

Welcome to Algebra 1 Honors!

This is a summer enrichment packet for all students enrolled in Algebra 1 Honors at Thoreau Middle School for Fall 2021. This packet contains concepts that were taught in 7<sup>th</sup> Grade Honors/ 6<sup>th</sup> 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 Honors Teachers

### A. Order of Operations

Directions: Simplify the following expressions.

1.  $-5 + 6(-4 + 1) \div \frac{1}{3}$

2.  $\frac{9(2+1)^2}{9} - \frac{5(4+2)}{5-3}$

3.  $\frac{3(4+2)}{2(4+3)}$

4.  $2\sqrt{36} + 10 \div 2(6) - |-5|$

### B. Substitution

Directions: Evaluate each of the following expressions for the given values of the variations:

$$w = -6$$

$$x = 0$$

$$y = 3$$

$$z = \frac{1}{3}$$

5.  $y^2 - 2xz$

6.  $\frac{w^2}{3y}$

7.  $\sqrt{yz} - 2w$

8.  $|w - y| - |w + y|$

### C. Solving Equations

Directions: Solve each equation. Be sure to show all work.

9.  $\frac{w}{-4} + 11 = 5$

10.  $\frac{5}{6} = \frac{13}{t}$

11.  $\frac{1}{3}(6 + 5d) = \frac{-d}{9}$

12.  $7(b + 3) = -(b - 4)$

13.  $-3(a - 1) + 2(a + 3) = 12$

14.  $\frac{1}{2}(-10x + 8) = 5$

### D. Solving Inequalities and Graphing on a Number Line

Directions: Solve the following inequality. Be sure to show your work. Graph its solution

15.  $5x - 4 > 4x + 6$



16.  $-3(p + 1) \geq -18$



17.  $\frac{m}{3} - 3 < -6$



18.  $-1 \leq \frac{v-2}{21}$



### E. Functions

Directions: Use the function tables given to find the function rules.

19.

| X | Rule: _____ |
|---|-------------|
| 4 | -12         |
| 5 | -15         |
| 6 | -18         |
| 7 | -21         |
| 8 | -24         |

20.

| X | Rule: _____ |
|---|-------------|
| 1 | 1           |
| 2 | 4           |
| 3 | 7           |
| 4 | 10          |
| 5 | 13          |

### F. Slope-Intercept Form ( $y=mx+b$ )

Directions: For each of the following, rewrite the following equation in slope-intercept form and identify the m and b.

21.  $y = 7x + 4$        $m = \underline{\hspace{1cm}}$      $b = \underline{\hspace{1cm}}$

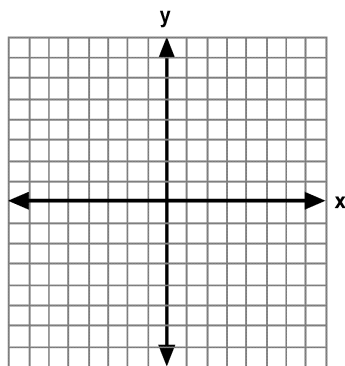
22.  $y = 3$                $m = \underline{\hspace{1cm}}$      $b = \underline{\hspace{1cm}}$

### G. Table to Graph

Directions: Complete the function table and graph the function.

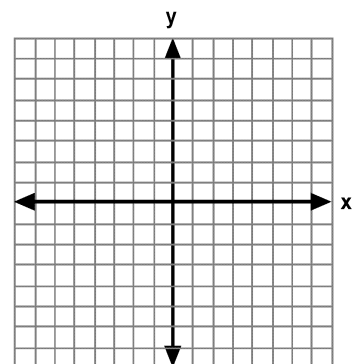
23.  $y = \frac{1}{4}x - 1$

| x  | y |
|----|---|
| -1 |   |
| 0  |   |
| 1  |   |
| 2  |   |



24.  $y = -2x + 1$

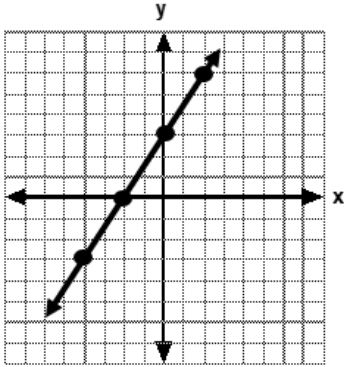
| x  | y |
|----|---|
| -2 |   |
| -1 |   |
| 0  |   |
| 1  |   |
| 2  |   |



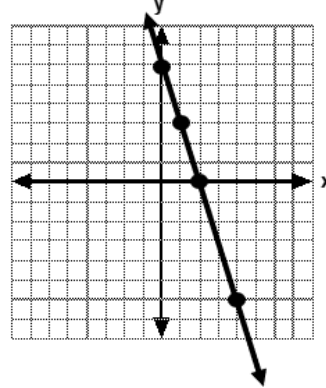
### H. Graph to Rule

Directions: Identify the function rule that created the graphs below.

25. Rule: \_\_\_\_\_



26. Rule: \_\_\_\_\_



### I. Domain and Range

Directions: Identify the domain and range of the table and set. Then, state if the set is a function.

27.

|        |   |    |    |    |
|--------|---|----|----|----|
| Input  | 1 | 3  | 5  | 7  |
| Output | 7 | 10 | 13 | 16 |

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

Function? Yes or no

28.  $\{(2, 0), (8, -3), (0, 2), (5, 5), (10, 13)\}$

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

Function? Yes or no

### J. Properties

Directions: Identify the property shown below.

29.  $(ab)c = a(bc)$

30.  $(2 + - 8) + 4 = (- 8 + 2) + 4$

31.  $\frac{2}{9} * 1 = \frac{2}{9}$

32.  $-17 + 17 = 0$

### K. Laws of Exponents

33.  $\frac{40x^6}{2x^5}$

34.  $(5y)^2$

35.  $3x^4 * 4x^3$

36.  $3x^2 + 7x^2$

### L. Words to Symbols

Directions: translate the following expressions into math symbols, and then simplify the expression

37. Four more than twice seven.

38. Five less than the square root of sixteen

39. Twenty five divided by the difference of seven and two

40. Six squared less the product of five and six.