USING INTEGERS

- **Integers** are negative numbers, zero and positive numbers.

- On a number line, negative integers are on the left side of zero with the larger a negative number, the farther to the left it is. Positive integers are on the right side of zero on the number line. If a number is to the left of another number it is said to be less than that number.

- In the **coordinate plane**, the x-axis is a horizontal line with negative numbers, zero and positive numbers.

- The y-axis is a vertical line with negative numbers, zero and positive numbers.

- To plot coordinates on the coordinate plane, the first coordinate is for the x-axis and the second number is for the y-axis. When plotting bers.

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- With **m** ules must also be followed. To multiply and divide, first the numbers are either multiplied or divided as stated. Then the sign for the answer is determined based on the following:

(+)(+) or (-)(-) = +
(+)(-) or (-)(+) = -

- **Order of operations** is the rule for the order in which mathematical operations should be performed. Another name for this is **PEMDAS**. PEMDAS states the operation order by name.

  - The order is as follows: **Parenthesis, Exponents, Multiplication and Division, Addition and Subtraction.**
  - Multiplication and division are equal operations and need to be performed from left to right.
  - The same applies to addition and subtraction.
  - This ensures that each person evaluating an expression will get the same answer.

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- **Distribution** is the practice of multiplying numbers and variables, such as 3(x + 2) by first multiplying the number, 3, by the variable, x, and then multiplying the number, 3, by the other number, 2, to get the answer of 3x + 6.

How to Use Integers:

- To **compare integers**, a number line can be used.
- Example: The following numbers, 6, -5, 12, 0, -1, -10, 2, can be ordered from least to greatest.
    - The negative numbers are less than the positive numbers, so the order is -10, -5, -1, 0, 2, 6, 12.
    - Remember the larger a negative number, the farther to the left it is.

On the **coordinate plane**, there are four quadrants.

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- To **add** a positive **integer**, start at the first number and move to the right on the number line the number to be added. To add negative integers, start at the first number and move to the left on the number line the number to be added.

Ex. **-6 + 3 = -3** (move right) **-6 + (-3) = -9** (move left)

- To **subtract** a positive **integer**, start at the first number and move to the left on the number line the number to be subtracted. When subtracting a negative integer, change both signs to positive and the numbers are added.

Ex. **5 - 3 = 2** (move left) **5 - (-3) = 5 + (+3) = 8**

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- To **multiply and divide integers**, first the numbers are either multiplied or divided as stated. Then the sign for the answer is determined based on the following: (+)(+) or (-)(-) = +; (+)(-) or (-)(+) = -.

Ex. **(-5)(-7) = +35** **(-6)(9) = -54**

- **Order of operations** means PEMDAS, so to evaluate $2^2 + 6 \div 3$, first evaluate $2^2 = 4$. The expression becomes $4 + 6 \div 3$. Next 6 is divided by 3 to get 4 + 2, which equals 6.

- **Distribution** is the practice of multiplying numbers and variables. The expression 5(x - 4) = 5x - (5)(4) = 5x - 20.

Try This!

Order the

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If a point **signs be**?

Add the integers: 9 + (-5) = ? -4 + 6 = ? -3 + (-7) = ?

Subtract the integers: 9 - 12 = ? -2 - 3 = ? -6 - (-10) = ?

Multiply or divide the integers: (-5)(8) = ? (-7)(-4) = ? -63/-9 = ?

Evaluate using order of operations: $4^2 - 10 \div 2 = ?$

Distribute: 6(x - 3) = ? -8(x - 5) = ?

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