, Volume of a cuboid = l x b x h*
Integers		Integers are whole numbers, but they also include negative numbers and zero *e.g. -2, -1, 0, 1, 2*
Mental agility		The ability to calculate problems mentally with speed, efficiency, accuracy in a variety of ways. Recall of number facts is important in being able to calculate quickly, as is mental jottings (writing down numbers to help track the calculation without using a written algorithm.) The preferred method is often selected until the learner has developed confidence in identifying the most efficient method.
Modelling		Generating a **number sequence** using a physical or pictorial pattern and working out the equation that the sequence represents. Formulae is used to find information about the items at any position in the sequence.
Multiplication		To find the **product** of more than one amount *e.g. 4 x 3 (find 4 lots of 3).* Multiplication is the inverse operation of division *e.g.* *10 x*  *= 60 could be answered by asking 60 ÷*  *= 10.*
Near doubles		These facts are learned once ‘double facts’ are learned. *E.g. To quickly answer 8 + 7, the learner can recall double 8 as 16 then minus 1 or recall double 7 as 14 and add 1.*

Number and number processes

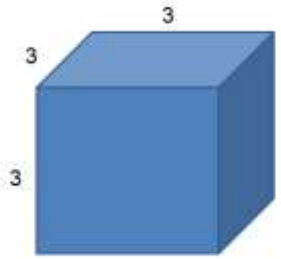
Negative numbers		Numbers which are less than zero. *e.g. -1, -2, -3 etc.*
Number bonds		The different pairs of numbers which make up the same number *e.g. the number bonds for 10 are 1+9, 2+8, 3+7, 4+6 and 5+5.* Learners try to learn these facts to help them with quick mental calculations.
Numeral		A symbol that represents a number. Digits make up numbers. *e.g. 3, 49 and twelve are all numerals.*
Odd number		A number which cannot be divided equally by 2 e.g. 1,3,5,7 etc
One to one correspondence		When counting, each object must be counted only once and as the number name is identified.
Order of operations		A set order of operations used within calculations involving more than one operation *e.g. + and x.* The use of mnemonics such as BODMAS, BIDMAS and BOMDAS are often used when deciding on the order of operations. BODMAS = Brackets first, orders next (e.g. powers and roots), division and multiplication then addition and

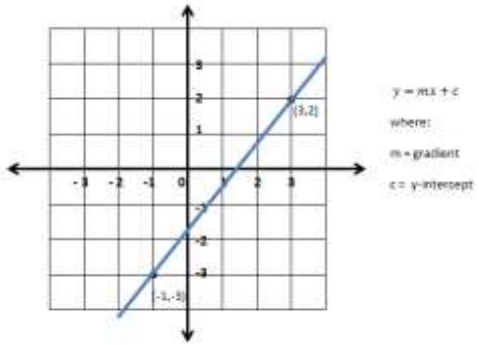
		subtraction. BIDMAS = Brackets first, indices next, division and multiplication then addition and subtraction. BOMDAS = Brackets Of Multiplication Division Addition Subtraction.
Ordinal number		Describes a position within an ordered set *e.g. first, second, third, fourth etc.*
Partitioning		To split a number into component parts. *E.g. 10 can be 6 + 4, 5 + 5 etc. These can also be known as 'number stories' or 'number bonds'.* To split a number into component parts *e.g. at First level; 38 can be partitioned into 30 + 8 or 19 + 19, or at Second level; 17 x 17 can be partitioned in to 17 x 10 and 17 x 7.*
Place Value		Understand zero is equal to no amount How a number is made up and its relationship to other numbers. It is the place of each of the digit or digits which makes a difference to the value of the whole number *e.g. 3**2**4 – the 2 is equal to 20 whereas in **2**34, the 2 is equal to 200*. How a number is made up and its relationship to other numbers. It is the place of each of the digit or digits which makes a difference to the value of the whole number and decimal fractions *e.g. at Second level; 10.05 is smaller than 10.50.*
Product		The results of multiplying 2 or more numbers together (only applies in multiplication) *e.g. 10 is the product of 5 x 2.*

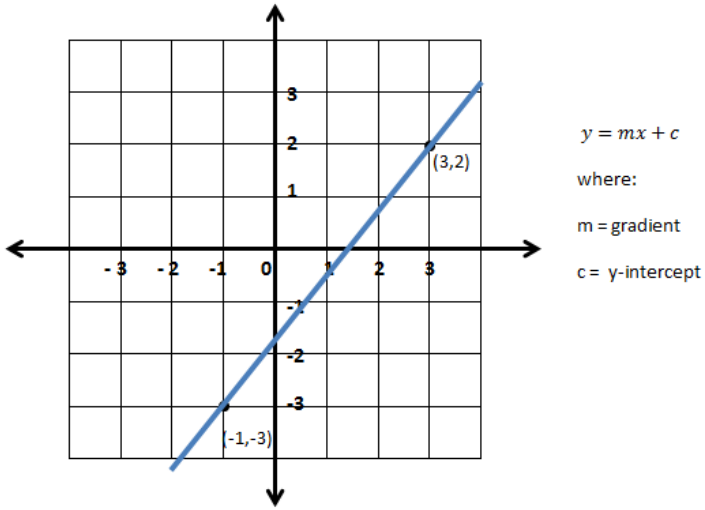
Number and number processes

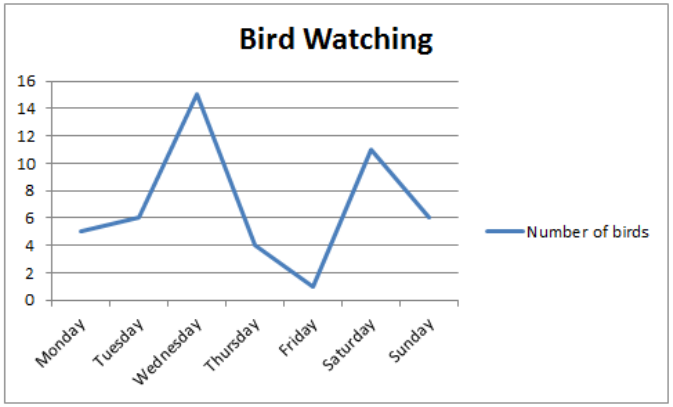
Real numbers		All points on an infinitely long number line*, e.g. fractions, decimal fractions, roots, π etc.*
Remainder		The amount “left over” after completing a calculation. *e.g. 23 divided equally by 5 would be 4 remainder 3.*
Repeated addition		Adding the same number repeatedly in order to find the answer to a multiplication problem. *e.g. 4 x 3 = 4 lots of 3 = 3 + 3 + 3*
Repeated subtraction		Subtracting the same number repeatedly in order to find the answer to a **division** problem. *e.g. 20 ÷ 5 = 5 can be subtracted from 20 four times so the answer is 4.*
Significant figures		With the number 368249, the 3 is the most significant digit, because it tells us that the number is 3 hundred thousand and something. It follows that the 6 is the next most significant, and so on. With the number 0.0000058763, the 5 is the most significant digit, because it tells us that the number is 5 millionths and something. The 8 is the next most significant, and so on.
Subitising		Recognising a quantity without counting, simply by looking. *e.g. seeing 3 dots on a card as 3 or 6 on a dice without counting them individually.*
Subtraction		To find the difference between two amounts, or the remainder*, e.g. The difference between 12 and 7 is 5 as 12 - 7=5.*

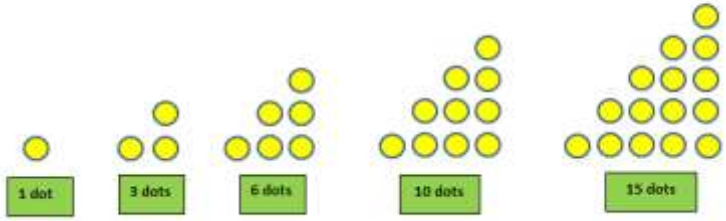
		Subtraction is the inverse of addition, e.g. e.g. 300 - ☐ = 230 could be solved by asking 230 + ☐ = 300
Sum		The result of adding together 2 or more numbers (only applies in addition). E.g. The sum of 5, 4 and 2 = 11.
Whole numbers		Any number from zero *e.g. 0, 1, 2, 3 (no negative numbers of fractions).*

erms	Illustrations	Definitions
Cubed	Cubed  3 cubed or 3^3 = 3 x 3 x 3 = 27	Multiplying a number 3 times e.g. 4 cubed is 4 x 4 x 4 = 64. The cubed sign is ^{3} For example, 5^3 = 5 x 5 x 5 = 125
Cube root	This is the symbol that means "cube root". $\sqrt[3]{27} = 3$	Finding the cube root is the inverse process of cubing a number *e.g. 3 cubed is 3 x 3 x 3 = 27 so the cube root of 27 is 3.*

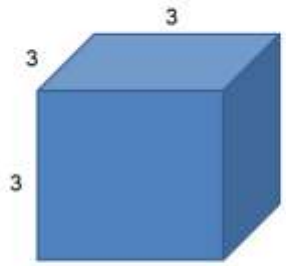
Equations of straight lines		A form of the **equation** of the straight line is y = mx + c. In a graph, 'm' represents the gradient and 'c' represents the point where the line intercepts the y-axis' (y-intercept). Horizontal and vertical lines are special cases of y = mx +c.
Fibonacci Sequence		Found by adding the two numbers before it together. e.g. 0, 1, 1, 2, 3, 5, 8, 13, 21, 34… The 2 is found by adding the two numbers before it (1+1) The 5 is found by adding the two numbers before it (2+3) The 8 is found by adding the two numbers before it ((3+5) The 13 is found by adding the two numbers before it (8+5) The 21 is found by adding the two numbers before it (8+13) The next number in the sequence above would be 55 (21+34)

		There are many areas of nature where the Fibonacci sequence can be found and some of these areas include, flower petals, plants, fruit, the human face, the human hand and animals (i.e. rabbits) Leonardo Bonacci, known as Fibonacci, founded the sequence so it was named after him.
Formula		A mathematical relationship or rule expressed in symbols *e.g. the formula for volume of a box is V = l x b x h*
Gradient	 $y = mx + c$ where: m = gradient c = y-intercept	The rate at which vertical height changes with respect to horizontal distance covered. A straight line that rises from left to right has a positive gradient and a straight line that falls from left to right has a negative gradient. To find the gradient of a straight line: • choose any two points on the line • draw a right-angled triangle with the line as **hypotenuse** • use the scale on each axis to find the triangle's: vertical length horizontal length • work out the vertical length ÷ horizontal length The result is the gradient of the line. Gradients can be recorded numerically as a fraction, decimal fraction or percentage. *E.g. in a distance-speed graph, the gradient represents the speed of an object over a distance.*

Graphical representations		It is the most efficient method of comparing two related variables, in a visual way.
Number pattern		A set of numbers that has a specific rule which makes the pattern predictable; - odds and evens, times tables etc. - **square numbers** and **triangular numbers.** - **Fibonacci sequence**
Pattern		A repetitive sequence of events, shapes or numbers which can be continued.
Sequence		A set of numbers written in order according to a mathematical rule. For example: • 4, 6, 8, 10, 12… (increasing in equal multiples of 2) • 25, 23, 20, 18, 15, 13… (subtracting 2 then subtracting 3…) • 1, 2, 4, 8, 16, 32… (increasing by doubling) • 109, 129, 124, 144, 139, 159… (adding 20, subtracting 5)

Square Root / Square numbers	This is the symbol that means "square root". $\sqrt{64} = 8$	The square root of a number is a value that, when multiplied by itself, gives the number e.g. 4 × 4 = 16, so the square root of 16 is 4. The symbol is √ which always means the positive square root e.g. √36 = 6 (because 6 x 6 = 36)
Triangular numbers		Generated from a pattern of dots which form a triangle. By adding another row of dots and counting all the dots we can find the next number of the sequence.

Powers and roots

Terms	Illustrations	Definitions
Cubed	Cubed  3 cubed or $3^3 = 3 \times 3 \times 3 = 27$	Multiplying a number 3 times e.g. 4 cubed is 4 x 4 x 4 = 64. The cubed sign is ^{3} For example, $5^3 = 5 \times 5 \times 5 = 125$
Cube root	This is the symbol for 'cube root'. $\sqrt[3]{27} = 3$	Finding the cube root is the inverse process of cubing a number *e.g. 3 cubed is 3 x 3 x 3 = 27 so the cube root of 27 is 3.*
Power		The power of a number says how many times to repeat a multiplication. It is written as a small number to the right and above the base number *e.g.* $8^2 = 8 \times 8$ *or* $8^3 = 8 \times 8 \times 8$. ^{2} *= "squared" (to the power of 2)* ^{3} *= "cubed" (to the power of 3)* *All other values known as "to the power of"*

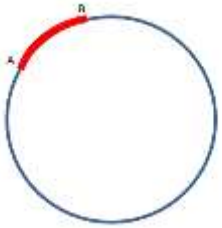
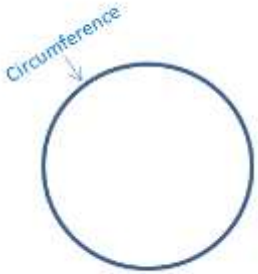
Powers and roots

Roots		Roots are the inverse process of powers. The root sign is √
Scientific Notation		Scientific notation is a standardised method of writing numbers which may to too large or too small to write in full e.g. • 700 000 can be written as 7×10^5 • 8 000 000 can be written as 8×10^6
Square Root / Square numbers	This is the symbol for a 'square root' $\sqrt{9} = 3$	The square root of a number is a value that, when multiplied by itself, gives the number e.g. 4 × 4 = 16, so the square root of 16 is 4. The symbol is √ which always means the positive square root e.g. √36 = 6 (because 6 x 6 = 36)

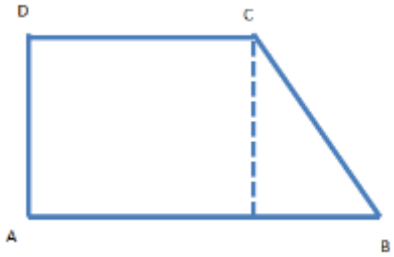
Properties of 2D shapes and 3D objects

Terms	Illustrations	Definitions
2 Dimensional shapes (2D)		2D shapes have only 2 dimensions and are flat e.g. **square, rectangle, triangle, circle, pentagon, hexagon, heptagon, octagon, nonagon, decagon, parallelogram, rhombus, kite, quadrilateral, trapezium.**
3 Dimensional objects (3D)		3D objects have three dimensions. The flat surfaces (faces) of many 3D objects are made up of 2D shapes e.g. **cube, cuboid, sphere, cylinder, prism.** 3D objects can be stacked or rolled and items can be put inside some 3D objects. They can also be combined to make models.

Properties of 2D shapes and 3D objects

Arc		Part of the **circumference** of a circle or part of any curve.
Circle	 	A 2-dimensional round shape with no corners or straight edges. Made by drawing a curve that is always the same distance from a centre. Circle calculations are interrelated. Given any one of **radius, diameter, circumference** or area all the others can be calculated.
Circumference		The distance all the way around a **circle.** Circumference can be measured using the formula; $2 \times \pi \times r \; or \; \pi \times d$

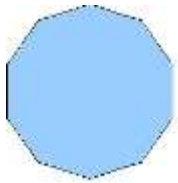
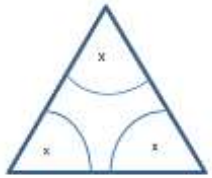
Properties of 2D shapes and 3D objects

Composite shape or composite figure		A figure (or shape) that can be divided into more than one of the basic figures/shapes. For example, figure ABCD is a composite figure as it consists of two basic figures – a **rectangle** and **triangle** as shown here.
Congruent triangles		Pairs or groups of **triangles** are congruent when they have exactly the same three sides and exactly the same three angles. The equal sides and angles may not be in the same position (if there is a turn or a flip).
Cross section of a shape		A cross section is the shape made by cutting straight across an object.
Cube		A 3D object made up of 6 square faces, 8 vertices and 12 edges. All edges and faces are equal. It is also a **prism** because it has the same cross-section along a length. It is a square prism. All angles are 90°.

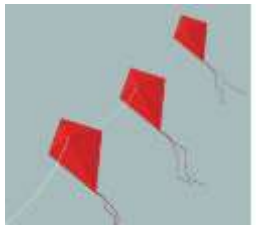
Properties of 2D shapes and 3D objects

Cuboid		A 3D object made up of 6 rectangular faces or a mix of 4 rectangular faces and 2 square faces, 8 vertices and 12 edges. It is also a **prism** because it has the same cross-section along a length. It is a rectangular prism. All angles are 90°.
Cylinder	 	A 3D object with a curved face joined by two circular faces at each end. The curved face is made of a **rectangle.** It is also a **prism** because it has the same cross-section along a length.

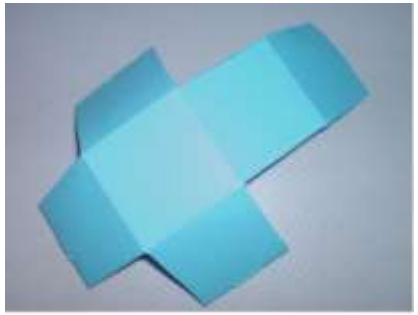
Properties of 2D shapes and 3D objects

Decagon		Any 2D shape with 10 sides.
Diameter		A straight line which passes through the centre of a circle.
Equilateral triangle	  	All sides are equal and all angles are equal. Each angle = 60°

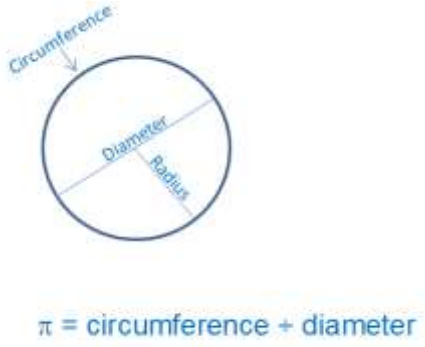
Properties of 2D shapes and 3D objects

Heptagon		Any 2D shape with 7 sides.
Hexagon		Any 2D shape with 6 sides.
Isosceles triangle		Has two equal sides and two opposite equal angles.
Kite	  	Has two pairs of equal sides next to each other. Has no parallel lines. One pair of diagonally opposite angles is equal. Only one diagonal is bisected by the other. The diagonals cross at 90°.

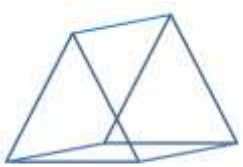
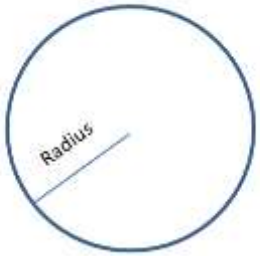
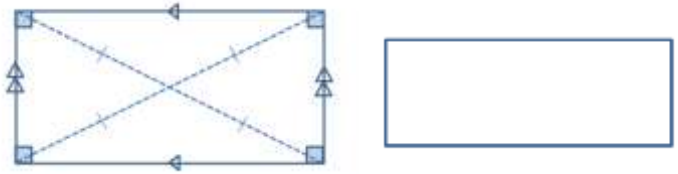
Properties of 2D shapes and 3D objects

Nets		The 2D pattern that creates a 3D object when folded together. This is a net of a cube.
Nonagon		Any 2D shape with 9 sides.
Octagon		Any 2D shape with 8 sides.

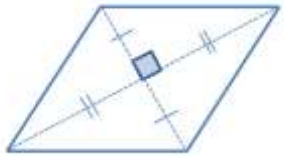
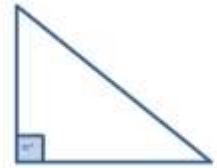
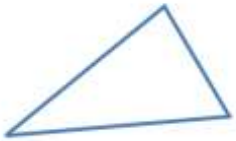
Properties of 2D shapes and 3D objects

Parallelogram		Has two pairs of opposite equal sides. Opposite sides are parallel to each other and opposite angles are equal. The diagonals bisect each other.
Pentagon		Any 2D shape with 5 sides.
Perimeter		The distance all the way around the edge of a 2D shape. To find the perimeter of a shape, add together the lengths of all the sides.
Pi (3.14…)		The **ratio** of a circle's **circumference** to its **diameter.** Equal to 3.14159265358979323846... (the digits go on infinitely without repeating). Pi is often rounded to 2 decimal places to 3.14.

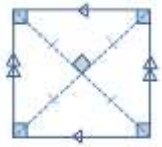
Properties of 2D shapes and 3D objects

Polygons		Shapes with many straight sides. There are regular and irregular polygons. Regular polygons have equal angles and sides of equal length. Irregular polygons have sides of different lengths.
Polyhedron		Any 3D object with flat faces.
Prism		Any 3D object with two identical ends and faces where the cross section is the same all along its length. In a triangular prism, there are two triangular faces and three rectangular faces. The face of any cross section of this shape when cut would always give you a triangle which gives it its name.
Quadrilateral		Any 2D shape with four sides.
Radius		The distance from the centre of a circle to any point on its circumference.
Rectangle		And 2D shape with 4 sides and 4 corners. The opposite sides are of equal length and angles are equal (90°).

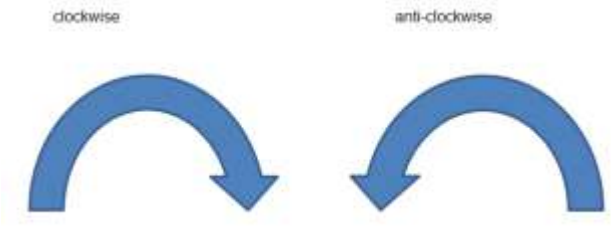
Properties of 2D shapes and 3D objects

Representation of 2D shapes and 3D objects		Using sketches, isometric paper (graph paper) or computer packages to draw 3D objects on a 2D plane.
Rhombus	 	Has four equal sides. Opposite sides are parallel to each other and opposite angles are equal. Diagonally opposite angles are equal. The diagonals bisect each other at 90°. ©BBC Bitesize ©BBC Bitesize
Right angled triangle		One of its angles is a right angle (90°)
Scalene Triangle		A triangle with no two sides equal and no two angles equal.

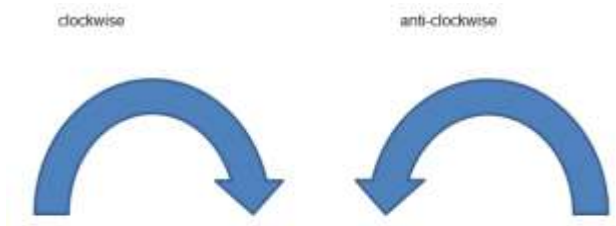
Properties of 2D shapes and 3D objects

Sphere		A 3D object shaped like a ball with no straight edges or vertices. Every point on the surface is the same distance from the centre.
Square	 	A 2D shape with 4 equal sides and 4 corners. All sides are of equal length. All angles are equal (90°). Opposite sides are parallel. The diagonals of a square of bisect each other at 90°. The diagonals are equal in length.
Trapezium	  	A 2D shape which has one pair of parallel sides of different lengths and a pair of opposite sides of equal length.
Triangle		A 2D shape with 3 sides and 3 corners. There are different types of triangles *e.g. equilateral, isosceles, scalene, right angled.*
Vertex or vertices (plural)		A ‘corner’ or corners on a 3D object. A point(s) where two or more straight lines meet.

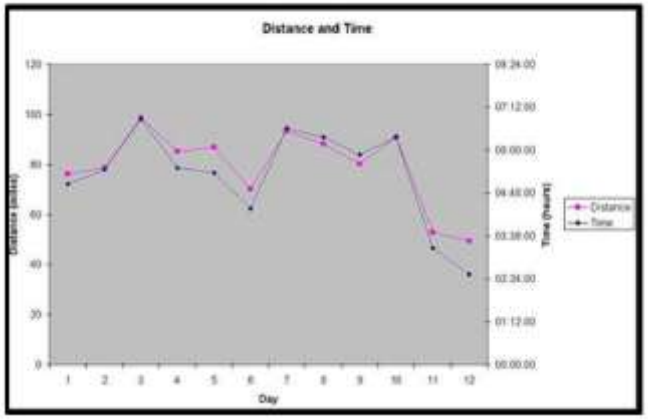
Time

Terms	Illustrations	Definitions
a.m.		Before noon. Latin for Ante Meridiem – before noon
Analogue clock	 	Uses the position of clock hands and numbers to display the time.
Annual		Occurs once every year.
Anti-clockwise		Moving in the opposite direction to the hands on a clock.

Time

Calendar	 	A visual display showing months, weeks and days. A calendar can be used to support time management.
Century		A period of 100 years.
Chronological		Events ordered in order of when they happened *e.g. by year*
Clockwise		Moving in the direction of the hands on a clock.
Daylight savings time (DST)		The process of moving the clocks forward each Spring and back again in Autumn to gain an extra hour of daylight in the evening in the Spring/Summer
Decade		A period of 10 years.

Time

Digital clock	 	Uses numbers and symbols to display the time *e.g.03:30, 17:45*
Distance		The length of space between two points. Distance if often referred to in terms of the length travelled in a journey e.g. m, km, miles. Can be found by using a formula - multiplying speed travelled and time taken; D = S x T D = distance S = **speed** T = **time**
Distance time graph	Distance time graph 	Describes an object's motion when it's accelerating (getting faster) or decelerating (getting slower). The steeper the gradient the faster the speed.

Time

Duration		A length of time.
Fortnight		A period of 2 weeks.
Leap year		Occurs every four years and has 366 days, including 29 February. A year is defined as the time it takes for the Earth to orbit around the sun once. It takes the Earth about 365.25 days to make one entire orbit around the sun. By adding one extra day every four years, the Earth is in the same point of its orbit at the same time of the calendar year each year.
Millennium		A period of 1000 years.
p.m.		After noon. Latin for Post Meridiem – after noon.
Schedule	 	A plan for carrying out something specific with lists of intended events, times and durations.

Time

Seasons		4 in a year; Winter, Spring, Summer and Autumn. • Winter is December, January, February • Spring is March, April, May • Summer is June, July, August • Autumn is September, October, November.
Speed		The rate of how fast or slow something or someone moves. Can be found using a formula by calculating distance divided by time; S = D ÷ T D = **distance** S = speed T = **time**
Stopwatch		A watch that can be started and stopped in order to measure the exact time of an event, often used in sports events.
Time		Measured in seconds, minutes, hours etc to help measure durations, passing of time and order events. Can be found using a formula by calculating distance divided by speed; T = D ÷ S D = **distance** S = **speed** T = time

Time conversions		• 7 days in a week, 12 months in a year, 4 seasons in a year • 60 seconds in a minute, 60 minutes in an hour, 24 hours in a day, days in each month, 52 weeks in a year • 10 years in a decade, 100 years in a century, 1000 years in a millennium • Millisecond is one thousandth of a second. e.g. there are 1000 milliseconds in a second.
Timer		Can be analogue or digital *e.g. 03:00 countdown timer would end when it reaches 00:00*
Timetable		A chart which can show; • the order of events • start and finish times of events • arrival and departure times of transport or events For example, a class timetable shows different classes/subjects for each day or train/bus/boat timetable shows departures and arrival times and can be used to calculate durations.

	  Timetable change from January 2016 until further notice GOUROCK - DUNOON Monday - Saturday Rail Ferry Rail	