Vocabulary

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

canceling ..... dividing a numerator and a denominator by a common factor to write a fraction in lowest terms or before multiplying fractions
Example: $\frac{15}{24} = \frac{^{1}\cancel{3} \bullet 5}{2 \bullet 2 \bullet 2 \bullet \cancel{3}_{1}} = \frac{5}{8}$

common denominator ..... a common multiple of two or more denominators
Example: A common denominator for $\frac{1}{4}$ and $\frac{5}{6}$ is 12.

common factor ..... a number that is a factor of two or more numbers
Example: 2 is a common factor of 6 and 12.

common multiple ..... a number that is a multiple of two or more numbers
Example: 18 is a common multiple of 3, 6, and 9.

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cross multiplication .....a method for solving and checking proportions; a method for finding a missing numerator or denominator in equivalent fractions or ratios by making the cross products equal

Example: Solve this proportion by doing the following.

$$\frac{n}{9} = \frac{8}{12}$$

$$12 \times n = 9 \times 8$$
$$12n = 72$$
$$n = \frac{72}{12}$$
$$n = 6$$

Solution:

$$\frac{⑥}{9} = \frac{8}{12}$$

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.

denominator .....the bottom number of a fraction, indicating the number of equal parts a whole was divided into

Example: In the fraction $\frac{2}{3}$ the denominator is 3, meaning the whole was divided into 3 equal parts.

difference .....a number that is the result of subtraction

Example: In $16 - 9 = 7$, the difference is 7.

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distributive property ..... the product of a number and the sum or difference of two numbers is equal to the sum or difference of the two products
Examples: $x(a + b) = ax + bx$
$5(10 + 8) = 5 \bullet 10 + 5 \bullet 8$

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

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

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 ($<$, $>$, $\leq$, $\geq$, or $\neq$) signs.

factor ..... a number or expression that divides evenly into another number; one of the numbers multiplied to get a product
Example: 1, 2, 4, 5, 10, and 20 are factors of 20 and $(x + 1)$ is one of the factors of $(x^2 - 1)$.

factoring ..... expressing a polynomial expression as the product of monomials and polynomials
Example: $x^2 - 5x + 4 = 0$
$(x - 4)(x - 1) = 0$

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

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
Examples: $a \neq 5$ *or* $x < 7$ *or* $2y + 3 \geq 11$

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

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

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

least common denominator (LCD) ..... the smallest common multiple of the denominators of two or more fractions
Example: For $\frac{3}{4}$ and $\frac{1}{6}$, 12 is the least common denominator.

least common multiple (LCM) ..... the smallest of the common multiples of two or more numbers
Example: For 4 and 6, 12 is the least common multiple.

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like terms ..... terms that have the same variables and the same corresponding exponents
Example: In $5x^2 + 3x^2 + 6$, the like terms are $5x^2$ and $3x^2$.

minimum ..... the smallest amount or number allowed or possible

multiplicative identity ..... the number one (1); the product of a number and the multiplicative identity is the number itself
Example: 5 x 1 = 5

multiplicative property of -1 ..... the product of any number and -1 is the opposite or additive inverse of the number
Example: -1(a) = -a and a(-1) = -a

negative numbers ..... numbers less than zero

numerator ..... the top number of a fraction, indicating the number of equal parts being considered
Example: In the fraction $\frac{2}{3}$, the numerator is 2.

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) ÷ 2 – 3 x 2 =
5 + 10 ÷ 2 – 3 x 2 =
5 + 5 – 6 =
10 – 6 =
4

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polynomial ..... a monomial or sum of monomials; any rational expression with no variable in the denominator
Examples: $x^3 + 4x^2 - x + 8$ $5mp^2$
$-7x^2y^2 + 2x^2 + 3$

positive numbers ..... numbers greater than zero

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 expression ..... a fraction whose numerator and/or denominator are polynomials
Examples: $\frac{x}{8}$ $\frac{5}{x+2}$ $\frac{4x^2+1}{x^2+1}$

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

reciprocals ..... two numbers whose product is 1; also called *multiplicative inverses*
Examples: 4 and $\frac{1}{4}$ are reciprocals because $\frac{4}{1} \times \frac{1}{4} = 1$; $\frac{3}{4}$ and $\frac{4}{3}$ are reciprocals because $\frac{3}{4} \times \frac{4}{3} = 1$; zero (0) has no multiplicative inverse

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simplest form (of a fraction) ..... 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 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.

substitute ..... to replace a variable with a numeral

Example: $8(a) + 3$

$8(5) + 3$

sum ..... the result of adding numbers together

Example: In $6 + 8 = 14$, the sum is 14.

term ..... a number, variable, product, or quotient in an expression

Example: In the expression $4x^2 + 3x + x$, the terms are $4x^2$, $3x$, and x.

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