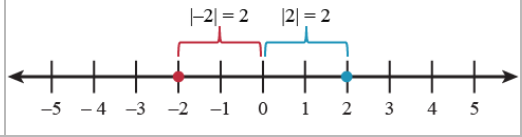
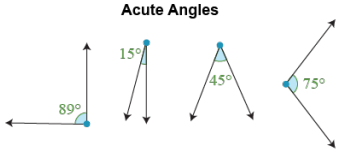
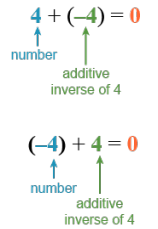
Vocabulary Word List

Grades 9-12

imagine plus math

Term	Definition	Example
absolute value	The distance a number is from zero on the number line. Example: -2 and 2 are both 2 units from 0 on the number line so |-2| = 2 and |2| = 2.	
acute angle	An angle that measures between 0°and 90°.	
additive inverses	Two numbers whose sum is zero.	
algorithm	A step-by-step set of directions for performing a procedure.	**Example:** Standard Algorithm for Addition **Steps:** 1. Add the ones: 4 ones + 8 ones = 12 ones. 2. Regroup 12 ones as 1 ten and 2 ones. 3. Record the total amount of ones as 2. 4. Make a note that you need to add another 1 ten. 6. Add the tens: 1 ten + 4 tens + 2 tens = 7 tens. 7. Record the total amount of tens as 7.

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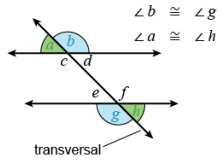
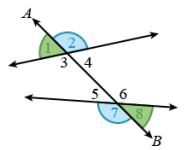
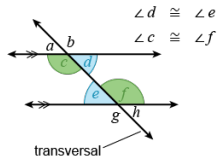
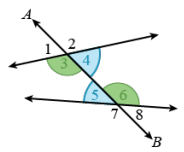
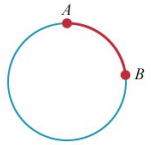
Term	Definition	Example
alternate exterior angles	Two pairs of angles formed when a transversal intersects two other lines. These angles are on opposite sides of the transversal and are outside the other two lines. When the lines are parallel, the alternate exterior angles are congruent.	Example: $\angle b \cong \angle g$, $\angle a \cong \angle h$  Example:  Angles 1 and 8 Angles 2 and 7 Alternate exterior angles
alternate interior angles	Two pairs of angles formed when a transversal intersects two other lines. These angles are on opposite sides of the transversal and are in between the other two lines. When the lines are parallel, the alternate interior angles are congruent.	Example: $\angle d \cong \angle e$, $\angle c \cong \angle f$  Example:  Angles 3 and 6 Angles 4 and 5 Alternate interior angles
arc	A section of the circumference of a circle.	 The parts of a circle between points A and B are arcs. The blue part is a major arc. The red part is a minor arc.
area	The area of a flat, closed figure is a measure of the number of same-size squares that fill the shape with no spaces or overlaps.	 Area = 8 square units
arithmetic sequence	A sequence or list of numbers in which each number is the same distance, or difference, from the number before it.	$5, \overset{+3}{8}, \overset{+3}{11}, \overset{+3}{14}, \overset{+3}{17}, \ldots$ The three dots mean that the sequence goes on without end.

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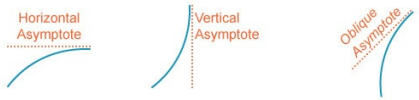
Term	Definition	Example
associative property of addition	When there are three or more addends, they may be grouped in different ways to add. The sum will be the same no matter which way they are grouped. Use parentheses to show which addends are grouped.	
associative property of multiplication	When there are three or more factors, they may be grouped in different ways to multiply. The product will be the same no matter which way they are grouped. Use parentheses to show which factors are grouped.	$(2 \times 3) \times 4 = 2 \times (3 \times 4)$
asymptote	A line that a curve gets closer and closer to but never intersects.	There are 3 types of aymptotes: horizontal, vertical, and oblique. 
availability (of a product)	A state of being accessible or ready to be used, sold, or purchased.	**Example:** As the day of the concert approached, the availability of tickets for the show decreased.  **Example:** We switched to shopping at Matt's Market when the availability of our favorite apples increased. 
average	A measure of central tendency found when adding the numbers in a data set and then dividing the sum by the number of numbers in that data set. It is also called the mean.	**Example:** average test score $= \frac{100 + 80 + 90}{3} = \frac{270}{3}$ and $\frac{270}{3} = 90$

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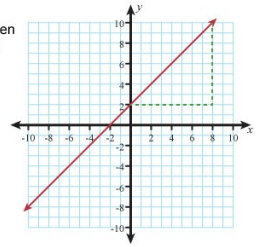
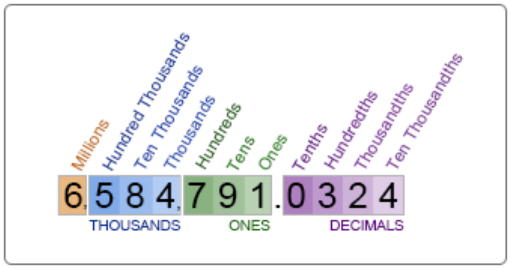
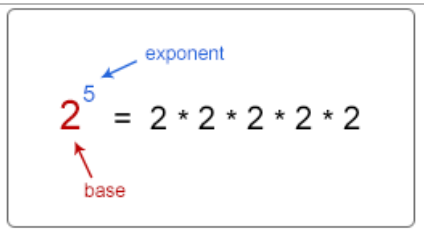
Term	Definition	Example
average rate of change	(function) The change in the *y*-value divided by the change in the *x*-value for two specific points of a graph of a function.	The average rate of change between the points $(0, 2)$ and $(8, 10)$ is the slope of the line. $\frac{y_2 - y_1}{x_2 - x_1} = \frac{10 - 2}{8 - 0}$ $= \frac{8}{8}$ $= 1$ 
base-10 number system	The number system we use is a base-ten system. It is also known as a decimal system. It has ten digits from 0 to 9 that allow you to write all real numbers by using place value and a decimal point. The value of a digit depends on its position in a number. Each position is 10 times the value of the digit to its right.	
base (of an exponent)	The number or variable being raised to a power. The power is indicated by an exponent.	
biconditional statement	An "if and only if" statement. Says that one thing is true if and only if another thing is also true. Example: A polygon is a triangle if and only if it has 3 sides.	**Conditional statement**: If two angles are congruent, then they have the same measures. **Conditional statement**: If two angles have the same measures, then they are congruent. **Bi-conditional statement**: Two angles have the same measures if and only if they are congruent.

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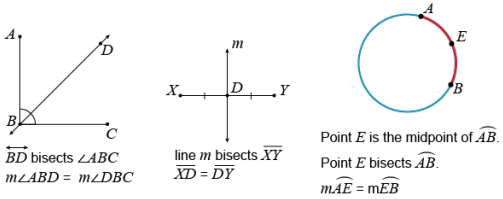
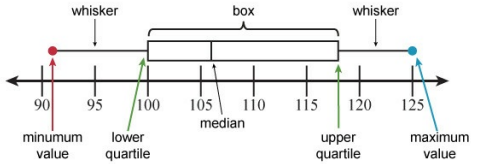
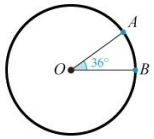
Term	Definition	Example
binomial	An algebraic expression with two terms separated by a plus or minus sign. The terms can be a combination of a number and an expression with variables, or both terms can be expressions with variables.	<table><tr><th>Example of binomial</th><th>Explanation</th></tr><tr><td>$x-2$</td><td>The expression has two unlike terms, "x" and "-2".</td></tr><tr><td>$x-2-3$</td><td>The expression can be simplified to $x-5$, which has two unlike terms, "x" and "-5".</td></tr><tr><td>$3x+5y$</td><td>The expression has two unlike terms, "$3x$" and "$5y$".</td></tr><tr><td>$2x^2+5$</td><td>The expression has two unlike terms, "$2x^2$" and "5".</td></tr></table>
bisect	To divide a line segment, angle, or arc into two congruent parts.	
box-and-whisker plot	A graphic way to show a summary of data using the minimum and maximum values, the lower and upper quartiles, and the median. The "whiskers" are lines connecting the minimum value to the lower quartile and maximum value to the upper quartile. The "box" lies between the "whiskers" and represents the data between the quartiles.	
central angle	An angle whose vertex is the center of a circle and with sides that are each a radius of the circle.	 Angle AOB is a central angle. Line segments $\overline{OA}$ and $\overline{OB}$ are radii of circle O.

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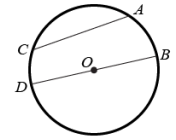
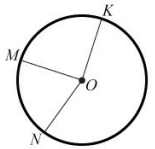
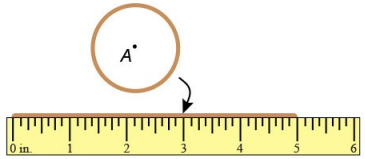
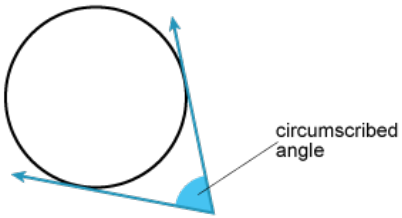
Term	Definition	Example
chord	Any line segment that connects two points on a circle. The diameter is a chord that passes through the center of a circle.	 Line segments $\overline{CA}$ and $\overline{DB}$ are chords of circle O. Line segment DB is a diameter of circle O.
circle	A two-dimensional figure that consists of all points that are all the same distance from a point. The point is called the center of the circle.	 Circle O: Points M, K, N, and every other point on the circle is the same distance from O. $\overline{KO} = \overline{MO} = \overline{NO}$
circumference	A measurement of the distance around a circle. Another way to think about it is, if you cut the circle at one point and straighten out the curved line, the circumference is the length of the line.	
circumscribed angle	An angle whose sides are both tangent to a circle.	

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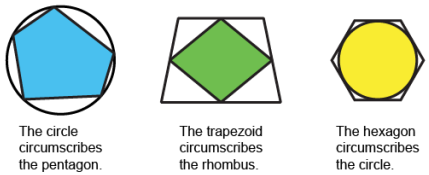
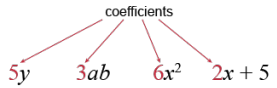
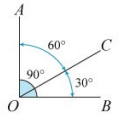
Term	Definition	Example
circumscribed figure	A circumscribed figure encloses a polygon so that only the vertices of the inner polygon touch the circumscribed figure. If a polygon circumscribes a circle, the sides of the polygon are tangent to the circle.	 The circle circumscribes the pentagon. The trapezoid circumscribes the rhombus. The hexagon circumscribes the circle.
coefficient	A number that is multiplied by a variable in an equation or expression.	
common ratio	The ratio or quotient of consecutive terms in a geometric sequence.	**Example:** Geometric sequence: 1, 3, 9, 27, ... $r_n = \frac{a_n}{a_{n-1}} = \frac{a_2}{a_1} = \frac{3}{1} = 3$ Common ratio: 3 $\frac{a_3}{a_2} = \frac{9}{3} = 3$ $\frac{a_4}{a_3} = \frac{27}{9} = 3$
commutative property	For two addends in addition, changing the order of the addends does not change the sum. For two factors in multiplication, changing the order of the factors does not change the product.	Commutative Property of Addition $4 + 3 = 3 + 4$  Commutative Property of Multiplication $4 \times 3 = 3 \times 4$
complementary angles	A pair of angles whose measures have a sum of 90°.	 $\angle AOC$ and $\angle COB$ are complementary angles

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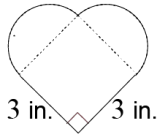
Term	Definition	Example
completing the square	A way to solve a quadratic equation by adding or subtracting values to each side of the equation so that the variable side is a perfect square.	This equation is not a perfect square because 21 is not $(10 \div 2)^2$ $x^2 + 10x + 21 = 0$ $x^2 + 10x + 21 + 4 = 0 + 4$ $x^2 + 10x + 25 = 4$ $(x^2 + 5)^2 = 4$ $x + 5 = \pm\sqrt{4}$ $= 2$ $x = -3$ and $x + 5 = \pm\sqrt{4}$ $= -2$ $x = -7$
composite figure	One figure that can be shown as two or more combined figures.	**Example:** A heart can be drawn as a composite figure by using one square and two semicircles.  **Example:** Olga used a rectangular prism and a triangular prism to make a composite figure that models a house. 

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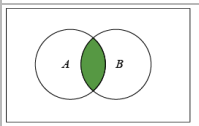
Term	Definition	Example
compound interest	The interest computed from both the principal amount and the accumulated interest over a period of time.	Compound interest can be calculated by the following formula. $A = P(1+\frac{r}{n})^{nt}$ Amount, Principal, Interest Rate, Time (years), Number of times interest is compounded per year **Example:** The bank is offering 9% compound interest for new accounts. If a new account invests $1,000 that will be compounded annually at a rate of 9%, the total amount in the bank account after 3 years can be calculated. $A = P(1+\frac{r}{n})^{nt}$ $A = 1{,}000(1+\frac{0.09}{1})^{(1)(3)}$ $A = 1{,}000(1+0.09)^3$ $A = 1{,}000(1.09)^3$ $A \approx \$1{,}295.03$
compound probability	The likelihood of two independent events occurring. Compound probability is denoted by P(A ∩ B) or P(A and B), and is read as the probability of A and B.	 A AND B $A \cap B$ **Example:** A class has 4 girls out of 10 students and a different class has 8 girls out of 14 students. What is the probability of choosing a student from each class, and both students being girls? $P(A \cap B) = P(A) \times P(B)$ $P(A \cap B) = \frac{4}{10} \times \frac{8}{14}$ $P(A \cap B) = \frac{32}{140}$ $P(A \cap B) \approx 23\%$

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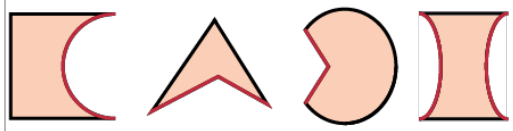
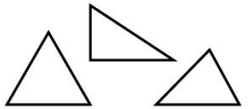
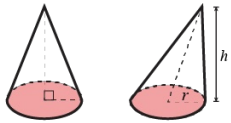
Term	Definition	Example
concave	Describes a closed shape that is curved inwards.	Examples : 
conditional statement	A conditional statement is an "if-then" statement. Example: If a polygon has 3 sides, then it is a triangle.	 If a polygon has 3 sides, then it is a triangle
cone	A three-dimensional (solid) shape with a circular base and a curved surface that tapers to a point called the vertex. A cone with the height perpendicular to the base is called a right cone. If the vertex is not perpendicular to the base it is called an oblique cone.	 Right cone Oblique cone There are many examples of cones in daily life. These include ice cream cones, party hats, traffic cones, and a tepee (also called a tipi, a conical tent used by Native Americans). 

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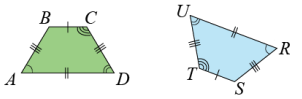
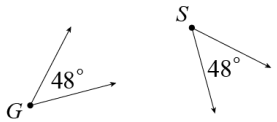
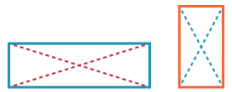
Term	Definition	Example
congruent	Exactly equal in size, shape, and measure; the symbol (≅) represents congruent.	**Example:** Congruent figures can be rotated, reflected, and/or translated to fit exactly onto each other.  Trapezoid $ABCD$ ≅ Trapezoid $RSTU$ **Example:** Angle G is congruent to angle S becasue both angles measure 48°. 
conjecture	A conjecture is a guess or plausible prediction based on observation. Conjectures can be proved or disproved. You only need one example to disprove a conjecture. That example is called a counterexample.	 Conjecture: the diagonals of each rectangle are the same length.

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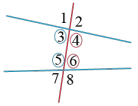
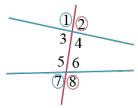
Term	Definition	Example
consecutive	To follow in order one after another.	**Example:** Consecutive integers Consecutive integers: -2, -1, 0, 1, 2, 3, 4, 5 . . . Consecutive even integers: -4, -2, 0, 2, 4, 6, 8 . . . Consecutive odd integers: -3, -1, 1, 3, 5, 7, 9 . . . **Example:** Three consecutive days are: Wednesday, Thursday, and Friday.  **Example:** When two lines are intersected by a transversal, the two angles that are between the lines on the same side of the transversal are consecutive interior angles.  ∠3 and ∠5 are consecutive interior angles. ∠4 and ∠6 are consecutive interior angles. The two angles that are outside the lines, both on the same side of the transveral are consecutive exterior angles.  ∠1 and ∠7 are consecutive exterior angles. ∠2 and ∠8 are consecutive exterior angles.
constant term	A term in an expression or equation that has a value that cannot change.	$y = 2x + 7$ variable term constant term
contrapositive	(of a conditional statement) Exchanging the hypothesis and conclusion of a conditional statement and then negating both of them.	**Conditional statement:** If a polygon has 3 sides, then it is a triangle. **Contrapositive:** If a polygon is not a triangle, then it does not have 3 sides.

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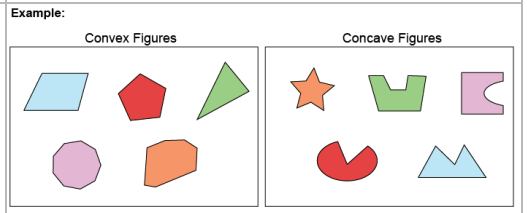
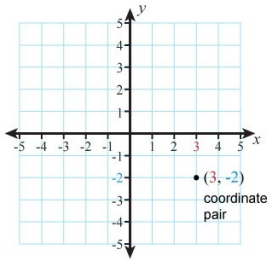
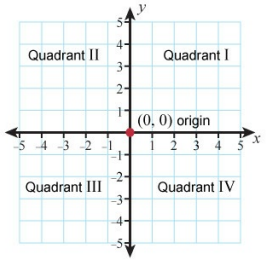
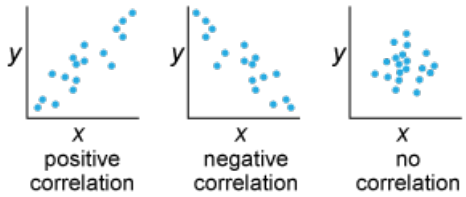
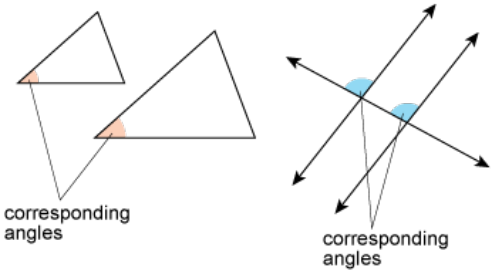
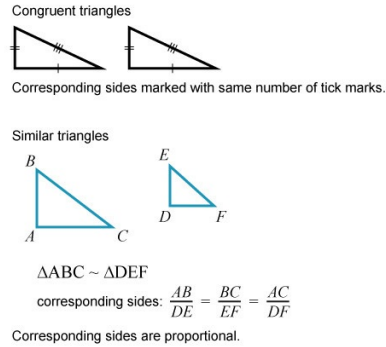
Term	Definition	Example
converse	(of a conditional statement) Exchanging the hypothesis and conclusion of a conditional statement.	**Conditional statement:** If a polygon has 3 sides, then it is a triangle. **Converse:** If a polygon is a triangle, then it has 3 sides.
convex	(figure) A figure curved outwards; a convex polygon has all interior angles less than 180°. Convex is the opposite of concave.	
coordinate pair	A pair of numbers of the form (*x*, *y*) that locate a point in the coordinate plane. The first coordinate or *x*-coordinate is the distance left or right from the origin (0, 0), and the second coordinate or *y*-coordinate is the distance up or down from the origin. The coordinate pair is also called an ordered pair.	
coordinate plane	A two-dimensional flat surface, or plane, with two perpendicular lines called axes intersecting at a point called the origin.The two axes divide the plane surface into four sections called quadrants. Position or location on the coordinate plane is designated by ordered pairs of coordinates. See coordinate pair.	

Vocabulary Word List

Grades 9-12

imagine plus math

Term	Definition	Example
correlation	When two sets of data are strongly linked together there is a high correlation. The correlation is positive when both sets of data increase together and is negative when one value increases while the other decreases. We use scatter plots to record the data, and the shape of the dots on the scatter plot is used to determine strong, weak, negative and no correlation.	
corresponding angles	Angles of similar or congruent figures that have the same relative position and the same measure.	
corresponding sides	Corresponding sides of congruent figures have the same relative position and are equal in length. Corresponding sides of similar figures have the same relative position with lengths that are proportional.	

Vocabulary Word List

Grades 9-12

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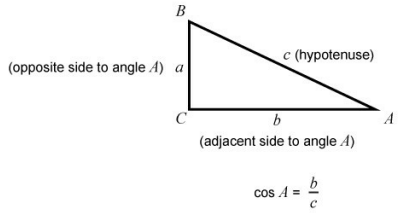
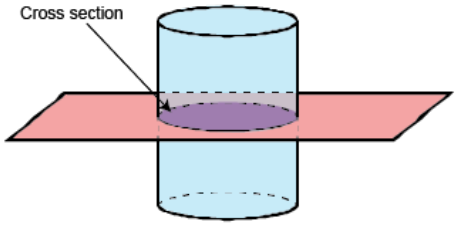
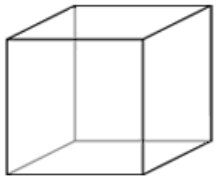
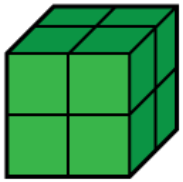
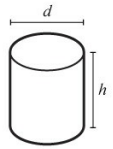
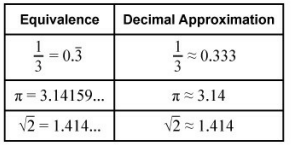
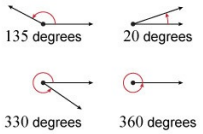
Term	Definition	Example
cosine ratio	In a right triangle, the cosine of an angle is the ratio of the length of the adjacent leg to the length of the hypotenuse. The cosine of angle A is written as cos A.	
cross section	The shape formed when a three-dimensional figure is intersected by a plane.	
cube	A three-dimensional figure with six congruent square faces.	

Vocabulary Word List

Grades 9-12

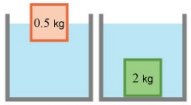
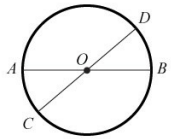
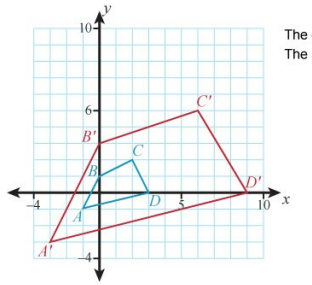
imagine plus math

Term	Definition	Example
cube (value)	To cube a number, use the number as a factor three times. x^3 is $x \cdot x \cdot x$. A number cubed is also the volume of a cube, where the number is the side length. We read $2^3 = 8$ as two cubed equals 8 or two to the third power is 8.	 $2^3 = 2 \times 2 \times 2 = 8$
cylinder	A three-dimensional shape with two congruent parallel bases in the shape of a circle. The curved surface connects the two circles and is a rectangle, which you can see if the curved surface is cut vertically and laid flat.	
decimal approximation	Using a terminating decimal to approximate a rational or irrational number whose decimal equivalent does not end or terminate. The three dots show that the number is non-ending. A decimal approximation may be used in calculations.	
degree	A degree is the unit of measure for an angle. A complete rotation of one ray or line segment from another is 360 degrees. So one degree is $\frac{1}{360}$ of a rotation.	
delta	A Greek letter that means "change" or the difference between two numbers. The symbol used to represent delta is a triangle.	Δ Delta symbol: means "change" $\Delta\ y = y_2 - y_1$ $\Delta\ x = x_2 - x_1$

Vocabulary Word List

Grades 9-12

imagine plus math

Term	Definition	Example
demand (of a product)	The amount of goods or services consumers are willing to buy at a given price during a specific period of time.	**Example:** Since the price of tickets decreased, many consumers rushed to buy more. Now the demand for tickets is high and the supply is low. 
density	A measure of how much matter there is in a specific volume. It can be written as mass versus volume: 1 kg per liter, 1 gram per cubic centimeter. For a population, density can be the number of people per square mile.	Density = Mass ÷ Volume  Less density — object floats Greater density — object sinks
diameter	A line segment through the center of a circle with endpoints on the circle.	 $\overline{AB}$ and $\overline{CD}$ are diameters of Circle O with center O.
dilation	A transformation of one figure that results in a figure that is similar to the original figure. A dilation is smaller than the original if the scale factor for the dilation is less than 1. The dilation is larger than the original if the scale factor is greater than 1.	 The dilation of $ABCD$ is $A'B'C'D'$. The scale factor is 3.

Vocabulary Word List

Grades 9-12

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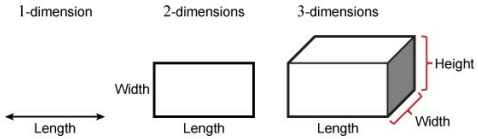
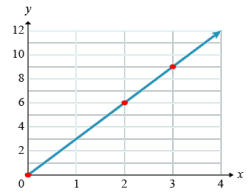
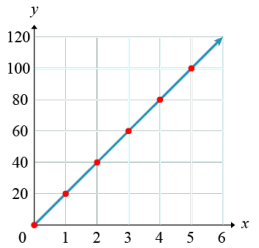
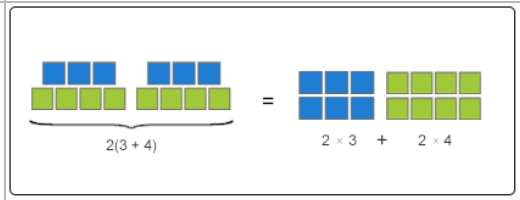
Term	Definition	Example
dimensions	Attributes such as length,width, and height. A line has one dimension: length. A rectangle has two dimensions: length and width. A rectangular prism has three dimensions: length, width, and height.	
directly proportional	A relationship between two variables in which one is a constant multiple of the other. A value y is directly proportional to x if $y = kx$, and k is a constant value. Example: The equation $m = 12y$ relates the number of months, m, to the number of years, y. The number of months is always 12 times the number of years, so the number of months is directly proportional to the number of years.	Years (y) / Constant (c) / Months (m) 1 × 12 12 2 × 12 24 3 × 12 36 4 × 12 48 $m = 12y$ The ratios of years and months are equivalent 1 to 12 2 to 24 3 to 36 4 to 48 Equal rations are proportional. $\frac{1}{12} = \frac{2}{24}$ $\frac{2}{24} = \frac{3}{36}$ $\frac{3}{36} = \frac{4}{48}$

Vocabulary Word List

Grades 9-12

imagine plus math

Term	Definition	Example
direct variation	A relationship between two variables whose ratio is constant. A direct variation can be represented by $y = kx$ where k is a constant value. A direct variation contains the solution (0, 0).	**Example:** A line containing the points $(2, 6)$ and $(3, 9)$ would show direct variation in the form $y = 3x$.  **Example:** Tau is paid $20 per hour. Let x represent the number of hours Tau works. This can be modeled by the equation $y = 20x$, which shows direct variation. 
distributive property	A number multiplied by two addends is the sum of the product of each addend and the number.	
domain	All of the input values that go into a function. The output values are called the range. The input values can be all numbers or limited to a set of numbers such as integers greater than 1.	**Example:** If the function $f(x) = \frac{1}{x}$ where $x \neq 0$ is given for values of $x = \{1, 2, 3, ...\}$, then $\{1, 2, 3. ...\}$ is the domain of the function.

Vocabulary Word List

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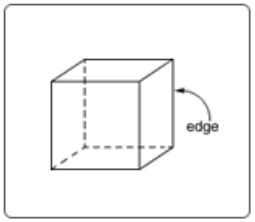
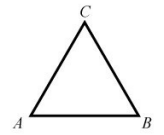
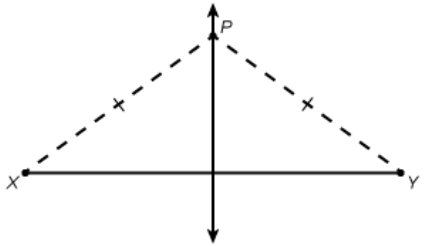
Term	Definition	Example
edge	A line segment that is formed when two faces of a three-dimensional figure meet.	
equally likely events	Events with an equal chance of occurring. For example, when tossing a fair 6-sided number cube each number is equally likely to occur. When flipping a coin, it is equally likely to show heads or tails.	When flipping a coin, it is equally likely to show heads or tails. 
equiangular	A polygon whose angles all have equal measures.	 $m\angle A = m\angle B = m\angle C = 60°$ ΔABC is equiangular
equidistant	The same distance If point P is 3 centimeters from point X and point P is 3 centimeters from point Y, then the P is equidistant from X and Y.	 *P* is equidistant from *X* and *Y*.

Vocabulary Word List

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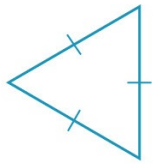
Term	Definition	Example
equilateral triangle	A triangle with all three sides the same length.	
excluded values	Values of a variable for which an expression is undefined. For example, any value for a variable which makes the denominator of a fraction (which is also a divisor) zero.	$\frac{x+1}{x-1}$ The denominator cannot be 0. So, x in the denominator cannot be 1.
expanded exponential form	A way to write a number using products of each digit and powers of 10 corresponding to the place value of the digit.	Exponential Form: $4{,}865 = 4 \cdot 10^3 + 8 \cdot 10^2 + 6 \cdot 10^1 + 5 \cdot 10^0$
experimental probability	In an experiment, the ratio of the number of times an event happens to the number of times the experiment is done. It is possible to be different from the theoretical probability.	 **Experiment:** Toss a coin 100 times and record the results. **Results:** Heads: 44 Tails: 56 **Experimental probability:** $\frac{44}{100} = \frac{11}{25}$ for Heads. **Theoretical probability:** $\frac{50}{100} = \frac{1}{2}$ for Heads.

Vocabulary Word List

Grades 9-12

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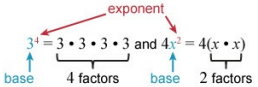
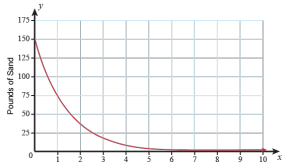
Term	Definition	Example
exponent	A number that indicates the number of times another number (the base) is to be used as a factor. When the exponent is 2, we say the base is squared. If the exponent is 3, we say the base is cubed. For exponents greater than 3, we say the base to the "*n*th" power. In the example, we would say 3 to the fourth power and four "*x*" squared.	
exponential decay	When a quantity decreases over a fixed period of time by a multiplier that is less than 1. The exponential decay function can be represented by the function $f(x) = a(b)^x$ where $a > 0$ and $0 < b < 1$. The exponent x represents time. The decay factor is represented by b, which is less than 1, and $f(x)$ represents the final amount remaining after the decay for a specified period of time.	$f(x) = a(1-r)^x$ a is the initial value where $a > 0$ $(1-r)$ is the decay factor where $0 < (1-r) < 1$ r is the rate of decrease where $0 < r < 1$ x is the specified period of time **Example:** There is 150 pounds of sand at the park. Every year, 50% of the sand blows away. If the sand is never replaced, how much sand will remain after 5 years? The initial amount of sand is 150 pounds. The rate of decrease, r, is 50%. $r = 0.5$. The time, t, is 5 years. $f(x) = a(1-r)^x$ $= 150(1-0.5)^5$ $= 150(0.5)^5$ $= 4.6875$ 4.6875 pounds of sand remain after 5 years. 

Vocabulary Word List

Grades 9-12

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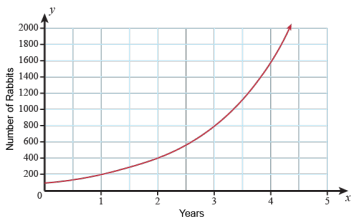
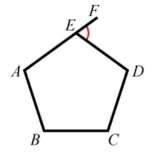
Term	Definition	Example
exponential growth	When a quantity increases over a fixed period of time by a multiplier that is greater than 1. The exponential growth function can be represented by the function $f(x) = a(b)^x$ where $a \neq 0$ and $b > 1$. The exponent x represents time. The growth factor is represented by b, and $f(x)$ represents the final amount remaining after the growth for a specified period of time.	$f(x) = a(1 + r)^x$ a is the initial value where $a > 0$. $(1 + r)$ is the growth factor where $(1 + r) > 1$. r is the rate of increase where $r > 0$. x is the specified period of time. **Example:** There are 100 rabbits and the total number of rabbits increases by 100% every year. How many rabbits will there be after 3 years? The initial amount of rabbits, a, is 100. The rate of increase is 100%. Therefore, $r = 1$. The time, t, is 3 years. $f(x) = a(1 + r)^x$ $= 100(1 + 1)$ $= 100(2)$ $= 800$ There are 800 rabbits after 3 years. 
exterior angle	An angle formed by extending a side of a polygon. One side of the angle is also a side of the polygon. The vertex is a vertex of the polygon and the angle.	 $\angle FED$ is an exterior angle of pentagon $ABCDE$

Vocabulary Word List

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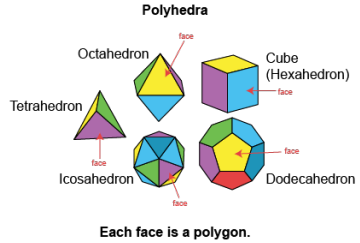
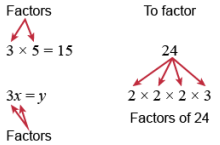
Term	Definition	Example
face	A face of a polygon is the flat surface of a three-dimensional figure.	
factor	As a noun: A whole number, quantity, or variable that is multiplied by one or more whole numbers, quantities, or variables. As a verb or action: To factor is to break a number apart into its factors.	
favorable outcome	An outcome of interest.	
first quartile	In a set of data, the first quartile is the middle number for the lower half of the data. The lower half is between the least number in the data and the median. It is also the 25th percentile of the data set. It is labeled Q1.	

Vocabulary Word List

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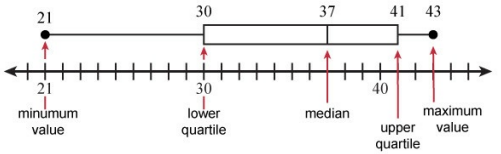
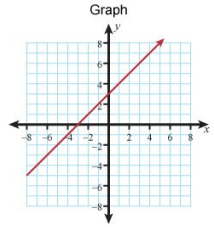
Term	Definition	Example
five-number summary	The five-number summary contains the attributes of a data set used in describing a data set. They are the minimum value, lower quartile, median, upper quartile, and maximum value for a data set. These numbers are used to make box-and-whisker plots.	Data Set: 21 24 30 31 35 37 37 40 41 42 43 
frequency	The number of times something occurs or happens.	**Example:** The table shows the number of meal worms and their lengths used in an experiment. Length of Mealworms (inches): $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1 Number of Mealworms: |, ||||, |||, || The frequency of meals worms with a length of $\frac{1}{2}$ inch is 5.
function	A relationship between a set of inputs and corresponding outputs where there is exactly one output for each input. Functions can be represented as a set of ordered pairs, as an equation, and as a graph. Function equations are usually written in the form: $f(x) = x + 3$ or $y = x + 3$.	$y = x + 3$ or $f(x) = x + 3$ table x | y 0 | 3 1 | 4 2 | 5 3 | 6 4 | 7 ordered pairs (x, y) (0, 3) (1, 4) (2, 5) (3, 6) (4, 7) Graph 
geometric sequence	A sequence or list of numbers in which each consecutive pair of numbers has the same multiplicative relationship. To find the next number in a geometric sequence, multiply using the same multiplier as the previous two numbers.	**Geometric Sequence:** 1, 2, 4, 8, 16, ... The three dots mean that the sequence goes on without end.

Vocabulary Word List

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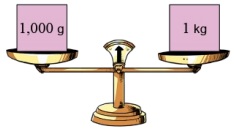
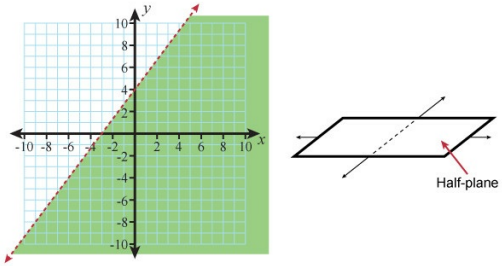
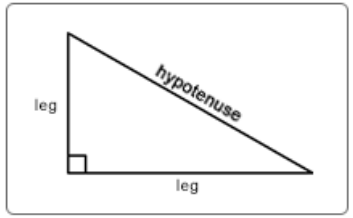
Term	Definition	Example
gram	A metric unit of measurement for mass or weight.	**Example:** A paperclip weighs about 1 gram.  **Example:** There are 1,000 grams in 1 kilogram. 
greatest common factor	The greatest factor shared by two or more numbers.	**Factors of 18:** 1, 2, 3, 6, 9, 18 **Factors of 30:** 1, 2, 3, 5, 6, 15, 30 **Common Factors of 18 and 30:** 1, 2, 3, 6 The greatest comon factor of 18 and 30 is 6.
growth factor	The value that each term in an exponential pattern is multiplied by to achieve the next value. The growth factor is 1 plus the growth rate. Compound interest and exponential growth use a growth factor in their equations.	**Compound Interest** $A = P\left(1 + \frac{r}{n}\right)^{nt}$ P = initial amount r = annual rate of interest t = number of years n = number of times the interest is compounded per year $1 + \frac{r}{n}$ is the growth factor A = amount of money after n years **Exponential Growth** $f(x) = a(1 + r)^x$ a is the initial value where $a > 0$. $(1 + r)$ is the decay factor where $0 < (1 + r) < 1$ r is the rate of decrease where $0 < r < 1$ x is the specified period of time If you put \$50 in a savings account that has an annual interest rate of 2%, compounded yearly, in 8 years you would have: $A = P\left(1 + \frac{r}{n}\right)^{nt}$ $= 50(1 + 0.02)^{1 \cdot 8}$ $= 50(1.02)^8$ $= \$58.58$ The growth factor is 1.02. **Example:** If a tennis tournament starts with150 players and decreases by 50% after each round, how many players remain after 5 rounds? $f(x) = a(1 - r)^x$ where $1 - r$ represents the growth (decay) factor a = initial amount, $a > 0$. $a = 150$ players r = rate of decrease, $0 < r < 1$, $r = 50\% = 0.5$ x = time, $x = 5$ $f(x) = a(1 - r)^x$ $= 150(1 - 0.5)^5$ $= 150(0.5)^8$ $= 4.6875$ **4 Players**

Vocabulary Word List

Grades 9-12

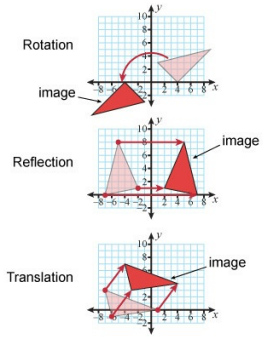
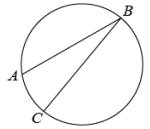
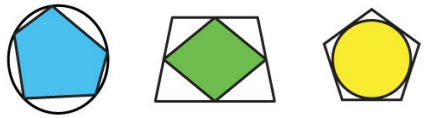
imagine plus math

Term	Definition	Example
half-plane	A line divides the Cartesian plane into two half planes. All of the points above the line form the upper half-plane and all of the points below the line form the lower half-plane. A closed half-plane includes the line and an open half plane does not include the line. The half-plane usually refers to the coordinate grid, but any plane (any flat infinite surface) can be divided into half-planes by a line.	
hypotenuse	The side of a right triangle that is opposite the right angle; the longest side of a right triangle.	
identity property of addition	The identity property of addition states that when you add 0 to a number, the result is the original number. The number 0 is called the additive identity.	additive identity $n + 0 = n$ $6 + 0 = 6$ $\frac{3}{4} + 0 = \frac{3}{4}$ $2.4 + 0 = 2.4$
identity property of multiplication	The identity property of multiplication states that when you multiply a number by 1, the result is the original number. The number 1 is called the multiplicative identity.	multiplicative identity $n \times 1 = n$ $8 \times 1 = 8$ $4.5 \times 1 = 4.5$ $\frac{5}{8} \times 1 = \frac{5}{8}$

Vocabulary Word List

Grades 9-12

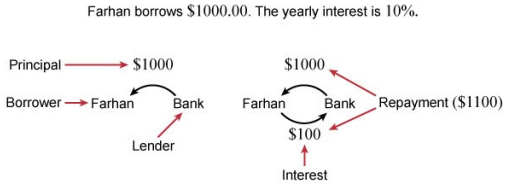
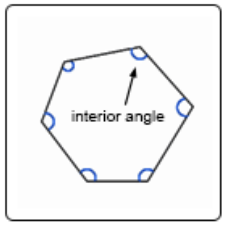
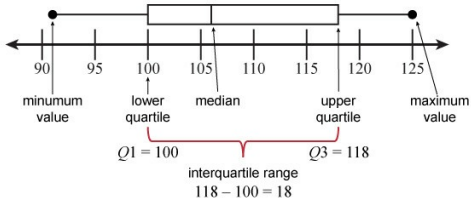
imagine plus math

Term	Definition	Example
image	An image is a new figure that results from a transformation of a figure. The transformation may be a reflection, rotation, translation, dilation, or a combination of these.	
imaginary unit, i	A number that is equivalent to the square root of negative 1. It is not a real number. It is a complex number. This means that i does not have a position on the real number line.	$i^2 = -1$ $i = \sqrt{-1}$
inscribed angle	An angle formed by two chords in a circle which have the same endpoint. The endpoint is the vertex of the angle.	 $\angle ABC$ is an inscribed angle.
inscribed figure	Inscribed figures can be a polygon or circle. When a polygon is inscribed in a circle or another polygon, all vertices of the inscribed figure are points on the figure that it is inscribed in. When a circle is inscribed in a polygon, all sides of the polygon are tangents of the circle.	 The pentagon is **inscribed** in the circle. The rhombus is **inscribed** in the trapezoid. The circle is **inscribed** in the pentagon.

Vocabulary Word List

Grades 9-12

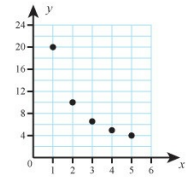
imagine plus math

Term	Definition	Example
integers	Numbers without a fractional or decimal part. Integers can be positive or negative. Zero is also an integer. Examples: 4 and -4 are integers. 412 and -4.5 are not integers.	
interest	A charge for borrowing money, or a profit made when money is invested. Generally, a percentage of the amount borrowed or invested.	
interior angle	(of a polygon) An angle formed inside the polygon by two adjacent sides of a polygon.	
interquartile range	For a set of data, the interquartile range is the difference between the third and first quartiles.	

Vocabulary Word List

Grades 9-12

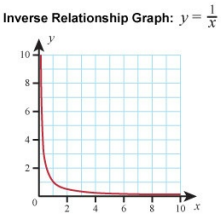
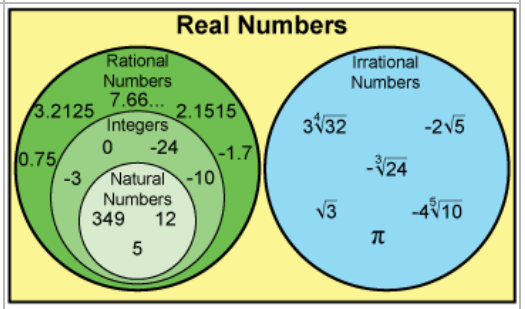
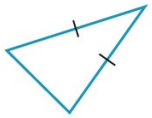
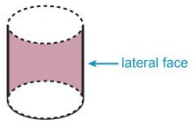
imagine plus math

Term	Definition	Example
inverse	A value or step that reverses another; inverse operations result in 0 for addition and 1 for multiplication.	**Example:** The additive inverses of two numbers have a sum of zero. The additive inverse of 4 is –4 and the additive inverse of –4 is 4. $4 + (-4) = 0$ (4: number; –4: additive inverse of 4) $(-4) + 4 = 0$ (–4: number; 4: additive inverse of –4) **Example:** Katy was able to solve the equation $4x + 1 = 9$ for x by using an additive and multiplicative inverse. $4x + 1 = 9$ $4x + 1 - 1 = 9 - 1$ add the inverse of 1 to both sides of the equation $4x = 8$ $\frac{4x}{4} = \frac{8}{4}$ use the multiplicative inverse of 4 on both sides of the equation $x = 2$ The additive inverse of 1 is –1 because $1 + (-1) = 0$. The multiplicative inverse of 4 is $\frac{1}{4}$ because $4 \times \frac{1}{4} = 1$.
inversely proportional	When one variable increases, the other variable decreases proportionally so that the product of the two variables is the same.	 As x increases, y decreases. $y = \frac{20}{x}$ or $xy = 20$
inverse of a conditional statement	The negation of the conditional statement "if p, then q" is the statement, then "if not p, then not q" is the inverse. An inverse conditional can be true or false.	True: Conditional: (If p then q) If a polygon has 4 sides, then it is a quadrilateral. Inverse: (If not p, then not q) If a polygon does not have 4 sides, then it is not a quadrilatreral. False: Conditional: (If p then q) If two angles are right angles, then they are congruent. Inverse: (If not p, then not q) If two angles are not right angles, then they are not congruent.
inverse operations	Operations that "undo" each other. Addition and subtraction are inverse operations. Multiplication and division are inverse operations.	Inverse Operations $5 + 4 = 9$ and $9 - 4 = 5$ $2 \times 5 = 10$ and $10 \div 5 = 2$

Vocabulary Word List

Grades 9-12

imagine plus math

Term	Definition	Example
inverse relationship	A relationship between two variables where an increase in one variable corresponds to a decrease in the other. For example, the faster you walk, the less time it takes to get to a destination.	
irrational number	A number that cannot be expressed as a ratio of integers (*a/b*). An irrational number is an infinitely nonrepeating decimal. Irrational numbers cannot be represented as terminating or repeating decimals.	
isosceles triangle	A triangle with two sides that are the same length.	
lateral surface area	The lateral surface area of a solid figure is the total surface area of the faces of the figure that are not bases.	
law of large numbers	The principle that as more trials of an experiment are conducted, the experimental probability more closely approximates the theoretical probability.	 The theoretical probability for the number of heads for 100 tosses of a coin is 50. The experimental probability for the number of heads tossed approaches 50 as the average number of tosses approaches infinity, or some large number.

Vocabulary Word List

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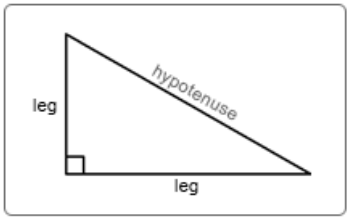
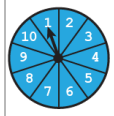
Term	Definition	Example
least common multiple	The least multiple that two or more numbers share.	Multiples of 6: 6, 12, 18, 24, 30, 36, 42, 48 ... Multiples of 8: 8, 16, 24, 32, 40, 48 ... Common multiples: 24 and 48 Least common multiple: 24
legs	The legs of a right triangle are the sides that form the right angle. The legs are perpendicular to each other.	
likelihood	A description of the probability or chance of something happening. The likelihood increases as the probability increases.	**Example:** The spinner can land on any number between 1 and 10 with an equal chance.  Landing on a 1 has the same likelihood as landing on a 7 because there is 1 out of 10 possibilities for either event happening. Landing on an even number has a higher likelihood than landing on 1 because the likelihood of landing on an even number is 5 out of 10 since there are 10 possibilities.  The likelihood of landing on a 1 is not very likely. The likelihood of landing on a number greater than 2 is very likely because there are 8 out of 10 possibilities.
likely	Describes an event that has more than a 50% probability of occurring; very possible.	**Example:** If Greg goes outside without an umbrella and it is raining, it is very likely he will get wet.  **Example:** If there are 6 green marbles and 4 orange marbles, it is likely that Ivy will randomly choose a green marble since there are more of them. 

Vocabulary Word List

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Term	Definition	Example
like terms	In an algebraic expression, like terms are terms that have the same variable(s) and same exponents.	$3n^2 + 5n + 7n^2 - 2n + 5 + 8$ **Like terms include:** $3n^2$ and $7n^2$ are like terms because they have the same variable n and the same exponent 2. $5n$ and $-2n$ are also like terms because they have the same variable n and the same exponent assumed to be 1. $5n^0$ and $8n^0$ are also like terms. They have the same variable and the same exponent. $5n^0$ and $8n^0$ are equal to 5 and 8 respectively. 5 and 8 are like terms because they are both constant terms.
line	A line is a set of points that form a straight path extending infinitely in two directions. A line has length but no width.	 $\overleftrightarrow{AB}$ is read as "line AB."

Vocabulary Word List

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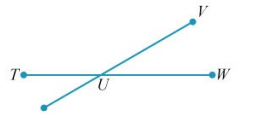
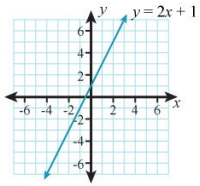
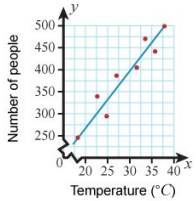
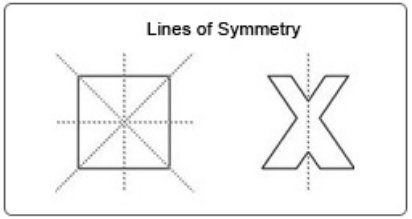
Term	Definition	Example
linear pair (angles)	A pair of adjacent angles formed by intersecting rays, line segments, or lines.	 $\angle VUT$ and $\angle VUW$ are a linear pair of angles.
linear relationship	A relationship in which there is a constant rate of change between two variables. For every increase of one unit in the first variable, there is a constant change in the value of the other variable. The equation for a linear relationship is in the form $y = mx + b$ and the graph is a straight line.	
line of best fit	A line that best represents a data trend on a scatter plot.	
line of symmetry	A line of symmetry divides a figure into two halves that are mirror-images of each other. A figure may have zero, one, two, or more lines of symmetry. In regular polygons, the number of lines of symmetry match the number of sides of the polygon.	

Vocabulary Word List

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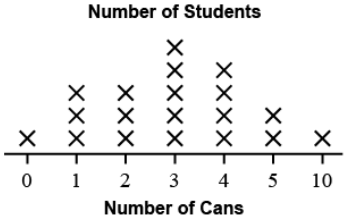
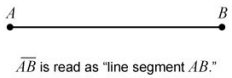
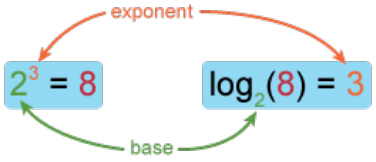
Term	Definition	Example
line plot	A graph that shows the spread of data along a number line using Xs or dots above a number to represent a data set. The Xs show the number of times the value occurs in that data set.	**Example:** The line plot shows the number of cans collected by students in Mr. Lane's class.  The line plot shows that 3 students collected 1 can and only 1 student collected 10 cans.
line segment	A line segment is part of a line between two points. We name the line segment using its endpoints (example line segment AB) and we write it by placing a bar over the labels for the endpoints.	 $\overline{AB}$ is read as "line segment AB."
logarithm	The logarithm of a number is the exponent to which the base of the logarithm must be raised to produce that number.	

Vocabulary Word List

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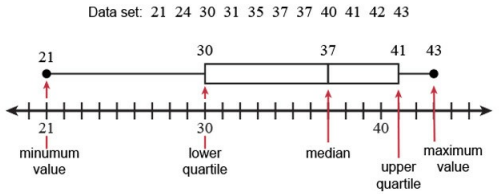
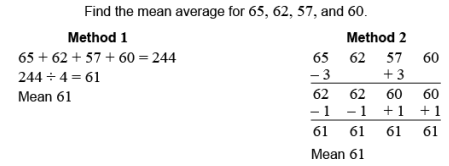
Term	Definition	Example
lower quartile	The median of the lower half of the data. It is also called the 25th percentile of the data set and is labeled Q1.	
mass	The mass of an object is a measure of the amount of matter the object contains. Grams (g) are units of mass. Mass is commonly measured by the weight of the object. Weight can change depending on gravity, but mass is constant. An object weighs less on the Moon than on Earth, but its mass stays the same.	
mean	The mean is a way to describe a set of data with a single value, which is called the measure of central tendency. The mean, also called the arithmetic mean, is an average of a set of data. To calculate the mean, find the sum of the numeric values and divide by the number of data values. A second way to calculate the mean is to add and subtract the same number from different values until they are all the same.	

Vocabulary Word List

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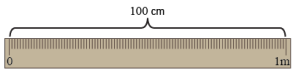
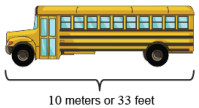
Term	Definition	Example
mean absolute deviation	In a set of data, the average distance between each data value and the mean; also seen as the acronym MAD.	**Example:** Find the Mean Absolute Deviation (MAD) for the data set 90, 100, 95, 80, and 85. Step 1: Find the mean of the values. $\text{mean} = \frac{\text{sum of the values}}{\text{number of values}} = \frac{90+100+95+80+85}{5} = \frac{450}{5} = 90$ Step 2: Find the distance of each data value from the mean. $\lvert 90-90 \rvert = \lvert 0 \rvert = 0$ $\lvert 100-90 \rvert = \lvert 10 \rvert = 10$ $\lvert 95-90 \rvert = \lvert 5 \rvert = 5$ $\lvert 80-90 \rvert = \lvert -10 \rvert = 10$ $\lvert 85-90 \rvert = \lvert -5 \rvert = 5$ Distance from the Mean Step 3: Find the mean of the distances. $\text{mean} = \frac{\text{sum of the values}}{\text{number of values}} = \frac{0+10+5+10+5}{5} = \frac{30}{5} = 6$ The MAD of the data set 90, 100, 95, 80, and 85 is 6.
median	The median is a way to describe a set of data with a single value where half of the numbers are greater than the median and half of the numbers are less than the median. The median of a set of data that is arranged in order from the least to the greatest value is the middle value. If there is an odd number of data values, the median is the middle value. If there is an even number of data values, the median is the average of the two middle values.	2 2 4 5 6 7 8 8 10 12 15 MEDIAN: 7 5 5 7 8 8 9 10 11 13 15 MEDIAN: 8.5 8 + 9 = 17, 17 ÷ 2 = 8.5 Half the numbers are less than the median and half of the numbers are greater than the median.
meter	The base unit of length for the metric system. One meter is equal to 100 centimeters.	**Example:** A meter stick is often used to measure short lengths, such as the height of a desk or the width of a door. The measurements on a meter stick are in centimeters (100 cm in 1 meter).  **Example:** A school bus is about 10 meters long.  10 meters or 33 feet

Vocabulary Word List

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Term	Definition	Example
metric system	The Metric system is a system of measurement of length, mass, and capacity. The basic unit of length is the meter. The unit of mass is the gram. The unit of capacity is the liter. The ratio between the units of measurement are multiples of 10. For example: 10 millimeters = 1 centimeter.	**Metric System** Unit / Prefix / Symbol tenth / deci / d hundredth / centi / c thousandth / milli / m millionth / micro / μ
mile	A standard unit of measurement for length in the US customary system.	**Example:** 1 mile is equal to 5,280 feet. **Example:** Beth ran one mile on the track in nine minutes.  **Example:** The distance between the Lincoln Memorial and the Capitol is about 2 miles. 
mode	A way to describe a set of data with a single value. The mode is the number in the data set that occurs most often. There can be more than one mode. Two modes is called bi-modal. There can also be no mode.	**MODE** **Data set:** 5 5 5 5 6 7 7 9 11 **Mode:** 5 **Data set:** 2 3 3 3 4 5 6 7 7 7 8 **Mode:** 3, 7 **Data set:** 8 9 11 12 13 15 18 21 24 30 **Mode:** none

Vocabulary Word List

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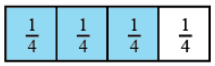
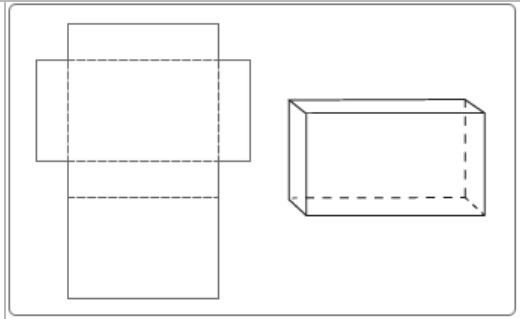
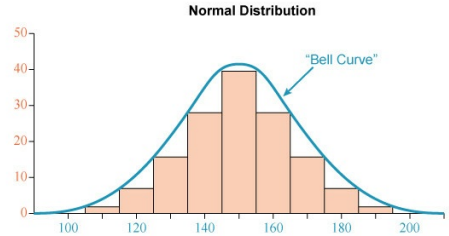
Term	Definition	Example
model	To represent mathematical ideas and relationships using drawings, objects, graphs, or equations.	**Example:** Model the fraction $\frac{3}{4}$ using fraction strips.  This model shows 3 out of the 4 parts of the rectangle shaded.
multiple	A multiple of a number is the product of a given whole number and a whole number or integer. If the given whole number is 4, then 12 is a multiple of 4 because 4×3 = 12, and 32 is a multiple of 4 because 4×8 = 32.	Multiples of 4: 4, 8, 12, 16, 20, 24 …
multiplicative identity	The multiplicative identity is the number 1, because any number times 1 is equal to itself. (See identity property of multiplication.)	$10 \times 1 = 10$ $2.5 \times 1 = 2.5$ $-6 \times 1 = -6$ 1 is the multiplicative identity because 1 multiplied by any number is equal to that number.
multiplicative inverses	Two numbers whose product is 1. For any non-zero number, the multiplicative inverse is the reciprocal.	$\frac{1}{2}$ is the multiplicative inverse of 2 because $\frac{1}{2} \times 2 = 1$. 3 is the multiplicative inverse of $\frac{1}{3}$ because $3 \times \frac{1}{3} = 1$.

Vocabulary Word List

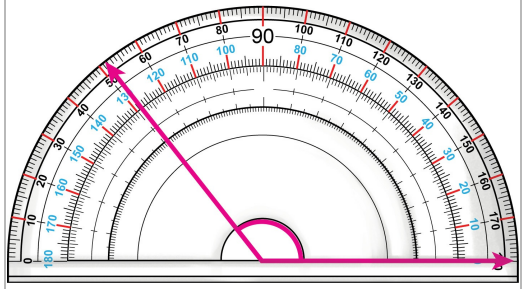
Grades 9-12

Term	Definition	Example
net	A two-dimensional pattern that can be folded to form a three-dimensional figure.	
normal distribution	Data that is symmetrically distributed around its mean. Half of the data are to the left of the mean and half are to the right of the mean. When graphed it is a bell-shaped curve. The mean, median, and mode are equal. The graph is also informally called the bell curve or normal curve.	

Vocabulary Word List

Grades 9-12

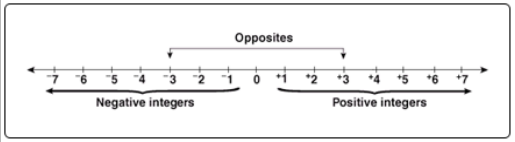
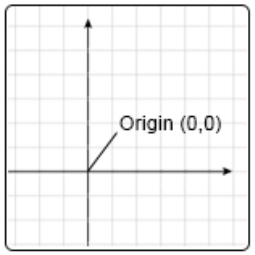
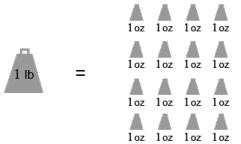
imagine plus math

Term	Definition	Example
obtuse angle	An angle with a measure greater than 90° and less than 180°.	
operation	An act upon two numbers to produce a number. The four basic operations of arithmetic are addition, subtraction, multiplication, and division. The resulting numbers produced are called sum, difference, product and quotient. These are binary operations because they involve adding, subtracting, multiplying or dividing only two numbers at a time.	**Four Basic Operations** Operation | Variable Example | Result | Numeric Example Addition | $a + b = c$ | c is a sum | $4 + 5 = 9$ Subtraction | $a - b = c$ | c is a difference | $5 - 4 = 1$ Multiplication | $a \times b = c$ | c is a product | $3 \times 4 = 12$ Division | $a \div b = c$ | c is a quotient | $9 \div 3 = 3$

Vocabulary Word List

Grades 9-12

imagine plus math

Term	Definition	Example
opposites	Opposites are two numbers with a sum of zero. Opposites are also called additive inverses. On a number line, opposites are the same distance from zero but on opposite sides of zero. The opposite of a positive number is a negative number, and the opposite of a negative number is a positive number. The number zero is its own opposite.	
origin	The point where the horizontal and vertical axes intersect on a coordinate plane. The origin has the coordinate (0, 0).	
ounce	A standard unit of measurement for mass in the US customary system which is often used for measuring weight; abbreviated as oz.	**Example:** There are 16 ounces in 1 pound.  **Example:** Five US quarters weigh about 1 ounce. 
outcome	A possible result of a probability experiment.	

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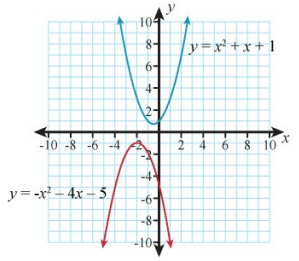
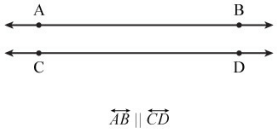
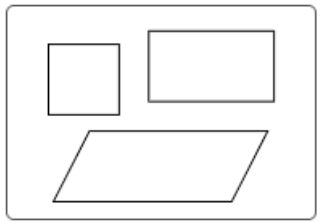
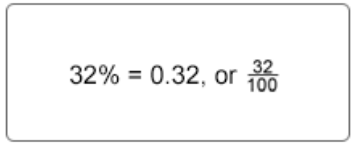
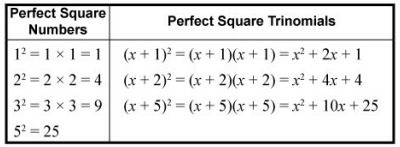
Term	Definition	Example
parabola	A parabola is a set of points that are equidistant from a point, called the focus, and a line called the directrix. The graph of a quadratic equation in the form $y = ax^2 + bx + c$ forms a parabola.	
parallel lines	Lines in the same plane that never intersect. The symbol for parallel is ∥. We say Line AB ∥ Line CD.	
parallelogram	A quadrilateral in which both pairs of opposite sides are parallel.	
percent	Percent means "Per Hundred." It is a ratio of a number to 100 with a percent sign %. For example 25% means 25 per hundred.	
perfect square	A whole number or algebraic expression that can be factored into exactly two identical factors.	

Vocabulary Word List

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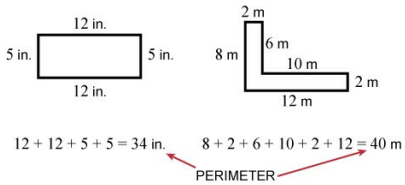
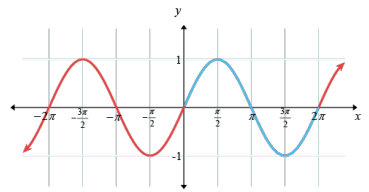
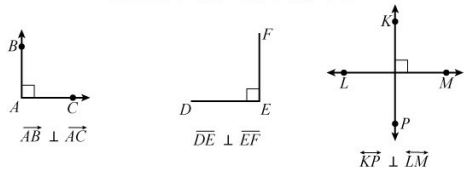
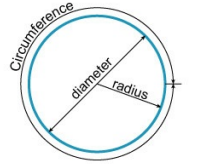
Term	Definition	Example
perimeter	The sum of the lengths of all of the sides of a polygon. The sides are measured in linear units such as feet, yards, or meters.	
period	A length of time that starts and ends; the distance required for a function to complete one full cycle.	**Example:** Juan's math period lasts from 8 a.m. to 8:45 a.m. **Example:** The period of a sine wave is the length of one cycle which is equal to 2π because the sine wave repeats every 2π units. 
perpendicular	Two lines, rays, or line segments that intersect to form right angles. To indicate that they are perpendicular, a little square is placed at the intersection.	Perpendicular rays, lines, and segements  $\perp$ the symbol for perpendicular It is read as "is perpendicular to".
pi (π)	A Greek letter representing the constant ratio of the circumference of any circle to its diameter. Pi is an irrational number so the decimal representation is infinite and nonrepeating, but it is commonly approximated by 3.14 or $\frac{22}{7}$.	 $\frac{\text{Circumference}}{\text{Diameter}} = \pi = 3.14159...$

Vocabulary Word List

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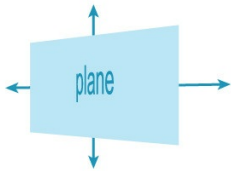
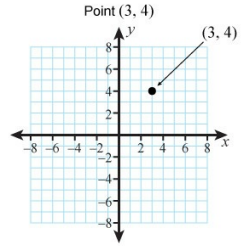
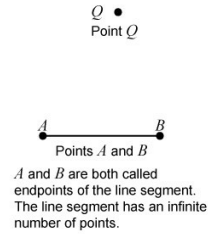
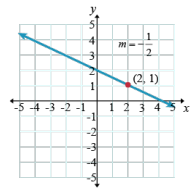
Term	Definition	Example
plane	A flat, two-dimensional non-curved surface that extends infinitely far. It has length and width but no thickness.	
point	It is an exact location. It has no size, only position. We use dots to represent points. Each point on the coordinate plane has two coordinates and is written as an ordered pair.	 
point-slope form (of a line)	An equation in the form $y - y_1 = m(x - x_1)$ representing a linear relationship, where m is the slope of the line and (x_1, y_1) is any coordinate pair on the line.	**Example:** Given a slope of $-\frac{1}{2}$ and the point $(2, 1)$, Randall wrote the equation in point-slope form.  $y-1=-\frac{1}{2}(x-2)$

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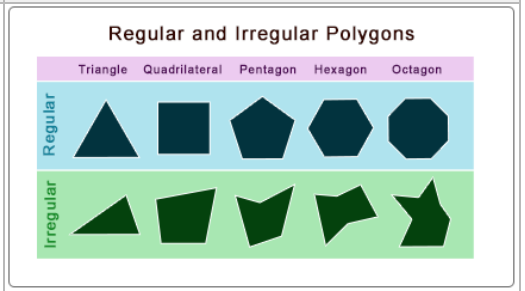
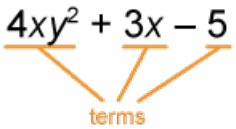
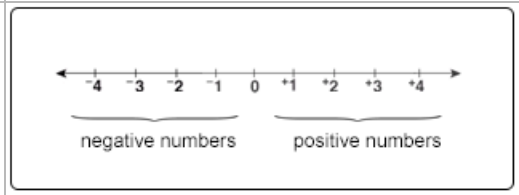
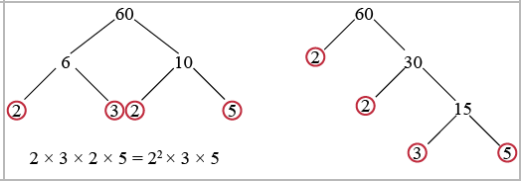
Term	Definition	Example
polygon	A polygon is a closed, two-dimensional figure formed by line segments so that each of the segments intersects exactly two other segments at their endpoints. The line segments are called sides of the polygon. A polygon has three or more sides.	
polynomial	An expression that is a sum and/or a difference of two or more terms. A polynomial with two terms is a binomial and a polynomial with three terms is a trinomial.	
positive number	A number with a value greater than zero. On a horizontal number line, positive numbers are located to the right of zero. A positive number may have a plus sign before it. A number without a plus sign is positive.	
powers of ten	The number obtained by raising 10 to a whole-number power. The exponent tells how many times 10 is a factor.	$10^1 = 10$ $10^2 = 100$ $10^3 = 1{,}000$ $10^4 = 10{,}000$
prime factorization	Factoring a number into its prime factors. Each whole number has exactly one set of prime factors.	

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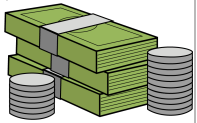
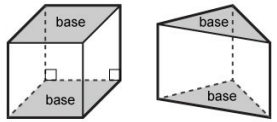
Term	Definition	Example
prime number	A whole number with exactly two factors: the number itself and 1. The number 1 is not a prime number because it has only one factor.	 5 is a prime number
principal	The amount of money that is invested, deposited, borrowed, or loaned.	$500 invested at a simple interest rate of 5% computer yearly. After one year you have $500 + $25 = $525. 
prism	A three-dimensional shape with two parallel congruent bases that are polygons and lateral faces that are rectangles or parallelograms. The shape of the bases gives the prism its name. Example. Triangular prism, hexagonal prism.	
probability	A number given to describe the chance of an event occurring. It is determined by dividing the number of favorable outcomes by the total number of all possible outcomes. The probability will have a value from zero to one. A probability of zero means the event cannot occur and a probability of one means the event is certain to occur.	 **Probability of getting** 6 **is** $1 \div 8$ **or** $\frac{1}{8}$  **Probability of getting** 4 **is** $1 \div 6$ **or** $\frac{1}{6}$

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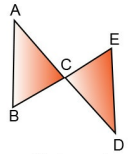
Term	Definition	Example
profit	To obtain an advantage or benefit; the money earned after deducting expenses from the total income.	**Example:** Adam profits from practicing his violin because he becomes a better violin player.  **Example:** Nayo collected $500 selling hot cocoa. It cost her $100 for the cocoa mix, cups, and water. She made a profit of $400. Income − Expenses = Profit Cocoa Sold − Cost of Supplies = Profit $500 − $100 = $400
proof	A proof in mathematics is a logical argument showing that a mathematical relationship is true. Only relationships that are known to be true can be used as reasons in a proof. Definitions, postulates, and things that have been proved previously can be used as reasons in proofs.	 **Given:** C is the midpoint of $\overline{AD}$ C is the midpoint of $\overline{BE}$ **Prove:** $\Delta ABC \cong \Delta DEC$ **Statements** / **Reasons** 1. C is the midpoint of $\overline{AD}$; C is the midpoint of $\overline{BE}$ — 1. Given 2. $\overline{BC} \cong \overline{EC}; \overline{AC} \cong \overline{DC}$ — 2. Midpoint of a segment divides the segment into two congruent segments. 3. $\angle ACB \cong \angle DCE$ — 3. Vertical angles are congruent. 4. $\Delta ABC \cong \Delta DEC$ — 4. SAS: If two sides and the included angle of one triangle are congruent to two sides and the included angle of anotehr triangle, the triangles are congruent. QED

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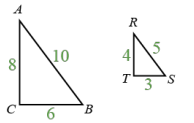
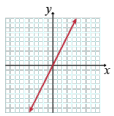
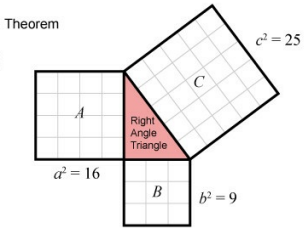
Term	Definition	Example
proportional	Describes quantities that correspond in size or amount, or have the same ratio.	**Example:** Triangles ABC and RST are proportional because their corresponding side lengths have a ratio of $2:1$.  $\frac{AB}{RS} = \frac{10}{5} = \frac{2}{1}$ $\frac{BC}{ST} = \frac{6}{3} = \frac{2}{1}$ $\frac{CA}{TR} = \frac{8}{4} = \frac{2}{1}$ **Example:** A proportional replationship can be used to double a recipe. If a recipe needs 1 cup of sugar for every 3 cups of milk, it will need 2 cups of sugar for 6 cups of milk.  **Example:** In the equation $y = 2x$, there is a proportional relationship between x and y. Proportional relationships are shown on a graph with a straight line that passes through $(0, 0)$. | x | 1 | 2 | 3 | 4 | 10 | | y | 2 | 4 | 6 | 8 | 20 | 
pythagorean theorem	A property that describes the relationship among the lengths of the sides of right triangles.The square of the length of the hypotenuse is equal to the sum of the squares of the legs.	Pythagorean Theorem $a^2 + b^2 = c^2$ $16 + 9 = 25$ 

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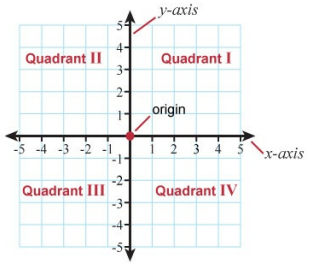
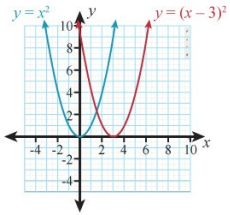
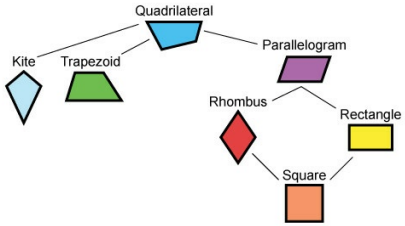
Term	Definition	Example
quadrants	The four sections into which the coordinate plane is divided by the horizontal and vertical axes. The axes are not parts of the quadrants.	
quadratic (equation)	A polynomial equation containing a variable to the second degree (power 2). A quadratic function is a function whose value is given by a quadratic polynomial. The solution is a set of ordered pairs (x, y). Its graph is a parabola.	**Quadratic Equations:** $ax^2 + bx + c = 0$ $2x^2 + 4x - 2 = 0$ $y = x^2$ $y = (x - 3)^2$ 
quadratic formula	A formula for finding the solutions of quadratic equations.	Quadratic Equation $\longrightarrow ax^2 + bx + c = 0$ Quadratic Equation $\longrightarrow x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
quadrilateral	Polygons with four sides are called quadrilaterals. Different quadrilaterals are named for the relationships of angles and sides.	

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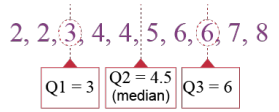
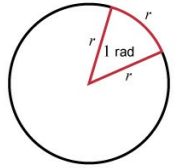
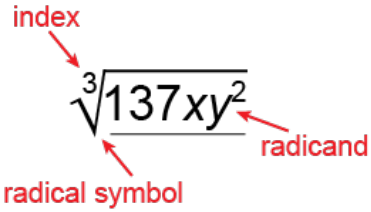
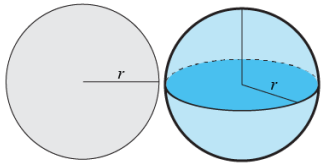
Term	Definition	Example
quartile	Each of the values that equally distribute a data set into quarters.	**Example:** The diagram shows the distribution of the first quartile (Q1), the median (Q2), and the third quartile (Q3) of the data set {2, 2, 3, 4, 4, 5, 6, 6, 7, 8}.  The lower quartile, Q1, is the median of the lower half of the data set. The median, Q2, is the middle value of the data set if there is an odd number of data values. If there is an even number of data values, the median is the average of the two middle values. The upper quartile, Q3, is the median of the upper half of the data set.
radian	A unit used to measure angles. The length of the arc is equal to the radius of the circle. A central angle with sides and an intercepted arc that are all the same length is equal to 1 radian (1 rad).	 $180° = \pi$ radians $360° = 2\pi$ radians
radical expression	An expression that contains a radical symbol such as a square root or cube root sign.	
radius	The radius of a circle is a line segment that connects the center of a circle to any point on the circle. The radius of a sphere is a line segment that connects the center of the sphere with any point on the sphere. The length of the line segment is also referred to as the radius.	

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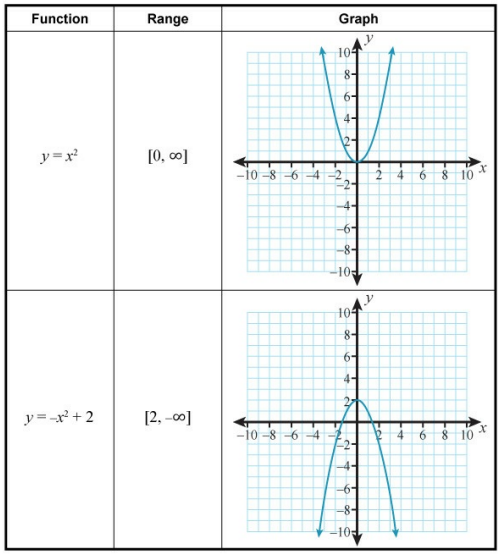
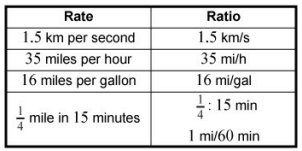
Term	Definition	Example
range	The difference between the least measurement and the greatest measurement in a data set. The range is also called the spread of data in a data set.	Data set: 8 9 11 12 13 15 18 21 24 30 Range: $30 - 8 = 22$
range of a function	The set of all output values of a function, all *y*-values of a function.	
rate	A ratio that compares two quantities that are measured in different units.	
ratio	A comparison of two quantities. Ratios may be written in one of three ways: *a* to *b*; *a* : *b*; or $\frac{a}{b}$ Ratios may be an actual comparison (30 men to 15 women) or an average comparison (2 men for every woman).	 The ratio of baseballs to basketballs is 3 : 4, 3 to 4, and $\frac{3}{4}$. The ratio of baseballs to total balls is 3 : 7, 3 to 7, and $\frac{3}{7}$.

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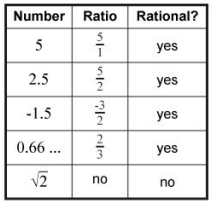
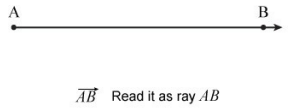
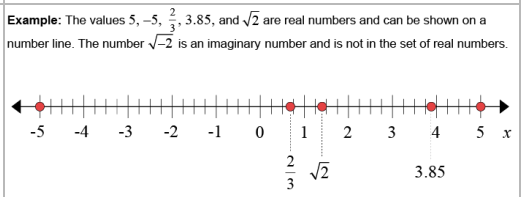
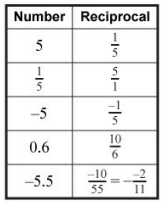
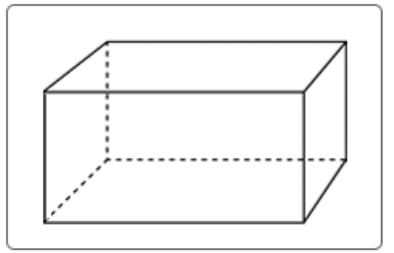
Term	Definition	Example
rational number	A number that can be written as a ratio *a/b* where *a* and *b* are integers and b does not equal zero. Every integer can be expressed as *a*/1 so every integer is a rational number.	
ray	A part of a line with one endpoint and that extends infinitely in one direction.	
real number	All rational and irrational numbers; includes whole numbers, integers, fractions, and decimals. Does not include imaginary numbers.	
reciprocal	One of a pair of numbers whose product is 1. For any nonzero number x, the reciprocal is $1/x$. The number 0 has no reciprocal. The reciprocal of a fraction a/b is b/a.	
rectangular prism	Also called a right rectangular prism. It is a prism with top and bottom bases that are congruent and parallel rectangles. All of the faces are rectangles.	

Vocabulary Word List

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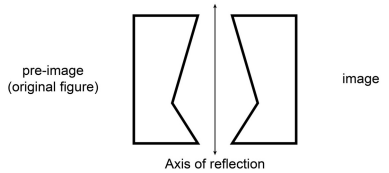
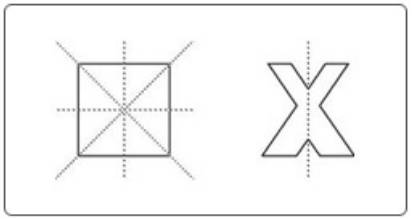
Term	Definition	Example
recursive formula	A formula used to find terms in a sequence using one or more previous terms.	**Recursive Formula (arithmetic sequence)** $a_n = a_{n-1} + d$ $a_n = n^{th}$ term $a_1 = 1^{st}$ term n = number of terms, $n > 1$ d = common difference **Recursive Formula (geometric sequence)** $a_n = a_{n-1} \cdot r$ $a_n = n^{th}$ term $a_1 = 1^{st}$ term n = number of terms, $n > 1$ r = common ratio **Example:** To find the fourth term in the arithmetic sequence $3, 8, 13, \ldots$, Marco used the recursive formula $a_4 = a_3 + 5$ to determine that the fourth term is 18. $a_4 = a_3 + 5$ $= 13 + 5$ $= 18$ **Example:** Write the first 5 terms of the geometric sequence whose first term is $a_1 = 4$ and has a common ratio $r = 2$. $a_1 = 4$ $a_2 = a_1 r = 4(2) = 8$ $a_3 = a_2 r = 8(2) = 16$ $a_4 = a_3 r = 16(2) = 32$ $a_5 = a_4 r = 32(2) = 64$
reflection	A transformation in which a geometric figure is reflected across a line creating a mirror image. The line is called the axis of reflection.	
reflection symmetry	A figure has reflectional symmetry if, when folded along a line, the two halves coincide exactly. The line that divides the figure into halves is called the line of symmetry. A figure may have zero, one, or more than one line of symmetry.	
reflexive property of equality	The reflexive property of equality states that any number is always equal to itself. For every number x, $x = x$.	$1 = 1$ $1.5 = 1.5$ $0 = 0$ $-8 = -8$ $\frac{1}{2} = \frac{1}{2}$ $x = x$

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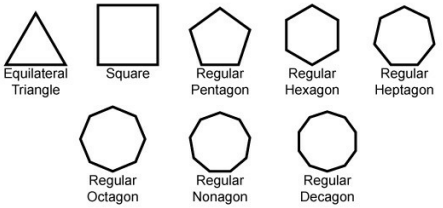
Term	Definition	Example
regular polygon	A regular polygon is a polygon that is equilateral (all sides equal in length and equiangular (all angles have the same measure.	
repeating decimal	A repeating decimal is a rational number that has decimal digits that repeat in a pattern without end. To show the part that repeats, a bar is placed over the digits that repeat.	$\frac{1}{3} = 0.\overline{3}$ $\frac{2}{3} = 0.\overline{6}$ $\frac{1}{7} = 0.\overline{142857}$
revenue	Sales; income for a company or organization.	**Example:** A company's revenue this year was \$10 million, and the company's expenses were \$6 million. This means the company made a profit of \$4 million. Revenue \$10 million − Expenses − \$6 million Profit \$4 million **Example:** By changing the packaging design, the snack company hopes to increase its revenue by 5%. 

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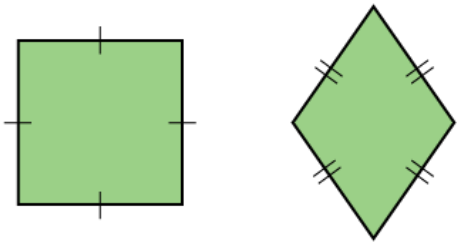
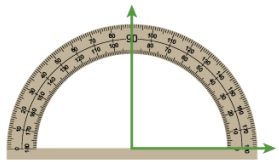
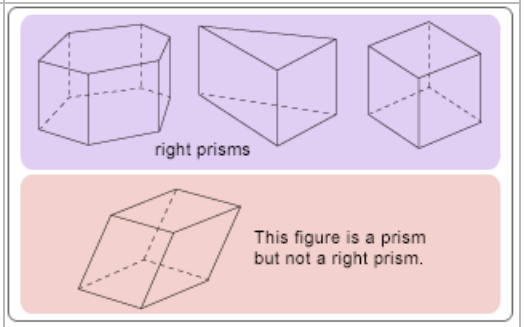
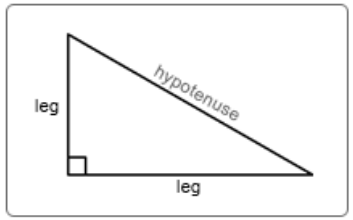
Term	Definition	Example
rhombus	A quadrilateral with four congruent sides. A rhombus with right angles is a square.	
right angle	An angle that measures 90°.	
right prism	A prism whose lateral faces form right angles with the bases. If the faces are not at right angles to the bases, then the prism is called an oblique prism.	
right triangle	A triangle that has one right or 90° angle.	

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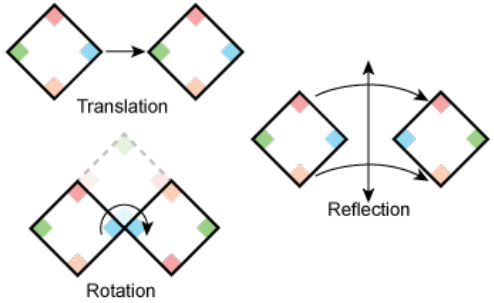
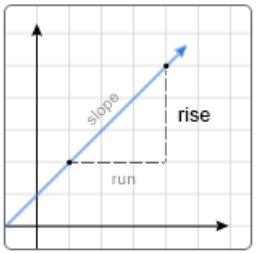
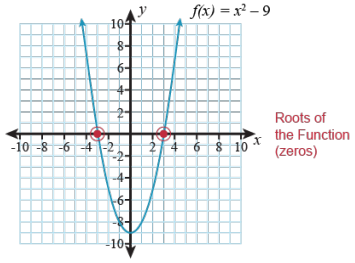
Term	Definition	Example
rigid transformation	A transformation that results in an image that is congruent to the original figure. Examples of rigid transformations are translations, reflections, rotations.	
rise	The rise is the vertical change between two points on a graph of a linear equation. The difference in the *y*-coordinates of two points is the rise. It is the vertical distance from the *y*-coordinate of one point to the *y*-coordinate of a second point.	
roots of a function	The solution to a function where the input values result in an output value of 0, $f(x) = 0$. On the graph of the function, the roots are the *x*-coordinates where the graph of the function crosses the *x*-axis.	

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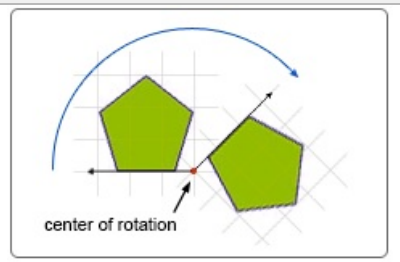
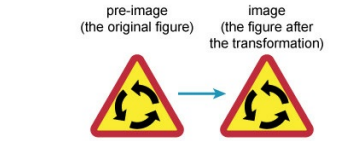
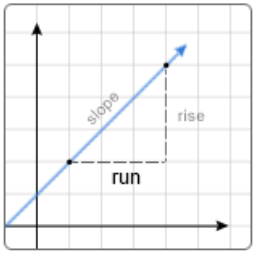
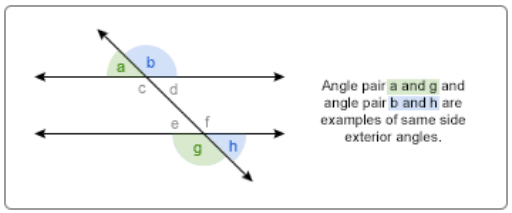
Term	Definition	Example
rotation	A rotation is a transformation that turns a figure around a fixed point by a specified number of degrees. The fixed point is called the center of rotation. The resulting figure is congruent to the original figure.	
rotational symmetry	A figure has rotational symmetry if it can be rotated less than a full turn (360°) around a central point so that the image matches the preimage.	 The roundabout traffic sign has rotational symmetry because the image is the same when rotated by one third (120°) of a full turn about its center.
run	The horizontal change between two points on a line. It is the horizontal distance from the x-coordinate of one point on the line to the x-coordinate of a second point on the same line.	
same side exterior angles	When a transversal intersects two lines, the same-side exterior angles are angles that are on the same side of the transversal and are not between the lines being crossed by the transversal.	

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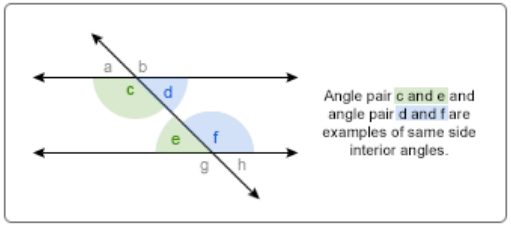
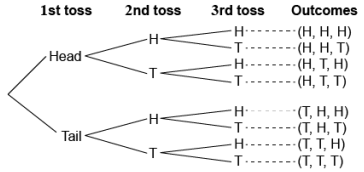
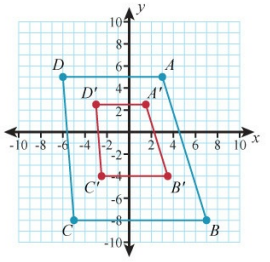
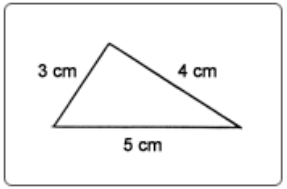
Term	Definition	Example
same side interior angles	When a transversal intersects two lines, the same-side interior angles are angles that are on the same side of the transversal and are between the lines being crossed by the transversal.	 Angle pair c and e and angle pair d and f are examples of same side interior angles.
sample space	In a probability experiment, the set of all possible outcomes.	 The sample space for tossing a coin three times. The 8 outcomes make up the sample space.
scale factor	A number used to multiply the lengths of a figure to stretch or shrink it to create a similar image. The scale factor is the ratio of the corresponding lengths in the image and the original figure (preimage).	 The scale factor $\frac{1}{2}$ was used to multiply the lengths of $ABCD$ (preimage) to create the similar figure $A'B'C'D'$ (image).
scalene triangle	A triangle with no two sides the same length.	

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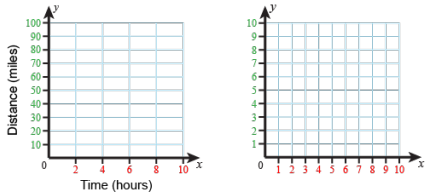
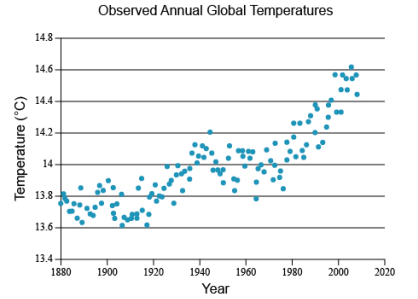
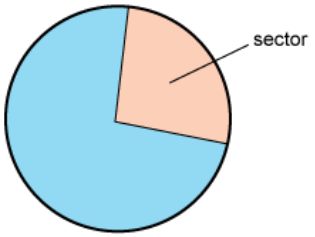
Term	Definition	Example
scale (on a graph)	The scale is the size of the units on an axis of a coordinate grid or number line. The numbers are placed at fixed distances and tell how many.	 The horizontal scale on this graph is 2 and the vertical scale on this graph is 10. The horizontal scale on the x-axis is 1 and the vertical scale on the y-axis is also 1.
scatter plot	A graph of plotted points that show the relationship between two sets of data.	 The scatter plot displays the relationship between the annual global temperatures and years from 1880 to 2010 using data from NASA.
sector	Part of a circle formed by a central angle and the arc it subtends.	

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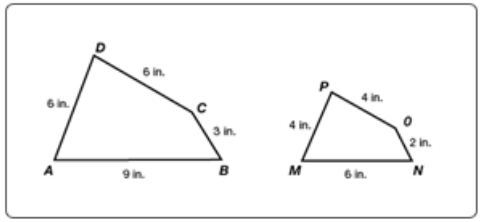
Term	Definition	Example
sequence	A list of numbers arranged according to a pattern. An infinite sequence continues without end. A finite sequence ends. (See arithmetic sequence or geometric sequence.	Sequence: 3, 5, 7, 9, ... 1st term, 2nd term, 3rd term, 4th term, three dots means goes on forever (infinite) ("term," "element," or "member" mean the same thing)
similar figures	Objects or figures that have the same shape. The ratios of the lengths of their corresponding sides are equal, making the figures proportional. Their corresponding angles are congruent. Every figure is similar to itself.	
simple interest	The amount of money paid or earned from an original investment determined by an interest rate over a period of time.	**Simple Interest Formula:** $I = prt$ I = interest p = initial investment or loan amount r = interest rate t = time (years) **Example:** Rita borrowed $7,000 to buy a car at a 6% simple interest rate, to be paid back over 5 years. Rita will pay a total of $2,100 in interest over the 5 years. $I = prt$ $I = 7{,}000(0.06)(5)$ $I = \$2{,}100$ **Example:** Brett invested $2,000 at a 5% simple interest rate for a 1-year period. He earned $100 in simple interest on his investment. $I = prt$ $I = 2{,}000(0.05)(1)$ $I = \$100$

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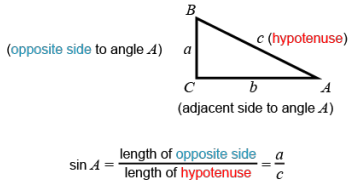
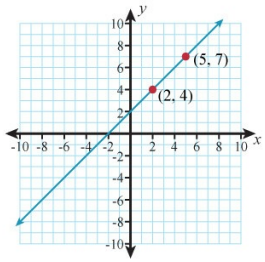
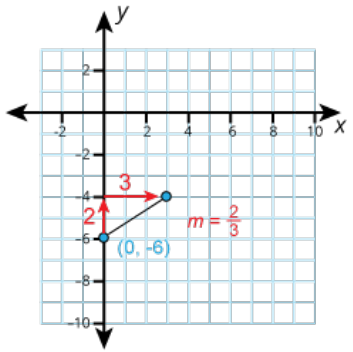
Term	Definition	Example
sine ratio	In a right triangle, the sine of an angle is the ratio of the length of the opposite leg to the length of the hypotenuse. The sine of angle A is written as sin$A$.	 $\sin A = \frac{\text{length of opposite side}}{\text{length of hypotenuse}} = \frac{a}{c}$
slope	A number that represents the unit rate of change in a linear relationship. It is a measure of the steepness of the line for the graph of a linear equation. The slope is the ratio of the change in y to the change in x. Slope can be calculated by dividing the rise (change in y-coordinates by the run (change in x-coordinates. In the linear equation $y = mx + b$, the slope is represented by m.	 $\text{slope } m = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$ $= \frac{7-4}{5-2}$ $= \frac{3}{3}$ $= \frac{1}{1}$
slope-intercept form of an equation	The equation in the form $y = mx + b$ represents a linear relationship with a graph that is a straight line, where m is the slope of the line and b is the y-intercept.	 $y = \frac{2}{3}x - 6$

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Term	Definition	Example
spread (of data)	The difference between the least value and the greatest value in a data set, also called the range.	**Examples:** The table represents the length of pencils measured to the nearest inch and the number of students that have pencils of that length. The spread of the length of pencils is $7 - 4 = 3$ inches, the difference between the greatest length and the least length. Length of Pencil (in.) | Number of Students 4 | |||| 5 | ||| 6 | ~~||||~~ || 7 | ||||
square root	For any numbers a and b, if a^2 equals b, then a is the square root of b. For example, $4^2 = 16$ then 4 is the square root of 16. The symbol $\sqrt{\ }$ is used to indicate square root of a number. For example, the square root of 16 can be written as $\sqrt{16}$.	$\sqrt{9} = 3$ $\sqrt{16} = 4$ $\sqrt{81} = 9$ $a^2 = b$, b is the square root of a. $\sqrt{a} = b$

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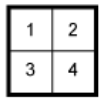
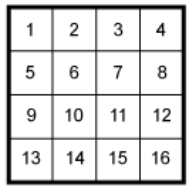
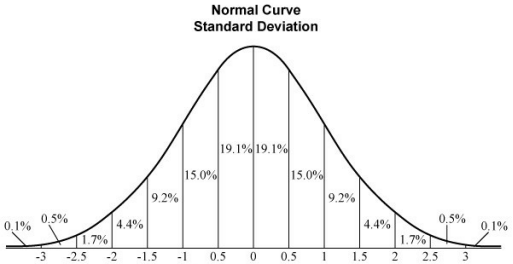
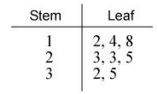
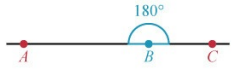
Term	Definition	Example
square (value)	The square of a number is equal to the number multiplied by itself.	2^2  $2 \times 2 = 4$ 3^2  $3 \times 3 = 9$ 4^2  $4 \times 4 = 16$
standard deviation	The standard deviation shows how spread out numbers are from the mean in a data set. The standard deviation is the average amount by which individual data items in a data set differ from the mean of all the data in the set. Its symbol is the Greek letter sigma.	 A Normal Curve distribution, often called a bell curve, is the most commonly obersved probability distribution where 50% of the distribution lies to the left of the mean and 50% lies ot the right of the mean (shown at 0). On this display, each band has a width of 0.5 standard deviation.
stem-and-leaf plot	A table where each data value is split into a "stem" (the first digit or digits) and a "leaf" (the last digit). *It is a way to show the shape of a data distribution.*	12, 23, 35, 23, 14, 25, 32, 18 
straight angle	A straight angle is an angle that measures one-hundred eighty degrees. The rays form a straight line.	 $\angle ABC$ is a straight angle.

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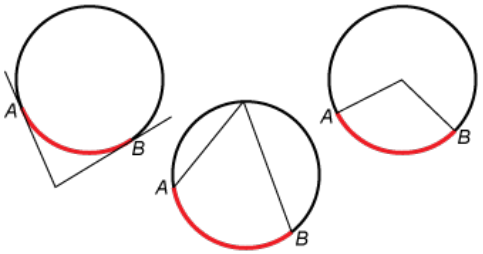
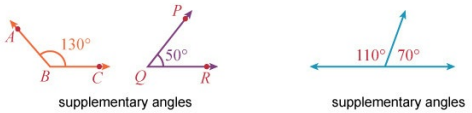
Term	Definition	Example
substitution	Replacing one symbol with another. For example to find the value of y in an equation $y = x + 5$, you can substitute different values for x. Substitute 2 for x and you get $y = 2 + 5$ or $y = 7$.	$y = 2x + 2$ substitute 2 for x $y = 2(2) + 2$ $= 4 + 2$ $= 6$
subtend	To mark off the boundaries of something. An angle subtends the arc of the circle that is between the points where the rays of the angle intersect the circle.	 These angles all subtend arc AB
supplementary angles	Two angles whose measures have a sum of 180°. When the two angles share a common side and vertex together they form a straight angle.	 supplementary angles supplementary angles

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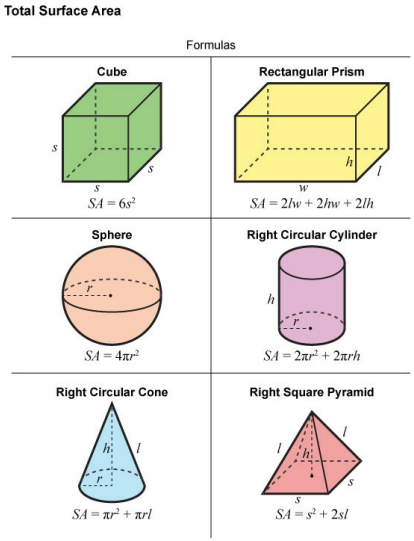
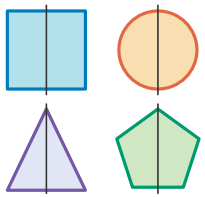
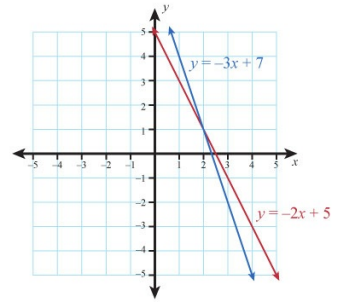
Term	Definition	Example
surface area	The total area of the surface of a solid figure. The surface area is the sum of the areas of all of the surfaces of the shape.	
symmetry	A figure is symmetrical if you can draw a line through it that produces two mirror images. See reflection symmetry and rotational symmetry.	
system of linear equations	Two or more linear equations using the same variables that are considered at the same time. The solution to a system of linear equations will be values for the variables that will make each equation in the system true.	 A system of two equations: $3x + y = 7$ and $2x + y = 5$. The common solution is $(2, 1)$.

Vocabulary Word List

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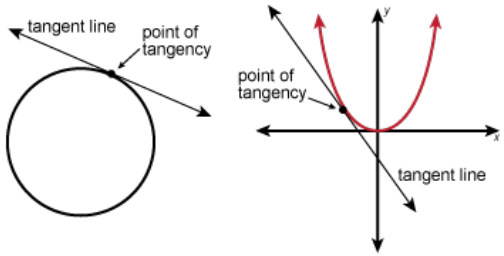
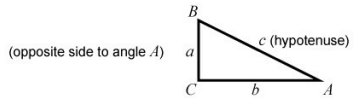
Term	Definition	Example
tangent line	A line that intersects a circle or curve at only one point. The point of intersection is called the point of tangency.	
tangent ratio	In a right triangle, the tangent of an angle is the ratio of the length of the opposite leg to the length of the adjacent leg. The tangent of angle A is written as tan$A$.	 $\tan A = \frac{\text{length of opposite side}}{\text{length of adjacent side}} = \frac{a}{b}$
terminating decimal	A decimal representation of a number that has a finite number of digits.	**Terminating Decimals** $\frac{1}{4} = 0.25$ or $0.250000....$ $\frac{7}{8} = 0.875$ or $0.8750000....$ $8\overline{)7.000}$ = 0.875 64 60 56 40 40 0 zero remainder
theoretical probability	The likeliness of an event happening based on all of the possible outcomes.Theoretical probability is what we expect to happen, whereas experimental probability is what actually happens when we try it out.	**Theoretical Probability**  • The probability of spinning and getting blue. • So blue is the favorite outcome. • There is 1 way to get blue. • There are 3 possible outcomes: R, G, B. • Possible outcomes are equally likely. • P(Blue) = $\frac{1}{3}$

Vocabulary Word List

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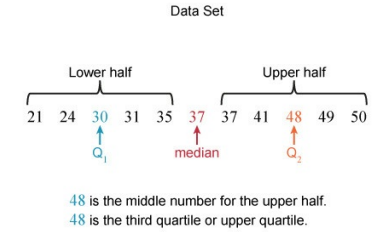
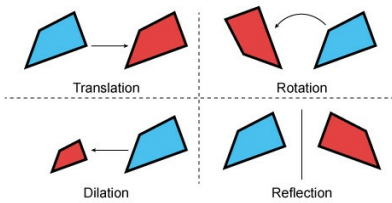
Term	Definition	Example
third quartile	In a set of data, the third quartile is the middle number for the upper half of the data. The upper half is between the greatest number in the data set and the median. It is labeled Q3.	
transformation	A transformation is the result of taking a figure and creating an image by translation (slide), reflection (flip), rotation (turn) and dilation (stretch or shrink).	

Vocabulary Word List

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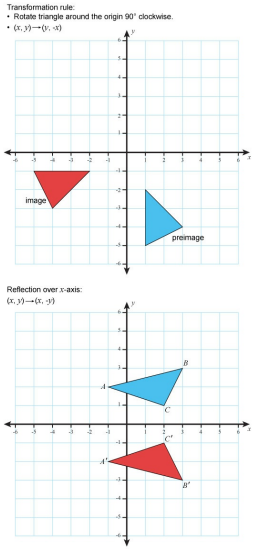
Term	Definition	Example
transformation rule	A description in words or symbols that describes how a transformation acts on the original figure (the preimage). The rule is usually written in terms of the *x*- and *y*-coordinates of the points of the figure being transformed and an arrow pointing to the resulting *x*- and *y*-coordinates of the points of the transformed figure (image).	

Vocabulary Word List

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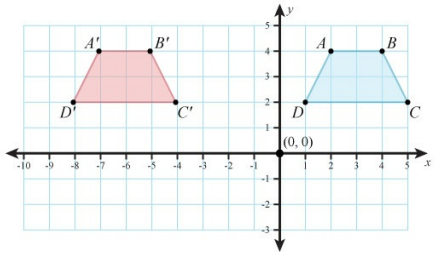
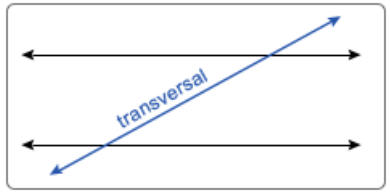
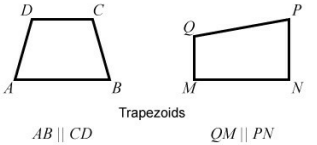
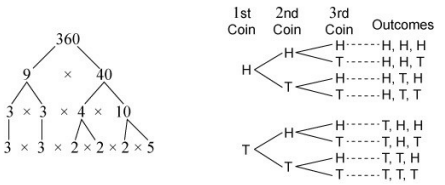
Term	Definition	Example
transitive property of equality	For any real numbers a, b, and c, if $a = b$ and $b = c$, then $a = c$. If two quantities are equal to the same quantity the two quantities are equal to each other.	If $x = y - 4$ and $y - 4 = 7$, then $x = 7$.
translation	A translation is a transformation that moves a figure or object a certain distance without changing it in any other way. It is sometimes called a "slide." The resulting image is congruent to the original figure.	
transversal	A line that intersects two or more other lines.	
trapezoid	A quadrilateral with at least one pair of parallel sides.	
tree diagram	A systematic way to represent combinations of things. Tree diagrams are sometimes used to show all possible outcomes of a probability experiment or to find the prime factorization of a number.	

Vocabulary Word List

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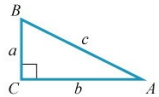
Term	Definition	Example
trial	One round of an experiment. When finding an experimental probability, the more trials that are conducted, the closer the experimental probability will match the theoretical probability.	**Probability Experiment: Toss a coin** Toss Coin | Trial | Outcome 1 | H 2 | H 3 | T 4 | T 5 | H
trigonometric ratio	Ratios of lengths of pairs of sides in a right triangle. There are six basic trigonometric ratios: sine (sin), cosine (cos), tangent (tan), secant (sec), cosecant (csc), and cotangent (cot).	 **Trigonometric Ratios** $\sin A = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{a}{c}$ | $\sin B = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{b}{c}$ $\cos A = \frac{\text{adjacent}}{\text{hypotenuse}} = \frac{b}{c}$ | $\cos B = \frac{\text{adjacent}}{\text{hypotenuse}} = \frac{a}{c}$ $\tan A = \frac{\text{opposite}}{\text{adjacent}} = \frac{a}{b}$ | $\tan B = \frac{\text{opposite}}{\text{adjacent}} = \frac{b}{a}$
trinomial	A polynomial expression with three terms.	terms $4x + 7y^2 - 8$ Trinomial (3 terms)

Vocabulary Word List

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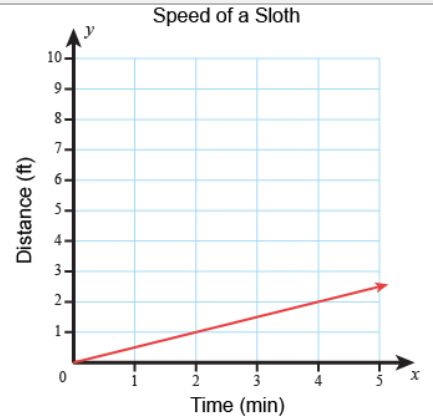
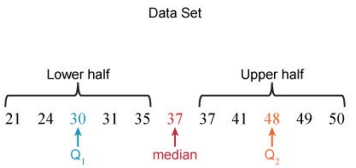
Term	Definition	Example
unit rate	A rate in which the second unit of the ratio is one unit of measurement such as miles per 1 hour. The graph of a unit rate equation is a straight line through the origin.	 The graph represents a unit rate. $d = \frac{1}{2}t$, where d = distance in feet and t = time in minutes. The sloth's rate is $\frac{1}{2}$ foot per 1 minute.
upper quartile	A number that divides a set of numeric data so that three-quarters, or seventy-five percent, of the data are less than or equal to the number and one-quarter, twenty-five percent, of the data are greater than or equal to the number. It can also be thought of as the median of the upper half of the data.	 48 is the middle number for the upper half. 48 is the third quartile or upper quartile.

Vocabulary Word List

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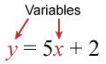
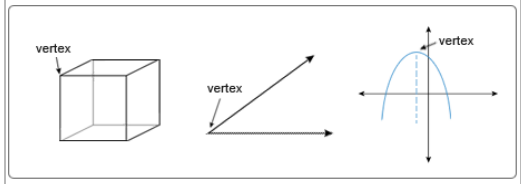
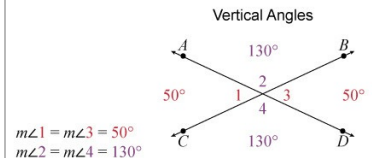
Term	Definition	Example
variable	A letter or symbol used in equations, expressions, and inequalities that represents a number.	
velocity	The speed and direction an object moves.	**Example:** The train's velocity is 200 km/hr to the north. 
vertex	There are several definitions for vertex. (1) A point common to two sides of a polygon. (2) A point common to two edges of a polyhedron such as a prism or pyramid. (3) The apex of the tip of a cone. (4) A common point shared by two sides of an angle. (5) The greatest point or lowest point where the parabola intersects the axis of symmetry of the parabola. The plural of vertex is vertices.	
vertical angle	Angles that are opposite one another at the intersection of two lines. Vertical angles share the same vertex and are congruent.	

Vocabulary Word List

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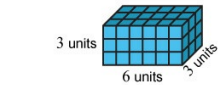
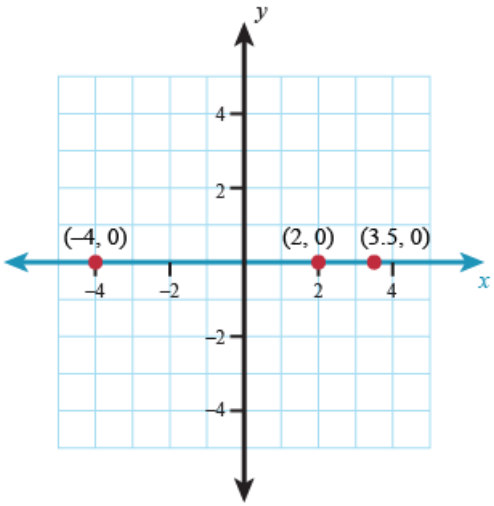
Term	Definition	Example
volume	The measure of the interior space of a three-dimensional figure. Volume is usually measured in cubic units such as cubic centimeters or cubic inches. Capacity is the volume of a container and is measured in units of liquid measure such as liters or fluid ounces.	 The volume of this rectangular prism can be represented by $v = l \cdot w \cdot h = 6 \cdot 3 \cdot 3 = 54$ units cubes.
***x*-axis**	The horizontal number line in a coordinate system. The coordinates of points on the *x*-axis have zero as the *y*-coordinate. Points (2, 0), (-4, 0), and (3.5, 0) are ordered pairs for points on the *x*-axis.	

Vocabulary Word List

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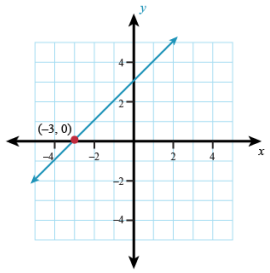
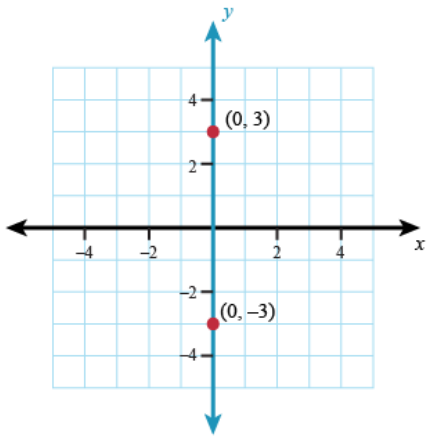
Term	Definition	Example
***x*-intercept**	The point where the graph of a function or equation intersects the *x*-axis in a coordinate system. The coordinates of the *x*-intercept are in the form (*a*, 0).	 The x-intercept of the graph of the equation $y = x + 3$ is the point $(-3, 0)$.
***y*-axis**	The vertical number line in a coordinate system. The coordinates of points on the *y*-axis have zero as the *x*-coordinate.	 Points $(0, 3)$ and $(0, -3)$ are ordered pairs on the y-axis.

Vocabulary Word List

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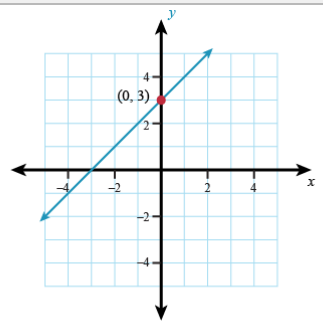
Term	Definition	Example
***y*-intercept**	The y-intercept is the point where the graph of a function or equation intersects the *y*-axis in a coordinate system. The coordinates of the *y*-intercept are in the form (0, *b*). On the graph of a linear equation $y = mx + b$, the *y*-intercept is point (0, *b*). It is the point where $x = 0$.	 The y-intercept of the graph of the equation $y = x + 3$ is the point $(0, 3)$.
zero property	**Zero Property of Addition:** For all numbers, the sum of zero and any number is equal to that number ($n + 0 = n$). It is also called the *Identity Property of Zero in Addition*. **Zero Property of Multiplication:** For all numbers, the product of any number and zero is equal to zero ($n \times 0 = 0$).	**Zero Properties** Zero Property of Multiplication: $a \times 0 = 0$, $10 \times 0 = 0$ Zero Property of Addition: $a + (0) = a$, $0 + a = a$, $10 + 0 = 10$
zeros of a function	The zero of a polynomial function is the *x*-value that makes the function equal to 0. There may be 1, 2, or multiple zeros. It is where the graph of the function intersects the *x*-axis. The points are called roots of the function. The zeros of a function may be real or complex.