

The following summer assignment is to be used as a study tool to review the skills necessary to be successful in Algebra 2 Honors. **This is due, and will be checked, on the first day of school.** The following skills have been taught in Algebra 1 and will be assessed as your first grade. If you are having difficulty with certain skills, resources have been provided for you and more can be found through an online search. An excellent online resource is the Khan Academy which can be found at <https://www.khanacademy.org/>.

Directions: Show all work in the spaces provided including your final answer. In addition, place your final answers on the answer sheet provided. You will be expected to know perfect squares from (1-25), square roots from (1-625), and perfect cubes (1-10) without the use of a calculator.

Square and Cube Roots

Give the value of each expression			
1. $\sqrt{36}$	2. $\sqrt{144}$	3. $\sqrt{256}$	4. $\sqrt{\frac{16}{25}}$
5. $\sqrt[3]{27}$	6. $\sqrt[3]{216}$	7. $\sqrt[3]{64}$	8. $\sqrt[3]{8}$

Order of Operations and Evaluating Expressions

Evaluate each expression. Use the variable replacements when given. Show all work.	
9. $3[27 \div 9(3)] + \frac{12}{4} - -5 $	10. $\frac{1}{4}[6^2 - 12(8 - 11)] - \sqrt{16} + 2 -24 + 12 + 6$
11. $\frac{4^3 - 24 \div 3}{\sqrt[3]{8}}$	12. $\frac{d(b - c)}{ac}$ if $a = \frac{3}{4}$, $b = -8$, $c = -2$, $d = 3$, and $g = \frac{1}{3}$.

13. $4(6a + 2b^2) - \frac{1}{3}(27b^2 - 15a)$

if $a = -2$ and $b = 3$

14. $\frac{\sqrt{yz}}{(z-x)^2+y}$ (if $x = 1, y = -20, z = -5$)

Translating Equations and Inequalities

Translate using an equation or an inequality. Do not solve.

15. Two more than 4 times the cube of a number is 34.

16. Three less than twice the square of a number is 47.

17. Six times the difference of a number and 4 is no more than 10.

18. The product of a number and four, increased by one, is at least 7.

Solving Equations

19. $21 = 6 - 3a$

20. $6 - \frac{1}{2}x = -12$

21. $\frac{3}{4}x + 18 = 24$

22. $7y - 4(y + 3) = 33$

23. $7(a + 1) - 3a = 5 + 4(2a - 1)$

24. $12 - (2w + 1) = 6w - 3(w - 1)$

25. $4x - 4(8x - 6) = 12 - 12x$

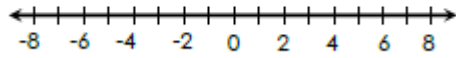
26. $\frac{5}{x+6} = \frac{7}{x}$

27. Solve $A = \frac{1}{2}bh$, for b

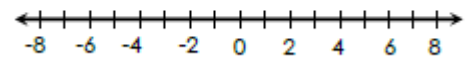
28. Solve $h = vt - gt^2$, for v

Solving and Graphing Inequalities

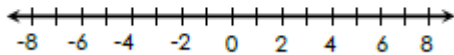
29. $9x - 8 \geq -17$



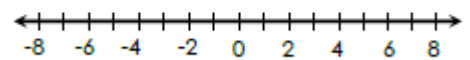
30. $3x - 21 > 6x - 6$



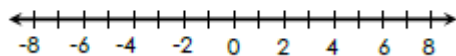
31. $10x - 3(5 - 3x) < 23$



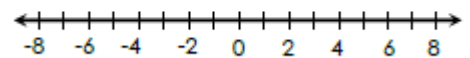
32. $8 - 2x \geq -2(3x - 10)$



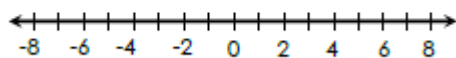
33. $6y - 3 < -27$ or $-14y + 2 < -26$



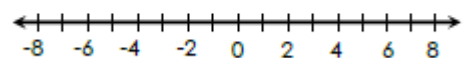
34. $x + 9 \leq 4$ or $\frac{x+12}{5} \geq 3$



35. $-14 < 3z - 2 \leq 13$



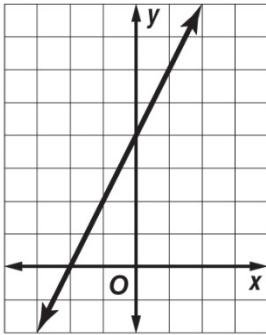
36. $10 < 3y - 2 < 19$



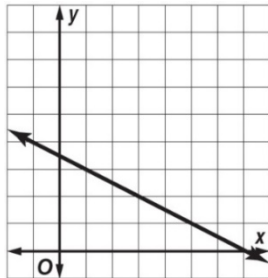
Slope

Find the slope of each line graphed below.

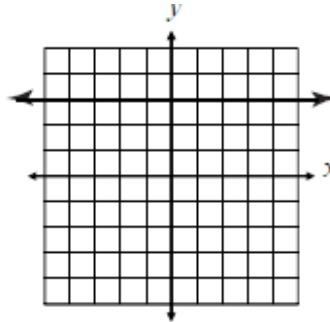
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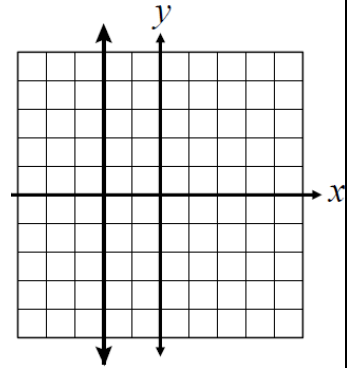
38.



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Slope m of a Line

For points (x_1, y_1) and (x_2, y_2) , where $x_1 \neq x_2$, $m = \frac{\text{change in } y}{\text{change in } x} = \frac{y_2 - y_1}{x_2 - x_1}$

Find the slope of the line that passes through each pair of points. Express as a fraction in simplest form.

41. $(3, -8), (-5, 2)$

42. $(-10, -3), (7, 2)$

43. $(-7, -6), (3, -6)$

44. $(8, 2), (8, -1)$

45. $(4, 3), (7, -2)$

46. $(-6, -3), (-8, -4)$

Slope-Intercept Form and Standard Form

Slope-Intercept Form:

$$y = mx + b$$

Standard Form:

$$Ax + By = C$$

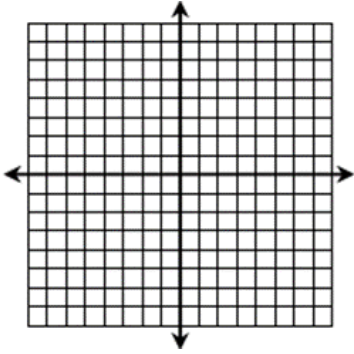
47. Write a linear equation in slope-intercept form with a slope of -2 and a y-intercept of 7.

48. Write a linear equation in slope-intercept form with a slope of $\frac{1}{2}$ and a y-intercept of -3.

Find the x-intercept and the y-intercept of the graph of each equation. Then graph the equation using the

intercepts.

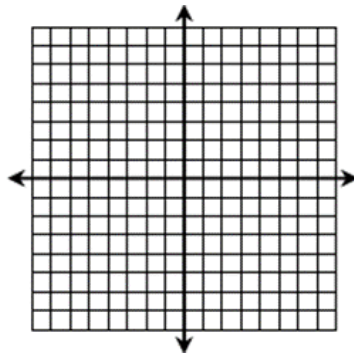
49. $y = 2x + 4$



x - intercept

y - intercept

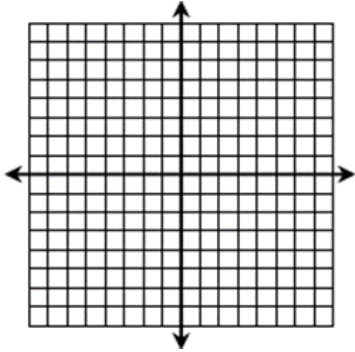
50. $2x + 7y = 14$



x - intercept

y - intercept

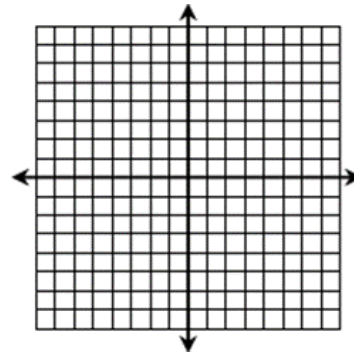
51. $y = -2x - 4$



x - intercept

y - intercept

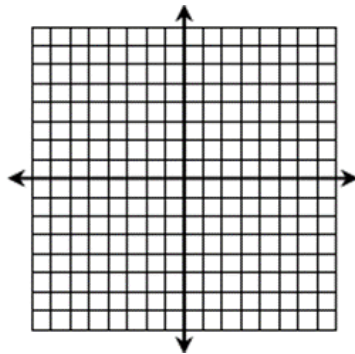
52. $6x + 2y = 6$



x - intercept

y - intercept

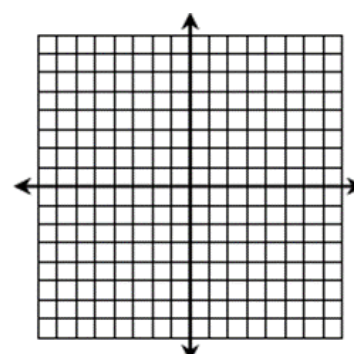
53. $y = 2$



x - intercept

y - intercept

54. $x = -3$



x - intercept

y - intercept

When given a point (x_1, y_1) and the slope, m , use the point – slope formula:

$$y - y_1 = m(x - x_1)$$

Write a linear equation in slope - intercept form using the given point and slope.

55. $(3, 4); m = 2$

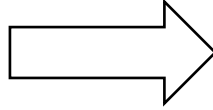
56. $(1, 3); m = -1$

57. $(-6, -8); m = \frac{3}{5}$

58. $(12, -4); m = -\frac{1}{4}$

When given two ordered pairs (x_1, y_1) and (x_2, y_2) ,
use the slope formula followed by point – slope formula

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$



$$y - y_1 = m(x - x_1)$$

Write a linear equation in slope-intercept form using the given two points.

59. $(-1, -2)$ and $(-3, 1)$

60. $(-2, -4)$ and $(1, 8)$

61. $(2, 0)$ and $(3, 2)$

62. $(-2, 9)$ and $(3, -6)$

Write an equation in slope-intercept form for the line that satisfies each set of conditions.

63. parallel to $y = 4x - 5$, y-intercept at -6

64. perpendicular to $y = 3x - 2$, passes through $(6, -1)$

65. passes through $(-8, -7)$, parallel to the graph of
 $y = \frac{1}{2}x - 3$

66. passes through $(4, 2)$ perpendicular to
 $y = -\frac{1}{2}x + 3$

PRODUCT RULE	QUOTIENT RULE	POWER RULE	NEGATIVE EXPONENT RULE
$x^a \cdot x^b = x^{a+b}$	$\frac{x^a}{x^b} = x^{a-b}$	$(x^a)^b = x^{ab}$	$x^{-a} = \frac{1}{x^a}$
Simplify each expression.			
67. $3a \cdot a^3 \cdot 8a^4$	68. $(3x^2y^5)^3$	69. $\frac{40m^6}{8m^2}$	
70. $(-3x^4yz^3)^2 \cdot -4x^2y$	71. $\frac{a^3b^2c^{10}}{a^2b^2c^6}$	72. $\frac{(-3r^7)^2}{4r^2 \cdot 5r^2}$	
73. $\left(\frac{6x^2y^4}{8xy^3}\right)^2$	74. $\frac{-3r^2s^8}{12r^{-1}s^3}$	75. $(2b^4) \cdot (ab^3)^2$	
76. $(3a)^{-2} \cdot (4a^{-5})^3$	77. $\frac{x^8y^{-2}}{(xy)^{-4}}$	78. $\left(\frac{r^{-4}s}{3r^{-3}s^4}\right)^4$	

Simplify each expression.

79. $(x^2 - 4x + 12) + (3x^2 + x - 20)$

80. $(2n^3 + 5n - 3) - (n^2 - 3n - 1)$

81. $(5 - 9y) - (8y - 12 + 3y^2)$

82. $(m^3 - 3m^2 + m - 4) + (9 - m^2 + 4m + 7m^3)$

83. $2x^3y^2(3x^2 - 5xy + y^2)$

84. $6a(a^2 + 4a - 1) - (5a^3 - 2a^2)$

85. $(x - 8)(x + 4)$

86. $(x - 4)(x + 4)$

87. $(2x + 5)(x - 3)$

88. $(2y - 1)^2$

Factor each polynomial completely.

89. $12x^2 + 4x$

90. $6x^2y + 2x$

91. $8a^2b - 12ab$

92. $x^2 + 5x + 4$

93. $y^2 + 12y + 27$

94. $x^2 + 6x + 8$

95. $3y^2 + 13y + 4$

96. $7x^2 + 58x + 16$

97. $3x^2 + 28x + 32$

98. $x^2 - 5x + 6$

99. $y^2 - 5y + 4$

100. $6x^2 - 13x + 5$

101. $x^2 - 144$

102. $4x^2 - 9$

103. $16y^2 - 1$

104. $25x^2 - 4y^2$

105. $36y^2 - 16$

106. $9a^2 - 49b^2$

Name _____

Period _____

Algebra 2 - Summer Assignment – Answer Sheet

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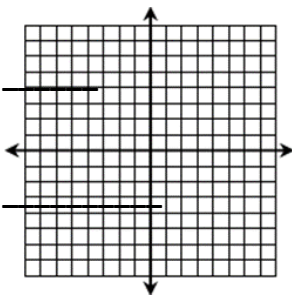
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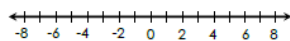
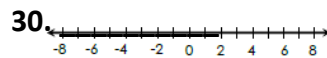
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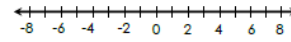
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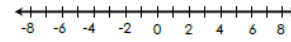
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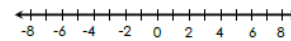
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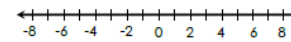
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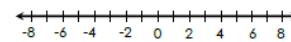
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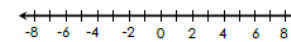
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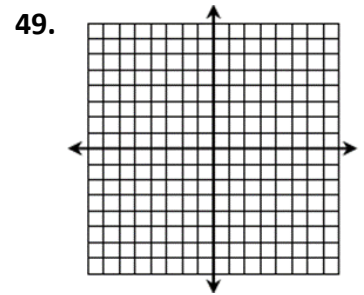
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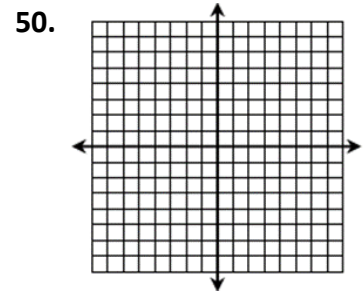
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x – intercept: _____

y – intercept: _____



x – intercept: _____

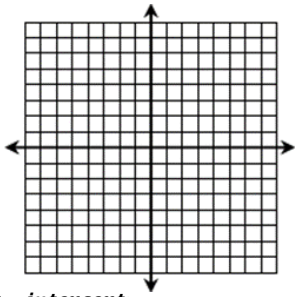
y – intercept: _____

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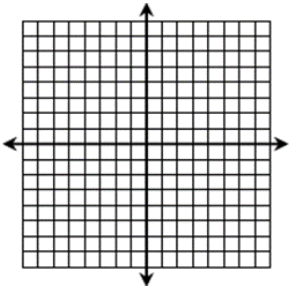
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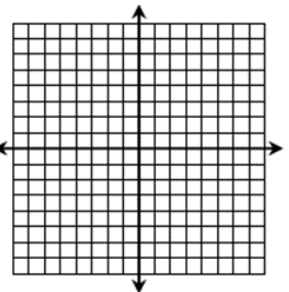
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