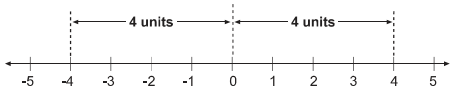
Vocabulary

Vocabulary

Use the vocabulary words and definitions below as a reference for this unit.

absolute value ..... a number's distance from zero (0) on the number line
Example: The absolute value of both 4, written $|4|$, and negative 4, written $|-4|$, equals 4.



additive identity ..... the number zero (0), that is, adding 0 does not change a number's value
Example: 5 + 0 = 5

additive inverses ..... a number and its opposite whose sum is zero (0); also called *opposites*
Example: In the equation 3 + -3 = 0, 3 and -3 are additive inverses, or *opposites*, of each other.

area (*A*) ..... the inside region of a two-dimensional figure measured in square units
Example: A rectangle with sides of four units by six units contains 24 square units or has an area of 24 square units.

associative property ..... the way in which three or more numbers are grouped for addition or multiplication does *not* change their sum or product
Example: (5 + 6) + 9 = 5 + (6 + 9) *or* (2 x 3) x 8 = 2 x (3 x 8)

base (of an exponent) ..... the number that is used as a factor a given number of times
Example: In 2^3, 2 is the base and 3 is the exponent.

Vocabulary

commutative property ..... the order in which any two numbers are added or multiplied does *not* change their sum or product
Example: 2 + 3 = 3 + 2 *or* 4 x 7 = 7 x 4

coordinate ..... the number paired with a point on the number line

cube (power) ..... the third power of a number
Example: $4^3 = 4 \times 4 \times 4 = 64$

decrease ..... to make less

difference ..... the result of a subtraction
Example: In 16 – 9 = 7,
7 is the difference.

equation ..... a mathematical sentence that equates one expression to another expression
Example: $2x = 10$

equivalent (forms of a number) ..... the same number expressed in different forms
Example: $\frac{3}{4}$, 0.75, and 75%

estimation ..... the use of rounding and/or other strategies to determine a reasonably accurate approximation without calculating an exact answer

exponent (exponential form) ..... the number of times the base occurs as a factor
Example: 2^3 is the exponential form of 2 x 2 x 2. The numeral two (2) is called the *base,* and the numeral three (3) is called the *exponent*.

Vocabulary

expression ..... a collection of numbers, symbols, and/or operation signs that stands for a number
Example: $4r^2$; $3x + 2y$; $\sqrt{25}$
Expressions do *not* contain equality (=) or inequality (<, >, ≤, ≥, or ≠) symbols.

factor ..... a number or expression that divides exactly another number
Example: 1, 2, 4, 5, 10, and 20 are factors of 20.

fraction ..... any number representing some part of a whole; of the form $\frac{a}{b}$
Example: One-half written in fractional form is $\frac{1}{2}$.

graph of a number ..... the point on a number line paired with the number

increase ..... to make greater

inequality ..... a sentence that states one expression is greater than (>), greater than or equal to (≥), less than (<), less than or equal to (≤), or not equal to (≠) another expression
Example: $a \neq 5$ or $x < 7$

integers ..... the numbers in the set
{… , -4, -3, -2, -1, 0, 1, 2, 3, 4, …}

inverse operation ..... an action that cancels a previously applied action
Example: Subtraction is the inverse operation of addition.

length (*l*) ..... a one-dimensional measure that is the measurable property of line segments

Vocabulary

multiplicative identity ..... the number one (1), that is, multiplying by 1 does not change a number's value
Example: 5 x 1 = 5

multiplicative inverses ..... any two numbers with a product of 1; also called *reciprocals*
Example: 4 and $\frac{1}{4}$

natural numbers ..... the counting numbers {1, 2, 3, 4, …}

negative numbers ..... numbers less than zero

number line ..... a line on which numbers can be written or visualized

opposites ..... two numbers whose sum is zero
Example: $-5 + 5 = 0$ *or* $\frac{2}{3} + -\frac{2}{3} = 0$
opposites opposites

order of operations ..... the order of performing computations in parentheses first, then exponents or powers, followed by multiplication and division, then addition and subtraction
Examples: $5 + (12 - 2) \div 2 - 3 \times 2 =$
$5 + 10 \div 2 - 3 \times 2 =$
$5 + 5 - 6 =$
$10 - 6 =$
4

origin ..... the graph of zero (0) on the number line *or* the intersection of the *x*-axis and the *y*-axis in a coordinate plane, described by the ordered pair (0, 0)

perfect square ..... a number whose square root is a whole number
Example: 25 is a perfect square because 5 x 5 = 25

Vocabulary

point ..... a location in space that has no length or width

positive numbers ..... numbers greater than zero

power (of a number) ..... an exponent; the number that tells how many times a number is used as a factor
Example: In 2^3, 3 is the power.

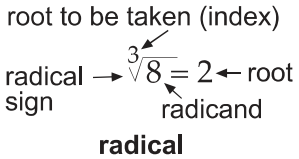
prime factorization ..... writing a number as the product of prime numbers
Example: $24 = 2 \times 2 \times 2 \times 3 = 2^3 \times 3$

prime number ..... any whole number with only two factors, 1 and itself
Example: 2, 3, 7, 11, etc.

product ..... the result of a multiplication
Example: In $6 \times 8 = 48$,
48 is the product.

quotient ..... the result of a division
Example: In $42 \div 7 = 6$,
6 is the quotient.

radical ..... an expression that has a root (square root, cube root, etc.)
Example: $\sqrt{25}$ is a radical
Any root can be specified by an index number, *b*, in the form $\sqrt[b]{a}$ (e.g., $\sqrt[3]{8}$).
A radical without an index number is understood to be a square root.



radical

Vocabulary

radical sign ($\sqrt{\ }$) ..... the symbol ($\sqrt{\ }$) used before a number to show that the number is a *radicand*

radicand ..... a number that appears under a radical sign
Example: In $\sqrt{25}$, 25 is the radicand.

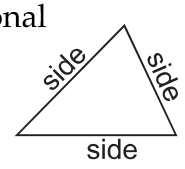
reciprocals ..... two numbers whose product is 1; also called *multiplicative inverses*
Example: Since $\frac{3}{4} \times \frac{4}{3} = 1$, the reciprocal of $\frac{3}{4}$ is $\frac{4}{3}$.

root ..... an equal factor of a number
Example:
In $\sqrt{144} = 12$, 12 is the square root.
In $\sqrt[3]{125} = 5$, 5 is the cube root.

rounded number ..... a number approximated to a specified place
Example: A commonly used rule to round a number is as follows.

- If the digit in the first place after the specified place is 5 or more, *round up* by adding 1 to the digit in the specified place ($\underline{4}61$ rounded to the nearest hundred is 500).
- If the digit in the first place after the specified place is less than 5, *round down* by *not* changing the digit in the specified place ($\underline{4}41$ rounded to the nearest hundred is 400).

side ..... the edge of a two-dimensional geometric figure
Example: A triangle has three sides.



Vocabulary

simplest form ..... a fraction whose numerator and denominator have no common factor greater than 1
Example: The simplest form of $\frac{3}{6}$ is $\frac{1}{2}$.

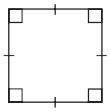
simplify a fraction ..... write fraction in lowest terms or simplest form

simplify an expression ..... to perform as many of the indicated operations as possible

solution ..... any value for a variable that makes an equation or inequality a true statement
Example: In $y = 8 + 9$
$y = 17$ 17 is the solution.

solve ..... to find all numbers that make an equation or inequality true

square ..... a rectangle with four sides the same length



square (of a number) ..... the result when a number is multiplied by itself or used as a factor twice
Example: 25 is the square of 5.

square root (of a number) ..... one of two equal factors of a number
Example: 7 is the square root of 49.

square units ..... units for measuring area; the measure of the amount of an area that covers a surface

Vocabulary

standard form ..... a method of writing the common symbol for a numeral
Example: The standard numeral for five is 5.

substitute ..... to replace a variable with a numeral
Example: 8(a) + 3
8(5) + 3

sum ..... the result of an addition
Example: In 6 + 8 = 14,
14 is the sum.

unit (of length) ..... a precisely fixed quantity used to measure measurement in inches, feet, yards, and miles, or centimeters, meters, and kilometers

value (of a variable) ..... any of the numbers represented by the variable

variable ..... any symbol that could represent a number

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

width (w) ..... a one-dimensional measure of something side to side