

# Clarksburg High School

## *Honors Algebra 2*

### Summer Pre-View Packet

The problems in this packet are designed to help you review topics from previous mathematics courses that are important to your success in

*Honors Algebra 2.*

DO ALL PROBLEMS WITHOUT A CALCULATOR. Show all work that leads you to each solution on separate sheets of paper. You may use your notes from previous mathematics courses to help you. Additional copies of this packet may be printed from the school's website.

Due date deadline is the first day of school.

**ENJOY YOUR SUMMER!! WE ARE LOOKING FORWARD TO SEEING YOU IN THE FALL.**

Honors Algebra 2 Summer Review

Name \_\_\_\_\_

**Show all work for all problems.**

1. Line  $l$  contains the points  $(-2, 3)$  and  $(1, 5)$ .

(a) Determine the slope of the line.

(b) Write an equation for the line.

2. Line  $k$  passes through the point  $(8, -3)$  and is parallel to the line  $y = 3x - 4$ . Write an equation for line  $k$ .

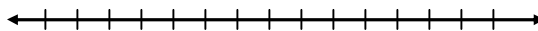
3. Line  $m$  is perpendicular to  $y = 4x - 1$  and passes through the origin. What is the equation of line  $m$ ?

4. Solve the following equations. Show your work and check your answers.

(a)  $(x - 1) - (4x + 6) = 8$       (b)  $2x - 7x + 4 = 5(4 - 9x)$       (c)  $\frac{x - 2}{x + 3} = \frac{5}{6}$

5. Solve the inequality and graph the solution set on a number line:

$$4(t + 2) - 3 \geq 7(t + 5)$$



6. Use  $A = \begin{bmatrix} 12 & 7 \\ -1 & -3 \end{bmatrix}$  and  $B = \begin{bmatrix} -5 & 6 \\ 14 & 0 \end{bmatrix}$  to perform the indicated operations.

(a)  $A + B$

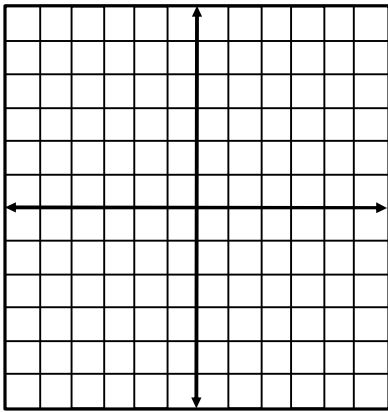
(b)  $2B - A$

(c)  $-4A$

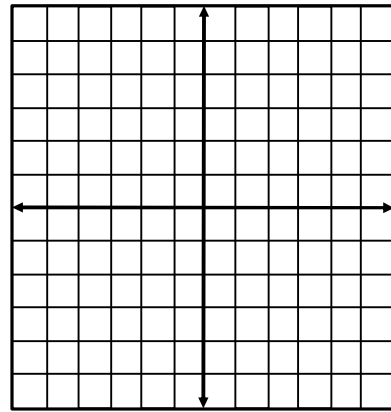
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7. Graph the following equations.

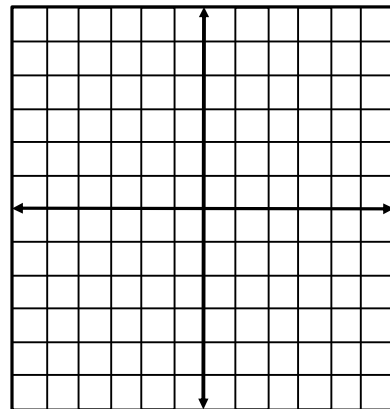
a)  $y = 2x - 3$



b)  $-2x + 3y = 6$



8. Solve the inequality  $6 + 3y < 4(3 - x)$  for  $y$  and graph the solution.



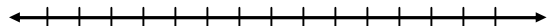
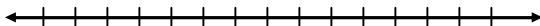
Is  $(0, -5)$  a solution to the inequality?

9. Solve the system of equations:  
$$\begin{aligned} -x + 3y &= 0 \\ 2x + 6y &= 12 \end{aligned}$$

10. Solve for the variable and graph the solution set on a number line:

(a)  $|x - 8| = 3$

(b)  $|x + 4| < 2$



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11. Simplify the expressions:

(a)  $(x^3 + 3x^2 - 2) + (5x^3 + x + 8) - (9x^3 - x^2 + 4)$

(b)  $(4x - 3y)(x + 5y)$

(c)  $(3x^2 + x + 1)(2x - 3)$

(d)  $\frac{16x^4y - 12x^5y^3}{2x^3y^2}$

(e)  $(5x - 2)^2$

(f)  $2(x^3 - 5x^2 + 6x) - (x^2 + 3x)$

12. Factor completely:

(a)  $9x^2y^3 - 3x^3y^2 - 15xy$

(b)  $2x^2y - 4xy - 30y$

(c)  $x^2 - x - 30$

(d)  $4x^2 - 81$

(e)  $x^3 + 4x^2 + 3x$

(f)  $2x^2 - 5x - 3$

13. Solve the quadratic equations:

(a)  $x^2 + x - 42 = 0$

(b)  $(x - 2)^2 = 25$

(c)  $6x^2 - 13x = -6$

14. Simplify:

(a)  $x^3 \cdot x^2 \cdot x$

(b)  $(m^3)^5$

(c)  $(y^{-2})^{-3}$

(d)  $\frac{a^4}{a^7}$

(e)  $\frac{3xy^5}{12x^2y^0}$

(f)  $\left(\frac{2}{3}\right)^3$

(g)  $(-3x^2y)^2$

(h)  $(8a^3b^2)(2a^{-4}b^{-5})$

(i)  $\frac{3x^3y^2}{6x^{-2}y^{-1}}$

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15. If  $y$  varies directly with  $x$  and  $y = 6$  and  $x = -3$ , find  $y$  when  $x = 4$ .

16. A car salesman's weekly salary is a base amount plus an additional amount for each car sold. The table below shows a person's weekly salary earned for the last three weeks.

Cars sold (c )	Weekly salary (\$)
4	\$500
9	\$1000
12	\$1300

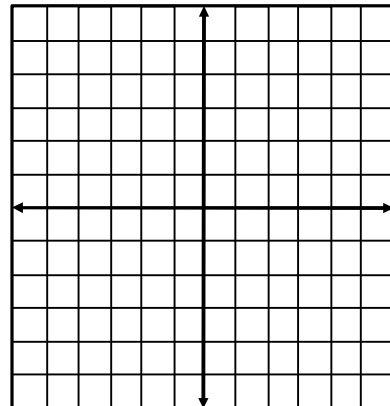
What is the person's weekly salary when 13 cars are sold? Justify your answer.

17. For each equation, identify the vertex, the axis of symmetry, and indicate whether the parabola opens up or down. Vertex form of the parabola is  $y = a(x - h)^2 + k$  where  $(h, k)$  are the coordinates of the vertex and the axis of symmetry is  $x = h$ .

	Vertex	Axis of symmetry	Opens
a) $y = 2(x - 2)^2 - 3$	_____	_____	_____
b) $y = -2x^2 - 3$	_____	_____	_____

18. Sketch a graph of  $f(x) = x^2 - x - 2$ . Then complete the characteristics below.

- Domain:
- Range:
- Axis of Symmetry:
- Increases:
- Decreases
- x-intercepts:
- y-intercept:
- Minimum Value:
- Maximum Value:
- Continuous:

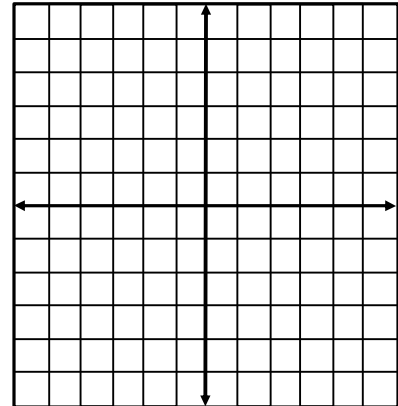


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19. Graph the following system of inequalities:

$$\begin{aligned}2x + 5y &< 10 \\ y &= 3x - 2\end{aligned}$$

Is  $(-2, 1)$  a solution to the system?



20. Find the values of  $x$  and  $y$ .

