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WELCOME TO THE MATH APPLICATIONS COURSE - PART 1!

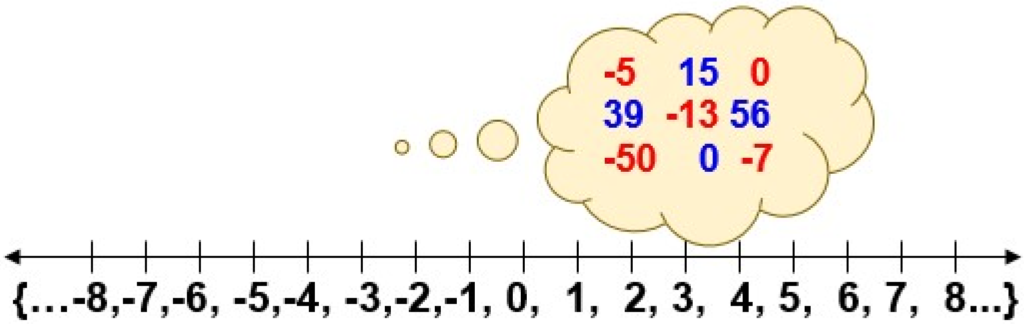
Course Overview

The Mathematics Applications course will cover math concepts spanning your entire mathematical student career. The aspect of technology is embedded in mathematics which includes use of calculators, computers, and software applications.

Unit Overview

In this unit, you will learn about integers and the rules that apply to adding, subtracting, multiplying and dividing these special numbers. You will also work with absolute value, a value that represents a number's distance from zero and comparing integers. You will apply your knowledge of integers to solve problem scenarios.

Comparing Integers



Integers are used to show positive and negative quantities. Integers are a union of the natural numbers (counting numbers), “0”, and the natural numbers’ opposites. Thus, integers are {…-4, -3, -2, -1, 0, 1, 2, 3, 4,…}.

Starting anywhere on the number line, **a number to the right** will be of **higher value** than the one on the left.

Example:

In the game of Jeopardy, Jennifer’s score was -100 and Jeremy’s score was -400. Which person is closer to getting back into the positive numbers?

{…-800, -700, -600, -500, -400, -300, -200, -100, 0, 100, 200, 300, 400, 500, 600, 700, 800...}

Since Jennifer’s score is to the right of Jeremy’s score, her score is higher than his, and she is closer to getting back into the positive numbers.

-100 > -400
-100 is greater than -400

Other Examples:

600 > 200
600 is greater than 200
(600 is to the right of 200 on the number line.)

300 > -700
300 is greater than -700
(300 is to the right of -700 on the number line.)
(Any positive number will be greater than a negative number.)

To compare integers, think about the number line and which one is located to the right of the other. The integer on the **right** will be the **larger** of the two integers.

Absolute Value

Absolute value of an integer is the distance the integer is from zero.

{…-8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8...}

5 units → ← 5 units

Absolute value is represented by two vertical bars around the number.

The absolute value of –5 is 5 because –5 is 5 units from 0. $|-5| = 5$

The absolute value of 5 is 5 because 5 is 5 units from 0. $|5| = 5$

The integers are a set of numbers that contain the whole numbers and their opposites. There are no decimals or fractions in the set of integers.

Integers: {… –4, –3, –2, –1, 0, 1, 2, 3, 4 …}

Addition of Integers

Rule 1: When the signs are the **same**, **ADD** the values and use the same sign.

Example 1: Find the sums.

$-4+(-5)=-9$ The signs are the same (both are negative), so ADD, and the answer will be negative.

$21+45=66$ The signs are the same (both are positive), so ADD, and the answer will be positive.

Rule 2: When the signs are **not the same**, **SUBTRACT** and take the sign of the number that is farthest from zero on the number line.

Example 2: Find the sums.

The integers are a set of numbers that contain the whole numbers and their opposites. There are no decimals or fractions in the set of integers.

Integers: {… –4, –3, –2, –1, 0, 1, 2, 3, 4 …}

Multiplication and Division of Integers

These two operations have very simple rules.

Rule 1: When the signs of each number are the **same**, the answer is automatically **positive**.

Example 4: Find the products.

$(-8)(-5) = +40 = 40$

$(9)(6) = 54$

$56 \div 7 = 8$

$(-64) \div (-16) = +4 = 4$

Rule 2: When the signs of the two numbers are **different**, the answer is **negative**.

Example 5: Find the quotients.

$(-6)(7) = -42$

$(10)(-3) = -30$

$100 \div (-20) = -5$

$(-72) \div 12 = -6$

Be sure to consider only one pair of numbers at a time. If three numbers are multiplied together, consider the first two, and then the third.

Example 6: Find the product of $(-4)(-3)(-5)$.

$$(-4)\times(-3)\times(-5) \;=\; 12\times(-5) \;=\; -60$$