

**CAREFULLY READ AND FOLLOW ALL INSTRUCTIONS**

The basic toolkit of Honors Advanced Algebra 2 involves a great deal of Algebra I material. In order to ensure that we are successful at the start of the year, it is important that each student reviews and refreshes those fundamental topics that will be essential throughout the year. These include

- Simplifying Expressions
- Solving Linear Equations
- Graphing Lines (standard/ slope y-intercept forms)
- Basic operations on polynomials
- Absolute Value (simplifying, solving and graphing)
- Inequalities (simplifying, solving and graphing)
- Solving systems of equations by graphing, substitution and elimination

**You are to PRINT OUT this packet and complete it in pencil; turn it in on the first day of school. NOTE: you do not need to complete it in one sitting but you may not look anything up once you begin.** It will be scored for correctness and with close reading of your problem solving process—this might be an ideal moment to go back and re-read the *Orientation* in order to clarify expectations in that regard.

**You are not to collaborate or use any resources on this problem set...no internet, no study buddy, no tutor, absolutely no *photomath/snapmath*...just you.** The intention of this final overview is for you to demonstrate your facility with the material covered in the basic review and for you to derive a sense of your own readiness for a successful beginning of the year.

If you have any questions, go ahead and send me a message [jherro@marisths.org](mailto:jherro@marisths.org) .

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Show your work

Box Your Answers

No Calculator Allowed

Reduce All Fractions

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**Evaluate (find the numerical answer by following the order of operations).**

1)  $18 - 6 + 60 \div 3 \cdot 2^2$

2)  $-x^3 - x^2 - x - 4$  if  $x = -4$

3)  $-2x^2 + 6x - 3$  if  $x = -6$

4)  $\frac{2}{3} + \frac{1}{2} - 3\frac{1}{4}$  (give solution as a reduced fraction)

5)  $\frac{-6}{5} \div 2\frac{2}{3}$  (give solution as a reduced fraction)

6)  $3 - \frac{11}{3}$  (give solution as a reduced fraction)

**Simplify the following expressions** (use the order of operations, the distributive property to eliminate parentheses , rules of exponents and combine all like terms).

7)  $3x - 2(x + 4)$

8)  $6x^2 - 12x + 4x^2 - (3x - 1)$

9)  $2(x + 3)^2 + 4x - 3$  [note:  $(x + 3)^2 \neq x^2 + 9$ ]

10)  $(6x - 2)(3x + 4)$

11)  $(2x^3y^4)(-5xy^3)(8x^6y^5)$

12) Find the slope of a line through (-4, 2) and (1,-8).

**Solve (find the values of x to make the initial equation a true statement).**

13)  $3x - 6 = 12$

14)  $\frac{2}{3}x - 4 = 2$

15)  $\frac{2x-4}{3} = 2$

16)  $3x - 2(x + 4) = 6x - 9$

17)  $\frac{3}{4} + \frac{2}{3}x = \frac{1}{2} - \frac{x}{5}$  (do you remember how to clear fractions?)

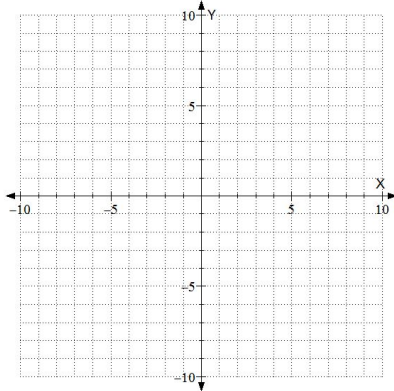
18)  $\frac{x+3}{x} = \frac{2}{5}$  (hint: solve as a proportion)

19) Isolate y:  $6x - 2y = 12$

Graph the following equations. Identify which form the equation is in (slope y-intercept/standard). Make a table of at least 5 inputs and outputs (x-values and y-values). Identify the x- and y-intercepts (these might not be whole numbers. If they aren't whole numbers, give them as a reduced fraction). Plot the y-int and 2 other points, use a straightedge, and label the essential info on your graph as an ordered pair.

20)  $y = 3x - 4$

| x | y |
|---|---|
|   |   |
|   |   |
|   |   |
|   |   |
|   |   |

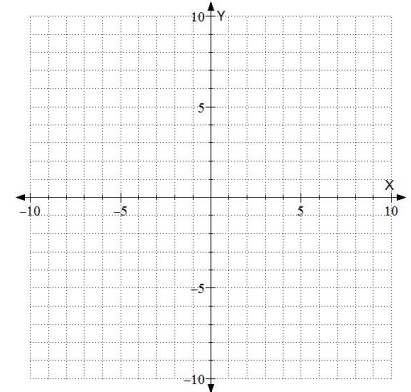


x - int:

y - int:

21)  $y = -x$

| x | y |
|---|---|
|   |   |
|   |   |
|   |   |
|   |   |
|   |   |

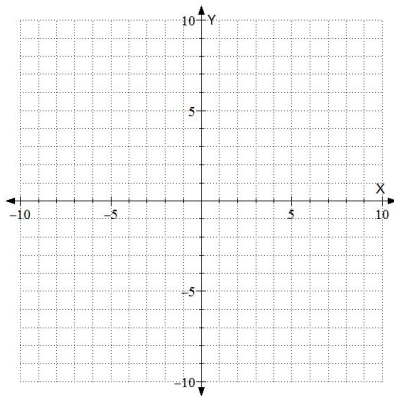


x - int:

y - int:

22)  $y = -\frac{2}{3}x + 6$

| x | y |
|---|---|
|   |   |
|   |   |
|   |   |
|   |   |
|   |   |

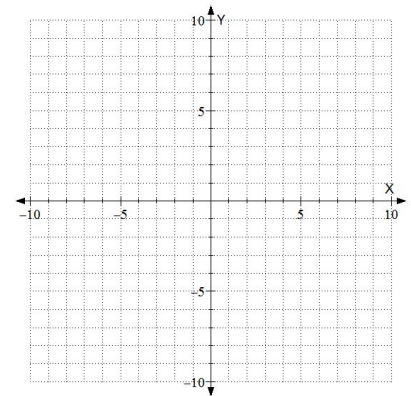


x-int:

y-int:

23)  $y = 7$

| x | y |
|---|---|
|   |   |
|   |   |
|   |   |
|   |   |
|   |   |

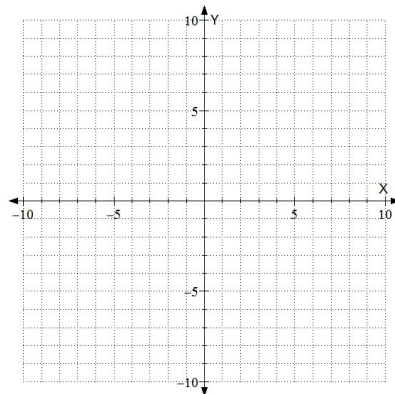


x - int:

y - int:

24)  $5x - 2y = 10$

| x | y |
|---|---|
|   |   |
|   |   |
|   |   |
|   |   |
|   |   |

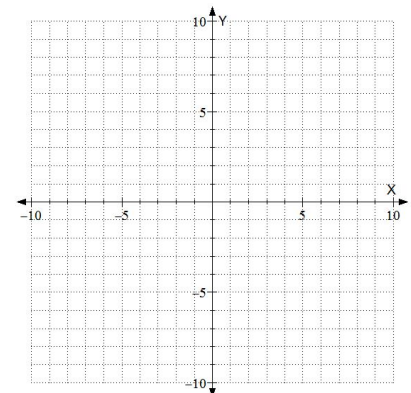


x-int:

y-int

25)  $x = -6$

| x | y |
|---|---|
|   |   |
|   |   |
|   |   |
|   |   |
|   |   |



x-int:

y-int:

**Solve and Graph the following inequalities. Remember! When you multiply or divide both sides of an inequality by a *negative* number, the inequality switches direction (the symbol flips). Check your solutions.**

26)  $x + 3 < 2x - 5$



27)  $4 - (2x + 5) \geq 3x + 1$



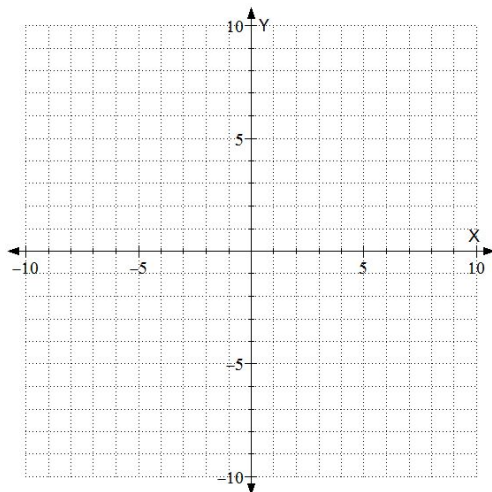
28)  $\frac{2}{3}x \leq -12$  or  $x - 5 > 9$



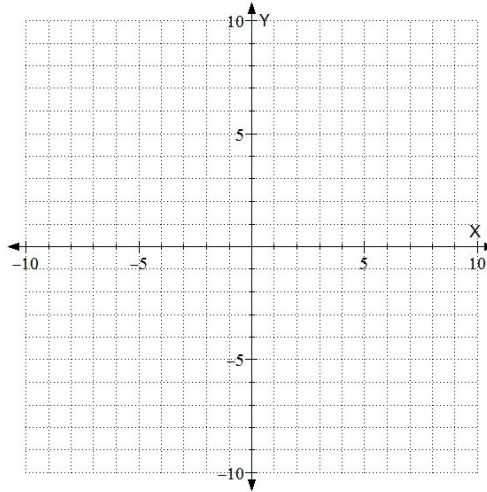
29)  $-6 < 2x + 10 < 14$



30)  $y > -3x + 5$



31)  $2x - 4y \leq 12$



**Evaluate the absolute value expressions (find a single numeric result).**

32)  $|6 - 2(4)|$

33)  $6 + 2|-4 - 2a^2|$  if  $a = -10$

Solve the absolute value equations (remember there are two parts and potentially 0, 1 or 2 solutions).

34)  $|x + 7| = 10$

35)  $10 - 3|x - 5| = 12$

36)  $2|4x - 2| > 24$



37) Write an equation of line through  $(-4, 3)$  with slope  $\frac{3}{2}$ . Put your answer in BOTH **slope-intercept** form and **standard** form. If you are unfamiliar with standard form we will cover it during the first week of school.

Solve the systems of equations (find the one point that works in both equations—remember, there could be 0, 1 or infinite solutions).

38) Solve by *Graphing*

39) Solve by *Substitution*

40) Solve by *Elimination*

$$6x + 4y = -8$$

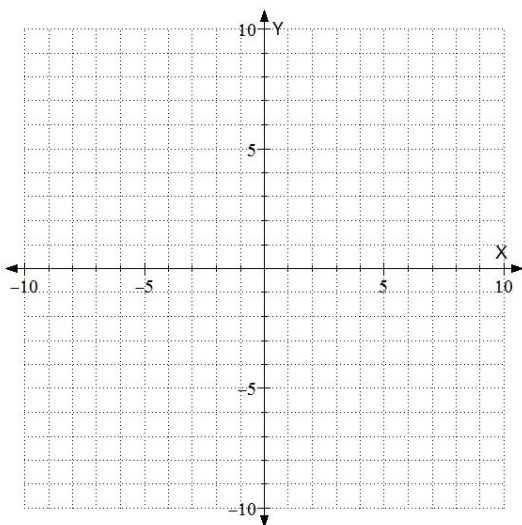
$$y = \frac{1}{2}x + 2$$

$$2x + 5y = 31$$

$$4x - y = 7$$

$$6x - 4y = 10$$

$$-9x + 6y = -15$$



I certify that this is entirely my own work. \_\_\_\_\_