ALGEBRA VOCABULARY

1. **Equation:** It is a math sentence, like this one: \( 3x + 1 = 7 \)

   It says the **TWO SIDES** are _______________

2. **Variable:** A _______________ that represents a number we do not know yet.

3. **Coefficient:** The number that is being _______________ by the variable.

   Coefficients can be _______________ or _______________.

   EVERY variable has a coefficient! What are the coefficients of the variables below?

   \[ 3a, x, -4m, \frac{2w}{3}, -m, \frac{x}{5} \]

4. **Constant:** Any *real* number in the equation that has NO _______________ attached.

5. **Term:** Each _______________ or _______________ of coefficients and variables is called a separate term in the equation.

   Terms are separated by the + and – signs in the equation, and also by the = sign.

   **Examples:** Separate the terms in each equation below.

   \[ 2k + 15 - m - 3 + n = -7p \]
   
   Terms: __________________________
   
   Variables: __________________________
   
   Coefficients: __________________________
   
   Constants: __________________________

   \[ -8 - 4c + 7 - c - 12c - 2 = m \]
   
   Terms: __________________________
   
   Variables: __________________________
   
   Coefficients: __________________________
   
   Constants: __________________________

6. **Expression:** A group of terms. DOES NOT contain an _______________.

   **Examples:** Separate the terms, then label coefficients, constants, and variables.

   a) \( 8y - 7 + 2y \)  
   b) \( m + 4 + 2 - 7m + 6 \)

   How many TERMS? _______  
   List them: __________________________

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   List them: __________________________
Inequality: A math sentence that contains the symbols: _____, _____, _____, or _____.

>: ___________________________________  <: ___________________________________
≥: ___________________________________  ≤: ___________________________________

Tell whether the following phrases are expressions, equations, or inequalities. Circle the key symbol.

1)  5x > 25 __________________
2)  \( \frac{1}{2}x - 2 \) __________________
3)  29 - k __________________
4)  8b + 9c < 45 __________________
5)  \( \frac{xy}{12} \) __________________
6)  r - (-12) = 9 __________________
7)  -4m = 16 __________________
8)  h + (-9) ≥ 3 __________________

Label the following parts.

<table>
<thead>
<tr>
<th>Math Sentence</th>
<th>Variables</th>
<th>Coefficients</th>
<th>Constants</th>
<th># of Terms</th>
<th>Equation, Expression, or Inequality?</th>
</tr>
</thead>
<tbody>
<tr>
<td>3x - 2 = 16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TRANSLATING FROM VERBAL TO ALGEBRAIC EXPRESSIONS

STEPS to translate verbal (word) statements into algebraic (math) expressions and equations:

1) Identify the __________ ____________ that represent math operations such as +, −, , , , , , etc.

   To help you do this, circle the math words you find and write the math symbol it represents above the circle.

2) Write the numbers/variables that the words mean, in the correct order.

Below is a table that summarizes the most commonly used words to represent each of the math operations:

<table>
<thead>
<tr>
<th>=</th>
<th>equal sign</th>
<th>•</th>
<th>Multiplication</th>
<th>÷</th>
<th>Division</th>
<th>+</th>
<th>Addition</th>
<th>−</th>
<th>Subtraction</th>
<th>²</th>
<th>Exponents</th>
<th>USE Parentheses</th>
</tr>
</thead>
<tbody>
<tr>
<td>equals</td>
<td>Product</td>
<td>quotient</td>
<td>sum</td>
<td>difference</td>
<td>squared</td>
<td>the quantity of</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>is equal to</td>
<td>of (use with fractions or %)</td>
<td>divided by (into)</td>
<td>more than</td>
<td>less than</td>
<td>cubed</td>
<td>the sum of</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>is</td>
<td>times</td>
<td>per</td>
<td>higher than</td>
<td>fewer than</td>
<td>raised</td>
<td>the difference of</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>verbs: “costs”, “weighs”, etc.</td>
<td>for every</td>
<td>half: ( \frac{1}{2} )</td>
<td>in addition to</td>
<td>decreased by</td>
<td>to the power of</td>
<td>the difference between</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>twice: 2*</td>
<td>double: 2*</td>
<td>triple: 3*</td>
<td>ratio</td>
<td>increased by</td>
<td>subtract</td>
<td>minus</td>
<td>the product of</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Examples:
Write each verbal phrase as an algebraic expression.

1. the sum of 8 and \( t \) 
2. the quotient of \( g \) and 15 
3. the product of 5 and twice \( b \) 
4. the difference of 32 and \( x \) 
5. The product of 7 and \( b \) is equal to 63. 
6. The sum of 45 and double \( r \) is 79.
**SPECIAL KEY WORDS THAT MEAN CHANGE ORDER**

When the problem uses the words ____________________, ____________________ or ____________________, this means you have to change the order of the terms when translating into math.

*Examples:*

**Write each verbal phrase as an algebraic expression.**

7. Eight more than $x$  
8. Six less than $p$

9. 14 less than $f$  
10. 3 more runs than Pirates scored

11. Arthur is 8 years younger than Tanya  
12. 12 less than some number

13. 5 less than the sum of $w$ and 2 is 6.  
14. The quotient of $x$ and 7 is equal to 13

15. Nine times a number decreased by four  
16. Six less than twice a number $x$ is four

17. Seven less than a number is 15  
18. The total of 5 and $c$

19. Five times the sum of six and some number  
20. The quotient of 7 and $d$ decreased by 9

21. Twice the score, increased by 8 points  
22. One more than the difference of $w$ and 10 is 7

23. Twice the difference of $x$ and 3 is 4  
24. $(-65)$ is 5 times a product of 5 and a number

25. Five less than twice a number is 7. ______________________

26. One less than the product of four and a number is 11. ______________________

27. Ten more than the quotient of a number and 3 is 12. ______________________

28. The sum of 9 and the quotient of $x$ and 7 is 11. ______________________

29. The product of 2 and the sum of 5 and $t$ is 8. ______________________

30. Ten less than the quotient of a number and $-2$ is three ______________________