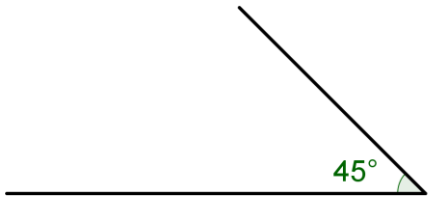
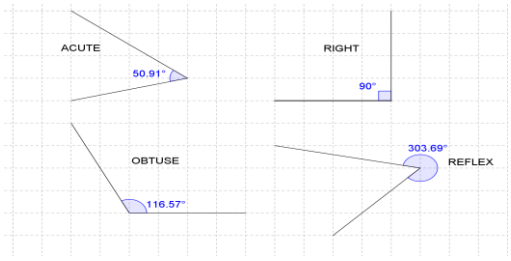
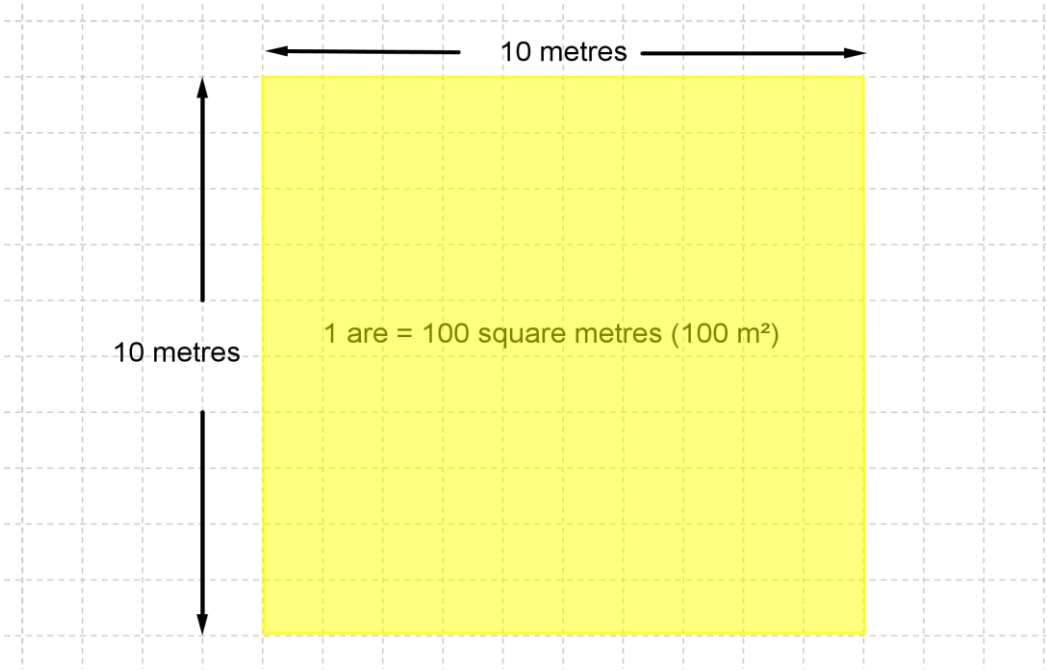
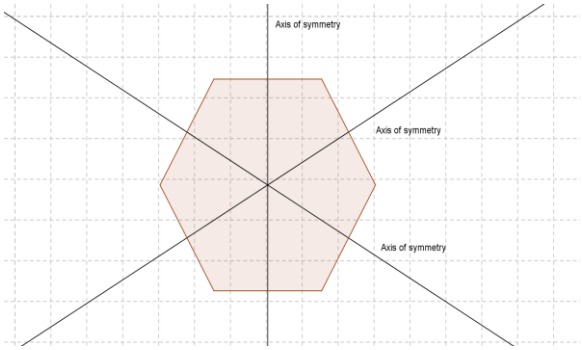
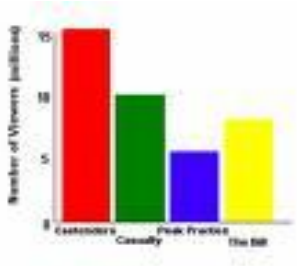
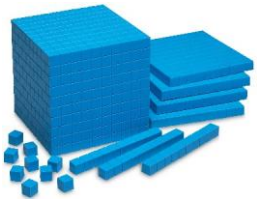
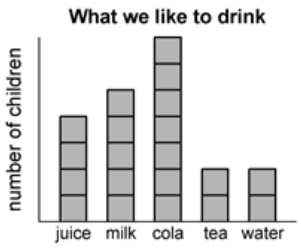
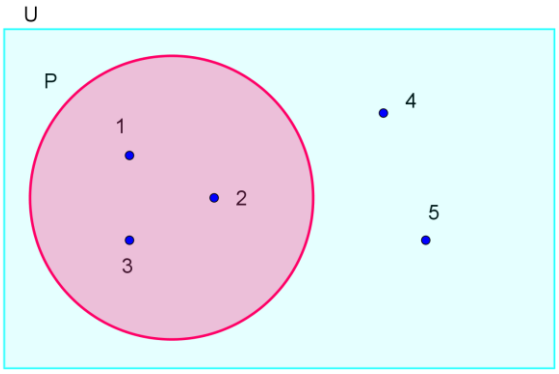
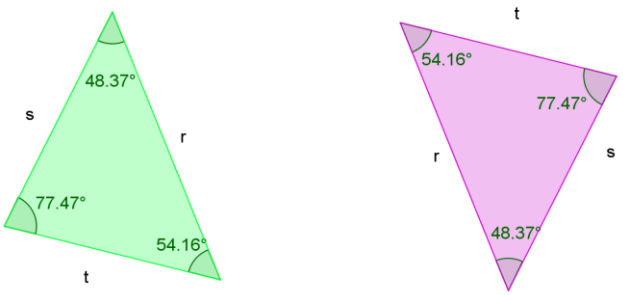
Glossary of mathematical terms to support the *Mathematics Primary School Curriculum*

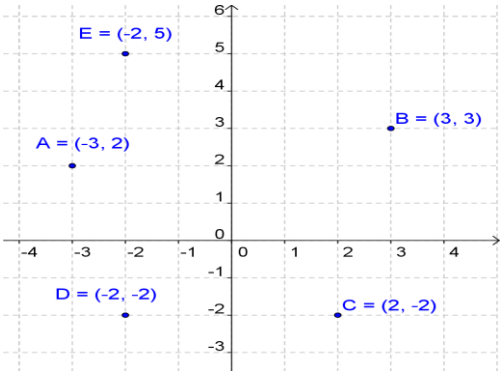
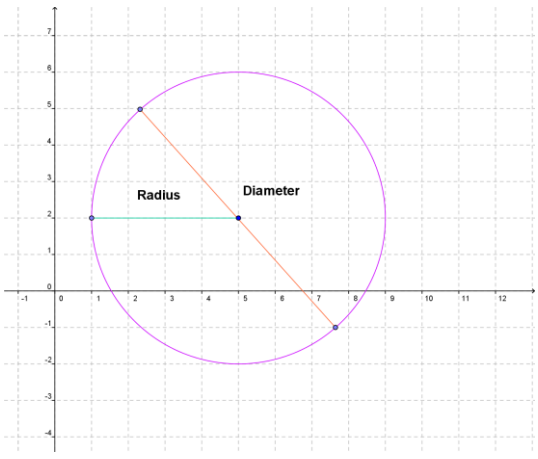
	Term	Diagram, definition, explanation, example
A	abacus	This helps to perform calculations by sliding beads along rods.
A	acute	This is an angle that is greater than 0° but less than 90°. 
A	algorithm	This is a step by step procedure that gives the solution of a particular problem. Multiplication and division in numbers are examples of how we use algorithms to find answers in an efficient way.
A	analogue clock	This is a clock on which hours, minutes and sometimes seconds are indicated by hands on a dial.
A	angle	This is made when two line segments meet at a point (vertex), or when two lines intersect. It is be measured in degrees and can be acute, right, obtuse or reflex. 

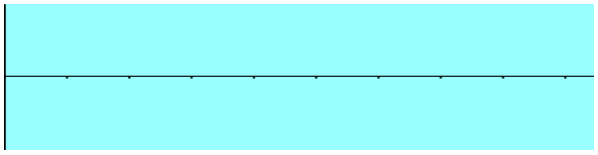
A	are	This is a unit of area equal to 100 square metres. 
A	area	This is the amount of a plane enclosed by a 2D shape measured in square units.
A	array	This is an arrangement of objects (usually numbers) in rows and columns. 1 2 3 4 5 2 4 6 8 10 3 6 9 12 15
A	associativity	This is a property of number operations. The order in which we do operations is important. Multiplication is associative: (12 x 3) x 6 = 12 x (3 x 6) Division is <u>not</u> associative (12 ÷ 3) ÷ 6 ≠ 12 ÷ (3 ÷ 6).
A	axis of symmetry	This is a line drawn through a plane figure, so that one half of the shape can be folded over along the line to fit exactly onto the other. A shape can have more than one axis of symmetry. 

B	bar chart	This is a diagram used to display data in rectangular bars. It is used to summarise and display information in a diagram. In general there should be spaces between the columns. 
B	bar-line graph	This is a way to show and compare data by using horizontal or vertical lines. The bars in a bar chart are simply replaced by straight lines.
B	base ten materials	This is used for teaching place value and volume. There are ten small cubes in one long, ten longs in one flat, and ten flats in one block. 
B	block graph	This is an introductory way of representing discrete (separate) data, in which each member of the population is represented by an individual square. In general there should be spaces between the columns. 

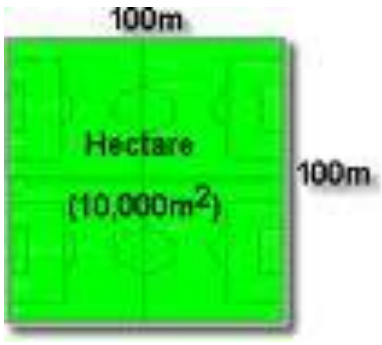
<table>
<tr><td>C</td><td>cardinal number</td><td>This is the number of elements in a set. The symbol for it is #.
Example: W = { 3, 45, 17, bear, z} # W= 5</td></tr>
<tr><td>C</td><td>capacity</td><td>This is the internal volume of a container or simply the amount that a container can hold.
Example: The capacity of the bucket is twenty litres so it takes a volume of twenty litres of water to fill it.
 </td></tr>
<tr><td>C</td><td>chance</td><td>This is measurement that applies to events. Chance does not tell you what will happen next but predicts what will happen in the long run.
Example: Tossing a coin
How many heads/tails might turn up in 10, 20, 30 times?
Would the results be the same if the experiment was repeated?
 </td></tr>
<tr><td>C</td><td>circumference</td><td>This is the length of the perimeter of a circle.
 </td></tr>
<tr><td>C</td><td>clustering strategy</td><td>This is a form of estimation that is best suited to groups of numbers that ‘cluster’ around a common value.
Example: Numbers of people who came to our concert
<table>
<tr><td>Monday</td><td>Tuesday</td><td>Wednesday</td><td>Thursday</td><td>Friday</td></tr>
<tr><td>425</td><td>506</td><td>498</td><td>468</td><td>600</td></tr>
</table>
The average attendance was about 500 per night.
500 x 5 nights = 2,500</td></tr>
<tr><td>C</td><td>commutative</td><td>This is a property of the number operations addition and multiplication.
In addition 1 + 2 = 2 + 1, i.e. it works both ways, it is commutative.
In subtraction or division it does not work both ways, e.g. 6–7 ≠ 7–6.</td></tr>
</table>

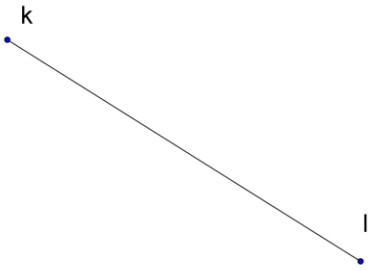
C	common factor	This is a number that divides evenly into more than one other number. (See factor) Examples: 16 has factors **1,2,4**,8,16 20 has factors **1,2,4**,5,10,20, 36 has factors **1,2,**3,**4**,6,9,12, 18,36 1, 2 and 4 are the common factors and 4 is the highest common factor.
C	complementing	This is a form of subtraction. Example: There are 10 stickers in a set. I have 4. How many more do I need to make a full set?
C	complement of a set	These are the elements not in a set. Example: The set P =[1,2,3] the complement P' = [4,5] 
C	components of number	This is the combination of ways in which a number can be made. Example: The number 4 can be made up of 1 + 1 + 1 + 1, 2 + 2, 3 + 1, 1 + 3 etc.
C	composite number	This is a number with more than two factors. Example: 6,12, 51, 65
C	congruent	These are 2D shapes that have identical properties and are exactly the same size, shape and measure of angle. 
C	conjecture	This is an unproven statement which appears correct and has not been proven to be true or false. Example: There is no biggest prime number.
C	conservation of number	This means that numbers can be counted in any order. The set does not need to exhibit uniformity.

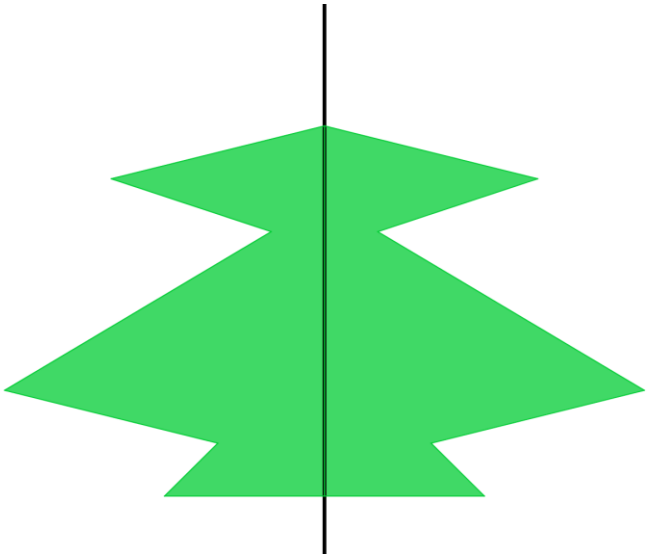
C	co-ordinates	These are the numbered pairs used to locate points on the plane. The plane is a flat surface, often referred to as the Cartesian plane. There are some points shown in the four quadrants of the Cartesian plane. 
C	cylinder	This is a three-dimensional shape consisting of two identical circular ends joined by one continuous curved surface.
D	data	This is information. Data handling involves practice in questioning, collecting information, analysing and recording or representing data visually using some form of a graph or table. Example: See block graphs, bar charts, bar-line graphs, pictograms.
D	deducting	This is a form of subtraction. Example: I had 10 sweets, I ate 3. How many have I left?
D	denominator	This is the number below the line in a fraction.
D	diameter	This is a chord through the centre of a circle. It is twice the radius in length. 

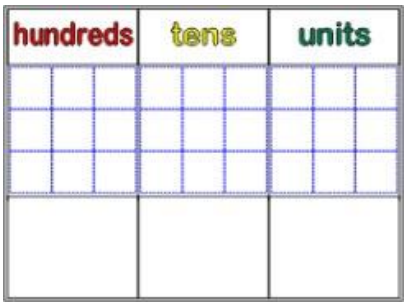
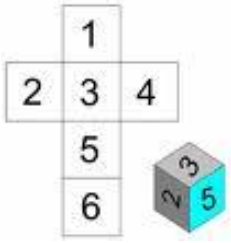
D	difference	This means subtraction. Example: The difference between two numbers such as 22 and 17 is 22–17 = 5. 5 is the difference.
D	digit	These are the individual symbols used to build up numerals in a numeration system. 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9.
D	direct proportion	These are when two sets are connected by a constant multiplier. A= {12, 24, 36} B= {3, 6, 9). Set A is in direct proportion to set B and the constant multiplier is 4.
D	discount	This is a reduction (usually a percentage). This is associated with money.
D	distributive	This is a property of number operations. It describes how two operators can be used together when linked in a certain way. It does not always work. 5(4+3) = 5(7) = 35 and this equals 5(4) + 5(3) = 20+15 = 35, i.e. multiplication is distributive over addition. 5(20 ÷ 5) = 5(4) = 20 ≠ 5(20) ÷ 5(5) = 100÷25 = 4, so multiplication is not distributive over division.
D	dividend	This is a number or quantity to be divided *by* another number or quantity. Example: 24 ÷ 6 = 4, 24 is the dividend.
D	divisor	This is the number that does the dividing. 36 ÷ 9 = 4, the number 9 is the divisor.
E	edge	This is the intersection of two surfaces; in particular, the straight line where two faces of a polyhedron meet.
E	element	This is a member of a set. Example: A = {dog, fridge, 17, Liverpool}. There are four elements in the set A; dog is one of the elements.
E	empty number line	This is a number line without a scale, used to support mental and informal additions and subtraction. 

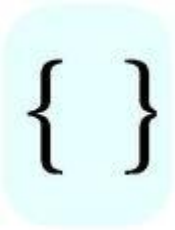
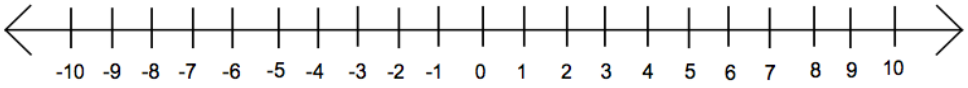
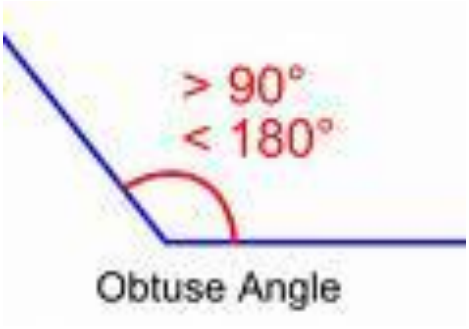
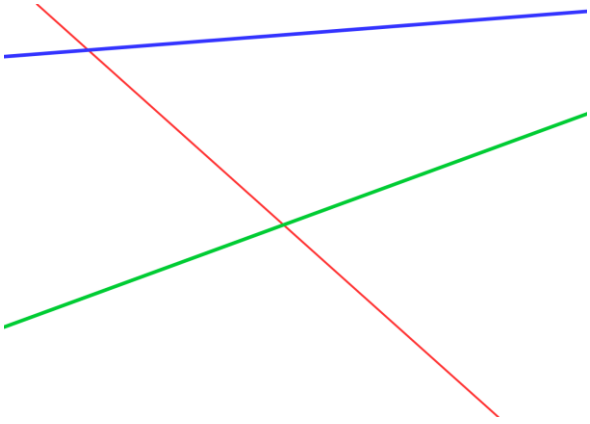
E	equation	This is a maths statement in symbols that includes an equals sign (equality). Example: 2b + 4c = 34
E	equivalent	This means 'has the same value as'. Example: ½, 0.5, and 50% are equivalent.
E	estimate	This is an approximation to an answer.
E	expanded form	This is when the value of each digit in a numeral is written in its entirety. Example: 246 = 2 hundreds + 4 tens + 6 units or 200 + 40 + 6
E	experiment	This is an activity which allows information/data to be collected and recorded (often called the results of the experiment). Example: rolling a pair of dice and recording the total.
E	exponential	This is an expression in which a number is raised to some power. The power is the exponent. (see power) 6^2, 8^3, 12^9
F	face	One of the plane surfaces of a polyhedron. A cube has six faces.
F	factor	This is a whole number or expression that divides evenly into another number. Example: 24 has eight factors including itself and one;1,2,3,4,6,8,12,24 Prime numbers such as 7, 11, and 23 have exactly two factors.
F	foreign exchange rate	This is the value one currency has in relation to another. Example: Foreign exchange rate. €1.00 = $ 1.39 thus €100 = $ 139. $ 2085 = 2085 ÷ 1.39 = € 1500
F	formula	This is an easy way of expressing information using symbols. Example: Area of a triangle (½ x base x height) = ½bh

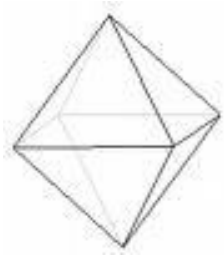
<table>
<tr><td>F</td><td>frequency</td><td>This is the number of times an event occurs in an experiment. Frequencies are often summarised in a table or a histogram.
Example: in nine soccer matches played on a school pitch during a tournament the number of goals scored was recorded as 0, 1, 1, 0, 2, 2, 0, 2, 0. This information could be summarised in a frequency table:
<table><tr><td>Number of goals</td><td>0</td><td>1</td><td>2</td></tr><tr><td>Frequency</td><td>4</td><td>2</td><td>3</td></tr></table></td></tr>
<tr><td>F</td><td>friendly numbers</td><td>There are two numbers that are related to each other in a way that makes a calculation particularly easy.
Example:457 - 257</td></tr>
<tr><td>F</td><td>front-end strategy</td><td>This is a form of estimation that has its strongest application in addition. The left-most digits (front-end) are the most significant in forming an initial estimate and can be used on their own in the earlier stages to establish a rough estimate.
Example :€1.54 + €6.35 + €0.99 + €2.51 =
€1 + €6 + €2 = €9
54c + 35c makes €1 approx, 99c is nearly €1 and 51c is nearly 50c
Overall estimate is €11.50 (€9 + cent estimate of €2.50)</td></tr>
<tr><td>G</td><td>geoboard</td><td>This is used for learning about co-ordinates as well as making 2D shapes using elastic bands.
 </td></tr>
<tr><td>G</td><td>Geostrips</td><td>These are used to construct 2D shapes.
 </td></tr>
<tr><td>H</td><td>highest common factor (hcf)</td><td>This is the largest whole number than divides into two or more whole numbers (see common factor).
Example: hcf of 16, 28 and 36 = 4</td></tr>
<tr><td>H</td><td>hectare</td><td>This is a unit of area equal to 100 ares.
 
</td></tr>
</table>

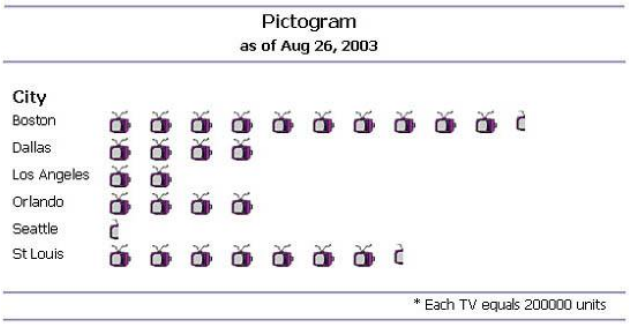
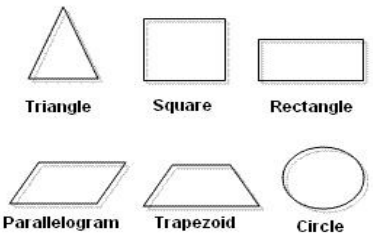
H	hexagon	This is a six-sided polygon.
I	improper fraction	This is a fraction in which the number above the line (numerator) is larger than the number below (denominator). Example: $\frac{5}{3}$
I	integers	These are whole numbers, plus and minus, including zero. The set of integers is represented by the letter Z. Examples: -12, -6, 8, 0, 257, - 4398 are integers.
I	interest rate	This is the percentage of total earned on an investment or paid on a loan. Example: €100 invested in a bank for 1 year at an interest rate of 10% will accumulate to €110.
I	inverse	This means 'the opposite' in many cases. The inverse of addition is subtraction. The additive inverse of a number is the number you add to it to give zero. The additive inverse of -8 is 8. The multiplicative inverse is the number you multiply by to give 1. The multiplicative inverse of 7 is $\frac{1}{7}$.
K	kilogram	This is the unit of mass (1000 grams) 1 kg = 1000 g
L	line segment	This is a part of a line. It has endpoints, by which it is identified or named. The line segment [AB] is illustrated. 

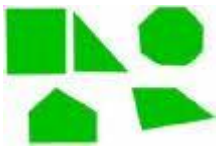
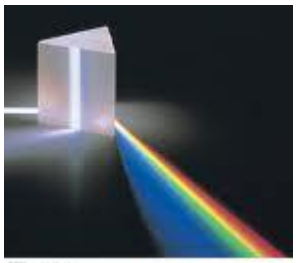
L	line symmetry	This is when one half of the shape can be folded exactly onto the other half. 
L	litre	This is the unit of capacity for measuring liquids. 1 litre =1000ml
L	lowest common multiple (lcm)	This is the smallest number that given denominators will divide into evenly. It can be found by listing the multiples of these denominators in increasing order, until a common number is reached. Example :To find what the lcm of 8, 9, and 12 is we could list their multiples**:** 8,16, 24, 32, 40, 48, 56, 64, **72**, 80, 88, … 12, 24, 36, 48, 60, **72**, 84, 96, … 9,18, 24, 36, 45, 54, 63, **72**, 81, 90, …
M	mean	This is the simple average of a given set of data. The mean of 8,7,12,0, 3 = 8 +7 +12 +0 +3 = 30 ÷5 = 6
M	median	This is the middle value (or two values) of a set of data arranged in order. Example: 18, 3, 7, 8, 16, 2, 3 becomes 2, 3, 3, 7, 8, 16, 18 and 7 is the median. -16, 2, -7, 2, 23, -9, 100, 0 becomes -16, -9, -7, 0, 2, 2, 23, 100. (0+2) ÷2= 1
M	millilitre	This is one thousandth of a litre, written as 1 ml.

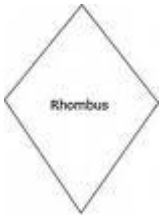
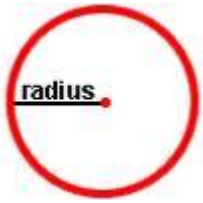
M	millimetre	This is one thousandth of a metre, written 1 mm.
M	minus	This can be an operation or a property. Example: 12- 8 = 4 is the operation of minus. -39 is described as negative thirty nine or minus thirty nine and this is a property.
M	mixed numbers	This is when a number is written with a whole number part and a fraction part. Example: $7+\frac{3}{8}=7\frac{3}{8}$
M	mode	This is the most commonly occurring value in a set of data. Example:12, 34 , 25,17, 34, 56,12, 67, 43, 68, 93, 34, 33, 21, 25 the mode is 34
M	multiple	This is when a number is made by multiplying it by another number. Example: The multiples of 7 are 7, 14, 21, 28, 35, 42…….
N	natural numbers	The set of counting numbers starting at 1. They are represented by the letter N. Example: N= {1, 2, 3, 4, 5, 6, 7, 8, 9, 10……}
N	notation board	This is used for learning about place value. 
N	negative	This is a property of a number often referred to as the sign of it. A negative number is less than zero (see minus). Example: - 20
N	net	This is the plan of a 3D object. Example: A cube with the net beside it. 

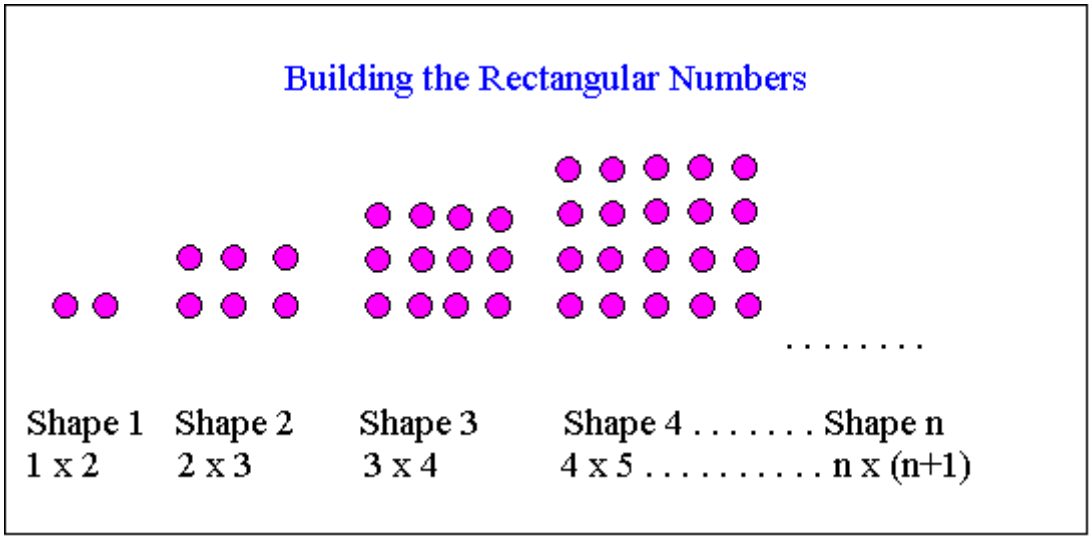
N	null set	This is a set that contains no elements. Example: T = {The number of Irish people 5 m tall}. T = { } The symbols used to show the null set are shown below. 
N	number line	This is a straight line, on which points are used to represent numbers, emphasising particularly the order of numbers and their position in relation to each other. 
N	number sentence	This is an equation or statement of inequality. Examples: $4 - x = 11$, $4x^2 < 12$ or $2 + 5 = 7$
N	numerator	This is the number above the line in a fraction.
O	obtuse	This is an angle that is greater than 90° but less than 180°. 
O	oblique lines	These are lines that are neither parallel nor perpendicular. They would form either an acute or obtuse angle if they intersected. 

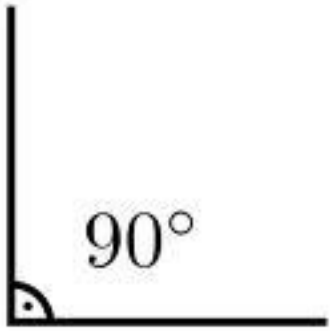
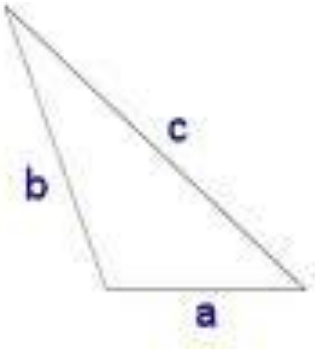
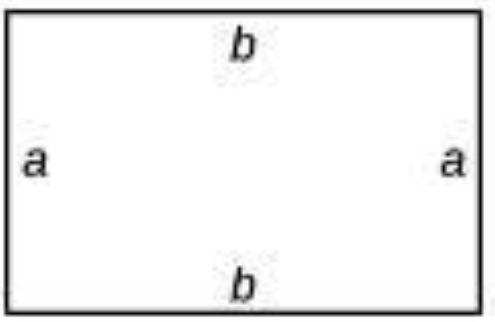
O	octahedron	This is a 3D shape with eight faces. 
O	ordinal number	This is a number denoting relative position in a sequence. Example: first, second, third……..
O	outcome	This is the result of an experiment. Example: Roll a die as an experiment and the outcome is a number between 1 and 6.
P	parallel	This is when a line runs at an equal distance apart from another line and they never meet.
P	perimeter	This is the sum of the length of the sides of a figure or shape.
P	perpendicular	This is when two lines meet at right angles (90°).

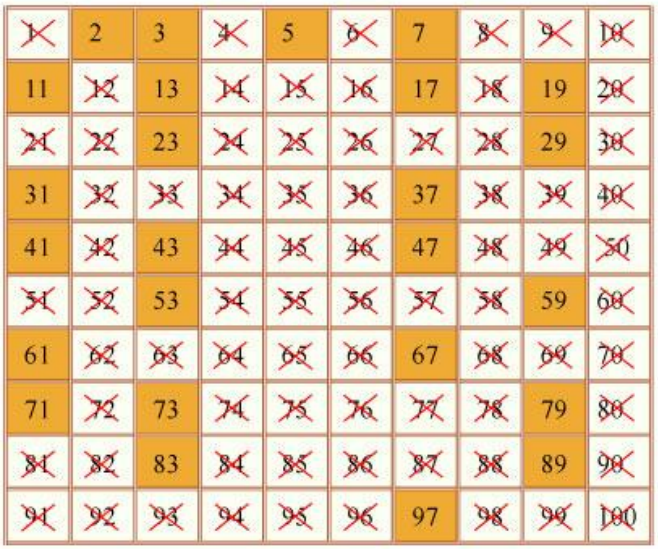
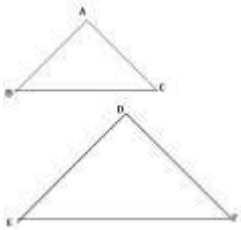
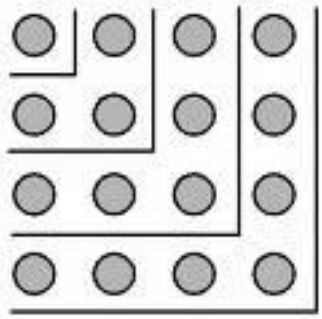
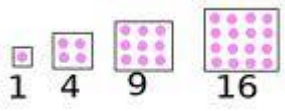
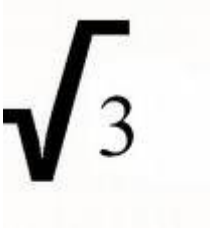
P	pictogram	This is a way of representing discrete (separate) data, in which each member of the population is represented by an individual picture or icon arranged in rows or columns. 
P	pie chart	This is a diagram in the shape of a circle or disc that is used to represent data. The 360° of the disc is divided in ratio into pieces of the pie.
P	place holder	This is the role of zero in the place-value system of numeration. Example: In the numeral 507 the 0 holds the tens place to indicate that there are no tens here.
P	place value	This is when the position of a digit in a numeral determines its value. For example, '6' can represent six, sixty, six hundred, six tenths, and so on, depending on where it is written in the numeral. 6 60 600 0.6
P	plane figure	This is a 2D shape. Examples: 
P	plus	This is the operation of addition or a property of a number. Examples: Addition 4 + 15 = 19 or the number plus six +6, which can be written as 6

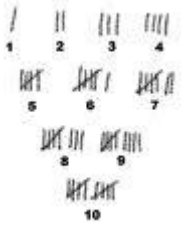
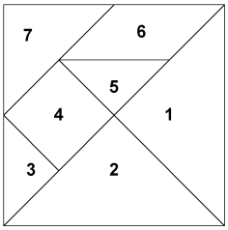
P	polygon	This is a two-dimensional (2D) closed shape made up entirely of straight edges. It does not have to be regular. Examples: 
P	polyhedron	This is a three-dimensional (3D) shape made up entirely of flat surfaces. It does not have to be regular Examples:
P	prime number	This is a number with exactly two factors, itself and 1. Examples: 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, ……
P	prism	This is a shape made up of two identical polygons at opposite ends, joined up by parallel lines. 
P	probability	This is the study of chance; its value varies between 0 and 1. Example: The probability of a fair coin landing on heads = 0.5
P	product	This is the result when you multiply two numbers. Example: 21 x 8 = 168
P	profit	This is the measure of gain in a financial transaction.

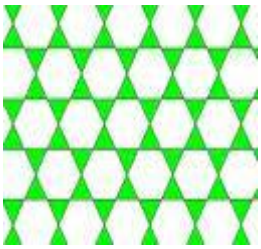
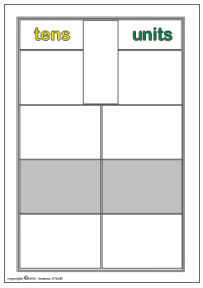
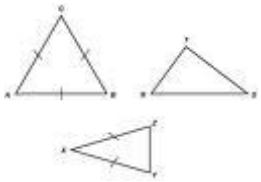
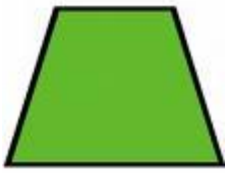
P	protractor	This is a geometric instrument for measuring angles.
P	positive	This is a number which is greater than zero. Example: $\sqrt{2}$, 5½, 7.09, 16
P	power	This is how often a number is multiplied by itself. It is also known as the index. Example: 3^4 = 3 x 3 x 3 x 3 = 81
Q	quadrilateral	This is a shape with four sides. Example: A rhombus is a four-sided shape with all of its sides equal in length. 
Q	quotient	This is the result of a division. Example: $\frac{24}{8}$ = 3
R	radius	This is a line joining the centre of a circle to the edge of the circle. It is half the diameter in length. 
R	range	This is the difference between the smallest and the largest piece of data in a set. Example: The range of four people with heights of 160 cm, 155 cm, 180 cm, 178 cm is 180 -155 = 25 cm
R	ratio	This is a comparison of two or more quantities. Example: When making concrete you mix 9 parts of gravel with 2 parts cement. The ratio of gravel to cement is 9:2

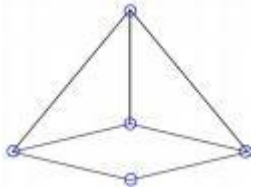
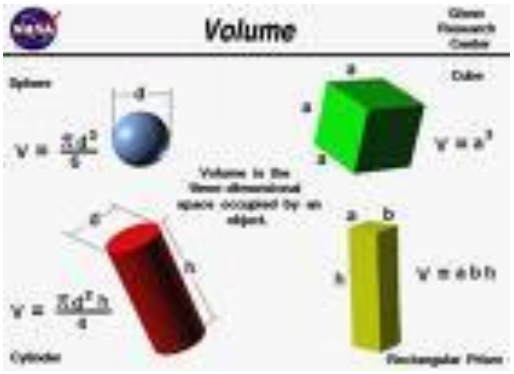
R	rational numbers	This is a set of numbers which includes whole numbers, minus numbers, zero, fractions and decimals. They are represented by the letter Q. Examples: -97, 128, 0, $\frac{3}{7}$, $-\frac{12}{19}$, 0.529, -17.64
R	rectangular number	There can be found by using the unit dots to make triangles or the product of consecutive natural numbers. 
R	reflex angle	This is an angle that is greater than 180° but less than 360° (see angle)
R	regrouping/ renaming	This is when a numeral is reconfigured into its equivalent but different form. Example: 372 can be regrouped/renamed as 36 tens and 12 units. 1 m 11 cm = 1 $^{11}/_{100}$ m = 1.11 m Note: We use addition with regrouping/renaming when the sum of the numbers along the same column is greater than 9. Regrouping/renaming takes place in subtraction if any of the digits in the larger number is smaller than any of the digits involved in the smaller number.
R	relative frequency	This is the number of times an event happens divided by the total number of experiments. How often the number 5 occurs when rolling a biased die twenty times.

R	right angle	This is an angle of 90°. 
R	rounding	This is the process of approximating an answer to an appropriate degree of accuracy; this can be done by rounding up or rounding down. Example: €25.37 rounded up to the nearest ten cent is €25.40 €24.14 rounded down to the nearest ten cent is €24.10;
S	scalene triangle	This is a triangle with three sides of different length and, therefore, three different-sized angles. 
S	sequence	This is a set of numbers written in order according to a rule. Examples: 1, 2, 4, 8, 16, 32, 62…….. 1, 2, 3, 5, 8, 13, 21……...
S	set	This is a well defined collection of objects. Example: S = { dog, cat, elephant, giraffe}
S	set diagram	This is the simplest picture of a population sorted into subsets; each subset is represented by an enclosed region (such as a circle) with the names of the items of individuals rather than just one.
S	side	These are the straight edges of a closed two-dimensional shape. 

S	Sieve of Eratosthenes	This is a way to identify and record prime numbers. Using a 100 square, Eratosthenes's sieve drains out composite numbers and leaves prime numbers behind. 
S	similar	These are 2D shapes that are identical in every way except for size. Example: similar triangles 
S	square number	This is when a number is multiplied by itself.   1 4 9 16
S	square root	This is when a number, when multiplied by itself will give the first number.  $\sqrt{16}$ = 4, 4x4 = 16; 11 = $\sqrt{11}$ x $\sqrt{11}$

S	subitise	This is to tell at a glance, without counting, the number of items in a set.
S	subset	This is a set which contains some or all elements of another set. The null set is a subset of every set. Example: Set A= {Kerry, Tyrone, Dublin, Galway}, K is a subset of A and could be K= {Kerry, Tyrone, Galway}.
S	subtraction	This is an operation in Mathematics when the difference of two numbers is found (see difference). Example: 21 – 13 = 8; -12 - 4 = -16; 63 – (-12) = 63 + 12 = 75.
S	subtrahend	This is the number to be subtracted from another number. Example: 10 – 4 (4 is a subtrahend)
S	survey	This is a method of collecting data often by asking questions of a population or a sample of a population.
T	tally	This is made by recording a series of single strokes. Usually every fifth stroke is a bar to the other four for easy counting. 
T	tangram	This is a Chinese puzzle made up of seven simple geometric shapes, 2 large triangles, 1 medium triangle, 2 small triangles, 1 square and 1 parallelogram which are capable of being recombined in many different figures. 

T	tessellation	These are shapes that fit together exactly, form a repeating pattern, and make an angle of 360 at the points of contact. Examples: 
T	transition board	This is a simple device to aid children's conceptual understanding of addition and subtraction. 
T	triangle	This is a three-sided shape. Example: An equilateral triangle had 3 sides of equal length, an isosceles triangle has 2 equal sides and a scalene triangle has no sides of equal length. 
T	trapezium	This is a four-sided figure with one set of parallel sides. 
T	trundle wheel	This is an instrument for measuring distance by counting the number of clicks as the wheel revolves. The circumference of the wheel is one metre.

V	variable	This is a symbol that represents a value in an algebraic expression. Example: y + 7 = 12. Y = 5
V	vertex	This is a point or corner on a 3D shape or where two shapes meet. 
V	volume	This is the amount of space taken up by a 3D object. 
W	weight	This is the gravitational pull exerted on an object.
W	whole numbers	These can sometimes mean the Natural numbers (N) but are better described as the integers (Z). -5, -3, 0, 17, 213, 488