

Name: _____

Honors Algebra 2 Summer Review

Welcome to Honors Algebra 2! To start the year off well, you will need to review certain Algebra 1 topics. Please complete this packet over the summer and be prepared to ask questions during the first week of school. There are some definitions and formulas you will need to look up if they are not already memorized. There will be a test on these concepts within the first 6-day cycle.

Topic #1: The Real Number System

Real Numbers: _____		
Irrational Numbers: _____	Rational Numbers: _____	
	Integers: _____	
	Whole Numbers: _____	
	Natural Numbers: _____	
Name the most specific set to which each number belongs.		
1. $\frac{2}{3}$	2. $-\sqrt{50}$	3. 0
4. $ -9 - 4 $	5. $-\frac{28}{7}$	6. $\frac{\pi}{\pi}$

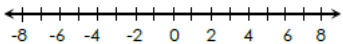
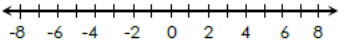
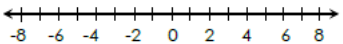
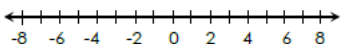
Topic #2: Evaluating Expressions

Evaluate each expression. Use the variable replacements when given.	
7. $2^3 \cdot (9 - 2) + \frac{12}{4} - -5 $	8. $\frac{5^3 - 42 \div 6}{\sqrt[3]{8}}$
9. $w^2 - 5xy$ (if $x = -3$, $w = -2$, $y = 1$)	10. $2 m - n^2 + k^3$ (if $k = -2$, $m = -7$, $n = 4$)

Topic #3: Solving Equations

Solve each equation.	
11. $18 = 3 - 3a$	12. $4 - \frac{1}{2}n = -12$
13. $\frac{3}{4}x + 17 = 23$	14. $9y - 4(y + 1) = 31$
15. $-6(w - 4) + 8w = 2(w + 9)$	16. $3m - (7m + 12) = 2(m - 3)$

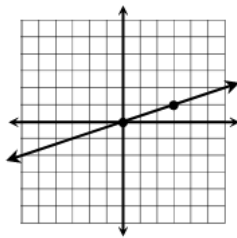
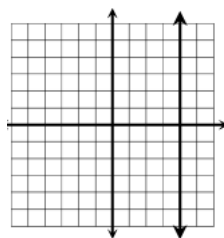
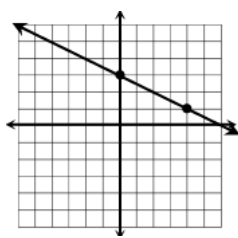
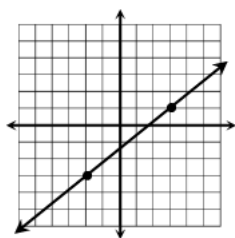
Topic #4: Solving and Graphing Inequalities

Solve and graph each inequality.	
17. $11x + 13 \geq -20$ 	18. $-2x + 6 > 3x - 34$ 
19. $3x - 7(x + 3) \geq -13$ 	20. $4 - 8x < 2(5 - 3x)$ 

Topic #5: Slope

There are _____ types of slope. Sketch them below.

Find the slope of each line graphed below.



To find the slope given two points (x_1, y_1) and (x_2, y_2) , use the slope formula:

Find the slope of the line passing through the given two points.

21. $(-12, -1)$ and $(-3, -4)$

22. $(-11, 7)$ and $(-11, -2)$

23. $(9, -3)$ and $(11, -7)$

24. $(12, 11)$ and $(-9, 11)$

Topic #6: Slope-Intercept Form & Standard Form

Slope-Intercept Form:	Standard Form:
25. Write a linear equation in slope-intercept form with a slope of -1 and a y-intercept of 4 .	26. Write a linear equation in slope-intercept form with a slope of $\frac{3}{4}$ and a y-intercept of -5 .
For each of the following equations, write the equation in slope-intercept form, then identify the slope and y-intercept.	
27. $x - y = 3$ Slope-intercept form: _____ Slope: _____ y-int: _____	28. $4x + 10y = -10$ Slope-intercept form: _____ Slope: _____ y-int: _____
29. $4x + y = 8$ Slope-intercept form: _____ Slope: _____ y-int: _____	30. $x - 3y = 6$ Slope-intercept form: _____ Slope: _____ y-int: _____

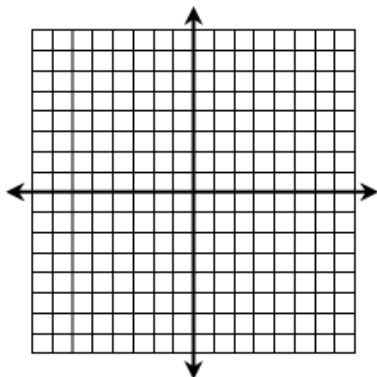
Topic #7: x- and y-Intercepts

- To find the x-intercept of a line, set ____ equal to ____ and solve for ____. - To find the y-intercept of a line, set ____ equal to ____ and solve for ____. - Make sure all intercepts are written as coordinates!			
Find the x-intercept and y-intercept of each linear equation.			
31. $y = 2x - 10$	x-intercept:	32. $y = -\frac{3}{2}x - 9$	x-intercept:
	y-intercept:		y-intercept:
33. $2x + y = -2$	x-intercept:	34. $3x - 4y = 24$	x-intercept:
	y-intercept:		y-intercept:

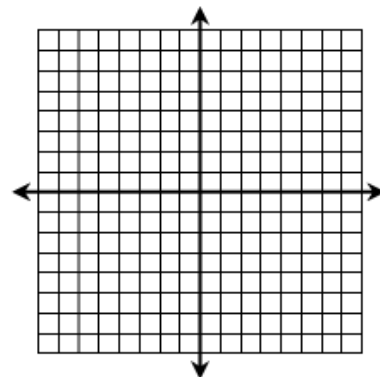
Topic #8: Graphing Linear Equations

Graph each linear equation. Convert to slope-intercept form when necessary.

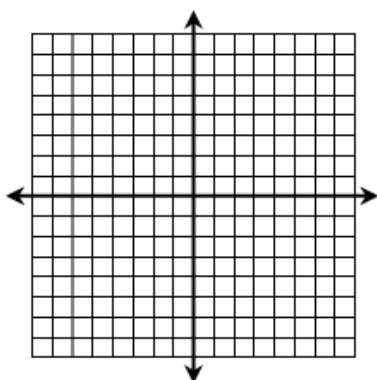
35. $y = -3x + 7$



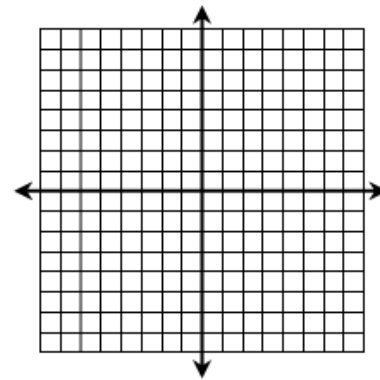
36. $y = 4x$



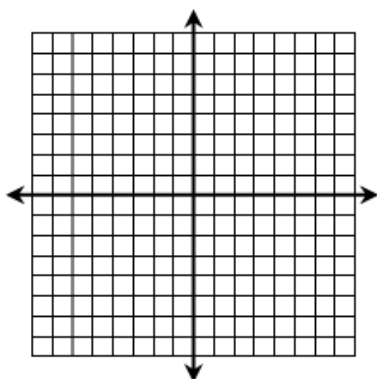
37. $x - y = 5$



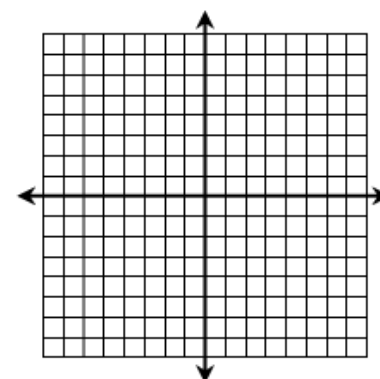
38. $x + 2y = 4$



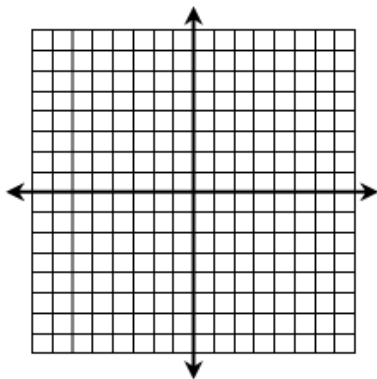
39. $-10x + 8y = -8$



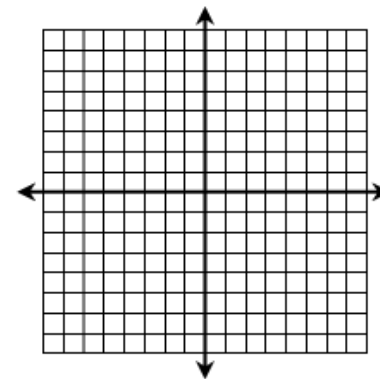
40. $3x - 2y = -6$



41. $x = -5$



42. $y = 1$



Topic #9: Simplifying Monomials

Product Rule	Quotient Rule	Power Rule	Zero Rule	Negative Exponent Rule
$x^a \cdot x^b = \underline{\hspace{2cm}}$	$\frac{x^a}{x^b} = \underline{\hspace{2cm}}$	$(x^a)^b = \underline{\hspace{2cm}}$	$x^0 = \underline{\hspace{2cm}}$	$x^{-a} = \underline{\hspace{2cm}}$
Simplify each expression.				
43. $7m \cdot m^2 \cdot 8m^3$	44. $(4x^3y^5)^3$		45. $\frac{35k^{10}}{5k^2}$	
46. $(6x^0)^2$	47. $(-2a^6bc^3)^2 \cdot -5ab^2$		48. $\frac{r^{16}s^2t^3}{r^4s^2t^8}$	
49. $\left(\frac{4m^4n^2}{6m^5n}\right)^2$	50. $\frac{-5p^2q^8}{20p^{-1}q^2}$		51. $(2v)^{-2} \cdot (6v^{-7})^3$	

Topic #10: Simplifying Polynomials

Simplify each expression.	
52. $(n^2 - 3n + 14) + (3n^2 + n - 25)$	53. $(2x^2 + 3x - 2) - (x^2 - 4x - 1)$
54. $3a(a^2 - 7a + 12)$	55. $8p(p^2 + 7p - 2) - (9p^3 - 2p^2)$
56. $(x - 9)(x + 7)$	57. $(2x + 3)(x - 8)$
58. $(x - 4)(x^2 + 5x + 3)$	