Vocabulary

Vocabulary

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

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.

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

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.

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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: To solve this proportion:

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

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

Solution:

$$\frac{6}{9} = \frac{8}{12}$$

cross product .... the product of one numerator and the opposite denominator in a pair of fractions

Example:

Is $\frac{2}{5}$ equal to $\frac{6}{15}$?

$$\frac{2}{5} \overset{?}{=} \frac{6}{15}$$

$$2 \times 15 \overset{?}{=} 5 \times 6 \quad \text{The cross products are } 2 \times 15 \text{ and } 5 \times 6.$$

$$30 = 30 \qquad \text{Both cross products equal } 30.$$
Yes, $\frac{2}{5} = \frac{6}{15}$. $\qquad$ The cross products of equivalent fractions are equal.

decimal number .... any number written with a decimal point in the number

Example: A decimal number falls between two whole numbers, such as 1.5 falls between 1 and 2. Decimal numbers smaller than 1 are sometimes called decimal fractions, such as five-tenths is written 0.5.

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decimal point .... the dot dividing a decimal number's whole part from its fractional part

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

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

divisor .... a number by which another number, the dividend, is divided
Example: In $7\overline{)42}$, $42 \div 7$, $\frac{42}{7}$, 7 is the divisor.

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

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

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 ($<$, $>$, $\leq$, $\geq$, or $\neq$) 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 $\frac{1}{2}$.

greatest common factor (GCF) .... the largest of the common factors of two or more numbers
Example: For 6 and 8, 2 is the greatest common factor.

improper fraction .... a fraction that has a numerator greater than or equal to the denominator
Example: $\frac{5}{4}$ or $\frac{3}{3}$ are improper fractions.

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

interest .... the amount of money paid for the use of
money

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.

mixed number .... a number that consists of both a whole
number and a fraction
Example: $1\frac{1}{2}$ is a mixed number.

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.

percent (%) .... a special-case ratio in which the
second term is always 100
Example: The ratio is written as a whole
number followed by a percent sign,
such as 25% which means the ratio of
25 to 100.

percent of change .... the amount of change divided by the
original amount
Example: $\frac{\text{amount of change}}{\text{original amount}}$

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percent of decrease .... the percent the amount of decrease is of the original amount; also called the *discount*

Example: $\frac{\text{amount of decrease}}{\text{original amount}}$

percent of increase .... the percent the amount of increase is of the original amount

Example: $\frac{\text{amount of increase}}{\text{original amount}}$

perimeter (*P*) .... the length of the boundary around a figure; the distance around a polygon

place value .... the position of a single digit in a whole number or decimal number containing one or more digits

positive numbers .... numbers greater than zero

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.

principal .... the amount of money on which interest is paid

product .... the result of a multiplication

Example: In 6 x 8 = 48, 48 is the product.

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proportion .... a mathematical sentence stating that two ratios are equal
Example: The ratio of 1 to 4 equals 25 to 100, that is $\frac{1}{4} = \frac{25}{100}$.

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

rate/distance .... calculations involving rates, distances, and time intervals, based on the distance, rate, time formula ($d = rt$); a ratio comparing two different units
Example: miles per hour

ratio .... the quotient of two numbers used to compare two quantities
Example: The ratio of 3 to 4 is $\frac{3}{4}$.

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 $\frac{4}{3}$.

remainder .... the whole number left after one number is divided by another number

$$\text{quotient} \rightarrow 4 \text{ R } 4 \leftarrow$$
$$\text{divisor} \rightarrow 5\overline{)24} \quad \text{dividend}$$
$$\underline{20} \qquad \text{remainder}$$
$$4 \leftarrow$$

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repeating decimal .... a decimal in which one digit or a series of digits repeat endlessly

Example: 0.3333333… or $0.\overline{3}$
24.6666666… or $24.\overline{6}$
5.27272727… or $5.\overline{27}$
6.2835835… or $6.2\overline{835}$

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 (461 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 (441 rounded to the nearest hundred is 400).

scientific notation .... a shorthand method of writing very large or very small numbers using exponents in which a number is expressed as the product of a power of 10 and a number that is greater than or equal to one (1) and less than 10
Example: The number is written as a decimal number between 1 and 10 multiplied by a power of 10, such as $7.59 \times 10^5 = 759,000$. It is based on the idea that it is easier to read exponents than it is to count zeros. If a number is already a power of 10, it is simply written 10^{27} instead of 1×10^{27}.

Unit 2: Measurement

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

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

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

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

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

unit .... a precisely fixed quantity used to measure

unit price .... the cost of one unit of a particular item, expressed in the unit in which the product is generally measured

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unit rate .... a rate with a denominator of 1; a rate for one unit of a given quantity
Example: feet per second, miles per gallon, miles per hour, or cents per pound

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, …}