Honors Algebra 2

Summer Assignment

<u>DUE THE FIRST DAY OF SCHOOL</u>

The problems outlined in this packet are designed to help you review the topics you have learned in Algebra I. These topics are crucial to the understanding of what you will be taught next year and are important to your success in Honors Algebra 2. All work is to be done on this packet and must be shown for each problem. If you need additional space to complete a selected problem, you should attach lined notebook paper to this packet and rewrite the entire question and question number with work shown. The problems should be done correctly and not just tried. You are expected to correctly answer each question. Please DO NOT use your calculator to solve these problems. Part of the success in Honors Algebra 2 is relied on your ability to do mental math.

All work must be ready and completed to turn in on the first day of school. You will be tested on this material on the first day of class.

Honors Algebra 2 - Summer Assignment

Show all work for all problems.

1. Line l contains the points (1, 5) and (4,-1).

    (a)   Determine the slope of the line. _____

    (b)   Write an equation for the line in slope-intercept form. _____

    (c)   Rewrite the equation for the line in Standard form. _____

2. Write an equation in standard form of the horizontal line that goes through the point (-7, 10).

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2. Line k passes through the point (-2,1) and is parallel to the line $y = -3x - 1$. Write an equation for line k. (in slope-intercept form AND Standard form)

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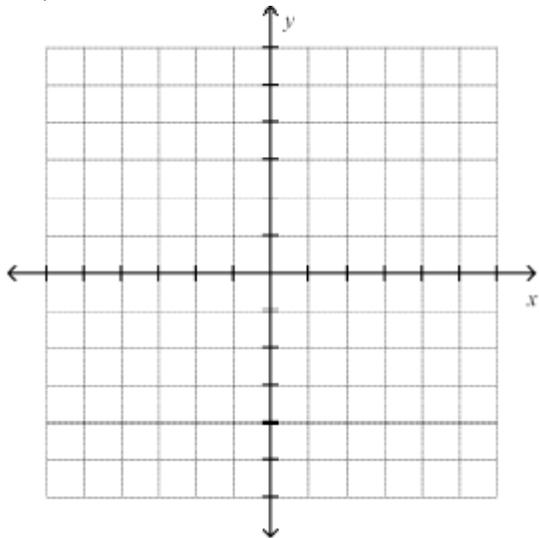4. Find the slope and the y-intercept of the following line: $-\frac{1}{2}x + 2y = \frac{3}{4}$

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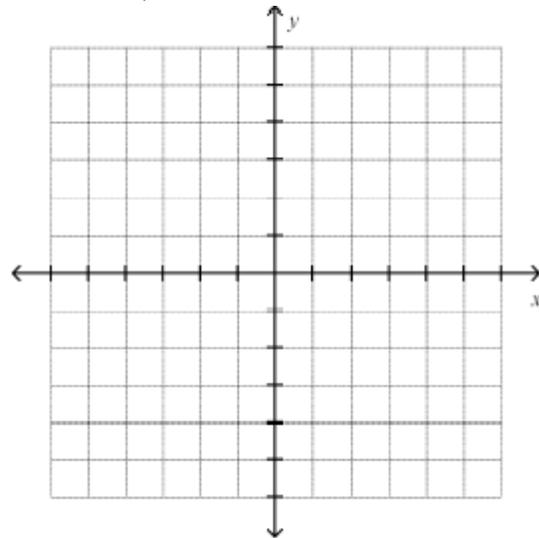5. Line m is perpendicular to $y = 2x - 1$ and passes through the origin. What is the equation of line m?
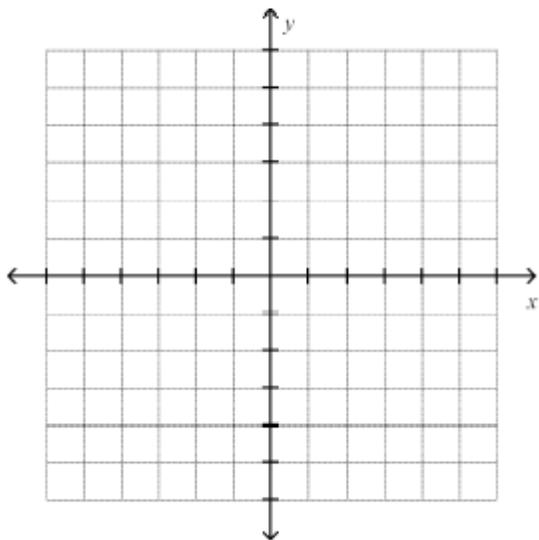
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6. Graph the following functions:

a) $y = 2x - 1$
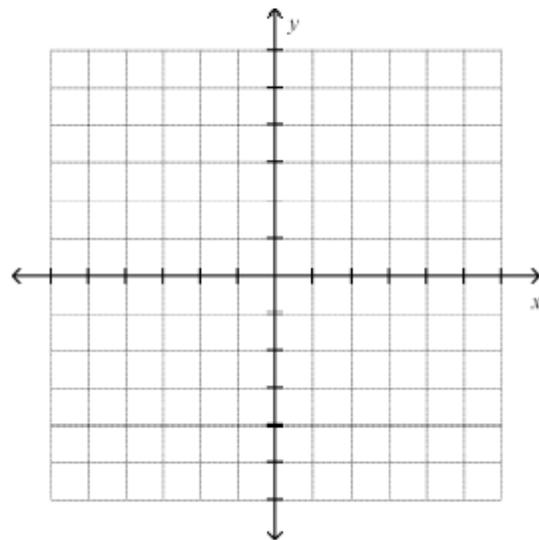
b) $-2x + 3y = 6$

c) $f(x) = -|x+3|$

d) $g(x) = 2|x+3| - 4$

7. Solve the following equations. Show your work and **check** your answers.

(a) $(2x-1)-(4x+6)=8$

(b) $4-7x+2x=5(4-9x)$

c) $\frac{5}{6}x+\frac{2}{3}=\frac{11}{4}$

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(d) Solve for x: $\dfrac{2ax+b}{c}=d$

(e) The sum of three consecutive odd integers is 45. Find the integers.

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

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

$\longleftrightarrow$
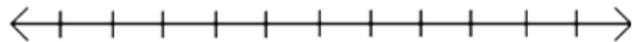
(b) $-1<3(n+4)-7\leq 14$

$\longleftrightarrow$

(c) $9x+7\leq-20$ or $20-9x<-16$

$\longleftrightarrow$
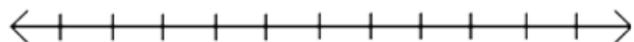
9. Solve the inequality $2+3y<2(4-x)$ for y and graph the solutions on the Cartesian plane.
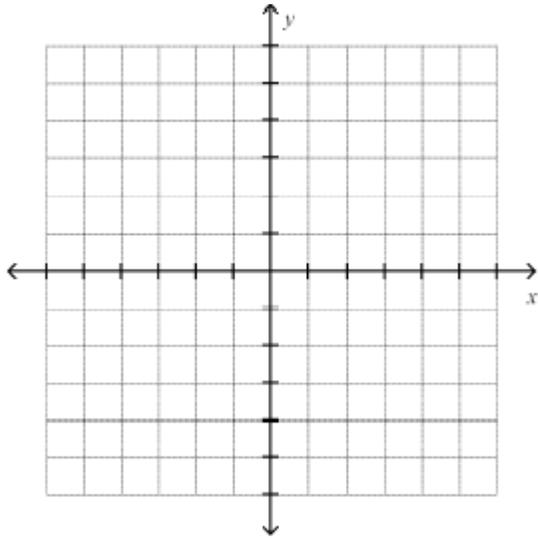
10. Is (0, -5) a solution to the inequality above? Show work.

11. Solve each system of equations for x and y. Check your work

(a) $\begin{cases} -x+3y=0 \\ 2x+6y=12 \end{cases}$
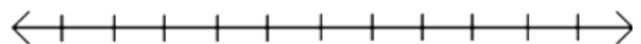
(b) $\begin{cases} y=3x-12 \\ x-2y=14 \end{cases}$

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

(a) $20-3|x-2|=5$

(b) $3|x+4|-5<1$

13. Simply the expressions:

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

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

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(c) $(4x - 3)(3x^2 + 2x + 1)$

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

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

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14. Factor completely:

(a) $4z^2m^5 - 2z^6m + 16z^3m^3$

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

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

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(d) $9x^2 - 4$

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

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

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15. Solve the following quadratic equations:

(a) $2x^2 + 20 = -14x$

(b) $(x-4)^2 = 64$

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

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16. Simplify:

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

(b) $(m^3)^4$

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

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(d) $\dfrac{a^4}{a^9}$

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

(f) $\left(\dfrac{2}{5}\right)^{-3}$

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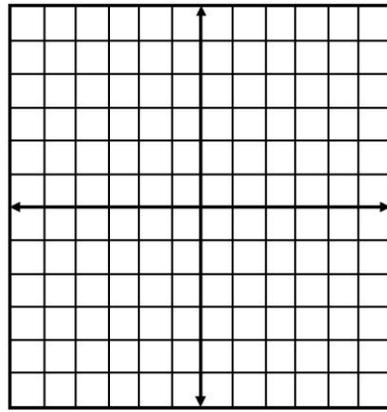
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(g) $(-3x^2y)^2$

(h) $(2x^3y^2)(3x^{-4}y^{-5})$

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

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17. Sketch a graph of $f(x) = x^2 - 6x + 6$. Then complete the characteristics below.
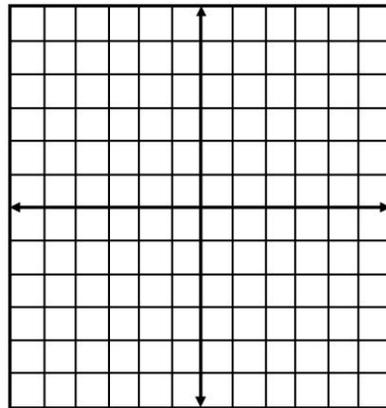
DOMAIN	
RANGE	
AXIS OF SYMMETRY	
X-INTERCEPTS	
Y-INTERCEPTS	
MINIMUM VALUE	

18. Graph the following system of inequalities:

$$2x + 5y < 10$$
$$y \geq 3x - 2$$

19. Is (-2, 1) a solution to the system above? Show work.

Set up and equation and solve the following:

20. Nine more than a number is 90. What is the number?

21. Two thirds of a number is 52. What is the number?

22. Three times a number is 18 more than the number. What is the number?

23. The perimeter of a rectangle is 42 meters. The length of the rectangle is 3 meters less than twice the rectangle's width. Find the length and width of the rectangle.

24. A postal clerk sold some fifteen cent stamps and some twenty five cent stamps. Altogether, 10 stamps were sold for a total cost of $1.70. How many of each type of stamp was sold?

25. Stan has 52 quarters and nickels combined. If he has three times as many nickels as quarters, how much money does he have?

Set up problems 26 and 27 by setting up two equations with two variables and then solve each resulting system.

26. The sum of two numbers is 45. Three times the smaller number exceeds twice the larger number by 5. Find both numbers.

27. Theater admission for a group of three children and four adults costs $62. If there were one more adult in the group the cost would have been $73. What is the price of admission for each child?

Set up and solve the following.

28. A change purse contains 14 coins consisting of nickels and dimes and having a total value of $1.10. How many nickels are in the change purse?

29. At 10:00 AM two cars leave the same location and travel in opposite directions. One car's speed is 50 miles per hour and the other car's speed is 55 miles per hour. At what time of day are the two cars 273 miles apart?

30. Have a great summer. I look forward to seeing you all in the Fall!