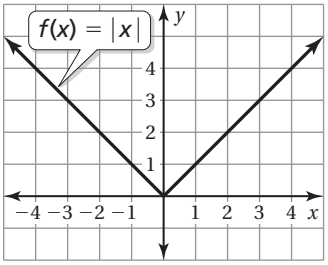
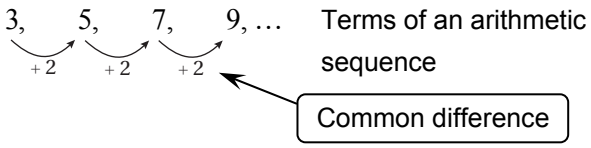
Glossary – Flash Cards

absolute value *Review*	**absolute value equation** *Chapter 1*
absolute value function *Chapter 5*	**absolute value inequality** *Chapter 3*
Addition Property of Equality *Review*	**Addition Property of Inequality** *Review*

An equation that contains an absolute value expression $\lvert x \rvert = 2$ $\lvert x + 1 \rvert = 5$ $3\lvert 2x + 1 \rvert = 6$	The distance between a number and 0 on a number line. The absolute value of a number a is written as $\lvert a \rvert$. $\lvert -5 \rvert = 5$ $\lvert 5 \rvert = 5$
An inequality that contains an absolute value expression $\lvert x \rvert < 7$ $\lvert x - 3 \rvert \geq 5$ $4\lvert 2x + 4 \rvert \leq 16$	A function that has a V-shaped graph that opens up or down; The most basic absolute value function is $f(x) = \lvert x \rvert$. 
If you add the same number to each side of an inequality, the inequality remains true. $a < b$, then $a + c < b + c$. This property is also true for $>$, $\leq$, and $\geq$. $x - 3 > -10$ $+3 \quad +3$ $x > -7$	Adding the same number to each side of an equation produces an equivalent equation. If $a = b$, then $a + c = b + c$. $x - 5 = -1$ $+5 \quad +5$ $x = 4$

Addition Property of Zero *Review*	**arithmetic sequence** *Chapter 5*
Associative Property of Addition *Review*	**Associative Property of Multiplication** *Review*
asymptote *Chapter 11*	**axis of symmetry** *Chapter 8*
base (of a power) *Review*	**binomial** *Chapter 7*

A sequence in which the difference between consecutive terms is the same; This difference is called the common difference.



The sum of any number and 0 is that number.

$$-5 + 0 = -5$$

$$a + 0 = a$$

Changing the grouping of factors does not change the product.

$$(-3 \bullet 4) \bullet 5 = -3 \bullet (4 \bullet 5)$$

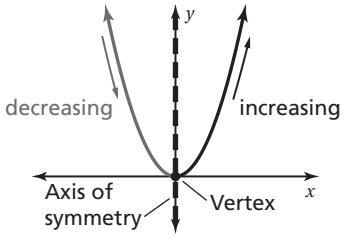
$$(a \bullet b) \bullet c = a \bullet (b \bullet c)$$

Changing the grouping of addends does not change the sum.

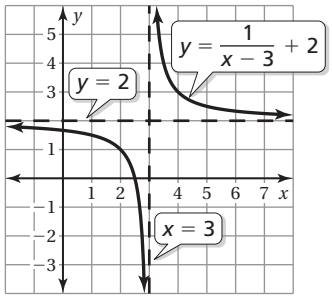
$$(-3 + 4) + 5 = -3 + (4 + 5)$$

$$(a + b) + c = a + (b + c)$$

The vertical line that divides a parabola into two symmetric parts



A line that a graph approaches, but never intersects



A polynomial with two terms

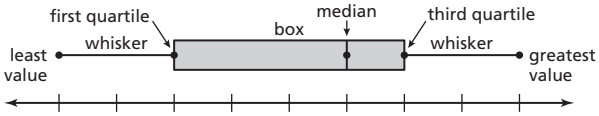
$$x^2 + 3x$$

$$2x - 1$$

The base of a power is the common factor.

See power.

box-and-whisker plot *Chapter 12*	**causation** *Chapter 12*
closed *Chapter 6*	**coefficient** *Review*
common difference *Chapter 5*	**common ratio** *Chapter 6*
Commutative Property of Addition *Review*	**Commutative Property of Multiplication** *Review*

When a change in one variable results in a change in another variable; This produces a strong correlation between the two variables. time spent exercising and the number of calories burned	Displays a data set along a number line using medians; Quartiles divide the data set into four equal parts. The median (second quartile) divides the data set into two halves. The median of the lower half is the first quartile. The median of the upper half is the third quartile.  *See five-number summary.*
The numerical factor of a term that contains a variable In the algebraic expression $-5x + 1$, -5 is the coefficient of the term $-5x$.	A set of numbers is closed under an operation when the operation performed on any two numbers in the set results in a number that is also in the set. The set of integers is closed under addition, subtraction, and multiplication; but not under division.
The ratio between consecutive terms of a geometric sequence *See geometric sequence.*	The difference between consecutive terms of an arithmetic sequence *See arithmetic sequence.*
Changing the order of factors does not change the product. $2 \bullet 8 = 8 \bullet 2$ $a \bullet b = b \bullet a$	Changing the order of addends does not change the sum. $2 + 8 = 8 + 2$ $a + b = b + a$

completing the square *Chapter 9*	**compound inequality** *Chapter 3*
compound interest *Chapter 6*	**conjugates** *Chapter 10*
constant term *Review*	**continuous domain** *Chapter 5*
coordinate plane *Review*	**correlation** *Review*

An inequality formed by joining two inequalities with the word "and" or the word "or."

$x \geq 2$ and $x < 5$

$y \leq -2$ or $y > 1$

$4 < x - 1 < 7$

A method for solving quadratic equations; In this method, a constant c is added to the expression $x^2 + bx$ so that $x^2 + bx + c$ is a perfect square trinomial.

$$x^2 + 6x + 9 = (x + 3)^2$$

$$x^2 + bx + \left(\frac{b}{2}\right)^2 = \left(x + \frac{b}{2}\right)^2$$

Used to simplify radical expressions that involve a sum or difference of radicals in the denominator

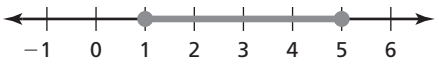
$a\sqrt{b} + c\sqrt{d}$ and $a\sqrt{b} - c\sqrt{d}$ are conjugates.

Interest earned on the principal and on previously earned interest

The balance y of an account earning compound interest is $y = P\left(1 + \frac{r}{n}\right)^{nt}$, where P is the principal (initial amount), r is the annual interest rate (in decimal form), t is the time (in years), and n is the number of times interest is compounded per year.

A set of input values that consists of all numbers in an interval

All numbers from 1 to 5

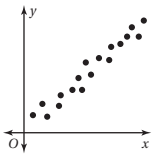


A term without a variable

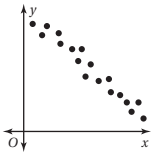
In the expression $2x + 8$, the term 8 is a constant term.

The relationship between paired data; The paired data have a positive correlation if y tends to increase as x increases, a negative correlation if y tends to decrease as x increases, and no correlation if x and y have no apparent relationship.

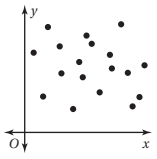
Positive relationship



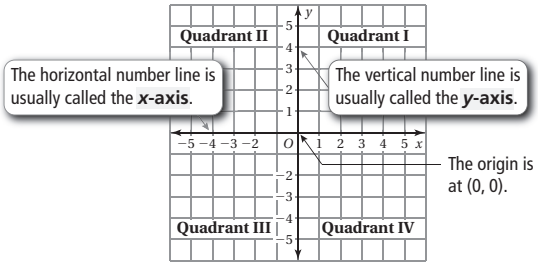
Negative relationship



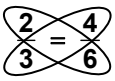
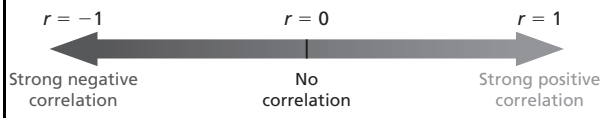
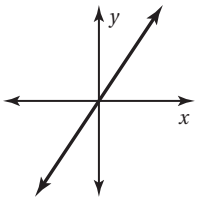
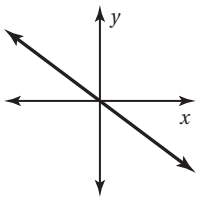
No relationship



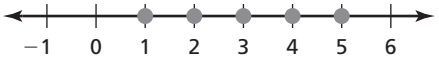
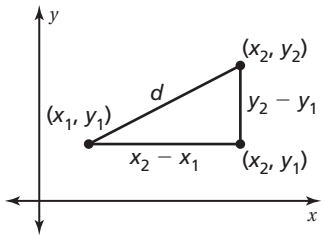
A coordinate plane is formed by the intersection of a horizontal number line, usually called the x-axis, and a vertical number line, usually called the y-axis.



correlation coefficient *Chapter 12*	**Cross Products Property** *Review*
data *Review*	**degree of a monomial** *Chapter 7*
degree of a polynomial *Chapter 7*	**denominator** *Review*
dependent variable *Chapter 5*	**direct variation** *Chapter 11*

The cross products of a proportion are equal.  $2 \bullet 6 = 3 \bullet 4$	When a calculator uses linear regression to find a line of best fit, it often gives a value r called the correlation coefficient. This value tells whether the correlation is positive or negative, and how closely the equation models the data. Values of r range from -1 to 1. 
The sum of the exponents of the variables in a monomial; The degree of a nonzero constant term is 0. The degree of 5 is 0. The degree of x^2 is 2. The degree of $2xy^3$ is $1 + 3 = 4$.	Information, often given in the form of numbers or facts
The number below the fraction bar in a fraction In the fraction $\frac{2}{5}$, the denominator is 5.	The greatest degree of the terms of a polynomial The degree of $6x^2 + x$ is 2. The degree of $x^5 + x^2 - 8$ is 5.
Two quantities x and y show direct variation when $y = kx$, where k is a nonzero constant.  $y = kx, k > 0$  $y = kx, k < 0$	The variable that represents output values of a function In the function $y = 2x - 3$, y is the dependent variable.

discrete domain *Chapter 5*	**discriminant** *Chapter 9*
distance formula *Chapter 10*	**Distributive Property** *Review*
Division Property of Equality *Review*	**Division Property of Inequality (Case 1)** *Review*
Division Property of Inequality (Case 2) *Review*	**domain** *Chapter 5*

The expression $b^2 - 4ac$ of the associated equation $ax^2 + bx + c = 0$; The expression under the radical sign, $b^2 - 4ac$, in the quadratic formula; Used to determine the number of real solutions of a quadratic equation The value of the discriminant of the equation $3x^2 - 2x - 7 = 0$ is $b^2 - 4ac = (-2)^2 - 4(3)(-7) = 88.$	A set of input values that consists of only certain numbers in an interval Integers from 1 to 5 
To multiply a sum or difference by a number, multiply each number in the sum or difference by the number outside the parentheses. Then evaluate. $3(2 + 9) = 3(2) + 3(9)$ $a(b + c) = ab + ac$ $3(2 - 9) = 3(2) - 3(9)$ $a(b - c) = ab - ac$	The distance d between any two points (x_1, y_1) and (x_2, y_2) is given by the formula  $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}.$
If you divide each side of an inequality by the same positive number, the inequality remains true. $a < b$ and $c > 0$, then $\frac{a}{c} < \frac{b}{c}$. This property is also true for $>$, $\leq$, and $\geq$. $4x > -12$ $\frac{4x}{4} > \frac{-12}{4}$ $x > -3$	Dividing each side of an equation by the same number produces an equivalent equation. If $a = b$, then $a \div c = b \div c, c \neq 0$. $4x = -40$ $\frac{4x}{4} = \frac{-40}{4}$ $x = -10$
The set of all input values of a function For the ordered pairs $(0, 6), (1, 7), (2, 8)$, and $(3, 9)$, the domain is 0, 1, 2, and 3.	If you divide each side of an inequality by the same negative number, the direction of the inequality symbol must be reversed for the inequality to remain true. If $a < b$ and $c < 0$, then $\frac{a}{c} > \frac{b}{c}$. This property is also true for $>$, $\leq$, and $\geq$. $-5x > 30$ $\frac{-5x}{-5} < \frac{30}{-5}$ $x < -6$

equation *Review*	**equivalent equations** *Review*
excluded value *Chapter 11*	**exponent** *Review*
exponential decay *Chapter 6*	**exponential decay function** *Chapter 6*
exponential function *Review*	**exponential growth** *Review*

Equations that have the same solution(s) $2x - 8 = 0$ and $2x = 8$	A mathematical sentence that uses an equal sign to show that two expressions are equal $4x = 16$ $a + 7 = 21$
The number or variable that represents the number of times the base of a power is used as a factor *See power.*	A number that makes a rational function or a rational expression undefined. A number that makes the denominator equal to 0 The excluded value of $\frac{2}{x + 5}$ is -5.
A function of the form $y = a(1 - r)^t$, where $a > 0$ and $0 < r < 1$ $y = 20(0.15)^t$ $y = 500\left(\frac{7}{8}\right)^t$ *See exponential decay.*	When a quantity decreases by the same factor over equal intervals of time *See exponential decay function.*
When a quantity increases by the same factor over equal intervals of time *See exponential growth function.*	A function of the form $y = ab^x$, where $a \neq 0$, $b \neq 1$, and $b > 0$ $y = -2(5)^x$ $y = 2(0.5)^x$

exponential growth function *Chapter 6*	**expression** *Review*
extraneous solution *Chapter 10*	**factor** *Review*
factored completely *Chapter 7*	**factored form** *Chapter 7*
factoring by grouping *Chapter 7*	**five-number summary** *Chapter 12*

A mathematical phrase containing numbers, operations, and/or variables $12 + 6, 18 + 3 \times 4,$ $8 + x, 6 \times a - b$	A function of the form $y = a(1 + r)^t$, where $a > 0$ and $r > 0$ $y = 20(1.15)^t$ $y = 500\left(\frac{7}{5}\right)^t$ *See exponential growth.*
An integer or expression that divides an integer or expression without leaving a remainder -2, 3, and 4 are factors of 24. $(x - 4)$ and $(x + 3)$ are factors of $x^2 - x - 12$.	A solution of a transformed equation that is not a solution of the original equation When you square each side of $x = \sqrt{x + 2}$, the resulting equation has two solutions, $x = -1$ and $x = 2$. However, $x = -1$ is an extraneous solution because it does not satisfy the original equation.
A polynomial is in factored form when it is written as a product of factors. $x^2 + 2x = x(x + 2)$ $x^2 + 5x - 24 = (x - 3)(x + 8)$	A factorable polynomial with integer coefficients is said to be factored completely when no more factors can be found and it is written as the product of prime factors. $3x^3 - 18x^2 + 24x = 3x(x^2 - 6x + 8)$ $= 3x(x - 2)(x - 4)$
The five numbers that make up a box-and-whisker plot (least value, first quartile, median, third quartile, and greatest value) *See box-and-whisker plot.*	To factor polynomials with four terms, group the terms into pairs, factor the GCF out of each pair of terms, and look for a common binomial factor. $x^3 + 3x^2 + 2x + 6 = (x^3 + 3x^2) + (2x + 6)$ $= x^2(x + 3) + 2(x + 3)$ $= (x + 3)(x^2 + 2)$

focus *Chapter 8*	**FOIL Method** *Chapter 7*
function *Chapter 5*	**function notation** *Chapter 5*
geometric sequence *Chapter 6*	**graph of an inequality** *Chapter 3*
graph of an linear inequality *Chapter 3*	**graph of a system of linear inequalities** *Chapter 4*

A shortcut for multiplying two binomials; To multiply two binomials using the FOIL Method, find the sum of the products of the **F**irst terms, **O**uter terms, **I**nner terms, and **L**ast terms.

F $(\boldsymbol{x} + 1)(\boldsymbol{x} + 2) \rightarrow x(x) = x^2$

O $(\boldsymbol{x} + 1)(x + \boldsymbol{2}) \rightarrow x(2) = 2x$

I $(x + \boldsymbol{1})(\boldsymbol{x} + 2) \rightarrow 1(x) = x$

L $(x + \boldsymbol{1})(x + \boldsymbol{2}) \rightarrow 1(2) = 2$

A fixed point on the interior of a parabola that lies on the axis of symmetry; A parabola "wraps" around the focus.

For functions of the form $y = ax^2$, the focus is $\left(0, \frac{1}{4a}\right)$.

A way to name a function using the $f(x)$ instead of y; The notation $f(x)$ is read as "the value of f at x" or "f of x."

The $y = 5x + 2$ can be written in function notation as $f(x) = 5x + 2$.

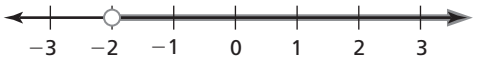
A relationship that pairs each input with exactly one output

The ordered pairs $(0, 1)$, $(1, 2)$, $(2, 4)$, and $(3, 6)$ represent a function.

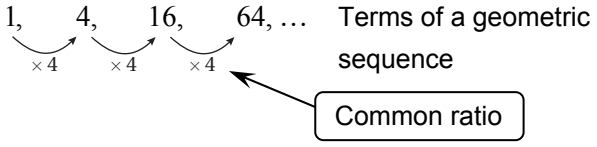
Ordered Pairs	Input	Output
$(0, 1)$	0	1
$(1, 2)$	1	2
$(2, 4)$	2	4
$(3, 6)$	3	6

A graph that shows all of the solutions of an inequality on a number line

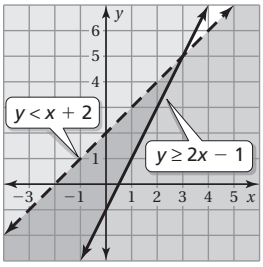
$x > -2$



A sequence in which the ratio between consecutive terms is the same; This ratio is called the common ratio.

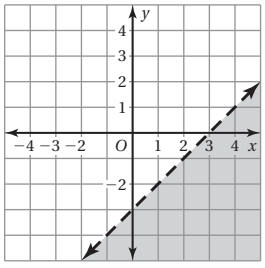


A graph of all the solutions of a system

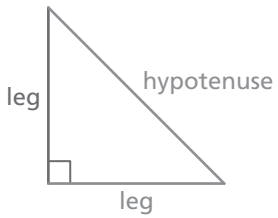


A graph in two variables that shows all of the solutions of an inequality in a coordinate plane

The graph of $y = x - 3$ is the shaded half-plane.



greatest common factor (GCF) *Review*	**half-planes** *Chapter 3*
hypotenuse *Chapter 10*	**independent variable** *Chapter 5*
inequality *Chapter 3*	**input** *Review*
integers *Review*	**interest** *Review*

In a coordinate plane, the regions on either side of a boundary line *See graph of a linear inequality.*	The largest of the common factors of two or more nonzero integers or expressions The common factors of 12 and 20 are 1, 2, and 4. So the GCF of 12 and 20 is 4. The common factors of $3x^3$ and $6x^2$ are 1, 3, x, x^2, and $3x^2$. So the GCF of $3x^3$ and $6x^2$ is $3x^2$.
The variable that represents input values of a function In the function $y = 5x - 8$, x is the independent variable.	The side of a right triangle that is opposite the right angle 
A number on which a function operates *See function.*	A mathematical sentence that compares expressions; It contains the symbols $<$, $>$, $\leq$, or $\geq$. $x - 4 < -14$ $x + 5 \geq -67$
Money paid or earned for the use of money *See compound interest and simple interest.*	The set of whole numbers and their opposites $\ldots -3, -2, -1, 0, 1, 2, 3, \ldots$

interquartile range *Chapter 12*	**inverse function** *Chapter 11*
inverse relation *Chapter 11*	**inverse variation** *Chapter 11*
irrational number *Review*	**joint frequency** *Chapter 12*
least common denominator (LCD) of rational expressions *Chapter 11*	**legs** *Chapter 10*

When a relation and its inverse are functions, they are called inverse functions. The inverse of a function f is written as $f^{-1}(x)$. To find the inverse of a function represented by an equation, switch x and y and then solve for y.

$f(x) = 2x - 5$ and $f^{-1}(x) = \frac{1}{2}x + \frac{5}{2}$ are inverse functions.

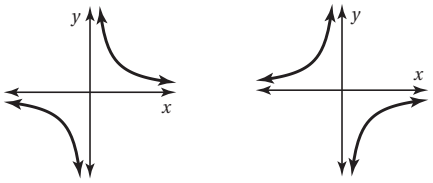
The difference of the third quartile of a data set and the first quartile of the data set; It represents the range of the middle half of the data.

The interquartile range of the data set is $42 - 18 = 24$.

first quartile ↓ third quartile ↓

15, **18**, 21, 28, 35, **42**, 55

Two quantities x and y show inverse variation when $y = \frac{k}{x}$, where k is a nonzero constant.



$y = \frac{k}{x}, k > 0$ $y = \frac{k}{x}, k < 0$

Switches the input and output values of a relation; If a relation contains (a, b), then the inverse relation contains (b, a).

$(-4, 7), (-2, 4), (0, 1), (2, -2), (4, -5)$

$(7, -4), (4, -2), (1, 0), (-2, 2), (-5, 4)$

Each entry in a two-way table

		Student	
		Studied	Did Not Study
Grade	Passed	21	2
	Failed	1	6

joint frequency

A number that cannot be written as the ratio of two integers

$\pi, \sqrt{14}$

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

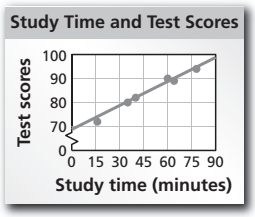
See hypotenuse.

The least common multiple of the denominators of two or more rational expressions

The least common denominator of $\frac{3}{10x^2}$ and $\frac{5}{12x}$ is the least common multiple of $10x^2$ and $12x$, or $60x^2$.

line of best fit *Chapter 12*	**line of fit** *Chapter 12*
linear equation *Chapter 2*	**linear function** *Chapter 5*
linear inequality in two variables *Chapter 3*	**linear regression** *Chapter 12*
literal equation *Chapter 1*	**marginal frequencies** *Chapter 12*

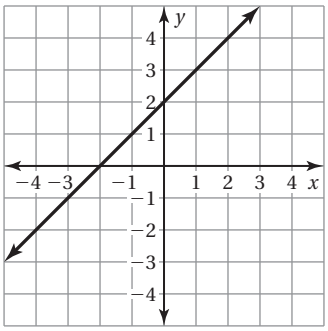
A line drawn on a scatter plot that is close to most of the data points; It can be used to estimate data on a graph.



A precise line that best models a set of data

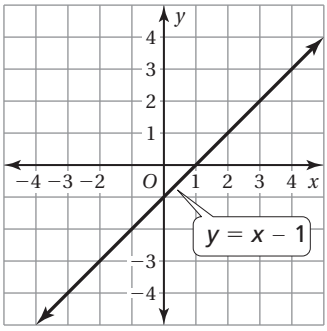
See linear regression.

A function whose graph is a nonvertical line; A linear function can be written in the form $y = mx + b$.

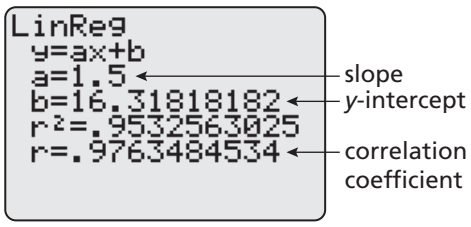


An equation whose graph is a line

$y = x - 1$



The process used to find the line of best fit for a set of data



An inequality that is the result of replacing the equal sign in a linear equation with $<$, $\leq$, $>$, or $\geq$.

$2x = y < -3$

$x - 3y \geq 8$

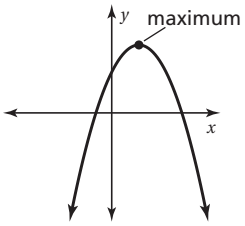
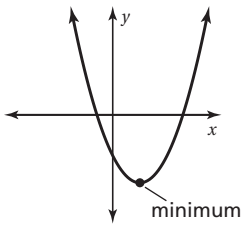
The sums of the rows and columns in a two-way table

		Age			
		12–13	14–15	16–17	Total
Student	Rides Bus	24	12	14	50
	Does Not Ride Bus	16	13	21	50
	Total	40	25	35	100

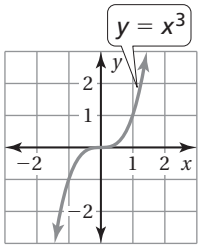
An equation that has two or more variables

$2y + 6x = 12$

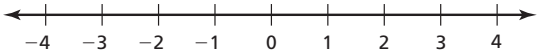
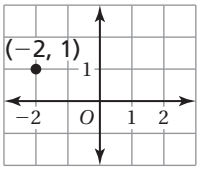
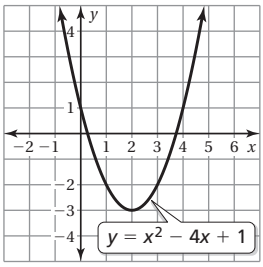
maximum value *Chapter 8*	**mean** *Review*
measure of central tendency *Chapter 12*	**measure of dispersion** *Chapter 12*
median *Review*	**minimum value** *Chapter 8*
mode *Review*	**monomial** *Chapter 7*

The sum of the values in a data set divided by the number of data values The mean of the values 7, 4, 8, and 9 is $\frac{7 + 4 + 8 + 9}{4} = \frac{28}{4} = 7.$	The y-coordinate of the vertex of the graph of $y = ax^2 + bx + c$ when $a < 0$ 
A measure that describes the spread of a data set The range and standard deviation are measures of dispersion.	A measure that represents the center of a data set The mean, median, and mode are all measures of central tendency.
The y-coordinate of the vertex of the graph of $y = ax^2 + bx + c$ when $a > 0$ 	For a data set with an odd number of ordered values, the median is the middle data value. For a data set with an even number of ordered values, the median is the mean of the two middle values. The median of the data set 24, 25, 29, 33, 38 is 29 because 29 is the middle value.
A number, a variable, or a product of a number and one or more variables with whole number exponents -5 $0.5y^2$ $4x^2y$	The data value or values that occur most often; Data can have one mode, more than one mode, or no mode. The modes of the data set 3, 4, 4, 7, 7, 9, 12 are 4 and 7 because they occur most often.

Multiplication Properties of Zero and One *Review*	**Multiplication Property of Equality** *Review*
Multiplication Property of Inequality (Case 1) *Review*	**Multiplication Property of Inequality (Case 2)** *Review*
negative exponent *Review*	**negative number** *Review*
nonlinear function *Chapter 5*	***n*th root** *Chapter 6*

Multiplying each side of an equation by the same number produces an equivalent equation. If $a = b$, then $a \bullet c = b \bullet c$. $-\frac{2}{3}x = 8$ $-\frac{3}{2} \bullet \left(-\frac{2}{3}x\right) = -\frac{3}{2} \bullet 8$ $x = -12$	The product of any number and 0 is 0. The product of any number and 1 is that number. $-5 \bullet 0 = 0$ $a \bullet 0 = 0$ $-6 \bullet 1 = -6$ $a \bullet 1 = a$
If you multiply each side of an inequality by the same negative number, the direction of the inequality symbol must be reversed for the inequality to remain true. If $a < b$ and $c < 0$, then $a \bullet c > b \bullet c$. This property is also true for $>$, $\leq$, or $\geq$. $\frac{x}{-6} < 3$ $-6 \bullet \frac{x}{-6} > -6 \bullet 3$ $x > -18$	If you multiply each side of an inequality by the same positive number, the inequality remains true. If $a < b$ and $c > 0$, then $a \bullet c < b \bullet c$. This property is also true for $>$, $\leq$, or $\geq$. $\frac{x}{2} < -9$ $2 \bullet \frac{x}{2} < 2 \bullet (-9)$ $x < -18$
A number less than 0 $-0.25, -10, -500$	For any integer n and any nonzero number a, a^{-n} is the reciprocal of a^n. $a^{-n} = \frac{1}{a^n}$
When $b^n = a$ for an integer n greater than 1, b is an nth root of a. $\sqrt[3]{64} = \sqrt[3]{4 \bullet 4 \bullet 4} = 4$ $\sqrt[n]{a} = n$th root of a	A function that does not have a constant rate of change; The graph of a nonlinear function is not a line. 

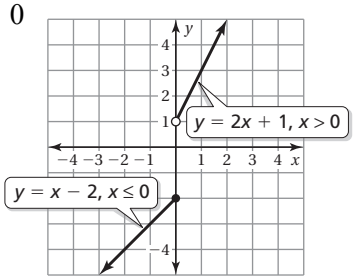
number line *Review*	**numerator** *Review*
ordered pair *Review*	**origin** *Review*
output *Review*	**parabola** *Chapter 8*
perfect square *Review*	**perfect square trinomial** *Review*

The number above the fraction bar in a fraction In the fraction $\frac{2}{5}$, the numerator is 2.	A line whose points are associated with numbers that increase from left to right 
The point, represented by the ordered pair $(0, 0,)$ where the *x*-axis and the *y*-axis meet in a coordinate plane *See coordinate plane.*	A pair of numbers (x, y) used to locate a point in a coordinate plane; The first number is the *x*-coordinate, and the second number is the *y*-coordinate.  The *x*-coordinate of the point $(-2, 1)$ is $-2,$ and the *y*-coordinate is 1.
The U-shaped graph of a quadratic function 	A number produced by evaluating a function using a given input *See function.*
Trinomials of the form $a^2 + 2ab + b^2$ and $a^2 - 2ab + b^2$. $x^2 + 6x + 9 = x^2 + 2(3)x + 3^2$ $x^2 - 10x + 25 = x^2 - 2(5)x + 5^2$	A number with integers as its square roots 16, 25, 81

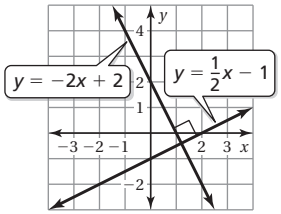
perpendicular lines *Chapter 2*	**piecewise function** *Chapter 5*
plane *Review*	**point-slope form** *Chapter 2*
polynomial *Chapter 7*	**positive number** *Review*
power *Review*	**Power of a Power Property** *Review*

A function defined by two or more equations

$$y = \begin{cases} x - 2, \text{ if } x \le 0 \\ 2x + 1, \text{ if } x > 0 \end{cases}$$



Two lines in the same plane that intersect to form right angles; Two nonvertical lines are perpendicular if and only if the product of their slopes is -1.



A linear equation written in the form $y - y_1 = m(x - x_1)$; The line passes through the point (x_1, y_1) and the slope of the line is m.

$$y - 1 = \frac{2}{3}(x + 6)$$

A flat surface that extends without end in all directions

A number greater than 0

0.5, 2, 100

A monomial or a sum of monomials; Each monomial is called a term of the polynomial.

$5x + 2$

$x^2 + 5x + 2$

To find a power of a power, multiply the exponents.

$$\left(3^4\right)^2 = 3^{4 \cdot 2} = 3^8$$

$$\left(a^m\right)^n = a^{mn}$$

A product of repeated factors

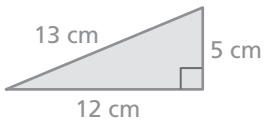
base — exponent

$$\underbrace{\left(\frac{1}{2}\right)^5}_{\text{Power}} = \underbrace{\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2}}_{\frac{1}{2} \text{ is used as a factor 5 times.}}$$

Power of a Product Property *Review*	**Power of a Quotient Property** *Chapter 1*
prime number *Review*	**prime polynomial** *Chapter 7*
principal *Review*	**product** *Review*
Product of Powers Property *Review*	**Product Property of Square Roots** *Review*

To find a power of a quotient, find the power of the numerator and the power of the denominator and divide. $\left(\frac{3}{5}\right)^6 = \frac{3^6}{5^6}$ $\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$	To find a power of a product, find the power of each factor and multiply. $(5 \bullet 7)^4 = 5^4 \bullet 7^4$ $(ab)^m = a^m b^m$
A polynomial that cannot be factored as a product of polynomials with integer coefficients $2x + 3$ $x^2 - x + 5$ $x^2 + 2x + 9$	A whole number greater than 1 whose only factors are 1 and itself 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, …
The result when two or more numbers or expressions are multiplied The product of 4 and -3 is $4 \times (-3)$, or -12. The product of $x + 2$ and $x - 5$ is $(x + 2)(x - 5)$, or $x^2 - 3x - 10$.	An amount of money borrowed or deposited You deposit \$200 in an account that earns 4% compound interest per year. The principal is \$200.
The square root of a product equals the product of the square roots of the factors. $\sqrt{4 \bullet 3} = \sqrt{4} \bullet \sqrt{3} = 2\sqrt{3}$ $\sqrt{xy} = \sqrt{x} \bullet \sqrt{y}$, where $x \geq 0$ and $y \geq 0$	To multiply powers with the same base, add their exponents. $3^7 \times 3^{10} = 3^{7+10} = 3^{17}$ $a^m \bullet a^n = a^{m+n}$

Pythagorean Theorem *Chapter 10*	**quadratic equation** *Chapter 9*
quadratic formula *Chapter 9*	**quadratic function** *Chapter 8*
quartile *Chapter 12*	**quotient** *Review*
Quotient of Powers Property *Review*	**Quotient Property of Square Roots** *Review*

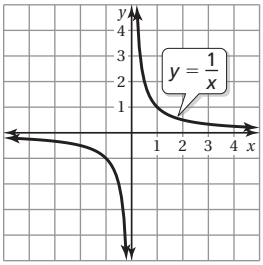
A nonlinear equation that can be written in the standard form $ax^2 + bx + c = 0$, where $a \neq 0$ $x^2 + 4x = 12$ $-x^2 + 1 = 2x$	In any right triangle, the sum of the squares of the lengths of the legs is equal to the square of the length of the hypotenuse. $a^2 + b^2 = c^2$  $5^2 + 12^2 = 13^2$
A nonlinear function that can be written in the standard form $y = ax^2 + bx + c$, where $a \neq 0$ $y = -16x^2 + 48x + 6$	The formula below that can be used to find the real solutions of the quadratic equation $ax^2 + bx + c$, where $a \neq 0$ and $b^2 - 4ac \geq 0$: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ To solve $2x^2 + 13x - 7 = 0$, substitute 2 for a, 13 for b, and -7 for c in the quadratic formula. $x = \frac{-13 \pm \sqrt{13^2 - 4(2)(-7)}}{2(2)} \rightarrow x = \frac{1}{2}$ or $x = -7$
The result of a division The quotient of 10 and -5 is $10 \div (-5)$, or -2.	Divides a data set into four equal parts *See box-and-whisker plot.*
The square root of a quotient equals the quotient of the square roots of the numerator and denominator. $\sqrt{\frac{7}{9}} = \frac{\sqrt{7}}{\sqrt{9}} = \frac{\sqrt{7}}{3}$ $\sqrt{\frac{x}{y}} = \frac{\sqrt{x}}{\sqrt{y}}$, where $x \geq 0$ and $y > 0$	To divide powers with the same base, subtract their exponents. $\frac{9^7}{9^3} = 9^{7-3} = 9^4$ $\frac{a^m}{a^n} = a^{m-n}$, where $a \neq 0$

radical sign *Review*	**radicand** *Review*
range *Chapter 5*	**range (of a data set)** *Chapter 12*
rate *Review*	**ratio** *Review*
rational equation *Chapter 11*	**rational exponents** *Review*

The number or expression under a radical sign The radicand of $\sqrt{25}$ is 25. The radicand of $\sqrt{x+1}$ is $x+1$.	The symbol $\sqrt{\ }$ which is used to represent a square root $\sqrt{25} = 5$ $-\sqrt{49} = -7$ $\pm\sqrt{100} = \pm 10$
The difference between the greatest value and the least value of a data set; The range describes how spread out the data are. The range of the data set 12, 16, 18, 22, 27, 35 is $35 - 12 = 23$.	The set of all output values of a function For the ordered pairs $(0, 6)$, $(1, 7)$, $(2, 8)$, and $(3, 9)$, the range is 6, 7, 8, and 9.
A comparison of two quantities using division; The ratio of a to b $(\text{where } b \neq 0)$ can be written as a to b, $a : b$, or $\frac{a}{b}$. 4 to 1, 4 : 1, or $\frac{4}{1}$	A ratio of two quantities with different units You read 3 books every 2 weeks.
The nth root of a positive number a can be written as a power with base a and an exponent of $1/n$. $\sqrt[4]{81} = 81^{1/4}$ $\sqrt[n]{a} = a^{1/n}$	An equation that contains one or more rational expressions $\frac{5}{x+4} = \frac{4}{x-4}$

rational expression *Chapter 11*	**rational function** *Chapter 11*
rational number *Review*	**rationalizing the denominator** *Chapter 10*
real numbers *Review*	**recursive rule** *Chapter 6*
relation *Chapter 5*	**residual** *Chapter 12*

A function of the form $y = \frac{\text{polynomial}}{\text{polynomial}}$, where the denominator does not equal 0; The most basic rational function is $y = \frac{1}{x}$.



An expression that can be written as a fraction whose numerator and denominator are polynomials

$$\frac{3}{x + 1}$$

$$\frac{x - 2}{x^2 + 16}$$

The process of eliminating a radical from the denominator of an expression by multiplying the expression by an appropriate form of 1.

$$\frac{1}{\sqrt{10}} = \frac{1}{\sqrt{10}} \bullet \frac{\sqrt{10}}{\sqrt{10}} = \frac{\sqrt{10}}{\sqrt{100}} = \frac{\sqrt{10}}{10}$$

$$\sqrt{\frac{1}{3}} = \frac{\sqrt{1}}{\sqrt{3}} = \frac{1}{\sqrt{3}} \bullet \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{\sqrt{9}} = \frac{\sqrt{3}}{3}$$

A number that can be written as $\frac{a}{b}$, where a and b are integers and $b \neq 0$

$$3 = \frac{3}{1}, \qquad -\frac{2}{5} = \frac{-2}{5}$$

$$0.25 = \frac{1}{4}, \qquad 1\frac{1}{3} = \frac{4}{3}$$

Gives the beginning term(s) of a sequence and an equation that indicates how any term a_n in the sequence relates to the previous term

$a_n = a_{n-1} + d$, where d is the common difference

$$a_1 = 2, a_n = a_{n-1} + 3$$

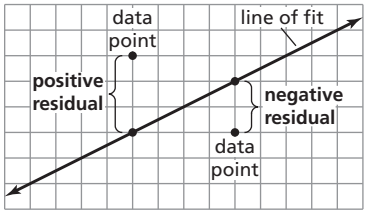
$a_n = r \bullet a_{n-1}$, where r is the common ratio

$$a_1 = 1, a_n = 3a_{n-1}$$

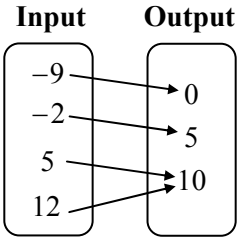
The set of all rational and irrational numbers

$$4, -6.5, \pi, \sqrt{14}$$

The difference between the y-value of a data point and the corresponding y-value found using the line of fit; A residual can be positive, negative, or zero.

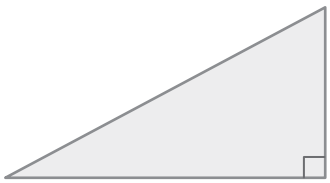


Pairs inputs with outputs; A relation that pairs each input with exactly one output is a function.

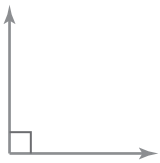


right angle *Review*	**right triangle** *Review*
rise *Chapter 2*	**roots** *Chapter 7*
run *Chapter 2*	**scatter plot** *Chapter 12*
sequence *Chapter 5*	**simple interest** *Review*

A triangle that has one right angle



An angle whose measure is $90°$



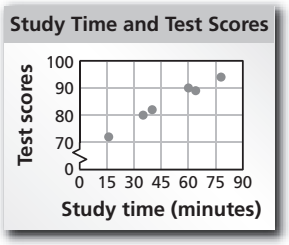
The solutions of a polynomial equation

The roots of the equation $(x + 9)(x - 4) = 0$ are $x = -9$ and $x = 4$.

The change in y between two points on a line

See slope.

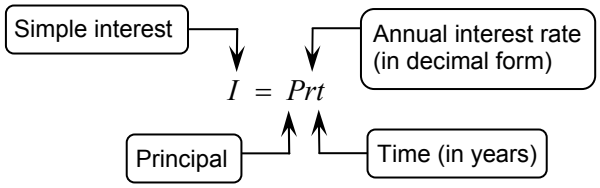
A graph that shows the relationship between two data sets using ordered pairs in a coordinate plane



The change in x between two points on a line

See slope.

Money paid or earned only on the principal



You put \$200 into an account. The account earns 5% simple interest per year. The interest earned after 3 years is $\$200 \times 0.05 \times 3$, or \$30. The account balance is $\$200 + \$30 = \$230$ after 3 years.

An ordered list of numbers

5, 10, 15, 20, …, a_n, …

2, 4, 8, 16, …, a_n, …

simplest form of a radical expression *Chapter 10*	**simplest form of a rational expression** *Chapter 11*
slope *Chapter 2*	**slope-intercept form** *Chapter 2*
solution of an equation *Review*	**solution of an inequality** *Chapter 3*
solution of a linear equation *Chapter 2*	**solution of a linear inequality** *Chapter 3*

A rational expression whose numerator and denominator have no common factors except 1

The simplest form of $\frac{4x}{2x(x + 7)}$ is $\frac{2}{x + 7}$.

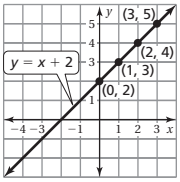
A radical expression that has no perfect square factors other than 1 in the radicand, no fractions in the radicand, and no radicals appearing in the denominator of a fraction

$$\sqrt{27} = 3\sqrt{3}$$

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

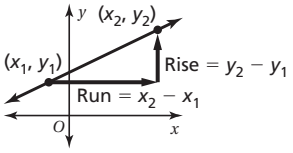
A linear equation written in the form $y = mx + b$; The slope of the line is m and the y-intercept of the line is b.

The slope is 1 and the y-intercept is 2.



A ratio of the change in y (the rise) to the change in x (the run) between any two points, (x_1, y_1) and (x_2, y_2) on a line; It is a measure of the steepness of a line.

$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{\text{change in } y}{\text{change in } x} = \frac{y_2 - y_1}{x_2 - x_1}$$



A value that makes an inequality true

A solution of the inequality $x + 3 > -9$ is $x = 2$.

A value that makes an equation true

6 is the solution of the equation $x - 4 = 2$.

An ordered pair (x, y) that makes a linear inequality true; All of the points in the shaded half-plane are solutions.

$(2, 4)$ is a solution of $-x + 2y > 2$.

See graph of a linear inequality.

An ordered pair (x, y) that makes a linear equation true; All of the points on the line are solutions.

$(2, -4)$ is a solution of $x + 2y = -6$

solution set *Chapter 3*	**solution of a system of linear equations** *Chapter 4*
solution of a system of linear inequalities *Chapter 4*	**square root** *Review*
square root equation *Chapter 10*	**square root function** *Chapter 10*
standard deviation *Chapter 12*	**standard form** *Chapter 2*

An ordered pair that is a solution of each equation in a system $(1, -3)$ is the solution of the following system of linear equations. $4x - y = 7$ $2x + 3y = -7$	The set of all solutions of an inequality
If $b^2 = a$, then b is a square root of a. The radical sign, $\sqrt{\ }$, represents a nonnegative square root. The square roots of 25 are 5 and -5 because $5^2 = 25$ and $(-5)^2 = 25$. So, $\sqrt{25} = 5$ and $-\sqrt{25} = -5$.	An ordered pair that is a solution of each inequality in a system $(-2, 5)$ is a solution of the following system of linear inequalities. $x - y < 4$ $2x - y \geq -9$
A function that contains a square root with the independent variable in the radicand; The most basic square root function is $y = \sqrt{x}$. $y = 3\sqrt{x - 5}$ $y = -\sqrt{x + 1} + 2$	An equation that contains a square root with a variable in the radicand $\sqrt{x} + 5 = 13$ $\sqrt{2x - 1} = \sqrt{x + 4}$
A linear equation written in the form $ax + by = c$, where a and b are not both zero $-2x + 3y = -6$	A measure of how much a typical value in a data set differs from the mean; It is given by standard deviation $\sqrt{\frac{(x_1 - \bar{x})^2 + (x_2 - \bar{x})^2 + \cdots + (x_n - \bar{x})^2}{n}}$ where n is the number of values in the data set. The symbol $\bar{x}$ represents the mean. It is read as "x-bar."

step function *Chapter 5*	**Subtraction Property of Equality** *Review*
Subtraction Property of Inequality *Review*	**system of linear equations** *Chapter 4*
system of linear inequalities *Chapter 4*	**term (of a sequence)** *Chapter 5*
terms (of an expression) *Review*	**theorem** *Chapter 10*

Subtracting the same number from each side of an equation produces an equivalent equation.
If $a = b$, then $a - c = b - c$.

$$\begin{aligned} x + 10 &= -12 \\ -10 \quad &\quad -10 \\ x &= -22 \end{aligned}$$

A piecewise function defined by constant values over its domain

$$f(x) = \begin{cases} 50, & \text{if } 0 < x \leq 1 \\ 75, & \text{if } 1 < x \leq 2 \\ 100, & \text{if } 2 < x \leq 3 \\ 125, & \text{if } 3 < x \leq 4 \\ 150, & \text{if } 4 < x \leq 5 \end{cases}$$

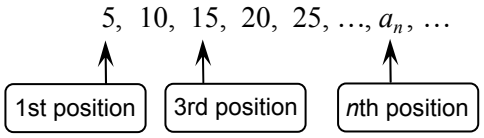
A set of two or more linear equations in the same variables; also called a linear system

$y = x + 1$ Equation 1
$y = 2x - 7$ Equation 2

If you subtract the same number from each side of an inequality, the inequality remains true. If $a < b$, then $a - c < b - c$. This property is also true for $>$, $\leq$, and $\geq$.

$$\begin{aligned} x + 7 &> -20 \\ -7 \quad &\quad -7 \\ x &> -27 \end{aligned}$$

Each number in a sequence; Each term a_n has a specific position n in the sequence.



A set of two or more linear inequalities in the same variables

$y < x + 2$ Inequality 1
$y \geq 2x - 1$ Inequality 2

A rule in mathematics

The Pythagorean Theorem

The parts of an expression that are added together

The terms of $x^2 - 2x + 3$ are x^2, $-2x$, and 3.

trinomial *Chapter 7*	**two-way table** *Chapter 12*
variable *Review*	**vertex (of a parabola)** *Chapter 8*
vertex form *Chapter 8*	**Vertical Line Test** *Chapter 5*
whole numbers *Review*	***x*-axis** *Review*

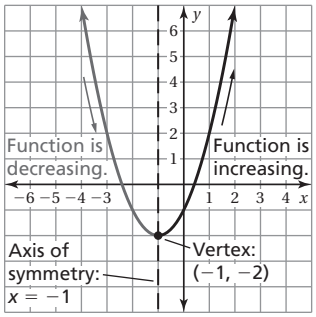
Displays two categories of data collected from the same source

		Fundraiser	
		No	Yes
Gender	Female	22	51
	Male	30	29

A polynomial with three terms

$$x^2 + 5x + 2$$

The lowest or highest point on a parabola

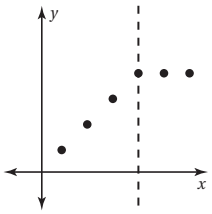


A symbol, usually a letter, that represents one or more numbers

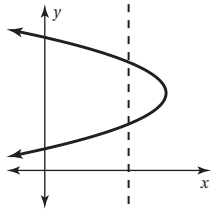
x is a variable in $2x + 1$.

A graph represents a function when no vertical line passes through more than one point on the graph.

Function



Not a function



A quadratic function of the form $y = a(x - h)^2 + k$, where $a \neq 0$; The vertex of the parabola is (h, k).

$$y = (x - 2)^2$$

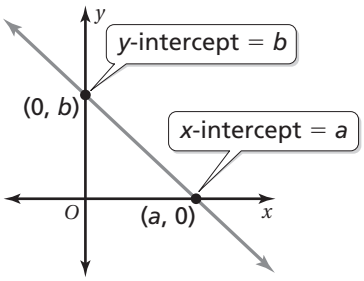
$$y = -2(x + 4)^2 + 3$$

The horizontal number line in a coordinate plane

See coordinate plane.

The numbers $0, 1, 2, 3, 4, \ldots$

***x*-coordinate** *Review*	***x*-intercept** *Chapter 2*
***y*-axis** *Review*	***y*-coordinate** *Review*
***y*-intercept** *Chapter 2*	**zero (of a function)** *Chapter 8*
zero exponent *Review*	**Zero-Product Property** *Chapter 7*

The x-coordinate of the point where a line crosses the x-axis  	The first coordinate in an ordered pair, which indicates how many units to move to the left or right from the origin In the ordered pair $(3, 5)$, the x-coordinate is 3.
The second coordinate in an ordered pair, which indicates how many units to move up or down from the origin In the ordered pair $(3, 5)$, the y-coordinate is 5.	The vertical number line in a coordinate plane *See coordinate plane.*
An x-value for which $f(x) = 0$; A zero is located at the x-intercept of the graph of the function. The zero of $f(x) = 2x - 6$ is 3 because $f(3) = 0$.	The y-coordinate of the point where a line crosses the y-axis *See x-intercept.*
If the product of two real numbers is 0, then at least one of the numbers is 0. If a and b are real numbers and $ab = 0$, then $a = 0$ or $b = 0$. $(x + 6)(x - 5) = 0$ $x + 6 = 0$ *or* $x - 5 = 0$ $x = -6$ *or* $x = 5$	For any nonzero number a, $a^0 = 1$. $10^0 = 1$ $(-5)^0 = 1$ $x^0 = 1$, where $x \neq 0$