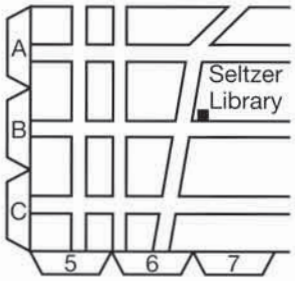
English Glossary

absolute position Location given as coordinates.

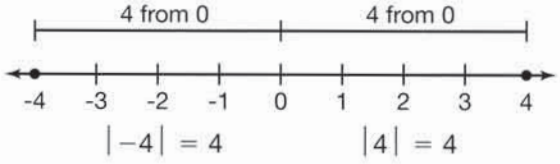
Example:



B7 is the absolute position for the Seltzer Library.

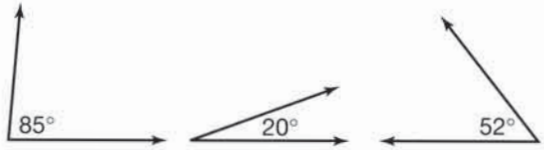
absolute value A number's distance from zero. The symbol for absolute value is $| \ |$.

Examples:



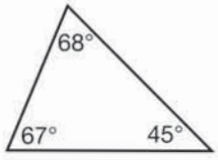
acute angle An angle measuring less than 90°.

Examples:



acute triangle A triangle with three acute angles.

Example:



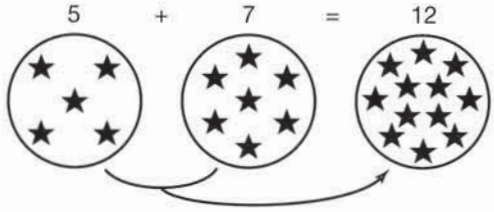
addend A number added to one or more other numbers.

Example: $12 + 19 = 31$

addend addend

addition An operation that gives the total number when two or more numbers are put together.

Example:



Addition Property of Equality If $a = b$, then $a + c = b + c$.

Example:

In the second line of the example below, 1 is added to both sides of the equation.

If $x - 1 = 2$

then $x - 1 + \mathbf{1} = 2 + \mathbf{1}$

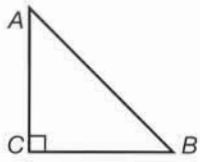
$x = 3$

additive inverse A number's opposite.

Examples: The additive inverse of -2 is 2.
The additive inverse of 5 is -5.

adjacent leg For an acute angle on a right triangle, the leg lying on one of the angle's sides.

Examples:



$\overline{AC}$ is the adjacent leg to $\angle CAB$.

$\overline{BC}$ is the adjacent leg to $\angle ABC$.

algebra A branch of mathematics in which arithmetic relations are explored using variables to represent numbers.

algebraic expression An expression that contains at least one variable.

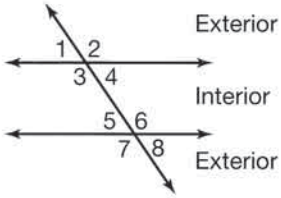
Examples: $n - 7$ $2y + 17$ $5(x - 3)$

alternate angles Two angles formed by two lines and a transversal that are on opposite sides of the transversal that are either (1) between the two given lines (alternate interior angles) or (2) not between the two given lines (alternate exterior angles). Alternate interior angles and alternate exterior angles are congruent when the transversal crosses parallel lines.

Examples:

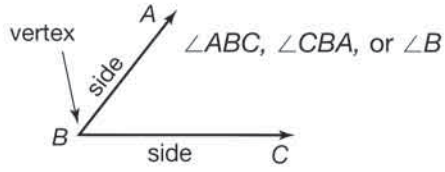
alternate exterior angles:
$\angle 1$ and $\angle 8$
$\angle 2$ and $\angle 7$

alternate interior angles:
$\angle 3$ and $\angle 6$
$\angle 4$ and $\angle 5$



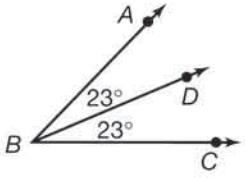
angle Two rays with a common endpoint.

Example:



angle bisector A ray that divides an angle into two congruent angles.

Example:

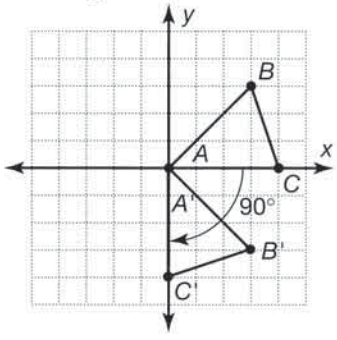


$\overrightarrow{BD}$ is the angle bisector of $\angle ABC$.

angle of rotation The angle through which a figure turns during a rotation.

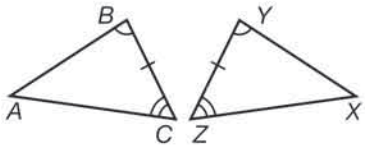
Example:

The angle of rotation is 90°.



Angle-Side-Angle (ASA) A rule used to determine whether triangles are congruent by comparing corresponding parts.

Example:

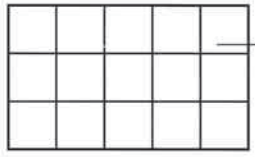


$\angle ABC \cong \angle XYZ$
$\overline{BC} \cong \overline{YZ}$
$\angle ACB \cong \angle XZY$

$\triangle ABC \cong \triangle XYZ$ by the ASA rule.

area The amount of surface a figure covers.

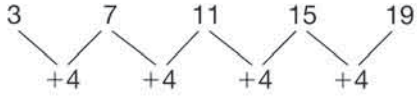
Example:



Area = 15 square units

arithmetic sequence A sequence where the difference between consecutive terms is always the same.

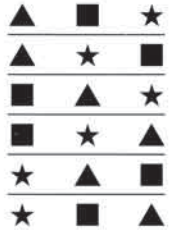
Example:



arrangement The order in which people, letters, numbers, or other things appear.

Example:

All possible arrangements of three shapes:



Associative Property of Addition The fact that changing the grouping of addends does not change the sum.

Examples: $a + (b + c) = (a + b) + c$
$5 + (3 + 7) = (5 + 3) + 7$

Associative Property of Multiplication The fact that changing the grouping of factors does not change the product.

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

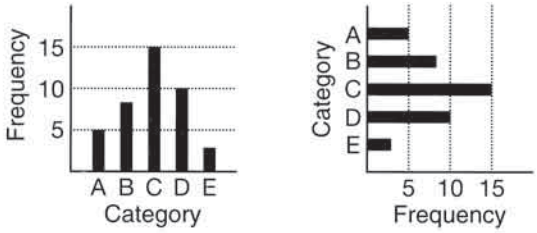
$3 \times (4 \times 2) = (3 \times 4) \times 2$

average See *mean.*

axes See *x-axis* and *y-axis.*

bar graph A graph that uses vertical or horizontal bars to display data.

Examples:



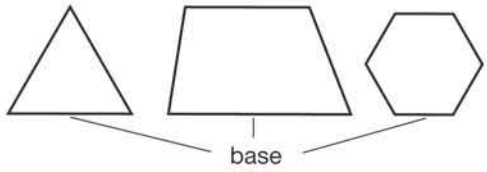
base (of an exponent) A number multiplied by itself the number of times shown by an exponent.

Example: base, exponent

$6^2 = 6 \times 6 = 36$

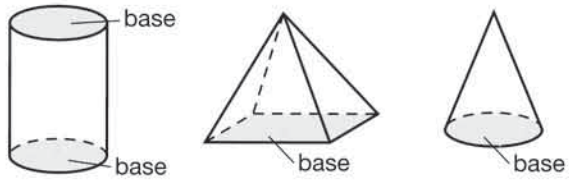
base (of a polygon) Any side (usually the one at the bottom), or the length of that side.

Examples:



base (of a solid) In a prism or cylinder, one of the two parallel and congruent faces. In a pyramid, the face opposite the vertex. In a cone, the circular face.

Examples:



binary number system A base-2 place value system.

Example:

In the binary number system, 1011 is equal to 11 in the decimal (base 10) number system.

	Eights place	Fours place	Twos place	Ones place
Base 2	1	0	1	1
Place value	8	4	2	1
Product	$1\times8=8$	$0\times4=0$	$1\times2=2$	$1\times1=1$

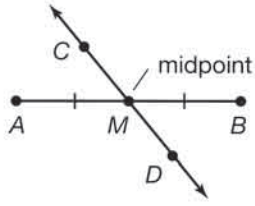
$(1 \times 8) + (0 \times 4) + (1 \times 2) + (1 \times 1) = 8 + 0 + 2 + 1 = 11$

binomial A two-term polynomial.

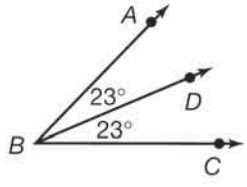
Examples: $4x^3 - 2x^2$ $2x + 5$

bisect To divide an angle or segment into two congruent angles or segments.

Examples:



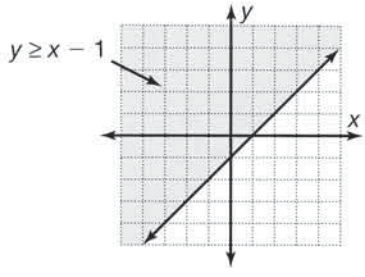
$\overleftrightarrow{CD}$ bisects $\overline{AB}$.



$\overrightarrow{BD}$ bisects $\angle ABC$.

boundary line On a graph of a linear inequality, the line separating points that are solutions from points that are not.

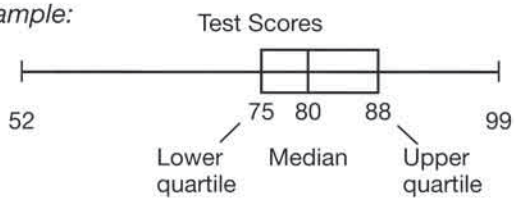
Example:



$y = x - 1$ is the boundary line.

box-and-whisker plot A visual way of showing how a collection of data is distributed. The example below is based on the following ten test scores: 52, 64, 75, 79, 80, 80, 81, 88, 92, 99.

Example:

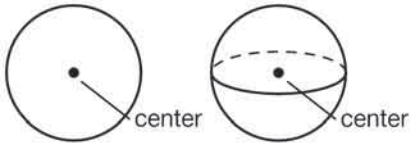


capacity The volume of a figure, given in terms of liquid measure.

Examples:

center The point at the exact middle of a circle or sphere.

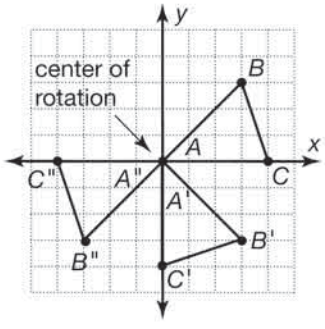
Examples:



center of rotation The point about which a rotation turns a figure.

Example:

The origin is the center of rotation.

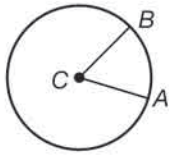


centi- A prefix meaning $\frac{1}{100}$.

Example: 1 centimeter $= \frac{1}{100}$ meter

central angle An angle whose vertex is at the center of a circle.

Example:

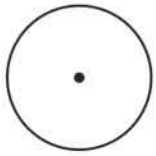


Point C is the center of the circle.

$\angle BCA$ is a central angle

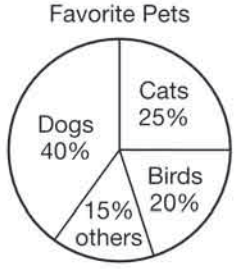
circle A plane figure whose points are all the same distance from its center.

Example:



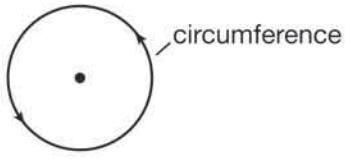
circle graph A circular graph that uses wedges to represent portions of the data set. It is also called a pie chart.

Example:



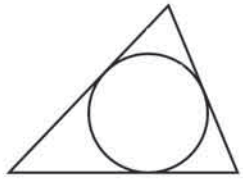
circumference The distance around a circle.

Example:



circumscribed figure A figure containing another. A polygon is circumscribed around a circle if the circle touches each of its sides.

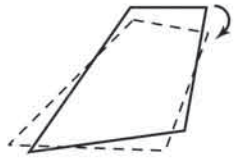
Example:



The triangle is circumscribed about the circle.

clockwise The direction of rotation when the top of a figure turns to the right.

Example:



clustering An estimation method where numbers that are approximately equal are treated as if they were equal.

Example:

26 + 24 + 23 is about 25 + 25 + 25, or 3 × 25.

coefficient A constant by which a variable is multiplied.

Example: coefficient, variable

$12y$

combination A selection of items in which order is not important.

Example:

Two students from this group will be selected to be on a committee: David, Juanita, Kim.

The possible combinations are:
David, Juanita David, Kim Juanita, Kim

Note: The combination "David, Juanita" is the same as the combination "Juanita, David."

common denominator A denominator that is the same in two or more fractions.

Example:

$\frac{5}{6}$ $\frac{1}{6}$ common denominator

$\frac{3}{12}$ $\frac{5}{12}$ $\frac{11}{12}$ common denominator

common factor A number that is a factor of two or more numbers.

Example:

4 is a common factor of 8, 12, and 20.

$8 = \mathbf{4} \times 2$

$12 = \mathbf{4} \times 3$

$20 = \mathbf{4} \times 5$

common multiple A number that is a multiple of each of two or more given numbers.

Example:

multiples of 3: 3 6 9 **12** 15 18 21 **24** 27...

multiples of 4: 4 8 **12** 16 20 **24** 28...

12 and 24 are two of the common multiples of 3 and 4.

Commutative Property of Addition The fact that order does not affect the sum of two or more numbers.

Examples: $a + b = b + a$

$18 + 23 = 23 + 18$

Commutative Property of Multiplication The fact that order does not affect the product of two or more numbers.

Examples: $ab = ba$

$4 \times 7 = 7 \times 4$

compatible numbers Pairs of numbers that can be computed easily.

Examples: 30 + 70 40 ÷ 4 25 + 75

compensation The mental math strategy of choosing numbers close to the numbers in a problem, and then adjusting the answer to compensate for the numbers chosen.

Example:

$99 \times 4 = (100 - 1) \times 4$

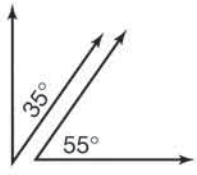
$= (100 \times 4) - (1 \times 4)$

$= 400 - 4$

$= 396$

complementary angles Two angles whose measures add up to 90°.

Example:



35° + 55° = 90°

composite number A whole number greater than 1 that has more than two factors.

Examples:

factors of 15: 1, 3, 5, 15
15 is a composite number.

factors of 7: 1, 7
7 is not a composite number.

compound event Event that is the combination of two or more single events.

Example:

and

Getting heads on a coin toss and rolling a 1 with a number cube is a compound event.

compound interest Interest based on both principal and previous interest.

Example:

If you deposit \$100 in a savings account which earns 6% interest compounded annually, you will have \$100 + (0.06 × 100) = \$106 the first year and \$106 + (0.06 × 106) = \$112.36 the second year.

compound statement A logical statement formed by joining two or more statements.

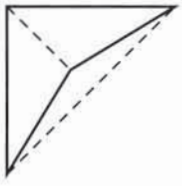
Examples:

10 is greater than 5 *and* 10 is less than 21.

10 is greater than 5 *or* 10 is less than 5.

concave polygon A polygon with one or more diagonals lying outside the figure.

Example:



conditional probability The probability that an event B will occur, given that event A has already occurred.

Example:

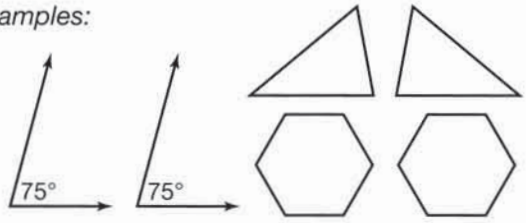
If you know the first of two coin tosses is tails, the probability of tossing two heads is zero. However, if you know the first toss is heads, the probability of getting two heads is $\frac{1}{2}$.

cone A solid with one circular base.

Example:

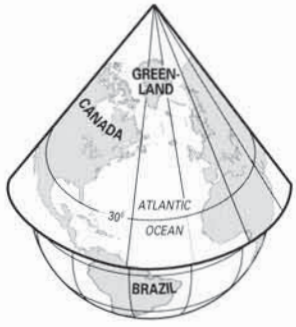
congruent Having the same size and shape.

Examples:



conic projection A map projection that uses a cone shape to represent a spherical surface.

Example:



conjunction A logical set of statements joined by the word *and*.

Examples:

$x > -2$ and $x < 5$

A square has 4 sides of equal length *and* a square is a rectangle.

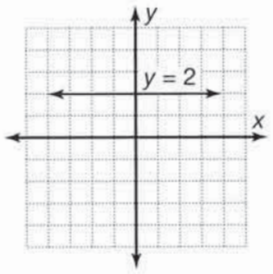
constant A quantity that does not change.

Example:

In the algebraic expression $x + 7$, 7 is a constant.

constant graph A graph in which the height of the line does not change.

Example:



constant of proportionality The quantity $\frac{y}{x}$ for two variables x and y whose ratio is constant. It is usually denoted by k.

Example:

x	3	6	9	12
y	5	10	15	20

$k = \frac{5}{3}$

conversion factor A measurement equivalence used to convert quantities from one unit to another. It is often expressed as a fraction.

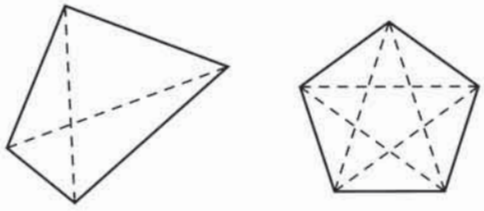
Examples:

12 inches = 1 foot; $\frac{12 \text{ inches}}{1 \text{ foot}}$

4 quarts = 1 gallon; $\frac{4 \text{ quarts}}{1 \text{ gallon}}$

convex polygon A polygon with all diagonals lying inside the figure.

Examples:



coordinates A pair of numbers in an ordered pair which is used to locate a point on a coordinate plane.

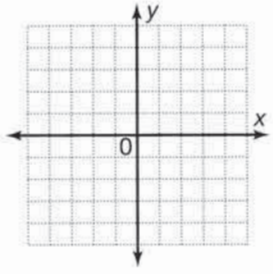
Example:

(5, 6)

coordinates

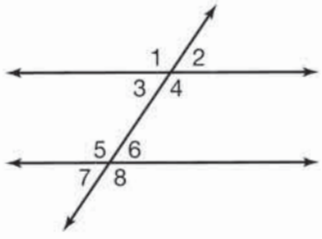
coordinate plane, coordinate system A system of intersecting horizontal and vertical number lines used to locate points.

Example:



corresponding angles (for lines) The angles on the same side of a transversal which intersects two or more lines. Corresponding angles are congruent when the transversal crosses parallel lines.

Example:



corresponding angles:

$\angle 1$ and $\angle 5$

$\angle 2$ and $\angle 6$

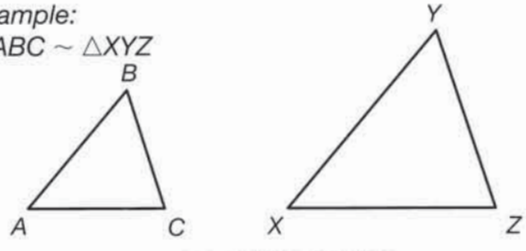
$\angle 3$ and $\angle 7$

$\angle 4$ and $\angle 8$

corresponding angles (in similar figures) Matching angles on similar figures.

Example:

$\triangle ABC \sim \triangle XYZ$



corresponding angles:

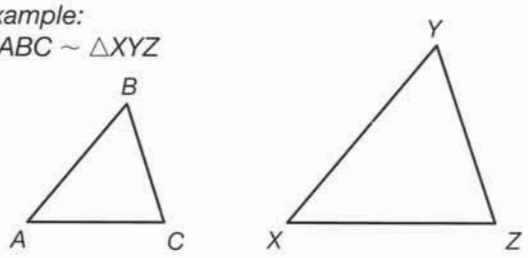
$\angle ABC$ and $\angle XYZ$

$\angle BCA$ and $\angle YZX$

$\angle CAB$ and $\angle ZXY$

corresponding sides Matching sides on similar figures.

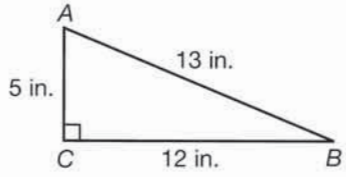
Example:
$\triangle ABC \sim \triangle XYZ$



corresponding sides:
$\overline{AB}$ and $\overline{XY}$
$\overline{BC}$ and $\overline{YZ}$
$\overline{AC}$ and $\overline{XZ}$

cosine For an acute angle x on a right triangle, the cosine of x, or $\cos(x)$, is the ratio $\frac{\text{adjacent leg}}{\text{hypotenuse}}$.

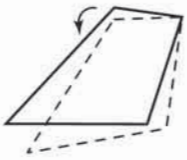
Example:



$$\cos \angle CAB = \frac{\text{adjacent leg}}{\text{hypotenuse}} = \frac{5}{13} \approx 0.38$$

counterclockwise The direction of rotation when the top of a figure turns to the left.

Example:



counterexample An example that shows a statement is false.

Example:

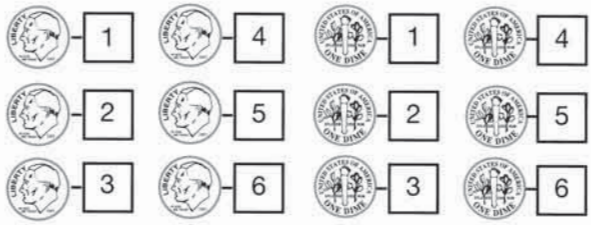
statement: If $x \cdot 0 = y \cdot 0$, then $x = y$.

counterexample: $3 \cdot 0 = 0$ and $5 \cdot 0 = 0$, but $3 \neq 5$.

Counting Principle If a situation can occur in m ways, and a second situation can occur in n ways, then these things can occur together in $m \times n$ ways.

Example:

There are 2 outcomes for flipping a coin and 6 outcomes for rolling a number cube. So there are 2×6, or 12, ways for these things to occur together.



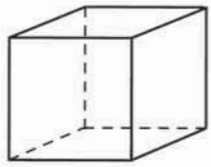
cross product The product of the numerator of one ratio with the denominator of another.

Example:

cross products:
$1 \times 5 = 5$
$3 \times 2 = 6$

cube A 6-sided prism whose faces are congruent squares.

Example:

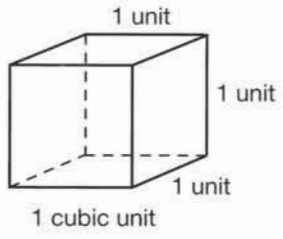


cubed Raised to the third power.

Example: 2 cubed $= 2^3 = 2 \times 2 \times 2 = 8$

cubic unit A unit measuring volume, consisting of a cube with edges one unit long.

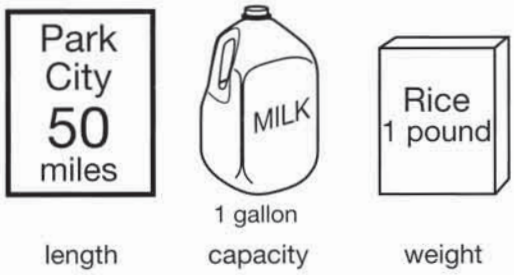
Example:



1 cubic unit

customary system of measurement The measurement system often used in the United States: inches, feet, miles, ounces, pounds, tons, cups, quarts, gallons, etc.

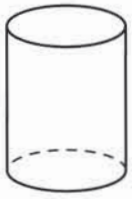
Examples:



length capacity weight

cylinder A solid with two parallel, circular bases.

Example:

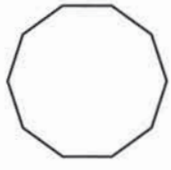


cylindrical projection A map projection that uses a cylinder shape to represent a spherical surface.

Example:

decagon A polygon with 10 sides.

Example:



deci- A prefix meaning $\frac{1}{10}$.

Example: 1 decimeter = $\frac{1}{10}$ meter

decimal Any base-10 numeral written using a decimal point.

Examples: 6.21 0.59 12.2 5.0

decimal addition Adding two or more decimals.

Example:

$$\begin{array}{r} {\scriptstyle 1} \\ 12.65 \\ +\ 29.10 \\ \hline 41.75 \end{array}$$

decimal division Dividing two decimals.

Example:

$$\begin{array}{r} 1.25 \\ 0.24\overline{)0.300} \\ -\ 24 \\ \hline 60 \\ -\ 48 \\ \hline 120 \\ -\ 120 \\ \hline 0 \end{array}$$

decimal multiplication Multiplying two or more decimals.

Example:

$$\begin{array}{rl} {\scriptstyle 2} & \\ 0.13 & \text{2 decimal places} \\ \times\ 0.7 & \text{1 decimal place} \\ \hline 0.091 & \text{3 decimal places} \end{array}$$

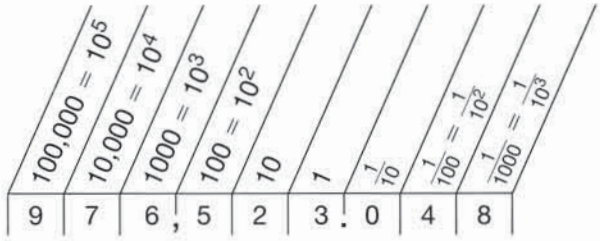
decimal subtraction Subtracting two decimals.

Example

$$\begin{array}{r} {\scriptstyle 1312} \\ {\scriptstyle 4\,3\,2\,10} \\ 5\,4.3\,0 \\ -\ 16.58 \\ \hline 37.72 \end{array}$$

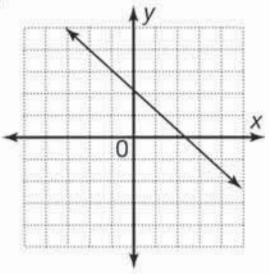
decimal system A base-10 place value system.

Example:



decreasing graph A graph in which the height of the line decreases from left to right.

Example:



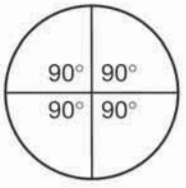
deductive reasoning Using logic to draw a conclusion.

Example:

When one diagonal is added to any quadrilateral, two triangles are formed. You know that the sum of the measures of the angles of a triangle is 180°. Therefore, the sum of the measures of the angles of a quadrilateral is twice that of a triangle, or $2 \times 180° = 360°$.

degree (°) A unit of angle measure.

Example: 1° is $\frac{1}{360}$ of a complete circle.



degree For a polynomial, the value of the largest exponent of a variable.

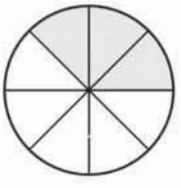
Example: The degree of $5x^3 - 2x^2 + 7x$ is 3.

deka- A prefix meaning 10.

Example: 1 dekameter = 10 meters

denominator The bottom number in a fraction which tells how many parts the whole is divided into.

Example:



$\frac{3}{8}$ — denominator

dependent events Events for which the outcome of one affects the probability of the other.

Example:

The names Therese, Diane, and José are written on separate slips of paper. One slip is drawn and kept. Then another slip is drawn. The probability that Diane's name will be drawn, given that Therese's name was drawn on the first slip, is $\frac{1}{2}$.

dependent variable The output variable for a function.

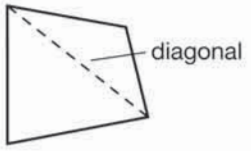
Example:

dependent variable

$y = x + 2$

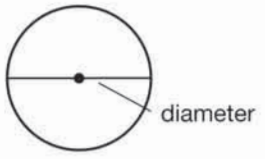
diagonal On a polygon, a segment connecting two vertices that do not share a side.

Example:



diameter A line segment, or its length, that passes through the center of a circle and has both endpoints on the circle.

Example:



difference The result of subtracting one number from another.

Example: $28 - 15 = 13$

difference

digit The symbols used to write the numerals 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9.

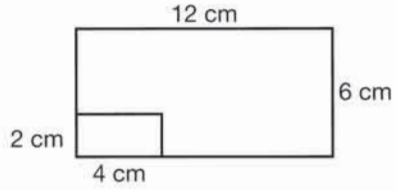
Example:

In 5,847, the digits are 5, 8, 4, and 7.

dilation A proportional reduction or enlargement of a figure.

Example:

The scale factor for the dilation from the small rectangle to the large rectangle is 3.



direct variation When two variables are related by a constant ratio.

Example:

time in hours (x)	1	2	3	4
distance in miles (y)	55	110	165	220

$\frac{y}{x} = 55$

disjunction A logical set of statements joined by the word *or.*

Examples:

$x > 4$ or $x < -1$

We went to the movie or we watched TV.

Distributive Property The fact that $a(b + c) = ab + ac$.

Example: $3(6 + 5) = 3 \cdot 6 + 3 \cdot 5$

dividend The number to be divided in a division problem.

Example:

dividend

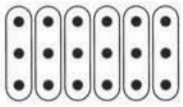
$8 \div 4 = 2$

divisible Can be divided by another number without leaving a remainder.

Example: 18 is divisible by 6, since $18 \div 6 = 3$.

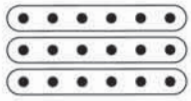
division An operation that tells how many equal sets or how many in each equal set.

Examples:



$18 \div 6 = 3$

18 divided into 6 groups puts 3 in each group.



$18 \div 3 = 6$

18 divided into 3 groups puts 6 in each group.

divisor A number that another number is being divided by.

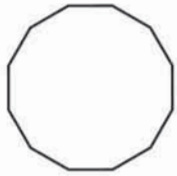
Example:

divisor

$8 \div 4 = 2$

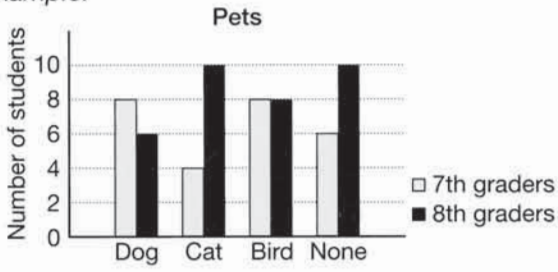
dodecagon A polygon with 12 sides.

Example:



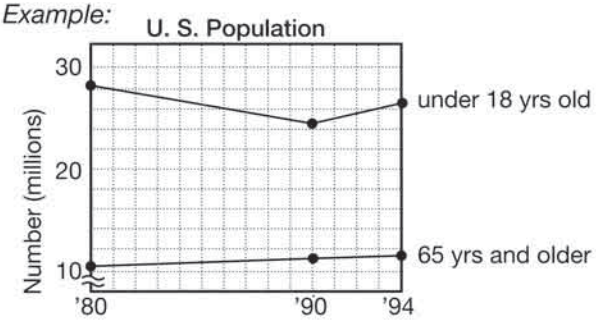
double bar graph A combination of two bar graphs, comparing two related data sets.

Example:



double line graph A combination of two line graphs, comparing two related data sets.

Example:



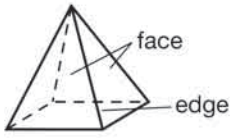
double stem-and-leaf diagram A stem-and-leaf comparison of two sets of data in a single diagram.

Example:

Leaf	Stem	Leaf
7 2 1	3	0 1 3
5 0 0	4	2 3
9	5	5 6 8
5 2 0	6	1 4

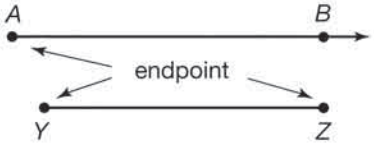
edge A segment where two faces of a polyhedron meet.

Example:



endpoint A point at the end of a segment or ray.

Examples:



equality A mathematical relation of being exactly the same.

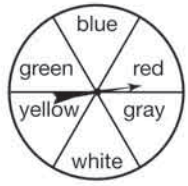
Examples: $16 + 8 = 24$ $25 \div 5 = 5$

equally-likely outcomes Outcomes that have the same probability.

Examples:

Rolling a "1"

Probability: $\frac{1}{6}$



Spinning red

Probability: $\frac{1}{6}$

equal ratios Ratios naming the same amount.

Example: $\frac{2}{6}$, $\frac{1}{3}$, and $\frac{4}{12}$

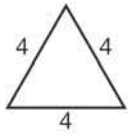
equation A mathematical sentence stating that two expressions are equal.

Examples:

$14 = 2x$ $3 + y = 81$ $3 + 4 = 7$

equilateral triangle A triangle whose sides are all the same length.

Example:



equivalent equations Equations that are true for exactly the same variable replacements.

Example: $x - 5 = 10$ and $x = 15$

equivalent expressions Two expressions that always have the same value for the same substitutions.

Example: $5(x + 1)$ and $5x + 5$

equivalent fractions Two fractions representing the same number.

Example: $\frac{1}{2}$ and $\frac{8}{16}$

equivalent rates Rates naming the same amount.

Example: $\frac{40 \text{ miles}}{2 \text{ hours}}$ and $\frac{20 \text{ miles}}{1 \text{ hour}}$

equivalent ratios See *equal ratios.*

estimate An approximation for the result of a calculation.

Example:

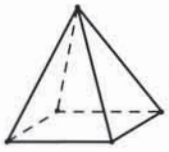
99×21

Estimate: $100 \times 20 = 2000$

$99 \times 21 \approx 2000$

Euler's formula A formula about the number of faces (F), vertices (V), and edges (E) of a polyhedron which states that $F + V - E = 2$.

Example:



For the triangular pyramid shown,

5 faces $+$ 5 vertices $-$ 8 edges $= 2$

evaluate To substitute values for variables in an expression and then simplify by applying the order of operations.

Example: Evaluate $8(x - 3)$ for $x = 10$.

$8(x - 3) = 8(10 - 3)$

$= 8\,(7)$

$= 56$

even number A whole number that has 0, 2, 4, 6, or 8 in the ones place.

Examples: 16 28 34 112 3000

event An outcome or set of outcomes of an experiment or situation.

Example:

Event: Obtaining a 3 or higher when one number cube is rolled.

Possible outcomes for this event: 3, 4, 5, 6

expanded form A way of writing an exponential number showing all of the factors individually.

Example: exponential number 9^3

expanded form $9 \times 9 \times 9$

experiment In probability, any activity involving chance.

Examples:

coin toss number cube roll spinner spin

experimental probability A probability based on data from experiments or surveys.

Example:

A bean bag is tossed into a ring 100 times. There are 23 hits. The experimental probability of a hit is $\frac{23}{100} = 23\%$.

exponent A raised number showing repeated multiplication.

Example: exponent

$4^3 = 4 \times 4 \times 4 = 64$

exponential function A nonlinear function in which an exponent is a variable.

Example: $y = 4^x$

exponential notation A way of writing repeated multiplication of a number using exponents.

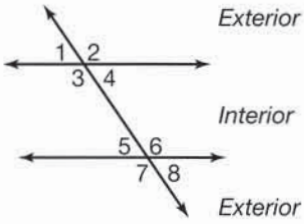
Examples: 2^8 5^2 9^3

expression A mathematical phrase made up of variables and/or numbers and operations.

Examples: $5(8 + 4)$ $x - 3$ $2x + 4$

exterior angles When a transversal crosses two lines, the angles outside those two lines are called exterior angles.

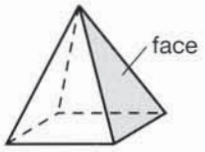
Example:



exterior angles:
$\angle 1$, $\angle 2$, $\angle 7$, $\angle 8$

face A flat surface on a solid.

Example:



factor A number that divides another number without leaving a remainder.

Example: Since $30 \div 5 = 6$, 5 is a factor of 30.

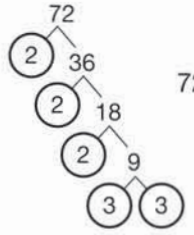
factorial The factorial of a number is the product of all whole numbers from 1 to that number. The symbol for factorial is "!".

Example:

6 factorial $= 6! = 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 720$

factor tree A diagram showing how a whole number breaks down into its prime factors.

Example:



$72 = 2 \times 2 \times 2 \times 3 \times 3$

fair game A game in which all players have the same probability of winning.

Example:

Fair game: Two players take turns rolling a number cube. Player A gets a point for rolls of 1, 3, or 5. Player B gets a point for rolls of 2, 4, or 6. The probability of getting a point is $\frac{1}{2}$ for both players.

flip See *reflection.*

foot A unit in the customary system of measurement equal to 12 inches.

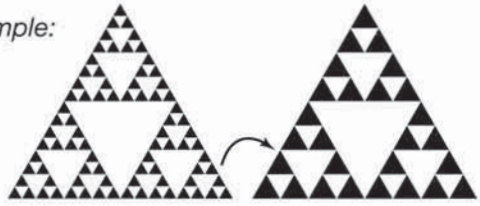
Example:

formula A rule showing relationships among quantities.

Examples: $A = bh$ $p = 4s$

fractal A pattern with self-similarity. If a small part of a fractal is enlarged, the enlarged region looks similar to the original figure.

Example:



fraction A number in the form $\frac{a}{b}$ which describes part of a whole when the whole is cut into equal pieces.

Examples: $\frac{3}{5}$ $\frac{2}{7}$ $\frac{1}{4}$ $\frac{7}{10}$

fraction addition Adding two or more fractions.

Example: $\frac{1}{3} + \frac{1}{4}$

$$\frac{1}{3} = \frac{1 \times 4}{3 \times 4} = \frac{4}{12}$$

$$\frac{1}{4} = \frac{1 \times 3}{4 \times 3} = \frac{3}{12}$$

$$\frac{1}{3} + \frac{1}{4} = \frac{4}{12} + \frac{3}{12} = \frac{4+3}{12} = \frac{7}{12}$$

fraction division Dividing two fractions.

Example:

$$\frac{1}{6} \div \frac{3}{4} = \frac{1}{6} \times \frac{4}{3}$$

$$= \frac{1 \times 4}{6 \times 3}$$

$$= \frac{4}{18} \text{ or } \frac{2}{9}$$

fraction multiplication Multiplying two or more fractions.

Example: $1\frac{1}{2} \times \frac{1}{4} = \frac{3}{2} \times \frac{1}{4}$

$= \frac{3 \times 1}{2 \times 4}$

$= \frac{3}{8}$

fraction subtraction Subtracting two fractions.

Example: $\frac{3}{4} - \frac{2}{3}$

$\frac{3}{4} = \frac{3 \times 3}{4 \times 3} = \frac{9}{12}$

$\frac{2}{3} = \frac{2 \times 4}{3 \times 4} = \frac{8}{12}$

$\frac{3}{4} - \frac{2}{3} = \frac{9}{12} - \frac{8}{12} = \frac{9 - 8}{12} = \frac{1}{12}$

frequency The number of times something occurs in a survey. See *frequency chart.*

frequency chart or table A table showing classes of things and the frequency with which things occur.

Example:

Color of Shirt	Frequency
Black	8
Tan	2
White	5
Blue	4

front-end estimation An estimation method where only the first or second digit of each number is used for computation, and the result is adjusted based on the remaining digits.

Example: One-digit front-end estimation

$$\begin{array}{r} 2{,}485 \\ +\ 3{,}698 \\ \hline 5{,}000 \\ +\ 1{,}200 \\ \hline 6{,}200 \end{array}$$

Add first digits.
485 + 698 is about 1,200.

function An input-output relationship giving only one output for each input.

Examples:

$y = x + 4$ $\quad y = 2x$ $\quad y = x^2$

Fundamental Theorem of Arithmetic All integers greater than 1 can be written as a unique product of prime numbers.

Examples: $24 = 2 \times 2 \times 2 \times 3$

$35 = 5 \times 7$

gallon A unit in the customary system of measurement equal to 4 quarts.

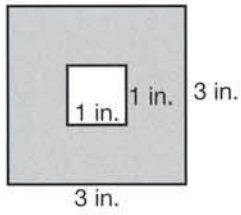
Example:

1 gallon

geometry A branch of mathematics in which the relations between points, lines, figures, and solids are explored.

geometric probability A probability based on comparing measurements of geometric figures.

Example:



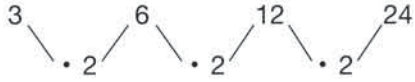
Area of large square = $3 \cdot 3$ or 9 in^2

Shaded area = 9 in^2 − 1 in^2 = 8 in^2

Probability of landing in shaded area = $\frac{8}{9}$

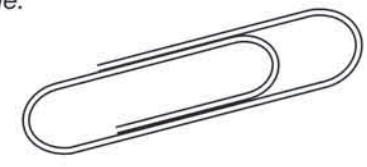
geometric sequence A sequence where the ratio between consecutive terms is always the same.

Example:



gram The basic unit of mass in the metric system.

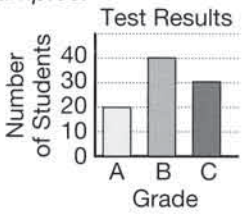
Example:



The mass of a large paperclip is about 1 gram.

graph A diagram that shows information in an organized way.

Examples:



Stem	Leaf
3	0 1 3
4	2 2
5	6 7 9

greatest common factor (GCF) The greatest whole number that divides two or more whole numbers without leaving a remainder.

Example: 6 is the GCF of 12, 18, and 24.

hecto- A prefix meaning 100.

Example: 1 hectometer = 100 meters

height On a triangle, quadrilateral, or pyramid, the perpendicular distance from the base to the opposite vertex or side. On a prism or cylinder, the distance between the bases.

Examples:

heptagon A polygon with 7 sides.

Example:

hexadecimal number system A base-16 place value system.

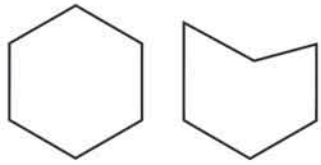
Example:

The letters A–F are used to represent the digits 10–15. The base-16 number A3CE is equal to 41,934 (40,960 + 768 + 192 + 14) in the decimal (base-10) number system.

Base 16	A	3	C	E
Place value	4096	256	16	1
Product	10 × 4096 = 40,960	3 × 256 = 768	12 × 16 = 192	14 × 1 = 14

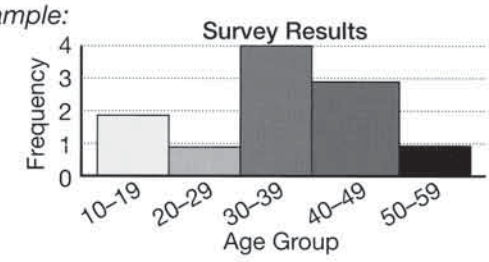
hexagon A polygon with 6 sides.

Examples:



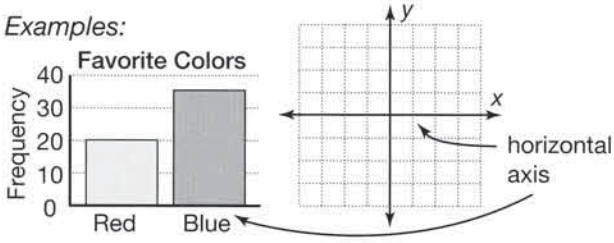
histogram A type of bar graph where the categories are equal ranges of numbers.

Example:



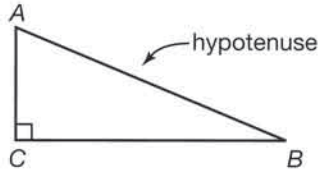
horizontal axis The horizontal line of the two lines on which a bar graph or a coordinate plane is built.

Examples:



hypotenuse The side opposite the right angle in a right triangle.

Example:



identity For any operation, the number that keeps another number the same. 0 is the additive identity, since $a + 0 = a$, 1 is the multiplicative identity since $a \times 1 = a$.

Examples: $6 + 0 = 6$
$5 \times 1 = 5$

if-then statement A logical statement that uses *if* and *then* to show a relationship between two conditions.

Example:

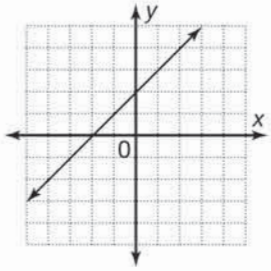
If a triangle is scalene, *then* none of its sides are congruent.

improper fraction A fraction whose numerator is greater than or equal to its denominator.

Examples: $\frac{5}{2}$ $\frac{8}{8}$ $\frac{14}{3}$

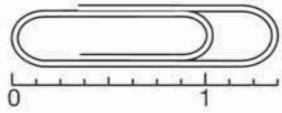
increasing graph A graph in which the height of the line increases from left to right.

Example:



inch A unit of length in the customary measurement system.

Example: The paperclip measures $1\frac{3}{8}$ in. or $1\frac{3}{8}$".



independent events Events for which the outcome of one does not affect the probability of the other.

Example:
The names Therese, Diane, and José are written on separate slips of paper. One slip is drawn and returned. Then another slip is drawn. The probability that Diane's name will be drawn, given that Therese's name was drawn on the first slip, is $\frac{1}{3}$.

independent variable The input variable for a function.

Example:

independent variable
/
$y = x + 2$

inductive reasoning Using a pattern to draw a conclusion.

Example:
Many quadrilaterals are drawn and their angles are measured. Each time the sum of the angles is 360°. The conclusion drawn is that the sum of the angles of a quadrilateral is 360°.

inequality A mathematical sentence involving $<$, $>$, $\leq$, or $\geq$.

Examples:

$6 < 9$ $x + 3 \geq 21$ $2x - 8 > 0$

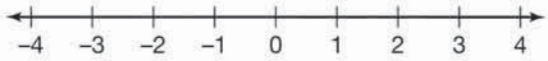
inscribed figure A figure that is contained inside another. A polygon is inscribed in a circle if all of its vertices lie on the circle.

Example:

The triangle is inscribed in the circle.

integers The set of positive whole numbers, their opposites, and 0.

Examples: ..., −3, −2, −1, 0, 1, 2, 3, ...



integer addition Adding two or more integers.

Examples:

$-5 + 8 = 3$ $-5 + (-8) = -13$

$5 + (-3) = 2$ $5 + 8 = 13$

integer division Dividing two integers.

Examples:

$-40 \div 8 = -5$ $40 \div (-8) = -5$

$-40 \div (-8) = 5$ $40 \div 8 = 5$

integer multiplication Multiplying two or more integers.

Examples:

$-5 \cdot 8 = -40$ $-5 \cdot (-8) = 40$

$5 \cdot (-8) = -40$ $5 \cdot 8 = 40$

integer subtraction Subtracting two integers.

Examples:

$-5 - 8 = -13$ $-5 - (-8) = 3$

$5 - (-3) = 8$ $5 - 8 = -3$

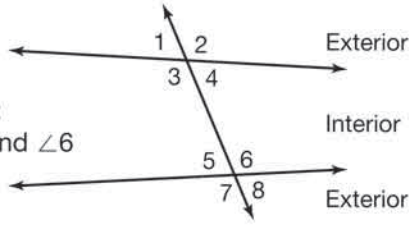
interest Money paid for the use of money.

Example:

Dave deposited $300 in a savings account. After 1 year the balance of his account was $315. He earned $15 in interest on his savings account.

interior angles When a transversal crosses two lines, the angles inside those two lines are called interior angles.

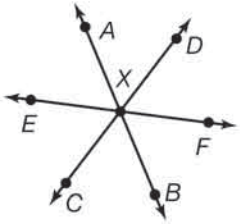
Example:



interior angles:
$\angle 3$, $\angle 4$, $\angle 5$, and $\angle 6$

intersect To cross through the same point.

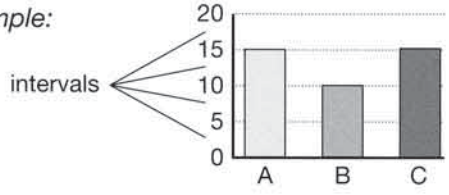
Example:



$\overleftrightarrow{AB}$, $\overleftrightarrow{CD}$, and $\overleftrightarrow{EF}$ intersect at point *X*.

interval One of the equal-sized divisions on a bar graph or line graph scale.

Example:



inverse operations Operations that "undo" each other.

Examples:

addition and subtraction $2 + \mathbf{3} = 5$ $5 - \mathbf{3} = 2$

multiplication and division $2 \cdot \mathbf{3} = 6$ $6 \div \mathbf{3} = 2$

inverse variation When two variables are related by a constant product.

Example:

x	1	2	3	4	5	6
y	60	30	20	15	12	10

$x \cdot y = 60$

irrational number A number, such as $\sqrt{2}$, that cannot be expressed as a repeating or terminating decimal.

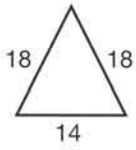
Examples: $\sqrt{5}$ π $-\sqrt{\frac{1}{2}}$

isometric drawing A method used to give perspective to a drawing.

Example:

isosceles triangle A triangle with at least two congruent sides.

Example:

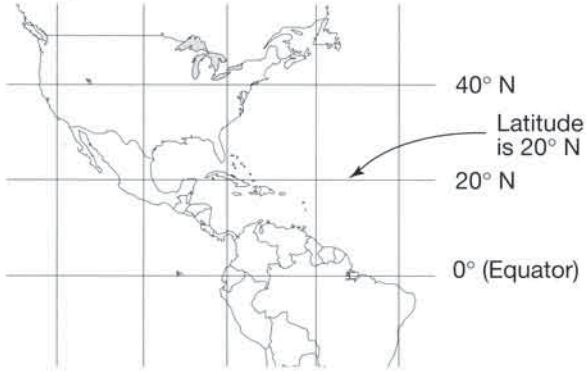


kilo- A prefix meaning 1000.

Example: 1 kilometer = 1000 meters

latitude A measurement in degrees north or south from the equator.

Example:



least common denominator (LCD) The least common multiple (LCM) of two or more denominators.

Example: $\frac{1}{2}$ $\frac{2}{3}$ $\frac{3}{4}$

The LCM of 2, 3, and 4 is 12, so the LCD of the fractions is 12.

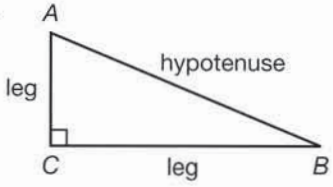
The fractions written with the LCD are $\frac{6}{12}$, $\frac{8}{12}$, and $\frac{9}{12}$.

least common multiple (LCM) The smallest number that is a common multiple.

Example:
multiples of 3: 3 6 9 **12** 15 18 21 **24** ...
multiples of 4: 4 8 **12** 16 20 **24** 28 32 ...
12 is the LCM of 3 and 4.

leg A side of a right triangle other than the hypotenuse.

Example:



like denominators Denominators that are the same in two or more fractions.

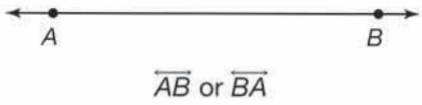
Example: $\frac{1}{8}$ $\frac{3}{8}$ $\frac{6}{8}$

like terms Terms in which the same variable is raised to the same exponent.

Example: $3x^2$ and $9x^2$ $10y$ and $2y$

line A one-dimensional figure that extends without end in both directions. Two points name a line.

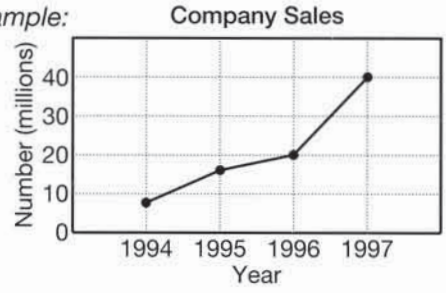
Example:



$\overleftrightarrow{AB}$ or $\overleftrightarrow{BA}$

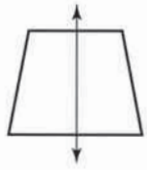
line graph A graph in which a line shows changes in data, often over time.

Example:

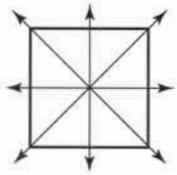


line of symmetry The line that divides a figure with line symmetry into two identical halves.

Examples:



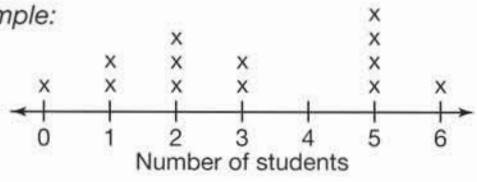
1 line of symmetry



4 lines of symmetry

line plot A plot that shows the shape of a data set by stacking x's above each value on a number line.

Example:



line segment Part of a straight line, with two endpoints. Two points name a segment.

Example:

$\overline{AB}$ or $\overline{BA}$

line symmetry A figure has line symmetry if it can be divided into two identical halves.

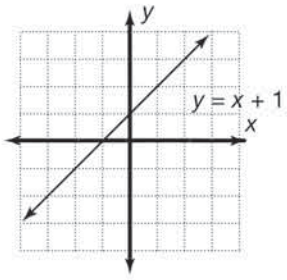
Example:

Figure with line symmetry

Figure with no line symmetry

linear equation An equation whose graph is a straight line.

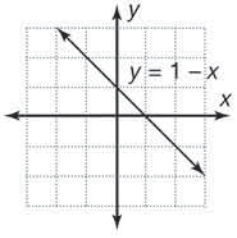
Example:



linear function A function whose graph is a straight line.

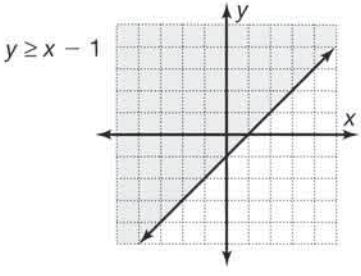
Example:

Input	Output
x	y
-2	3
-1	2
0	1
1	0
2	-1
3	-2



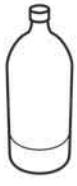
linear inequality A mathematical sentence involving $<$, $>$, $\leq$ or $\geq$ whose graph is a region with a straight-line boundary.

Example:



liter The basic unit of volume in the metric system.

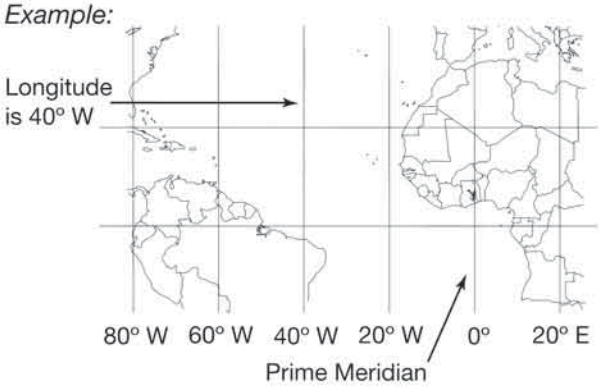
Example:



2-liter bottle

longitude A measurement in degrees east or west from the prime meridian.

Example:



lower quartile The median of the lower half of a data set.

Example:

27 27 27 29 32 33 36 38 42 43 62

↑ lower quartile ↑ median ↑ upper quartile

lowest terms A fraction with a numerator and denominator whose only common factor is 1.

Examples: $\frac{1}{2}$ $\frac{3}{5}$ $\frac{21}{23}$

mass The amount of matter that something contains.

Examples:

A raisin has a mass of 1 gram.

A pair of athletic shoes has a mass of 1 kilogram.

mean The sum of the values in a data set divided by the number of values. Also known as the average.

Example:

27 27 27 29 32 33 36 38 42 43 62

sum: 396

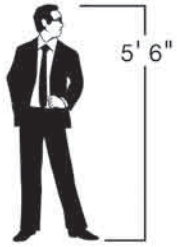
number of values: 11

mean: 396 ÷ 11 = 36

measurement error The uncertainty in a measurement. The greatest possible error in a measurement is half the smallest unit used.

Example:

Since inch is the smallest unit, the greatest possible error is $\frac{1}{2}$ inch. So the actual height is between $5'5\frac{1}{2}"$ and $5'6\frac{1}{2}"$.



measure of central tendency A single value summarizing a set of numerical data.

Example:

Mean, median, and mode are common measures of central tendency.

27 27 27 29 32 33 36 38 42 43 62

mode: 27 27 27 — median: 33

Mean = 396 ÷ 11 = 36

median The middle value of a data set when the values are arranged in numerical order.

Example:

27 27 27 29 32 33 36 38 42 43 62

median: 33

mental math Performing calculations in your mind, without using pencil and paper or a calculator.

Example:

2000 × 30

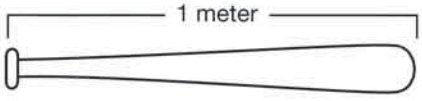
3 zeros + 1 zero = 4 zeros

Think: 2 × 3 = 6, annex 4 zeros

2000 × 30 = 60,000

meter The basic unit of length in the metric system.

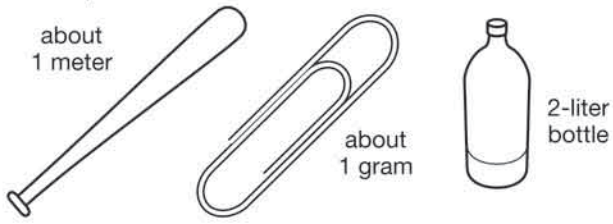
Example:



The baseball bat is about 1 meter long.

metric system A system of measurement based on the meter, the gram, and the liter.

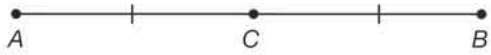
Examples:



length mass capacity

midpoint The point that divides a segment into two congruent smaller segments.

Example: C is the midpoint of $\overline{AB}$.



Length of $\overline{AC}$ = Length of $\overline{CB}$

mile A unit in the customary system of measurement equal to 5280 feet.

Example:

A mile is the distance you can walk in 15 to 20 minutes or run in about 10 minutes.

milli- A prefix meaning $\frac{1}{1000}$.

Example: 1 millimeter = $\frac{1}{1000}$ meter

mixed number A number made up of a whole number and a fraction.

Examples: $3\frac{1}{2}$ $1\frac{3}{4}$ $13\frac{3}{8}$

mode The value(s) that occur most often in a data set.

Example:

27 27 27 29 32 33 36 38 42 43 62

For the given set of data, 27 is the mode.

monomial An algebraic expression that has exactly one term.

Examples: $2x^2$ $5y$ x^3 -3

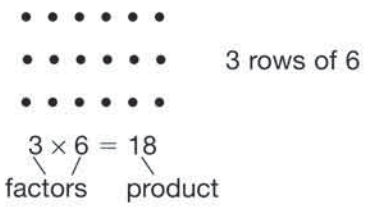
multiple The product of a given number and another whole number.

Example:

Since $3 \times 7 = 21$, 21 is a multiple of both 3 and 7.

multiplication An operation that combines two numbers, called factors, to give one number, called the product.

Example:

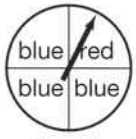


multiplication property If *A* and *B* are independent events, then the probability of both occurring is given by *P(A* and *B)* = *P(A)* × *P(B).*

Example:

1st spin: $P(\text{red}) = \frac{1}{4}$

2nd spin: $P(\text{red}) = \frac{1}{4}$



1st and 2nd spins: $P(\text{red and red}) = \frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$

Multiplication Property of Equality If $a = b$, then $ac = bc$.

Example:

In the second line of the example below, 2 is multiplied on both sides of the equation.

If $\frac{1}{2}y = 4$

then $\mathbf{2} \times \frac{1}{2}y = \mathbf{2} \times 4$

multiplicative inverse If the product of two numbers is 1, each number is the multiplicative inverse of the other.

Example:

$\frac{1}{6}$ and 6 are multiplicative inverses since $\frac{1}{6} \times 6 = 1$.

mutually exclusive If either event *A* or *B* occurs, then the other cannot occur.

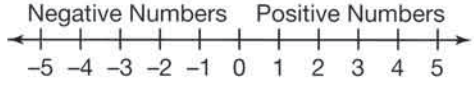
Examples:

If the temperature outside is 90°, it is not snowing.

If a polygon has only three sides, it cannot have 4 angles.

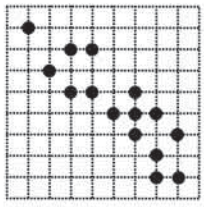
negative numbers Numbers less than zero.

Example:



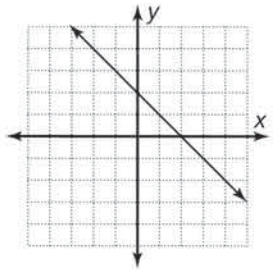
negative relationship Two data sets have a negative relationship when the data values in one set increase as the values in the other decrease.

Example:



negative slope The slope of a line slanting downward.

Example:



negative square root The opposite of the principal square root of a number.

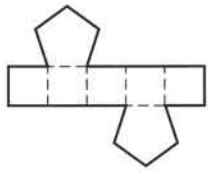
Example:

principal square root: $\sqrt{25} = 5$

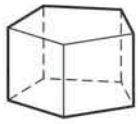
negative square root: $-\sqrt{25} = -5$

net A flat pattern that can be folded to create a three-dimensional figure such as a prism.

Example:



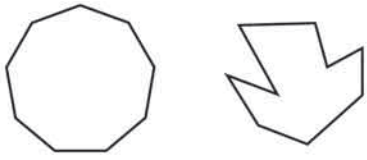
Net for pentagonal prism



Pentagonal prism

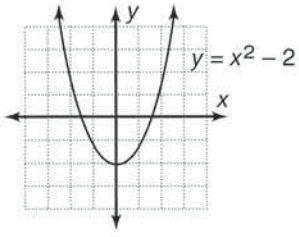
nonagon A polygon with 9 sides.

Examples:



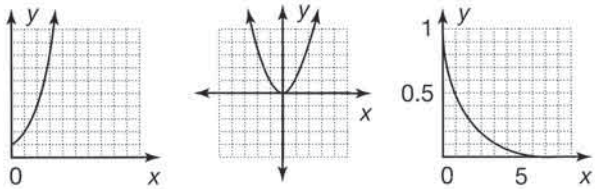
nonlinear equation An equation whose graph is a curve rather than a line.

Example:



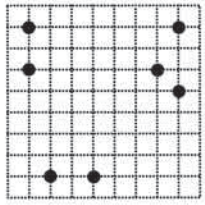
nonlinear function A function whose graph is not a straight line because equal changes in x do not result in equal changes in y.

Examples:



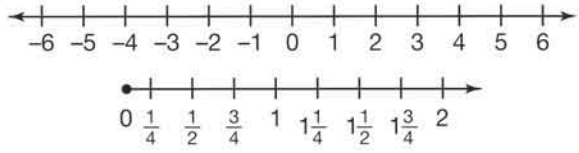
no relationship Two data sets have no relationship when there is no positive or negative relationship.

Example:



number line A line that shows numbers in order.

Examples:



number-word form A way of writing a number using digits and words.

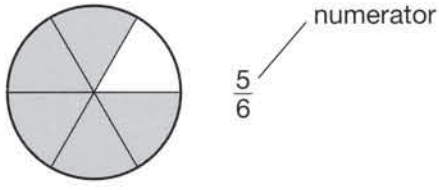
Examples: 45 trillion 9 thousand

numeral A symbol for a number.

Examples: 7 58 234

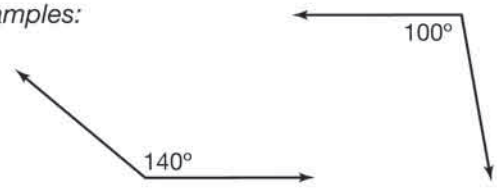
numerator The top number in a fraction which tells how many parts of the whole are being named.

Example:



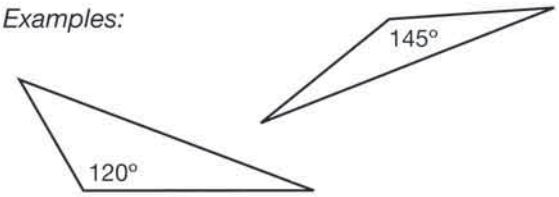
obtuse angle An angle that measures more than 90° and less than 180°.

Examples:



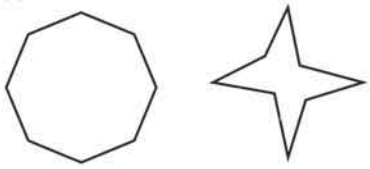
obtuse triangle A triangle with an obtuse angle.

Examples:



octagon A polygon with 8 sides.

Examples:



odd number A whole number that has 1, 3, 5, 7, or 9 in the ones place.

Examples:

43 225 999 8,007

odds The ratio of the number of ways an event can happen to the number of ways it cannot.

Example:

Odds of rolling a 3: 1 to 5

Odds against rolling a 3: 5 to 1

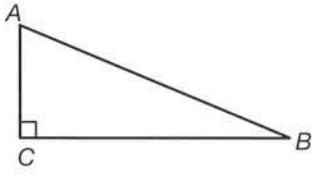
operation A mathematical procedure.

Examples:

Four basic operations: addition, subtraction, multiplication, division

opposite leg For an acute angle on a right triangle, the leg lying across from the angle.

Example:



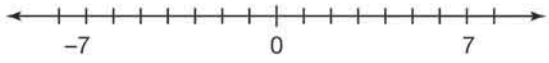
$\overline{CB}$ is the opposite leg to $\angle CAB$.

$\overline{AC}$ is the opposite leg to $\angle ABC$.

opposite numbers Numbers that are the same distance on a number line from zero but are on opposite sides.

Example:

7 and −7 are opposites of each other.



order of operations The rules telling what order to do operations in: (1) simplify inside parentheses, (2) simplify exponents, (3) multiply and divide from left to right, and (4) add and subtract from left to right.

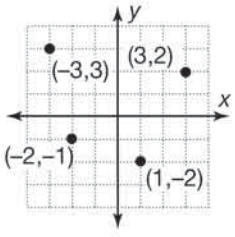
Example:

Evaluate $2x^2 + 4(x - 2)$ for $x = 3$.

(1) simplify inside parentheses	$2 \cdot 3^2 + 4(3 - 2)$ $2 \cdot 3^2 + 4(1)$
(2) simplify exponents	$2 \cdot 9 + 4$
(3) multiply and divide from left to right	$18 + 4$
(4) add and subtract from left to right	22

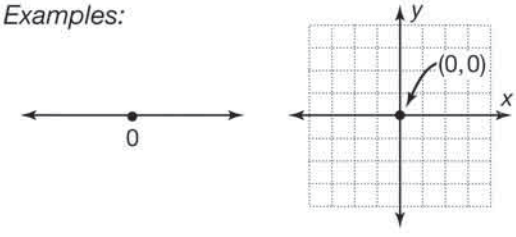
ordered pair A pair of numbers used to locate a point on a coordinate plane.

Example:



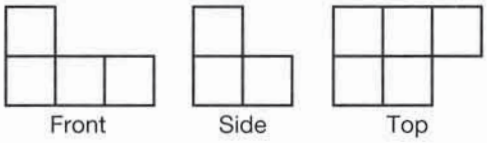
origin The zero point on a number line, or the point (0, 0) where the axes of a coordinate system intersect.

Examples:



orthographic drawing A drawing of an object using front, side, and top views.

Example:



ounce A unit of weight in the customary measurement system.

Example:

A letter weighs about one ounce.

outcome One way an experiment or situation could turn out.

Example:

Outcomes for Tossing 2 Coins:

coin 1	coin 2
head	tail
head	head
tail	head
tail	tail

There are 4 outcomes. One outcome is head, head.

outlier An extreme value in a data set, separated from most of the other values.

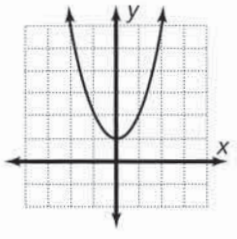
Example:

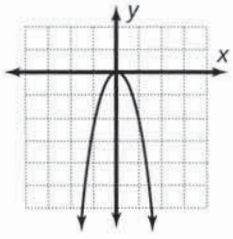
27 27 27 29 32 33 36 38 42 43 62

↑
outlier

parabola A U-shaped or upside-down U-shaped curve which is the graph of a quadratic function.

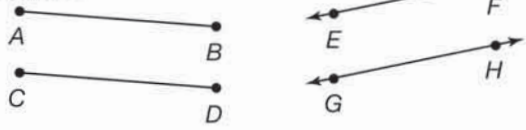
Examples:





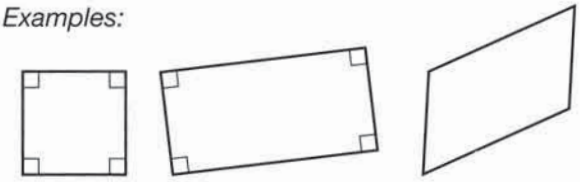
parallel Two lines, segments, or rays in the same plane that do not intersect.

Examples:



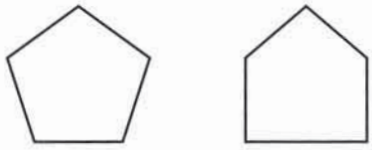
parallelogram A four-sided figure whose opposite sides are parallel and congruent.

Examples:



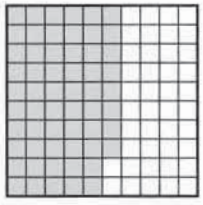
pentagon A polygon with 5 sides.

Examples:



percent A ratio comparing a number to 100.

Example:



$\frac{58}{100} = 0.58 = 58\%$

percent change The amount of a change, increase or decrease, divided by the original amount, expressed as a percent of the original amount.

Examples:

Find the percent change if \$1500 is invested and \$75 is earned in interest.

$\frac{75}{1500} = 0.05 = 5\%$ \$75 is a 5% increase.

Find the percent change if an item that costs \$50 is on sale for \$10 off.

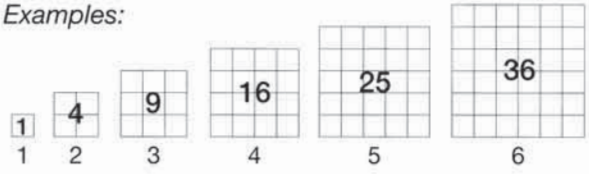
$\frac{10}{50} = 0.20 = 20\%$ \$10 off is a 20% decrease.

percent decrease The decrease in an amount expressed as a percent of the original amount. See *percent change.*

percent increase The increase in an amount expressed as a percent of the original amount. See *percent change.*

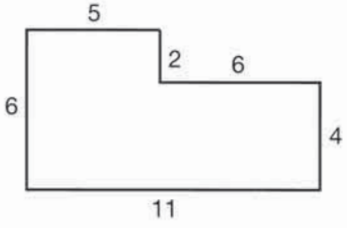
perfect square The square of a whole number.

Examples:



perimeter The distance around the outside of a figure.

Example: $P = 5 + 2 + 6 + 4 + 11 + 6$
$= 34$ units



permutation An arrangement of items in which order is important.

Example:

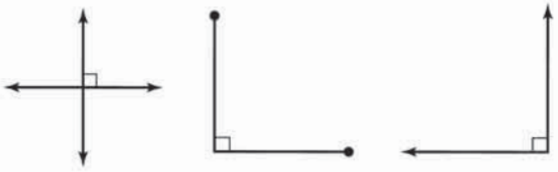
One student from this group will be elected president and one will be elected vice president: Wendy, Alex, Carlos. The possible permutations are:

Wendy—president, Alex—vice president
Wendy—president, Carlos—vice president
Alex—president, Wendy—vice president
Alex—president, Carlos—vice president
Carlos—president, Wendy—vice president
Carlos—president, Alex—vice president

Note: Each of the above is a different permutation.

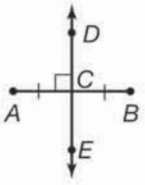
perpendicular Lines, rays, or line segments that intersect at right angles.

Examples:



perpendicular bisector A line, ray, or segment that intersects a segment at its midpoint and is perpendicular to it.

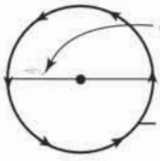
Example:



$\overleftrightarrow{DE}$ is the perpendicular bisector of $\overline{AB}$.

pi (π) The ratio of a circle's circumference to its diameter: 3.14159265….

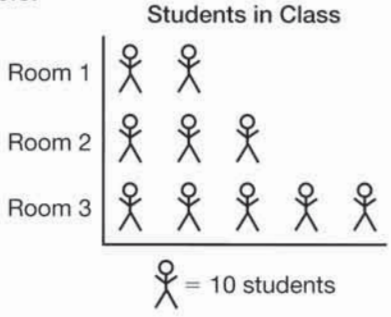
Example:



$\pi = \frac{\text{circumference}}{\text{diameter}}$

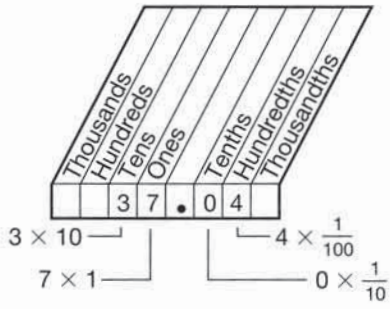
pictograph A graph using symbols to represent data.

Example:



place value The value given to the place a digit occupies.

Example:



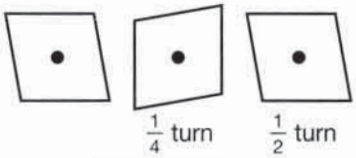
plane A flat surface that extends forever.

Example:

To visualize a plane, think of extending the table surface in all directions.

point symmetry A figure has point symmetry if it looks unchanged after a 180° rotation.

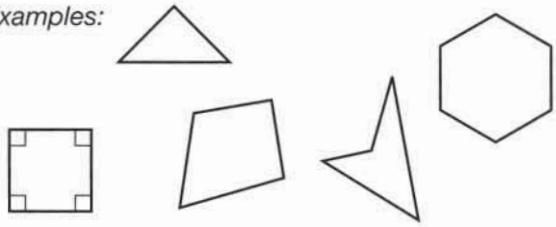
Example:



The figure looks the same after a 180° rotation or $\frac{1}{2}$ turn.

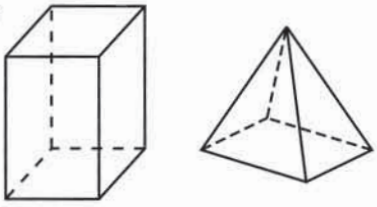
polygon A closed figure in a plane made of line segments that intersect only at their endpoints.

Examples:



polyhedron A solid whose faces are polygons.

Examples:



polynomial An algebraic expression that is the sum of one or more terms.

Examples: $x^2 + 2x - 3$ $5y - 15$

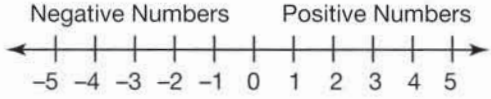
population The collection of all things to be studied in a survey.

Example:

All 1000 names of a club's membership were put on cards and the cards were shuffled. Then 100 cards were drawn and these members were given a phone survey. The population of the survey is all 1000 of the club members.

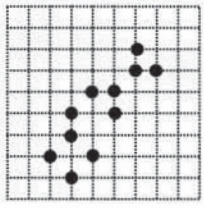
positive numbers Numbers greater than zero.

Example:



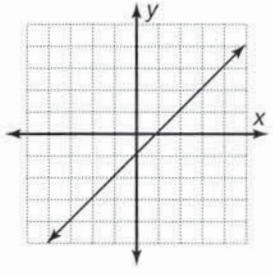
positive relationship Two data sets have a positive relationship when their data values both increase or both decrease.

Example:



positive slope The slope of a line slanting upward.

Example:



pound A unit in the customary system of measurement equal to 16 ounces.

Example:

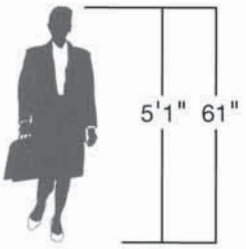
power An exponent or the number produced by raising a base to the exponent.

Example:

$16 = 2^4$ 2 is raised to the 4th power.
16 is the 4th power of 2.

precision The exactness of a measurement, determined by the unit of measure.

Example:



The smaller unit of measure, inches, is more precise than the larger unit of measure, feet.

prime factor A prime number that divides another integer without leaving a remainder.

Example:

5 is a prime factor of 35, because $35 \div 5 = 7$.

prime factorization Writing a number as a product of prime numbers.

Example: $70 = 2 \times 5 \times 7$

prime number A whole number greater than 1 whose only factors are 1 and itself.

Example:

The primes start with 2, 3, 5, 7, 11, ...

principal An amount of money deposited or borrowed, on which interest is paid.

Example:

Dave deposited $300 in a savings account. After 1 year the balance of his account was $315. $300 is the amount of principal.

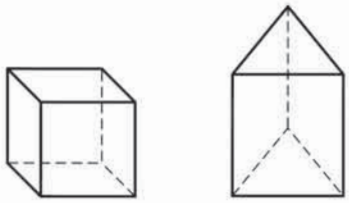
principal square root The positive square root of a number.

Example:

principal square root	negative square root
$\sqrt{25} = 5$	$-\sqrt{25} = -5$

prism A polyhedron whose bases are congruent and parallel.

Example:



probability A ratio of the number of ways an event can happen to the total number of possible outcomes.

Example:

The probability of rolling a 3 is $\frac{1}{6}$.
The probability of not rolling a 3 is $\frac{5}{6}$.

product The result of multiplying two or more numbers.

Example:

$$2 \times 3 \times 5 = 30$$

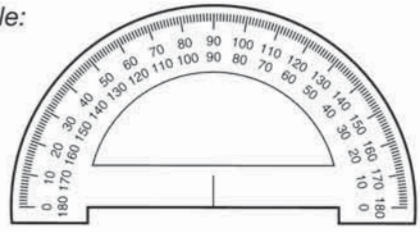
(product)

proportion An equation stating that two ratios are equal.

Example: $\frac{12}{34} = \frac{6}{17}$

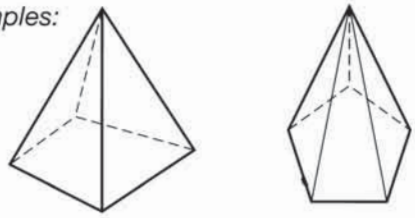
protractor A tool for measuring angles.

Example:



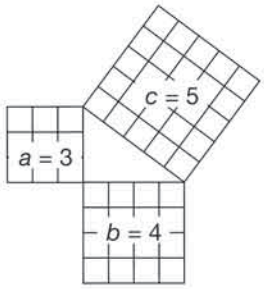
pyramid A solid with one polygonal base and whose other sides are all triangles meeting at a single point.

Examples:



Pythagorean Theorem In a right triangle where c is the length of the hypotenuse and a and b are the lengths of the legs, $a^2 + b^2 = c^2$.

Example:

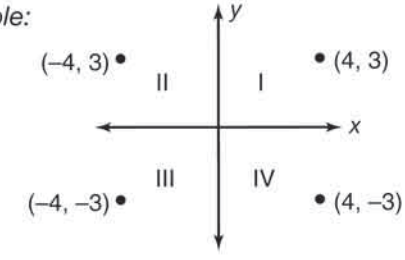


$a^2 + b^2 = c^2$

$3^2 + 4^2 = 5^2$

quadrants The four regions determined by the axes of a coordinate plane.

Example:



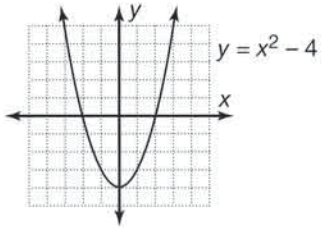
quadratic equation An equation with a squared term like x^2.

Examples:

$y = x^2 + 3x - 12$ $\quad$ $y = 2x^2 + 7$

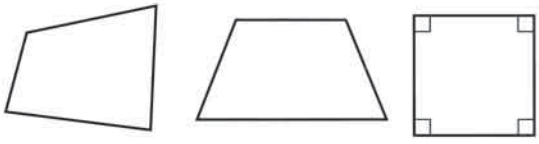
quadratic function A function where the highest power of x is 2. The graph of a quadratic function is a parabola.

Example:



quadrilateral A polygon with 4 sides.

Examples:



quart A unit of volume in the customary measurement system.

Example:

A quart of milk

quartile One of the numbers dividing a data set into equal fourths.

Example:

27 27 27 29 32 33 36 38 42 43 62

lower quartile — median — upper quartile

27, 33, and 42 are the three quartiles for this data set.

quotient The result of dividing one number by another.

Example:

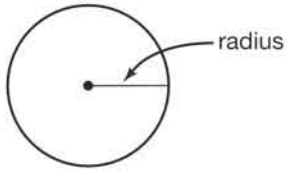
$8 \div 4 = 2$ (2: quotient)

radical sign $\sqrt{\ }$, used to represent the square root of a number.

Example: $\sqrt{49} = 7$

radius A line from the center of a circle to any point on the circle.

Example:



random sample A sample chosen in such a way that every member of the population has an equal chance of being included.

Example:

All 1000 names of a club's membership were put on cards and the cards were shuffled. Then 100 cards were drawn and these members were given a phone survey. All the members of the club had an equal chance of being called so this was a random sample.

range The difference between the highest and lowest values in a data set.

Example:

27 27 27 29 32 33 36 38 42 43 62

The range is 62 − 27 = 35.

rate A ratio showing how quantities with different units are related.

Examples: $\frac{72 \text{ dollars}}{28 \text{ hours}}$ $\frac{55 \text{ miles}}{1 \text{ hour}}$

ratio A comparison of two quantities, often written as a fraction.

Examples: $\frac{2}{1}$ 2 to 1 2:1

rational number A number that can be written as a ratio of two integers. Integers, fractions, and many decimals are rational numbers.

Examples:

Integer	Fraction	Decimal
$-27 = \frac{-27}{1}$	$\frac{7}{8}$	$3.1 = 3\frac{1}{10} = \frac{31}{10}$

ray A part of a line that has one endpoint and extends forever in the other direction. A ray is named by its endpoint first.

Example:

$\overrightarrow{AB}$

real numbers All rational and irrational numbers.

Examples:

-27	$\frac{1}{2}$	3.1
$\sqrt{5}$	π	$-\sqrt{\frac{1}{2}}$

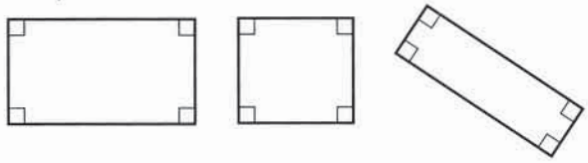
reciprocals Two numbers whose product is 1.

Example:

$\frac{3}{5}$ and $\frac{5}{3}$ are reciprocals since $\frac{3}{5} \cdot \frac{5}{3} = 1$.

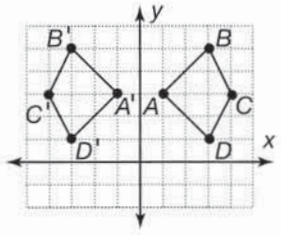
rectangle A parallelogram with opposite sides the same length and all angles measuring 90°.

Examples:



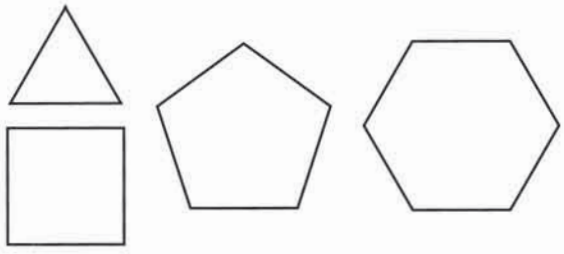
reflection The mirror image of a figure that has been "flipped" over a line. Also, the name for the transformation that flips the figure over the line.

Example:



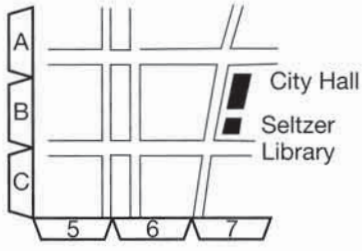
regular polygon A polygon with all sides and angles congruent.

Examples:



relative position Location given in relationship to another place.

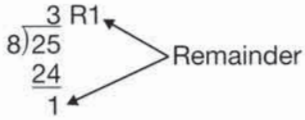
Example:



City Hall is next to Seltzer Library.

remainder The number less than the divisor that remains after the division process is completed.

Example:

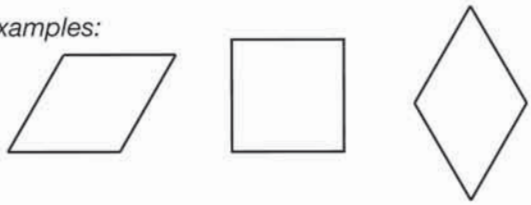


repeating decimal A decimal with a repeating digit or group of digits to the right of the decimal point.

Examples: $0.\overline{6}$ $0.\overline{123}$ $2.\overline{18}$

rhombus A parallelogram with four sides of equal length.

Examples:

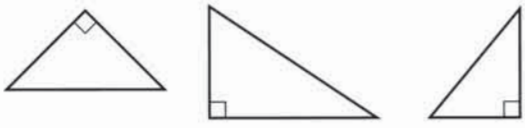


right angle An angle that measures 90°.

Example:

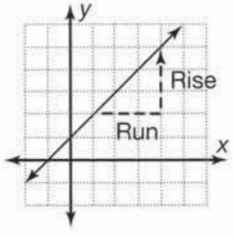
right triangle A triangle with one right angle.

Examples:



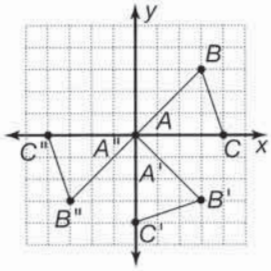
rise For a line on a graph, the vertical change for a given horizontal change.

Example:



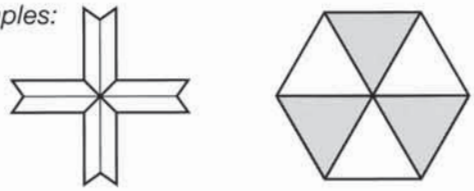
rotation The image of a figure that has been "turned," as if on a wheel. Also, the name for the transformation that turns the figure.

Example:



rotational symmetry A figure has rotational symmetry if it can be rotated less than a full circle and exactly match its original image.

Examples:



Each figure has rotational symmetry.

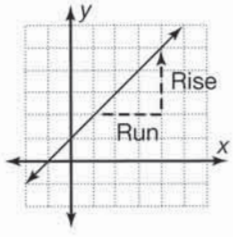
rounding Estimating a number to a given place value.

Example:

2153 rounded to	
nearest hundred: 2200	nearest ten: 2150

run For a line on a graph, the horizontal change used to find the vertical change, or rise.

Example:



sample A set of data used to predict how a particular situation might happen.

Example:

All 1000 names of a club's membership were put on cards and the cards were shuffled. Then 100 cards were drawn and these members were given a phone survey. The sample is the 100 members that took the phone survey.

sample space The set of all possible outcomes of an experiment.

Example:

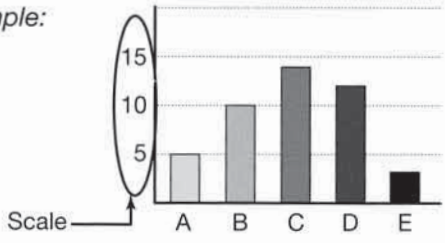
Outcomes for Tossing 2 Coins:

coin 1	coin 2
head	tail
head	head
tail	head
tail	tail

The sample space is head, tail; head, head; and tail, tail.

scale (graphical) The evenly spaced marks on a bar graph's or line graph's vertical axis, used to measure the heights of the bars or lines.

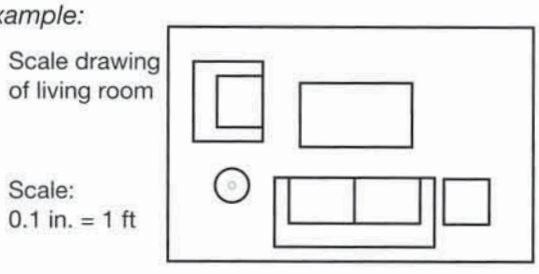
Example:



scale (in scale drawings) The ratio of measurements in a scale drawing to the measurements of the actual object. See *scale drawing.*

scale drawing A drawing that uses a scale to make an enlarged or reduced picture of an object.

Example:

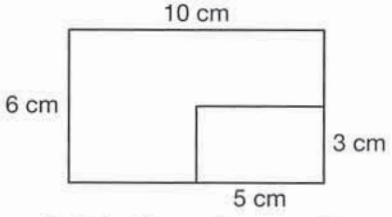


scale factor The ratio used to enlarge or reduce similar figures.

Example:

$\frac{10}{5} = 2$

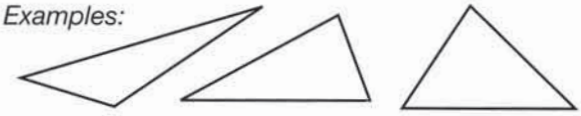
$\frac{6}{3} = 2$



The scale factor is 2 for the enlargement.

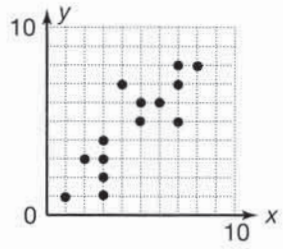
scalene triangle A triangle whose sides have different lengths.

Examples:



scatterplot A graph using paired data values as points to show the relationship between the two data sets.

Example:

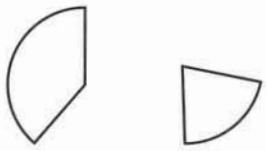


scientific notation A number written as a decimal greater than or equal to 1 and less than 10, multiplied by a power of 10.

Example: $350{,}000 = 3.5 \times 10^5$

sector A wedge-shaped part of a circle, used in a circle graph to show how portions of a set of data compare with the whole set.

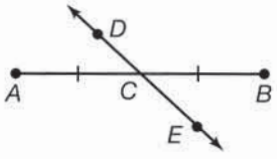
Examples:



segment See *line segment*.

segment bisector A line, ray, or segment through the midpoint of a segment.

Example:

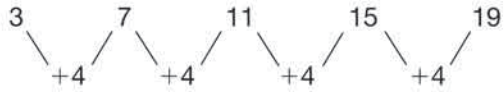


$\overleftrightarrow{DE}$ bisects $\overline{AB}$ at C.

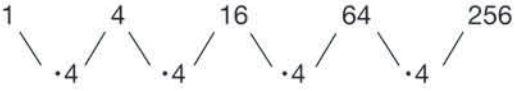
sequence An arrangement of numbers that follows a pattern.

Examples:

arithmetic sequence

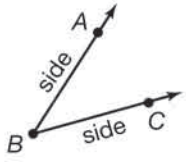


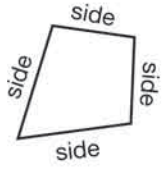
geometric sequence



side Each of the rays forming an angle. Also, the line segments that make up a polygon.

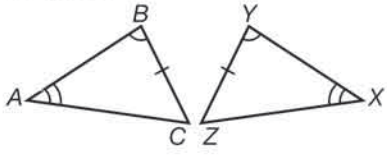
Examples:





Side-Angle-Angle (SAA) A rule used to determine whether triangles are congruent by comparing corresponding parts.

Example:

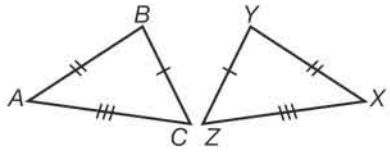


$\overline{BC} \cong \overline{YZ}$
$\angle ABC \cong \angle XYZ$
$\angle BAC \cong \angle YXZ$

$\triangle ABC \cong \triangle XYZ$ by the SAA rule.

Side-Side-Side (SSS) A rule used to determine whether triangles are congruent by comparing corresponding parts.

Example:

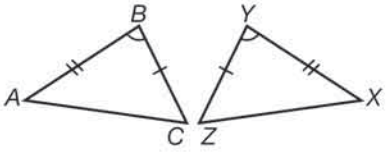


$\overline{AB} \cong \overline{XY}$
$\overline{BC} \cong \overline{YZ}$
$\overline{CA} \cong \overline{ZX}$

$\triangle ABC \cong \triangle XYZ$ by the SSS rule.

Side-Angle-Side (SAS) A rule used to determine whether triangles are congruent by comparing corresponding parts.

Example:



$\overline{AB} \cong \overline{XY}$
$\angle ABC \cong \angle XYZ$
$\overline{BC} \cong \overline{YZ}$

$\triangle ABC \cong \triangle XYZ$ by the SAS rule.

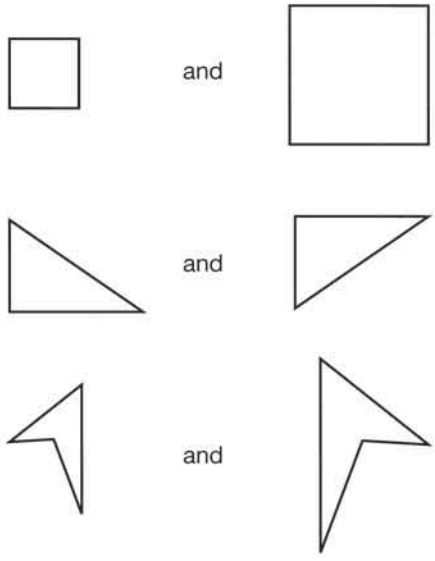
significant digits In a measured quantity, the digits representing the actual measurement.

Examples:

380.6700	All digits are significant.
0.0038	3 and 8 are significant, but none of the zeros are significant.

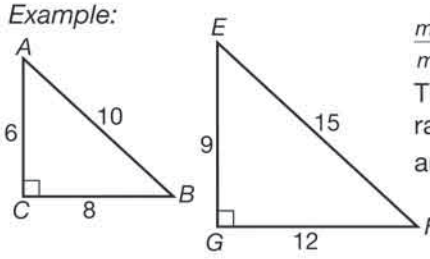
similar Having the same shape but not necessarily the same size.

Examples:



similarity ratio The ratio between corresponding side lengths on similar figures.

Example:



$\frac{m\overline{AB}}{m\overline{EF}} = \frac{10}{15} = \frac{2}{3}$

The similarity ratio of $\triangle ABC$ and $\triangle EFG$ is $\frac{2}{3}$.

simple interest Interest based on principal alone.

Example: Ramon invests \$240 in an account which earns 6% interest per year for 5 years.

He will earn $240 \cdot 0.06 \cdot 5 = 72$; \$72 in simple interest after 5 years.

simplified A polynomial containing no like terms.

Example:

$4x^4 + x^3 + x^2 - 8$	simplified
$4x^4 + x^2 + 6x^2 - 8$	not simplified, since x^2 and $6x^2$ are like terms

simplify To reduce the complexity of an expression by applying the order of operations.

Example: Simplify $3 + 8 \cdot 5^2$.

$3 + 8 \cdot 5^2 = 3 + 8 \cdot 25$	(exponents)
$= 3 + 200$	(multiply)
$= 203$	(add)

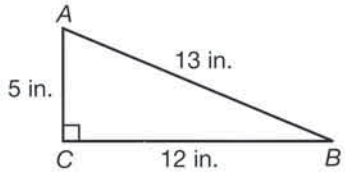
simulation An experimental model used to find probability.

Example:

A baseball player bats .250. To simulate how this player might bat, a 4-section spinner is spun. The simulation can be used to predict how often the batter would hit 2 in a row or 3 in a row.

sine For an acute angle x on a right triangle, the sine of x, *or* $\sin(x)$, is the ratio $\frac{\text{opposite leg}}{\text{hypotenuse}}$.

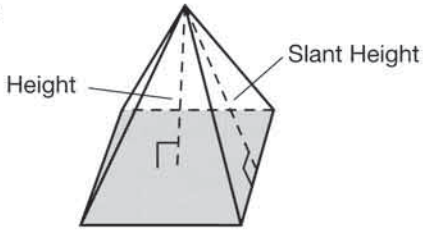
Example:



$$\sin \angle CAB = \frac{\text{opposite leg}}{\text{hypotenuse}} = \frac{12}{13} \approx 0.92$$

slant height On a pyramid, the perpendicular distance from one edge of the base to the vertex.

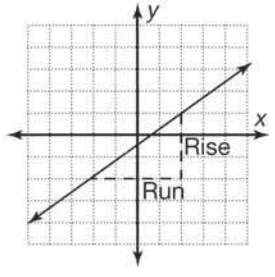
Example:



slide See *translation*.

slope For a line on a graph, slope is the rise divided by the run, used to describe the steepness of a line.

Example:

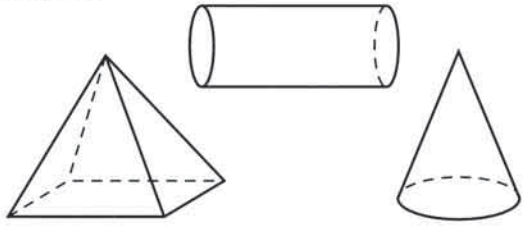


$\frac{\text{rise}}{\text{run}} = \frac{3}{4}$

The slope is $\frac{3}{4}$.

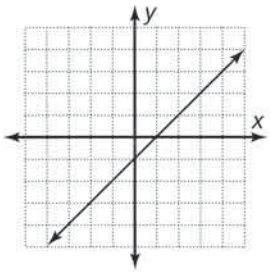
solid A three-dimensional figure.

Examples:

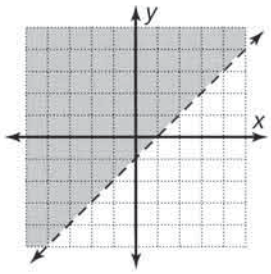


solutions of an equation or inequality Values of a variable that make an equation or inequality true.

Examples:



The line represents the solutions to $y = x - 1$.



The shaded area represents the solutions to $y > x - 1$.

solution of a system The variable replacements making all equations in a system true.

Example:
$$y = x + 4$$
$$y = 3x - 6$$

The ordered pair (5, 9) solves both equations. So, (5, 9) is a solution of the system.

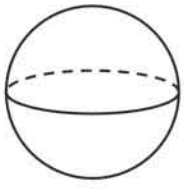
solve To find the solutions of an equation or inequality.

Example: Solve $x + 6 = 13$.

$$x + 6 = 13$$
$$x + 6 + (-6) = 13 + (-6)$$
$$x + 0 = 7$$
$$x = 7$$

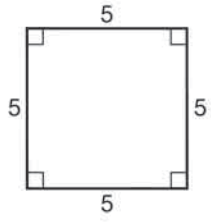
sphere A solid whose points are all the same distance from the center.

Example:



square A quadrilateral with all sides the same length and all angles measuring 90°.

Example:

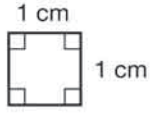


squared Raised to the second power.

Example: 3 squared is written 3^2.
$3^2 = 3 \times 3 = 9$

square centimeter The area of a square with 1-centimeter sides.

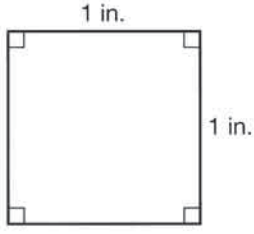
Example:



1 square centimeter

square inch The area of a square with 1-inch sides.

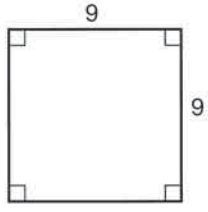
Example:



1 square inch

square root The square root of N is the number that when multiplied by itself gives N. Also, the square root of a given number is the length of one side of a square with an area equal to the given number.

Example:
$9 \times 9 = 81$, so 9 is the square root of 81.
$9 = \sqrt{81}$



Area is 81 square units.

standard form A way of writing a number using digits.

Example:

Standard form:	100,000,000
Word form:	one hundred million
Number-word form:	100 million

stem-and-leaf diagram A display of data that uses the digits of the data numbers to show the shape and distribution of the data set.

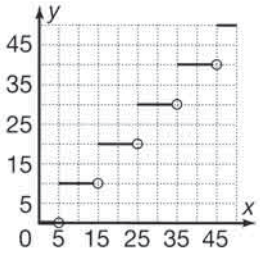
Example:

The diagram shows the data set: 33, 34, 34, 35, 40, 41, 46, 51, 51, 52, 53, 55, 58.

Stem	Leaf
3	3 4 4 5
4	0 1 6
5	1 1 2 3 5 8

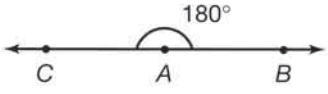
step function A function in which different rules are applied to different input values. The graph of a step function is made up of unconnected pieces.

Example:



straight angle An angle measuring 180°.

Example:



substitute To replace a variable with a specific value.

Example:

Use the formula $A = l \cdot w$ to find the area of a rectangle with length 12 cm and width 8 cm.

$A = l \cdot w$

$A = 12 \cdot 8$ Substitute values for length and width.

$A = 96$

Area is 96 cm^2.

subtraction An operation that tells the difference between two numbers, or how many are left when some are taken away.

Example: $12 - 5 = 7$

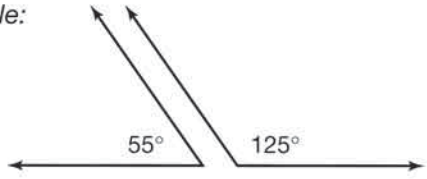
⊠⊠⊠⊠⊠
○○○○○
○○

sum The result of adding two or more numbers.

Example: $30 + 18 = 48$ (sum)

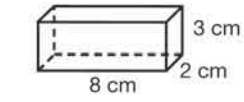
supplementary angles Two angles whose measures add up to 180°.

Example:



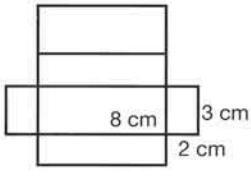
surface area (SA) The sum of the areas of each face of a polyhedron.

Example:



Two faces are 8 cm by 3 cm.
$A = b \cdot h = 8 \cdot 3 = 24$ cm^2

Two faces are 8 cm by 2 cm.
$A = b \cdot h = 8 \cdot 2 = 16$ cm^2



Two faces are 2 cm by 3 cm.
$A = b \cdot h = 2 \cdot 3 = 6$ cm^2

The surface area of the rectangular prism is:

$SA = 2(24 + 16 + 6)$
$= 92$ cm^2

survey A study that requires collecting and analyzing information.

Example:

A survey was conducted to determine what sport was the most popular among students.

symmetry See *line symmetry, point symmetry,* and *rotational symmetry.*

system of linear equations Two or more linear equations considered together.

Example:

$y = x + 3$
$y = 4x - 15$

T-table A table showing corresponding x- and y-values for an equation.

Example: $y = 2x + 1$

x	y
-2	-3
-1	-1
0	1
1	3
2	5

tally A record, using tally marks, of a count taken during a survey.

Example:

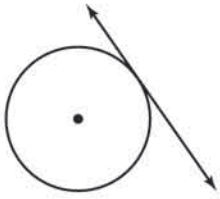
Vehicle	Tally
Sedan	𝍸 |||
Station Wagon	||||
Suburban	𝍸 |
Truck	𝍸
Van	|||

tally marks Marks used to organize a large set of data. Each mark indicates one time a value appears in the data set.

Example: | One 𝍸 Five

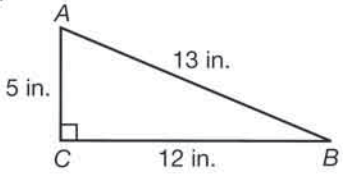
tangent line A line that touches a circle at only one point.

Examples:



tangent ratio For an acute angle x on a right triangle, the tangent of x, or $\tan(x)$, is $\frac{\text{opposite leg}}{\text{adjacent leg}}$.

Example:



$\tan \angle CAB = \frac{\text{opposite leg}}{\text{adjacent leg}} = \frac{12}{5} = 2.4$

term One number in a sequence. Also, a part of a polynomial that is a signed number, a variable, or a number multiplied by a variable or variables. The variables can have whole-number exponents.

Examples:

sequence 3 7 11 15 19 23

terms

polynomial $2x^3 - x^2 + 3x - 5$

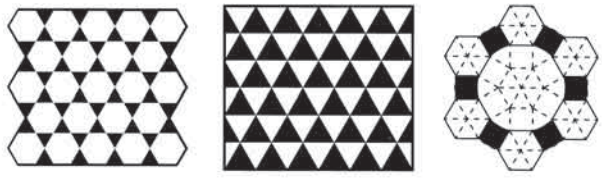
terms

terminating decimal A decimal with a fixed number of digits.

Examples: 3.5 0.599992 4.05

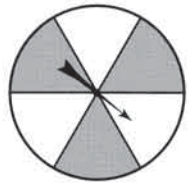
tessellation A repeating pattern of figures that covers a plane without gaps or overlaps.

Examples:



theoretical probability The ratio of the number of ways an event can happen to the total number of possible outcomes.

Example:

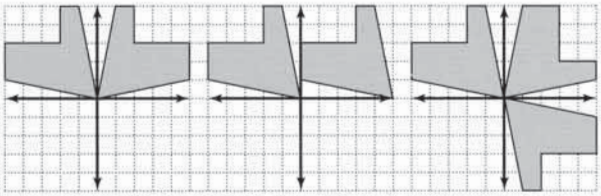


$\frac{\text{Number of ways to spin white}}{\text{Total ways}} = \frac{3}{6} = \frac{1}{2}$

Since half of the sections on the spinner are white, the theoretical probability of spinning white is $\frac{1}{2}$.

transformation A change in the position of a figure.

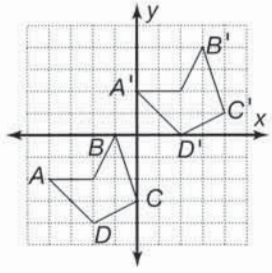
Example:



reflection translation rotation

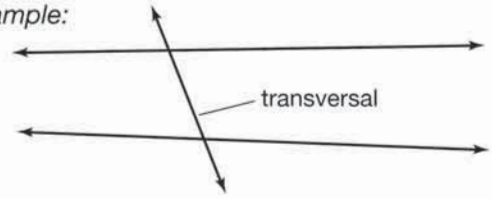
translation The image of a figure that has been slid to a new position without flipping or turning. Also, the name for the transformation that slides the figure.

Example:



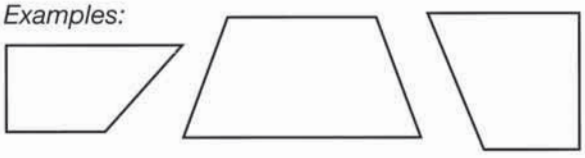
transversal A line that crosses two or more other lines.

Example:



trapezoid A quadrilateral with exactly two sides parallel.

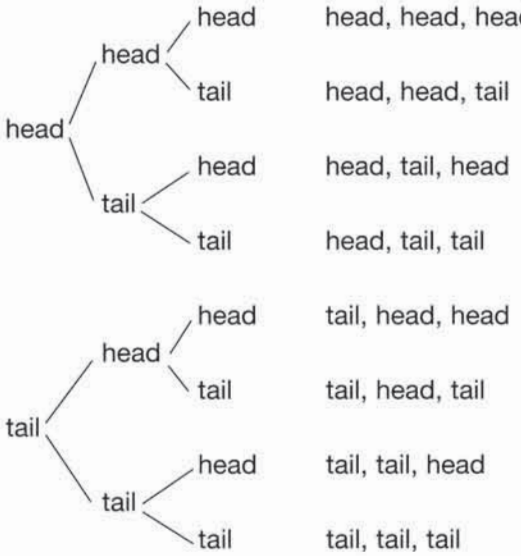
Examples:



tree diagram A branching, tree-like diagram showing all possible outcomes of a situation.

Example:

Tossing 3 coins:



trend A relationship between two sets of data that shows up as a pattern in a scatterplot. See *positive relationship, negative relationship, no relationship.*

trend line A line that approximately "fits" points forming a trend in a scatterplot. See *positive relationship* and *negative relationship.*

trial One experiment.

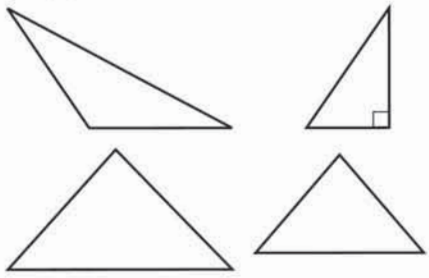
Examples:

One roll of a number cube

One toss of a coin

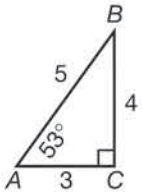
triangle A polygon with three sides.

Examples:



trigonometric ratios Ratios of the side lengths of a right triangle, related to the measures of the triangle's acute angles.

Examples:



$\cos \angle CAB = \frac{\text{adjacent leg}}{\text{hypotenuse}} = \frac{3}{5} = 0.6$

$\sin \angle CAB = \frac{\text{opposite leg}}{\text{hypotenuse}} = \frac{4}{5} = 0.8$

$\tan \angle CAB = \frac{\text{opposite leg}}{\text{adjacent leg}} = \frac{4}{3} \approx 1.3$

trinomial A polynomial with three terms.

Examples: $2x^3 - x^2 + 3x$ $3x^2 + 2x - 4$

turn See *rotation.*

unfair game A game in which not all players have the same probability of winning.

Example:

Unfair game: A pair of number cubes is rolled and each player is assigned a sum from 2 to 12. Each player gets a point when his/her sum is rolled. Since the sums from 2 to 12 do not have equal chances of being rolled, the players do not have equal chances of winning and thus the game is unfair.

unit price A unit rate giving the cost of one item.

Examples:

$3.00 per pound $5.75 per box

unit One of something. An amount or quantity used as a standard of measurement.

unit fraction A fraction with a numerator of 1.

Examples: $\frac{1}{4}$ $\frac{1}{2}$ $\frac{1}{7}$

unit rate A rate in which the second number in the comparison is one unit.

Examples: 25 gallons per minute $\frac{55 \text{ miles}}{1 \text{ hour}}$

unlike denominators Denominators that are different in two or more fractions.

Example: $\frac{1}{2}$ $\frac{2}{5}$ $\frac{2}{9}$

unlike denominators

upper quartile The median of the upper half of a data set.

Example:

27 27 27 29 32 33 36 38 42 43 62

lower quartile — median — **upper quartile**

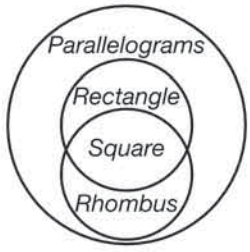
variable A quantity that can change or vary, often represented by a letter.

Examples: $3x$ y $2t$

variables

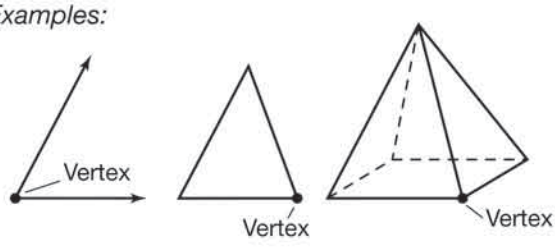
Venn diagram A diagram that uses regions to show relationships between sets of things.

Example:



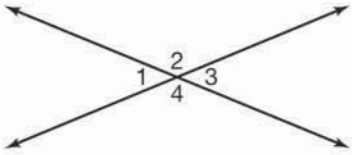
vertex On an angle or a polygon, the point where two sides intersect. On a polyhedron, the intersection point of three or more faces.

Examples:



vertical angles Angles on opposite sides of the intersection of two lines.

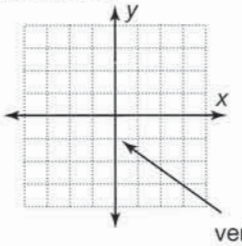
Example:

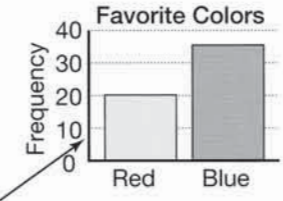


vertical angles:
$\angle 1$ and $\angle 3$
$\angle 2$ and $\angle 4$

vertical axis The vertical line of the two lines on which a bar graph or a coordinate plane is built.

Examples:

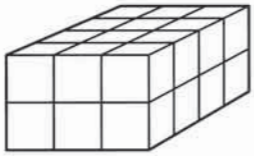




vertical axis

volume The amount of space taken up by a solid.

Example:



$V = lwh$
$V = 4 \cdot 3 \cdot 2$
$V = 24$ cubic units

weight A measure of the force that gravity exerts on a body.

Examples:

1 oz

1 lb

1 ton

whole number Any number in the set {0, 1, 2, 3, 4, ...}.

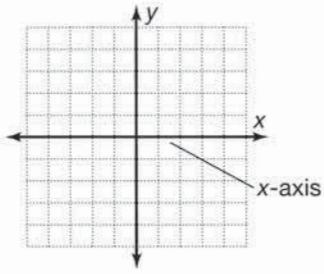
word form A way of writing a number using only words.

Examples:

forty-five trillion one billion six

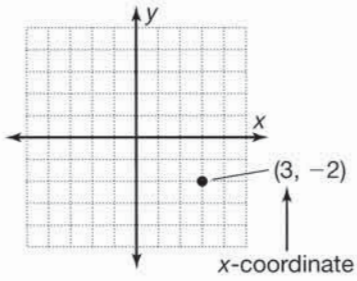
***x*-axis** The horizontal axis on a coordinate plane.

Example:



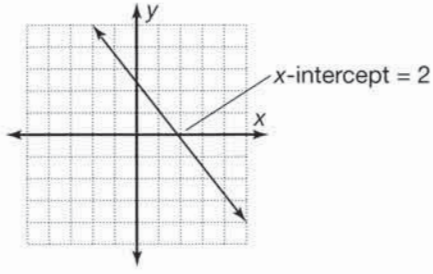
***x*-coordinate** The first number in an ordered pair.

Example:



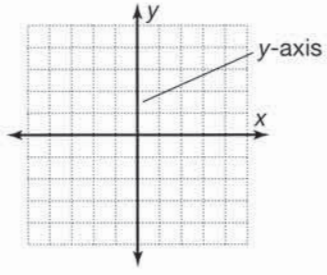
***x*-intercept** A point where the graph of an equation crosses the *x*-axis.

Example:



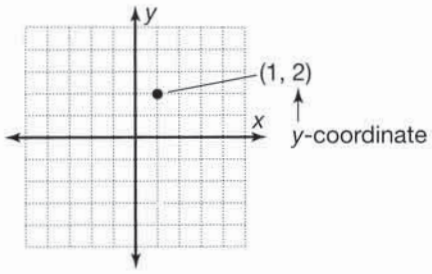
***y*-axis** The vertical axis on a coordinate plane.

Example:



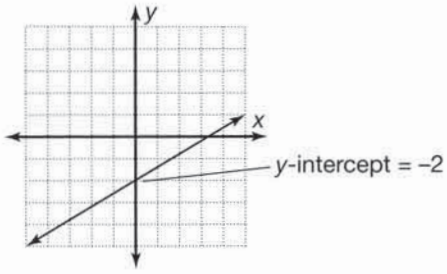
y-coordinate The second number in an ordered pair.

Example:



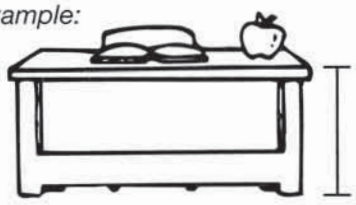
y-intercept A point where the graph of an equation crosses the *y*-axis.

Example:



yard A unit in the customary system of measurement equal to 3 feet.

Example:



The height of a desk is about a yard.

zero pair A number and its opposite.

Examples: 7 and −7 23 and −23

Zero Property of Addition The sum of an integer and its additive inverse is 0.

Examples: $3 + (-3) = 0$

$-8 + 8 = 0$