8th Grade Summer Math Packet

Name:_____

Mr. Landry

8th Grade Math Readiness Packet

Dear 8th Graders,

Congratulations on completing 7th Grade! Believe it or not, this math packet was NOT created to torture you! Instead, it was made to help you keep your math skills strong over the summer. Don't worry, just in case you forgot some things, there are some example problems as you go. Some directions and a suggested outline of completion can be found below...

Directions:

• The Summer Math Packet will count as your first grade of the first marking period in math!
• You need to show your work as much as possible. Feel free to attach any scrap paper with work if you run out of room.
• You will bring this **completed** packet with you on the first day of school.

Suggested Timeline for Completion:

◯ Week 1: Evaluating Expressions

◯ Week 2: Order of Operations

◯ Week 3: Combining Like Terms

◯ Week 4: Solving Equations

◯ Week 5: Graphing Points in the Coordinate Plane

Good luck & have a **wonderful** summer! Can't wait to see you all in September!

Blessings,
      Mr. Landry

Evaluating Expressions

Below are some examples to help you solve the problems in this section.

Example 1: Evaluate $6x - 7$ if $x = 8$.

$6x - 7 = 6(8) - 7$ Replace x with 8.
       $= 48 - 7$ Use order of operations.
       $= 41$ Subtract 7 from 48.

Example 2: Evaluate $5m - 15$ if $m = 6$.

$5m - 15 = 5(6) - 15$ Replace m with 6..
       $= 30 - 15$ Use order of operations.
       $= 15$ Subtract 15 from 30.

Example 3: Evaluate $\dfrac{7b}{3}$ if $b = 6$.

$\dfrac{7b}{3} = \dfrac{(7)(6)}{3}$ Replace b with 6.

    $= \dfrac{42}{3}$ Multiply 6 by 7.

    $= 14$ Divide.

Example 4: Evaluate $x^3 + 4$ if $x = 3$.

$x^3 + 4 = 3^3 + 4$ Replace x with 3.

       $= 27 + 4$ Use order of operations.

       $= 31$ Add 27 and 4.

Problem Set

Directions: Evaluate the following expressions using the values for a, b, & c. Show your work!

1.) Evaluate $6 + 3b$ if $b = 7$

2.) Evaluate $6a^2$ if $a = 4$

3.) Evaluate $5(6) - c$ if $c = 7$

4.) Evaluate $\dfrac{b^4}{4}$ if $b = 2$

Order of Operations

Below are some examples to help you solve the problems in this section.

Use the order of operations to evaluate numerical expressions.
1. Do all operations within grouping symbols first.
2. Evaluate all powers before other operations.
3. Multiply and divide in order from left to right.
4. Add and subtract in order from left to right.

Example 1: Evaluate $14 + 3(7 - 2) - 2 \cdot 5$

$14 + 3(7 - 2) - 2 \cdot 5$
$= 14 + 3(5) - 2 \cdot 5$ Subtract first since 7 – 2 is in parentheses
$= 14 + 15 - 2 \cdot 5$ Multiply left to right, 3 • 5 = 15
$= 14 + 15 - 10$ Multiply left to right, 2 • 5 = 10
$= 29 - 10$ Add left to right, 14 + 15 = 29
$= 19$ Subtract 10 from 29

Example 2: $8 + (1 + 5)^2 \div 4$

$8 + (1 + 5)^2 \div 4$
$= 8 + (6)^2 \div 4$ Add first since 1 + 5 is in parentheses
$= 8 + 36 \div 4$ Find the value of 6^2
$= 8 + 9$ Divide 36 by 4
$= 17$ Add 8 and 9

Problem Set

Directions: Evaluate each of the following expressions. Show your work!

5.) $(2 + 10)^2 \div 4$

6.) $(6 + 5) \cdot (8 - 6)$

7.) $72 \div 3 - 5(2.8) + 9$

8.) $3 \cdot 14(10 - 8) - 60$

Combining Like Terms

Below are some examples to help you solve the problems in this section.

- **Like terms are terms that share the same variable.**
- **Terms can be added or subtracted from each other if they share the same variable.**
- **If they do not share the same variable, they cannot be added or subtracted. Variables without a coefficient (the number beside a variable) should be treated as having a 1 beside them.**
- **Numbers without a variable are called constants, and they cannot be combined with terms that have variables.**

1. **5x + x - 3x**
   6x - 3x
   3x

2. **2a + 3a +4b - b**
   5a + 3b

3. **-6y - 7y - 19z**
   -13y - 19z

4. **-2x + 6x + 3y - 7**
   4x + 3y - 7

Problem Set

Directions: Simplify each expression by combining like terms. Show your work!

9.   6m + m - 2m

10.   3x + 5x + 7y - y

11.   -4p - 6p - 10n

12.   -6m + 8m + 6n - 10

Solving Equations

Below are some examples to help you solve the problems in this section.

Remember, equations must always remain balanced.
- If you add or subtract the same number from each side of an equation, the two sides remain equal.
- If you multiply or divide the same number from each side of an equation, the two sides remain equal.

Example 1: Solve x + 5 = 11

x + 5 = 11	Write the equation
- 5 = - 5	Subtract 5 from both sides
x = 6	Simplify

Check ⟹

x + 5 = 11	Write the equation
6 + 5 = 11	Replace x with 6
11 = 11 ✓	The sentence is true

Example 2: Solve - 21 = - 3y

- 21 = - 3y	Write the equation
- 3 = - 3	Divide each side by – 3
7 = y	Simplify

Check ⟹

- 21 = - 3y	Write the equation
- 21 = - 3(7)	Replace the y with 7
-21 = - 21?	Multiply – is the sentence true?

Example 3: Solve 3x + 2 = 23

3x + 2 = 23	Write the equation
- 2 = - 2	Subtract 2 from each side
3x = 21	Simplify
3 3	Divide each side by 3
x = 7	Simplify

Check ⟹

3x + 2 = 23	Write the equation
3(7) + 2 = 23?	Replace x with 7
21 + 2 = 23?	Multiply
23 = 23?	Add – is the sentence true?

Example 4: Solve $\frac{x}{3} + 2 = 12$

$\frac{x}{3} + 2 = 12$	Write the equation
$-2 = -2$	Subtract 2 from each side
$\frac{x}{3} = 10$	Simplify to isolate x
$3 \cdot \frac{x}{3} = 10 \cdot 3$	Multiply both sides by 3
$x = 30$	Simplified answer

Check ⟹

$\frac{x}{3} + 2 = 12$	Check your answer
$\frac{30}{3} + 2 = 12$	Replace x w/30 & divide
$10 + 2 = 12$	Add
$12 = 12$	Is the sentence true?

Problem Set

Directions: Solve each equation. Show your work! Use your own paper if you need more room.

13. Solve **x - 9 = -12**

14. Solve **48 = -6r**

15. Solve **2t + 7 = -1**

16. Solve **4t +4 = 12**

17. Solve $\frac{x}{4} = 21$

18. Solve $\frac{x}{4} + 3 = 10$

Graphing Points in the Coordinate Plane

Below are some examples to help you solve the problems in this section.

When graphing points in the coordinate plane, plot the ordered pair by starting at the origin (0,0) and then moving left(-) or right(+) to the x value then up(+) or down(-) for the y value.

When writing the ordered pair for a point on the coordinate plane, read the x value first then the y value. The ordered pair is written as (x, y)
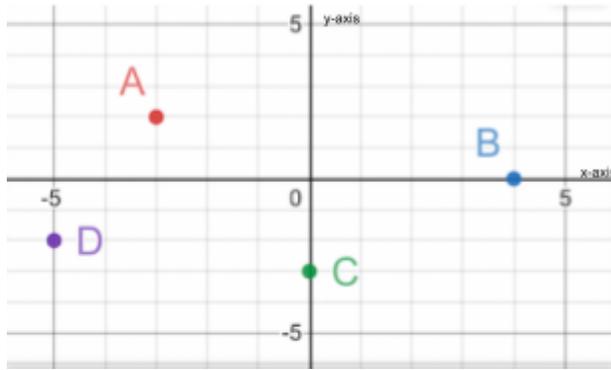
Point A(-3, 2)   Point B(4, 0)
left 3, up 2   right 4, up 0

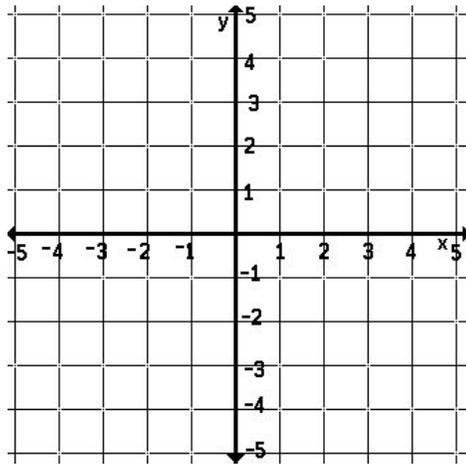Point C(0, -3)   Point D(-5, -2)
right 0, down 3   left 5, down 2

Problem Set

Directions: Plot the following points on the coordinate plane. Label with the given letter.

19. Point E (1, 1)

20. Point F (-2, 2)

21. Point G (-3, -3)

22. Point H (0, 1)

Directions: Write the ordered pair for the points in the given graph.

23. Point J _____

24. Point K _____

25. Point L _____