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Glossary

A

Abstract Context: thought of apart from concrete realities, specific objects, or actual instances: an abstract idea.

Alignment: an adjustment to a line; arrangement in a straight line.

Algebraic Expression: a combination of numbers and letters equivalent to a phrase in language, e.g. $x^2 + 3x - 4$.

Appropriateness: suitable or fitting for a particular purpose, person, occasion, etc.: an appropriate example; an appropriate dress.

Area: any particular extent of space or surface; part: the dark areas in the painting; the dusty area of the room.

Arithmetic Operations: a mathematical operation involving numbers.

Associative Property: property (which applies both to multiplication and addition) by which numbers can be added or multiplied in any order and still yield the same value, e.g. $(a + b) + c = a + (b + c)$ or $(ab)c = a(bc)$.

Attribute: a quality, character, characteristic, or property: Sensitivity is one of his attributes.

B

Bases: the bottom support of anything; that on which a thing stands or rests: a metal base for the table.

Box and Whisker Plot: A frequency plot that indicates the median, the interquartile range (the box), the range of the non-outlier data (the whiskers), and the outliers in the data set.

C

Career: an occupation or profession, especially one requiring special training, followed as one's lifework: He sought a career as a lawyer.

Circle: a closed plane curve consisting of all points at a given distance from a point within it called the center.

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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.

Classification: systematic placement in categories.

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.

Concrete Context: representing or applied to an actual substance or thing, as opposed to an abstract quality.

Cone: a solid whose surface is generated by a line passing through a fixed point and a fixed plane curve not containing the point, consisting of two equal sections joined at a vertex.

Congruency: figures that have the same size and same shape.

Converting: to obtain an equivalent value for in an exchange or calculation, as money or units of measurement: to convert bank notes into gold; to convert yards into meters.

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.

Counterexample: an example that refutes an assertion or claim.

Cylinder: a surface or solid bounded by two parallel planes and generated by a straight line moving parallel to the given planes and tracing a curve bounded by the planes and lying in a plane perpendicular or oblique to the given planes.

Cylinder Volume: The number of cubic units that will exactly fill a *cylinder*.

D

Deductive Reasoning: reasoning from the general to the particular (or from cause to effect).

Design: to work out the structure or form of (something), as by making a sketch, outline, pattern, or plan.

Diameter: a chord that passes through the center of a circle.

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Dilatations: the enlargement or reduction of a plane figure.

Dimensions: a measurement of the size of something in a particular direction, such as the length, width, height, or diameter.

Direction: the line along which anything lies, faces, moves, etc., with reference to the point or region toward which it is directed: The storm moved in a northerly direction.

Distance: the extent or amount of space between two things, points, lines, etc.

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.

E

Equivalent Fraction: equations that have the same solution.

Estimation: approximate calculation; estimate: to make an estimation of one's expenditures.

Expanded Notation: Showing place value by multiplying each digit in a number by the appropriate power of 10. For example, 523 = 5 x 100 + 2 x 10 + 3 x 1.

Experimental Probability: The probability that a certain outcome will occur, as determined through experiment.

Exponents: a symbol or number placed above and after another symbol or number to denote the power to which the latter is to be raised.

F

Formulate: to devise or develop, as a method, system, etc.

Frequency Distribution: the correspondence of a set of frequencies with the set of categories, intervals, or values into which a population is classified.

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G

Geometric Figure: resembling or employing the simple rectilinear or curvilinear figures used in geometry.

Graphical: pertaining to the use of diagrams, graphs, mathematical curves, or the like; diagrammatic.

Graphs: a diagram representing a system of connections or interrelations among two or more things by a number of distinctive dots, lines, bars, etc.

H

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

Humanities: Those branches of knowledge, such as philosophy, literature, and art, that are concerned with human thought and culture; the liberal arts.

I

Identity Property: equality that remains true regardless of the values of any variables that appear within it, e.g. for multiplication, the identity is one; for addition, the identity is zero.

Independent Event: In probability theory, to say that two events are independent intuitively means that the occurrence of one event makes it neither more nor less probable that the other occurs.

Indirect Measurement: A process where the measurement of some entity is not obtained by the direct reading of a measuring tool, or by counting of units superimposed alongside or on that entity

Inductive Reasoning: A type of logic in which generalizations are based on a large number of specific observations.

Inequality: a mathematical sentence that includes one of the symbols $>$, $<$, or $\neq$.

Integer: A whole number; a number that is not a fraction.

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Interpretation: the act or process of interpreting or explaining; elucidation.

Inverse Operations: An operation that is the opposite of, or undoes, another operation; addition and subtraction are inverse operations; multiplication and division are inverse operations.

Irregular Polygon: A polygon whose sides and angles are not all congruent.

J

Justify: Show or prove to be right or reasonable.

L

Length : The measurement or extent of something from end to end; the greater of two or the greatest of three dimensions of a body.

Linear Patterns: a list of numbers that increases or decreases by the same amount between each number.

M

Mean: a quantity having a value intermediate between the values of other quantities; an average, especially the arithmetic mean.

Measurement System: a set of units which can be used to specify anything which can be measured.

Measurements: the process of estimating or determining the magnitude of a quantity, such as length or mass, relative to a unit of measurement, such as a meter or a kilogram.

Media: The main means of mass communication (esp. television, radio, newspapers, and the Internet) regarded collectively.

Median: 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.

Mid-point: A point on a line segment that divides it into two equal parts; the halfway point of a

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line segment.

Mode: the value that appears most frequently in a set of data.

N

Nth Term: this phrase is used to describe a general term in a sequence and can be used to find any term by substituting that number for n.

Notation: A series or system of written symbols used to represent numbers, amounts, or elements in something such as music or mathematics.

Number Line: A line on which numbers are marked at intervals, used to illustrate simple numerical operations.

Numerical: Of, relating to, or expressed as a number or numbers.

O

Order of Operations: A set of rules used to solve mathematical problems. PEMDAS is often the acronym used to remember the order of operations. PEMMAS (or Please Excuse My Dear Aunt Sally) stands for "Parentheses, Exponents, Multiplication, Division, Addition and Subtraction."

Ordered Pairs: 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).

P

Parallel Line: Lines in the same plane that do not intersect.

Peers: A person of the same age, status, or ability as another specified person.

Percent: a proportion in relation to a whole (which is usually the amount per hundred).

Perimeter: The continuous line forming the boundary of a closed geometric figure.

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Perpendicular Bisector: A segment, line, or ray that is perpendicular to a segment at its midpoint.

Perpendicular Line: Lines that intersect to form right angles.

Plane Figure: a closed two-dimensional figure that lies entirely in one plane. (Polygons and circles are examples of plane figures. An arc is not a plane figure because it is not closed.)

Polygon: a closed figure made up of line segments.

Polynomial: an expression consisting of one or more terms.

Position: A place where someone or something is located or has been put.

Prime Factorization: In number theory, integer factorization or prime factorization is the breaking down of a composite number into smaller non-trivial divisors, which when multiplied together equal the original integer.

Prism: A solid geometric figure whose two end faces are similar, equal, and parallel rectilinear figures, and whose sides are parallelograms.

Prediction: forecast, augury, prognostication, divination, projection.

Probability: the relative frequency with which an event occurs or is likely to occur.

Proportionality: the ratio of proportions.

Proportion: A part, share, or number considered in comparative relation to a whole.

Q

Quadrilateral: a polygon with four sides (or 'edges') and four vertices or corners.

R

Rate: a quotient used to compare two measures of different units; e.g.: kilometers per hour.

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.

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Ratio: a quotient used to compare two or more quantities of the same units of measure.

Real Number: a rational number or the limit of a sequence of rational numbers, as opposed to a complex number.

Reasonableness: The justification that a particular solution to a problem is within logical estimates.

Rectangular Prism: A prism with a top and bottom (base) that are congruent rectangles.

Reflections: 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.

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.

Representation: The description or portrayal of someone or something in a particular way or as being of a certain nature.

Right Triangular Prism: A triangular prism is a geometric solid with two bases that are congruent (identical), parallel triangles and all other faces are parallelograms. It is referred to as a right triangular prism if the faces are rectangles.

Rotation: a transformation of a figure in which the image is formed by turning the figure about a fixed point called the center of rotation. The center may be inside or outside the figure.

Rounding: replacing a numerical value by another value that is approximately equal but has a shorter, simpler, or more explicit representation; for example, replacing US$23.4476 by US$23.45, or the fraction 312/937 by 1/3, or by 1.41.

S

Sample Spaces: a list or diagram of all the possible outcomes of an experiment or series of observations, including their probabilities.

Scale Factor: the ratio of a distance measured on a scale drawing to the corresponding distance measured on the actual object.

Scatter Plot: 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.

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Science: The intellectual and practical activity encompassing the systematic study of the structure and behavior of the physical and natural world through observation and experiment.

Scientific Notation: writing a number as the product of a number between 1 and 10 and the appropriate power of ten.

Sequence: A particular order in which related events, movements, or things follow each other.

Similar Form: objects or shapes having the same shape but not necessarily the same size.

Similarity: Two geometrical objects are called similar if they both have the same shape. More precisely, one is congruent to the result of a uniform scaling (enlarging or shrinking) of the other.

Simulation: the imitation of some real thing, state of affairs, or process. The act of simulating something generally entails representing certain key characteristics or behaviors of a selected physical or abstract system.

Spreadsheets: A grid that organizes data.

Standard Form: An equation written as Ax + By = C, where A and B are not both zero.

Stem and Leaf Plot: This plot is a way of showing the distribution of a set of data along a vertical axis. The ten's digits of these data are the stems and the one's digits are the leaves.

Story (Word) Problem: A mathematics exercise presented in the form of a hypothetical situation that requires an equation to be solved.

Strategy: a plan of action designed to achieve a particular goal.

Surface Area: the sum of the areas of all the faces, including the bases, of a 3-D object.

Symmetry: The quality of being made up of exactly similar parts facing each other or around an axis.

Systematic: Done or acting according to a fixed plan or system; methodical.

T

Tables: a set of data arranged in rows and columns.

Technology: The application of scientific knowledge for practical purposes.

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Theoretic 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: an exact duplication of a geometric figure formed by moving each point in the figure the same distance and in the same direction.

Tree Diagram: A graphic tool which breaks down in increasing detail, components of a process or result.

Trend: A general direction in which something is developing or changing.

Truncating : shortening, terminating abruptly or shortening by cutting off a part.

V

Value: the numerical amount denoted by an algebraic term; a magnitude, quantity, or number.

Validity: The quality of supporting the intended point or claim; soundness or cogency.

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.

Venn Diagram: A diagram representing mathematical or logical sets pictorially as circles or closed curves within an enclosing rectangle (the universal set), common elements of the sets being represented by intersections of the circles.

Verification: The process of establishing the truth, accuracy, or validity of something.

Vertices: points of intersection of two rays that form an angle, two sides of a polygon, or two edges of a solid.

Volume: The amount of space that a substance or object occupies, or that is enclosed within a container.

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W

Whole Number: A whole number doesn't contain a fraction. A whole number is an integer which has 1 or more units and can be positive or negative.

Width: the linear extent or measurement of something from side to side, usually being the shortest dimension or (for something fixed) the shortest horizontal dimension.

Written Phrase: a written expression consisting of one or more words forming a grammatical constituent of a sentence.