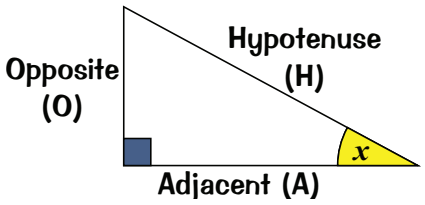
A – Alpha

Acceleration /əkˌseləˈreɪʃ(ə)n/

The rate of change of velocity over time.

Adjacent /əˈdʒeɪ.sənt/

Of a right-angled triangle, it's the side between the angle under consideration and the right angle.

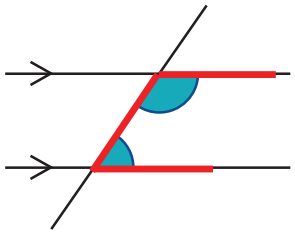


Algebraic fraction

A fraction that has an algebraic expression in the numerator and/or denominator.

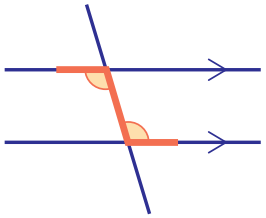
Allied /'ælaɪd/ **angles**

The pair of angles in a C– or U–shape formed when a straight line crosses two parallel lines. These angles always add up to 180°.



Alternate /ˈɒl.tə.neɪt/ **angles**

The pair of equal angles in a Z–shape formed when a straight line crosses two parallel lines.



AND rule (for dependent events)

The probability of both A and B happening is equal to the probability of A happening multiplied by the probability of B happening given that A has happened.

AND rule (for independent events)

The probability of both A and B happening is equal to the probability of A happening multiplied by the probability of B happening.

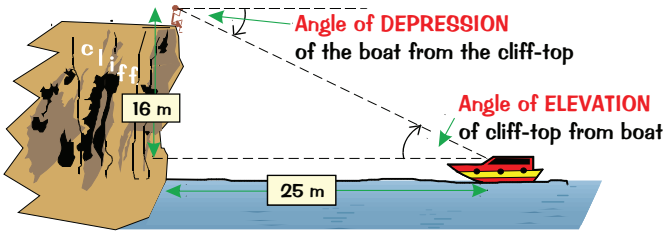
$$P(A \text{ and } B) = P(A) \times P(B)$$

Angle bisector /baɪˈsektə/

The line that cuts an angle into two equal smaller angles.

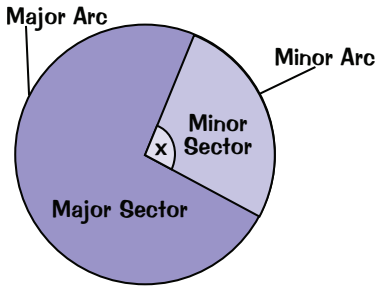
Angle of depression/elevation

The angle between a horizontal line and the line of sight of an observer at the same level looking down or up, respectively.



Arc /ˈɑːk/

A part of the circumference of a circle.



Arithmetic /əˈrɪθ.mə.tɪk/ **(or linear) sequence**

A sequence where the terms increase or decrease by the same amount each time (the common difference d).

$$u_n = a + (n-1)d,$$

where a is the first term and u_n is the n^{th} term.

Asymptote /ˈæs.ɪm.təʊt/

A straight line to show the values where the graph of a function is undefined.

Average

A way of representing a set of data with a central or typical value of the set. The three common averages used are the mode, median and mean.

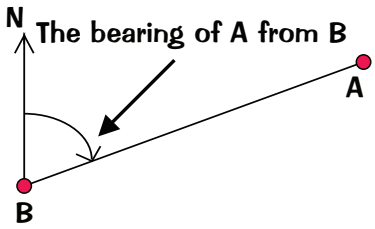
B – Bravo

Bar chart

A chart to display discrete or categorical data. The height of bars shows the number (or frequency) of items in different categories.

Bearing /ˈbeə.rɪŋ/

A three-figure angle measured clockwise from the north line to tell you the position of one object in relation to another.



Bias /ˈbaɪ.əs/ (in outcomes)

Applies to e. g. rolling dice, where the outcomes are not equally likely.

Biased /ˈbaɪ.əst/ sample

One in which some members of a population are more likely to be included than others.

Bisect

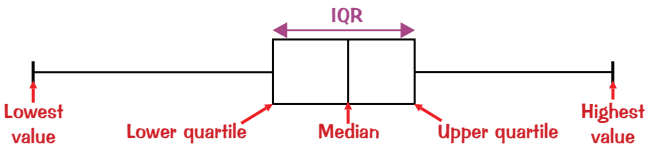
Split a line or angle exactly in half.

BODMAS

The correct order to carry out mathematical operations — it stands for Brackets, Other, Division, Multiplication, Addition, Subtraction.

Box plot

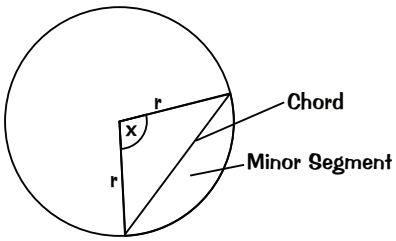
A diagram that shows the distribution of data in a data set. The lower and upper quartiles form the ends of a box, the median is marked inside the box, and lines extend from the box to the lowest and highest values.



C – Charlie

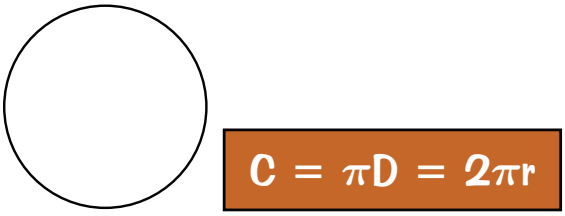
Chord /kɔːd/

A line between two points on the edge of a circle.



Circumference /səˈkʌm.fər.əns/

The distance around the outside of a circle.



Common denominator /dɪˈnɒm.ɪ.neɪ.tər/

The same bottom number in two or more fractions.

Common factor

A common factor of two or more numbers is a factor of both or all of those numbers.

Common multiple /ˈmʌl.tɪ.pəl/

A common multiple of two or more numbers is a multiple of both or all of those numbers.

Complement of a set

All elements of the universal set that aren't in the set. The complement of a set A is written A'

Completing the square

A way to write and solve a quadratic equation when it can't be easily factorised. The 'Completed square form' is $(x+p)^2+q$ where x is a variable and p and q are constants.

Composite bar chart

A bar chart which has single bars split into different sections for each set of data displayed.

Composite /ˈkɒm.pə.zɪt/ function

The combination of two or more functions — $\mathrm{f}(x)$ and $\mathrm{g}(x)$ could combine to give the composite functions $\mathrm{gf}(x)$ or $\mathrm{fg}(x)$.

Composite shape

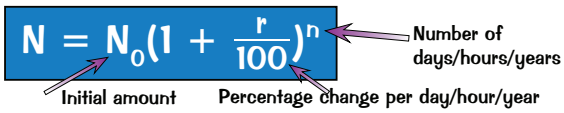
A shape made up of two or more basic shapes.

Compound /ˈkɒm.paʊnd/ decay

When a quantity gets smaller over time due to successive percentage decreases based on the decreasing value itself.

Compound growth

When a quantity gets larger over time due to successive percentage increases based on the increasing value itself.



Compound inequality /ˌɪn.ɪˈkwɒl.ə.ti/

A combination of multiple inequalities, e.g. $a < x < b$.

Compound interest

Compound growth applied to money.

Compound measure

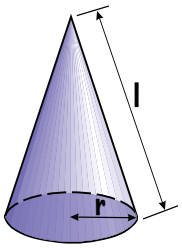
A measurement made up of two or more other measurements, e. g. speed = distance ÷ time.

Conditional probability

The probability of an event happening, given that another event has happened.

Cone /kəʊn/

A 3D shape which has a circular base and a curved sloping face that goes up to a point at the top.



Congruent /ˈkɒŋ.gru.ənt/ 全等

Congruent shapes are exactly the same shape and size as each other.

Constant of proportionality /prəˌpɔːʃəˈnæləti/

Usually given the letter k, it's the constant in an equation where two variables are in proportion, e.g. $y = kx$ or $y = \frac{k}{x}$.

Construction

An accurate drawing made using a pair of compasses, a protractor and a ruler.

Continuous data

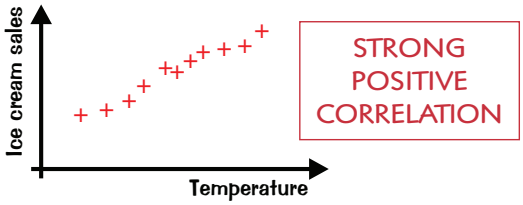
Numerical data which can take any value in a given range.

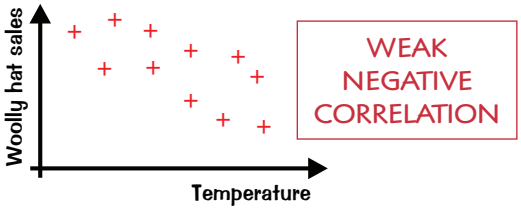
Conversion factor

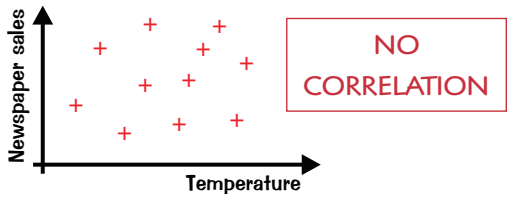
The number you multiply or divide by to convert a measurement from one unit to another.

Correlation /ˌkɒr.əˈleɪ.ʃən/

How two variables are related to each other. Positive correlation means the variables increase and decrease together. Negative correlation mean that as one variable increases, the other decreases.

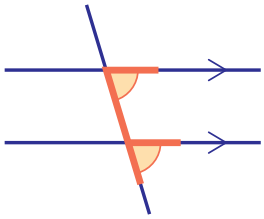






Corresponding /ˌkɒr.ɪˈspɒn.dɪŋ/ angles

The pair of equal angles in an F–shape formed when a straight line crosses two parallel lines.

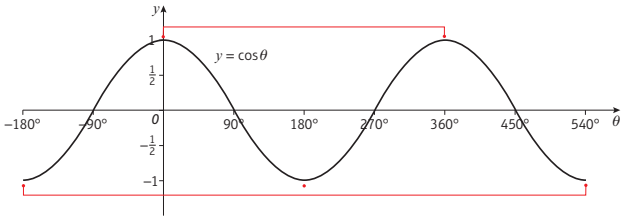


Cosine

The cosine of an angle x in a right-angled triangle is the ratio of the adjacent and hypotenuse adjacent sides, i.e.

$$\cos(x) = \frac{\text{adjacent}}{\text{hypotenuse}}.$$

The graph of $y = \cos(x)$ has a 'bucket' shape pattern repeated every $360°$.



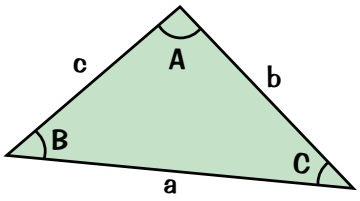
Cosine rule

A rule connecting sides and angles in any triangle:

$$a^2 = b^2 + c^2 - 2bc\cos(A).$$

or

$$\cos(A) = \frac{b^2 + c^2 - a^2}{2bc}$$

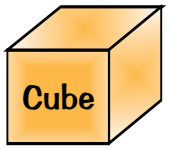


Cross–section

The face exposed when cutting through a 3D shape.

Cube

A cuboid where all six faces are squares.



Cube (power)

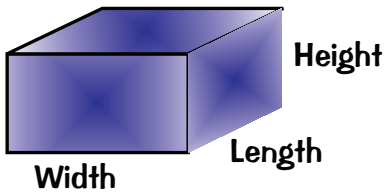
A number multiplied by itself three times — written as the power of 3, x^3.

Cubic graph

The graph of a cubic function, which has x^3 as its highest power.

Cuboid /ˈkjuː.bɔɪd/

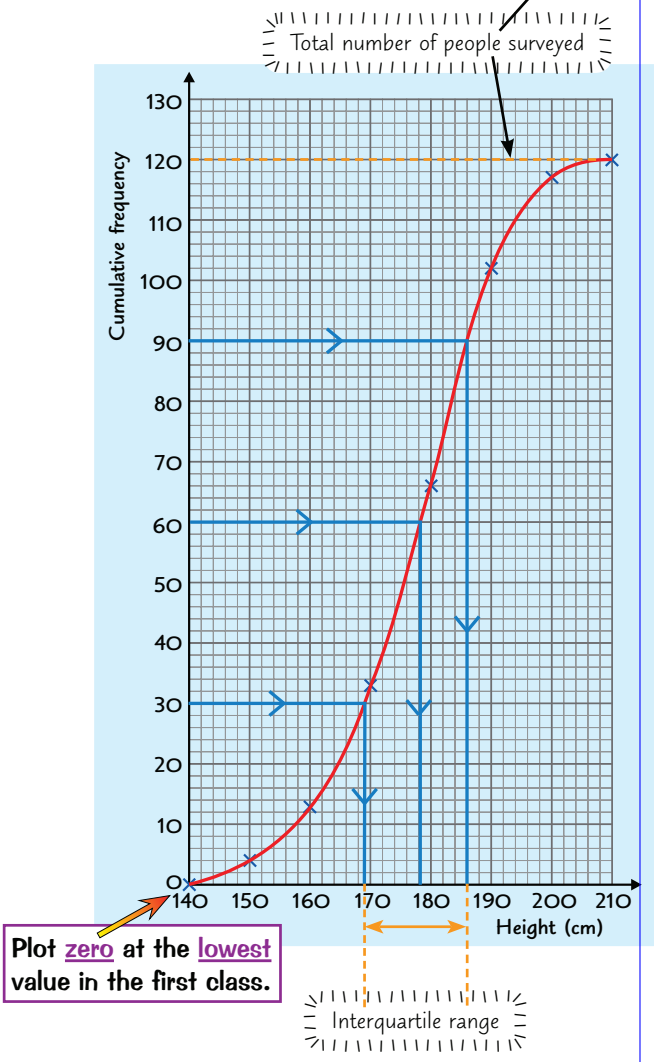
A 3D shape with six rectangular faces.



Cumulative /ˈkjuː.mjə.lə.tɪv/ frequency diagram

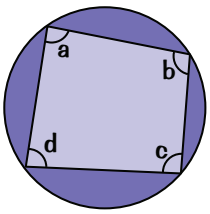
An S-shaped curve to display the running total of frequencies for a set of data.

Height (h cm)	Frequency	Cumulative Frequency
140 < h ≤ 150	4	4
150 < h ≤ 160	9	4 + 9 = 13
160 < h ≤ 170	20	13 + 20 = 33
170 < h ≤ 180	33	33 + 33 = 66
180 < h ≤ 190	36	66 + 36 = 102
190 < h ≤ 200	15	102 + 15 = 117
200 < h ≤ 210	3	117 + 3 = 120



Cyclic /ˈsɪk.lɪk/ quadrilateral /ˌkwɒd.rɪˈlæt.ər.əl/

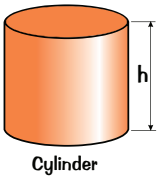
Any quadrilateral that can be drawn inside a circle with all four vertices (corners) touching the circumference.



a + c = 180°
b + d = 180°

Cylinder /ˈsɪl.ɪn.dər/

A 3D shape with a constant circular cross-section.



D – Delta

Deceleration /ˌdiːˈsel.ər.eɪt/

A negative acceleration.

Denominator /dɪˈnɒm.ɪ.neɪ.tər/

The bottom number of a fraction.

Density /ˈden.sɪ.ti/

The mass per unit volume of a substance.

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

Depreciation /dɪˌpri · ʃiˈeɪ · ʃən/

The loss of value over time due to compound decay.

Diameter /daɪˈæm.ɪ.tər/

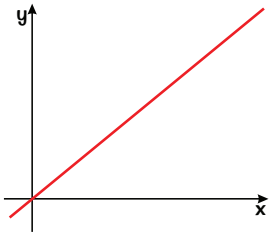
The line from one side of a circle to the other through its centre. The diameter is twice the length of the radius.

Difference of two squares

A quadratic expression with just two square terms separated by a minus sign, $a^2 - b^2$, which can be factorised as $(a + b)(a - b)$.

Direct proportion /prəˈpɔːʃən/

Two variables are in direct proportion when the ratio between them is always the same, i.e. $y = kx$.



Discrete data

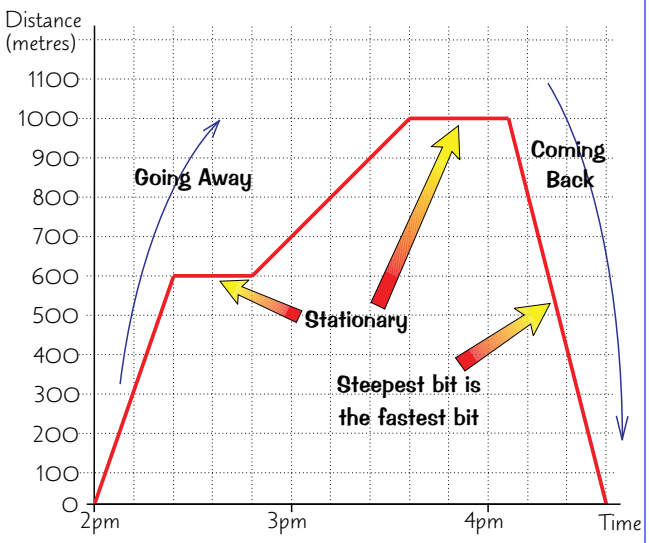
Numerical data which can only take certain values.

Disproof by counter-example

Showing that a statement is false by giving an example where it doesn't work.

Distance-time graph

A graph with distance travelled on the vertical axis and time taken on the horizontal axis.



Dual /ˈdʒuː.əl/ bar chart

A bar chart which shows two sets of data by having two bars per category.

E – Echo

Element /ˈel.ɪ.mənt/

An item contained in a set, also called a member of the set. $x \in A$ means x is an element of set A.

Elevation /ˌel.ɪˈveɪ.ʃən/

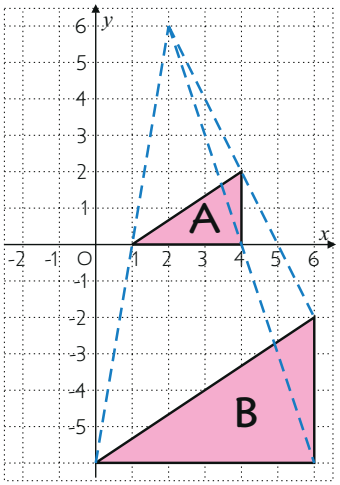
The 2D view of a 3D object looking at it either from the front or side horizontally.

Empty set

A set that has no elements, denoted by $\varnothing$ or $\{\ \}$.

Enlargement /ɪnˈlɑːdʒ.mənt/

A transformation where a shape is enlarged by a particular scale factor, sometimes in relation to a centre of enlargement.



Equation

A way of showing that two expressions are equal to each other for a particular value or values of an unknown.

Equilateral /ˌiː.kwɪˈlæt.ər.əl/ triangle

A triangle with 3 equal sides and equal angles (of 60°).

Equivalent /ɪˈkwɪv.əl.ənt/ fraction

A fraction that shows the same proportion as another fraction using a different numerator and denominator.

Estimate

An approximation to the answer to a calculation or the size of an amount.

Event

A set of one or more outcomes to which a probability is assigned.

Exchange rate

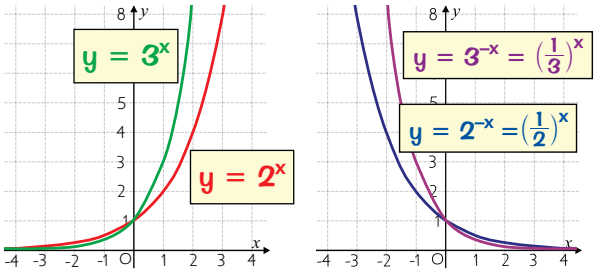
The conversion factor between two currencies.

Expected frequency /ˈfriː.kwən.si/

The number of times an event is expected to happen — its probability of happening multiplied by the number of times an experiment is done.

Exponential /ˌek.spəˈnen.ʃəl/ graph

The graph of an exponential function, $y = a^x$. They all have the same curved shape, an asymptote at $y = 0$ and a y-intercept at $y = 1$.

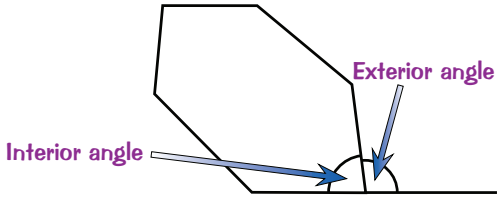


Expression

An algebraic expression is a combination of terms separated by + and − signs.

Exterior /ɪkˈstɪə.ri.ər/ angles

The angle between a side of a polygon and a line that extends out from a neighbouring side.



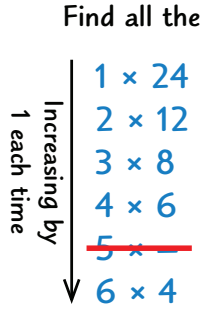
Extrapolation /ɪkˌstræp.əˈleɪ.ʃən/

Using e.g. a line of best fit to predict values outside the range of data you have.

F – Foxtrot

Factor

The factors of a number are the numbers that divide into it exactly.



Factorising

Finding a common factor in the terms of an expression and taking it outside a pair of brackets.

Fibonacci /fɪb.əˈnɑː.tʃi/ sequence

A sequence where each term is found by adding together the two previous terms.

Formula

The mathematical relationship between different quantities.

Fraction

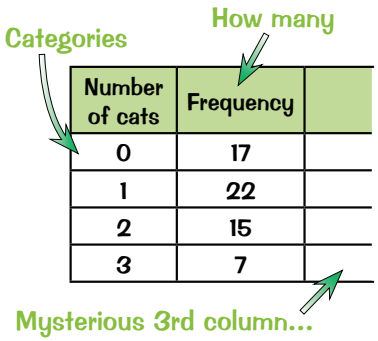
A value written as one number divided by another.

Frequency polygon

A line graph which shows the frequency of data in a grouped frequency table.

Frequency table

A table to record the frequency of a response or event.

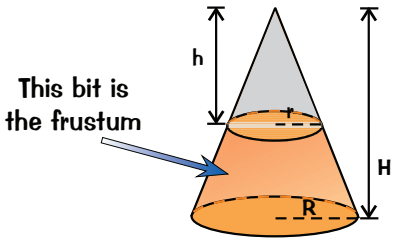


Frequency tree

A diagram made up of branches to show the different possible outcomes of multiple events. The number at the end of each branch shows how many times that event or combination of events happened.

Frustum /ˈfrʌs.təm/

The 3D shape left once you chop off the top bit of a cone parallel to its circular base.



Function

A rule that turns one number (the input) into another number (the output) .

Function notation

E.g. $\mathrm{f}(x) = x + a$ and $\mathrm{f} : x \mapsto x + a$ both tell you the rule of a function, in this case to add a to any input value x.

G – Golf

Geometric sequence

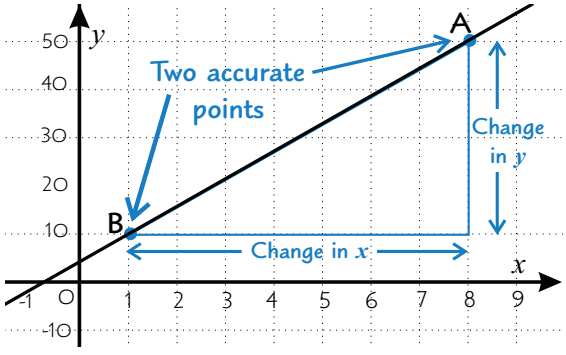
A sequence where the terms are found by multiplying by the same value each time (the common ratio).

$$u_n = ar^{n-1},$$

where a is the first term and r is the common ratio.

Gradient

The slope or steepness of a graph, which can be found by dividing the change in y by the change in x.

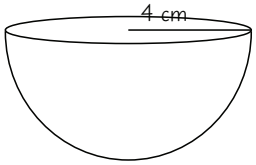


$$\text{GRADIENT} = \frac{\text{CHANGE IN Y}}{\text{CHANGE IN X}}$$

H – Hotel

Hemisphere

Half of a sphere.

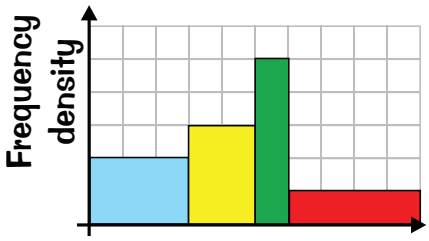


Highest common factor (HCF)

The largest number that will divide exactly into both (or all) of a given pair (or set) of numbers.

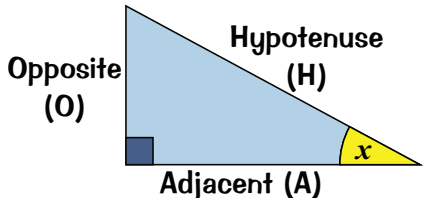
Histogram

A diagram to show grouped continuous data. The area of each bar represents the frequency of each group.



Hypotenuse

The longest side in a right-angled triangle, opposite the right angle.



I – India

Identity

A way of showing that two expressions are always equal to each other, not just for a particular value or values. Identities use the sign '≡'.

Imperial units

A set of non-metric units for measuring, e.g. inches, ounces, miles.

1) Length Inches, feet, yards, miles
2) Area Square inches, square feet, square miles
3) Volume Cubic inches, cubic feet, gallons, pints
4) Weight Ounces, pounds, stones, tons
5) Speed mph

Improper fraction

A fraction where the numerator (the top number) is bigger than the denominator (the bottom number) .

Independent events

Two (or more) events are independent if the probability of one happening has no effect on the probability of the others happening.

Index (or power)

A repeated multiplication of a number or variable. a^x means 'a to the power of x' or 'x lots of a multiplied together'.

Inequality

A pair of expressions separated by one of the symbols $<, >, \leq, \geq$. Like an equation, but with a range of solutions.

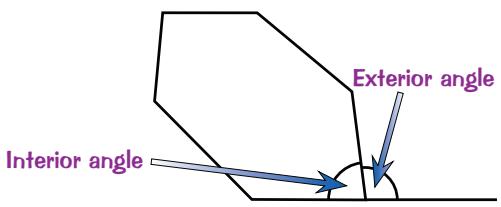
$>$	greater than
$<$	less than
$\geq$	great than or equal to
$\leq$	less than or equal to

Intercept

The point where a graph crosses an axis.

Interior angles

The angles inside each vertex (corner) of a polygon.



Interpolation

Using e.g. a line of best fit to predict values within the range of data you have.

Interquartile range

The difference between the upper and lower quartiles. This gives you the range of the middle 50% of the data in a set — a measure of spread.

Intersection (of sets)

The intersection of two sets $(A \cap B)$ contains only the elements that are in both sets.

Invariant point

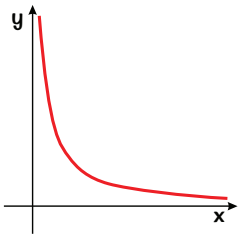
A point on a shape that doesn't move under a transformation.

Inverse function

A function $f^{-1}(x)$ that reverses the effect of the original function $f(x)$.

Inverse proportion

Two variables are inversely proportional when one variable increases as the other decreases, i.e. $y = \frac{k}{x}$. The product of the two variables is constant.



Irrational number

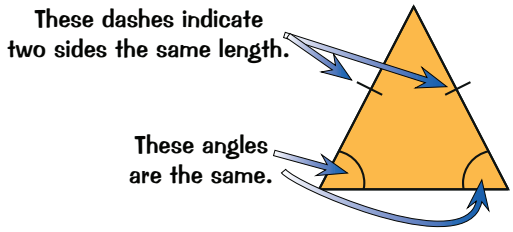
A number that cannot be written as a fraction, e.g. $\sqrt{2}$ or π. Irrational numbers are non-recurring decimals that go on forever.

Isometric drawing

A 2D drawing of a 3D object on an isometric grid of dots or lines in a pattern of equilateral triangles.

Isosceles triangle

A triangle with 2 equal sides and 2 equal angles.

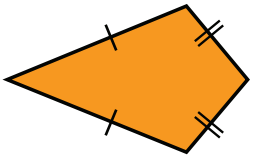


Iteration

A numerical way of solving equations that lets you find the approximate value of a solution by repeatedly using an iteration formula.

K – Kilo

Kite A quadrilateral with two pairs of equal sides and one pair of equal angles in opposite corners.

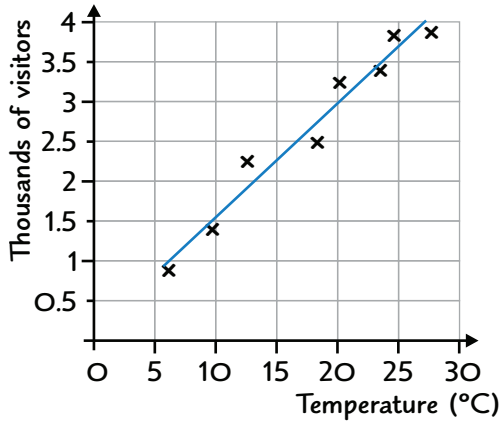


Kite

L – Lima

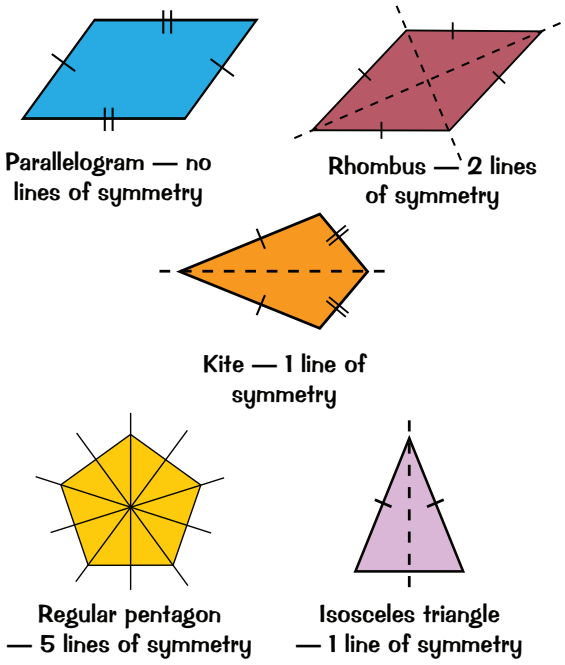
Line of best fit

A straight line on a scatter graph to show the general trend of the data.



Line of symmetry

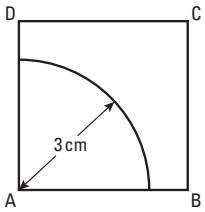
A mirror line on a graph or 2D shape which divides it so that each half is a reflection of the other.



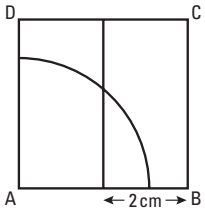
Locus

A set of points which satisfy a particular condition, e.g. points that are a fixed distance away from a point or line. The plural of locus is loci.

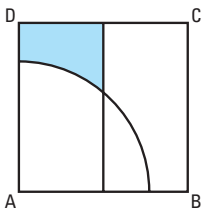
ABCD is a square of side 4 cm. Draw the region of points inside the rectangle that are both more than 3 cm from point A and more than 2 cm from the line BC.



Find the locus of points 3 cm from point A inside the square.



Find the locus of points 2 cm from the line BC inside the square.



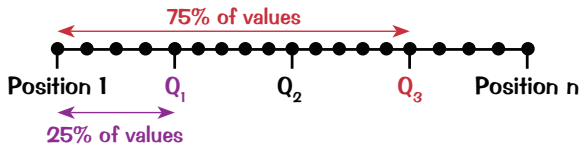
Shade the area that is both more than 3 cm from point A and more than 2 cm from the line BC.

Lower bound

The smallest actual value a rounded number can be.

Lower quartile

The value 25% of the way through an ordered set of data.



Lowest common multiple (LCM)

The smallest number that is a multiple of both (or all) of a given pair (or group) of numbers.

M – Mike

Mean

The total of all the values in a set of data divided by the number of values.

Median

The middle value in a set of data written in size order.

Member

See element.

Metric units

Units for measuring using a decimal-based system (so units are based on powers of 10), e.g. metres, kilograms.

1) Length mm, cm, m, km
2) Area mm^2, cm^2, m^2, km^2,
3) Volume mm^3, cm^3, m^3, ml, litres
4) Weight g, kg, tonnes
5) Speed km/h, m/s

MEMORISE THESE KEY FACTS:

1 cm = 10 mm	1 tonne = 1000 kg
1 m = 100 cm	1 litre = 1000 ml
1 km = 1000 m	1 litre = 1000 cm^3
1 kg = 1000 g	1 cm^3 = 1 ml

Mixed number

A number that has a whole number part and a fraction part.

Modal group/class

The group with the highest frequency in a set of grouped data.

Mode

The most common value in a set of data.

MODE = MOST common
MEDIAN = MIDDLE value (when values are in order of
MEAN = TOTAL of items ÷ NUMBER of items
RANGE = Difference between highest and low

Multiple

The multiples of a number are the numbers in its times table.

Find the first 8 multiples of 13.

You just need to find the first 8 numbers in the 13 times table:

13 26 39 52 65 78 91 104

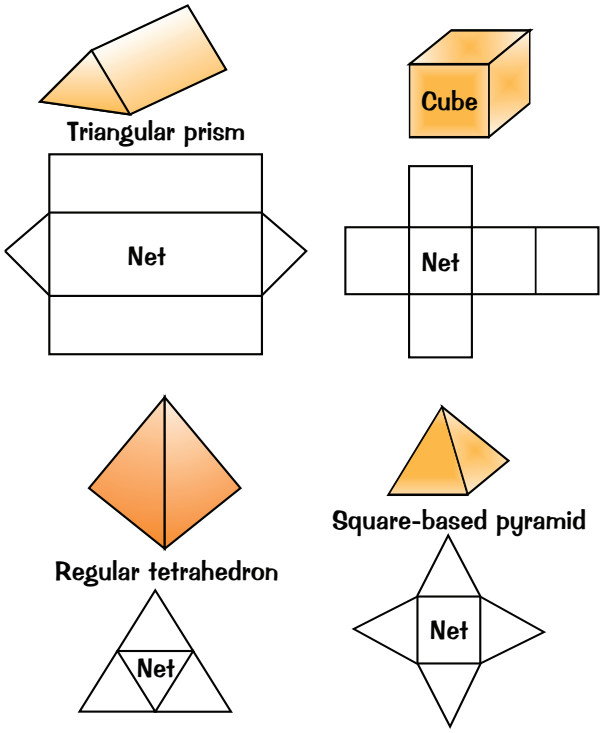
Mutually exclusive events

Events that cannot happen at the same time. E.g. choosing a club and choosing a red card from a pack of cards are mutually exclusive events.

N – November

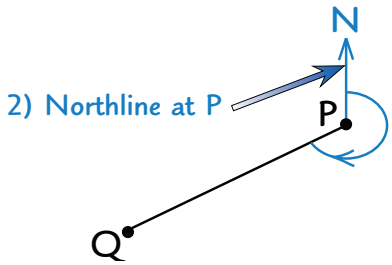
Net

The 2D representation of a 3D object that can be folded up to make the object.



North line

The line vertically upwards from a point, used as the start point for bearings. nth term A general term in a sequence in the position n, which can be used to find any term in the sequence.



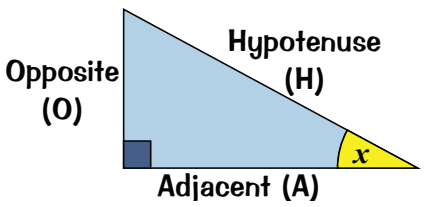
Numerator

The top number of a fraction.

O – Oscar

Opposite

Of a right-angled triangle, it's the side opposite the angle under consideration.



Order of rotational symmetry

The number of positions you can rotate a shape into so that it still looks exactly the same.

OR rule (for mutually exclusive events)

The probability of at least one of the events happening is the sum of the probabilities of each event happening. It's also called the addition rule.

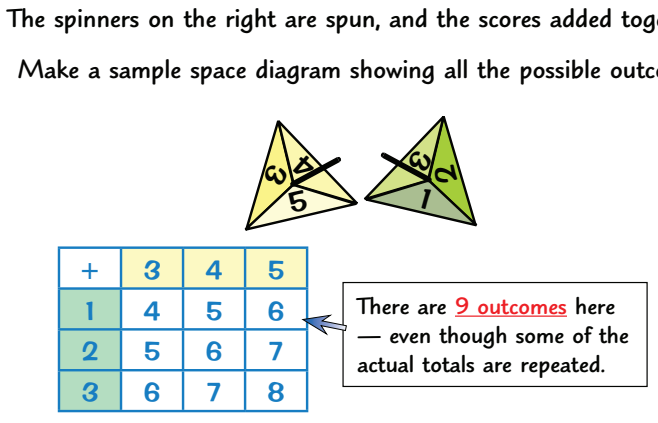
$$P(A \text{ or } B) = P(A) + P(B)$$

OR rule (general)

If events are not mutually exclusive, the probability that at least one event happens is equal to the sum of the probabilities of each event happening, minus the probability that both events happen.

Outcome

The result of an activity in probability. E.g. flipping a coin and getting tails.



Outlier

An extreme value in a data set.

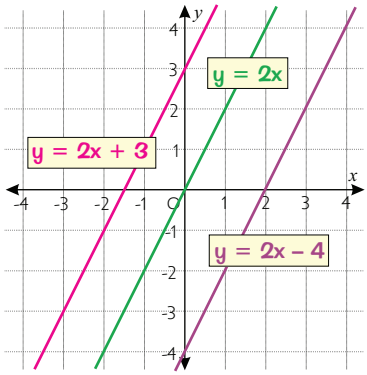
P – Papa

Parabola

The shape of a graph of a quadratic function.

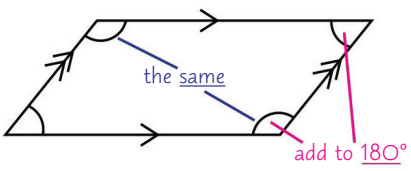
Parallel lines

Two lines that have the same gradient. They are always at the same distance apart and never meet.



Parallelogram

A quadrilateral with two pairs of equal, parallel sides.

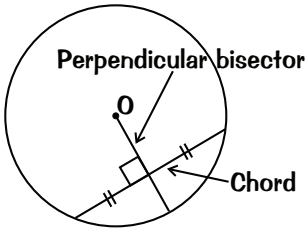


Percentage

A proportion of something compared to the whole, where the whole is taken to be 100.

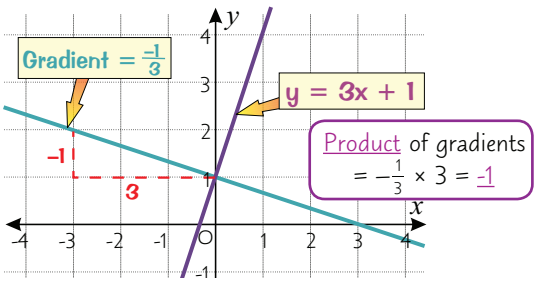
Perpendicular bisector

The perpendicular bisector of line AB is at right angles to the line and cuts it in half.



Perpendicular lines

Two lines that cross at a right angle.



Pie chart

A circular chart showing the proportion of the data set in each category rather than the actual frequency.

Plan

The 2D view of a 3D object looking vertically downwards on it.

Plane of symmetry

A 2D shape that cuts a 3D solid into two identical halves.

Polygon

A 2D shape with straight sides.

Population

The whole group of people or things you want to find out about when collecting data.

Power

See index.

Pressure

A force per unit area.

Primary data

Data you have collected yourself.

Prime factorisation

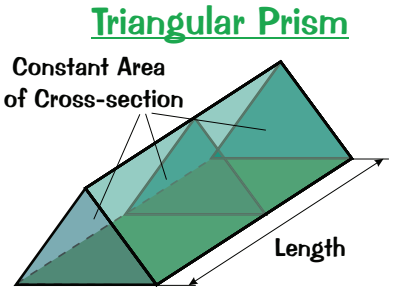
Breaking a number down into a unique string of prime numbers (its prime factors) multiplied together.

Prime number

A number that has no factors except itself and 1.

Prism

A 3D shape with a constant cross–section in the shape of a polygon.



Probability

How likely an event is to happen.

Projections

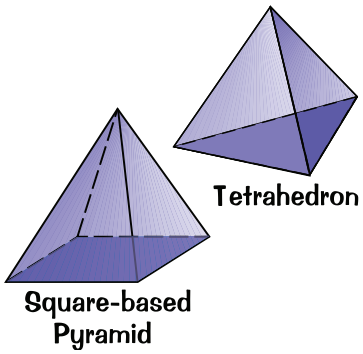
Plans and elevations — 2D representations of a 3D object.

Proof

A mathematical explanation to show that something is true.

Pyramid

A 3D shape which has a polygon base and which rises to a point.



Pythagoras's theorem

The rule connecting lengths of sides in right-angled triangles: $h^2 = a^2 + b^2$, where h is the hypotenuse of the triangle and a and b are the shorter sides.

Q – Quebec

Quadratic

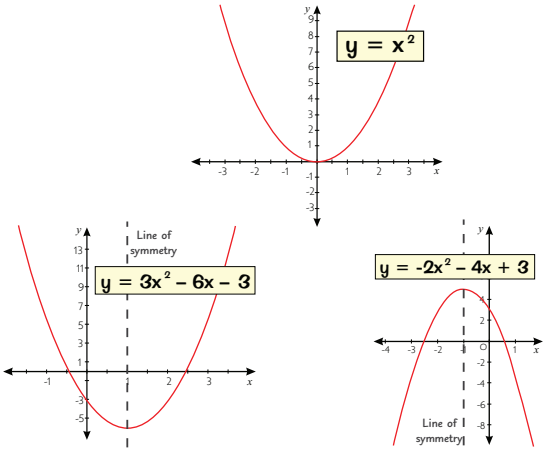
An expression, equation or function where the highest power of the variable is 2. They take the form $ax^2 + bx + c$, where a, b and c are constants and x is a variable.

Quadratic formula

The formula $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ which gives you all the possible solutions to the quadratic equation $ax^2 + bx + c = 0$.

Quadratic graph

The graph of a quadratic function — a u- or n-shaped symmetrical curve.



Quadrilateral

A shape that has 4 sides.

Qualitative data

Data which is descriptive, so it records words instead of numbers.

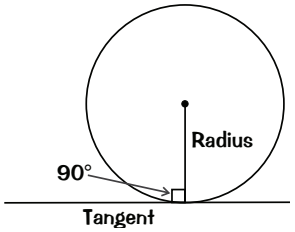
Quantitative data

Data which is numerical. It can be discrete or continuous.

R – Romeo

Radius

The line from the centre to the edge of a circle.



Range

The difference between the largest and smallest value in a set of data — measure of spread.

Ratio

A way of showing proportion between quantities in the form $a : b$.

Rational number

A number that can be written as a fraction with an integer on the top and the bottom of the fraction. Terminating and recurring decimals are rational.

Rationalising the denominator

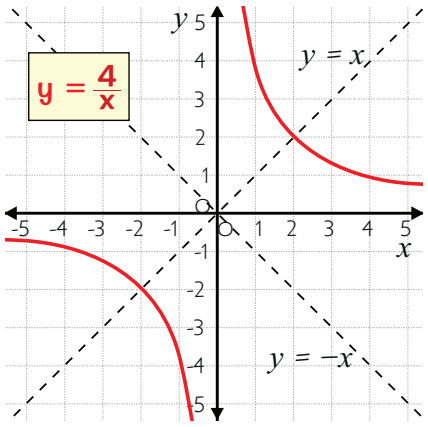
Getting rid of surds from the bottom of a fraction by multiplication.

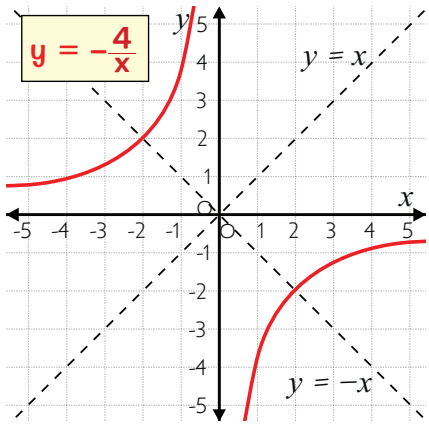
Reciprocal

The reciprocal of a number is $1\div$ that number.

Reciprocal graph

The graph of a reciprocal function $y = \frac{1}{x-a} + b$. All reciprocal graphs have the same basic shape but with different asymptotes.





Recurring decimal

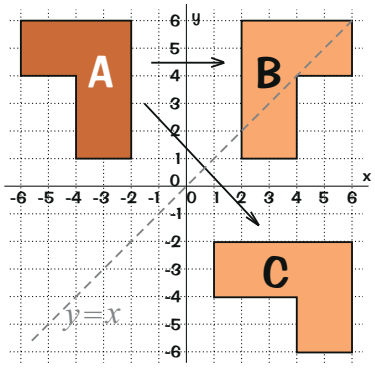
A decimal number that has a repeating pattern in its digits which goes on forever.

Recursive iteration

Repeatedly putting the result from an iteration formula back into the formula, each time getting closer to the actual solution.

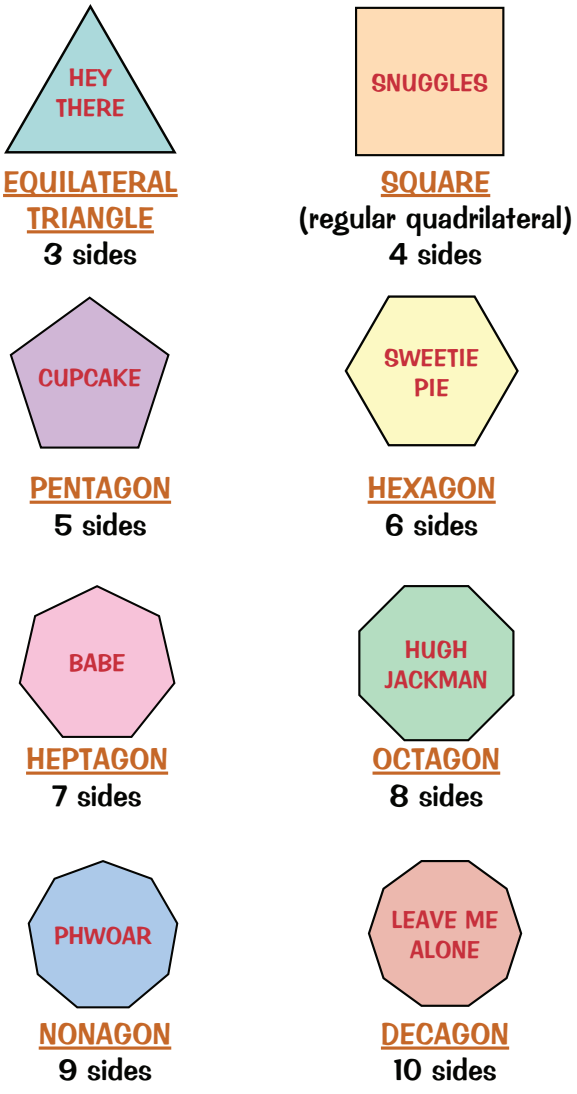
Reflection

A transformation where a point, shape or graph is mirrored in a straight line.



Regular polygon

A polygon where all its sides and angles are equal.

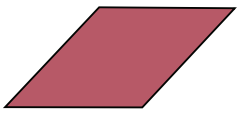


Relative frequency

The number of times a result has occurred divided by the number of times an experiment has been done. It's used to estimate probabilities. Also called 'experimental probability'

Rhombus

A parallelogram where all sides are the same length.



Rhombus

Right-angled triangle

A triangle with a right-angle $90°$.

Root (of an equation)

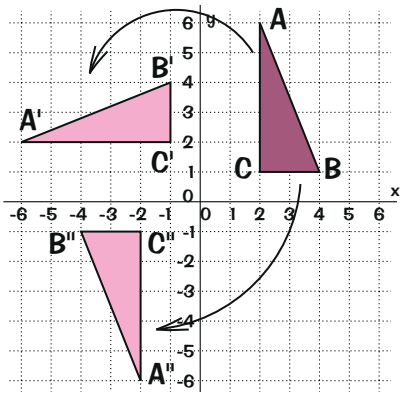
Another word for the solution of an equation, usually used when solving $f(x) = 0$.

Root

The inverse operation of squaring and cubing (and raising to other powers). Square roots are written as $\pm\sqrt{x}$, cube roots as $\sqrt[3]{x}$.

Rotation

A transformation where a shape is turned about a particular point — centre of rotation.



S – Sierra

Sample

A smaller group of the population used to represent the population and to collect data from.

Sample space diagram

A list, grid or two-way table to show all the possible outcomes of an event in a systematic way. Also known as a possibility diagram.

Scalar

A quantity with magnitude (size) but no direction.

Scale drawing

A diagram where all lengths are related to their real-life lengths by a constant scale factor.

Scale factor

The number that tells you how many times longer the sides of an enlarged shape are compared to the original shape. Or how many times bigger one quantity is in relation to another proportional quantity.

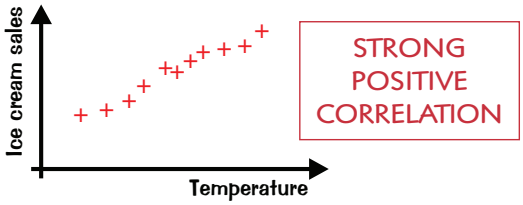
$$\text{scale factor} = \frac{\text{new length}}{\text{old length}}$$

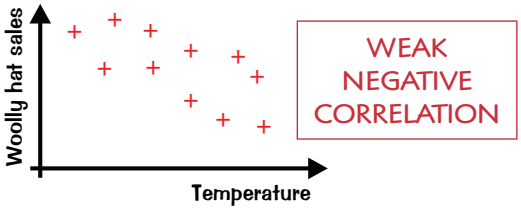
Scalene triangle

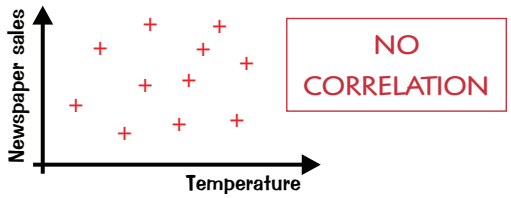
A triangle whose sides and angles are all different.

Scatter graph

A graph of two variables plotted against each other, which can show if these variables are related or not.





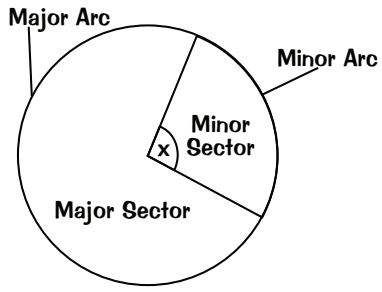


Secondary data

Data collected by someone else. You can get secondary data from e.g. newspapers or the internet.

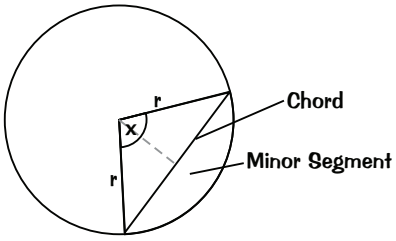
Sector

An area of a circle from the centre to the edge, like a "slice of pie".



Segment

An area of a circle between an arc and a chord.



Sequence

A list of numbers or shapes which follows a particular rule. Each number or shape is called a term.

Set A set is a group of items or numbers, written in a pair of curly brackets { }.

Set notation

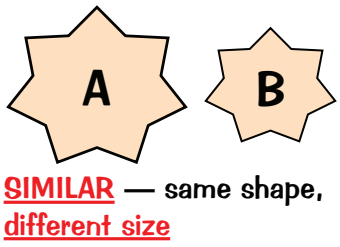
A collection of symbols used to help define the elements of (objects within) a set.

Significant figures (s.f.) 有效数字

The digits in a number after and including the first digit that is not a 0.

Similar

Similar shapes have the same size angles (and so are the same shape) but the lengths of corresponding sides are different, related by a scale factor.



Simple interest

A percentage of an initial amount of money added on at regular intervals. The amount of interest added each time doesn't change.

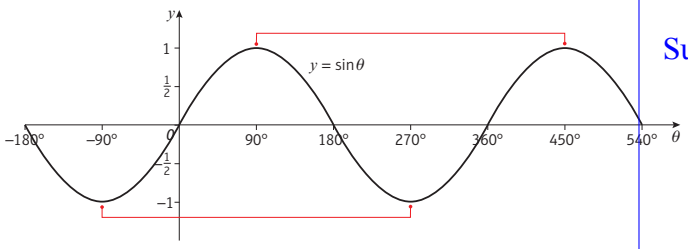
Simultaneous equations

A pair of equations which are both true for particular values of the unknowns.

Sine The sine of an angle x in a right-angled triangle is the ratio of the opposite and hypotenuse sides, i.e.

$$\sin(x) = \frac{\text{opposite}}{\text{hypotenuse}}.$$

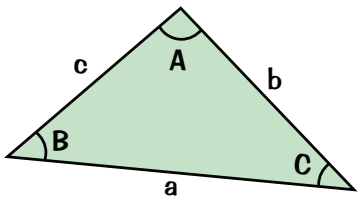
The graph hypotenuse of $y = \sin(x)$ has a 'wave' pattern that repeats every $360°$



Sine rule

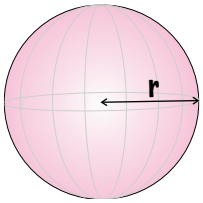
A rule connecting sides and angles in any triangle:

$$\frac{a}{\sin(A)} = \frac{b}{\sin(B)} = \frac{c}{\sin(C)}$$



Sphere

A 3D shape with one curved surface, no vertices (corners) and no edges.



Square (power)

A number multiplied by itself – written as the power of 2, x^2.

Standard form

A way to write very big or small numbers as $A \times 10^n$, where $1 \leq A < 10$ and n is an integer.

Stem and leaf diagram

A diagram that displays data values. They consist of 'stems' (the first digit(s)) and 'leaves' (the remaining digit) of the data values arranged in numerical order.

Substituting

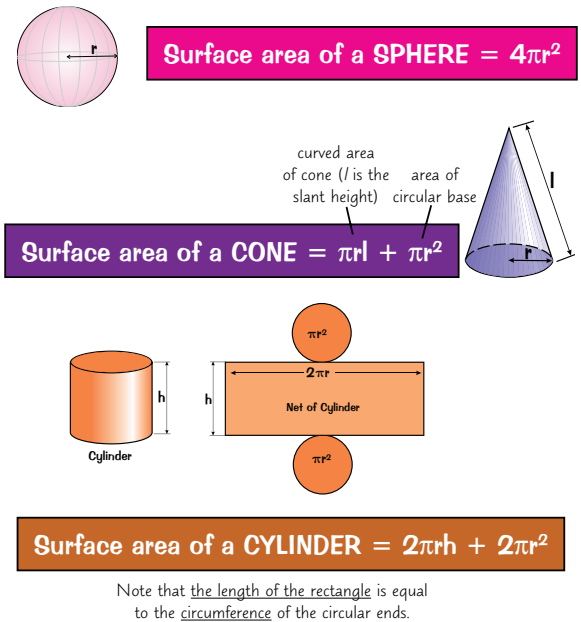
Replacing the letters in a formula, expression or equation with actual values.

Surd An expression containing an irrational root.

- $\sqrt{a} \times \sqrt{b} = \sqrt{a \times b}$
- $\frac{\sqrt{a}}{\sqrt{b}} = \sqrt{\frac{a}{b}}$
- $\sqrt{a} + \sqrt{b} \neq \sqrt{a+b}$ in general
- $\left(a + \sqrt{b}\right)^2 = a + 2a\sqrt{b} + b$
- $(a + \sqrt{b})(a - \sqrt{b}) = a^2 - b$
- $\frac{a}{\sqrt{b}} = \frac{a\sqrt{b}}{b}$

Surface area

The total area of all the faces of a 3D shape.



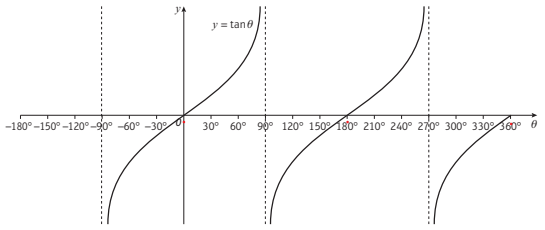
T – Tango

Tangent

The tangent of an angle x in a right-angled triangle is the ratio of the opposite and adjacent sides, i.e.

$$\tan(x) = \frac{\text{opposite}}{\text{adjacent}}.$$

The graph of $y = \tan(x)$ has a pattern of a 'wiggle' and a vertical asymptote repeated every $180°$.



Tangent (to a curve)

A straight line that just touches the curve at a point and has the same gradient as the curve at that point.

Term

An individual part of an expression, e.g. $3, 2x, a^2b$.

Terminating decimal

A decimal number where the digits stop.

Tetrahedron

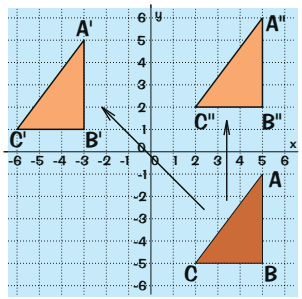
A pyramid with a triangular base.

Time series graph

A line graph that shows data collected at regular intervals over time.

Translation

A transformation where a point, shape or graph is moved horizontally and/or vertically but keeps its original shape and size.



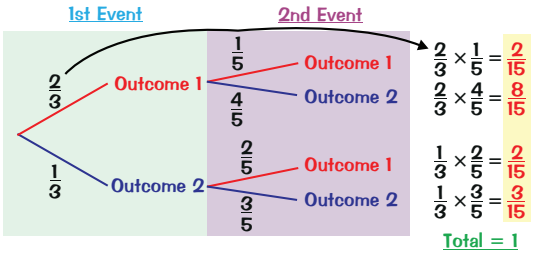
Trapezium

A quadrilateral with one pair of parallel sides.

Trapezium

Tree diagram

A diagram made up of branches to show the probabilities of different possible outcomes of multiple events.

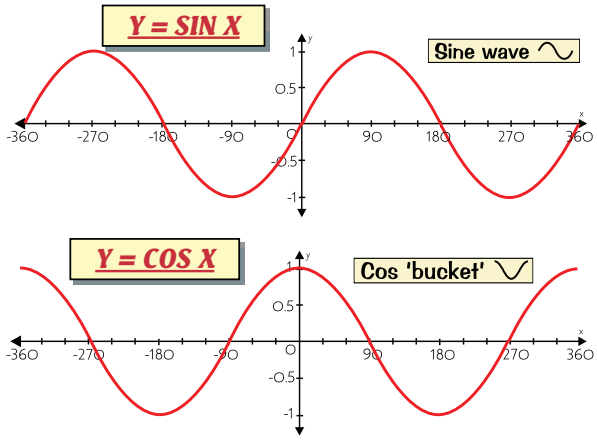


Trend

A pattern in data.

Trigonometric graph

The graph of a trigonometric function: $y = \sin x, y = \cos x$ or $y = \tan x$.



Truncating

Chopping off the digits of a decimal number after a certain number of decimal places without rounding.

Turning point

The point on a curve where the gradient is zero, e.g. a maximum or minimum point.

Two-way table

A data collection sheet which records two pieces of information about the same subject at once. It shows the frequency for two different variables.

U – Uniform

Union

The union of two sets $(A \cup B)$ contains all the elements that are in either set.

Unique factorisation theorem

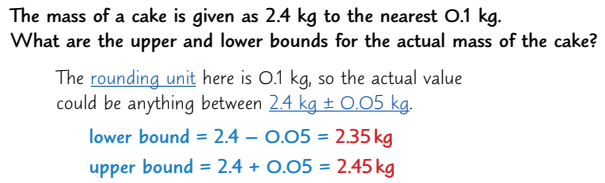
This states that the prime factorisation of every number is unique to that number.

Universal set

The set of all things under consideration for a particular situation, denoted by $\mathcal{E}$.

Upper bound

The largest actual value a rounded number can be.



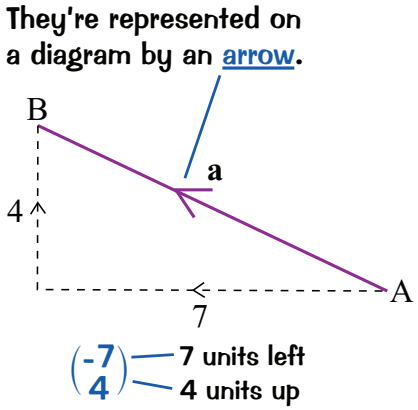
Upper quartile

The value 75% of the way through an ordered set of data.

V – Victor

Vector

A quantity or straight line with magnitude (size) and direction.



Velocity-time graph

A graph with velocity on the vertical axis and time taken on the horizontal axis.

Velocity

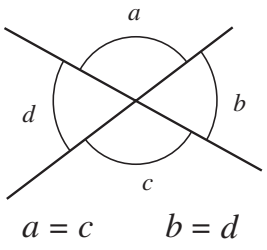
The speed of an object measured in a particular direction.

Venn diagram

A diagram with two or more circles used to represent sets, which may overlap.

Vertically opposite angles

The pair of equal angles opposite each other when two lines intersect.



Volume

The amount of space a 3D shape takes up.

Y – Yankee

$y = mx + c$

The equation for a straight line where m is the gradient and c is the y-intercept (the point where the line crosses the y-axis).