

Glossary

A

Acute An angle greater than 0° but less than 90° .

Adjacent A “shorter” side of a right-angled triangle that is “next to” an angle other than the right-angle.

Algebra The use of letters and other symbols to write mathematical information.

Alternate A pair of equal angles formed between two parallel lines and on opposite sides of the transversal (a line that crosses both parallel lines).

Alternate segment When an angle is drawn between a tangent and a chord the alternate segment is the segment that the angle does not cross.

Angle A measure of the amount of turning between two lines that meet at a point.

Apex In a pyramid, the apex is the point, above the base, at which all the sloping sides meet.

Arc Part of the circumference of a circle.

Area A measure of the amount of space contained within a plane shape.

Asymptote A line that a graph approaches but never intersects.

Average A single value used to represent a set of data. (A measure of the central tendency of the data.)

Axis of symmetry A line that divides a plane shape into two symmetrical halves or a “rod” about which a solid can rotate and still look the same in different positions.

B

Bar graph A diagram used to display discrete data.

Base When working with indices, the base is the number that is being raised to a power.

Bearing An angle indicating the direction of travel between two points. The bearing begins from the “North” direction and is measured clockwise round to the line joining start point and destination.

Bias Something that affects the chance of an event occurring in favour of a desired outcome.

Bivariate data Two measurements, relating to an investigation, taken at the same time.

BODMAS/BIDMAS When more than one arithmetic operation appears in a sum, this mnemonic indicates the order in which the operations should take place. Brackets, Of, Divide, Multiply, Add, Subtract.

C

Categorical data Non-numerical data.

Centre of rotation The point around which a plane shape can rotate and show the same shape in different positions.

Chord A straight line joining one point on the circumference of a circle to another point on the circumference.

Circle A set of (joined) points that are the same distance (radius) from a given fixed point (the centre).

Class interval The difference between the upper and lower limits of groups of data.

Coefficient In a term which is a mixture of numbers and letters, the coefficient is the number that is multiplying the letters.

Column vector Number pair notation used to describe a vector as the movement between two points: x units in the x -direction (left or right) and y units in the y -direction (up or down)

e.g. $\begin{pmatrix} x \\ y \end{pmatrix}$. See also vector.

Combined events One event followed by another event.

Commission Pay based on a percentage of sales made.

Common Denominator A common value that two or more fractions need to be converted to in order to be able to add and/or subtract fractions.

Common Factor A term that can be divided exactly into two or more other terms.

Complement The elements that are in the universal set but not in a given set.

Composite function Applying a function to a value and then another function to that result.

Composite number Integer with more than two factors i.e. it has more factors than just 1 and itself.

Compound interest Interest paid on interest already earned and not just the original capital.

Congruent Shapes that are identical in both shape and size.

Constant term A term in an equation or expression that has a fixed numerical value.

Continuous Data that can take any value in a range, such as height or weight.

Conversion Changing one quantity or unit into its equivalent in another unit.

Correlation The relationship between bivariate data.

Corresponding angles A pair of equal angles formed in the “same manner”. These occur with parallel lines and transversals, in similar and congruent triangles and other similar shapes.

Corresponding sides Sides that occupy the same relative position in similar or congruent shapes.

Cosine ratio For a given angle (other than the right-angle) in a right-angled triangle, the cosine ratio is the length of the side adjacent to the angle divided by the hypotenuse of the triangle.

Cosine rule A formula connecting the three sides of a triangle and one of the angles.

Cost price The price that a trader pays for goods.

Co-interior angles The two angles formed on the same side of a transversal when it cuts two parallel lines. Co-interior angles add up to 180° (they are supplementary).

Cube A cube is the result obtained when a number is multiplied by itself and then multiplied by itself again.

Cube root The number which, when multiplied by itself and then by itself again, gives the cube.

Cumulative frequency A “running total” of the frequencies.

Cumulative frequency curve A curve formed using the cumulative frequencies as the vertical axis value.

Cyclic quadrilateral A quadrilateral whose vertices all exactly touch the circumference of a circle.

D

Data A set of facts, numbers or other information.

Deductions Money that is subtracted from income before tax is calculated.

Denominator The number on the bottom of a fraction.

Dependent variable A variable whose value depends on the value of another variable.

Determinant In a two by two matrix, the product of the elements in the leading diagonal minus the product of the elements in the other diagonal.

Difference between two squares A method of factorising (putting into brackets) one squared term subtracted from another.

Differentiation The process of finding a derived function, which tells you the gradient of the function at a point on the curve.

Directed numbers Numbers that have a (positive or negative) direction; once a direction is taken to be positive, the opposite direction is negative e.g. -4°C is a directed number.

Direct proportion When two quantities increase or decrease at the same rate.

Discount The amount by which an original selling price is reduced.

Discrete Data that can only take certain (usually integer) values.

E

Earnings The amount earned for work done. (See commission, salary and wages.)

Element A member of a set.

Empty set A set that contains no elements.

Enlargement A transformation of a shape that keeps the ratio of corresponding sides the same but increases or decreases the lengths of the sides.

Equation A mathematical “sentence” involving the use of the “=” sign.

Equation of a line A formula that shows how the x coordinate is related to the y coordinate.

Equidistant The same distance from.

Equivalent Fraction The result of multiplying (or dividing) the top and bottom of a fraction by the same value.

Estimate An approximate solution to a sum found by using rounded values.

Estimated mean A calculated approximation for the mean of grouped data.

Event The outcome that is being tested for in a probability “experiment”.

Exchange rate The value to convert from one currency to another.

Expansion Multiplying out the terms inside a bracket by the term multiplying the bracket. (This includes multiplying one bracket by another.)

Experimental probability The chance of an event happening, calculated by running an “experiment” many times.

Exponent Another word for power or index, indicating how many times a base number is multiplied by itself.

Exponential A function formed when the variable is in the index.

Expression A group of terms linked by operation signs.

Extrapolation A value determined by continuing a line of best fit beyond the plotted data.

F

Face A plane shape that forms part of a solid.

Factor A number that divides exactly into another number with no remainder.

Factorisation To re-write an expression using brackets.

Favourable combinations Combinations of outcomes that mean a desired event has occurred.

Favourable outcomes Any outcomes that mean a desired event has occurred.

FOIL A mnemonic for the order of multiplying out terms in a double bracket expansion. First, Outside, Inside, Last.

Formula A general “rule” expressed algebraically (such as how to find the area of a shape).

Fraction Part of a whole.

Frequency The number of times a particular value occurs.

Frequency density The frequency of a class divided by the width of the class.

Frequency table A method of summarising data when values or classes occur more than once.

Function A set of rules or instructions for changing one number (an input) into another (an output).

Function notation An alternative mathematical way of writing equations.

G

Gradient The steepness of a line (or the steepness of a tangent drawn at a point on a curve).

Gross income Amount earned before deductions and tax.

Grouped The collection of individual data values into convenient groups. Used especially for continuous data.

H

Histogram A specialised graph used to illustrate grouped continuous data.

Hyperbola A graph where the variable is in the denominator of a fraction. (Also called reciprocal graphs.)

Hypotenuse The longest side of a right-angled triangle.

I

Image The new position of a point after a transformation.

Imperial A non-metric system of measurement.

Included angle In congruency, an angle that is formed by the meeting of two given sides.

Included side In congruency, a side that connects two given angles.

Independent An event whose outcome is not affected/influenced by what has occurred before.

Index Another word for power or exponent, indicating how many times a base number is multiplied by itself.

Integer Any of the negative and positive whole numbers, including zero.

y-intercept The point at which a line or curve crosses the y-axis.

x-intercept The point at which a line or curve crosses the x-axis.

Interest The amount charged for borrowing, or earned for investing, money.

Interest rate The percentage charged for borrowing, or earned for investing, money. (Usually an annual rate.)

Interquartile range The difference between the upper and lower quartiles.

Intersection In sets, the elements that are common to two or more sets. In algebra, the point where two lines or curves cross.

Inverse functions A function that does the opposite of the original function.

Inverse proportion When one quantity decreases in the same proportion as another quantity increases.

Irrational number A (decimal) number that does not terminate or recur and cannot be written as a fraction.

L

Line A straight, one dimensional figure that extends to infinity in both directions. See "line segment".

Line graph A chart where numerical values are plotted against 'number lines' on vertical and horizontal axes. Points are plotted and joined to form a line.

Line of best fit A trend line drawn onto a scatter graph that passes as close to as many data points as possible.

Line segment A section of a line that is the shortest distance between two points.

Line symmetry A line that divides a plane shape into two halves so that one half is the mirror image of the other. (See also axis of symmetry.)

Linear Equation A linear equation has no terms with a power in x greater than one.

Linear inequalities Similar to linear equations but using $<$, $>$, $\leq$ or $\geq$.

Linear programming A method for finding region in a plane that satisfies a set of constraints defined as linear inequalities.

Loss When goods are sold for less than they were bought, the loss is the cost price – selling price.

Lower bound The exact smallest value that a number (given to a specified accuracy) could be.

Lower quartile The value of data at the 25th percentile.

Lowest Terms An equivalent fraction where the numerator and denominator are the smallest allowable whole numbers. Also called simplest form.

M

Magnitude The size (of a vector) irrespective of direction.

Major segment The larger of two circle segments formed when a chord is drawn between two points on the circumference.

Maximum A turning point or vertex on a graph whose y-coordinate is greater than points immediately to its left and right.

Mean An average that uses all the data.

Median An average, the middle value of data when it is arranged in increasing order.

Metric A measuring system based on multiples of ten.

Midpoint Exactly half way between the ends of a line segment.

Minimum A turning point or vertex on a graph whose y-coordinate is lower than points immediately to its left and right.

Minor segment The smaller of two circle segments formed when a chord is drawn between two points on the circumference.

Mixed Number A number with a whole number part and a fraction part.

Modal class For grouped data, a class that has the highest frequency.

Mode An average, the most frequently occurring value in a set of data.

Multiple The result of multiplying a number by an integer.

Multiply out Multiplying out the terms inside a bracket by the term multiplying the bracket. (This includes multiplying one bracket by another.) See also expansion.

Mutually exclusive Events that cannot happen at the same time.

N

Natural number Any whole number from 1 to infinity, sometimes called “counting numbers”. 0 is not included.

Negative correlation A trend, in bivariate data, where, as one value increases, the other value decreases.

Net The plane shape formed from the faces of a solid when it is “unfolded”.

Net income Income from earnings after deductions and tax have been subtracted.

No correlation No apparent linear relationship between two sets of data.

n^{th} term The value in the n th position in a sequence.

Numerator The number on the top of a fraction.

Numerical data Data that is in the form of numbers.

O

Object The original position of a point before a transformation.

Obtuse An angle greater than 90° but less than 180° .

Opposite A “shorter” side of a right-angled triangle that is “opposite” an angle other than the right-angle.

Order of rotational symmetry The number of times a shape fits onto itself in one rotation.

Outcome The possible results of an “experiment”.

P

Parabola The graph of a quadratic relationship.

Parallel Lines that “never meet”. The shortest distance between a pair of parallel lines remains the same.

Percentage A fraction with a denominator of 100.

Percentage decrease The amount that something has decreased as a percentage of the original value.

Percentage increase The amount that something has increased as a percentage of the original value.

Percentiles The value of data at a specified position (the data must be arranged in increasing order).

Perimeter The distance around the edges of a plane shape.

Periodic Repeats at regular intervals.

Perpendicular At right angles to. When the angle between two lines is 90° , the lines are perpendicular to each other.

Perpendicular bisector A line that cuts exactly through the middle of another line, making an angle of 90° with it.

Pictogram A diagram that uses symbols or small pictures to represent data.

Pie chart A circular chart which uses slices or sectors of the circle to show the data.

Plane symmetry A flat surface that cuts a solid into two halves so that one half is the mirror image of the other.

Point of contact The point at which a tangent to a circle and chord meet.

Polygon A plane (two-dimensional) shape with three or more sides.

Positive correlation A trend in bivariate data where as one value increases, so does the other.

Possible outcomes The possible results from an event.

Power Another word for exponent or index, indicating how many times a base number is multiplied by itself.

Primary data Data collected by the person who is going to use it.

Prime factor A prime number that divides exactly into another number with no remainder.

Prime number A whole number greater than 1 which has only two factors: the number itself and 1.

Principal The initial amount of money invested or borrowed.

Probability A measure of how likely an event is to happen

Probability scale The range of values from zero to one.

Possibility diagram A list or diagram that shows all the equally likely outcomes of an “experiment”.

Profit When goods are sold for more than they were bought, the profit is the selling price – cost price.

Projection The image of a line on a plane such that the angle between the angle and the image is the smallest possible.

Q

Quadratic equation An equation that contains a quadratic expression.

Quadratic expression An expression where one term has a variable squared (and no variable with a higher power).

Quadrilateral Polygons with four sides.

Qualitative Another name for categorical data.

Quantitative Another name for numerical data.

Quartiles The values one quarter and three quarters through a set of data when arranged in ascending order.

R

Radius (plural Radii) a straight line from the centre to the circumference of a circle or sphere

Range A measure of the spread of data. The largest value – the smallest value.

Rate A comparison of two different quantities.

Ratio A comparison of amounts in a particular order.

Rational number A number that can be expressed as a fraction in its lowest terms.

Reciprocal The fraction obtained when the values of the numerator and denominator are interchanged. (See also hyperbola.)

Recurring decimals A decimal that continues forever, repeating itself at regular intervals.

Reflection A transformation that creates an image by reflecting points in a given line.

Reflex An angle greater than 180° but less than 360° .

Region A region in a plane that satisfies a set linear inequalities.

Relative frequency The experimental probability of an event happening.

Reverse percentage Finding the original value of an item before a percentage change has been applied.

Right-angle An angle that is exactly 90° .

Rotation A transformation that creates an image by rotating points by a given angle about a fixed point.

Rotational symmetry Symmetry by turning a shape about a fixed point so that it looks the same in different positions.

S

Salary Earnings based on a fixed yearly amount, usually paid in monthly instalments.

Sample space A list or diagram that shows the possible outcomes of two or more events.

Scalar A quantity that has size (magnitude) but not direction.

Scale A ratio that indicates how much smaller (or larger) a drawing is from the original object.

Scale drawing A representation of an object, either bigger or smaller than the original, whose corresponding sides remain in the same proportion.

Scale factor of areas The multiplying factor for the area of a shape that is enlarged from an original. (This is the square of the multiplying factor for sides.)

Scale factor of lengths The multiplying factor for the sides of a shape that is enlarged from an original.

Scale factor of volumes The multiplying factor for the volume of a shape that is enlarged from an original. (This is the cube of the multiplying factor for sides.)

Scatter diagram A diagram that plots pairs of bivariate data to help determine if there is any correlation between them.

Secondary data Data used for statistical purposes that has not been collected by the person performing the statistical analysis.

Sector Part of a circle defined by the angle that two radii make at the centre of the circle.

Selling price The price that a trader sells goods for.

Semi-circle Half of a circle.

Sequence A set whose elements have been listed in a particular order, with some connection between the elements.

Set A list or collection of objects that share a characteristic.

Set builder notation A means of describing the elements of a set without having to write them all down.

Similar Plane objects that have the same shape and proportion but are different in size.

Simple interest Interest that is calculated only on the original amount borrowed or invested.

Simplest Form An equivalent fraction where the numerator and denominator are the smallest allowable whole numbers. Also called lowest terms.

Simultaneous At the same time (or in the same position).

Sine ratio For a given angle (other than the right-angle) in a right-angled triangle, the sine ratio is the length of the side opposite to the angle divided by the hypotenuse of the triangle.

Sine rule In any triangle, the ratio of the sine of an angle to the length of the side opposite the angle is always the same.

Slant Height In a cone, the slant height is the shortest distance from a point on the circumference of the base to the apex.

Solid A three-dimensional object.

Solution The value obtained from solving an equation.

Speed A rate that compares distance travelled in a given time.

Spread A measure such as range or interquartile range.

Square The product obtained when a number is multiplied by itself.

Square root A number that, multiplied by itself gives a square.

Standard Form A shorthand method of writing very large or very small numbers.

Subject The variable written by itself (usually to the left of the "=" sign).

Subset A set whose elements are all also members of another (usually larger) set.

Substitute To replace one value with another (usually a letter with a number).

Substitution The replacement of a letter in a formula or expression with a number.

Subtended An angle formed at the meeting of two given lines.

Surface Area The total area of the faces of a three-dimensional solid.

Symbol A short way of writing mathematical information, such as "=" which means is equal to.

Symmetrical A shape that has a property of symmetry.

Symmetry Having the same shape in different positions either through reflection in a line or rotation about a point.

T

Tangent A straight line that just touches a curve at one point.

Tangent ratio For a given angle (other than the right-angle) in a right-angled triangle, the tangent ratio is the length of the side opposite to the angle divided by the side adjacent to the angle.

Tax threshold The amount of money that can be earned before any tax becomes payable.

Term Part of an expression or the individual numbers, letters, objects etc in a sequence.

Terminating decimals A decimal that does not continue forever.

Term-to-term rule The rule that tells you how to generate the next term in a sequence.

Theoretical probability The chance of an event happening, calculated if it is known that the possible outcomes are equally likely.

Transformation A change in the position of a point or line following a given rule.

Translation A transformation that creates an image of a point by “sliding” it along a plane.

Trend The general direction of the line of best fit for bivariate data.

Trial An “experiment” to determine the value of an outcome.

Triangle A polygon with three sides.

Turning point A point on a graph where it changes direction. Usually a maximum or minimum point.

Two-way table A table that summarises the data from two or more sets of data.

U

Union A set that contains all the elements of two or more sets but without any repeats.

Unitary method A method for solving proportion problems.

Universal set For a given problem, all the elements that could possibly be included.

Unknown angle An angle whose value is to be calculated.

Unknown side A side whose length is to be calculated.

Upper bound The largest value that a number (given to a specified accuracy) could be.

Upper quartile The value of data at the 75th percentile.

V

Variable A letter in a formula or equation that can have different values.

Vector A quantity that has direction as well as size.

Venn diagram A pictorial method for illustrating the elements and interconnections of sets.

Vertically opposite A pair of equal angles formed when two straight lines cross.

Vertices The points where two or more edges of a plane shape meet.

Volume The amount of space contained inside a solid object.

Vulgar Fraction Another name for “common” fractions that have a numerator and denominator.

W

Wages Pay based on the number of hours worked, usually paid weekly.