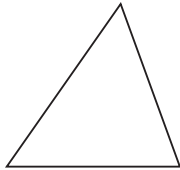


acute angle: an angle between 0° and 90°

acute triangle: a triangle where all angles are less than 90°

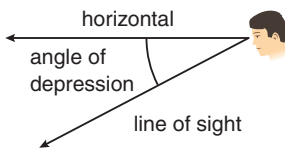


amortization period: the length of time over which a loan is paid off

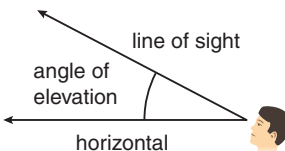
amortization table: a detailed outline showing how much of each equal payment repays interest and principal and the loan balance after each payment

amount of an annuity: the ending balance after a designated amount of time; it is the principal plus interest; see *future value*

angle of depression: the angle between the horizontal and a sightline to a point below eye level



angle of elevation: the angle between the horizontal and a sightline to a point above eye level



angle of inclination: see *angle of elevation*

annuity: a series of regular, equal payments paid into, or out of, an account

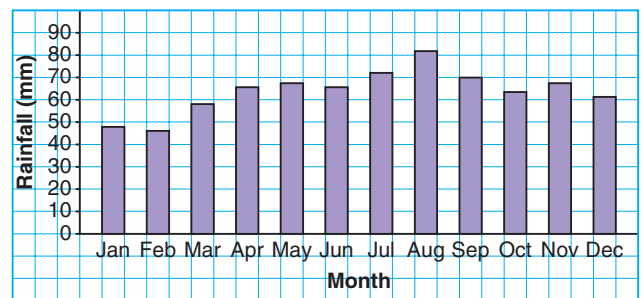
area: the number of square units needed to cover a surface; common units used to measure area include square centimetres and square metres

average: a single number that represents a set of numbers: see *mean*, *median*, *mode*

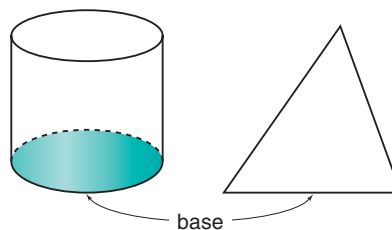
balance: for a budget, the difference when total expenses are subtracted from total income. Adjusting the balance so that expenses meet income is called balancing the budget.

bar graph: a graph that displays data using horizontal or vertical bars whose lengths are proportional to the numbers they represent

Average Rainfall in Toronto



base: the side of a polygon, or the face of a solid or object, from which the height is measured; also, in an expression of the form b^n , b is the base; see *exponent*, *power*



base value: for an index, a set value used for comparisons across the index

bearing: the angle describing an object's position as measured clockwise from North, usually expressed using 3 digits

bias: an emphasis on characteristics that are not typical of the entire population

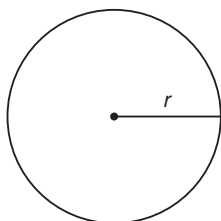
budget: a written plan to outline how money will be spent

capacity: the measure of how much liquid a container can hold. It can be measured in imperial or metric units. Imperial measures of capacity include fluid ounces (fl. oz.), pints (pt.), quarts (qt.), and gallons (gal.)

categorical data: data that are grouped by categories

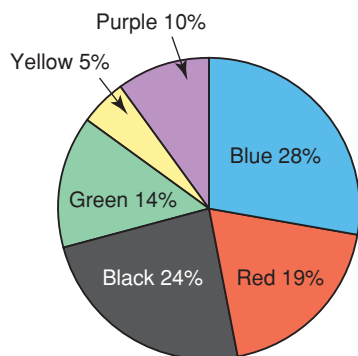
census: the collection of data about every individual in a population

circle: the set of points in a plane that are a given distance (the radius) from a fixed point (the centre)



circle graph: a diagram that uses parts of a circle to display data, sometimes called a pie chart

Favourite Colours of People in My Class



circumference: the distance around a circle; the distance around any region whose boundary is a simple closed curve

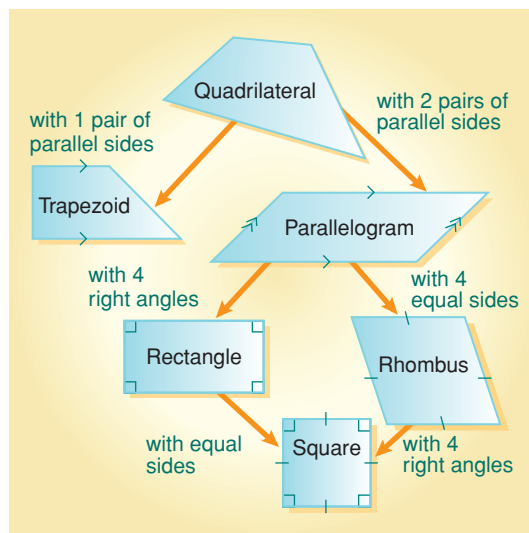
cluster sampling: sampling in which the data are organized into representative groups and one group is chosen as a sample

composite figure: a figure made up of two or more other figures

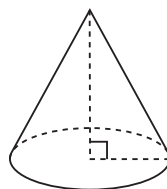
composite object: a 3-dimensional structure or object made up of two or more objects

compound interest: interest earned via a method of calculating interest in which the interest due is added to the principal and thereafter earns interest; calculated using the formula $A = P(1 + i)^n$, where A is the amount of the compound interest, P is the principal, i is the interest rate per compounding period as a decimal, n is the number of compounding periods

concept map: a graphic organizer that illustrates the connections among different terms or concepts



cone: a solid that is formed by a region (base of the cone) and all the line segments joining points in the base to a point not in the base



congruent: having the same size and shape, but not necessarily the same orientation

constraint: a condition that limits or restricts options

convenience sampling: sampling in which individuals who are easy to sample are chosen

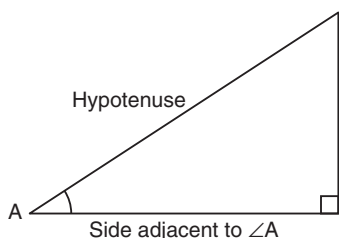
coordinate axes: the horizontal and vertical number lines on a grid that represents a plane

coordinates: also called Cartesian coordinates; the numbers in an ordered pair that locate a point in the coordinate plane

correlation: the strength of a linear relationship between two variables

correlation coefficient, r : a measure, between -1 and 1 , of how closely data can be described by a certain type of function; the closer the value of r to 1 or -1 , the more closely the data fits the function

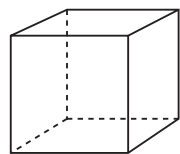
cosine: for an acute $\angle A$ in a right triangle, the ratio of the length of the side adjacent to $\angle A$, to the length of the hypotenuse; written $\cos A$
$$\cos A = \frac{\text{length of side adjacent to } \angle A}{\text{length of hypotenuse}}$$



Cosine Law: In any $\triangle ABC$,
$$c^2 = a^2 + b^2 - 2ab \cos C$$

This can also be written as:
$$\cos C = \frac{a^2 + b^2 - c^2}{2ab}$$

cube: a rectangular prism whose length, width, and height are all equal; see *rectangular prism*

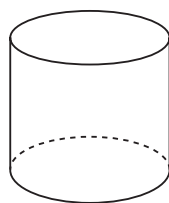


cube number: a power with exponent 3; for example, 8 is a cube number because $2^3 = 8$

cube root: a number which, when raised to the power 3, results in a given number; for example, 3 is the cube root of 27, and -3 is the cube root of -27

curve of best fit: for a given scatter plot, the curve that passes most closely to the majority of points; the curve of best fit can be obtained by exponential or quadratic regression

cylinder: a solid with two parallel, congruent, circular bases



equation: a mathematical statement indicating that two expressions are equal

equilateral triangle: a triangle with three equal sides; each angle is 60°

expenses: items that must be paid from income; for example, food, shelter, transportation

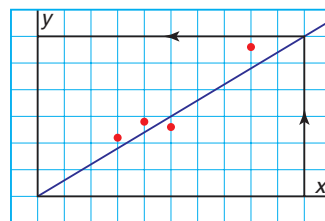
exponent: in an expression of the form b^n , n is the exponent; exponents that are positive integers indicate the number of times a factor is repeated in a product; for example, in 3^4 , the exponent 4 indicates that the base 3 is used as a factor 4 times; see *base*, *power*

exponential equation: an equation in the form $y = ab^x$; a is the initial value; b is the growth or decay factor

exponential regression: the process of identifying an exponential curve of best fit for a given set of data

expression: a meaningful mathematical phrase made up of numbers and/or variables which may include operation symbols

extrapolate: to estimate a value that lies beyond the known values

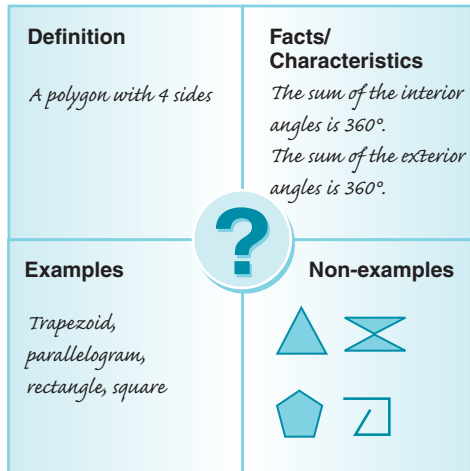


face: a flat surface of a 3-dimensional object

fixed cost: the same amount charged at regular intervals

formula: a rule that is expressed as a mathematical equation that relates two or more variables

Framer model: a graphic organizer with 4 sections which can hold a definition, characteristics or facts, examples, and non-examples of a word or a concept



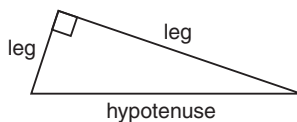
function: a rule that gives a single output number for each input number

future value: the principal and interest due when an investment matures; also referred to as *amount*

Amount = Principal + Interest, or $A = P + I$

horizontal intercept: the horizontal coordinate of a point where the graph of a relation intersects the horizontal axis

hypotenuse: the side opposite the right angle in a right triangle



income: the money you earn

income tax: money paid as tax to the federal and provincial governments based on the amount of income earned

index: a comparative set of data used to track trends or establish guidelines for

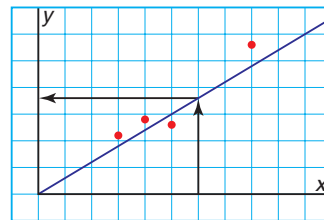
a given situation; each value may be given as a percent of the base value (as in a stock index); or calculated using a formula (as in the body mass index)

inflation: the continuing rise in the general price of all goods and services; it is usually attributed to an increase in the volume of money and credit relative to available goods and services

interest: the fee paid by a borrower for the use of a lender's money

interest rate: the amount earned or paid for the use of money; usually given as a percent of the amount invested or borrowed per year

interpolate: to estimate a value between two known values



inverse operation: an operation that reverses another operation

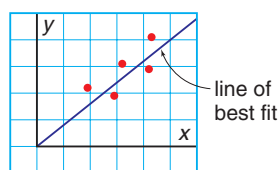
inverse ratios: \sin^{-1} , \cos^{-1} , and \tan^{-1} which are used to determine the measure of an angle when its trigonometric ratio is known

judgement sampling: sampling in which the person doing the sampling uses her or his judgement to create a representative sample

landlord: the owner of a property. He/she receives compensation from the tenant for use of his/her property.

lease: to rent an item from the owner; the lease payments cover the depreciation of the item over the course of the lease plus interest on the outstanding balance of the full purchase price

line of best fit: a line that passes as close as possible to a set of plotted points



linear correlation: a trend where points may lie in the general direction of a line

linear regression: the process of identifying a line of best fit for a set of data

margin of error: the proportion that we add to and subtract from a result to create a range of possible values between which the result could lie

mass: a measure of the amount of material in an object; common units are grams or kilograms

matrix: a graphic organizer used to list and compare characteristics of different items

mean: one measure of the average of a set of numbers; to find the mean, divide the sum of the data by the number of data

measure of central tendency: the *mean*, *median*, or *mode* of a data set

median: the middle number of a set of data arranged in numerical order; if there are two middle numbers, the median is their average

mode: the most frequently occurring value in a set of data

mortgage: a long-term loan on real estate that gives the person or firm providing the money a claim on the property if the loan is not repaid

numeric data: data that always involve numbers

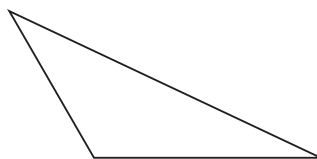
oblique angle: an angle that is not a multiple of 90°

oblique triangle: a triangle that does not contain a 90° angle



obtuse angle: an angle between 90° and 180°

obtuse triangle: a triangle with one obtuse angle



one-variable data: a set of data that describes one attribute per item in a sample

optimization: the process of finding the most efficient use of available materials within given constraints

ordered pair: a pair of numbers, written as (x, y) , that represents a point on the coordinate plane; see *coordinates*

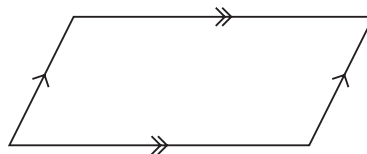
ordinary simple annuity: an annuity in which payments are made and interest is compounded with the same frequency; see *annuity*

outlier: an observed value that differs markedly from the pattern established by most data in a set

parabola: the graph of a quadratic relation; see *quadratic regression*

parallel: describing lines lying on the same plane that do not intersect

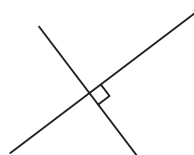
parallelogram: a quadrilateral with opposite sides parallel



percentile: tells approximately what percent of the data are less than a particular data value

perimeter: the distance around a closed figure

perpendicular: intersecting at right angles (90°)



pi (π): the ratio of the circumference of a circle to its diameter; $\pi \doteq 3.1416$

poll: a survey or an investigation of a topic to find out people's views

polygon: a closed figure that consists of line segments that only intersect at their endpoints

population: the set of all things or people being considered

power: an expression of the form b^n , where b is the base and n is the exponent; for positive integer exponents, powers are a shortcut for repeated multiplication – for example, $(-4)^3 = (-4) \times (-4) \times (-4)$; see *base*, *exponent*

present value: the principal that must be invested today to obtain a given amount in the future; compare to *future value*

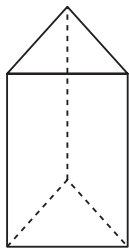
present value of an annuity: the principal that must be invested today to provide the regular payments of an annuity

primary trigonometric ratios: sine, cosine, and tangent

prime number: a whole number with exactly two factors, itself and 1; for example, 2, 3, 5, 7, 11, 29, 31, 43...

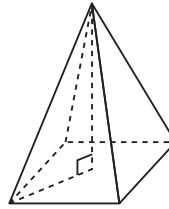
principal: the sum of money invested or borrowed

prism: a solid with two congruent and parallel faces (bases); all other faces are parallelograms

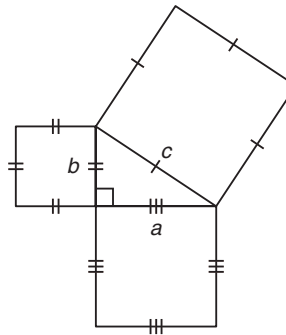


property tax: an amount that property owners pay to their municipal government

pyramid: a solid with one face that is a polygon (the base) and the other faces that are triangles with a common vertex



Pythagorean Theorem: for any right triangle, the area of the square on the hypotenuse is equal to the sum of the areas of the squares on the other two sides; $a^2 + b^2 = c^2$



quadrants: one of the four regions into which the coordinate axes divide the plane

		y		
Quadrant II		Quadrant I		
			x	
Quadrant III		Quadrant IV		

quadratic regression: a process of identifying the parabola of best fit for a given set of data

quadrilateral: a polygon with four sides

quartile: any of three numbers that separate a sorted data set into four equal parts

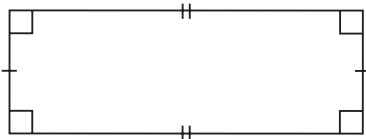
radical form: a number written using the root symbol: $\sqrt{\quad}$ or $\sqrt[n]{\quad}$, where $n = 2, 3, \dots$

rate: a certain quantity or amount of one thing considered in relation to a unit of another thing

rate of change: the rate at which something is changing; it is often indicated by the slope of a graph

ratio: a comparison of two or more quantities with the same unit

rectangle: a quadrilateral with four right angles



rectangular prism: a prism with rectangular faces; see *prism*

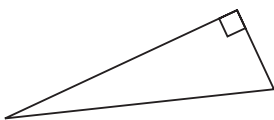
regression: the process of identifying a curve or a line of best fit for a set of data

representative sample: a sample which in certain respects is typical of the population from which it is chosen

rhombus: a parallelogram with four equal sides

right angle: a 90° angle

right triangle: a triangle with one right angle



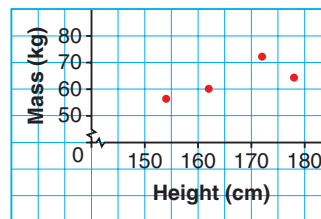
root of a number: the n th root of a number is a number which, when n copies of the number are multiplied, results in a given number; for example, 3 is a cube root of 27

sampling technique: the process used to select the individuals from a population who will be studied; see *cluster sampling*, *convenience sampling*, *judgement sampling*, *simple random sampling*, *stratified sampling*, *systematic sampling*, *voluntary sampling*

savings: money set aside for future use; in a budget, it is shown as an expense

scatter plot: a graph of data that are a series of points

Height (cm)	154	162	172	178
Mass (kg)	56.3	60.1	72.2	64.3



sightline: the line from an observer's eye to a specific object

simple interest: interest earned only on the principal, calculated using the formula $I = Prt$, where I is the simple interest, P is the principal, r is the annual interest rate as a decimal, t is the time in years; compare to *compound interest*

simple random sampling: sampling in which individuals are chosen randomly from the entire population

sine: for an acute $\angle A$ in a right triangle, the ratio of the length of the side opposite $\angle A$, to the length of the hypotenuse; written $\sin A$

$$\sin A = \frac{\text{length of side opposite } \angle A}{\text{length of hypotenuse}}$$

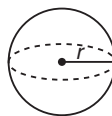
Sine Law: In any $\triangle ABC$,

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} \text{ and } \frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

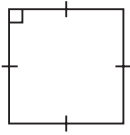
slope: a measure of the steepness of a line; calculated as $\text{slope} = \frac{\text{rise}}{\text{run}}$

solve a triangle: to determine the measures of all unknown sides and angles in a triangle

sphere: the set of points in space that are a given distance (the radius) from a fixed point (the centre)



square: a rectangle with four equal sides



square of a number: the product of a number multiplied by itself; a number to the power of 2

square root: a number which, when multiplied by itself, results in a given number; for example, 5 and -5 are the square roots of 25

stratified sampling: sampling in which data are grouped and a few individuals from each group are selected randomly

supplementary angles: 2 angles whose sum is 180°

surface area: the measure of the area of all the faces of an object

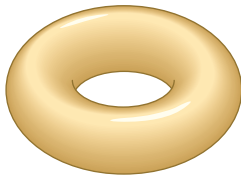
systematic sampling: sampling in which every n th individual is selected

tangent: for an acute $\angle A$ in a right triangle, the ratio of the length of the side opposite $\angle A$, to the length of the side adjacent to $\angle A$; written $\tan A$

$$\tan A = \frac{\text{length of side opposite } \angle A}{\text{length of side adjacent to } \angle A}$$

tenant: the user of a property owned by another person; he/she pays the landlord for use of the property

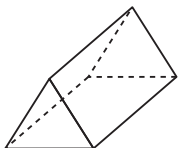
torus: an object shaped like a doughnut



trends: patterns of change; trends are often used to justify decisions and make predictions

triangle: a polygon with three sides

triangular prism: a prism with triangular bases, see *prism*



trigonometric ratios: see *cosine*, *sine*, and *tangent*

two-variable data: a set of data that gives measures of two attributes for each item in a sample

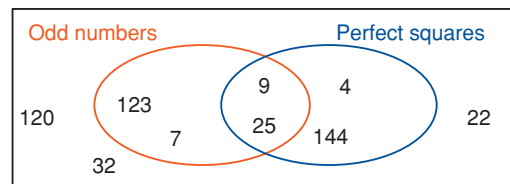
utilities: services such as heat, water, and electricity

valid conclusion: a conclusion that is supported by unbiased data that has been interpreted appropriately

variable: a letter or symbol used to represent a quantity that can vary

variable cost: operating costs that change depending on variables; compare to *fixed cost*

Venn diagram: a graphical organizer with loops that group items to show similarities and differences



vertical intercept: the vertical coordinate of a point where the graph of a relation intersects the vertical axis

volume: the amount of space occupied by an object; measured in cubic units

voluntary sampling: sampling in which participants volunteer to be included in the sample

x-axis: the horizontal number line on a coordinate grid

x-intercept: the x -coordinate of a point where a graph intersects the x -axis; see *horizontal intercept*

y-axis: the vertical number line on a coordinate grid

y-intercept: the y -coordinate of a point where a graph intersects the y -axis; see *vertical intercept*