Math-2
Lesson 1-1
Basic Vocabulary

Math is a language, learn the vocabulary!

"Expression" (a math "phrase")   A name or a symbol for a number

$$4 \qquad x + 3 \qquad 3x + 4y - 2$$

Do you see an equal sign in an expression?

"Statement" (a math sentence)

A meaningful assertion that is either true or false.

The most common "statement" is an equation.

$$x + 3 = 5$$

Another "statement" could be an inequality.

$$x + 3 \leq 5$$

<u>Equivalence</u>?

Consult with your neighbor to define "equivalence" as it applies to mathematics.

Fill in the blank:

$$7 - 4 = \underline{\ \ 3\ \ }$$

Are there any other possible "equivalences"?

$$"3" = \{3, \frac{6}{2}, \frac{3x}{x}, (5-2),...\}$$

<u>Equivalent Equation</u>   An equation that means the same thing (has the same "solution") as the first equation.

x = 2   and 2x = 4 are <u>equivalent equations.</u>

<u>Solution</u>: the number (or numbers) that when substituted in for the unknown value will make the statement true.

3x + 4 = 7   Is 5 a <u>solution</u> of the equation?

Does the equation have more than one solution?

Can an <u>expression</u> have a <u>solution</u>?

Are <u>expressions</u> math statements?

<u>"Variable"</u> vs. <u>"Unknown Value"</u>

<u>variable:</u> A letter or symbol can have many values as the solution.

$$x + 3 = 5$$

'x' is an <u>unknown value</u>

What <u>number</u>
does 'x' represent?

$$3x + 4y = 12$$

'x' and 'y' are
the <u>variables</u>

What <u>numberS</u> do
'x' and 'y' represent?

Your turn: What is it?
a. Statement
b. Equation
c. expression

1. $3 + 4 - 1 = 6$

2. $x + 2y$

3. $ax + by > c$

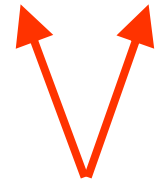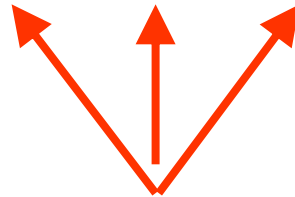Terms   The individual numbers in an expression or an expression or equation.

$4x$

$x + 3$

$3x + 4y - 2$

1 term

2 terms

3 terms

"Monomial"

"Binomial"

"Trinomial"

Coefficient   The number in <u>front</u> of a <u>variable</u> in an expression or an equation.

$$3x + 4y - 2$$

3 is the coefficient of 'x'

4 is the coefficient of 'y'

Constant   A term in an expression or an equation that does not contain a variable

$$3x + 4y - 2$$

-2 is a <u>constant</u> (it's "constantly" -2 regardless of the values of 'x' or 'y')

$$2x + 3 = 5$$

Both 3 and 5 are <u>constants</u>

Your Turn:

$$2x + 5y - 4$$

4.   What type of "nomial" is this? (mon-, bi-, tri-)

5.   List the coefficients

6.   List the variables

7.   Is this an expression or an equation?

8.   List the constants

9.   How many terms are there?

10.   What is the <u>solution</u> of the expression?

Sum

The <u>answer</u> when you add
two or more numbers together.

$$2 + 3 = 5$$

Addends
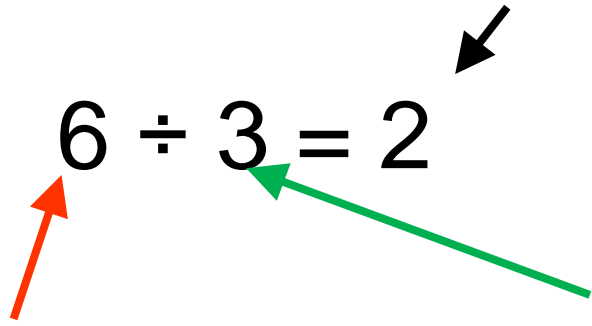
The <u>numbers</u> that are added
together to get the sum.

Factors

The <u>numbers</u> that are multiplied
together to get an <u>equivalent</u> value.

$$2 \times 3 = 6$$

"Product"

The <u>equivalent value</u> of factors
multiplied together.

Quotient   The equivalent value of one number divided by another number.

$$6 \div 3 = 2$$

Divisor   The number that divides the dividend.

Dividend   The number that is being divided.

Your turn

$$\frac{10}{5} = 2$$

Your turn:

Name the circled item (correct vocabulary needed)

14. $2 + \boxed{3} = 5$

15. $2 + 3 = \boxed{5}$

16. $2 * \boxed{3} = 6$

17. $7 * 8 = \boxed{56}$

<u>Mathematical Property</u>: a general rule that, when applied to an expression or an equation, results in an **<u>equivalent</u>** expression or equation.

We use properties to rewrite expressions and equations as in <u>equivalent</u> more-simplified forms.

The following properties are so easy, that you have been applying them without even thinking about them.

You must know the name of each property and be able to give an example of its use.

Identity Property of Addition

Adding <u>zero</u> to a number results in the original number being the <u>sum</u>.

$$5 + 0 = 5$$

Think: "zero added to any number will not change the "identity" of the number."

Inverse Property of Addition

Adding a number so its "opposite" (sign) results in zero as the sum.

$$5 + (-5) = 0$$

Think of the additive inverse of a number as the "opposite" or "negative" of the number.

What is the additive inverse of -22?   of 2/3?

Identity Property of Multiplication

Multiplying any number by <u>one</u> results in the original number being the <u>product</u>.

$$5(1) = 5$$

Think: "one multiplied by any number will not change the "identity" of the number."

Inverse Property of Multiplication

Any number multiplied by its reciprocal will always is equivalent to '1'.

Any number divided by itself always is equivalent to '1'.

$$5 \times \frac{1}{5} = 1$$

$$5 \div 5 = 1 \qquad \frac{5}{5} = 1$$

5 is the "reciprocal" of 1/5
And
1/5 is the reciprocal of 5.

What is the multiplicative inverse (reciprocal) of 1/7?

Your turn:

16. What number do we multiply "3" by to change it into a "1" ?

17. What number do we mulitiply "5y" by to change it into a "y" ?