

Glossary

This student friendly glossary is designed to be a reference for key vocabulary, properties, and mathematical terms. Several of the entries include a short example to aid your understanding of important concepts.

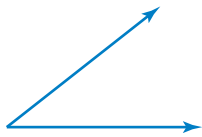
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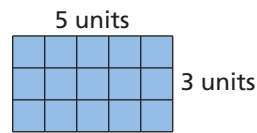
<p>absolute value</p> <p>The distance between a number and 0 on a number line. The absolute value of a number a is written as a.</p> $ -5 = 5$ $ 5 = 5$	<p>addend</p> <p>A number to be added to another number.</p> <p>2 or 3 in the sum $2 + 3$.</p>
<p>Addition Property of Equality</p> <p>If you add the same number to each side of an equation, the two sides remain equal.</p> $\begin{array}{r} x - 4 = 5 \\ + 4 \quad + 4 \\ \hline x = 9 \end{array}$	<p>Addition Property of Inequality</p> <p>If you add the same number to each side of an inequality, the inequality remains true.</p> $\begin{array}{r} x - 4 > 5 \\ + 4 \quad + 4 \\ \hline x > 9 \end{array}$
<p>Addition Property of Zero</p> <p>The sum of any number and 0 is that number.</p> $5 + 0 = 5$	<p>algebraic expression</p> <p>An expression that contains numbers, operations, and one or more variables.</p> $8 + x, 6 \times a - b$

angle

A figure formed by two rays with the same endpoint.

**area**

The amount of surface covered by a figure. Area is measured in square units such as square feet (ft²) or square meters (m²).



$$A = 5 \times 3 = 15 \text{ square units}$$

Associative Properties of Addition and Multiplication

Changing the grouping of addends or factors does not change the sum or product.

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

$$(3 \cdot 4) \cdot 5 = 3 \cdot (4 \cdot 5)$$

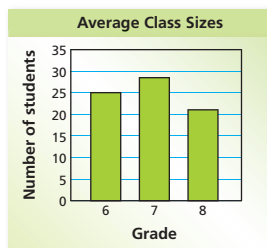
average

A single number used to describe what is typical of a set of data. The average is the sum of the values in a data set divided by the number of data values; also called the mean.

See mean.

bar graph

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

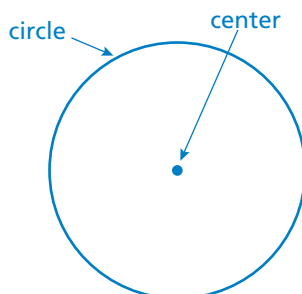
**center (of a circle)**

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

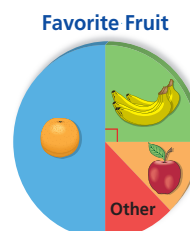
See circle.

circle

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

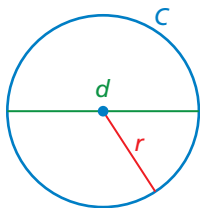
**circle graph**

Displays data as parts of a whole. The circle represents all of the data. Each section represents part of the data. The sum of the angle measures in a circle graph is 360°.



circumference

The distance around a circle.



common factor

A factor that is shared by two or more whole numbers.

2 is a common factor of 8 and 10.

Commutative Properties of Addition and Multiplication

Changing the order of addends or factors does not change the sum or product.

$$2 + 8 = 8 + 2$$
$$2 \cdot 8 = 8 \cdot 2$$

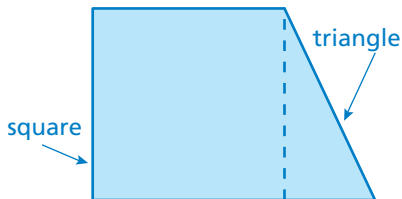
compatible numbers

Numbers that are easy to compute mentally.

$$237 \div 5 \frac{5}{7} \approx 237 \div 6$$
$$\approx 240 \div 6$$
$$= 40$$

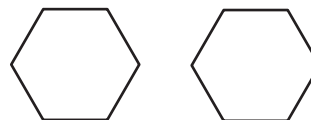
composite figure

A figure made up of triangles, squares, rectangles, semicircles, and other two-dimensional figures.



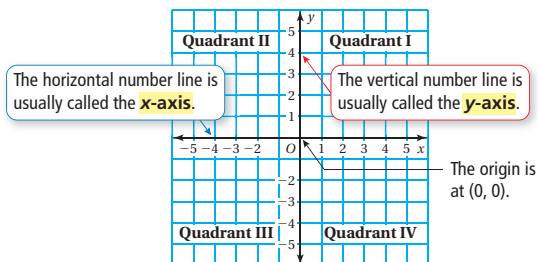
congruent (figures)

Figures that have exactly the same size and shape.



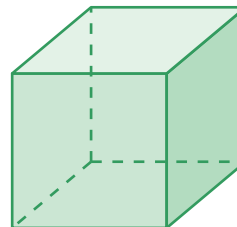
coordinate plane

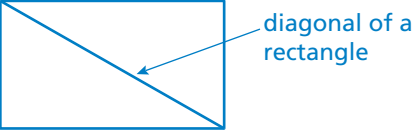
A coordinate plane is formed by the intersection of a horizontal number line, usually called the x-axis, and a vertical number line, usually called the y-axis.

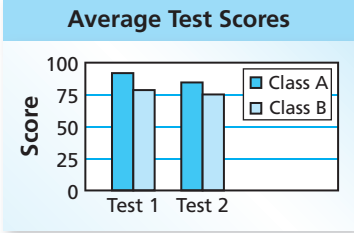


cube

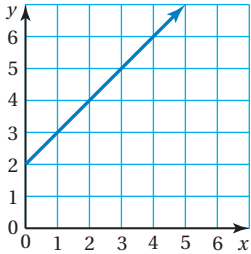
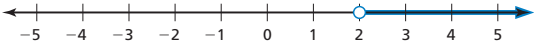
A rectangular prism with 6 congruent square faces.



<p>cubic units</p> <p>The units volume is measured in.</p> <p>cubic feet (ft^3), cubic meters (m^3)</p>	<p>data</p> <p>Information, often given in the form of numbers or facts.</p>
<p>decimal</p> <p>A number that is written using the base-ten place value system. Each place value is ten times the place value to the right.</p> <p>The decimal 2.15 represents 2 ones plus 1 tenth plus 5 hundredths, or two and fifteen hundredths.</p>	<p>denominator</p> <p>The number below the fraction bar in a fraction.</p> <p>In the fraction $\frac{2}{5}$, the denominator is 5.</p>
<p>diagonal</p> <p>A line segment that connects two non-adjacent vertices of a polygon.</p> 	<p>diameter (of a circle)</p> <p>The distance across a circle through the center.</p> <p><i>See circumference.</i></p>
<p>difference</p> <p>The result when one number is subtracted from another number.</p> <p>The difference of 4 and 3 is $4 - 3$, or 1.</p>	<p>Distributive Property</p> <p>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.</p> $3(2 + 9) = 3(2) + 3(9)$ $3(2 - 9) = 3(2) - 3(9)$

<p>dividend</p> <p>The number to be divided in a division problem.</p> <p>In $25 \div 5$, the dividend is 25.</p>	<p>divisible</p> <p>A number is divisible by another number if the other number is a factor of the first number.</p> <p>30 is divisible by 5, because 5 is a factor of 30.</p>									
<p>Division Property of Equality</p> <p>If you divide each side of an equation by the same nonzero number, the two sides remain equal.</p> $4x = 32$ $\frac{4x}{4} = \frac{32}{4}$ $x = 8$	<p>Division Property of Inequality</p> <p>If you divide each side of an inequality by the same positive number, the inequality remains true.</p> $4x < 8$ $\frac{4x}{4} < \frac{8}{4}$ $x < 2$									
<p>divisor</p> <p>The number you are dividing by in a division problem.</p> <p>In $40 \div 5$, the divisor is 5.</p>	<p>double bar graph</p> <p>A bar graph that shows two sets of data on the same graph.</p>  <table border="1"> <caption>Average Test Scores</caption> <thead> <tr> <th>Test</th> <th>Class A</th> <th>Class B</th> </tr> </thead> <tbody> <tr> <td>Test 1</td> <td>90</td> <td>80</td> </tr> <tr> <td>Test 2</td> <td>85</td> <td>75</td> </tr> </tbody> </table>	Test	Class A	Class B	Test 1	90	80	Test 2	85	75
Test	Class A	Class B								
Test 1	90	80								
Test 2	85	75								
<p>equation</p> <p>A mathematical sentence that uses an equal sign, =, to show that two expressions are equal.</p> $4x = 16, a + 7 = 21$	<p>equivalent expressions</p> <p>Expressions with the same value.</p> $7 + 4, 4 + 7$									

<p>equivalent fractions</p> <p>Fractions that represent the same number.</p> <p>$\frac{2}{4}$ and $\frac{9}{18}$ are equivalent fractions that both represent $\frac{1}{2}$.</p>	<p>equivalent ratios</p> <p>Two ratios that describe the same relationship.</p> $\frac{2}{3} = \frac{4}{6}$
<p>estimate</p> <p>noun: An approximate solution to a problem.</p> <p>2π is about 6.28.</p> <p>verb: To find an approximate solution to a problem.</p> <p>You can estimate the sum of $98 + 53$ as $100 + 50$, or 150.</p>	<p>evaluate (an algebraic expression)</p> <p>Substitute a number for each variable in an algebraic expression. Then use the order of operations to find the value of the numerical expression.</p> <p>Evaluate $3x + 5$ when $x = 6$.</p> $\begin{aligned} 3x + 5 &= 3(6) + 5 \\ &= 18 + 5 \\ &= 23 \end{aligned}$
<p>exponent</p> <p>The exponent of a power is the number of times the factor is repeated.</p> <p>The exponent of the power 2^4 is 4.</p>	<p>expression</p> <p>A mathematical phrase containing numbers, operations, and/or variables.</p> <p><i>See numerical expression or algebraic expression.</i></p>
<p>factor</p> <p>When whole numbers other than zero are multiplied together, each number is a factor of the product.</p> <p>$2 \times 3 \times 4 = 24$, so 2, 3, and 4 are factors of 24.</p>	<p>formula</p> <p>An equation that shows how one variable is related to one or more other variables.</p> <p>$A = \ell w$ is the formula for the area of a rectangle.</p>

<p>fraction</p> <p>A number in the form $\frac{a}{b}$, where $b \neq 0$.</p> <p>$\frac{1}{2}, \frac{5}{9}$</p>	<p>function</p> <p>A relationship that pairs each input with exactly one output.</p> <p>The ordered pairs (0, 1), (1, 2), (2, 4), and (3, 6) represent a function.</p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Ordered Pairs</th> <th style="text-align: center;">Input</th> <th style="text-align: center;">Output</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">(0, 1)</td> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">(1, 2)</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">(2, 4)</td> <td style="text-align: center;">2</td> <td style="text-align: center;">4</td> </tr> <tr> <td style="text-align: center;">(3, 6)</td> <td style="text-align: center;">3</td> <td style="text-align: center;">6</td> </tr> </tbody> </table>	Ordered Pairs	Input	Output	(0, 1)	0	1	(1, 2)	1	2	(2, 4)	2	4	(3, 6)	3	6
Ordered Pairs	Input	Output														
(0, 1)	0	1														
(1, 2)	1	2														
(2, 4)	2	4														
(3, 6)	3	6														
<p>function rule</p> <p>An equation that describes the relationship between inputs and outputs.</p> <p>The function rule "the output is three less than the input" is represented by the equation $y = x - 3$.</p>	<p>graph (of a function)</p> <p>A representation of all the points that are solutions of a function rule.</p> <p>The graph of $y = x + 2$ is shown.</p> 															
<p>graph of an inequality</p> <p>A graph that shows all of the solutions of an inequality on a number line.</p> <p>$x > 2$</p> 	<p>greatest common factor (GCF)</p> <p>The largest of the common factors of two or more nonzero whole numbers.</p> <p>The common factors of 12 and 20 are 1, 2, and 4. So the GCF of 12 and 20 is 4.</p>															
<p>improper fraction</p> <p>A fraction in which the numerator is greater than or equal to the denominator.</p> <p>$\frac{5}{4}, \frac{9}{9}$</p>	<p>inductive</p> <p>Making conclusions from several known cases.</p>															

<p>inequality</p> <p>A mathematical sentence that compares expressions. It contains the symbols $<$, $>$, \leq, or \geq.</p> $x - 4 < 14, x + 5 \geq 67$	<p>input</p> <p>A number on which a function operates.</p> <p><i>See function.</i></p>										
<p>input-output table</p> <p>A table that lists the output of a function for each input.</p> <table border="1" data-bbox="261 695 537 947"> <thead> <tr> <th>Input, x</th> <th>Output, y</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3</td> </tr> <tr> <td>2</td> <td>4</td> </tr> <tr> <td>3</td> <td>5</td> </tr> <tr> <td>4</td> <td>6</td> </tr> </tbody> </table>	Input, x	Output, y	1	3	2	4	3	5	4	6	<p>integers</p> <p>The numbers</p> <p>..., -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, ...</p>
Input, x	Output, y										
1	3										
2	4										
3	5										
4	6										
<p>inverse operations</p> <p>Operations that "undo" each other, such as addition and subtraction or multiplication and division.</p>	<p>least common denominator (LCD)</p> <p>The least common multiple of the denominators of two or more fractions.</p> <p>The least common denominator of $\frac{3}{4}$ and $\frac{5}{6}$ is the least common multiple of 4 and 6, or 12.</p>										
<p>least common multiple (LCM)</p> <p>The smallest of the common multiples of two or more nonzero whole numbers.</p> <p>Multiples of 10: 10, 20, 30, 40, ...</p> <p>Multiples of 15: 15, 30, 45, 60, ...</p> <p>The least common multiple of 10 and 15 is 30.</p>	<p>like terms</p> <p>Terms that have identical variable parts.</p> <p>4 and 8, $2x$ and $7x$</p>										

line

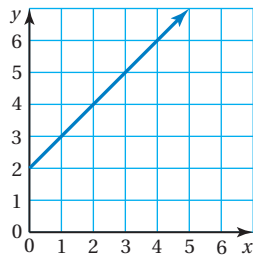
A set of points that extends without end in two opposite directions.

**line segment**

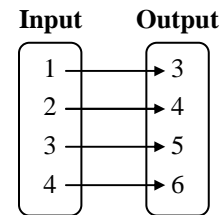
Part of a line that consists of two points, called endpoints, and all of the points on the line between the endpoints.

**linear function**

A function whose graph is a line.

**mapping diagram**

A way to represent a function.

**mean**

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

$$\frac{7 + 4 + 8 + 9}{4} = \frac{28}{4} = 7.$$

measure of central tendency

A measure that represents the center of a data set.

The mean, median, and mode are all measures of central tendency.

median

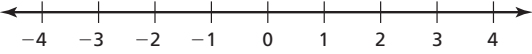
For a data set with an odd number of ordered values, the median is the middle data value. For a data set with an even number of ordered values, the median is the mean of the two middle values.

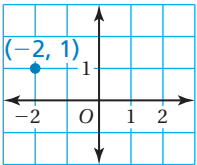
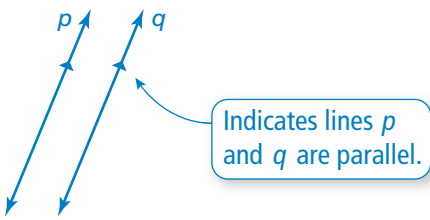
The median of the data set 24, 25, 29, 33, 38 is 29 because 29 is the middle value.

mixed number

A number that has a whole number part and a fraction part.

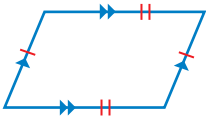
$$3\frac{1}{2}, 6\frac{2}{3}$$

<p>mode</p> <p>The data value or values that occur most often. Data can have one mode, more than one mode, or no mode.</p> <p>The modes of the data set 3, 4, 4, 7, 7, 9, 12 are 4 and 7 because they occur most often.</p>	<p>Multiplication Properties of Zero and One</p> <p>The product of any number and 0 is 0. The product of any number and 1 is that number.</p> $5 \cdot 0 = 0$ $6 \cdot 1 = 6$
<p>Multiplication Property of Equality</p> <p>If you multiply each side of an equation by the same nonzero number, the two sides remain equal.</p> $\frac{x}{4} = 2$ $\frac{x}{4} \cdot 4 = 2 \cdot 4$ $x = 8$	<p>Multiplication Property of Inequality</p> <p>If you multiply each side of an inequality by the same positive number, the inequality remains true.</p> $\frac{x}{4} < 2$ $\frac{x}{4} \cdot 4 < 2 \cdot 4$ $x < 8$
<p>negative integers</p> <p>Integers that are less than zero.</p> $-1, -2, -3, -4, -5, \dots$	<p>negative number</p> <p>A number less than 0.</p> $-0.25, -10, -500$
<p>number line</p> <p>A line whose points are associated with numbers that increase from left to right.</p> 	<p>numerator</p> <p>The number above the fraction bar in a fraction.</p> <p>In the fraction $\frac{2}{5}$, the numerator is 2.</p>

<p>numerical expression</p> <p>An expression that contains only numbers and operations.</p> $12 + 6, 18 + 3 \times 4$	<p>order of operations</p> <p>The order in which to perform operations when evaluating expressions with more than one operation.</p> <p>To evaluate $5 + 2 \times 3$, you perform the multiplication before the addition.</p>
<p>ordered pair</p> <p>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.</p>  <p>The x-coordinate of the point $(-2, 1)$ is -2, and the y-coordinate is 1.</p>	<p>origin</p> <p>The point, represented by the ordered pair $(0, 0)$, where the x-axis and the y-axis meet in a coordinate plane.</p> <p><i>See coordinate plane.</i></p>
<p>outlier</p> <p>A data value that is much greater or much less than the other values.</p> <p>In the data set 23, 42, 33, 117, 36, and 40, the outlier is 117.</p>	<p>output</p> <p>A number produced by evaluating a function using a given input.</p> <p><i>See function.</i></p>
<p>overestimate</p> <p>An estimate that is greater than the exact answer.</p> $16\frac{1}{4} \times 4\frac{2}{5} \approx 17 \times 5$ $= 85$	<p>parallel (lines)</p> <p>Two lines in the same plane that do not intersect.</p> 

parallelogram

A quadrilateral with two pairs of parallel sides.

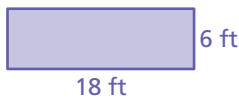
**percent**

The number of parts per one hundred.

$$37\% = 37 \text{ out of } 100 = \frac{37}{100}$$

perimeter

The distance around a figure. Perimeter is measured in linear units such as feet (ft) or meters (m).



$$\text{Perimeter} = 18 + 6 + 18 + 6 = 48 \text{ ft}$$

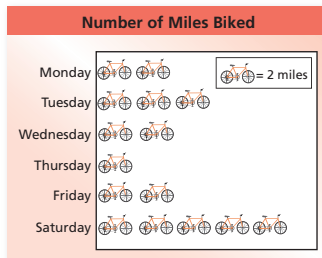
pi (π)

The ratio of the circumference of a circle to its diameter.

You can use 3.14 or $\frac{22}{7}$ to approximate π .

pictograph

A graph that uses pictures or symbols to display data.

**place value**

The place value of each digit in a number depends on its position within the number.


In 521, 5 is in the hundreds place and has a value of 500.

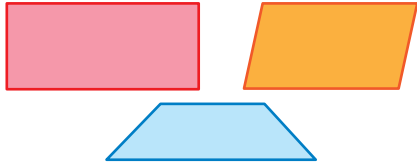

plane


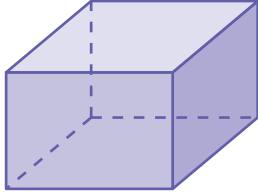

A flat surface that extends without end in all directions.

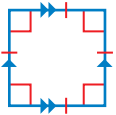
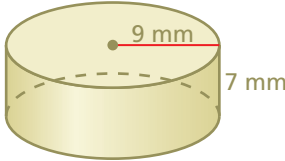
point

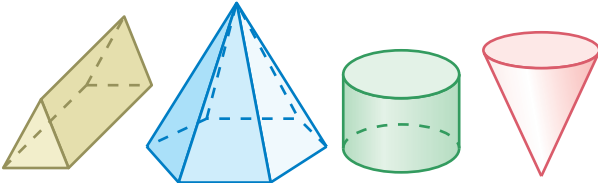
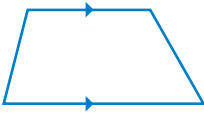
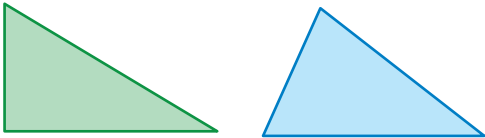
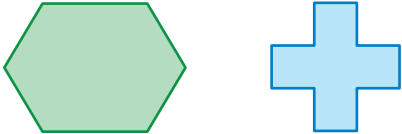
A position in space represented with a dot.


<p>polygon A closed plane figure made up of three or more line segments that intersect only at their endpoints.</p> 	<p>positive integers Integers that are greater than zero.</p> <p>1, 2, 3, 4, 5, ...</p>
<p>positive number A number greater than 0.</p> <p>0.5, 2, 100</p>	<p>power A product formed from repeated multiplication by the same number or expression. A power consists of a base and an exponent.</p> <p>2^4 is a power with base 2 and exponent 4.</p>
<p>prime factorization A whole number written as the product of prime numbers.</p> <p>$60 = 2 \times 2 \times 3 \times 5$</p>	<p>prime number A whole number greater than 1 whose only factors are 1 and itself.</p> <p>2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, ...</p>
<p>product The result when two or more numbers are multiplied.</p> <p>The product of 4 and 3 is 4×3, or 12.</p>	<p>quadrants The four regions created by the intersection of the x-axis and the y-axis in a coordinate plane.</p> <p><i>See coordinate plane.</i></p>

<p>quadrilateral A polygon with four sides.</p> 	<p>quotient The result of a division.</p> <p>The quotient of 10 and 5 is $10 \div 5$, or 2.</p>
<p>radius (of a circle) The distance from the center of a circle to any point on the circle.</p> <p><i>See circumference.</i></p>	<p>range (of a data set) The difference between the greatest value and the least value of a data set. The range describes how spread out the data are.</p> <p>The range of the data set 12, 16, 18, 22, 27, 35 is $35 - 12 = 23$.</p>
<p>rate A ratio of two quantities with different units.</p> <p>You read 3 books every 2 weeks.</p>	<p>ratio A comparison of two quantities using division. The ratio of a to b (where $b \neq 0$) can be written as a to b, $a : b$, or $\frac{a}{b}$.</p> <p>4 to 1, $4 : 1$, or $\frac{4}{1}$</p>
<p>ray A part of a line that has one endpoint and extends without end in one direction.</p> 	<p>reciprocals Two numbers whose product is 1.</p> <p>Because $\frac{4}{5} \times \frac{5}{4} = 1$, $\frac{4}{5}$ and $\frac{5}{4}$ are reciprocals.</p>

<p>rectangle A parallelogram with four right angles.</p> 	<p>rectangular prism A three-dimensional figure that has 6 rectangular sides.</p> 
<p>remainder If a divisor does not divide a dividend evenly, the remainder is the whole number left over after the division.</p> $\begin{array}{r} 4 \text{ R}2 \text{ The remainder is 2.} \\ 7 \overline{)30} \\ \underline{28} \\ 2 \end{array}$	<p>repeating decimal A decimal that repeats a pattern of one or more digits.</p> $0.555\dots = 0.\overline{5}$ $1.727272\dots = 1.\overline{72}$
<p>round To approximate a number to a given place value.</p> <p>132 rounded to the nearest ten is 130.</p>	<p>semicircle One half of a circle.</p> 
<p>simplest form of a fraction A fraction is in simplest form if its numerator and denominator have a greatest common factor (GCF) of 1.</p> <p>The simplest form of the fraction $\frac{10}{15}$ is $\frac{2}{3}$.</p>	<p>solution (of an equation) A value that makes an equation true.</p> <p>6 is the solution of the equation $x - 4 = 2$.</p>

<p>solution of an inequality</p> <p>A value that makes an inequality true.</p> <p>A solution of the inequality $x + 3 > 9$ is $x = 12$.</p>	<p>solution set</p> <p>The set of all solutions of an inequality.</p>
<p>solve a formula</p> <p>Find the value of one variable by substituting numbers for the other variables.</p> $\begin{aligned} \ell &= 6 \text{ in.}, w = 10 \text{ in.} \\ P &= 2\ell + 2w \\ &= 2(6) + 2(10) \\ &= 32 \text{ in.} \end{aligned}$	<p>square</p> <p>A parallelogram with four right angles and four sides of equal length.</p> 
<p>Subtraction Property of Equality</p> <p>If you subtract the same number from each side of an equation, the two sides remain equal.</p> $\begin{array}{r} x + 4 = 5 \\ -4 \quad -4 \\ \hline x = 1 \end{array}$	<p>Subtraction Property of Inequality</p> <p>If you subtract the same number from each side of an inequality, the inequality remains true.</p> $\begin{array}{r} x + 4 > 5 \\ -4 \quad -4 \\ \hline x > 1 \end{array}$
<p>sum</p> <p>The result when two or more numbers are added.</p> <p>The sum of 4 and 3 is $4 + 3$, or 7.</p>	<p>surface area of a solid</p> <p>The sum of the areas of the outside surfaces of a solid.</p>  $\begin{aligned} \text{Surface area} &= 2\pi r^2 + 2\pi rh \\ &\approx 904.32 \text{ mm}^2 \end{aligned}$

<p>terminating decimal A decimal that ends. A decimal that can be written as a fraction.</p> <p style="text-align: center;">1.5, 2.58, 100.1</p>	<p>terms The parts of an expression that are added together.</p> <p>The terms of $4x + 7$ are $4x$ and 7.</p>
<p>three-dimensional figure A figure that has length, width, and depth.</p> 	<p>trapezoid A quadrilateral with exactly one pair of parallel sides.</p> 
<p>triangle A polygon with three sides.</p> 	<p>two-dimensional figure A figure that has only length and width.</p> 
<p>two-step equation An equation that contains two different operations.</p> <p style="text-align: center;">$3x + 4 = 7$, $2x - 5 = 13$</p>	<p>underestimate An estimate that is less than the exact answer.</p> $35\frac{7}{8} \times 8\frac{1}{3} \approx 35 \times 8$ $= 280$

<p>unit cost</p> <p>A unit rate for cost per unit.</p> <p>The cost per bottle is \$3.</p>	<p>unit rate</p> <p>A rate that compares a quantity to one unit of another quantity.</p> <p>The speed limit is 65 miles per hour.</p>
<p>variable</p> <p>A symbol, usually a letter, that represents one or more numbers.</p> <p>x is a variable in $2x + 1$.</p>	<p>vertex of a polygon</p> <p>A point at which two sides of a polygon meet. The plural of vertex is vertices.</p> <p><i>See polygon.</i></p>
<p>volume</p> <p>A measure of the amount of space that a three-dimensional figure occupies. Volume is measured in cubic units such as cubic feet (ft^3) or cubic meters (m^3).</p>  <p style="text-align: center;">$V = \ell wh = 12(3)(4) = 144 \text{ ft}^3$</p>	<p>whole numbers</p> <p>The numbers 0, 1, 2, 3, 4, ...</p>
<p>x-axis</p> <p>The horizontal number line in a coordinate plane.</p> <p><i>See coordinate plane.</i></p>	<p>x-coordinate</p> <p>The first coordinate in an ordered pair, which indicates how many units to move to the left or right.</p> <p>In the ordered pair (3, 5), the x-coordinate is 3.</p>

<p>y-axis</p> <p>The vertical number line in a coordinate plane.</p> <p><i>See coordinate plane.</i></p>	<p>y-coordinate</p> <p>The second coordinate in an ordered pair, which indicates how many units to move up or down.</p> <p>In the ordered pair $(3, 5)$, the y-coordinate is 5.</p>
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