Welcome to Algebra 1!

This is a summer enrichment packet for all students enrolled in Algebra 1 at Thoreau Middle School for Fall 2021. This packet contains concepts that were taught in 7th Grade Honors/ 6th Grade AAP. It is important that you know and understand these concepts, as we will build on them in Algebra 1. **Be sure to show ALL of your work!**

Purpose: Summer enrichment opportunities can provide students access to review and support meaningful learning experiences aligned to course objectives.

The purpose of optional summer enrichment might be to

- activate students' background knowledge and skills

- provide opportunity to review introductory topics/prerequisites for the course

- create or enhance enthusiasm and interest in a subject or to serve as a springboard for future learning.

Please spend some time this summer keeping these skills and concepts fresh in your mind.

Have a great summer and see you in August!

From,

The Algebra 1 Teachers

Part 1: WORDS TO SYMBOLS

Directions: Translate the following verbal sentences into symbols and numbers. Please use "x" to represent the variable. Write your answer on the provided line.

1. _____ Five more than a number.

2. _____ The quotient of a number and ten.

3. _____ Four times the difference of a number and eight.

4. _____ The product of six and a number

Part 2: ORDER OF OPERATIONS

Directions: Evaluate the expressions using order of operations

5. _____ $10^2 \div (16 + 9) \cdot 6$

6. _____ $\sqrt{25} + 30 \div 6 \cdot 4$

7. _____ $\frac{2}{3}(26 - 7^2 \div 7 \cdot 2)$

8. _____ $(2^3 + 2^2) \cdot (3 - 6)$

Part 3: EVALUATING EXPRESSIONS WITH SUBSTITUTION

9. _____ Evaluate a^3bc^5 when a = 2, b = 4, c = -1

10. _____ Evaluate $|4x^2 - 2y|$ when x = 2 and y = 3

11. _____ Evaluate $2x^2 + 8$ when x = -3

12. _____ Evaluate $\frac{1}{2}a - \frac{2}{3}b + 1$ when a = 6 and b = 3

Percent Applications

Solve the following problems (hint: use proportions).

13. I purchased new school supplies totaling $78. Tax is 6%. How much did I pay in all?

14. The Jones family went out to lunch and decided to leave a 22% tip on the food they ordered before tax was added. They left a tip of $12? What was the Jones' family bill before tax.

15. On a sunny day, a tree casts a shadow that is 146 feet long. At the same time, a person who is 5.6 feet tall standing beside the tree casts a shadow that is 11.2 feet long. How tall is the tree? (hint: when in doubt, draw it out)

EXPONENTS AND SQUARE ROOTS

Exponents indicate how many times the base is used as a factor. A square root indicates the base that is used twice to result in the number under the radicand.

Simplify each exponential expression or square root.

16. $(-6)^2$

17. -17^2

18. $4^3 + (-5)^3$

19. $-\sqrt{121}$

20. $3 + \sqrt{361}$

SIMPLIFY EXPRESSIONS

Simplify the following expressions by combining like terms.

21. -2(m - 3) + 5(m+ 2)   22. -5m + 3(6 + 7m)

SOLVE EQUATIONS

Solve each equation for the variable.

23. -5 – 5x = 30   25. $\frac{3x-4}{2} = -8$
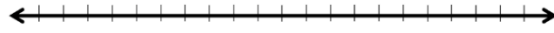
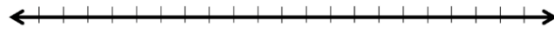24. $\frac{k}{3} - 5 = -11$ 26. -2y +9 = 7

SOLVE INEQUALITIES

Solve each inequality then graph the solution on the number line.

27. $-7x + 33 \geq 5$

28. $\frac{x}{2} - 7 \leq -9$

SLOPE AS A RATE OF CHANGE

Determine the slope of a line passing through the given points and write an equation of the line that represents the proportional relationship. #30 also graph on coordinate plane

29.

x	2	3	5	10
y	-5	-7.5	-12.5	-25

Slope: _____   Equation: _____

30.

x	-2	0	2	4	6
y	6	4	2	0	-2

Slope: _____

Equation: _____