GUIDELINES FOR COMPLETING THE ASSIGNMENT

This packet was created to help you succeed in your upcoming Algebra 1 class. Many of the concepts covered in this packet were taught to you in previous classes. In your upcoming math class we will be building on the concepts covered in this packet.

You may find that you have forgotten some of these concepts. We have taken the time to provide you with step by step instructions within the packet. If you are still confused, be sure to take the time to ask for the help needed to complete them.

For each of the questions make sure you show all

This packet will count as two grades toward your first marking period grade.

The packet will be graded for completeness. Your teacher will be looking for supporting work to see that you understand each concept. This will be a homework grade.

You will also be given an assessment on the materials with in this packet to check for understanding within the first two weeks of school.

Have a great summer!

Supplies needed for your first day of class and every day after:

- Pencils/Erasers
- Single subject notebook

RESOURCE — CONTACT A TEACHER

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Do your best. Be sure to show work even if it is only partial.
Algebraic Order of Operations

To simplify numeric expressions we must use the proper order of operations.

1) Parenthesis – do all computations inside the parenthesis following the order of operations.  
2) Evaluate exponents.  
3) Perform all multiplication and division, going from left to right.  
4) Perform all addition and subtraction, going from left to right.

When answering the questions in this section you must show every step. An example of acceptable work is shown below.

$$3 + 2 \cdot 4 - (2^4 + 4 + 5) + 4$$

*First I will simplify what is inside the parenthesis.*

$$3 + 2 \cdot 4 - (16 + 4 + 5) + 4$$  
I evaluated the exponents first \(2^4 = 16\).

$$3 + 2 \cdot 4 - (4 + 5) + 4$$  
Then I divided 16 by 4.

$$3 + 2 \cdot 4 - (9) + 4$$  
To finish the parenthesis I added 4 and 5.

*Now I will perform all multiplication and division from left to right.*

$$3 + 8 - (9) + 4$$  
I multiplied 2 by 4.

*Now I will perform all addition and subtraction from left to right.*

$$11 - (9) + 4$$  
I added 3 and 8.

$$2 + 4$$  
Then I subtracted 9 from 11.

$$6$$  
And finally I added 2 and 4 to get the final answer.

Simplify the following, be sure to show all of your work as was demonstrated in the above example.

1) \(5 - 3 + 12 + (2 - 1 + 5) \cdot 6 + 3\)

2) \(3^2 + 6 \div 2 \cdot 4 - (12 - 6 + 4) \div 2\)
Graphing With Coordinates

The coordinate plane is something we will see a lot of this year. It is very important that you know how to plot points, and how to identify points that are given.

(2,6) is called a coordinate pair. A coordinate pair is simply a location of a point on the plane. The first number is always the x-coordinate (how far left or right from the origin) and the second number is always the y-coordinate (how far up or down from the origin).

If I was asked to plot the point (2,6) I would move my pencil right two units to the right along the x-axis and then 6 units up from there and draw a bold point. (I have done so on the diagram to the left)

Write the coordinate pair for each point listed below, and state which quadrant it is in (I,II,III or IV)

F:
G:
H:
M:
P:
R:

Plot the following points on the provided coordinate plane. Be sure to label the points.

A (1, 3) (example shown)
B (-5, 2)
C (-4, -2)
D (3, -4)
E (-3, -3)
F (3, 5)
Simplifying Expressions With Like Terms

Key Vocabulary:

A term is a single number or variable, or the product or quotient of a number and one or more variables. For example:

3  \( \quad 3x^2 \quad \frac{2xy}{3ab} \quad 5xyz \)

An expression is one or more terms being added or subtracted together. For example:

\[ 3x + 2 \quad 5x^2 + 2x - 8 \]

Like terms are terms that have the same combination of variables.

\[ 3x \text{ and } 4x \quad 2y \text{ and } -6y \quad 10ab \text{ and } 2ab \quad 3xy \text{ and } 4yx \text{ (these are like terms because multiplication is Commutative [look it up!])} \]

The coefficient is the number being multiplied by the variable or variables. In the term \( 5x \), 5 is the coefficient. If there appears to be no coefficient, like in the term "x", the coefficient is 1.

How to simplify expressions with like terms:

To combine like terms, we simply add the coefficients. Please see the example below and model your work after it.

\[ 3x + 2y + 9x - 7y \]

First we can re-order the terms so that like terms appear next to each other. Be sure to move the sign to the left of the term with the term. For example, we are moving \(-7y\), not just \(7y\).

\[ 3x + 9x + 2y - 7y \]

Now we can simplify the \(x\) terms by adding 3 and 9

\[ 12x + 2y - 7y \]

Then we should add 2 and -7 to simplify the \(y\) terms.

\[ 12x - 5y \]

Once there are no more like terms in our expression, it is simplified.
Simplify the following expressions. If it cannot be simplified, copy the problem and circle it as your answer.

1) $-5x + 2y + 7y - 3x$

2) $5a + 4a - 2b + 7a$

3) $150x - 50x$

4) $2xy - 6xy$

5) $25ab + 50ba$

6) $-6d + 7d$

7) $-5x + x + x + x$

8) $2x + 5a - 2x + 5a$

9) $4a - a$

10) $12r + 5 + 3r - 4$

11) $-3x - 9 + 15x$

12) $12r - 8 - 12$
Solving Single and Two Step Equations:

In solving equations, you want to get the variable, or the letter, by itself. In order to do that you must eliminate the value on the same side of the variable by adding or subtracting that number from both sides of the equal sign, and then by multiplying or dividing by the coefficient, or number, in front of the variable.

Examples:

1. \( x + 5 = 8 \)  
   Notice that the 5 needs to be eliminated in order to get the variable alone
   
   \(-5 - 5\)  
   Subtract 5 from both sides of the equal sign so that it lines up under the values
   
   \( x = 3 \)  
   & will eliminate on the variable side

2. \( \frac{x}{4} = 6 \)  
   Multiply 4 on both sides, so that it will cancel on the variable side
   
   \(* 4 \) \(* 4\)
   
   \( x = 24 \)

3. \( 2x - 5 = 11 \)  
   In two-step equation, you need to first eliminate the constant, or number by itself
   
   \(+ 5 + 5\)  
   First add 5 to both sides, so that it will eliminate on the variable side
   
   \( 2x = 16 \)
   You are then left with a simple one step equation to solve by multiplying or dividing
   
   \( \frac{2x}{2} = \frac{16}{2} \)  
   Divide 2 from both sides, so that it will eliminate on the variable side
   
   \( x = 8 \)

SOLVE THE FOLLOWING EQUATIONS: SHOWING ALL WORK ON THIS PAPER
1. \(5 - x = 3\)

2. \(\frac{x}{6} = 7\)

3. \(3x = -15\)

4. \(x + 6 = 14\)

5. \(\frac{x}{7} = 12\)
6. \( x - 12 = 54 \)

7. \( 12x = 144 \)

8. \( 15 - x = 32 \)

9. \( 32 = 8x \)

10. \( 98 = -12 + x \)
Applications of Solving Equations:

An equation is a combination of math expressions. Word problems are a series of expressions that fits into an equation.

There are two steps to solving math word problems:

1. Translate the wording into a numeric equation that combines smaller "expressions"
2. Solve the equation!

Suggestions:

- Read the problem entirely
  Get a feel for the whole problem
- List information and the variables you identify
  Attach units of measure to the variables (gallons, miles, inches, etc.)
- Define what answer you need, as well as its units of measure
- Look for the "key" words
  Certain words indicate certain mathematical operations
- Work in an organized manner
  Working clearly will help you think clearly
    - Draw and label all graphs and pictures clearly
    - Note or explain each step of your process;
      this will help you track variables and remember their meanings

Example: Leo bought 6 glasses and 6 mugs. Leo knows that he was charged $3.99 for each mug and that the total bill before tax was $65.88. Write and solve an equation to determine how much Leo was charged for each glass.

Important information: 6 glasses at an unknown \(g\) amount each

6 mugs at $3.99 each

total bill was $65.88

find the amount it costs for each class.

\[6g + 6(3.99) = 65.88\] \(\text{Six glasses plus the 6 mugs at$3.99 each equals the total bill}\)

\[6g + 23.94 = 65.88\] \(6\text{ times} 3.99 \text{ is} 23.94; \text{then solve this 2 step equation}\)

\[-23.94\]

\[\frac{6g}{6} = \frac{41.94}{6}\]

\[g = 6.99\] \(\text{Each glass costs$6.99}\)
1. The number of trees planted by the Alpine Nursery in April was 3 more than twice the number of trees planted by the nursery in March. If 71 trees were planted in April, write and solve an equation to find how many trees were planted in March.

USING THE FORMULA $y-y_1$ FIND THE SLOPE OF THE FOLLOWING PAIRS

1. $(2, 4) (5, 7)$

2. $(12, 14) (24, 30)$