Interactive Math Glossary – Terms and Definitions

Absolute Value – the magnitude of a number, or the distance from 0 on a real number line

Addend – any number or quantity being added

addend + addend = sum

Additive Property of Area – the process of finding an the area of a shape by totaling the areas of the non-overlapping sub-divisions of that shape

Additive Relationship – a situation where the same constant is added to each input

Adjacent Angles – two coplanar angles that share a vertex and exactly one ray

Algorithm – a step-by-step process to accomplish a task

Apex – the extreme point of a three dimensional shape or a single point opposite of the base (see vertex)

Area – measurement of the interior region of a 2-dimensional space, measured by the number of non-overlapping square units

Area model – a visual representation of multiplication where the factors are indicated by the number of rows and columns of adjacent but non-overlapping squares

The product is the total number of squares.

Array – set of objects or numbers arranged in rows and columns

Associative Property – a property that enables the different combinations of the same operation to be performed in different orders

Addition: $a + (b + c) = (a + b) + c$

Multiplication: $a(bc) = (ab)c$

Automaticity – the ability to recall of facts or algorithms quickly, effortlessly, and accurately

Bar Graph – a graph that uses either vertical or horizontal bars to display each category of discrete qualitative data

Bar-type Graph – any graph that can be made into a bar graph by drawing rectangles about its features

See also dot plot, pictograph, stem and leaf plot, and histogram.

At the elementary level, a bar-type graph is a bar graph without a vertical axis. Instead, it delineates each unit on the bar itself.

Base Area – the two dimensional measure of the base of a three dimensional shape

The area of the base is symbolized with a capital "***B***" in the formulas for volume.

Base Ten System – number system in which each place has ten times the value of the place to its right; also known as the decimal number system

Bivariate Set of Data – data of two variables of the same subject or object

Box Plot – a graphical method for showing the five-number summary of data: median, lower quartile, upper quartile, maximum, and minimum

Cardinality – the count of objects in a set

Categorical Data – a type of data that can be divided into groups normally associated with qualities of the objects being examined such as color, day of the week, etc.

Center of Dilation – a coordinate point that serves as the focal point for generating a dilation

This point is the intersection of the lines that connect each point of the dilation with the corresponding points of the original.

Circle – the set of all points in a plane that are equidistant from a given point, the center of the circle

Coefficient – a number that is multiplied by a variable

Commutative Property – a property that enables the order of certain operations to be changed.

Addition: $a + b = b + a$

Multiplication: $ab = ba$

Comparative Box Plot – the display of two box plots of the same variable from two different data sets

This display uses stacked graphs with the scale below.

Comparative Dot Plot – the display of two dot plots of the same variable from two different data sets

This display uses back-to-back graphs with the scale in the middle. One graph displays the data above the scale, while the other graph displays the data below the axis. This can also be displayed left and right.

Comparative Language – descriptive language used to discuss the size, value, or magnitude of two numbers such as less than, greater than, equal to, not equal to, less than or equal to, or greater than or equal to

Composition of Numbers – the process of combining smaller numbers to create a larger number.

Composition of Geometric Figures – the process of combining two- or three-dimensional figures to form a new shape. The composition of geometric figures is the act of combining non-overlapping shapes to create a new shape.

Computational fluency – having accurate, efficient, and flexible methods for computing that are based on the student's conceptual understanding of mathematical ideas

Cone – a 3-dimensional figure containing one circular base and a curved lateral surface that rises to one point opposite the base, which is called the vertex of the cone

Constant of Proportionality – a numeric value multiplied by the input in a situation that involves direct, inverse, or joint variation

Converse – a logical statement where what was implied is now implying, such as the converse of the conditional statement "if *p* then *q*" is "if *q* then *p*."

Cylinder – a 3-dimensional figure containing two parallel, congruent bases that are circles, which are connected by a curved lateral surface

Decomposition of Geometric Figures – the process of breaking down a two- or three-dimensional figure into figures that are more common or easier to measure.

Decomposition of Numbers – the act of determining a sum that will give a specific value

For addition, this is the process of breaking down a number into smaller numbers that are easier to use when performing operations.

For multiplication, this is called factoring.

Dependent Quantity – a value that is arrived at through some rule, function, or experiment

For functions, a dependent quantity is the output represented by the dependent variable.

Difference – the amount that remains after one quantity is subtracted from another

difference = minuend - subtrahend

Direct Variation – an equation, function, or situation where the variables are related through the multiplication of constant only

The y-intercept must be zero.

Discrete Paired Data – data that involves only distinct values that are finite or countable

Distributive Property – a property that allows for numbers to be combined using one operation, usually addition or subtraction, before combining the value with another operation, usually multiplication or division

Dividend – a quantity or total to be divided

dividend ÷ divisor=quotient

$$\text{divisor}\overline{)\text{dividend}}\text{quotient}$$

Divisible – the relationship between two natural numbers where the smaller is a factor of the larger, i.e. 12 is divisible by 3

Divisor – the number per group by which the dividend is to be divided

dividend ÷ divisor=quotient

$$\text{divisor}\overline{)\text{dividend}}\text{quotient}$$

Dot Plot – a representation of categorical or discrete quantitative data with an axis usually on either the bottom or left side and "dots" stacked above the value to represent the number of items

One dot can represent more than one item of the data.

Equation – a mathematical statement that demonstrates that two numbers, expressions, or other objects are equal

Expanded Form – a number or expression written to demonstrate its hidden parts

Expanded Notation – the representation of rational numbers as the sum of the products of each digit and its associated power of ten

Expression – the sum of products of numbers and variables

The variables can be raised to different powers.

Exterior Angle – an angle formed between an extended edge of polygon and the adjacent side of the polygon

Factor (noun) – a number that is multiplied by another number

The result is the product; factors may include number represented as variables or polynomial expressions.

factor × factor = product

Factor (verb) – the process of rewriting a number (or polynomial) as a multiplication expression

First Quadrant – the quarter plane located between the positive *x* and *y* axes

Fixed Expense – expense that is consistent from month to month

Function – any action or rule where each input can be related to no more than one output

Histogram – a data representation that uses adjacent bars to show the distribution of values that fall within an interval of a quantitative variable

Independent Quantity – a value that is acted upon usually by a function

For functions, an independent quantity is an input represented by the independent variable.

Inequality – a mathematical statement formed by placing two or more numbers or expressions on either side of the following signs: $<$, $>$, $\geq$, $\leq$, $\neq$

Integers – set of numbers that includes, natural numbers, their opposites, and zero {. . . –3, –2, –1, 0, 1, 2, 3, . . .}

Interpreting a Remainder – the process of placing the remainder in the context of a given problem

Interquartile Range – the difference between third and first quartiles of a set of data; the length of the box in a box and whisker plot; a measure of spread

Intersection of Graphed Equations – a common point or points between two functions, two loci of equations, or a combination of the two

Isosceles Triangle – a triangle with at least two angles having the same measure

Join – the action of combining quantities in a change problem

In joining problems, the result is the whole.

Lateral Surface Area – the sum of the areas of the lateral faces or surfaces of a 3-dimensional figure

Linear Relationship – an association of bivariate data or two number sets where every pair of ordered pairs share the same ratio formed by the change in dependent values over the change in the independent values

Mapping – the process of pairing input and output in a function

Mapping is usually demonstrated by a diagram consisting of two lists, usually in ovals, with arrows associating items from the first list to items in the second list in grade K–8.

Mass – amount of matter in an object

Mass is not influenced by gravity.

Mean Absolute Deviation – the sum of the absolute values of the differences between each data point of a given set and the mean of that data set divided by the number of data points

Measurable Attribute – an aspect of an object that can be quantified in some fashion such as time, mass, capacity, or distance.

Minuend – the number or quantity you subtract from when subtracting

minuend – subtrahend = difference

Multiplicative Relationship – a function where each input is multiplied by a given constant

Natural Numbers (also called *counting numbers*) – set of positive integers {1, 2, 3, . . .}

Number Sense – an understanding of number relationships including counting composing and decomposing numbers, and benchmark values as well as the ability to use these understanding to solve problems

One-variable Inequality – two expressions in terms of the same variable set upon opposing sides of a "less than" sign, "less than or equal to" sign, "greater than" sign, or "greater than or equal to" sign

Ordinal Numbers – names the position of an object in a list or ordered sequence

Orientation of a Figure – determined by the position of the figure in the plane

Using this definition, orientation is preserved using translations and dilations. It is not preserved for a reflection or rotations.

Orientation of Vertices – determined by the order in which the vertices are labeled (clockwise or counterclockwise)

Using this definition, orientation is preserved using translations, dilations, and rotations. It is not preserved for a reflection.

Origin – the point of intersection of the axes in a coordinate system

The ordered pair for this point is written as (0, 0).

Partial Product – a process of multiplying that involves intermediate steps of multiplication achieved by multiplying a digit from one factor by the other factor or the decomposition of that other factor

Partition – to divide an object or objects

Partitive division – division by sharing

The number of objects represented by the dividend are partitioned, or shared equally, between a given number of groups as indicated by the divisor. The number of objects in each group is the quotient.

Pictograph – a variation of a dot plot that uses pictures or icon in place of dots, also known as a picture graph

Picture Graph – a variation of a dot plot that uses pictures or icons in place of dots, also known as a pictograph

Positive Rational Numbers – the subset of rational numbers greater than zero

Prism – a 3-dimensional figure containing two congruent and parallel faces that are polygons

Product – the result of a multiplication expression

product = factor × factor

Properties of Geometric Figures – attributes of two and three dimensional figures including types of angles, and the number of faces, edges, vertices, angles, and sides

This could also include whether a figure is regular or convex.

Pyramid – a 3-dimensional figure containing a base that is a polygon and the faces are triangles that share a common vertex

Qualitative Data – another name for categorical data or experimental results that are not readily measured beyond counting

Quantitative Data – observations or experimental results that can be measured

Quotative division (also known as *measurement division*) – division by grouping

The number of objects represented by the dividend are divided into equal-sized groups as indicated by the divisor. The number of groups is the quotient.

Quotient – the result of the division of one quantity by another

quotient = dividend ÷ divisor

$$\text{divisor}\overline{)\text{dividend}}^{\text{quotient}}$$

Rational Numbers – numbers that can be expressed as the ratio of two integers where the denominator is not zero

Real Numbers – set of all rational and irrational numbers

Relative Magnitude – comparative size, a ratio

Scale Factor – the multiplier that resizes the second factor

Scaled Interval – axis intervals of a value other than 1

Scatterplot – a graph consisting of points that demonstrates the relationship between the data of two variables

Separate – the action of removing quantities in a change problem

In separating problems, the start is the whole.

Set – a well-defined collection of objects

Simplified Expression – a mathematical statement where all operations that can be computed have been computed

Slope – the change in two dependent values of a linear function divided by the change in the corresponding two independent values

This can be thought of rise over run, the rate of change in *y* over the change in *x*, or steepness of a line.

Sphere – a 3-dimensional figure made up of all points that are equal distance from the center point

Stem-and-Leaf Plot – a data display in which the left digit(s) of the data, called stems, are listed and the remaining digits or fraction, called leaves, are listed to the right of the corresponding stem

In a double stem and leaf plot, the stems appear in the middle with leaves on either side.

In either case, vertical bars separate the stems from the leaves.

Strip Diagram – a subdivided rectangle used to demonstrate a rational number, or equations

Subitizing – associating a number with a pattern of object without counting

Subset – a well-defined smaller collection of certain items from a set

Subtrahend – the number or quantity being subtracted from another number or quantity

minuend – subtrahend = difference

Sum – the result when two or more quantities are added together

sum = addend + addend

Transversal – a line that intersects one or more other lines

Trapezoid – a quadrilateral with exactly one pair of parallel lines

Unit Fraction – a rational number with a numerator of 1 and the denominator of an integer other than 0

Unit Iteration – an operation or series of operations that is performed repeatedly to create or measure another quantity

Variable Expense – expense that varies in cost from month to month

Vertex (algebraic) – the point where the axis of symmetry intersects the graph

This can be a minimum or maximum point.

Vertex (geometric) – an extreme value or point of a two or three-dimensional shape including the point where two edges meet

Weight – a measure of how heavy an object is

Weight is influenced by gravity.

Whole Numbers – set of non-negative integers that do not have a fractional or decimal part {0, 1, 2 , 3, . . . }

***Y*-intercept** – the point of the graph of a function where the *x*-value is 0

The *y*-intercept is where the graph of the function crosses the *y* axis.