

Math Glossary

accuracy - The degree to which a measured or calculated quantity correctly captures the true value of that quantity. Accuracy describes how well a measurement procedure was performed (compare to precision).

benchmark - A point of reference to which comparisons are made. In primary school, 5 and 10 are benchmark numbers. As students work with larger numbers, 100 becomes benchmark. Benchmark fractions are halves and quarters. In measurement, 10 cm (the width of a hand) or 7 feet (the height of a door) or 5 grams (the weight of a nickel) may be used as benchmark values.

classify - To sort according to the values of an attribute. For example, for the attribute of “color” items might be sorted by their “values” red, yellow and green.

compose - To create a number from component numbers or a figure from component figures; the term is generally used in school mathematics. Putting the numbers thirty and fourteen together to get 44 is one example of numerical composition; a whole composed of six sixths is another example. When students work with tangrams, two congruent isosceles right triangles can be put together to compose a square.

create - To make or produce a product.

decompose - Generally used in school mathematics to refer to the breaking down of a number into component numbers, or of a shape into component shapes. For example, the number 6 can be decomposed as follows $5 + 1$; $4 + 2$; $3 + 3$; and $6 + 0$. To find the surface area of a rectangular prism, the surface of the figure can be decomposed into a set of 6 faces and the area of each face computed.

derived measures - A measure that is calculated using direct measures. For example, area is a derived measure that is calculated using direct measures of length. Speed is a derived measure calculated from direct measures of distance and time.

direct and indirect comparison [in measurement] - The measurement of objects using side by side comparisons as contrasted with the measurement of objects using a standard against which the two objects are compared.

The length of two pencils, for example, can be compared directly by laying the pencils side by side and observing the length of each. For example, if one pencil is shorter than my hand and a second is longer than an individual’s hand one can say the first pencil is shorter than the second. Similarly, one can use a tool like a ruler. If one pencil is 5 inches long and a second pencil is seven inches long, one knows that the first is shorter since five inches is less than seven inches.

estimate - To approximate or to predict a reasoned, “ballpark” figure for some calculation or measurement.

evaluate - To find the value of an expression, usually by calculation or by the substitution of numerical values for variables followed by a calculation.

interpret - To draw some inference from facts or data.

iteration - A process in which a series of calculations is used to approximate a value by repeatedly refining the estimate of a value, especially in cases where a direct method of finding the solution is not available. An example is finding square roots of numbers by the using the “estimate, divide into the number, average estimate and quotient to get new estimate, and repeat until the desired precision is reached” method.

justify - To verify by arriving at the same result in a different way, demonstrating that a result meets the required conditions; or to support with reasons.

model

Mathematics: A mathematical representation of an object or relationship. While models may be diagrams or physical representations, they can also be equations or sets of equations that are used to represent an object or relationship. Colored chips may be used as models for positive and negative numbers. Geometric diagrams are sketched as part of the problem solving process. The graph of a function describes the relationship visually. Ohm’s law $v=ir$, describes the relationship among voltage, current and resistance in simple electric circuits.

net - A net is a flat (two-dimensional) pattern of faces that can be folded to form the surface of a polyhedron. A net represents the surface of a polyhedron spread out in two dimensions. Therefore, the area of the net equals the surface area of the corresponding solid.

precision - The stated or implied degree of refinement of a measurement or calculated measure. Precision describes the size of the unit used for a measurement using a given tool. The smaller the unit is, the greater the precision. A measure to the nearest thousandth of an inch is more precise than a measure to the nearest inch. In calculation, the precision of a result is based on the number of digits expressed in the result.

recursive - A method of defining a mathematical relationship by describing how one term is transformed into the next term in the sequence. A recursive description of a relationship usually includes an initial value (start) and a rule that tells how a term is found based on the previous term in the sequence. Recursion treats a relationship as a sequence of individual (discrete) steps rather than as a continuous situation.

simplify - To rewrite in some equivalent form where the numbers used are simpler.

solve - To provide the solution to a problem. To solve an equation “in one unknown” means to find the values of the unknown that will make the equation true.

understand - To understand a procedure or concept mathematically means to be able to:

- communicate its meaning, its use, the results of its application, and its implications for a given context
- reason about it by making conjectures and justifying conclusions
- represent it in a variety of ways
- connect it to other ideas in and outside of mathematics; and
- know when and how to apply it to solve problems in mathematics and in other contexts.

unit [of measurement] - A quantity in terms of which the size of other materials of the same kind can be stated. Inches, feet, meters, and paper clips can all be used as units to measure length. Inches and milliliters are examples of standard units. A paperclip is an example of a non-standard unit. Customary units are units of measurement like inches, quarts, and pounds used in a place, like the United States, but not other places.