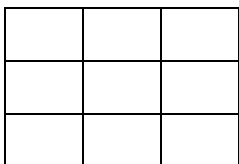


GLOSSARY AND EXAMPLES OF MATHEMATICS TERMS

Acute triangle. A triangle with all acute angles (acute means measuring less than 90°). See <http://www.mathsisfun.com/definitions/acute-triangle.html>

Angles. A shape formed by two lines or rays that diverge from a common point or vertex.

Area. The size of a region enclosed by the figure. Area is measured in square units (e.g., the area of this rectangle is six square units).



Associative property for addition. The sum of three or more numbers which are always the same when added together, no matter what order they are in. This is illustrated by $a + (b + c) = (a + b) + c$; $2 + (3 + 4) = (2 + 3) + 4$.

Associative property for multiplication. The product of three or more numbers which are always the same when multiplied together, regardless of their grouping. This is illustrated by $a(bc) = (ab)c$; $2(3 \times 4) = (2 \times 3)4$.

Attributes. For math purposes, "attributes" refer to characteristics of an object or geometric shape. These include qualities of shape, color, size, side, length, etc.

Base ten blocks. Blocks used to learn place value, addition, subtraction, multiplication, and division. Base ten blocks consist of cubes (ones place), rods (tens place), flats (hundreds place), and blocks (thousands place).

Categorical data. Types of data, which may be divided into groups such as race, sex, age group, and educational level when categorized into a small number of groups.

Commutative property of addition. The sum of numbers are always the same when added together, no matter if the order of the addends are changed. This is illustrated by $a + b = b + a$ ($2 + 1 = 1 + 2$).

Commutative property of multiplication. The product of numbers are always the same when multiplied together, even if the order of factors are changed (i.e., if a and b are two real numbers, then $a \times b = b \times a$).

Compose numbers. To combine parts/components to form a number (adding parts to obtain a number).

Congruent figures. Figures that have the same size and shape.

Congruent/congruence. The same.

Decompose numbers. The process of separating numbers into their components (to divide a number into smaller parts). *Example:* 456 can be decomposed as $456 = 400 + 50 + 6$.

Denominator. The "bottom" number of a fraction; the number that represents the total number of parts into which one whole is divided (e.g., in $\frac{3}{4}$, the 4 is the denominator and indicates that one whole is divided into 4 parts).

Dividend. The number that is being divided (e.g., In the problem, there are 550 pencils; each pack has 10 pencils; how many packs are there? $550 \div 10 = 55$, 550 is the dividend because it tells how many pencils there are in all to be divided.).

Divisor. A number by which another number is divided (e.g., In the problem, there are 550 pencils; each pack has 10 pencils; how many packs are there? $550 \div 10 = 55$, 10 is the divisor because it tells how many times 550 is to be divided).

Edge. The line segment where two faces of a solid figure meet (i.e., a cube has 12 edges).

ELA. English Language Arts

Equation. A mathematical sentence of equality between two expressions; equations have an equal sign (e.g., $n + 50 = 75$ or $75 = n + 50$ means that $n + 50$ must have the same value as 75).

Equilateral triangle. A triangle with all three sides of equal length, corresponding to what could also be known as a "regular" triangle – an equilateral triangle is therefore a special case of an isosceles triangle having not just two but all three sides equal. An equilateral triangle also has three equal angles. See <http://www.mathsisfun.com/definitions/equilateral-triangle.html>

Expression. An operation between numbers that represents a single numeric quantity; expressions do not have an equal sign (e.g., $4r$, $x+2$, $y-1$).

Face. A plane surface of a three-dimensional figure.

Fact families. Sets of related math facts. For example:

Addition fact family: $3 + 5 = 8$; $8 - 3 = 5$; $5 + 3 = 8$; and $8 - 5 = 3$

Multiplication fact family: $5 \times 4 = 20$; $20 \div 5 = 4$; $4 \times 5 = 20$; and $20 \div 4 = 5$

Fair share. In division meaning splitting into equal parts or groups with nothing left over.

Frequency table. A table that lists items and uses tally marks to record and show the number of times they occur.

Functions. A special kind of relation where each x-value has one and only one y-value.

Function table. A table that lists pairs of numbers that show a function.

Inequality. A mathematical sentence in which the value of the expressions on either side of the relationship symbol are unequal; relation symbols used in inequalities include $>$ (greater than) and $<$ (less than) symbols (e.g., $7 > 3$, $x < y$).

Input/output table. A table that lists pairs of numbers that show a function.

Integers. Positive and negative whole numbers.

Interlocking cubes. Manipulatives that help students learn number and math concepts - cubes represent "units" and link in one direction. Interlocking cubes are used for patterning, grouping, sorting, counting, numbers, addition, subtraction, multiplication, division, and measurement.

Intersecting lines. Lines that cross.

Inverse operations. Opposite/reverse operations (e.g., subtraction is the inverse operation of addition, which is why $4 + 5 = 9$ and $9 - 5 = 4$; division is the inverse operation of multiplication, which is why $4 \times 5 = 20$ and $20 \div 5 = 4$).

Linear equation. An equation that is made up of two expressions set equal to each other (e.g., $y = 2x + 5$) - A linear equation has only one or two variables and graph as a straight line. See <http://www.eduplace.com/math/mathsteps/7/d/index.html>

Line graph. A graphical representation using points connected by line segments to show how something changes over time.

Lines of symmetry. Any imaginary line along which a figure could be folded so that both halves match exactly.

Manipulatives. Objects that are used to explore mathematical ideas and solve mathematical problems (e.g., tools, models, blocks, tiles cubes, geoboards, colored rods, M&M's).

Mathematical structures.

Addition – compare-total unknown

Ex. If Anita has 10 sheets of paper and you have 10 more sheets than Anita. How many sheets do you have?

Addition – start unknown

Ex. Sam gave away 10 apples and has five apples left. How many apples did he start have before he gave 10 apples?

Addition join-part/part – whole

Ex. Jessie had 20 cakes and bought five more. How many does he have now?

Subtraction – classic take away

Ex. If Judy had \$50 and spent \$10, how much does she have left?

Subtraction – difference unknown

Ex. Sandi has 10 cats and 20 dogs. Which does she have more of, cats or dogs? How many more?

Subtraction – deficit missing amount

Ex. Sandy wants to collect 35 cards and she already has 15. How many more cards does she need?

Multiplication – repeated addition

Ex. James got paid \$5 each day for five days. How much money did he have at the end of the five days?

Multiplication – array

Ex. Carlos wanted to cover his rectangular paper with one-inch tiles. If his paper is five inches long and four inches wide, how many tiles will it take to cover the paper?

Multiplication – fundamental counting principle

Ex. Julie packed four shirts and four jeans for her trip. How many outfits can she make?

Division – repeated subtraction

Ex. James pays \$5 each day to ride the bus. How many days can he ride for \$20?

Division – factor/area – side length

Ex. Tim wants to know the width of a rectangular surface covered in 20 one-inch tiles. He knows the length is five inches, but what is the width?

Division – partitive/fair share

Ex. Julie has 20 different outfits. She has five shirts – how many pair of jeans does she have to make 20 different outfits?

Mean. The "average" – To find the mean, add up all the numbers and then divide by the number of numbers.

Median. The "middle" value in the list of numbers - To find the median, your numbers have to be listed in numerical order, so you may have to rewrite your list.

Minuend. The number one is subtracting from (e.g., 9 in $9 - 2 = \underline{\quad}$).

Mode. The value that occurs most often - If no number is repeated, then there is no mode for the list. See <http://www.purplemath.com/modules/meanmode.htm>

Models. Pictorial or tactile aids used explore mathematical ideas and solve mathematical problems – Manipulatives can be used to model situations.

Non-numeric patterns. Using symbols, shapes, designs, and pictures to make patterns (e.g., $\square\square\Delta\Delta\diamond\diamond\square\square\Delta\Delta\diamond\diamond$).

Non-standard units of measure. Measurements that are neither metric nor English (e.g., number of footsteps used to measure distance or using a piece of yarn used to measure length).

Number line. A diagram that represents numbers as points on a line; a number line must have the arrows at the end.

Number sentence. An equation or inequality using numbers and symbols that is written horizontally (e.g., $5 < 7$ or $5 + 7 = 12$).

Numerals. 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9.

Numeric patterns. A pattern that uses skip counting, often starting with the number 1 or 2 – Counting by tens and twos may also be presented to students beginning with different numbers such as 7 or 23; this is more difficult for students but indicates a deeper understanding of skip counting (e.g., 7, 17, 27, 37, 47, . . . or 7, 9, 11, 13, 15, 17).

Numerical expression. A mathematical phrase that involves only numbers and one or more operational symbols.

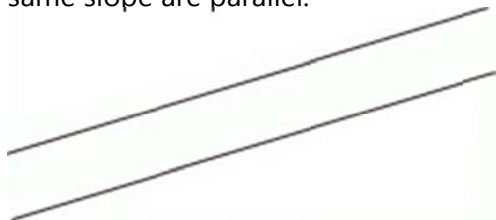
Obtuse triangle. A triangle that has one obtuse angle (obtuse means measuring more than 90°). See <http://www.mathsisfun.com/definitions/obtuse-triangle.html>

Operations. Addition, subtraction, multiplication, and division.

Ordered pair. In the ordered pair (1, 3), the first number is called the x-coordinate; the second number is called the y-coordinate; this ordered pair represents the coordinates of point A.

- The x-coordinate tells the distance right (positive) or left (negative).
- The y-coordinate tells the distance up (positive) or down (negative).

Parallel Lines. Lines that are the same distance apart and that never intersect – Lines that have the same slope are parallel.



Pattern. Patterns with a minimum of three terms

- using numbers by repeatedly adding or subtracting (i.e., 2, 4, 6, 8, 10, 12; 0, 3, 6, 9, 12, 15; or 50, 45, 40, 35, 30, 25).
- using objects, figures, colors, sound, etc. - a repeated pattern needs to be at least six terms.

Extend a pattern - When a student is asked to continue a pattern, the pattern is presented, and the student is asked, "What comes next?" before a student can extend or describe a pattern, the given pattern must be comprised of a minimum of three terms so that the student

can see the regularities of the situation and extend or describe the pattern based on those regularities.

Percent. A way of expressing a fraction as “out of 100” (e.g., 50% means 50 out of 100 or 50/100).

Perpendicular lines. Lines that intersect, forming right angles.

Polygon. A closed plane figure made by line segments.

Prediction. A guess based on available information.

Quadrilateral. A four-sided polygon.

Rational numbers. Any number that can be expressed as a/b ($b \neq 0$) where a and b are integers; also, in decimal form, any terminating or ultimately repeating decimal.

Ratios. A comparison between two things. For instance, someone can look at a group of people and refer to the “ratio of boys to girls” in the class. Suppose there are 35 students, 15 of whom are boys; the ratio of boys to girls is 15 to 20. See <http://www.purplemath.com/modules/ratio.htm>

Real-life situations. Ways in which mathematical concepts are used in real life.

Real numbers. All numbers on a number line, including negative and positive integers, fractions, and irrational numbers.

Real-world applications. Ways in which mathematical concepts are used in real-life situations.

Rectangle. A four-sided polygon (a flat shape with straight sides) where every angle is a right angle (90°); opposite sides are parallel and of equal length.

Right triangle. A triangle that has one right angle (a right angle measures exactly 90°) – Only a single angle in a triangle can be a right angle or it would not be a triangle. A small square is used to mark which angle in the figure is the right angle.

Sets. A group or collection of things that go together (e.g., a group of four stars).

Side. In most general terms, a line segment that is part of the figure - it is connected at either end to another line segment, which, in turn, may or may not be connected to still other line segments.

Similar figures. Figures that have the same shape but different sizes.

Similar shapes. Objects of the same shape but different sizes in which the corresponding angles are the same.

Slope. The steepness/incline/grade of a line.

Positive slope – the condition in which a line inclines from left to right.

Negative slope – the condition in which a line declines from left to right.

Square. A four-sided polygon (a flat shape with straight sides) where all sides have equal length and every angle is a right angle (90°).

Square root. A value that can be multiplied by itself to give the original number (e.g., the square root of 25 is 5 because $5 \times 5 = 25$).

Square root notation. Numbers written using a radical $\sqrt{}$.

Subitize. To judge the number of objects in a group accurately without counting.

Three-dimensional geometric figures. The study of solid figures in three-dimensional space: cube, rectangular prism, sphere, cone, cylinder, and pyramid.

Two-dimensional figures. The study of two-dimensional figures in a plane; drawings of square, rectangle, circle, triangle, pentagon, hexagon, and octagon.

Unknown fixed quantities. A constant that is a quantity; a value that does not change.

Variable. A symbol for an unknown number to be solved; it is usually a letter like x or y (e.g., in $x + 3 = 7$, x is the variable).

Venn diagram. Made up of two or more overlapping circles. It is often used in mathematics to show relationships between sets. A Venn diagram enables students to organize similarities and differences visually.

Vertex (vertices, pl.). The point(s) where two or more edges meet (corners).

Volume. The amount of three-dimensional space an object occupies; capacity.

GLOSSARY OF SPECIAL EDUCATION TERMS

Accommodations. Changes in the administration of an assessment, such as setting, scheduling, timing, presentation format, response mode, or others, including any combination of these that does not change the construct intended to be measured by the assessment or the meaning of the resulting scores. Accommodations are used for equity, not advantage, and serve to level the playing field. To be appropriate, assessment accommodations must be identified in the student's Individualized Education Plan (IEP) or Section 504 plan and used regularly during instruction and classroom assessment.

Achievement descriptors. Narrative descriptions of performance levels that convey student performance at each achievement level and further defines content standards by connecting them to information that describes how well students are doing in learning the knowledge and skills contained in the content standards. (See also "performance descriptors.")

Achievement levels. A measurement that distinguishes an adequate performance from a Level I or expert performance. Achievement levels provide a determination of the extent to which a student has met the content standards. (See also Performance levels.)

Achievement standard .A system that includes performance levels (e.g., unsatisfactory, Level III, advanced), descriptions of student performance for each level, examples of student work representing the entire range of performance for each level, and cut scores. A system of performance standards operationalizes and further defines content standards by connecting them to information that describes how well students are doing in learning the knowledge and skills contained in the content standards. (See also "performance standards.")

Achievement test. An instrument designed to efficiently measure the amount of academic knowledge and/or skill a student has acquired from instruction. Such tests provide information that can be compared to either a norm group or a measure of performance, such as a standard.

Age appropriate. The characteristics of the skills taught, the activities and materials selected, and the language level employed that reflect the chronological age of the student.

Alignment. The similarity or match between or among content standards, achievement (performance) standards, curriculum, instruction, and assessments in terms of equal breadth, depth, and complexity of knowledge and skill expectations.

Alternate assessment. An instrument used in gathering information on the standards-based performance and progress of students whose disabilities preclude their valid and reliable participation in general assessments. Alternate assessments measure the performance of a relatively small population of students who are unable to participate in the general assessment system, even with accommodations, as determined by the IEP team.

Assessment. The process of collecting information about individuals, groups, or systems that relies upon a number of instruments, one of which may be a test. Therefore, assessment is a more comprehensive term than *test*.

Assessment literacy. The knowledge of the basic principles of sound assessment practice including terminology, development, administration, analysis, and standards of quality.

Assistance (vs. support). The degree to which the teacher provides aid to the student's performance that provides direct assistance in the content or skill being demonstrated by the student. That is, the assistance involves the teacher performing the cognitive work required. Assistance results in an invalidation of the item or score. (See also "support.")

Assistive technology. A device, piece of equipment, product system, or service that is used to increase, maintain, or improve the functional capabilities of a student with a disability. (See 34 CFR §300.5 and 300.6.)

Cues. Assistance, words, or actions provided to a student to increase the likelihood that the student will give the desired response.

Curriculum. A document that describes what teachers do in order to convey grade-level knowledge and skills to a student.

Depth. The level of cognitive processing (e.g., recognition, recall, problem solving, analysis, synthesis, and evaluation) required for success relative to the performance standards.

Disaggregation. The collection and reporting of student achievement results by particular subgroups (e.g., students with disabilities, limited English Level III students) to ascertain the subgroup's academic progress. Disaggregation makes it possible to compare subgroups or cohorts.

Essence of the standard. That which conveys the same ideas, skills, and content of the standard, expressed in simpler terms.

Essential Elements (EEs or CCEEs). The Common Core Essential Elements are specific statements of the content and skills that are linked to the Common Core State Standards (CCSS) grade level specific expectations for students with significant cognitive disabilities.

Grade Band Essential Element. A statement of essential precursor content and skills linked to the Common Core State Standards (CCSS) grade level clusters and indicators that maintain the essence of that standard, thereby identifying the grade-level expectations for students with significant cognitive disabilities to access and make progress in the general curriculum.

Grade level. The grade in which a student is enrolled.

Instructional Achievement Level Descriptors (IALDs). Describes student achievement and illustrates student performance. IALDs operationalize and further define Essential Elements by connecting them to information that describes how well students are doing in learning the knowledge and skills contained in the Essential Elements.

Individualized Education Program (IEP). An IEP is a written plan, developed by a team of regular and special educators, parents, related service personnel, and the student, as appropriate, describing the specially designed instruction needed for an eligible exceptional student to progress in the content standards and objectives and to meet other educational needs.

Linked. A relationship between a grade level indicator for Common Core State Standards (CCSS) and Common Core Essential Elements (EEs or CCEEs) that reflects similar content and skills but does not match the breadth, depth, and complexity of the standards.

Multiple measures. Measurement of student or school performance through more than one form or test.

- For students, these might include teacher observations, performance assessments or portfolios.
- For schools, these might include dropout rates, absenteeism, college attendance or documented behavior problems

Natural cue. Assistance given to a student that provides a flow among the expectations presented by the educator, opportunities to learn, and the desired outcome exhibited by the student.

Opportunity to learn. The provision of learning conditions, including suitable adjustments, to maximize a student's chances of attaining the desired learning outcomes, such as the mastery of content standards.

Readability. The formatting of presented material that considers the organization of text; syntactic complexity of sentences; use of abstractions; density of concepts; sequence and organization of ideas; page format; sentence length; paragraph length; variety of punctuation; student background knowledge or interest; and use of illustrations or graphics in determining the appropriate level of difficulty of instructional or assessment materials.

Real-world application. The opportunity for a student to exhibit a behavior or complete a task that he or she would normally be expected to perform outside of the school environment.

Response requirements. The type, kind, or method of action required of a student to answer a question or testing item. The response may include, but is not limited to, reading, writing, speaking, creating, and drawing.

Stakeholders. A group of individuals perceived to be vested in a particular decision (e.g., a policy decision).

Standardized. An established procedure that assures that a test is administered with the same directions, and under the same conditions and is scored in the same manner for all students to ensure the comparability of scores. Standardization allows reliable and valid comparison to be made among students taking the test. The two major types of standardized tests are norm-referenced and criterion-referenced.

Standards. There are two types of standards, content and achievement (performance).

- **Content standards.** Statements of the subject-specific knowledge and skills that schools are expected to teach students, indicating what students should know and be able to do.
- **Achievement (Performance) standards.** Indices of qualities that specify how adept or competent a student demonstration must be and consist of the following four components:
 - levels that provide descriptive labels or narratives for student performance (i.e., advanced, Level III, etc.);
 - descriptions of what students at each particular level must demonstrate relative to the task;
 - examples of student work at each level illustrating the range of performance within each level; and
 - cut scores clearly separating each performance level.

Standards-based assessments. Assessments constructed to measure how well students have mastered specific content standards or skills.

Test. A measuring device or procedure. Educational tests are typically composed of questions or tasks designed to elicit predetermined behavioral responses or to measure specific academic content standards.

Test presentation. The method, manner, or structure in which test items or assessments are administered to the student.

Universal design of assessment. A method for developing an assessment to ensure accessibility by all students regardless of ability or disability. Universal design of assessment is based on principles used in the field of architecture in which user diversity is considered during the conceptual stage of development.

**Adapted from the Glossary of Assessment Terms and Acronyms Used in Assessing Special Education Students: A Report from the Assessing Special Education Students (ASES) State Collaborative on Assessment and Student Standards (SCASS)*

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