Qualifications and Curriculum Authority

Mathematics glossary for teachers in key stages 1 to 4

November 2003

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

The glossary was first developed in response to requests from teachers and others during the national curriculum consultation in 1999. The explanations of mathematical terms refer to the terms as they are used in the programmes of study. Other terms that are explained are taken from supporting publications, including:

1 National Numeracy Strategy
Framework for teaching mathematics from Reception to Year 6
DfEE, 1999

2 National Numeracy Strategy,
Mathematical vocabulary
BEAM for DfEE, 1999

3 Qualifications and Curriculum Authority / National Numeracy Strategy,
Standards in mathematics: exemplification of key learning objectives from reception to year 6
QCA 1999

4 Qualifications and Curriculum Authority / National Numeracy Strategy,
Teaching mental calculation strategies: guidance for teachers at key stages 1 and 2
QCA 1999

5 Qualifications and Curriculum Authority / National Numeracy Strategy,
Teaching written calculations: guidance for teachers at key stages 1 and 2
QCA 1999

6 Key Stage 3 National Strategy
Framework for teaching mathematics: Years 7, 8 and 9
DfEE, 2001

As well as in this printed document, the glossary is currently located on the QCA website, www.qca.organisation.uk and can be accessed by choosing Subjects, M for mathematics, Mathematics: Ages 5 – 14 and Mathematics glossary.

The glossary is a work in progress. Readers are invited to suggest refinements to explanations or to offer alternative explanations. Readers may also suggest further terms that should be explained or deletions where it is felt the explanations are unnecessary. Please e-mail Pamela Wyllie, wylliep@qca.organisation.uk with your suggestions.

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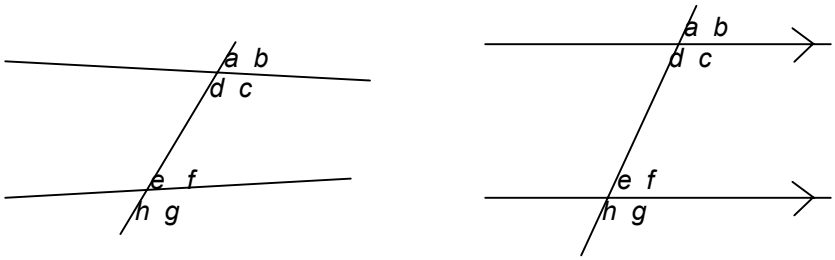
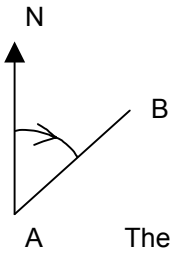
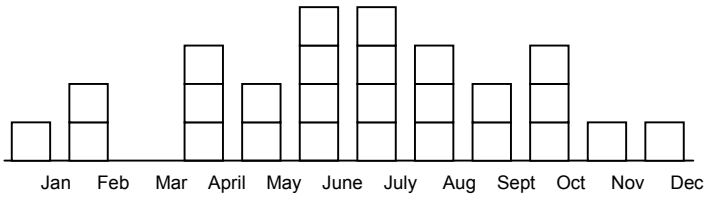
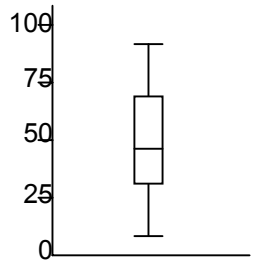
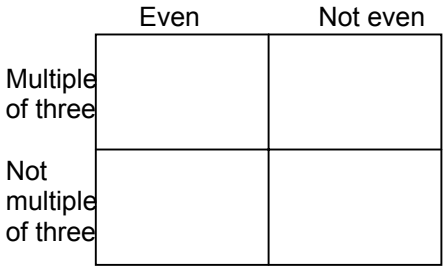
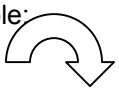
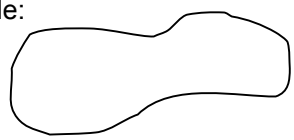
acute angle	An angle between 0^o and 90^o.
addition	The operation to combine two numbers or quantities to form a further number or quantity, the sum or total. Addition is the inverse operation to subtraction.
algebra	The part of mathematics that deals with generalised arithmetic. Letters are used to denote variables and unknown numbers and to state general properties. Example: a(x + y) = ax + ay exemplifies a relationship that is true for any numbers a, x and y. Adjective: algebraic. See also equation, formula, identity and expression.
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. 
analogue clock	A clock usually with 12 equal divisions labelled 1 to 12 to represent hours. Each twelfth is subdivided into five equal parts providing sixty minor divisions to represent minutes. The clock has two hands that rotate about the centre. The minute hand completes one revolution in one hour whilst the hour hand completes one revolution in 12 hours.
angle	Where two line segments meet at a point, the term describes the measure of rotation from one of the line segments to the other. In this way, a right-angle measures 90^o, an acute angle is between 0^o and 90^o, an obtuse angle is between 90^o and 180^o and a reflex angle is greater than 180^o.
approximation	A number or result that is not exact. In a practical situation an approximation is sufficiently close to the actual number for it to be useful. Verb: approximate. Adverb: approximately. When two values are approximately equal, the sign ≈ is used.
arc	A portion of a curve. Often used for a portion of a circle.

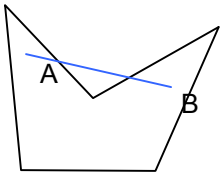
area	A measure of surface. Area is usually measured in square units e.g. square centimetres (cm^2), square metres (m^2).
arithmetic mean	Of a set of discrete data, the sum of quantities divided by the number of quantities. Example: The arithmetic mean of 5, 6, 14, 15 and 45 is (5 + 6 + 14 + 15 + 45) ÷ 5 i.e. 17.
arithmetic sequence	A sequence of numbers in which terms are generated by adding or subtracting a constant amount to the preceding term. Examples: 3, 11, 19, 27, 35, … where 8 is added; 4, -1, -6, -11, … where 5 is subtracted.
array	An ordered collection of counters, numbers etc. in rows and columns.
associative	A binary operation $*$ on a set S is associative if $a * (b * c) = (a * b) * c$ for all a, b and $c \in S$. Addition of real numbers is associative where a + (b + c) = (a + b) + c for all real numbers a, b, c. It follows that, for example, 1 + (2 + 3) = (1 + 2) + 3. Similarly multiplication is associative. Subtraction and division are not associative where, as counter examples, $1 – (2 – 3) \neq (1 – 2) – 3$ and $1 ÷ (2 ÷ 3) \neq (1 ÷ 2) ÷ 3$.
average	Used synonymously with ‘arithmetic mean'.
axis	A fixed, reference line along which or from which distances or angles are taken.
axis of symmetry	See reflection symmetry.
bar chart	A format for representing statistical information. Bars, of equal width, represent frequencies and the lengths of the bars are proportional to the frequencies. Sometimes called bar graph.
bar line chart	Similar to a bar chart, the width of bars is reduced so that they appear as lines. The lengths of the bar lines are proportional to the frequencies. Sometimes called bar line graph.

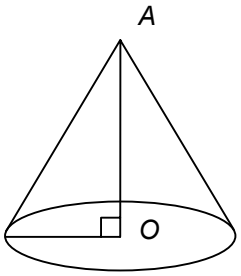
bearing	The direction of a line specified by the angle it makes with a North-South line. The angle is measured in degrees from north in a clockwise direction. Example:  The bearing of B from A Bearings are usually given in a three figure format.
binary operation	For the set of real numbers, a rule for combining two numbers in the set to produce a third also in the set. Addition, subtraction, multiplication and division of real numbers are all binary operations.
bisect	In geometry, to divide into two equal parts.
bisector	A point, line or plane that divides (a line, an angle or a solid shape) into two equal parts. A perpendicular bisector is a line at right angles to a line segment that divides it into two equal parts.
block graph	A simple format for representing statistical information. One block represents one observation. Example: A birthday graph where each child places one block, or colours one square, to represent himself / herself in the month in which he or she was born. 

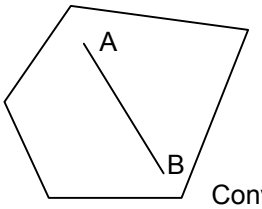
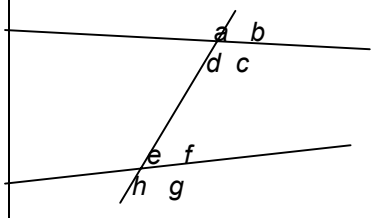
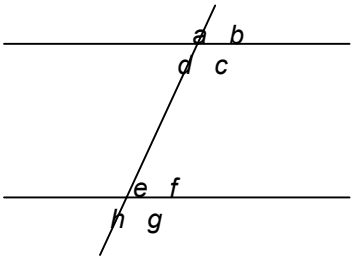
box-plot	A diagram to represent a set of ranked numerical data. A box represents the interquartile range. Lines from the points representing the maximum and minimum values to the box are sometimes referred to as 'whiskers'. The median is marked on the box by a line. Example: 
brackets	Symbols used to show items that should be treated as together or as having priority. In arithmetic and algebra, operations within brackets are given priority. Example: 2 x (3 + 4) = 2 x 7 = 14 whereas 2 x 3 + 4 = 6 + 4 = 10.
cancel (a fraction)	One way to simplify a fraction. The numerator and denominator are divided by a common factor. Also to 'reduce' a fraction. Example: to simplify $\frac{5}{15}$ the fraction is cancelled when the numerator and denominator are divided by 5 to give $\frac{1}{3}$.
capacity	Volume, i.e. a measure of three-dimensional space, applied to liquids, materials that can be poured or the space within containers. Units include cubic centimetres (cm^3) and cubic metres (m^3). A litre is equivalent to 1000 cm^3.
Carroll diagram	A sorting diagram named after Lewis Carroll, author and mathematician. Example: 

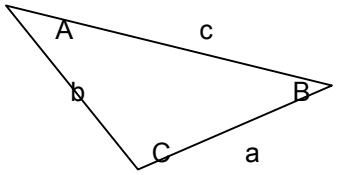
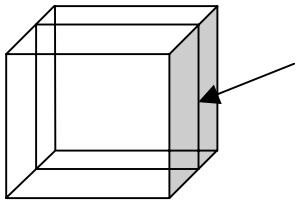
Cartesian coordinate system	A system used to define the position of a point in two-dimensional and three-dimensional space: 1. Two axes at right angles to each other are used to define the position of a point in a plane. The convention is to label the horizontal axis as the x-axis and the vertical axis as the y-axis. In this case, the origin is the intersection of the axes. The ordered pair of numbers (x, y) that defines the position of a point is the coordinate pair. Each of the numbers is a coordinate. The numbers are also known as Cartesian coordinates, after the French mathematician, René Descartes. 2. Three mutually perpendicular axes, conventionally labelled *x, y* and *z*, and coordinates (*x, y, z*) can be used to define the position of a point in space.
categorical data	Data arising from measurements taken on a categorical (unordered discrete) variable. Examples: pupils' favourite colours; states of matter – solids, liquids, gases, gels etc; nutrient groups in foods – carbohydrates, proteins, fats etc; settlement types – hamlet, village, town, city etc; and types of land use – offices, industry, shops, open space, residential etc.
centi–	Prefix meaning one-hundredth (of)
centilitre	Symbol: cl. A unit of volume equivalent to one-hundredth of a litre.
centimetre	Symbol: cm. A unit of linear measure, one hundredth of a metre.
centre	The middle point.
chord	A straight line segment joining two points on a circle or other curve.
circle	A set of points in a plane at a fixed distance (the radius) from a fixed point (the centre) also in the plane; alternatively the path traced by a single point travelling in a plane at a fixed distance (the radius) from a fixed point (the centre) in the same plane. One half of a circle cut off by a diameter is a semi-circle.
circular	In the form of a circle.

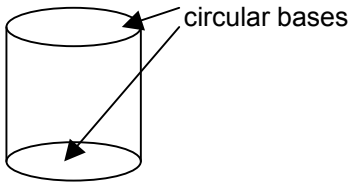
circular function	A term for trigonometric functions. If the point (1,0) is rotated (anticlockwise) with center (0, 0) through an angle θ, the coordinates of the transformed point are ($\cos\theta$, $\sin\theta$). This 'circular' approach defines cosine and sine for all angles, including angles greater than 90°, negative angles, and for 0° and 90°. The tangent function, $\tan\theta$, is defined as $\frac{\sin\theta}{\cos\theta}$.
circumference	The length of a circle (its perimeter). If the radius of a circle is r units, and the diameter d units, then the circumference is $2\pi r$, or πd units. For a sphere the circumference is the length of a great circle on the sphere.
clockwise	In the direction in which the hands of clock travel. Example:  Anti-clockwise or counter-clockwise are terms used for the opposite direction.
closed	Of a curve in a plane, continuous and beginning and ending at the same point. Example:  A closed region consists of a closed curve and all the points contained within it. Example:
coefficient	Often used for the numerical coefficient. More generally, a factor of an algebraic term. Example: in the term 4xy, 4 is the numerical coefficient of xy but x is also the coefficient of 4y and y is the coefficient of 4x.
column	A vertical arrangement.
column graph	A bar graph where the bars are presented vertically.
common fraction	A fraction where the numerator and denominator are both integers. Also known as simple or vulgar fraction. Contrast with a compound or complex fraction where the numerator or denominator or both contain fractions. See also decimal fraction.

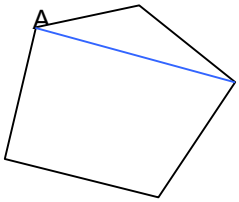
commutative	A binary operation $*$ on a set S is commutative if $a * b = b * a$ for all a and b $\in$ S. Addition and multiplication of real numbers are commutative where $a + b = b + a$ and $a \times b = b \times a$ for all real numbers a and b. It follows that, for example, $2 + 3 = 3 + 2$ and $2 \times 3 = 3 \times 2$. Subtraction and division are not commutative since, as counter examples, $2 - 3 \neq 3 - 2$ and $2 \div 3 \neq 3 \div 2$.
compasses (pair of)	An instrument for constructing circles and circular arcs and for marking points at a given distance from a fixed point.
compensation (in calculation)	A mental or written calculation strategy. One number is rounded to make the calculation easier. The calculation is then adjusted by an appropriate compensatory addition or subtraction. Examples: • 56 + 38 is treated as 56 + 40 and then 2 is subtracted to compensate. • 27×19 is treated as 27×20 and then 27 (i.e. 27×1) is subtracted to compensate. • $67 - 39$ is treated as $67 - 40$ and then 1 is added to compensate.
complement (in addition)	In addition, a number and its complement have a given total. Example: When considering complements in 100, 67 has the complement 33, since 67 + 33 = 100
complementary angles	Two angles with the sum of 90°. Each is the 'complement' of the other.
compound measures	Measures with two or more dimensions. Examples: speed calculated as distance $\div$ time; density calculated as mass $\div$ volume; car efficiency measured as litres per 100 kilometres; and rate of inflation measured as percentage increase in prices.
concave	Curving inwards. A concave polygon has at least one re-entrant angle i.e. one interior angle greater than 180°. A line segment joining two points within the polygon may pass outside it. Example:  A concave pentagon. The line segment, joining points A and B within the polygon, passes outside it. Compare with convex.
concentric	Used to describe circles that have the same centre.

cone	A cone consists of a circular base, a vertex in a different plane, and line segments joining all the points on the circle to the vertex. If the vertex *A* lies directly above the centre *O* of the base, then the axis of the cone *AO* is perpendicular to the base and the shape is a right circular cone. 
congruent (figures)	Adjective. Describing two or more geometric figures that are the same in every way except their position in space. Example: Two figures, where one is a reflection of the other, are congruent since one can be transposed onto the other without changing any angle or edge length. Noun: congruence.
consecutive	Following in order. Consecutive numbers are adjacent in a count. Examples: 5, 6, 7 are consecutive numbers. 25,30,35 are consecutive multiples of 5. In a polygon, consecutive sides share a common vertex and consecutive angles share a common side.
constant	A number or quantity that does not vary. Example: in the equation y = 3x + 6, the 3 and 6 are constants, where x and y are variables.
continuous data	Data arising from measurements taken on a continuous variable (examples: lengths of caterpillars; weight of crisp packets). Continuous data may be grouped into touching but non-overlapping categories. (Example height of pupils [x cm] can be grouped into 130 ≤ x < 140; 140 ≤ x <150 etc.) Compare with discrete data.

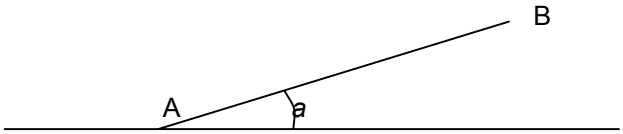
convex	Curved outwards. A convex polygon has all its interior angles less than or equal to 180°. The line segment joining any two points, A and B, inside a convex polygon will lie entirely within it. Example:  Convex polygon (pentagon). For a polyhedron to be convex, it must lie completely to one side of a plane containing any face. Compare with concave.
coordinate	See Cartesian coordinate system.
corner	In elementary geometry, a point where two or more lines or line segments meet. More correctly called *vertex, vertices (plural)*. Examples: a rectangle has four corners or vertices; and a cube has eight corners or vertices.
correlation	A measure of the strength of the association between two variables. High correlation implies a close relationship and low correlation a less close one. If an increase in one variable results in an increase in the other, then the correlation is positive. If an increase in one variable results in a decrease in the other, then the correlation is negative. The term zero correlation does not necessarily imply 'no relationship' but merely 'no linear relationship'
corresponding angles	Where two straight-line segments are intersected by a third, as in the diagrams, the angles *a* and *e* are corresponding. Similarly *b* and *f*, *c* and *g* and *d* and *h* are corresponding. Where parallel lines are cut by a straight line, corresponding angles are equal.  
cosine	See circular function and trigonometric function

cosine rule	In trigonometry, a rule used to calculate the sides and angles of a triangle: $c^2 = a^2 + b^2 - 2ab\ \cos C$ 
counter example	Where a hypothesis or general statement is offered, an example that clearly disproves it.
cross-section	In geometry, a section in which the plane that cuts a figure is at right angles to an axis of the figure. Example: In a cube, a square revealed when a plane cuts at right angles to a face.  Cross section, cut at right angles to the plane of the shaded face
cube	1. In geometry, a three-dimensional figure with six identical, square faces. Adjoining edges and faces are at right angles. 2. In number and algebra, the result of multiplying to power three, n^3 is read as 'n cubed' or 'n to the power of three' Example: Written 2^3, the cube of 2 is (2 x 2 x 2) = 8.
cube number	A number that can be expressed as the product of three equal integers. Example: $27 = 3 \times 3 \times 3$. Consequently, 27 is a cube number.
cube root	A value or quantity whose cube is equal to a given quantity. Example: the cube root of 8 is 2 since $2^3 = 8$. This is recorded as $\sqrt[3]{8} = 2$ or $8^{\frac{1}{3}} = 2$
cubic centimetre	Symbol: cm^3. A unit of volume. The three-dimensional space equivalent to a cube with edge length 1cm.
cubic	A mathematical expression of degree three. Examples: a cubic polynomial is one of the type $ax^3 + bx^2 + cx + d$
cubic curve	A curve with an algebraic equation of degree three.

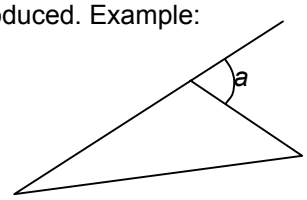
cubic metre	Symbol: m^3. A unit of volume. A three-dimensional space equivalent to a cube of edge length 1m.
cuboid	A three-dimensional figure with six rectangular faces.
cumulative frequency diagram	A graph for displaying cumulative frequency. At a given point on the horizontal axis the sum of the frequencies of all the values up to that point is represented by a point whose vertical coordinate is proportional to the sum.
cyclic quadrilateral	A four sided figure whose vertices lie on a circle.
cylinder	A three-dimensional object whose uniform cross-section is a circle. A right cylinder can be defined as having circular bases with a curved surface joining them, this surface formed by line segments joining corresponding points on the circles. The centre of one base lies over the centre of the second.  right cylinder
1-D, 2-D, 3-D	One-dimensional, two-dimensional, three-dimensional. One-dimensional: able to be identified by one coordinate, for example points on a line. Two-dimensional: requiring two coordinates for identification, for example points in a plane. Also used to describe 'flat' geometric shapes. Three-dimensional: requiring three coordinates for identification, for example points in space. Also used to describe 'solid' geometric shapes.
data	Information of a quantitative nature consisting of counts or measurements. Initially data are nearly always counts or things like percentages derived from counts. When they refer to measurements that are separate and can be counted, the data are discrete. When they refer to quantities such as length or capacity that are measured, the data are continuous. Singular: datum.
database	A means of storing sets of data.

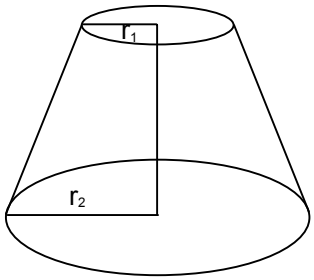
decimal	Relating to the base ten. Most commonly used synonymously with decimal fraction where the number of tenths, hundredth, thousandths etc. are represented as digits following a decimal point. The decimal point is placed at the right of the units column. Each column after the decimal point is a decimal place. Example: The decimal fraction 0.275 is said to have three decimal places. The system of recording with a decimal point is decimal notation. Where a number is rounded to a required number of decimal places, to 2 decimal places for example, this may be recorded as 2 d.p.
decimal fraction	Tenths, hundredths, thousandths etc represented by digits following a decimal point. Example 0.125 is equivalent to $\frac{1}{10} + \frac{2}{100} + \frac{5}{1000}$ or $\frac{125}{1000}$ or $\frac{1}{8}$. The decimal fraction representing $\frac{1}{8}$ is a terminating decimal fraction since it has a finite number of decimal places. Other fractions such as $\frac{1}{3}$ produce recurring decimal fractions. These have a digit or group of digits that is repeated indefinitely. In recording such decimal fractions a dot is written over the single digit, or the first and last digits of the group that is repeated.
decomposition	See subtraction by decomposition.
degree	Symbol: ^{o}. In the measurement of angles, a unit of turn. One whole turn is equal to 360 degrees, written 360^{o}
denominator	In the notation of common fractions, the number written below the line i.e. the divisor. Example: In the fraction $\frac{2}{3}$, the denominator is 3.
diagonal (of a polygon)	A line segment joining any two non-adjacent vertices of a polygon.  The line AB is one diagonal of this polygon.
diagram	A picture, a geometric figure or a representation.
diameter	Any of the chords of a circle or sphere that pass through the centre.
difference	The amount by which one number or value is greater than another, obtained by subtracting the smaller from the larger.

digit	One of the symbols of a number system most commonly the symbols 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9. Examples: the number 29 is a 2-digit number; there are three digits in 2.95. The position or place of a digit in a number conveys its value.
digital clock	A clock that displays the time as hours and minutes passed, usually since midnight. Example: four thirty in the afternoon is displayed as 16:30.
directed number	A numbered point on a directed line. Where one point on a line is labelled 0 and equally spaced points to one side of it are labelled +1, +2, +3 etc. these, and the numbers represented by points between them, are positive. Similar numbered points on the other side of 0 are negative and are read as 'minus one, minus two …etc.
disc	All points that lie on a circle or within it.
discrete data	Data resulting from measurements taken on a discrete variable (examples: value of coins in pupils' pockets; number of peas in a pod). Discrete data may be grouped. Example: Having collected the shoe sizes of pupils in the school, the data might be grouped into 'number of pupils with shoe sizes 3 – 5, 6 – 8, 9 – 11' etc.
distribution	For a set of data, the way in which values in the set are distributed between the minimum and maximum values. In number and algebra operations, the application of the distributive law.
distributive	One binary operation $*$ on a set S is distributive over another binary operation $\bullet$ on that set if $a * (b \bullet c) = (a * b) \bullet (a * c)$ for all a, b and $c \in S$. For the set of real numbers, multiplication is distributive over addition and subtraction since a(b + c) = ab + ac for all a, b and c real numbers. It follows that 4(50 + 6) = (4 x 50) + (4 x 6) and 4 x (50 - 2) = (4 x 50) - (4 x 2). Addition, subtraction and division are not distributive over other number operations.
divide	Carry out the operation of division.
dividend	In division, the number that is divided.
divisibility	The property of being divisible by a given number. Example: A test of divisibility by 9 checks if a number can be divided by 9 with no remainder.

divisible (by)	A whole number is divisible by another if there is no remainder after division and the result is a whole number. Example: 63 is divisible by 7 because $63 \div 7 = 9$ remainder 0. However, 63 is not divisible by 8 because $63 \div 8 = 7.875$ or 7 remainder 7.
division	1. An operation on numbers interpreted in a number of ways. Division can be sharing - the number to be divided is shared equally into the stated number of parts; or grouping - the number of groups of a given size is found. Division is the inverse operation to multiplication. 2. On a scale, one part. Example: Each division on a ruler might represent a millimetre.
divisor	The number by which another is divided. Example: In the calculation $30 \div 6 = 5$, the divisor is 6. In this example, 30 is the dividend and 5 is the quotient.
dodecahedron	A polyhedron with twelve faces. The faces of a regular dodecahedron are regular pentagons. A dodecahedron has 20 vertices and 30 edges.
double	1. To multiply by 2. Example: Double 13 is $(13 \times 2) = 26$. 2. The number or quantity that is twice another. Example: 26 is double 13. In this context, a 'near double' is one unit away from a double. Example: 27 is a near double of 13 and of 14.
edge	A line segment, joining two vertices of a figure. A line segment formed by the intersection of two plane surfaces. Examples: a square has four edges; and a cuboid has twelve edges.
elevation	1. The vertical height of a point above a base (line or plane). 2. The angle of elevation from one point A to another point B is the angle between the line AB and the horizontal line through A. Example: in the diagram, the angle *a* is the angle of elevation of point B from point A.  3. See projection
enlargement	A transformation of the plane in which lengths are multiplied whilst directions and angles are preserved. A centre and a positive scale factor are used to specify an enlargement. The scale factor is the ratio of the distance of any transformed point from the centre to its distance from the centre prior to the transformation. Any figure and its image under enlargement are similar.

equal	Symbol: =, read as 'is equal to' or 'equals'. Having the same value. Example: $7 - 2 = 4 + 1$ since both expressions, $7 - 2$ and $4 + 1$ have the same value, 5.
equal class interval	See grouped (discrete data)
equation	A mathematical statement showing that two expressions are equal. The expressions are linked with the symbol = Examples: $7 - 2 = 4 + 1$ $4x = 3$ $x^2 - 2x + 1 = 0$
equilateral	Of a polygon, having sides of equal length.
equivalent fraction	Fraction with the same value as another. Example: $\frac{6}{12} = \frac{3}{6} = \frac{1}{2}$. These are equivalent fractions.
estimate	1. Verb: To arrive at a rough or approximate answer by calculating with suitable approximations for terms or, in measurement, by using previous experience. 2. Noun: A rough or approximate answer.
evaluate	Find the value of a numerical or an algebraic expression. Examples: Evaluate $28 \div 4$ by calculating, $28 \div 4 = 7$ Evaluate $x^2 - 3$ when $x = 2$ by substituting this value for x and calculating, $2^2 - 3 = (2 \times 2) - 3 = 4 - 3 = 1$
even number	An integer that is divisible by 2.
exchange	Change a number or expression for another of equal value. The process of exchange is used in some standard compact methods of calculation. Examples: 'carrying figures' in addition, multiplication or division; and 'decomposition' in subtraction.
exponent	Also known as index, a number, positioned above and to the right of another, indicating repeated multiplication. Example: n^2 indicates $n \times n$; and n^5 indicates $n \times n \times n \times n \times n$. The result of the multiplication is the power. Example: $2^5 = 32$ and 32 is the fifth power of 2. Exponents may be fractional or negative. Examples: $8^{1/3} = 2$, 2^{-2} is the inverse of 2^2 and has the value $\frac{1}{4}$.
exponential (function)	A function having variables expressed as exponents.
expression	A mathematical form expressed symbolically. Examples: $7 + 3$; $a^2 + b^2$.

exterior angle	Of a polygon, the angle formed outside between one side and the adjacent side produced. Example:  The angle *a* is one exterior angle of this triangle.
face	One of the flat surfaces of a solid shape. Example: a cube has six faces.
factor	When a number, or polynomial in algebra, can be expressed as the product of two numbers or polynomials, these are factors of the first. Examples: 1, 2, 3, 4, 6 and 12 are all factors of 12: $(x - 1)$ and $(x + 4)$ are factors of $(x^2 + 3x - 4)$ where $(x - 1)(x + 4) = (x^2 + 3x - 4)$
factorise	To express a number or polynomial as the product of its factors. Examples: Factorising 12: $12 = 1 \times 12$ $= 2 \times 6$ $= 3 \times 4$ The factors of 12 are 1, 2, 3, 4, 6 and 12. 12 may be expressed as a product of its prime factors: $12 = 2 \times 2 \times 3$ Factorising $x^2 - 4x - 21$: $x^2 - 4x - 21 = (x + 3)(x - 7)$ The factors of $x^2 - 4x - 21$ are $(x + 3)$ and $(x - 7)$
foot	Symbol: ft. An imperial measure of length. 1 foot = 12 inches. 3 feet = 1 yard. 1 foot is approximately 30 cm.
formula	An equation linking sets of physical variables. Plural: formulae.
fraction	The result of dividing one integer by a second integer, which must be non-zero. The dividend is the numerator and the non-zero divisor is the denominator. See also common fraction, decimal fraction, equivalent fraction, improper fraction, proper fraction, simple fraction, unit fraction and vulgar fraction.
frequency density	See histogram.

frequency table	A table for a set of observations showing how frequently each event or quantity occurs.
frustum of a cone	Part of a cone bounded by two parallel planes.  r_1 and r_2, the radii of the bases, are parallel.
function	A rule that relates every element x of a set X, the domain of the function, to a unique element y of another set Y, the codomain. Example: the function 'has a birthday on' could relate each person, in a set of individuals, to a unique element in the set of days in the year. If the function can be expressed algebraically, then for any particular value of x, the value of y can be calculated and y is said to have a functional relationship with x. Example: for the function $y = x^2$, when $x = 5$, then $y = 5^2$ or 25.
functional relationship	See function.
gallon	Symbol: gal. An imperial measure of volume or capacity, equal to the volume occupied by ten pounds of distilled water. In the imperial system, 1 gallon = 4 quarts = 8 pints. One gallon is just over 4.5 litres.
general statement	A statement that applies correctly to all relevant cases.
generalise	To formulate a general statement or rule.
geometrical	Relating to geometry, the aspect of mathematics concerned with the properties of space and figures or shapes in space.
gradient	A measure of the slope of a line. On a coordinate plane, the gradient of the line through the points (x_1, y_1) and (x_2, y_2) is defined as $(y_2 – y_1) / (x_2 – x_1)$. The gradient may be positive, negative or zero depending on the values of the coordinates.

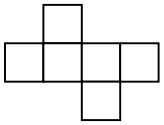
gram	Symbol: g. The unit of mass equal to one thousandth of a kilogram.
graph	A diagram showing a relationship between variables. Adjective: graphical.
grid	A lattice created with two sets of parallel lines. Lines in each set are usually equally spaced. If the sets of lines are at right angles and lines in both sets are equally spaced, a square grid is created.
grouped (discrete data)	Observed data arising from counts and grouped into non-overlapping intervals. Example: score in test / number of children obtaining the score, scores 1 – 10, 11 - 20, 21 - 30, 31 - 40, 41 - 50 etc. In this example there are equal class intervals.
heptagon	A polygon with seven sides or edges.
hexagon	A polygon with six sides or edges. Adjective: hexagonal, having the form of a hexagon
highest common factor (HCF)	The common factor of two or more numbers which has the highest value. Example: 16 has factors 1, 2, 4, 8, 16. 24 has factors 1, 2, 3, 4, 6, 8, 12, 24. 56 has factors 1, 2, 4, 7, 8, 14, 28, 56. The common factors of 16, 24 and 56 are 1, 2, 4 and 8. Their highest common factor is 8.
histogram	A particular form of representation of grouped data. Segments along the x-axis are proportional to the class interval. Rectangles are drawn with the line segments as bases. The area of the rectangle is proportional to the frequency in the class. Where the class intervals are not equal, the height of each rectangle is called the frequency density of the class.
horizontal	Parallel to the horizon.
hour	A unit of time. One twenty-fourth of a day. 1 hour = 60 minutes = 3600 seconds, ie (60 x 60) seconds.
hundred square	A 10 by 10 square grid numbered 1 to 100. A similar grid could be numbered as a 0 - 99 grid.
icosahedron	A polyhedron with 20 faces. In a regular icosahedron all faces are equilateral triangles.

identity	An equation that holds for all values of the variables. The symbol ≡ is used. Example: $a^2 - b^2 \equiv (a + b)(a - b)$.
imperial unit	A unit of measurement historically used in the United Kingdom and other English speaking countries. Units include inch, foot, yard, mile, acre, ounce, pound, stone, hundredweight, ton, pint, quart and gallon. Now largely replaced by metric units.
improper fraction	An improper fraction has a numerator that is greater than its denominator. Example: $\frac{9}{4}$ is improper and could be expressed as the mixed number $2\frac{1}{4}$.
inch	Symbol: in. An imperial unit of length. 12 inches = 1 foot. 36 inches = 1 yard. Unit of area is square inch, in^2. Unit of volume is cubic inch, in^3. 1 inch is approximately 2.54 cm.
index laws	Where index notation is used and powers are multiplied or divided, the rules for manipulating index numbers. Examples: $2^a \times 2^b = 2^{a+b}$ and $2^a \div 2^b = 2^{a-b}$
index notation	The notation in which a product such as $a \times a \times a \times a$ is recorded as a^4. In this example the number 4 is the index (plural indices) See also standard index form
inequality	Statements such as $a \neq b$, $a \leq b$ or $a > b$ are inequalities.
inscribed	Describing a figure enclosed by another. Examples: a polygon, whose vertices lie on the circumference of a circle, is said to be inscribed in the circle. Where a circle is drawn inside a polygon so that the sides of the polygon are tangents to the circle, the circle is inscribed in the polygon. (In this case the circle is the 'incircle' of the polygon.)
integer	Any of the positive or negative whole numbers and zero. Example: …-2, -1, 0, +1, +2 …
intercept	1. To cut a line, curve or surface with another. 2. In the Cartesian coordinate system, the positive or negative distance from the origin to the point where a line, curve or surface cuts a given axis. **OR** On a graph, the value of the non-zero coordinate of the point where a line cuts an axis.
interior angle	At a vertex of a polygon, the angle that lies within the polygon.
interquartile range	See quartile

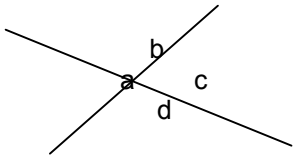
intersect	To have a common point or points. Examples: Two intersecting lines intersect at a point; two intersecting planes intersect in a line.
inverse operations	Operations that, when they are combined, leave the entity on which they operate unchanged. Examples: addition and subtraction are inverse operations e.g. $5 + 6 - 6 = 5$. Multiplication and division are inverse operations e.g. $6 \times 10 \div 10 = 6$. Some operations, such as reflection in the x-axis, are self-inverse.
irrational number	A number that is not an integer and cannot be expressed as a common fraction with a non-zero denominator. Examples: $\sqrt{3}$ and π. Real irrational numbers, when expressed as decimals, are infinite, non-recurring decimals.
isosceles triangle	A triangle in which two sides have the same length and consequently two angles are equal. This definition includes an equilateral triangle as a special case.
kilo-	Prefix denoting one thousand
kilogram	Symbol: kg. The base unit of mass in the SI (Système International d'Unités). 1kg. = 1000g.
kilometre	Symbol: km. A unit of length in the SI (Système International d'Unités). The base unit of length in the system is the metre. 1km. = 1000m.
kite	A quadrilateral with two pairs of equal, adjacent sides whose diagonals consequently intersect at right angles.
least common multiple (LCM)	The common multiple of two or more numbers which has the least value. Example: 3 has multiples 3, 6, 9, 12, 15, 18, 21, 24 …, 4 has multiples 4, 8, 12, 16, 20, 24 … and 6 has multiples 6, 12, 18, 24, 30 …. The common multiples of 3, 4 and 6 include 12, 24 and 36. The least common multiple of 3, 4 and 6 is 12.
line	A set of adjacent points that has length but no width. A curve. A straight line is completely determined by two of its points, say A and B. The part of the line between any two of its points is a line segment.
line of best fit	A line drawn on a scatter graph to represent the best estimate of an underlying linear relationship between the variables.
linear	In algebra, describing an expression or equation of degree one. Example: $2x + 3y = 7$ is a linear equation. This linear equation with its two variables, x and y, can be represented as a straight line graph.

litre	Symbol: l. A metric unit used for measuring volume or capacity. A litre is equivalent to 1000 cm^3.
locus	The set of points that satisfy given conditions. Example: in 3-D the locus of all points that are a given distance from a fixed point is a sphere. Plural: loci.
mass	A characteristic of a body, relating to the amount of matter within it. Mass differs from weight, the force with which a body is attracted towards the earth's centre. Whereas, under certain conditions, a body can become weightless, mass is constant. In a constant gravitational field weight is proportional to mass.
maximum value	The greatest value. Example: The maximum temperature in London yesterday was 18°C.
mean	Used synonymously with average. The arithmetic mean of a set of discrete data is the sum of quantities divided by the number of quantities. Example: The arithmetic mean of 5, 6, 14, 15 and 45 is (5 + 6 + 14 + 15 + 45) ÷ 5 i.e. 17.
measure	1. The size in terms of an agreed unit. See also compound measure. 2. Measure is also used as a verb, to find the size.
median	The middle number or value when all values in a set of data are arranged in ascending order. Example: The median of 5, 6, 14, 15 and 45 is 14. When there is an even number of values, the arithmetic mean of the two middle values is calculated. Example: The median of 5, 6, 7, 8, 14 and 45 is (7 + 8) ÷ 2 i.e. 7.5.
mensuration	In the context of geometric figures the process of measuring or calculating angles, lengths, areas and volumes.
metre	Symbol: m. The base unit of length in SI (Système International d'Unités).
metric unit	Unit of measurement in the metric system. Metric units include metre, centimetre, millimetre, kilometre, gram, kilogram, litre and millilitre.
mile	An imperial measure of length. 1 mile = 1760 yards. Five miles is approximately 8 kilometres.
milli–	Prefix. One-thousandth.

millilitre	Symbol: ml. One thousandth of a litre.
millimetre	Symbol: mm. One thousandth of a metre.
minimum value	The least value. Example: The expected minimum temperature overnight is 6^{o}C.
minus	The name for the symbol –, representing the operation of subtraction.
minute	Unit of time. One-sixtieth of an hour. 1 minute = 60 seconds. In the measurement of angles, $\frac{1}{60}$ of a degree
mixed fraction	A whole number and a fractional part expressed as a common fraction. Example: $1\frac{2}{3}$ is a mixed fraction. Also known as a mixed number.
mixed number	A whole number and a fractional part expressed as a common fraction. Example: $1\frac{2}{3}$ is a mixed number. Also known as a mixed fraction.
mode	The most commonly occurring value or class with the largest frequency.
moving average	The mean of a set of adjacent observations of fixed size is taken. The mean is calculated for successive sets of the same size to give the moving average. See time series.
multiple	For any integers *a* and *b*, *a* is a multiple of *b* if a third integer *c* exists so that *a* = *bc* Example: 14 = 7 x 2, 49 = 7 x 7 and 70 = 7 x 10. So 14, 49 and 70 are all multiples of 7. -21 is also a multiple of 7 since -21 = 7(-3).
multiplication	The operation of combining two numbers to give a third number, the product. Example: 12 x 3 = 36 is a multiplication. Multiplication can be seen as the process of repeated addition. Example: 3 x 5 = 3 + 3 + 3 + 3 + 3 = 15. Multiplication is the inverse operation of division, and it follows that 7 ÷ 5 × 5 = 7 Multiplication is commutative, associative and distributive over addition or subtraction.

multiplicative	Relating to multiplication. Example: the multiplicative inverse of 6 is $\frac{1}{6}$ since $6 \times \frac{1}{6} = 1$
multiply	Carry out the process of multiplication.
mutually exclusive events	In probability, events that cannot both occur in one experiment. When the mutually exclusive events cover all possible outcomes the sum of their probabilities is 1.
natural number	The counting numbers 1, 2, 3, … etc. The positive integers. The set of natural numbers is usually denoted by $\mathbb{N}$.
near double	See double.
negative integer	An integer less than 0. Examples: -1, -2, -3 etc.
negative number	1. At number less than zero. Example: – 0.25. Where a point on a line is labelled 0 and equally spaced points to one side of it are labelled –1, –2, –3 etc, these, and the numbers represented by points between them, are negative numbers 2. Commonly read aloud as 'minus one, minus two' etc. In some teaching approaches they are read as 'negative one, negative two' etc to distinguish the numbers from operations upon them. 3. See also directed number and positive number.
net	1. A plane figure composed of polygons which by folding and joining can form a polyhedron.  A net of a cube 2. Remaining after deductions. Examples: The net profit is the profit after deducting all operating costs. The net weight is the weight after deducting the weight of all packaging.
notation	A convention for recording mathematical ideas. Examples: Money is recorded using decimal notation e.g. £2.50 Other examples of mathematical notation include $a + a = 2a$ and $n \times n \times n = n^3$
number bond	A pair of numbers with a particular total e.g. number bonds to ten are all pairs of whole numbers with the total 10.

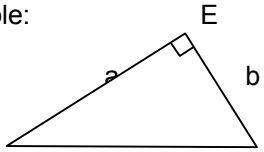
number line	A line where numbers are represented by points upon it.
number sentence	A mathematical sentence involving numbers. Examples: 3 + 6 = 9 and 9 > 3
number square	A square grid in which cells are numbered in order.
number track	A numbered track along which counters might be moved. The number in a region represents the number of single moves from the start.
numeral	A symbol used to denote a number. The Roman numerals I, V, X, L, C, D and M represent the numbers one, five, ten, fifty, one hundred, five hundred and one thousand. The Arabic numerals 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 are used in the Hindu-Arabic system giving numbers in the form that is widely used today.
numerator	In the notation of common fractions, the number written on the top - the dividend (part that is divided). In the fraction $\frac{2}{3}$, the numerator is 2.
oblong	Sometimes used to describe a non-square rectangle.
obtuse angle	An angle greater than 90^{o} but less than 180^{o}.
octagon	A polygon with eight sides. Adjective: octagonal, having the form of an octagon.
octahedron	A polyhedron with eight faces. A regular octahedron has faces that are equilateral triangles.
odd number	An integer that has a remainder of 1 when divided by 2.
operation	See binary operation

opposite	1. In a triangle, an angle is said to be opposite a side if the side is not one of those forming the angle. 2. Angles formed where two line segments intersect.  In the diagram *a* is opposite *c* and *b* is opposite *d*. Also called vertically opposite angles.
ordinal number	A term that describes a position within an ordered set. Example: first, second, third, fourth … twentieth etc.
origin	A fixed point from which measurements are taken. See also Cartesian coordinate system.
ounce	Symbol: oz. An imperial unit of mass. In the imperial system, 16 ounces = 1 pound. 1 ounce is just over 28 grams.
parallel	In Euclidean geometry, always equidistant. Parallel lines, curves and planes never meet however far they are produced.
parallelogram	A quadrilateral whose opposite sides are parallel and consequently equal in length.
partition	1. To separate a set into subsets. 2. To split a number into component parts. Example: the two-digit number 38 can be partitioned into 30 + 8 or 19 + 19. 3. A model of division. Example: 21 ÷ 7 is treated as 'how many sevens in 21?'
pattern	A systematic arrangement of numbers, shapes or other elements according to a rule.
pentagon	A polygon with five sides and five interior angles. Adjective: pentagonal, having the form of a pentagon.
percentage	1. A fraction expressed as the number of parts per hundred and recorded using the notation %. Example: One half can be expressed as 50%; the whole can be expressed as 100%. 2. Percentage can also be interpreted as the operator 'a number of hundredths of'. Example: 15% of Y means $\frac{15}{100} \times Y$

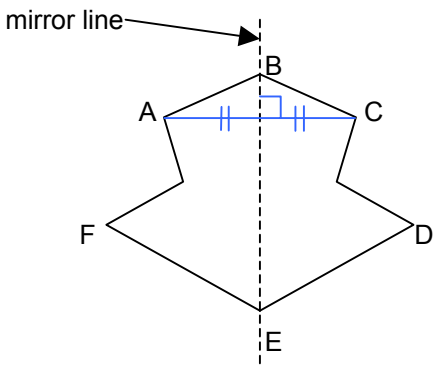
perimeter	The length of the boundary of a closed figure.
perpendicular	A line or plane that is at right angles to another line or plane.
pi	Symbol: π. The length of any circle divided by the length of its diameter is a constant, π. π is an irrational number. One common approximation for π is $^{22}/_{7}$. 3.14159265 is a more accurate approximation, to 8 decimal places.
pictogram	A format for representing statistical information. Suitable pictures, symbols or icons are used to represent objects. For large numbers one symbol may represent a number of objects and a part symbol then represents a rough proportion of the number.
pie-chart	Also known as pie graph. A form of presentation of statistical information. Within a circle, sectors like 'slices of a pie' represent the quantities involved. The frequency or amount of each quantity is proportional to the angle at the centre of the circle.
pint	An imperial measure of volume applied to liquids or capacity. In the imperial system, 8 pints = 4 quarts = 1 gallon. 1 pint is just over 0.5 litres.
place value	The value of a digit that relates to its position or place in a number. Example: in 1482 the digits represent 1 thousand, 4 hundreds, 8 tens and 2 units respectively; in 12.34 the digits represent 1 ten, 2 units, 3 tenths and 4 hundredths respectively.
plan	A 2-dimensional diagram of a 3-dimensional object, usually the view from directly above.
plane	A flat surface. A line segment joining any two points in the surface will also lie in the surface.
plot	The process of marking points. Points are usually defined by coordinates and plotted with reference to a given coordinate system.
plus	The name for the symbol +, representing the operation of addition.
point	An element, in geometry, that has position but no magnitude.

polygon	A closed plane figure bounded by straight lines. The name derives from *many angles*. If all interior angles are less than 180° the polygon is convex. If any interior angle is greater than 180°, the polygon is concave. If the sides are all of equal length and the angles are all of equal size, then the polygon is regular; otherwise it is irregular. Adjective: polygonal.
polyhedron	Plural: polyhedra. A closed solid figure bounded by surfaces (faces) that are polygonal. Its faces meet in line segments called its edges. Its edges meet at points called vertices. For a polyhedron to be convex, it must lie completely to one side of a plane containing any face. If it is not convex it is concave. A regular polyhedron has identical regular polygons forming its faces and equal angles formed by its surfaces and edges. The Platonic Solids are the five possible convex regular polyhedra: tetrahedron with four equilateral-triangular faces; cube with six square faces; octahedron with eight equilateral-triangular faces; dodecahedron with twelve regular-pentagonal faces; and icosahedron with twenty equilateral-triangular faces.
polynomial function	A function of the form $f(x) = a_n x^n + a_{n-1} x^{n-1} + a_{n-2} x^{n-2} + \ldots + a_1 x + a_0$ Is a polynomial of order n
positive number	A number greater than zero. Where a point on a line is labelled 0 and equally spaced points to one side of it are labelled +1, +2, +3 etc., these, and the numbers represented by points between them, are positive numbers and are read 'positive one, positive two, positive three' etc. See also directed number and negative number.
pound (mass)	Symbol: lb. An imperial unit of mass. In the imperial system, 14 lb = 1 stone. 1 lb is approximately 455 grams. 1 kilogram is approximately 2.2 lb.
pound (money)	Symbol £. A unit of money. £1.00 = 100 pence.
power (of ten)	1. 100 (i.e. 10^2 or 10 x 10) is the second power of 10, 1000 (i.e.10^3 or 10 x 10 x 10) is the third power of 10 etc. Powers of other numbers are defined in the same way. Example: 2 (2^1), 4 (2^2), 8 (2^3), 16 (2^4) etc are powers of 2. 2. A fractional power represents a root. Example: $x^{\frac{1}{2}} = \sqrt{x}$ 3. A negative power represents the reciprocal. Example: $x^{-1} = \frac{1}{x}$ 4. By convention any number or variable to the power 0 equals 1. Example: $x^0 = 1$
prime factor	The factors of a number that are prime. Example: 2 and 3 are the prime factors of 12 (12 = 2 x 2 x 3). See also factor.

prime factor decomposition	The process of expressing a number as the product of factors that are prime numbers. Example: $24 = 2 \times 2 \times 2 \times 3$ or $2^3 \times 3$
prime number	A whole number greater than 1 that has exactly two factors, itself and 1. Examples: 2 (factors 2, 1), 3 (factors 3, 1). 51 is not prime (factors 51, 17, 3, 1).
prism	A solid bounded by two congruent polygons that are parallel (the bases) and parallelograms (lateral faces) formed by joining the corresponding vertices of the polygons. Prisms are named according to the base e.g. triangular prism, quadrangular prism, pentagonal prism etc. Examples: If the lateral faces are rectangular and perpendicular to the bases, the prism is a right prism.
probability	The likelihood of an event happening. Probability is expressed on a scale from 0 to 1. Where an event cannot happen, its probability is 0 and where it is certain its probability is 1. The probability of scoring 1 with a fair dice is $\frac{1}{6}$. The denominator of the fraction expresses the total number of equally likely outcomes. The numerator expresses the number of outcomes that represent a 'successful' occurrence. Where events are mutually exclusive and exhaustive the total of their probabilities is 1.
product	The result of multiplying one number by another. Example: The product of 2 and 3 is 6 since $2 \times 3 = 6$.
projection	A mapping of points on a 3-dimensional geometric figure onto a plane according to a rule. Example: A map of the world is a projection of some type such as Mercator's projection. Plan and elevation are vertical and horizontal mappings.
proof	A chain of reasoning that establishes in conclusion the truth of a proposition.
proper fraction	A proper fraction has a numerator that is less than its denominator. Example: $\frac{3}{4}$ is a proper fraction whereas $\frac{4}{3}$ is improper.
property	Any attribute. Example: One property of a square is that all its sides are equal.

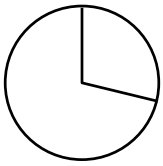
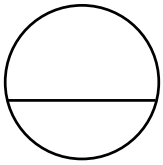
proportion	1. A part to whole comparison. Example: Where £20 is shared between two people in the ratio 3 : 5, the first receives £7.50 which is $^{3}/_{8}$ of the whole £20. This is his proportion of the whole. 2. If two variables *x* and *y* are related by an equation of the form y = kx, then y is directly proportional to x; it may also be said that y varies directly as x. When y is plotted against x this produces a straight line graph through the origin. 3. If two variables *x* and *y* are related by an equation of the form $y = \frac{k}{x}$ then y is inversely proportional to x; it may be said that y varies inversely as x.
protractor	An instrument for measuring angles.
prove	To formulate a chain of reasoning that establishes in conclusion the truth of a proposition.
pyramid	A solid with a polygon as the base and one other vertex, the apex, in another plane. Each vertex of the base is joined to the apex by an edge. Other faces are triangles that meet at the apex. Pyramids are named according to the base: a triangular pyramid (which is also called a tetrahedron, having four faces), a square pyramid, a pentagonal pyramid etc.
Pythagoras' theorem	In a right-angled triangle, the square of the length of the hypotenuse is equal to the sum of the squares of the lengths of the other sides i.e. the sides that bound the right angle. Example:  When ∠DEF is a right angle, $a^2 + b^2 = h^2$
quadrant	One of the four regions into which a plane is divided by the x and y axes in the Cartesian coordinate system.
quadratic	Describing a expression of the form $ax^2 + bx + c$ where a, b and c are real numbers.
quadrilateral	A polygon with four sides.
qualitative	Relating to a quality or attribute.

quantitative	Relating to quantity or amount.
quartile	Where quantitative data is ranked in ascending order, the quartile values divide the data into four equal parts. The quartiles are the first or lower quartile, the second quartile, which is also the median value, and the third or upper quartile. The difference between the first and third quartiles, used as a measure of spread, is the interquartile range.
quotient	The result of a division. Example: $46 \div 3 = 15\frac{1}{3}$ and $15\frac{1}{3}$ is the quotient of 46 by 3. Where the operation of division is applied to the set of integers, and the result expressed in integers, for example $46 \div 3 = 15$ remainder 1 then 15 is the quotient of 46 by 3 and 1 is the remainder.
radius	In relation to a circle, the distance from the centre to any point on the circle. Similarly, in relation to a sphere, the distance from the centre to any point on the sphere.
random sample	In statistics, a selection from a population where each sample of this size has an equal chance of being selected.
range	A measure of spread in statistics. The difference between the greatest value and the least value in a set of numerical data.
ratio	A part to part comparison. The ratio of *a* to *b* is usually written *a* : *b*. Example: In a recipe for pastry fat and flour are mixed in the ratio 1 : 2 which means that the fat used has half the mass of the flour. In a unitary ratio a or b is 1.
rational number	A number that is an integer or that can be expressed as a fraction whose numerator and denominator are integers, and whose denominator is not zero. Examples: $-1, \frac{1}{3}, \frac{3}{5}$, 9, 235. Rational numbers, when expressed as decimals, are recurring decimals or finite (terminating) decimals. Numbers that are not rational are irrational. Irrational numbers include $\sqrt{5}$ and π which produce infinite, non-recurring decimals.
raw data	Data as they are collected, unprocessed.
real numbers	A number that is rational or irrational. Real numbers are those generally used in mathematics, science and everyday contexts. Numbers that are not imaginary, not connected with the square root of a negative number for instance.
reciprocal	The multiplicative inverse of any non-zero number. Example: $\frac{1}{3}$ is the reciprocal of 3. Any number multiplied by its reciprocal gives 1. Example $\frac{1}{3} \times 3 = 1$ (Division by 0 is not defined and 0 has no reciprocal.)

rectangle	A parallelogram with an interior angle of 90°. Opposite sides are equal. If adjacent sides are also equal the rectangle is a square. If adjacent sides are not equal, the rectangle is an oblong. Adjective: rectangular.
rectilinear	Bounded by straight lines. A closed rectilinear shape is also a polygon. A rectilinear shape can be divided into rectangles and triangles for the purpose of calculating its area.
recurring decimal	A decimal fraction with an infinitely repeating digit or group of digits. Example: The fraction $\frac{1}{3}$ is the decimal 0.33333 …, referred to as nought point three recurring and may be written as 0.3 (with a dot over the three). Where a block of numbers is repeated indefinitely, a dot is written over the first and last digit in the block e.g. $\frac{1}{7}$ = 0.˙142857˙
reduce (a fraction)	Divide the numerator and denominator by a common factor. To cancel a fraction. Example: divide the numerator and denominator by 5, to reduce $^5/_{15}$ to $^1/_3$, its simplest form.
reflection	In 2-D, a transformation of the whole plane involving a mirror line or axis of symmetry in the plane, such that the line segment joining a point to its image is perpendicular to the axis and has its midpoint on the axis. A 2-D reflection is specified by its mirror line.
reflection symmetry	A 2-D shape has reflection symmetry about a line if an identical-looking object in the same position is produced by reflection in that line. Example:  In the shape ABCDEF, the mirror line runs through B and E. The part shape BCDE is a reflection of BAFE. Point A reflects onto C and F onto D. The mirror line is the perpendicular bisector of AC and of FD.
reflex angle	An angle that is greater than 180° but less than 360°.

regular	1. Describing a polygon, having all sides equal and all internal angles equal. 2. Describing a tessellation, using only one kind of regular polygon. Examples: squares, equilateral triangles and regular hexagons all produce regular tessellations.
relation, relationship	A common property of two or more items. An association between two or more items.
remainder	In the context of division requiring a whole number answer (quotient), the amount remaining after the operation. Example: 29 divided by 7 = 4 remainder 1.
repeated addition	The process of repeatedly adding the same number or amount. One model for multiplication. Example 5 + 5 + 5 + 5 = 5 x 4.
repeated subtraction	The process of repeatedly subtracting the same number or amount. One model for division. Example 35 -5 - 5 - 5 - 5 - 5 - 5 = 0 so 35 ÷ 5 = 7 remainder 0.
resultant (of two or more vectors)	A vector that is equivalent to the vector sum of two or more vectors.
rhombus	A parallelogram with all sides equal.
RHS	Abbreviation for ‘right angle, hypotenuse, side’ describing one of the sets of conditions for congruence of two triangles.
right	Used as an adjective, right-angled or erect. Example: In a right cylinder the centre of one circular base lies directly over the centre of the other.
right angle	One quarter of a complete turn. An angle of 90 degrees. An acute angle is less than one right angle. An obtuse angle is greater than one right angle but less than two. A reflex angle is greater than two right angles.
rotation	In 2-D, a transformation of the whole plane which turns about a fixed point, the centre of rotation. A is specified by a centre and an (anticlockwise) angle.

rotation symmetry	A 2-D shape has rotation symmetry about a point if an identical-looking shape in the same position is produced by a rotation through some angle greater than 0° and less than 360° about that point. A 2-D shape with rotation symmetry has rotation symmetry of order *n* when *n* is the largest positive integer for which a rotation of $\frac{360°}{n}$ produces an identical-looking shape in the same position. A rotation of 360°, about any centre whatever, produces an identical-looking shape in the same position for all 2-D shapes including those without rotation symmetry. For this reason it is true, though not very informative, to say that the order of rotation symmetry is 1 for shapes that do not have rotation symmetry.
round (verb)	In the context of a number, express to a required degree of accuracy. Example: 543 rounded to the nearest 10 is 540.
row	A horizontal arrangement.
rule	Generally a procedure for carrying out a process. In the context of patterns and sequences a rule, expressed in words or algebraically, summarises the pattern or sequence and can be used to generate or extend it.
sample	A subset of a population. In handling data, a sample of observations may be made from which to draw inferences about a larger population.
scalar	When working with vectors, a quantity that is not a vector but a real number.
scalar multiple (of a vector)	The result of multiplying a non-zero vector by a scalar. The scalar multiple of vector **a** and scalar k has the direction of **a**, if k>0, or a direction of –**a**, if k<0. Its magnitude is $\lvert k \rvert \lvert \mathbf{a} \rvert$
scale	A measuring device usually consisting of points on a line with equal intervals.
scale factor	For two similar geometric figures, the ratio of corresponding edge lengths.
scalene triangle	A triangle with no two sides equal and consequently no two angles equal.

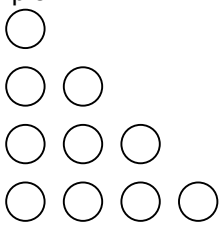
scatter graph	A graph on which paired observations are plotted and which may indicate a relationship between the variables. Example: The heights of a number of people could be plotted against their arm span measurements. If height is roughly related to arm span, the points that are plotted will tend to lie along a line.
score	1. To earn points or goals in a competition. The running total of points or goals. 2. The number twenty.
second	1. A unit of time. One-sixtieth of a minute. 2. Ordinal number as in 'first, second, third, fourth …'.
section (plane section)	A plane geometrical configuration formed by cutting a solid figure with a plane. Example: A section of a cube could be a triangle, quadrilateral, pentagon or hexagon according to the direction of the plane cutting it.
sector	The region within a circle bounded by two radii and one of the arcs they cut off. Example:  The smaller of the two sectors is the minor sector and the larger one the major sector.
segment	The part of a line between two points. Within a circle, the region bound by an arc and the chord joining its two end points. Example:  The smaller of the two regions, is the minor segment and the larger is the major segment.
sequence	A succession of terms formed according to a rule. There is a definite relation between one term and the next or between each term and its position in the sequence. Example: 1, 4, 9, 16, 25 etc
set	A well-defined collection of objects (called members or elements).
set square	A drawing instrument for constructing parallel lines, perpendicular lines and certain angles. A set square may have angles 90^o, 60^o, 30^o or 90^o, 45^o, 45^o.

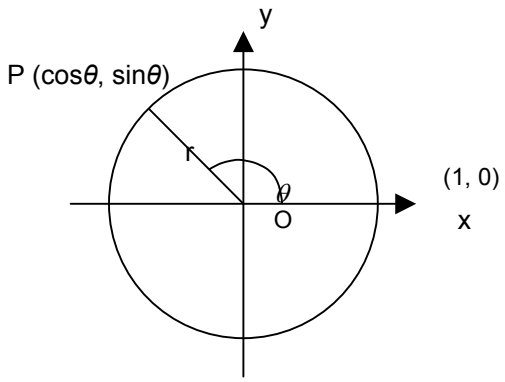
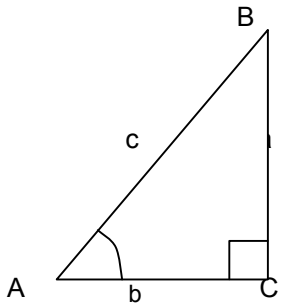
share (equally)	One model for the process of division.
short division	A compact written method of division. Example: 17) 5 2 ^{1}7 3 1
side	A line segment that forms part of the boundary of a figure. Also edge.
sign	A symbol used to denote an operation. Examples: addition sign +, subtraction sign –, multiplication sign ×, division sign ÷, equals sign = etc. In the case of directed numbers, the positive + or negative – sign indicates the direction in which the number is located from the origin along the number line.
sign change key	The function key +/– of a calculator that changes a positive value to negative or vice versa.
significant figures	The run of digits in a number that is needed to specify the number to a required degree of accuracy. Additional zero digits may also be needed to indicate the number's magnitude. Examples: To the nearest thousand, the numbers 125 000, 2 376 000 and 22 000 have 3, 4 and 2 significant figures respectively; to 3 significant figures 98.765 is written 98.8
similar figures	A geometric figure is similar to another if it is congruent to an enlargement of the other. Any two squares are similar, as are any two circles.
simple fraction	A fraction where the numerator and denominator are both integers. Also known as common or vulgar fraction.
simplify (a fraction)	Reduce a fraction to its simplest form. See cancel and reduce (a fraction).
simultaneous equations	Two linear equations that apply simultaneously to given variables. The solution to the simultaneous equations is the pair of values for the variables that satisfies both equations. The graphical solution to simultaneous equations is a point where the lines representing the equations intersect.
sine	See circular function and trigonometric functions

sine rule	In trigonometry, a rule used to calculate the sides and angles of a triangle: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$
soroban	A Japanese counting frame or abacus
sphere	A closed surface, in three-dimensional space, consisting of all the points that are a given distance from a fixed point, the centre. A hemi-sphere is a half-sphere. Adjective: spherical
square	1. A quadrilateral with four equal sides and four right angles. 2. The square of a number is the product of the number and itself. Example: the square of 5 is 25. This is written $5^2 = 25$ and read as five squared is equal to twenty-five. See also square number and square root.
square centimetre	Symbol: cm^2. A unit of area, a square measuring 1 cm by 1 cm. $10000\ cm^2 = 1\ m^2$
square metre	Symbol: m^2. A unit of area, a square measuring 1m by 1 m.
square millimetre	Symbol: mm^2. A unit of area, a square measuring 1 mm by 1 mm. One-hundredth part of a square centimetre and one-millionth part of a square metre.
square number	A number that can be expressed as the product of two equal numbers. Example 36 = 6 x 6 and so 36 is a square number. A square number can be represented by dots in a square array.
square root	A number whose square is equal to a given number. Example: one square root of 25 is 5 since $5^2 = 25$. The square root of 25 is recorded as $\sqrt{25} = 5$. However, as well as a positive square root, 25 has a negative square root, since $(-5)^2 = 25$.
standard index form	A form in which numbers are recorded as a number between 1 and 10 multiplied by a power of ten. Example: 193 in standard index form is recorded as 1.93×10^2.
standard unit	Uniform units that are agreed throughout a community. Example: the metre is a standard unit of length. Non-standard units such as the handspan are not widely agreed.

stem-and-leaf diagram	A format for displaying grouped data. Class intervals form the stem and all observations are listed in order against them, forming the leaves. Example: the numbers 29, 16, 18, 8, 4, 16, 27, 19, 13, 15 could be displayed as 0 | 4, 8 1 | 3, 5, 6, 6, 8, 9 2 | 7, 9 In this example, the class interval is the tens digit of the numbers. The diagram resembles a histogram on its side.
stratified sample	Where a population has been divided into strata based on common characteristics, a random sample drawn from each of the strata. Example: for the purposes of a school survey the pupils might be divided into age groups. The size of the sample drawn at random from each age group might be proportional to the relative sizes of the different age group for greater precision.
subtract	Carry out the process of subtraction
subtraction	The inverse operation to addition. Finding the difference when comparing magnitude. Take away.
subtraction by decomposition	A vertical method of subtraction. The number in the top line is broken down to aid calculation. Example: For 719 – 297 the calculation is written as $^{6}\not{7}^{1}1\ 9$ $-\ 2\ 9\ 7$ $4\ 2\ 2$
sum	The result of one or more additions.
surd	1. An irrational number expressed as the root of a natural number. Examples: $\sqrt[3]{2}$. 2. A numerical expression involving irrational roots. Example: $3 + 2\sqrt{7}$.
surface	A set of points defining a space in two or three dimensions.
symbol	A letter, numeral or other mark that represents a number, an operation or another mathematical idea. Example: L (Roman symbol for fifty), > (is greater than).

symmetry	A plane figure has symmetry if it is invariant under a reflection or rotation i.e. if the effect of the reflection or rotation is to produce an identical-looking figure in the same position. See also reflection symmetry, rotation symmetry. Adjective: symmetrical.
table	An orderly arrangement of information, numbers or letters usually in rows and columns.
take away	1. Subtract 2. Remove a number of items from a set.
tally	Make marks to represent objects counted.
tangent	1. A line that touches a curve at one point only. 2. See circular function and trigonometric function.
terminating decimal	A decimal fraction that has a finite number of digits. Example: 0.125 is a terminating decimal. In contrast 1/3 is a recurring decimal fraction. All terminating decimals can be expressed as fractions in which the denominator is a multiple of 2 or 5.
tetrahedron	A solid with four triangular faces. A regular tetrahedron has faces that are equilateral triangles. Plural: tetrahedra
theorem	A mathematical statement derived from premises and established by means of a proof.
time series	A set of observations, generally measurements or counts, taken over time usually at equally spaced intervals. Examples: annual birth rate for a country, mean monthly rainfall for a city. Time series are widely used in economics to predict future trends. To reduce the influence of short-term irregularities, a moving average may be used.
total	1. The aggregate. Example: the total population - all in the population. 2. The sum found by adding.
translation	A transformation in which every point of a body moves the same distance in the same direction. A transformation specified by a distance and direction (vector).
trapezium	A quadrilateral with exactly one pair of sides parallel.

tree diagram	A branching, decision diagram in which probabilities may be assigned to each branch and used to determine the probability of any outcome of combined or compound events.
triangle	A polygon with three sides. Adjective: triangular, having the form of a triangle.
triangular number	1. A number that can be represented by a triangular array of dots with the number of dots in each row from the base decreasing by one. Example:  The triangular number 10 represented as a triangular array of dots. 2. A number in the sequence 1, 1 + 2, 1 + 2 + 3, 1 + 2 + 3 + 4 etc. 55 is a triangular number since it can be expressed as, 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10.

trigonometric functions	Functions of angles. The main trigonometric functions are cosine, sine and tangent. Other functions are reciprocals of these.  The point (1, 0) is rotated (anticlockwise) with centre (0, 0) through an angle θ to P. The coordinates or P are (cosθ, sinθ). $\tan\theta$ is defined as $\frac{\sin\theta}{\cos\theta}$ The functions may be introduced as functions of angles in a right-angled triangle. Cosine, sine and tangent are defined as the ratios of sides in the triangle.  cos A = $\frac{b}{c}$ sin A = $\frac{a}{c}$ tan A = $\frac{\sin A}{\cos A} = \frac{a}{b}$
uniform	Not changing. Remaining constant.
unit	One. A standard used in measuring. Example: a metre is a metric unit of length.

unit fraction	A fraction that has 1 as the numerator and whose denominator is a non-zero integer. Example: $\frac{1}{2}$, $\frac{1}{-3}$,
unitary ratio	See ratio.
vector	A quantity that has magnitude and direction.
vertex	The point at which two or more lines intersect. Plural: vertices.
vertical	At right angles to the horizontal plane.
volume	A measure of three-dimensional space. Usually measured in cubes, units include cubic centimetres (cm^3) and cubic metres (m^3).
vulgar fraction	A fraction in which the numerator and denominator are both integers. Also known as common or simple fraction.
weight	The force exerted on an object possessing mass by the gravity of the earth, or any other gravitational body.
yard	Symbol: yd. An imperial measure of length. In relation to other imperial units of length, 1 yard = 3 feet = 36 inches. 1760yd. = 1 mile One yard is approximately 0.9 metres.
zero	1. Nought or nothing. 2. In a place value system, a place-holder. Example: 105. 3. The cardinal number of an empty set.