Vocabulary

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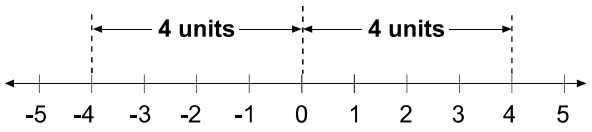
Use the vocabulary words and definitions below as a reference for this unit.

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



addend .....any number being added
Example: In 14 + 6 = 20, the addends are 14 and 6.

additive identity .....the number zero (0); when zero (0) is added to another number the sum is the number itself
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, the additive inverses are 3 and -3.

algebraic expression .....an expression containing numbers and variables ($7x$) and operations that involve numbers and variables ($2x + y$ or $3a^2 - 4b + 2$); however, they do not contain equality (=) or inequality symbols ($<$, $>$, $\leq$, $\geq$, or $\neq$)

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

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braces { } ..... grouping symbols used to express sets

commutative property ..... the order in which two numbers are added or multiplied does *not* change their sum or product, respectively
Examples: $2 + 3 = 3 + 2$ *or*
$4 \times 7 = 7 \times 4$

counting numbers
(natural numbers) ..... the numbers in the set {1, 2, 3, 4, 5, …}

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

decimal number ..... any number written with a decimal point in the number
Examples: A decimal number falls between two whole numbers, such as 1.5, which falls between 1 and 2. Decimal numbers smaller than 1 are sometimes called *decimal fractions*, such as five-tenths, or $\frac{5}{10}$, which is written 0.5.

difference ..... a number that is the result of subtraction
Example: In $16 - 9 = 7$, the difference is 7.

digit ..... any one of the 10 symbols 0, 1, 2, 3, 4, 5, 6, 7, 8, or 9

element or **member** ..... one of the objects in a set

empty set or **null set (ø)** .... a set with no elements or members

equation ..... a mathematical sentence stating that the two expressions have the same value
Example: $2x = 10$

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even integer ..... any integer divisible by 2; any integer with the digit 0, 2, 4, 6, or 8 in the units place; any integer in the set {… , -4, -2, 0, 2, 4, …}

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*.

expression ..... a mathematical phrase or part of a number sentence that combines numbers, operation signs, and sometimes variables
Examples: $4r^2$; $3x + 2y$; $\sqrt{25}$
An expression does *not* contain equal (=) or inequality (<, >, ≤, ≥, or ≠) signs.

finite set ..... a set in which a whole number can be used to represent its number of elements; a set that has bounds and is limited

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

grouping symbols ..... parentheses ( ), braces { }, brackets [ ], and fraction bars indicating grouping of terms in an expression

infinite set ..... a set that is not finite; a set that has no boundaries and no limits

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

irrational number ..... a real number that cannot be expressed as a ratio of two integers
Example: $\sqrt{2}$

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member or **element** .....one of the objects in a set

multiples .....the numbers that result from multiplying a given whole number by the set of whole numbers
Example: The multiples of 15 are 0, 15, 30, 45, 60, 75, etc.

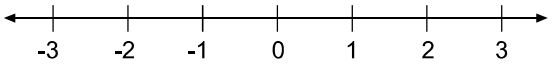
natural numbers
(counting numbers) .....the numbers in the set {1, 2, 3, 4, 5, …}

negative integers .....integers less than zero

negative numbers .....numbers less than zero

null set (ø) or **empty set** ....a set with no elements or members

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



odd integer .....any integer *not* divisible by 2; any integer with the digit 1, 3, 5, 7, or 9 in the units place; any integer in the set {… , -5, -3, -1, 1, 3, 5, …}

opposites .....two numbers whose sum is zero; also called *additive inverses*
Examples: $-5 + 5 = 0$ *or* $\frac{2}{3} + \left(-\frac{2}{3}\right) = 0$
opposites opposites

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order of operations .....the order of performing computations in parentheses first, then exponents or powers, followed by multiplication and/or division (as read from left to right), then addition and/or subtraction (as read from left to right); also called *algebraic order of operations*
Example: $5 + (12 - 2) \div 2 - 3 \times 2 =$
$5 + 10 \div 2 - 3 \times 2 =$
$5 + 5 - 6 =$
$10 - 6 =$
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pattern (relationship) .....a predictable or prescribed sequence of numbers, objects, etc.; may be described or presented using manipulatives, tables, graphics (pictures or drawings), or algebraic rules (functions)
Example: 2, 5, 8, 11 … is a pattern. Each number in this sequence is three more than the preceding number. Any number in this sequence can be described by the algebraic rule, $3n - 1$, by using the set of counting numbers for n.

pi (π) .....the symbol designating the ratio of the circumference of a circle to its diameter; an irrational number with common approximations of either 3.14 or $\frac{22}{7}$

positive integers .....integers greater than zero

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.

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product ..... the result of multiplying numbers together
Example: In 6 x 8 = 48, the product is 48.

quotient ..... the result of dividing two numbers
Example: In 42 ÷ 7 = 6, the quotient is 6.

ratio ..... the comparison of two quantities
Example: The ratio of a and b is a:b or $\frac{a}{b}$, where $b \neq 0$.

rational number ..... a number that can be expressed as a ratio $\frac{a}{b}$, where a and b are integers and $b \neq 0$

real numbers ..... the set of all rational and irrational numbers

repeating decimal ..... a decimal in which one digit or a series of digits repeat endlessly
Examples: 0.3333333… or $0.\overline{3}$
24.6666666… or $24.\overline{6}$
5.27272727… or $5.\overline{27}$
6.2835835… or $6.2\overline{835}$

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

set ..... a collection of distinct objects or numbers

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

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

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.

sum ..... the result of adding numbers together
Example: In $6 + 8 = 14$, the sum is 14.

terminating decimal ..... a decimal that contains a finite (limited) number of digits
Example: $\frac{3}{8} = 0.375$
$\frac{2}{5} = 0.4$

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

variable ..... any symbol, usually a letter, which could represent a number

Venn diagram ..... a diagram which shows the relationships between sets

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