Name: Date:

Glossary

abscissa
- the first element in an ordered pair. It is the distance along the horizontal axis on a graph.

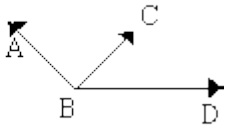
acute angle
- an angle whose measure is between 0^o and 90^o.

acute triangle
- a triangle with three acute angles.

additive inverses
- see opposites.

adjacent angles
- two angles that share a vertex and a common side between them but have no interior points in common.

∠ABC and ∠CBD are adjacent.

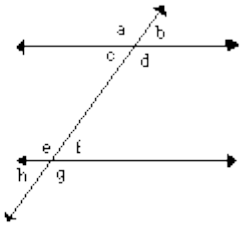


algorithm
- a step-by-step procedure for carrying out computation.

alternate angles
- two angles that are in opposite locations when lines are cut by a transversal. If the angles are between the lines, they are called alternate interior angles; if they are outside the lines, they are called alternate exterior angles. If the lines are parallel, the alternate angles are congruent.

Alternate interior
c and f
d and e

Alternate exterior
a and g
b and h



altitude of a triangle
- the line segment drawn from any vertex of a triangle perpendicular to the line containing the opposite side. Its length is referred to as the height of the triangle.

associative property
- when performing an operation on three or more numbers, the result is unchanged by the way the numbers are grouped. Addition and multiplication of numbers is associative.

E.g.: $6 + (7 + 9) = (6 + 7) + 9$ and $(4 \times 3) \times 5 = 4 \times (3 \times 5)$.

Subtraction and division are not associative.
E.g.: $(8 \div 4) \div 2 \neq 8 \div (4 \div 2)$.

axis (axes)
- the horizontal and vertical lines that form the quadrants of the coordinate plane. The horizontal axis is usually called the x-axis. The vertical axis is usually called the y-axis.

base of a triangle
- any side of a triangle.

benchmarks
- points of reference used in estimation.

E.g.: the square corner on a piece of paper can be used as a benchmark when estimating angle measures.

binomial
- a polynomial consisting of two terms.

E.g.: $3x^2 - 8$

bisector of an angle
- a segment or ray that divides an angle into two congruent angles.

bisector of a line segment
- a point, segment, ray, or line that divides a line segment into two congruent segments.

box-and-whiskers plot
- a type of graph used in data management particularly useful in showing the spread of the distribution of the data. See page 967.

capacity
- the amount a container holds, usually measured in litres.

census
- when information is gathered from all people in the population, the activity is called a census. Polls or surveys are a method of collecting data by asking people to give their answers to a set of questions.

central angle of circle
- the angle formed at the centre of a circle by the intersection of two radii.

chord
- a segment joining two points on a circle.

circle graph
- a graph of statistical data where a circle is subdivided into regions that represent the percent of the total.

circumference
- the distance around (perimeter of) a circle.

coefficient
- the numerical factor of a term. E.g.: the coefficient of $-3x^2 y$ is -3. The coefficient of $a^3 b^4 c^2$ is 1.

commission
- earnings based on the amount of total sales.

commutative property
- the order of numbers in a calculation does not affect the result. E.g.: addition is commutative because $3 + 5 = 5 + 3$. Subtraction is not commutative because

$8 - 2 \neq 2 - 8$.

complementary angles
- two angles whose measures total 90^o.

composite number
- a whole number that has more than two different factors. E.g.: 18 has factors 1, 18, 2, 9, 3, 6 so it is composite.

compound bar graph
- a bar graph that compares two or more quantities simultaneously.

compound event
- the outcome of a probability experiment that involves more than one object. E.g.: when you roll two dice and the result is a 5 on one and a 2 on the other, this is a compound event.

compound interest
- see interest.

concave polygon
- a polygon with at least one interior angle with measure greater than 180^o.

congruent
- figures that have the same size and same shape.

congruent angles
- angles that have the same measure.

congruent triangles
- triangles that are the same size and shape.

convex polygon
- a polygon with each interior angle measuring less than 180^o.

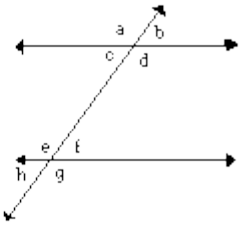
coordinate plane
- grid paper that is divided into four quadrants by drawing a vertical and a horizontal line that intersect at a point called the origin. Used for graphing ordered pairs.

coordinates
- the ordered pair that names the location of a point on the coordinate plane. The first number in the ordered pair is called the abscissa and the second number is the ordinate.

corresponding angles
- angles that have the same relative positions.

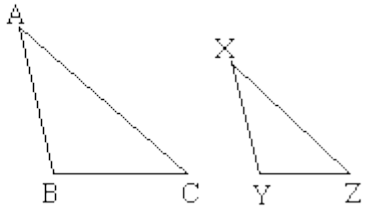
in parallel lines corresponding angles are congruent.

pairs of corresponding angles are:
a and e
b and f
c and h
d and g



in triangles

pairs of corresponding angles are:
∠A and ∠X
∠B and ∠Y
∠C and ∠Z



Corresponding angles are congruent if the triangles are similar or congruent.

cube root
- the number that when cubed (taken to the power of 3) gives the original number.

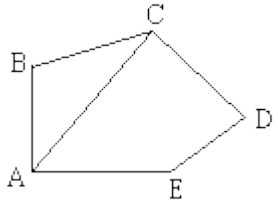
data
- facts and opinions from which conclusions can be drawn.

degree of a:
polynomial
- the greatest of the degrees of its terms.

term
- the sum of the number of times each variable appears as a factor. E.g.: the degree of the term $5x^3 y^4 z$ is 8 because 3 + 4 + 1 = 8.

dependent events
- events whose outcomes affect each other.

diagonal
- a segment joining two non-consecutive vertices of a convex polygon. E.g.:



AC is a diagonal.

diameter
- a chord that passes through the centre of a circle.

dilatation
- the enlargement or reduction of a plane figure.

distributive property
- adding two numbers and then multiplying by another yields the same result as multiplying each one by the number and then adding the products, e.g.: a(b + c) = ab + ac.

divisibility rules
- patterns that allow you to determine whether a number divides evenly into another number (leaving no remainder) without actually doing the division. E.g.: a number that ends in 5 or 0 is divisible by 5.

edge
- the line segment where two faces of a polyhedron meet.

equation
- a mathematical sentence containing an equal sign.

equiangular or equilateral triangle
- see regular polygon.

estimation

- determining an approximate amount, value, or size of something. *Quantitative estimation* is determining the approximate number of items in a group. *Computational estimation* is determining the approximate result to an arithmetic calculation. *Measurement estimation* is determining the approximate length, perimeter, area, volume, or other measurement of a geometric figure.

Euler's formula

- a formula relating the number of vertices (V), faces (F) and edges (E) of a polyhedron.

$$V + F - E = 2$$

event

- one or more outcomes of a probability experiment.

experimental probability

- the ratio of the favorable outcomes to the total outcomes in an experiment.

exponent

- a number that indicates the number of times the base appears as a factor. E.g.: $4^3 = 4x4x4$. The exponent is 3. The entire term is called a power and 4 is the base. When 0 is the exponent the value of the power is 1;
e.g.: $(-9)^0 = 1$. When the exponent is a negative integer, the value of the power is the reciprocal of the value when the exponent is its opposite. E.g.: $3^{-4} = 1/3^4$.

expression

mathematical

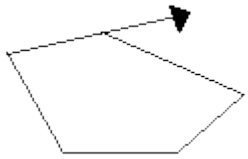
- a group of symbols representing numbers and operations.

open

- a mathematical expression containing variables.

exterior angle of a polygon

- the angle outside a polygon formed by extending one of its sides.

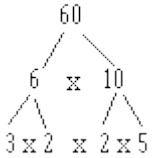


face

- any of the flat sides of a polyhedron.

factor tree

- a systematic way of determining all the prime factors of a number. E.g.:



fraction

- any number that can be written in the form a/b where a and b are whole numbers and $b \neq 0$.

frequency diagram

- used in statistics as a method of recording the data collected. A tally is often used in the frequency

diagram to keep track of the number of times something occurs.

Trial	Prize 1	Prize 2	Prize 3	Prize 4	Total Spins/Throws
1	IIII	III	IIII	I	13
2					
3					
4					
5					

function
- a set of ordered pairs where each first element is paired with one and only one second element and no element in either pair is without a partner.

hectare (hm^2)
- a unit of area that is 100 m by 100 m. It is equivalent to 10 000 m^2 .

height of a triangle
- see altitude.

histogram
- a type of statistical graph that uses bars, where each bar represents a range of values and the data are continuous.

hypotenuse
- the side opposite the right angle in a right triangle. It is always the longest side in the triangle.

image
- the result of a transformation on an object.

improper fraction
- a fraction whose numerator is greater than or equal to its denominator. E.g.: 11/7.
Note: 11/7 and 1 4/7 are both in simplest form.

inequality
- a mathematical sentence that includes one of the symbols >, <, or $\neq$

integer
- any number in the set 0, ±l, ±2, ±3, ...

interior angles of a polygon
- angles within a polygon formed by the intersection of two sides.

interest
- money paid for the use of someone else's money. Simple interest is calculated using the formula i = prt. Compound interest is calculated by adding the interest on to the principal each time the interest is calculated.

isosceles
- a polygon with two sides equal in length. Usually used to refer to either a triangle or a trapezoid.

like terms
- terms that have the same variables raised to the same exponent. E.g.: $3x^2$ and $-2x^2$.

linear equation
- an equation whose graph is a line, that is, an equation that has a degree of one;
e.g.: $y = 3x - 2$

line of symmetry
- a line that divides a figure into two parts, each a mirror image of the other.

mean
- in statistics, the measure of central tendency calculated by adding all the values and dividing the sum by the number of values. (Often referred to as the average.)

median
statistical
- the measure of central tendency that is in the middle when the values are arranged in order of size. If there is an even number of data items, the median is the mean of the middle two.
of a triangle
- a line segment from any vertex of a triangle to the midpoint of the opposite side.

mental calculation
- refers to finding an exact answer mentally (without the use of pencil and paper or calculator).

mixed number
- a number consisting of a whole number and a fraction; e.g.: 5 1/4.

mode
- the value that appears most frequently in a set of data.

monomial
- a number, a variable, or a product of numbers and variables.

multiplicative inverses
- see reciprocals.

negative integer exponent
- see exponents.

negative rational number
- see rational number.

net
- a plane figure obtained by opening and flattening a 3-D object, or a 2-D pattern for a 3-D object.

obtuse angle
- an angle whose measure is between 90^o and 180^o.

obtuse triangle
- a triangle with one obtuse angle.

odds
- the probability that an event will occur compared with the probability of its not occurring.

open expression
- see expression.

opposites (additive inverses)
- two numbers whose sum is 0.

ordered pair
- a pair of numbers that gives the location of a point in a plane; e.g.: (3,1). The order of the numbers in the pair is important because the point (1,3) is not the same as the point (3,1).

ordinate
- the second element of an ordered pair. When graphed in the coordinate plane, it is the distance from the x-axis. Frequently called the y-coordinate.

outcome
- see event.

parallelogram
- a quadrilateral with both pairs of opposite sides parallel.

percent
- a ratio where the second term is 100.

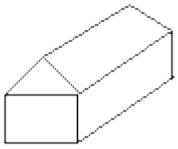
perfect square
- a whole number that is the square of an integer. E.g.: 25 is a perfect square because 5 x 5 = 25.

perpendicular
- two segments or lines that intersect to form right angles.

pi (∏)
- the ratio of the circumference to the diameter (C/d) of any circle.

polygon
- a closed figure made up of line segments.

polyhedron
- a 3-D object that has polygons as its faces. The intersection of any two faces forms an edge.



polynomial
- an expression consisting of one or more terms.

population
- in statistics, population refers to the entire group about which data are being collected.

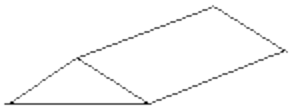
power
- see exponent.

primary data
- data obtained directly using methods such as a survey or an experiment.

prime number
- a whole number greater than one whose only whole number factors are itself and one.

prism
- a geometric solid with two bases that are congruent, parallel polygons, and all other faces are parallelograms. It is referred to as a right prism if the faces are rectangles. It is named according to the

shape of its bases; e.g.: triangular prism.



proper fraction
- a fraction whose numerator is less than its denominator.

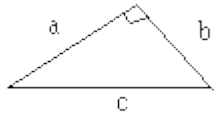
proportion
- an equality of two ratios;
e.g.: 5 : 8 = 10 : 16.

protractor (circular)
- a circular device subdivided into 360 equal parts and used for measuring angles.

protractor (semi-circular)
- a half circle subdivided around the edge in degrees and used for measuring angles.

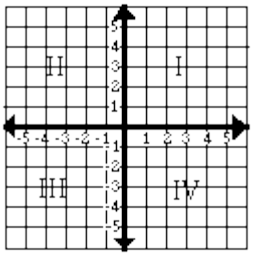
Pythagorean Theorem
- in any right triangle, the square of the length of the hypotenuse equals the sum of the squares of the other 2 sides.

$c^2 = a^2 + b^2$.



pyramid
- a geometric solid with one base that is a polygon and all other faces are triangles with a common vertex.

quadrant
- when the axes are drawn in a coordinate plane, the plane is divided into 4 sections called quadrants.



quartile
- any one of the values in a frequency distribution that divides the distribution into four parts of equal frequency. The first quartile is the number below which 1/4 of the values are found.

radius (plural: radii)
- the distance from the centre of a circle to any point on the circle.

range
- in statistics, the difference between the least and the greatest values in a set of data. In more advanced statistics, it is considered the number of values between the greatest and the least, inclusive, and is calculated by the formula: range = greatest - least + 1.

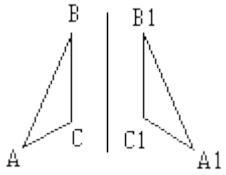
rate
- a quotient used to compare two measures of different units; e.g.: kilometres per hour.

ratio
- a quotient used to compare two or more quantities of the same units of measure.

rational number
- any number that can be written in the form a/b where a and b are integers and $b \neq 0$. It is a negative rational number if it is less than zero; i.e., either a or b, but not both, is negative.

reciprocals (multiplicative inverses)
- two numbers whose product is one.

reflection (flip)
- a transformation of a geometric figure that results in a mirror image of it. The object and the image are equal distance from the line of reflection.



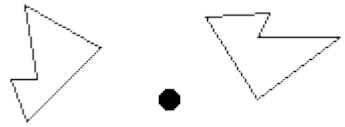
reflex angle
- an angle whose measure is between 180^0 and 360^0.

regular polygon
- a polygon with all sides congruent and all angles congruent. An equilateral or equiangular triangle is a regular polygon, as is a square.

repeating decimal
- a decimal number that contains a digit or digits that repeat; e.g.: 0.3 = 0.333...

rhombus
- a parallelogram with all sides equal in length.

rotation (turn)
- a transformation of a figure in which the image is formed by turning the figure about a fixed point called the centre of rotation. The centre may be inside or outside the figure.



sample
- refers to a representative portion of the population from whom information is gathered. Often, the information is used to draw conclusions about the behavior of the population. E.g.: to determine the favourite activity of students in your school, you could collect the information from some of the students (a sample). The sample should be random and representative of the group.

scale factor
- the ratio of a distance measured on a scale drawing to the corresponding distance measured on the actual object.

scalene triangle
- a triangle with all sides of different lengths.

scatterplot
- a graphical method used in statistics to show the relationship between two variables. The values of the two variables form an ordered pair that is graphed on the coordinate plane.

scientific notation
- writing a number as the product of a number between 1 and 10 and the appropriate power of ten. E.g.: 118 000 = 1.18 x 10^5.

secant of circle
- a line that intersects a circle in two points.

secondary data
- data obtained indirectly from sources such as a book or computer database.

similar polygons
- polygons that have the same shape but not necessarily the same size.

simple interest
- see interest.

simplest form (lowest terms)
- a fraction is in simplest form if both its numerator and denominator are whole numbers and their only common factor is 1.

simplified fraction
- a fraction in simplest form.

spreadsheet
- a computer generated arrangement of data in rows and columns.

square root
- a number that when squared gives the value of the original number. E.g.: the square root of 49 = 7 because $7^2 = 49$.

straight angle
- an angle whose measure is 180^o.

stem-and-leaf plot
- in statistics, a way of recording, organizing and displaying numerical data so that the original data remains intact. E.g.:

Class	Math Marks
4	2 5
5	1 6 6 8
6	1 8 8 9
7	0 2 2 3 5 5 5 7
8	3 6 7
9	0 2 5

In this plot, the last row represents the numbers 90, 92, and 95.

supplementary angles
- two angles whose measures total 180^o.

surface area
- the sum of the areas of all the faces, including the bases, of a 3-D object.

term
- any expression written as a product or quotient; e.g.: 3xy, $2m^3$, or $-5x^3 y^2 z$.

tessellate
- the repeated use of geometric figures to completely fill a plane without gaps or overlapping.

theoretical probability
- probability that is determined on the basis of reasoning, not through experimentation. E.g.: because a regular die has 6 sides, the theoretical probability of tossing a 3 is 1/6.

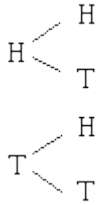
transformation
- a movement of one geometric shape to another according to some rule. The common transformations used in Middle Level mathematics are translations, rotations, and reflections.

translation (slide)
- an exact duplication of a geometric figure formed by moving each point in the figure the same distance and in the same direction.

transversal
- a line that intersects two or more other lines in the same plane.

trapezoid
- a quadrilateral with exactly one pair of parallel sides.

tree diagram
- a systematic way of determining all possible outcomes in a probability experiment. E.g.: if you toss two coins, the possible outcomes are:



trinomial
- a polynomial consisting of 3 terms.

unit price
- the price of a single item or the price per kilogram or gram.

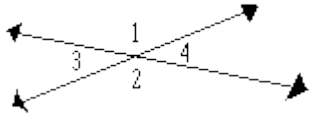
unlike terms

-terms with different variables or the same variables raised to different exponents;
e.g.: $4x^2$ and $2x^3$.

variable
- a symbol, usually a small case letter, used to represent one or more numbers. E.g.: in the expression $2x + 3$, the variable is x. The 3 is called a constant because its value never changes.

vertex (plural: vertices)
- the point of intersection of two rays that form an angle, two sides of a polygon, or two edges of a solid.

vertically opposite angles
- two angles formed by the intersection of two lines. They share a common vertex but no sides or interior points. E.g.: $\angle 1$ and $\angle 2$ are vertically opposite.



Vertically opposite angles are congruent.