Name: _____

Summer Work: Rising Geometry **Due date:** First day of school

green hedges
SCHOOL

Important Information:

This summer work packet will be graded as your **first quiz grade** of the semester. The skills that are covered in this assignment are Algebra 1 skills that are necessary prior to taking Geometry. You may use a graphing calculator to help answer questions. Please show work whenever possible.

To finish your summer work efficiently and effectively, we recommend doing 10 – 12 problems per week. Please strategize with your parents about how to best complete the work.

Have a great summer!

PART 1: SOLVING EQUATIONS

Solve each 1 variable equation.

1. $6x - 5x = 0$

2. $17 = n + 2 + 4n$

3. $-2(2m + 7) = -28 - 6m$

4. $25 + y = -5(2 - 8y) + 6y$

5. $6x - 8(-2x - 5) = -10(x - 4)$

6. $-28x + 6 = -3(1 + 7x) - 7x$

Solve each absolute value equation.

7. $|-6x| = 6$

8. $|5x| = 30$

9. $|-7-8k|=73$

10. $|10a-8|=78$

11. $-6|3-9x|=-18$

12. $|9x-9|+4=76$

Solve radical equations. Remember to check for *extraneous* solutions.

13. $2=\sqrt{\frac{m}{4}}$

14. $1=\sqrt{n+5}$

15. $x = \sqrt{20 - x}$

16. $p = \sqrt{10 - 9p}$

17. $-n + \sqrt{2n + 34} = 5$

18. $-b + \sqrt{60 - 6b} = -10$

Solving Quadratic Equations – Use the Specified Method.

Solve by Factoring

19. $x^2 - 8x + 7 = 0$

20. $3x^2 + 12x + 9 = 0$

21. $x^2 + 7x = 8$

22. $x^2 = -6x - 9$

23. $x^2 - 1 = 0$

24. $8x^2 + 10x - 3 = 0$

Solve by taking the square root. Leave answers as simplified radicals (if needed).

25. $x^2 - 80 = 0$

26. $(x - 2)^2 = 12$

Solve using the quadratic formula. Leave answers as simplified radicals (if needed).

27. $x^2 - 2x - 3 = 0$

28. $x^2 - 3x - 18 = 0$

29. $4x^2 = 24 - 10x$

30. $4x^2 + 4x = 2$

31. $2x^2 + 2x + 60 = 0$

32. $-10x^2 - 12x + 45 = -9x^2 + 1 + 5x$

Solve each system of equations.

33. $8x + 3y = -9$

$-8x + y = 29$

34. $y = 4x + 4$

$-8x + 2y = 8$

35. $8x - 6y = -3$

$6x - 5y = -1$

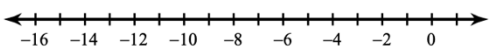
36. $y = x + 2$

$-x + y = 1$

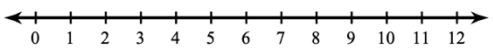
PART 2: SOLVING INEQUALITIES

Solve each compound inequality. Graph its solution.

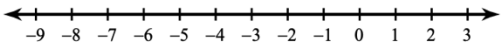
37. $2a - 12 > -20$ or $5 - 2a \geq 29$



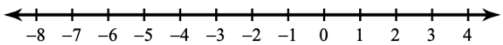
38. $11 \leq 4 + 7n \leq 67$



39. $5x \geq -10$ or $3x \leq -18$

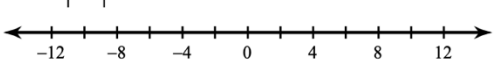


40. $-1 < 3 + r \leq 4$

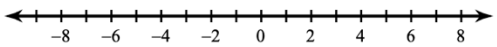


Solve each absolute value inequality. Graph its solution.

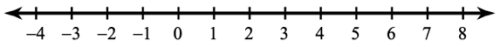
41. $\left|\frac{n}{3}\right| > 3$



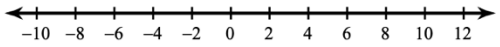
42. $|3x| \geq 15$



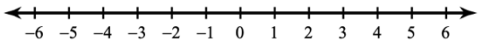
43. $|4k-5|<5$



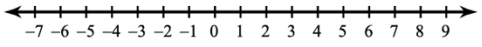
44. $|9-6p|<57$



45. $3|3n-6|>-9$



46. $|6-6x|+3\leq 39$



PART 3: SIMPLIFYING EXPRESSIONS

Simplify using the rules of exponents. Your answer should have only *positive* exponents.

47. $n \cdot n^3 \cdot 2n$

48. $(k^2)^4$

49. $a^2 \cdot 2a^0$

50. $2x^{-3} \cdot 3x$

51. $((-x^4y^4)^{-5} \cdot 2xy^3)^0$

52. $(-2u^{-2}v^2)^2 \cdot -2v^{-5}$

53. $2x^0y^5 \cdot (2x^5y^3)^3$

54. $\frac{3x^6}{6x^4}$

55. $\frac{(-2x^4y^2)^3}{2y^{-2} \cdot 2x^{-2}y^2}$

56. $\frac{a^{-4}b^{-1} \cdot ab^2}{a^{-4}}$

Simplify each radical.

57. $\sqrt{8}$

58. $\sqrt{27}$

59. $\sqrt{x^3}$

60. $2\sqrt{24}$

61. $3\sqrt{48x^4}$

62. $-5\sqrt{128x^5}$

63. $\sqrt{2} \cdot \sqrt{4}$

64. $-2\sqrt{15}(5 + \sqrt{10})$

65. $7\sqrt{98x^3yz^4}$

66. $5\sqrt{15}(\sqrt{3}+\sqrt{10})$

67. $(6\sqrt{7}-2\sqrt{6})(6\sqrt{7}+3\sqrt{6})$

68. $\frac{2\sqrt{3}}{\sqrt{27}}$

69. $\frac{2\sqrt{16}}{4\sqrt{9}}$

70. $\frac{4}{4+\sqrt{2}}$

71. $\frac{3}{\sqrt{3}-1}$

72. $-5\sqrt{2}+5\sqrt{2}$

73. $-2\sqrt{5}+5\sqrt{5}$

74. $-2\sqrt{3}-2\sqrt{12}-\sqrt{54}$

75. $4\sqrt{112}+2\sqrt{128}-2\sqrt{7}-2\sqrt{32}$

Simplify each expression by adding or subtracting.

76. $(7x^4 - 5x^3 - 14) - (11x^4 - 8x^3 + 7)$

77. $(10x^3 + 12x - 7) + (6x^3 - 2x^2 + 4x + 3)$

Simplify by finding each product.

78. $(2x + 4)(2x - 4)$

79. $(4n + 5)(n + 4)$

80. $(-5x + 8)(7x - 5)$

81. $(-n + 3)(8n - 8)$

82. $(4x - 6)(6x^2 + 3x + 8)$

83. $(y + 1)^2$

PART 4: FACTORING. Factor each expression.

84. $x^2 - 9x + 18$

85. $x^2 - 8x - 9$

86. `$5x^2 + 44x + 32$

87. $3x^2 - 4x - 15$

88. $x^3 - 4x^2 - 4x + 16$

89. $-30x^2 + 51x - 18$

90. $4x^2 - 25$

91. $32x^3 - 50x$

92. `$4x^2 + 15x + 9$

93. $9x^2 + 24x + 16$

94. `$18x^2 - 2$

95. $x^4 - 16$

PART 5: LINEAR FUNCTIONS

Find the slope of each line.

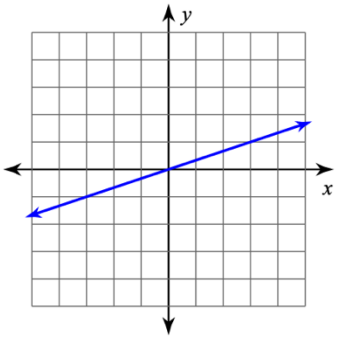
96. $y = \frac{5}{4}x + 5$

97. $y = -3x$

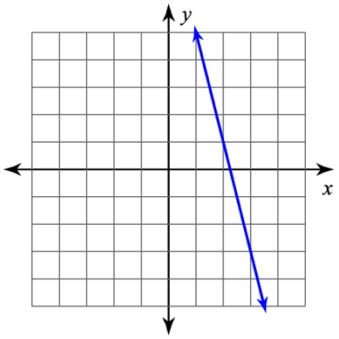
98. $3x + 2y = 4$

99. $x = 7$

100.



101.



102. $4y = 3x$

103. $2 - y = 4x$

Find the slope of the line through each of the 2 points.

104. $(17, 2), (-3, -4)$

105. $(4, -18), (4, 20)$

Write the equation of a line given the information in each problem. Final equations should be in slope-intercept form.

106. The line passes through the points $(2, 10), (0, 2)$

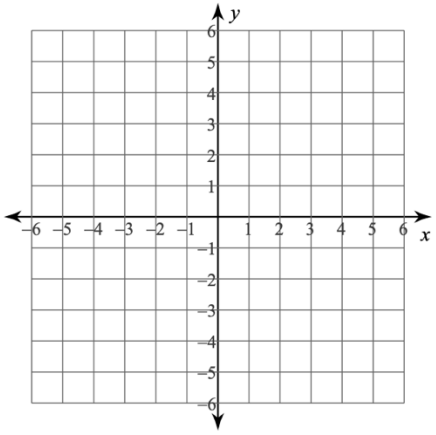
107. The line passes through the points $(1, -8), (3, -4)$

108. The line is perpendicular to $y = \frac{3}{4}x - 8$ and passes through the point $(6, -1)$

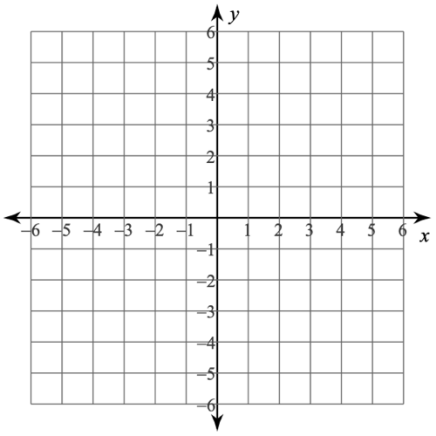
PART 6: GRAPHING

Graph each line.

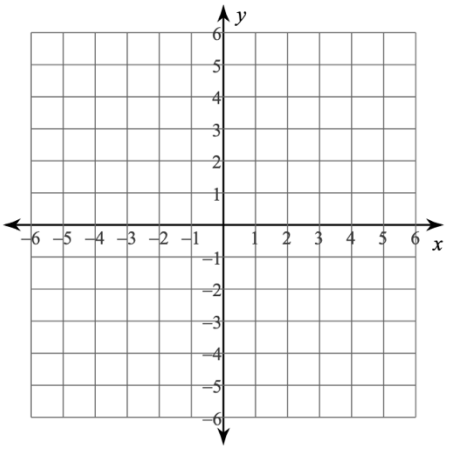
109. $y + 6x = 3$



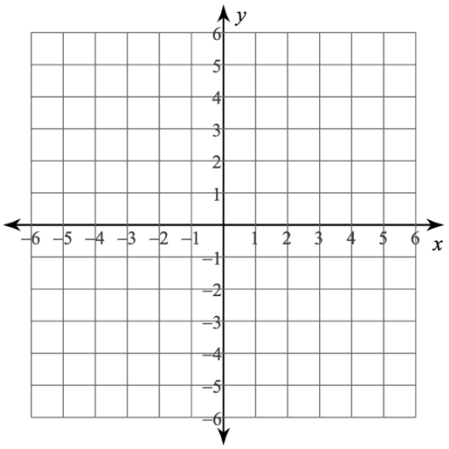
110. $y = -2$



111. $2x - 3y = -6$



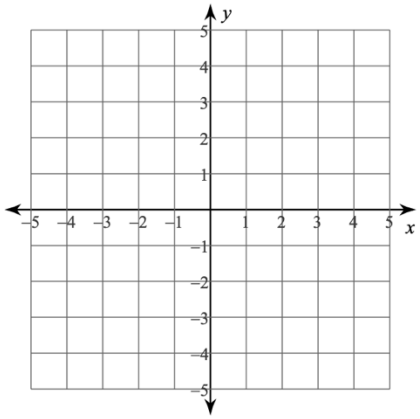
112. $3x + 4y = -4$



Graph each system of linear equations and identify the solution point.

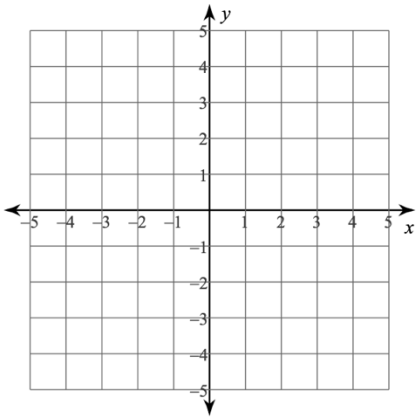
113. $y = \frac{1}{3}x + 4$

$y = -\frac{4}{3}x - 1$



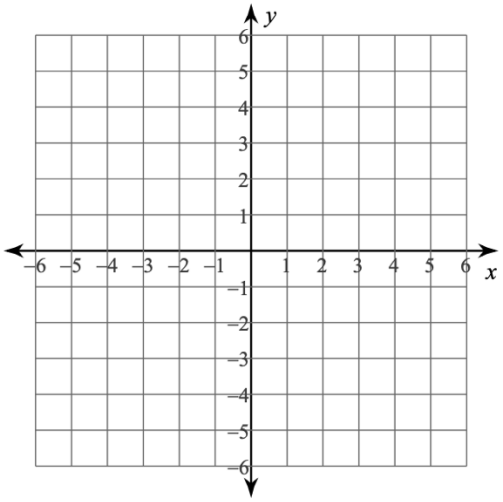
114. $y = -x + 1$

$y = -\frac{1}{4}x - 2$

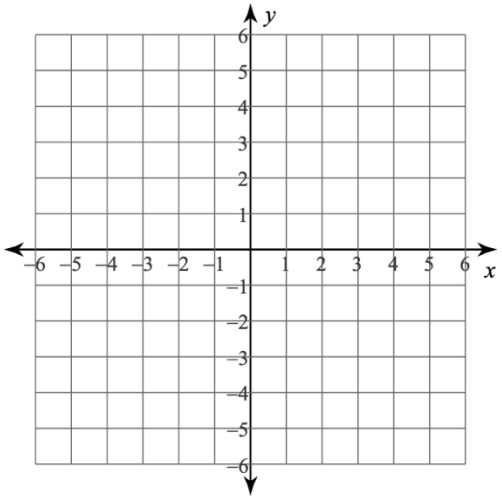


Graph each linear inequality.

115. $y > x - 4$

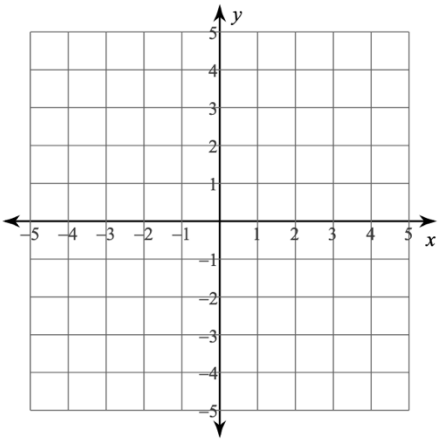


116. $y \leq -\frac{1}{3}x - 3$

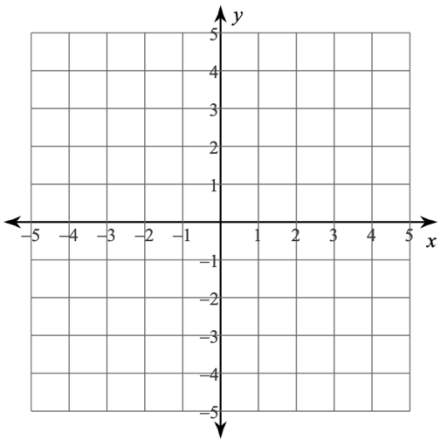


Graph each system of linear inequalities.

117. $y < -5x + 3$
$y > x - 3$



118. $y \leq \frac{5}{3}x - 2$
$y > \frac{1}{3}x + 2$



Graph each quadratic equation. Then complete the information about each graph.

Graph each quadratic function. The complete the information about each graph.

119. $g(x) = -2x^2$

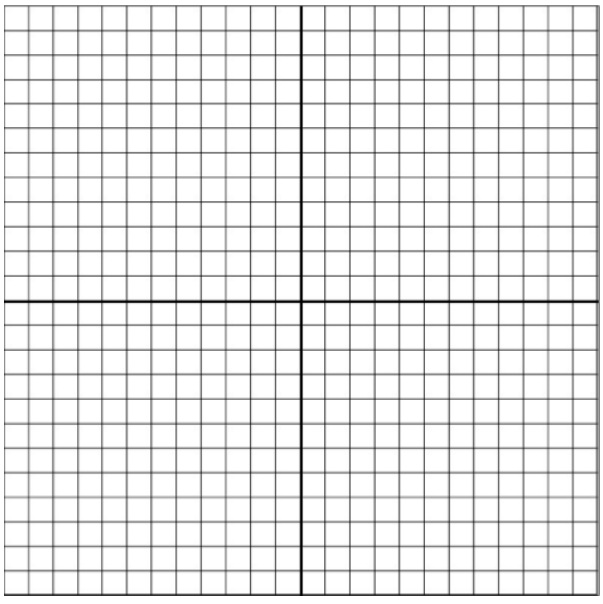
x	*y*

Axis of symmetry:

Vertex:

Roots:

Domain: Range:



120. $g(x) = x^2 - 4x - 5$

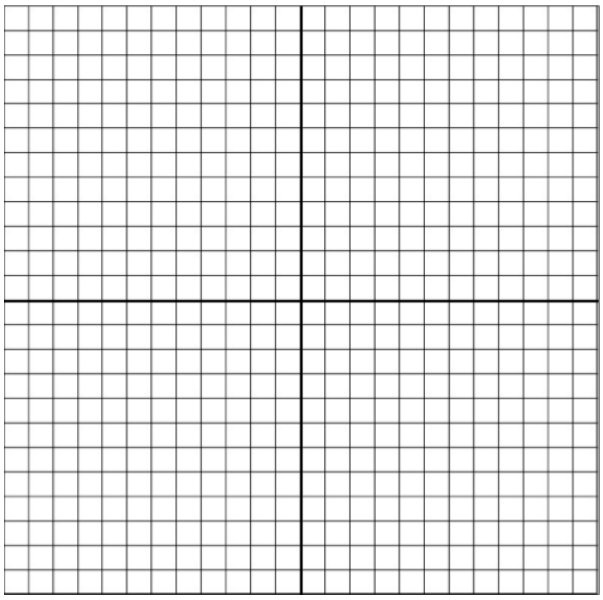
Axis of symmetry:

Vertex:

Roots:

Domain: Range:

x	y



121. $g(x) = -2x^2 - 16x$

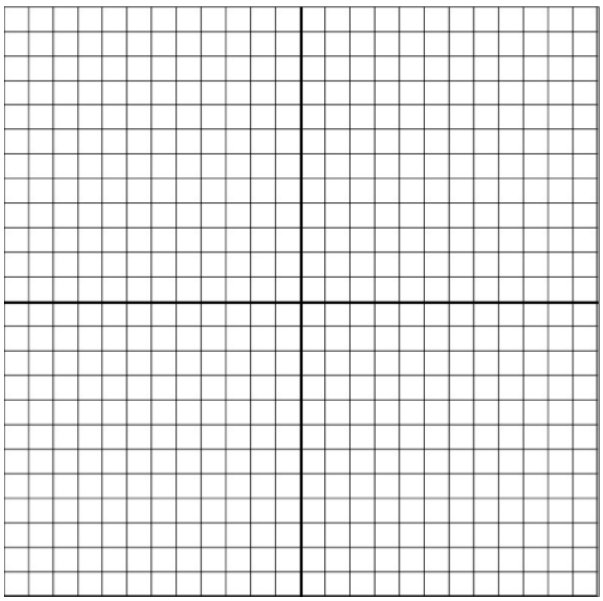
Axis of symmetry:

Vertex:

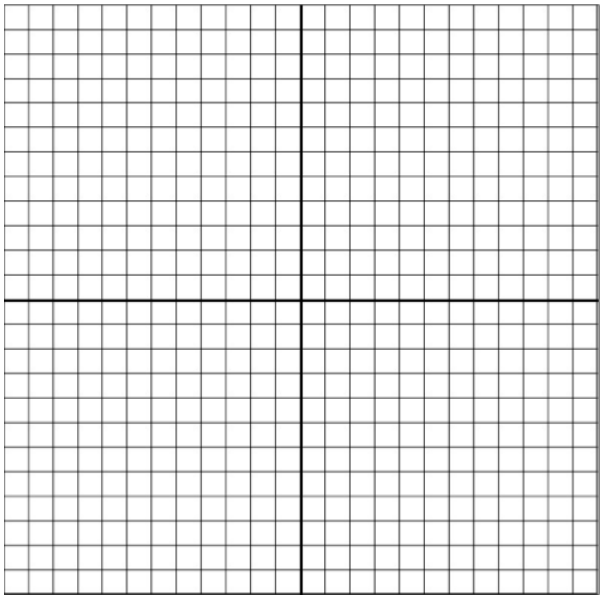
Roots:

Domain: Range:

x	y



122. $h(x) = (x + 2)^2 - 6$



Vertex:

Axis of Symmetry:

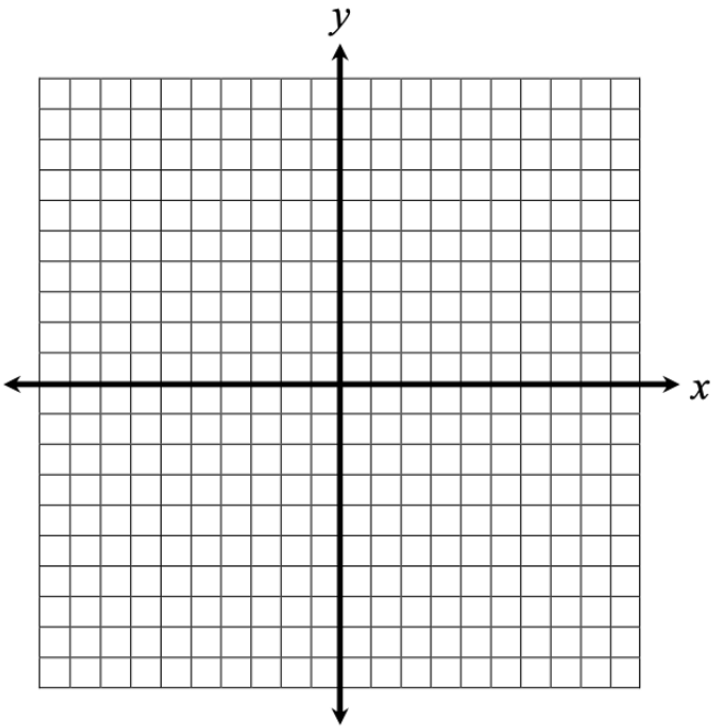
Domain: Range:

Graph each exponential equation. Then complete the information about each graph.

123. $y = 2^x$

Type of Exponential Function: GROWTH OR DECAY

Domain: **Range:** **y-intercept:**



124. $y = \left(\frac{1}{3}\right)^x$

Type of Exponential Function: GROWTH OR DECAY

Domain: **Range:** **y-intercept:**