

Multi-Language Visual Glossary

**Middle School Math
Glossaries in:**

English

Spanish

Chinese

Vietnamese

Cambodian

Laotian

Arabic

Haitian Creole

Russian

Portuguese



McDougal Littell Middle School

Math

Larson

Boswell

Kanold

Stiff

Multi-Language Visual Glossary

The Multi-Language Visual Glossary includes an English Glossary that covers all the vocabulary in Middle School Math, Courses 1-3, as well as translations of this glossary into the following languages:

Spanish

Chinese

Vietnamese

Cambodian

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Haitian Creole

Russian

Portuguese



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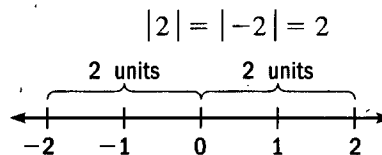
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ENGLISH

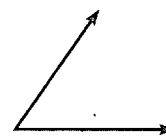
A

ENGLISH

absolute value The absolute value of a number a is the distance between a and 0 on a number line. The absolute value of a is written $|a|$.



acute angle An angle whose measure is less than 90° .



acute triangle A triangle with three acute angles.



addition property of equality Adding the same number to each side of an equation produces an equivalent equation.

If $x - 5 = 2$, then
 $x - 5 + 5 = 2 + 5$, so $x = 7$.

If $x - a = b$, then
 $x - a + a = b + a$.

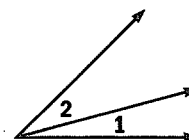
additive identity The number 0 is the additive identity because the sum of any number and 0 is the original number.

$$\begin{aligned} -7 + 0 &= -7 \\ a + 0 &= a \end{aligned}$$

additive inverse The additive inverse of a number a is the opposite of the number, or $-a$. The sum of a number and its additive inverse is 0.

The additive inverse of 6 is -6 ,
 so $6 + (-6) = 0$.

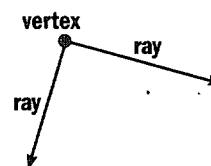
adjacent angles Two angles that share a common side and a vertex and do not overlap.



$\angle 1$ and $\angle 2$ are adjacent angles.

algebraic expression See variable expression.

angle A figure formed by two rays that begin at a common point, called the vertex.



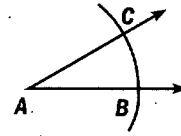
angle of rotation In a rotation, the angle formed by two rays drawn from the center of rotation through corresponding points on the original figure and its image.

See rotation.

annual interest rate The percent of the principal earned or paid per year.

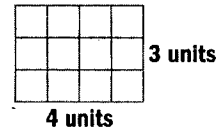
If you deposit \$100 in a bank account that pays 4% per year, then 4% is the annual interest rate.

arc Part of a circle.



The arc intersects $\angle A$ at points B and C .

area The amount of surface covered by a figure. Area is measured in square units such as square feet (ft^2) or square meters (m^2).



Area = 12 square units

associative property of addition The value of a sum does not depend on how the numbers are grouped.

$$(9 + 4) + 6 = 9 + (4 + 6)$$
$$(a + b) + c = a + (b + c)$$

associative property of multiplication The value of a product does not depend on how the numbers are grouped.

$$(2 \cdot 5) \cdot 3 = 2 \cdot (5 \cdot 3)$$
$$(ab)c = a(bc)$$

average A single number used to describe what is typical of a set of data.

See mean, median, and mode.

axes A horizontal number line, the *horizontal axis*, and a vertical number line, the *vertical axis*, that meet at $(0, 0)$.

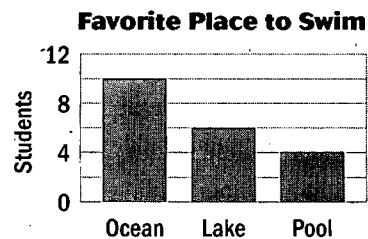
See coordinate plane.

B

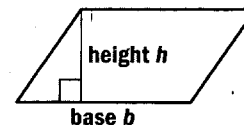
balance The sum of the interest and the principal.

See simple interest.

bar graph A graph in which the lengths of bars are used to represent and compare data.



base of a parallelogram The length of any side of the parallelogram can be used as the base.

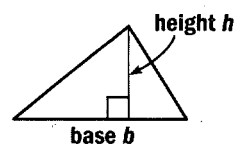


base of a power The number or expression that is used as a factor in a repeated multiplication.

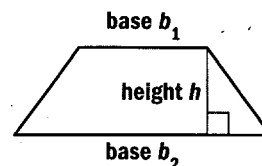
In the power 5^3 , the base is 5.

base of a solid See prism, cylinder, pyramid, and cone.

base of a triangle The length of any side of the triangle can be used as the base.



bases of a trapezoid The lengths of the parallel sides of the trapezoid.



benchmark A familiar object that can be used to approximate the size of a unit.

The length of a small paper clip is about one inch.

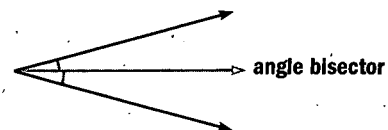
biased sample A sample that is not representative of the population from which it is selected.

The members of a football team are a biased sample if you want to determine the average amount of time students spend playing sports each week.

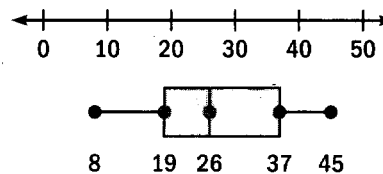
binomial A polynomial with two terms.

$$7y^4 + 9$$

bisector of an angle The ray that divides an angle into two angles with the same measure.



box-and-whisker plot A data display that divides a data set into four parts using the lower extreme, lower quartile, median, upper quartile, and upper extreme.



capacity Capacity measures the amount that a container can hold.

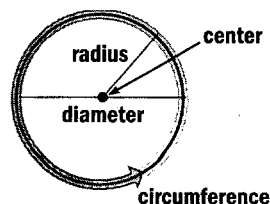
center of a circle The point inside the circle that is the same distance from all points on the circle.

See circle.

center of rotation The point about which a figure is turned when the figure undergoes a rotation.

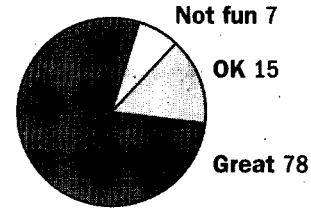
See rotation.

circle The set of all points in a plane that are the same distance, called the radius, from a fixed point, called the center.



circle graph A graph that represents data as parts of a circle. The entire circle represents all of the data.

Opinions of Roller Coasters



circumference The distance around a circle.

See circle.

clustering A method of estimating a sum when numbers being added have about the same value.

You can estimate the sum $72 + 69 + 65$ as $3(70) = 210$.

coefficient The number part of a term that includes a variable.

The coefficient of $7x$ is 7.

combination A grouping of objects in which the order is not important.

There are 6 combinations of 2 letters chosen from the 4 letters in the word VASE:

VA VS VE AS AE SE

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

The common factors of 8 and 12 are 1, 2, and 4.

common multiple A whole number that is a multiple of two or more nonzero whole numbers.

The common multiples of 6 and 8 are 24, 48, 72, 96,

commutative property of addition In a sum, you can add terms in any order.

$$4 + 7 = 7 + 4$$

$$a + b = b + a$$

commutative property of multiplication In a product, you can multiply factors in any order.

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

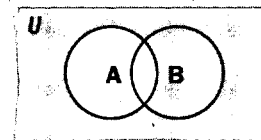
$$ab = ba$$

compatible numbers Numbers that make a calculation easier.

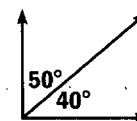
To estimate the quotient $377.25 \div 21$, use compatible numbers:


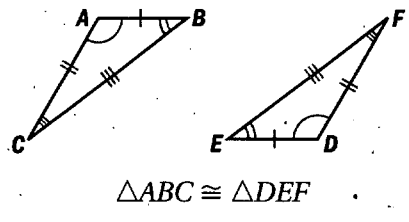
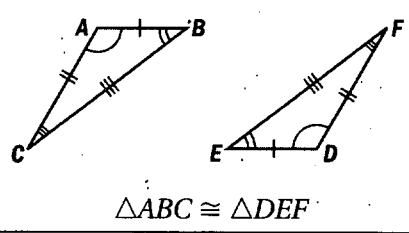
$$377.25 \div 21 \approx 380 \div 20 = 19$$

complement The set of all elements that are in universal set U that are not in set A , written as $\sim A$.



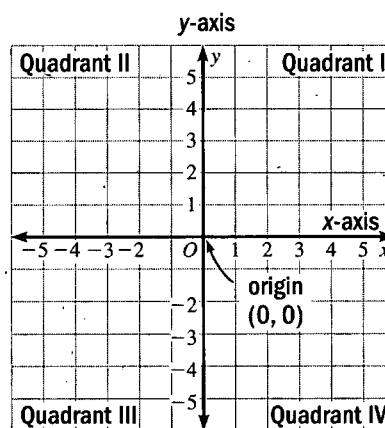
complementary angles Two angles whose measures have a sum of 90° .



<p>complementary events Events that have no outcomes in common and that together contain all the outcomes of the experiment.</p>	<p>When rolling a number cube, the events “getting an odd number” and “getting an even number” are complementary events.</p>
<p>composite number A whole number greater than 1 that has factors other than itself and 1.</p>	<p>6 is a composite number because its factors are 1, 2, 3, and 6.</p>
<p>compound events Two or more events that can happen either at the same time or one after the other.</p>	<p>See independent events <i>and</i> dependent events.</p>
<p>compound interest Interest earned on both the principal and on any interest that has already been earned.</p>	<p>You deposit \$250 in an account that earns 4% interest compounded yearly. After 5 years, your account balance is $y = 250(1 + 0.04)^5 \approx \\304.16.</p>
<p>computation To perform operations to find an amount. A computation can also be the result of the operations.</p>	
<p>cone A solid that has one circular base and a vertex that is not in the same plane.</p>	
<p>congruent angles Angles that have the same measure.</p>	<p>See congruent triangles.</p>
<p>congruent polygons Similar polygons that have the same size. For congruent polygons, corresponding angles are congruent and corresponding sides are congruent. The symbol \cong indicates congruence and is read “is congruent to.”</p>	
<p>congruent segments Segments that have the same length.</p>	<p>See congruent polygons.</p>
<p>congruent sides Sides that have the same length.</p>	<p>See congruent triangles.</p>
<p>congruent triangles Triangles with the same size and shape. Corresponding angles are congruent and corresponding sides are congruent.</p>	
<p>constant term A term that has a number but no variable.</p>	<p>In the expression $5y + 9$, the term 9 is a constant term.</p>
<p>converse An if-then statement where the hypothesis and conclusion of the original statement have been reversed.</p>	<p>Original: If you clean your room, then it will be neat. Converse: If your room is neat, then you cleaned it.</p>

coordinate grid See coordinate plane.

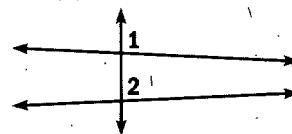
coordinate plane A plane divided into four *quadrants* by a horizontal number line called the *x-axis* and a vertical number line called the *y-axis*.



coordinates The numbers in an ordered pair that locate a point on a coordinate grid. See also *x-coordinate* and *y-coordinate*.

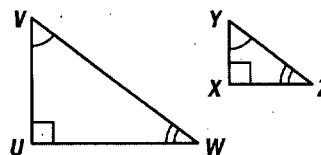
The numbers 4 and 3 in the ordered pair (4, 3) are the coordinates of the graph of (4, 3), which is located 4 units to the right and 3 units up from (0, 0).

corresponding angles Angles that occupy corresponding positions when a line intersects two other lines.



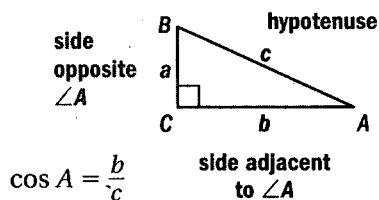
$\angle 1$ and $\angle 2$ are corresponding angles.

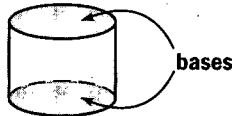
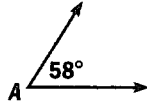
corresponding parts Pairs of sides and angles of polygons that are in the same relative position.



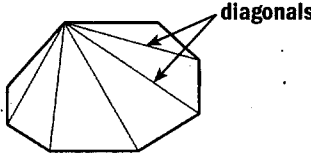
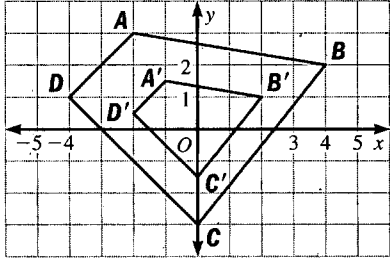
Corresponding parts:
 $\angle U$ and $\angle X$, $\angle V$ and $\angle Y$,
 $\angle W$ and $\angle Z$, \overline{UV} and \overline{XY} ,
 \overline{VW} and \overline{YZ} , \overline{UW} and \overline{XZ} .

cosine The cosine of any acute angle A of a right triangle is the ratio of the adjacent leg to the hypotenuse.



<p>counting principle If one event can occur in m ways, and for each of these a second event can occur in n ways, then the number of ways that the two events can occur together is $m \cdot n$. The counting principle can be extended to three or more events.</p>	<p>If a T-shirt is made in 5 sizes and in 7 colors, then the number of different T-shirts that are possible is $5 \cdot 7 = 35$.</p>
<p>cross products In a proportion $\frac{a}{b} = \frac{c}{d}$ where $b \neq 0$ and $d \neq 0$, the cross products are ad and bc.</p>	<p>The cross products of the proportion $\frac{2}{3} = \frac{4}{6}$ are $2 \cdot 6$ and $3 \cdot 4$.</p>
<p>cross products property The cross products of a proportion are equal.</p>	<p>If $\frac{4}{9} = \frac{12}{x}$, then $4x = 9 \cdot 12$. If $\frac{a}{b} = \frac{c}{d}$ where $b \neq 0$ and $d \neq 0$, then $ad = bc$.</p>
<p>cube A rectangular prism with 6 congruent square faces.</p>	<p>See solid.</p>
<p>cubed A number cubed is the third power of the number.</p>	<p>4 cubed indicates 4^3, or 64.</p>
<p>cylinder A solid with two congruent circular bases that lie in parallel planes.</p>	
<p>data Information, facts, or numbers that describe something.</p>	<p>Numbers of cars sold annually at a dealership: 340, 350, 345, 347, 352, 360, 365</p>
<p>decimal A number that is written using the base-ten place value system. Each place value is ten times the place value to the right.</p>	<p>The decimal 3.12 represents 3 ones plus 1 tenth plus 2 hundredths, or three and twelve hundredths.</p>
<p>degrees Units of measure for angles. The symbol for degrees is $^\circ$. There are 360° in a circle.</p>	
<p>denominator The number b in the fraction $\frac{a}{b}$ where $b \neq 0$.</p>	<p>The denominator of $\frac{7}{13}$ is 13.</p>
<p>dependent events Two events such that the occurrence of one affects the likelihood that the other will occur.</p>	<p>A bag contains 5 red and 8 blue marbles. You randomly choose a marble, do not replace it, then randomly choose another marble. The events "first marble is red" and "second marble is red" are dependent events.</p>

D

<p>diagonal A segment, other than a side, that connects two vertices of a polygon.</p>	
<p>diameter of a circle The distance across the circle through the center.</p>	<p>See circle.</p>
<p>difference The result when one number is subtracted from another.</p>	<p>The difference of 7 and 3 is $7 - 3$, or 4.</p>
<p>digit Any of the numbers 0, 1, 2, 3, 4, 5, 6, 7, 8, or 9.</p>	<p>In the whole number 127,891, the digit 8 has a value of 800, or 8×100, because it is in the hundreds' place.</p>
<p>dilation A transformation that stretches or shrinks a figure.</p>	 <p>The scale factor is $\frac{1}{2}$.</p>
<p>dimension The extent of a figure, especially the length (l), width (w), or height (h).</p>	<p>See area, base, height, <i>and</i> volume of a solid.</p>
<p>direct variation The relationship of two variables x and y if there is a nonzero number k such that $y = kx$ or $k = \frac{y}{x}$.</p>	$y = 5x$ $y = kx$
<p>discount An amount subtracted from the regular price of an item to get the sale price.</p>	<p>When \$40 sneakers are on sale at 25% off, the discount is 25% of \$40, or \$10.</p>
<p>disjoint events Events that have no outcomes in common.</p>	<p>When rolling a number cube, the events "getting an odd number" and "getting a 4" are disjoint events.</p>
<p>distributive property You can multiply a number and a sum by multiplying the number by each part of the sum and then adding these products. The same property applies with subtraction.</p>	$a(b + c) = ab + ac$ $3(4 + 6) = 3(4) + 3(6)$ $a(b - c) = ab - ac$ $2(8 - 5) = 2(8) - 2(5)$
<p>dividend A number that is divided by another number.</p>	<p>In $18 \div 6 = 3$, the dividend is 18.</p>
<p>divisible A number is divisible by another number if that other number is a factor of the first.</p>	<p>Because $3 \times 4 = 12$, 12 is divisible by 3 and by 4.</p>

division property of equality Dividing each side of an equation by the same nonzero number produces an equivalent equation.

If $6x = 54$, then $\frac{6x}{6} = \frac{54}{6}$, so $x = 9$.

If $ax = b$ and $a \neq 0$, then $\frac{ax}{a} = \frac{b}{a}$.

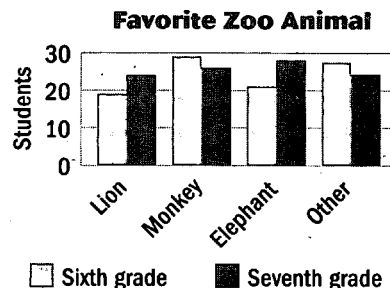
divisor The number by which another number is divided.

In $18 \div 6 = 3$, the divisor is 6.

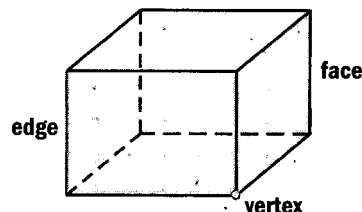
domain of a function The set of all possible input values for the function.

See function.

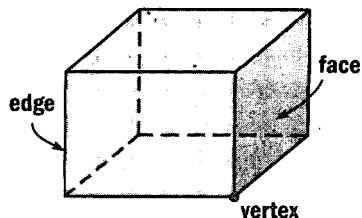
double bar graph A bar graph that shows two sets of data on the same graph.



edge of a polyhedron A line segment where two faces of the polyhedron meet.



edge of a solid A line segment where two faces of the solid meet.



elapsed time The amount of time between a start time and an end time.

The elapsed time from 7:15 A.M. to 12 P.M. is 4 hours and 45 minutes.

element An object in a set.

5 is an *element* of the set of whole numbers,
 $W = \{0, 1, 2, 3, 4, 5, \dots\}$.

empty set The set with no elements, written as \emptyset .

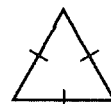
The set of negative whole numbers
 $= \emptyset$.

endpoint See segment *and* ray.

equation A mathematical sentence formed by placing an equal sign (=) between two expressions.

$3 \cdot 6 = 18$ and $x + 7 = 12$ are equations.

equilateral triangle A triangle with three sides of the same length.



E

equivalent equations Equations that have the same solution(s).	$2x - 6 = 0$ and $2x = 6$ are equivalent equations because the solution of both equations is 3.
equivalent expressions Expressions that have the same value when simplified.	$4(3 + 5)$ and $4(3) + 4(5)$ are equivalent expressions because $4(3 + 5) = 4(8) = 32$ and $4(3) + 4(5) = 12 + 20 = 32$.
equivalent fractions Fractions that represent the same number.	$\frac{5}{15}$ and $\frac{20}{60}$ are equivalent fractions that both represent $\frac{1}{3}$.
equivalent inequalities Inequalities that have the same solution.	$3x \leq 12$ and $x \leq 4$ are equivalent inequalities because the solution of both inequalities is all numbers less than or equal to 4.
equivalent ratios Ratios that have the same value.	$\frac{15}{12}$ and $\frac{25}{20}$ are equivalent ratios because $\frac{15}{12} = 1.25$ and $\frac{25}{20} = 1.25$.
equivalent variable expressions Expressions that are equal for every value of each variable they contain.	$5(x - 3)$ and $5x - 15$ are equivalent variable expressions.
estimate To find an approximate solution to a problem.	You can estimate the sum $88 + 51$ as $90 + 50$, or 140.
evaluate To find the value of an expression with one or more operations.	$4(3) + 6 \div 2 = 15$
evaluating a variable expression Substituting a value for each variable in the expression and simplifying the resulting numerical expression.	Evaluating $2x + 3y$ when $x = 1$ and $y = 4$ gives $2(1) + 3(4) = 2 + 12 = 14$.
event A collection of outcomes of an experiment.	The event "getting an odd number" on a number cube consists of the outcomes 1, 3, and 5.
experimental probability A probability based on repeated trials of an experiment. The experimental probability of an event is given by: $P(\text{event}) = \frac{\text{Number of successes}}{\text{Number of trials}}$	During one month, your school bus is on time 17 out of 22 school days. The experimental probability that the bus is on time is: $P(\text{bus is on time}) = \frac{17}{22} \approx 0.773$
exponent The exponent of a power is the number of times the factor is repeated.	The exponent of the power 2^3 is 3.
expression See numerical expression.	

face of a polyhedron A polygon that is a side of the polyhedron.

See edge of a polyhedron.

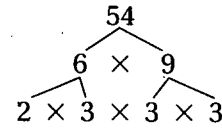
face of a solid A polygon that is a side of the solid.

See edge of a solid.

factor When whole numbers other than zero are multiplied together, each number is a factor of the product.

Because $2 \times 3 \times 7 = 42$, 2, 3, and 7 are factors of 42.

factor tree A diagram that can be used to write the prime factorization of a number.



factorial The expression $n!$ is read “ n factorial” and represents the product of all integers from 1 to n .

$$4! = 4 \cdot 3 \cdot 2 \cdot 1 = 24$$

favorable outcomes Outcomes corresponding to a specified event.

When rolling a number cube, the favorable outcomes for the event “getting a number greater than 4” are 5 and 6.

formula An equation that relates two or more quantities such as perimeter, length, and width.

$$P = 2l + 2w$$

fraction A number of the form $\frac{a}{b}$ where $b \neq 0$.

$\frac{5}{7}$ and $\frac{18}{10}$ are fractions.

frequency The number of data values that lie in an interval of a frequency table or histogram.

See frequency table *and* histogram.

frequency table A table used to count how many times data values occur in a data set or to group data values into intervals.

Interval	Tally	Frequency
0-9		2
10-19		4
20-29		5
30-39		3
40-49		4

front-end estimation A method of estimating a sum by adding the front-end digits and using the remaining digits to adjust the sum.

To estimate $3.81 + 1.32 + 5.74$, first add the front-end digits: $3 + 1 + 5 = 9$. Then estimate the sum of the remaining digits: $0.81 + (0.32 + 0.74) \approx 1 + 1 = 2$. The sum is about $9 + 2 = 11$.

function A pairing of each number in a given set with exactly one number in another set. Starting with a number called an input, the function associates with it exactly one number called an output.

Input x	1	2	3	4
Output y	2	4	6	8

The input-output table above represents a function.

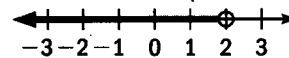
function notation An equation that uses $f(x)$ to represent the output of the function f for an input of x .

$f(x) = 5x + 13$ is written using function notation.

G

graph of an inequality On a number line, the set of points that represents the solution of the inequality. (See half-plane.)

The graph of the inequality $x < 2$ is shown below. The open dot at 2 shows that 2 is not part of the solution of the inequality.



greatest common factor (GCF) The largest of the common factors of two or more nonzero whole numbers.

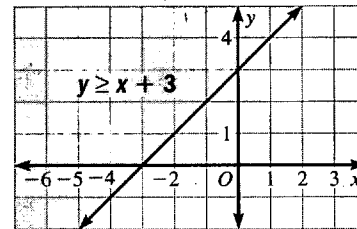
The greatest common factor of 64 and 120 is the greatest of the common factors 1, 2, 4, and 8, which is 8.

grouping symbols Symbols such as parentheses, brackets, or fraction bars that group parts of an expression.

The parentheses in $12 \div (4 - 1)$ are grouping symbols that indicate that the subtraction is done first.

H

half-plane The graph of a linear inequality in two variables.



height of a parallelogram The perpendicular distance between the side whose length is the base and the opposite side.

See base of a parallelogram.

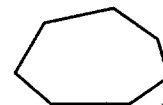
height of a trapezoid The perpendicular distance between the bases of the trapezoid.

See bases of a trapezoid.

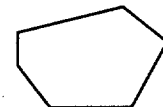
height of a triangle The perpendicular distance between the side whose length is the base and the vertex opposite that side.

See base of a triangle.

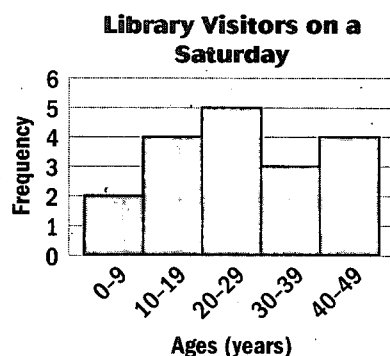
heptagon A polygon with seven sides.



hexagon A polygon with six sides.



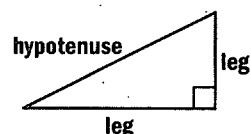
histogram A graph that displays data from a frequency table. A histogram has one bar for each interval of the table that contains data values. The length of the bar indicates the frequency for the interval.



horizontal axis The horizontal number line of a graph.

See coordinate plane.

hypotenuse The side of a right triangle that is opposite the right angle.



identity property of addition The sum of a number and the additive identity, 0, is the number.

$$8 + 0 = 8$$

$$a + 0 = a$$

identity property of multiplication The product of a number and the multiplicative identity, 1, is the number.

$$4 \cdot 1 = 4$$

$$a \cdot 1 = a$$

image The new figure formed by a transformation.

See reflection, rotation, *and* translation.

improper fraction A fraction in which the numerator is greater than or equal to the denominator.

$\frac{21}{8}$ and $\frac{6}{6}$ are improper fractions.

independent events Two events such that the occurrence of one does not affect the likelihood that the other will occur.

You toss a coin and roll a number cube. The events “getting heads” and “getting a 6” are independent events.

inequality A mathematical sentence formed by placing an inequality symbol between two expressions.

$3 < 5$ and $x + 2 \geq -4$ are inequalities.

input A number on which a function operates. An input value is in the domain of the function.

See function.

input-output table A table used to represent a function by listing the *output* for each of several different *inputs*.

See function.

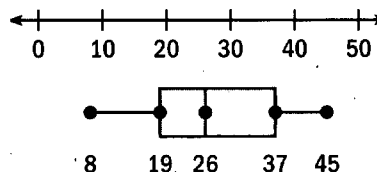
integers The numbers . . . , -4, -3, -2, -1, 0, 1, 2, 3, 4, . . . consisting of the negative integers, zero, and the positive integers.

-8 and 14 are integers.
 $-8\frac{1}{3}$ and 14.5 are *not* integers.

interest The amount earned or paid for the use of money.

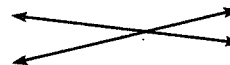
See simple interest.

interquartile range The difference between the upper and lower quartiles in a box-and-whisker plot.

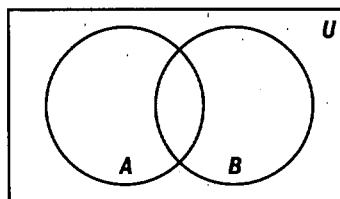


The *interquartile range* is $37 - 19$, or 18.

intersecting lines Two lines that meet at a point.



intersection of a set The set of all elements in both set A and set B , written as $A \cap B$.



inverse operations Operations that “undo” each other.

Addition and subtraction are inverse operations.

Multiplication and division are also inverse operations.

inverse property of addition The sum of a number and its additive inverse, or opposite, is 0.

$$5 + (-5) = 0$$

$$a + (-a) = 0$$

inverse property of multiplication The product of a nonzero number and its multiplicative inverse, or reciprocal, is 1.

$$\frac{3}{4} \cdot \frac{4}{3} = 1$$

$$\frac{a}{b} \cdot \frac{b}{a} = 1 \quad (a, b \neq 0)$$

inverse variation The relationship of two variables x and y if there is a nonzero number k such that $xy = k$ or $y = \frac{k}{x}$.

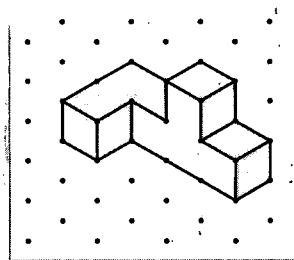
$$\frac{x}{y} = k \text{ or } y = \frac{k}{x}$$

$$\frac{x}{y} = 8 \text{ or } y = \frac{8}{x}$$

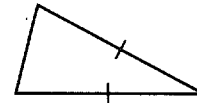
irrational number A real number that cannot be written as a quotient of two integers. The decimal form of an irrational number neither terminates nor repeats.

$\sqrt{2}$ and 0.313113111... are irrational numbers.

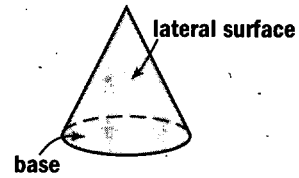
isometric drawing A two-dimensional drawing of a three-dimensional figure that can be created using a grid of dots and a set of three axes that intersect to form 120° angles.



Isosceles triangle A triangle with at least two sides of the same length.



lateral surface area Surface area of a figure excluding the area of its base(s).



leading digit The first nonzero digit in a number.

The leading digit of 725 is 7.
The leading digit of 0.002638 is 2.

leaf The last digit on the right of a number displayed in a stem-and-leaf plot.

See stem-and-leaf plot.

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

The least common denominator of $\frac{5}{6}$ and $\frac{7}{9}$ is the least common multiple of 6 and 9, or 18.

least common multiple (LCM) The smallest of the common multiples of two or more nonzero whole numbers.

The least common multiple of 9 and 12 is the smallest of the common multiples 36, 72, 108, . . . , or 36.

legs of a right triangle The two sides of a right triangle that form the right angle.

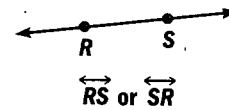
See hypotenuse.

length See dimension.

like terms Terms that have identical variable parts. (Two or more constant terms are considered like terms.)

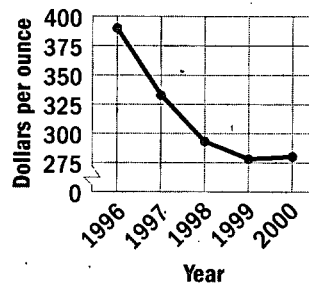
In the expression $x + 4 - 2x + 1$, x and $-2x$ are like terms, and 4 and 1 are like terms.

line A set of points that extends without end in two opposite directions.



line graph A type of graph in which points representing data pairs are connected by line segments.

Average Price of Gold



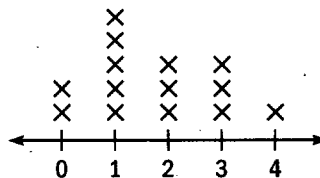
line of reflection The line over which a figure is flipped when the figure undergoes a reflection.

See reflection.

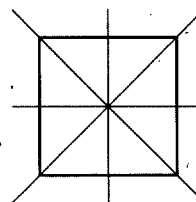
line of symmetry A line that divides a figure into two parts that are mirror images of each other.

See line symmetry.

line plot A number line diagram that uses X marks to show the frequencies of items or categories being tallied.



line symmetry A figure has line symmetry if it can be divided by a line, called a line of symmetry, into two parts that are mirror images of each other.

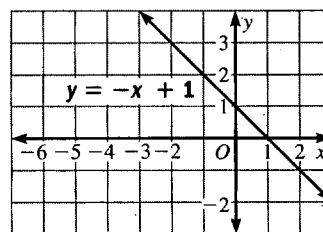


A square has 4 lines of symmetry.

linear equation An equation in which the variables appear in separate terms and each variable occurs only to the first power.

$7y = 14x + 21$ is a *linear equation*.

linear function A function whose graph is a line or part of a line.



linear inequality An inequality in which the variables appear in separate terms and each variable occurs only to the first power.

$y \leq 2x + 5$ is a linear inequality.

lower extreme The least value in a data set.

See box-and-whisker plot.

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

See box-and-whisker plot.



markup The increase in the wholesale price of an item:

The wholesale price of a loaf of bread is \$1 but the store sells it for \$1.59. The markup is \$.59.

mean The sum of the values in a data set divided by the number of values.

The mean of the data set

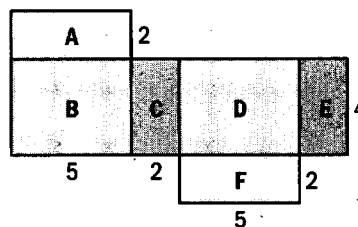
85, 59, 97, 71

is $\frac{85 + 59 + 97 + 71}{4} = \frac{312}{4} = 78$.

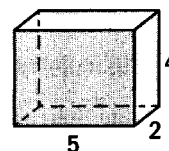
measure To find dimensions, quantity, capacity, or weight.	See capacity <i>and</i> dimension.
median The middle value in a data set when the values are written in numerical order. If the data set has an even number of values, the median is the mean of the two middle values.	The median of the data set 8, 17, 21, 23, 26, 29, 34, 40, 45 is the middle value, 26.
mixed number A number that has a whole number part and a fraction part.	$3\frac{2}{5}$ is a mixed number.
mode The value in a data set that occurs most often. A data set can have no mode, one mode, or more than one mode.	In the data set 36, 36, 37, 37, 39, 40, 41, both 36 and 37 occur twice, so there are two modes, 36 and 37.
monomial A number, a variable, or a product of a number and one or more variables.	$3xy$, $8x^2$, x , and 14 are monomials.
multiple The product of a number and any nonzero whole number.	The multiples of 3 are 3, 6, 9,
multiplication property of equality Multiplying each side of an equation by the same nonzero number produces an equivalent equation.	If $\frac{x}{3} = 7$, then $3 \cdot \frac{x}{3} = 3 \cdot 7$, so $x = 21$. If $\frac{x}{a} = b$ and $a \neq 0$, then $a \cdot \frac{x}{a} = a \cdot b$.
multiplication property of zero The product of a number and 0 is 0.	$-4 \cdot 0 = 0$ $a \cdot 0 = 0$
multiplicative identity The number 1 is the multiplicative identity because the product of any number and 1 is the original number.	$9 \cdot 1 = 9$ $a \cdot 1 = a$
multiplicative inverse The multiplicative inverse of a number $\frac{a}{b}$ ($a, b \neq 0$) is the reciprocal of the number, or $\frac{b}{a}$. The product of a number and its multiplicative inverse is 1.	The multiplicative inverse of $\frac{3}{2}$ is $\frac{2}{3}$, so $\frac{3}{2} \cdot \frac{2}{3} = 1$.
negative integers The integers that are less than zero.	The negative integers are $-1, -2,$ $-3, -4,$



net A two-dimensional figure that can be folded to form a solid.



Net

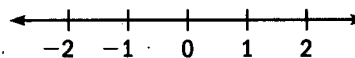


Solid

number fact family Four number facts consisting of three numbers related by inverse operations.

The facts $8 + 2 = 10$, $10 - 2 = 8$, $2 + 8 = 10$, and $10 - 8 = 2$ are in the same number fact family.

number line A line whose points are associated with numbers. You can use a number line to compare and order numbers. The numbers on a number line increase from left to right.



number sentence See equation.

numerator The number a in the fraction $\frac{a}{b}$.

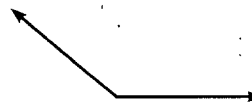
The numerator of $\frac{7}{13}$ is 7.

numerical expression An expression, consisting of numbers and operations to be performed, that represents a particular value.

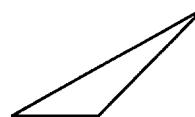
The numerical expression $2 \times 3 - 1$ represents 5.

O

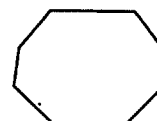
obtuse angle An angle whose measure is between 90° and 180° .



obtuse triangle A triangle with one obtuse angle.



octagon A polygon with eight sides.



odds in favor of an event The ratio of favorable outcomes to unfavorable outcomes.

The odds of rolling an even number on a six sided number cube is $\frac{3}{3}$, or 1.

opposites Two numbers that are the same distance from 0 on a number line but are on opposite sides of 0.

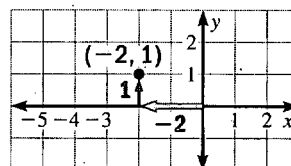
-3 and 3 are opposites.

order of operations The order in which to perform operations when evaluating expressions with more than one operation.

To evaluate $3 + 2 \cdot 4$, you perform the multiplication before the addition:

$$3 + 2 \cdot 4 = 3 + 8 = 11$$

ordered pair A pair of numbers (x, y) that can be used to represent a point in a coordinate plane. The first number is the x -coordinate, and the second number is the y -coordinate.



origin The point $(0, 0)$ where the x -axis and the y -axis meet in a coordinate plane.

See coordinate plane.

outcome A possible result of an experiment.

When you toss a coin, the outcomes are heads and tails.

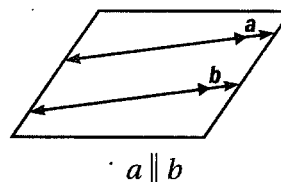
output A number produced by evaluating a function using a given input. An output value is in the range of the function.

See function.

overlapping events Events that have one or more outcomes in common.

When rolling a number cube, the events "getting a number less than 3" and "getting an even number" are overlapping events because they have the outcome 2 in common.

parallel lines Two lines in the same plane that do not intersect. The symbol \parallel is used to indicate parallel lines.



parallelogram A quadrilateral with two pairs of parallel sides.

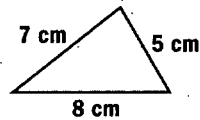
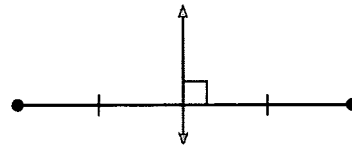
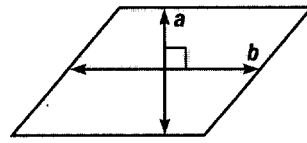


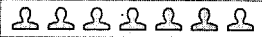

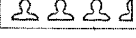

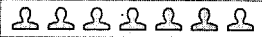

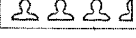
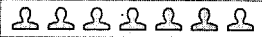

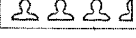


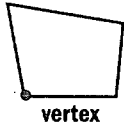
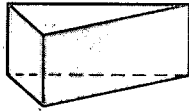
pattern A sequential list of objects or numbers with a consistent relationship between them.

pentagon A polygon with five sides.



P

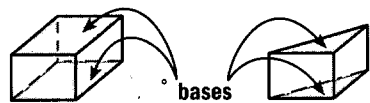
<p>percent A ratio whose denominator is 100. The symbol for percent is %.</p>	$\frac{17}{20} = \frac{17 \cdot 5}{20 \cdot 5} = \frac{85}{100} = 85\%$
<p>percent equation You can represent “a is p percent of b” with the equation $a = p\% \cdot b$ where a is the part of base b and $p\%$ is the percent.</p>	<p>4.5 is 10 percent of 45 can be written as the equation $4.5 = 10\% \cdot 45$.</p>
<p>percent of change A percent that shows how much a quantity has increased or decreased in comparison with the original amount:</p> <p>Percent of change $p = \frac{\text{Amount of increase or decrease}}{\text{Original amount}}$</p>	<p>The percent of change p from 15 to 19 is:</p> $p = \frac{19 - 15}{15} = \frac{4}{15} \approx 0.267 = 26.7\%$
<p>percent of decrease The percent of change in a quantity when the new amount of the quantity is less than the original amount.</p>	<p>See percent of change.</p>
<p>percent of increase The percent of change in a quantity when the new amount of the quantity is greater than the original amount.</p>	<p>See percent of change.</p>
<p>perfect square A number that is the square of an integer.</p>	<p>49 is a perfect square because $49 = (\pm 7)^2$.</p>
<p>perimeter The distance around a figure, measured in linear units such as feet, inches, or meters.</p>	
	<p>$Perimeter = 5 + 7 + 8$, or 20 cm</p>
<p>permutation An arrangement of objects in which order is important.</p>	<p>There are 6 permutations of the 3 letters in the word CAT:</p> <p>CAT ACT TCA CTA ATC TAC</p>
<p>perpendicular bisector A line that divides a segment into two segments of equal length and forms four right angles.</p>	
<p>perpendicular lines Two lines that intersect to form four right angles. The symbol \perp is used to indicate perpendicular lines.</p>	 <p>$a \perp b$</p>
<p>pi (π) The ratio of the circumference of a circle to its diameter.</p>	<p>You can use 3.14 or $\frac{22}{7}$ to approximate π.</p>

<p>pictograph A graph that uses pictures or symbols to display data.</p>	<p style="text-align: center;">Color of Eyes</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Brown</td> <td></td> </tr> <tr> <td>Blue</td> <td></td> </tr> <tr> <td>Green</td> <td></td> </tr> </table> <p style="text-align: center;"> = 2 students</p>	Brown		Blue		Green	
Brown							
Blue							
Green							
<p>place value The place value of each digit in a number depends on its position within the number.</p>	<p>In 723, the 2 is in the tens' place and it has a value of 20.</p>						
<p>plane A flat surface that extends without end in all directions.</p>							
<p>point A position in space represented with a dot.</p>							
<p>polygon A closed plane figure that is formed by three or more segments called sides. Each side intersects exactly two other sides at a <i>vertex</i>.</p>							
<p>polyhedron A solid that is enclosed by polygons.</p>							
<p>polynomial A monomial or a sum of monomials.</p>	<p>See binomial, monomial, and trinomial.</p>						
<p>population In statistics, the entire group of people or objects about which you want information.</p>	<p>If a biologist wants to determine the average age of the elephants in a wildlife refuge, the population consists of every elephant in the refuge.</p>						
<p>positive integers The integers that are greater than zero.</p>	<p>The positive integers are 1, 2, 3, 4,</p>						
<p>power A product formed from repeated multiplication by the same number or expression. A power consists of a base and an exponent.</p>	<p>2^4 is a power with base 2 and exponent 4. $2 \cdot 2 \cdot 2 \cdot 2 = 16$</p>						
<p>preimage The original figure prior to a transformation.</p>	<p>See reflection, rotation, and translation.</p>						
<p>prime factorization A whole number written as the product of prime factors.</p>	<p>The prime factorization of 54 is $54 = 2 \times 3 \times 3 \times 3 = 2 \times 3^3$.</p>						
<p>prime number A whole number greater than 1 whose only factors are 1 and itself.</p>	<p>59 is a prime number, because its only factors are 1 and itself.</p>						

principal An amount of money that is deposited or borrowed.

If you deposit \$100 in a bank account that pays 4% annual interest, then the principal is \$100.

prism A solid, formed by polygons, that has two congruent bases lying in parallel planes.



Rectangular prism

Triangular prism

probability of an event A measure of the likelihood that the event will occur, computed as

$$\frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}}$$

when all the outcomes are equally likely.

If you toss a number cube, the probability that you roll an odd number is $\frac{3}{6} = 0.5 = 50\%$.

product The result when two or more numbers are multiplied.

The product of 3 and 4 is 3×4 , or 12.

proper fraction A fraction in which the numerator is less than the denominator.

$\frac{2}{3}$ is a proper fraction.

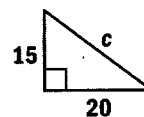
proportion An equation stating that two ratios are equivalent.

$\frac{3}{5} = \frac{6}{10}$ and $\frac{x}{12} = \frac{25}{30}$ are proportions.

pyramid A solid, formed by polygons, that has one base. The base can be any polygon, and the other polygons are triangles.



Pythagorean theorem For any right triangle, the sum of the squares of the lengths a and b of the legs equals the square of the length c of the hypotenuse: $a^2 + b^2 = c^2$.



$$15^2 + 20^2 = c^2$$

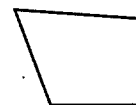
Pythagorean triple A set of three positive integers a , b , and c such that $a^2 + b^2 = c^2$.

5, 12, and 13 is a Pythagorean triple.

quadrant One of the four regions that a coordinate plane is divided into by the x -axis and the y -axis.

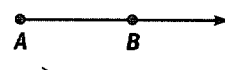
See coordinate plane.

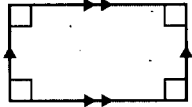
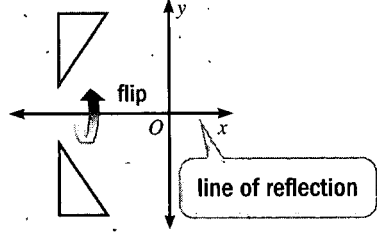
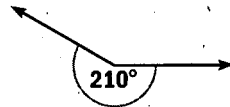
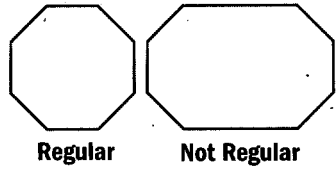
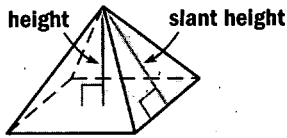
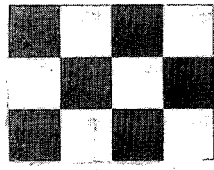
quadrilateral A geometric figure made up of four line segments, called sides, that intersect only at their endpoints; a polygon with four sides.



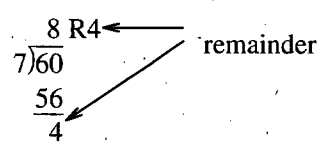
quotient The result of a division.

The quotient of 18 and 6 is $18 \div 6$, or 3.

<p>radical expression An expression involving a radical sign, $\sqrt{\quad}$.</p>	<p>$\sqrt{3(22 + 5)}$ is a radical expression.</p>
<p>radius of a circle The distance from the center to any point on the circle. The plural of radius is <i>radii</i>.</p>	<p>See circle.</p>
<p>random sample A sample selected in such a way that each member of the population has an equally likely chance to be part of the sample.</p>	<p>A random sample of 5 seventh graders can be selected by putting the names of all seventh graders in a hat and drawing 5 names without looking.</p>
<p>range of a data set The difference between the greatest and least values in the data set.</p>	<p>The range of the data set 60, 35, 22, 46, 81, 39 is $81 - 22 = 59$.</p>
<p>range of a function The set of all output values for the function.</p>	<p>See function.</p>
<p>rate A ratio of two quantities measured in different units.</p>	<p>An airplane climbs 18,000 feet in 12 minutes. The airplane's rate of climb is $\frac{18,000 \text{ ft}}{12 \text{ min}} = 1500 \text{ ft/min}$.</p>
<p>rate of change A comparison of a change in one quantity with a change in another quantity. In real-world situations, you can interpret the slope of a line as a rate of change.</p>	<p>You pay \$7 for 2 hours of computer use and \$14 for 4 hours of computer use. The <i>rate of change</i> is $\frac{\text{change of cost}}{\text{change in time}} = \frac{14 - 7}{4 - 2} = 3.5$ or \$3.50 per hour.</p>
<p>ratio A comparison of two numbers using division. The ratio of a to b (where $b \neq 0$) can be written as a to b, as $\frac{a}{b}$, or as $a : b$.</p>	<p>The ratio of 17 to 12 can be written as 17 to 12, as $\frac{17}{12}$, or as 17 : 12.</p>
<p>rational number A number that can be written as $\frac{a}{b}$ where a and b are integers and $b \neq 0$.</p>	<p>$6 = \frac{6}{1}$, $-\frac{3}{5} = \frac{-3}{5}$, $0.75 = \frac{3}{4}$, and $2\frac{1}{3} = \frac{7}{3}$ are all rational numbers.</p>
<p>ray A part of a line that has one <i>endpoint</i> and extends without end in one direction.</p>	 <p>\overrightarrow{AB} with endpoint A.</p>
<p>real numbers The set of all rational numbers and irrational numbers.</p>	<p>0, $-\frac{5}{9}$, 2.75, and $\sqrt{3}$ are all real numbers.</p>

<p>reciprocals Two numbers whose product is 1.</p>	<p>Because $\frac{3}{5} \times \frac{5}{3} = 1$, $\frac{3}{5}$ and $\frac{5}{3}$ are reciprocals.</p>
<p>rectangle A parallelogram with four right angles.</p>	
<p>rectangular prism A prism with rectangular bases.</p>	<p>See prism.</p>
<p>reflection A transformation that reflects a figure in a line, called the line of reflection, creating a mirror image of the figure; also known as a <i>flip</i>.</p>	
<p>reflex angle An angle greater than 180° but less than 360°.</p>	
<p>regular polygon A polygon with all sides equal in length and all angles equal in measure.</p>	
<p>regular pyramid A pyramid whose base is a regular polygon.</p>	
<p>regular tessellation A tessellation made from only one type of regular polygon.</p>	
<p>relation A set of ordered pairs.</p>	<p>$(5, 7), (6, 5), (0, 5), (6, 0)$ is a relation.</p>
<p>relative frequency The ratio of number of favorable outcomes to the total number of times the experiment was performed.</p>	<p>See experimental probability.</p>
<p>relatively prime numbers Two or more nonzero whole numbers whose greatest common factor is 1.</p>	<p>9 and 16 are relatively prime because their GCF is 1.</p>

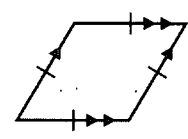
remainder If a divisor does not divide a dividend evenly, the remainder is the whole number left over after the division.



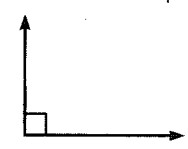
repeating decimal A decimal that has one or more digits that repeat forever.

0.3333... and $2.\overline{01}$ are repeating decimals.

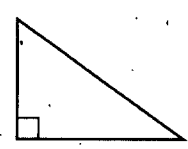
rhombus A parallelogram with four sides of equal length.



right angle An angle whose measure is exactly 90° .



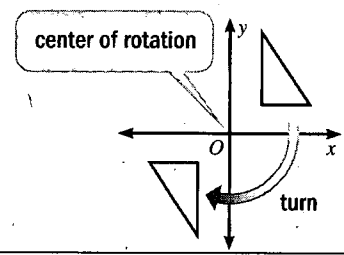
right triangle A triangle with one right angle.



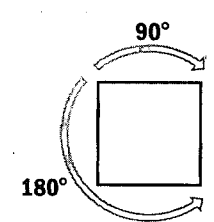
rise The vertical change between two points on a line.

See slope.

rotation A transformation that rotates a figure through a given angle, called the angle of rotation, and in a given direction about a fixed point, called the center of rotation; also known as a *turn*.



rotational symmetry A figure has rotational symmetry if a turn of 180° or less produces an image that fits exactly on the original figure.



A square has rotational symmetry.

round To approximate a number to a given place value.

518 rounded to the nearest ten is 520, and 518 rounded to the nearest hundred is 500.

round numbers Numbers used in estimation.

You can use round numbers to estimate 18×3.98 as 20×4 , or 80.

run The horizontal change between two points on a line.

See slope.

S

sample A part of a population.

To predict the results of an election, a survey is given to a sample of voters.

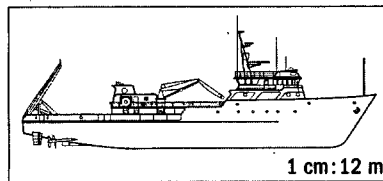
sample space The set of all possible outcomes.

The *sample space* for rolling a number cube is {1, 2, 3, 4, 5, 6}.

scale In a scale drawing, the scale gives the relationship between the drawing's dimensions and the actual dimensions.

The scale "1 in. : 10 ft" means that 1 inch in the scale drawing represents an actual distance of 10 feet.

scale drawing A diagram of an object in which the dimensions are in proportion to the actual dimensions of the object.



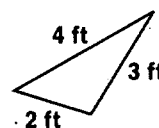
scale factor The ratio of corresponding side lengths of a figure and its image after dilation.

See dilation.

scale model A model of an object in which the dimensions are in proportion to the actual dimensions of the object.

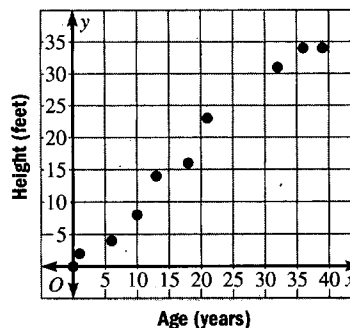
A scale model of the White House appears in Tobu World Square in Japan. The scale used is 1 : 25.

scalene triangle A triangle with three sides of different lengths.



scatter plot The graph of a set of data pairs (x, y) , which is a collection of points in a coordinate plane.

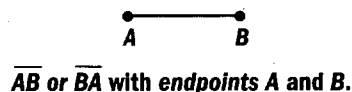
Pine Tree Growth



scientific notation A number is written in scientific notation if it has the form $c \times 10^n$ where c is greater than or equal to 1 and less than 10, and n is an integer.

In scientific notation, 328,000 is written as 3.28×10^5 , and 0.00061 is written as 6.1×10^{-4} .

segment A part of a line that consists of two *endpoints* and all the points between them.



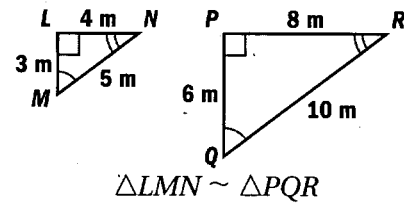
sequence An ordered list of numbers.

1, 2, 3, 4, ... is a *sequence*.

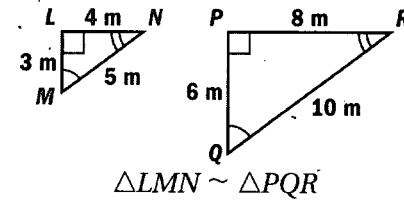
set collection of distinct objects.

The set of whole numbers is
 $W = \{0, 1, 2, 3, 4, 5, \dots\}$.

similar polygons Polygons that have the same shape but not necessarily the same size. Corresponding angles of similar polygons are congruent, and the ratios of the lengths of corresponding sides are equal. The symbol \sim , is used to indicate that two polygons are similar.



similar triangles Triangles with the same shape but not necessarily the same size. Corresponding angles are congruent, and the ratios of the lengths of corresponding sides are equal.



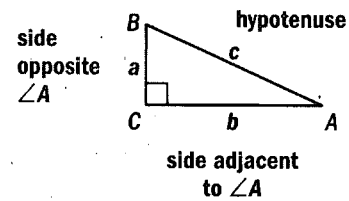
simple interest Interest that is earned or paid only on the principal. The simple interest I is the product of the principal P , the annual interest rate r written as a decimal, and the time t in years: $I = Prt$.

Suppose you deposit \$700 into a savings account. The account earns 3% simple annual interest. After 5 years, the interest is $I = Prt = (700)(0.03)(5) = \105 , and your account balance is $\$700 + \$105 = \$805$.

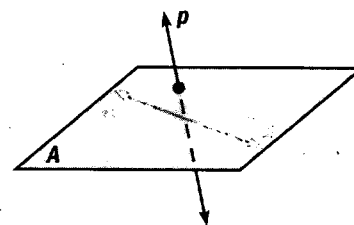
simplest form of a fraction A fraction is in simplest form if its numerator and denominator have a greatest common factor of 1.

The simplest form of the fraction $\frac{6}{8}$ is $\frac{3}{4}$.

sine The sine of any acute angle A of a right triangle is the ratio of the opposite leg to the hypotenuse.

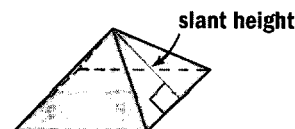


skew lines Two lines in different planes that do not intersect.

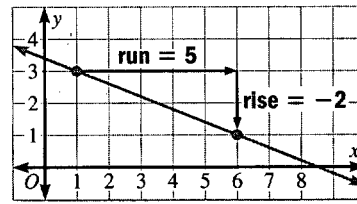


Lines n and p are *skew lines*.

slant height The height of any face that is not the base of a regular pyramid.



slope The slope of a nonvertical line is the ratio of the rise (vertical change) to the run (horizontal change) between any two points on the line.



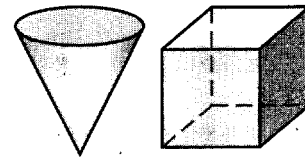
The slope of the line above is:

$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{-2}{5} = -\frac{2}{5}$$

slope-intercept form The form of a linear equation $y = mx + b$ where m is the slope and b is the y -intercept.

$y = 6x + 8$ is in slope-intercept form.

solid A three-dimensional figure that encloses a part of space.



solution of an equation A number that, when substituted for the variable in the equation, makes the equation true.

The solution of the equation $n - 3 = 4$ is 7.

solution of an equation in two variables An ordered pair (x, y) that makes the equation true when the values of x and y are substituted into the equation.

$(3, 8)$ is a solution of $y = 3x - 1$.

solution of an inequality The set of all numbers that, when substituted for the variable in the inequality, make the inequality true.

The solution of the inequality $y + 2 > 5$ is $y > 3$.

solution of a linear inequality An ordered pair (x, y) that makes the inequality true when the values of x and y are substituted into the inequality.

A solution of $y \geq 2x - 9$ is $(5, 1)$.

solution of a linear system An ordered pair that is a solution of each equation in a system of linear equations.

The *solution of the linear system* below is $(3, 3)$.

$$\begin{aligned} 3y - x &= 6 \\ 3y + 2x &= 15 \end{aligned}$$

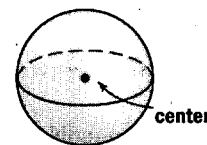
solve an equation To find all the solutions of an equation by finding all the values of the variable that make the equation true.

To solve the equation $n \div 4 = 7$, find the number that can be divided by 4 to equal 7; $28 \div 4 = 7$, so the solution is 28.

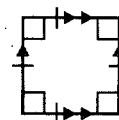
solve an inequality Find all values of the variable that make the inequality true.

To solve $x + 2 \geq 3$, subtract 2 from each side to get $x \geq 1$.

sphere A solid formed by all points in space that are the same distance from a fixed point called the center.



square A parallelogram with four right angles and four sides of equal length.



square numbers Numbers that are squares of integers.

Because 3×3 is 9, 9 is a *square number*.

square root A square root of a number n is a number m which, when multiplied by itself, equals n .

The square roots of 81 are 9 and -9 because $9^2 = 81$ and $(-9)^2 = 81$.

squared A number squared is the second power of the number.

3 squared indicates 3^2 , or 9.

standard form A polynomial written with the exponents of the variable decreasing from left to right.

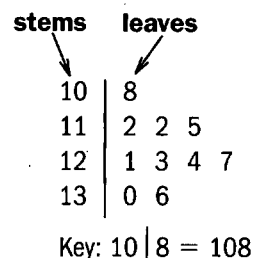
$3x^5 - 8x^3 + 5x^2 + x - 2$ is in standard form.

statistics The collection, organization, and interpretation of numerical data.

stem All the digits except the last digit on the right of a number displayed in a stem-and-leaf plot.

See stem-and-leaf plot.

stem-and-leaf plot A data display that helps you see how data values are distributed. Each data value is separated into a leaf (the last digit) and a stem (the remaining digits). In an ordered stem-and-leaf plot, the leaves for each stem are listed in order from least to greatest.



straight angle An angle whose measure is exactly 180° .



subtraction property of equality Subtracting the same number from each side of an equation produces an equivalent equation.

If $x + 7 = 9$, then
 $x + 7 - 7 = 9 - 7$, so $x = 2$.

If $x + a = b$, then
 $x + a - a = b - a$.

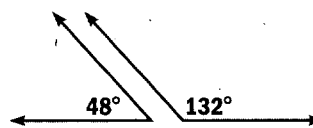
success In experimental probability, any trial where the desired outcome occurs.

If you want to pick a blue marble out of a bag of 20 marbles where only 7 are blue marbles, then *success* is picking a blue marble.

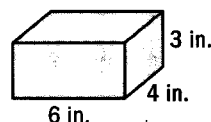
sum The result when two or more numbers are added.

The sum of 2 and 5 is $2 + 5$, or 7.

supplementary angles Two angles whose measures have a sum of 180° .

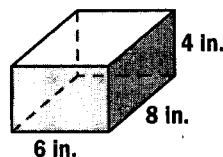


surface area of a polyhedron The sum of the areas of the faces of the polyhedron.



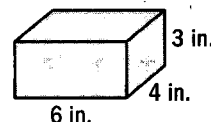
$$\begin{aligned} \text{Surface area} &= 2(6)(4) + 2(6)(3) + 2(4)(3) \\ &= 108 \text{ in.}^2 \end{aligned}$$

surface area of a prism The sum of the areas of the faces of the prism. Surface area is measured in square units.



$$\begin{aligned} \text{Surface area} &= 2(8 \times 6) + 2(8 \times 4) + 2(6 \times 4) \\ &= 208 \text{ square inches.} \end{aligned}$$

surface area of a solid The sum of the areas of the outside surfaces of the solid.



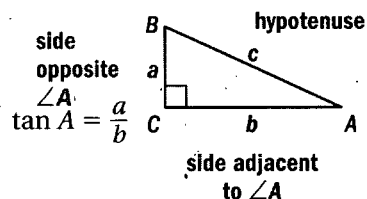
$$\begin{aligned} \text{Surface area} &= 2(6)(4) + 2(6)(3) + 2(4)(3) \\ &= 108 \text{ in.}^2 \end{aligned}$$

system of linear equations A set of two or more linear equations with the same variables.

$$\begin{aligned} 3y - x &= 6 \\ 3y + 2x &= 15 \end{aligned}$$

T

tangent The tangent of any acute angle A of a right triangle is the ratio of the opposite leg to the adjacent leg.



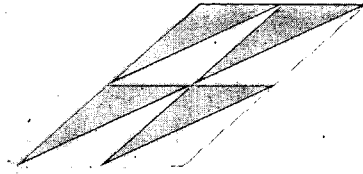
terminating decimal A decimal that has a final digit.

0.4 and 3.6125 are terminating decimals.

terms of an expression The parts of an expression that are added together.

The terms of $2x + 3$ are $2x$ and 3 .

tessellation A covering of a plane with congruent copies of the same pattern so that there are no gaps or overlaps.



theoretical probability A probability based on all of the equally likely outcomes of an experiment. The theoretical probability of an event is given by:

$$P(\text{event}) = \frac{\text{Number of favorable outcomes}}{\text{Total number of outcomes}}$$

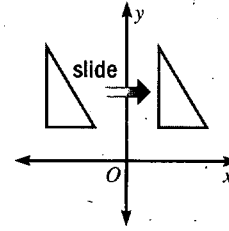
A bag of 20 marbles contains 7 red marbles. The theoretical probability of randomly choosing a red marble is:

$$P(\text{red}) = \frac{7}{20} = 0.35$$

transformation A movement of a figure in a plane.

See translation, reflection, and rotation.

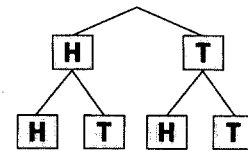
translation A transformation that moves each point of a figure the same distance in the same direction; also known as a *slide*.



trapezoid A quadrilateral with exactly one pair of parallel sides.

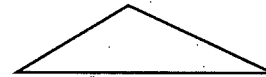


tree diagram A branching diagram that shows all the possible choices or outcomes of a process carried out in several stages.



Outcomes: HH, HT, TH, TT

triangle A closed plane figure with three straight sides that connect three points.



triangular prism A prism with triangular bases.

See prism.

trigonometric ratio A ratio of the lengths of two sides of a right triangle.

See sine, cosine, and tangent.

trinomial A polynomial with three terms.

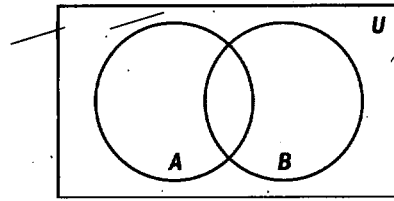
$$3x^2 + 2x - 4$$

unfavorable outcome An outcome that is not a favorable outcome.

See favorable outcome.



union The set of all elements in *either* set A or set B , written as $A \cup B$.



unit analysis Evaluate expressions with units of measure and check that your answer uses correct units.

$$\frac{\text{miles}}{\text{hour}} \cdot \text{hours} = \text{miles}$$

unit rate A rate that has a denominator of 1 unit.

\$9 per hour is a unit rate.

universal set The set of all elements under consideration, written as U .

If the universal set is the set of positive integers, then $U = \{1, 2, 3, \dots\}$.

upper extreme The greatest value in a data set.

See box-and-whisker plot.

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

See box-and-whisker plot.

V

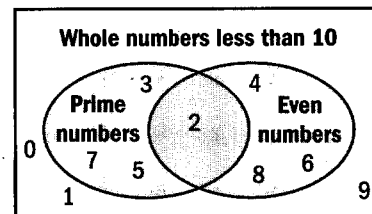
variable A symbol, usually a letter, that represents one or more numbers.

x is a variable in $4x - 3$ and in $x + 3 = 5$.

variable expression An expression that consists of numbers, variables, and operations.

$4x - 3$ and $2t^2$ are variable expressions.

Venn diagram A diagram that uses shapes to show how sets are related.



verbal model A word equation that represents a real-world situation.

$$\text{Distance traveled} = \text{Speed of car} \cdot \text{Time traveled}$$

vertex of an angle The common endpoint of the two rays that form the angle.

See angle.

vertex of a polygon A point at which two sides of a polygon meet. The plural of vertex is *vertices*.

See polygon.

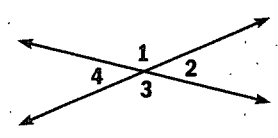
vertex of a polyhedron A point at which three or more edges of a polyhedron meet. The plural of vertex is *vertices*.

See edge of a polyhedron.

vertex of a solid A point where the edges of the solid meet. The plural of vertex is *vertices*.

See edge of a solid.

vertical angles When two lines intersect, the angles opposite each other are vertical angles.

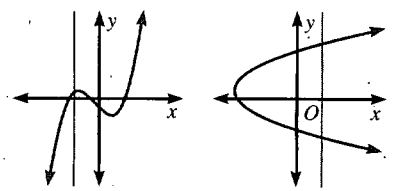


$\angle 1$ and $\angle 3$ are vertical angles;
 $\angle 2$ and $\angle 4$ are also vertical angles.

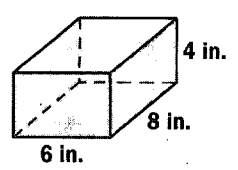
vertical axis The vertical number line of a graph.

See coordinate plane.

vertical line test If a vertical line intersects a graph at more than one point, then the graph does not represent a function.



volume of a solid The amount of space that the solid occupies. Volume is measured in cubic units.



$$\text{Volume} = lwh = 6 \cdot 8 \cdot 4 = 192 \text{ cubic inches}$$

whole numbers The numbers 0, 1, 2, 3



width See dimension.



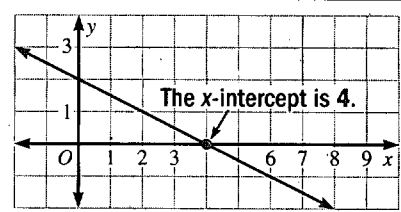
x-axis The horizontal axis in a coordinate plane.

See coordinate plane.

x-coordinate The first number in an ordered pair representing a point in a coordinate plane.

The *x*-coordinate of the ordered pair $(-2, 1)$ is -2 .

x-intercept The *x*-coordinate of the point where the graph intersects the *x*-axis.



y-axis The vertical axis in a coordinate plane.

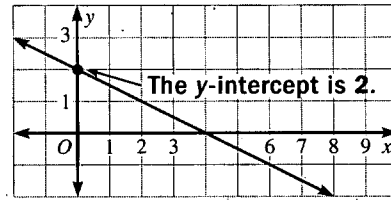
See coordinate plane.



y-coordinate The second number in an ordered pair representing a point in a coordinate plane.

The *y*-coordinate of the ordered pair $(-2, 1)$ is 1 .

y-intercept The y -coordinate of the point where the graph intersects the y -axis.



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