

7th ITF and 8th Algebra or ITF Going Into Geometry A or H

When starting class next year, you should have a concrete understanding of the topics listed below.

In order to help you with this, we are attaching a packet of practice that you should complete over the summer. There are problems for each of these skills and a solutions sheet at the back so you can check your solutions. All work should be completed on a separate sheet of paper and brought with you on the first day of school. Khan Academy is a great resource for videos, practice, and quizzes to help you master these. IXL also has practice that you can complete. Simply search the topic you are working on.

We hope you have a great summer and good luck in high school!

- Solving Multi-Step Equations with Variables on Both Sides, including:
 - equations with fractions
 - equations with decimals
 - equations with special solutions
- Solving Literal Equations (solving equations for a given variable)
- Polynomials
 - add, subtract, multiply, and divide
 - factoring
- Solving Polynomial Equations
 - factoring
 - completing the square
 - quadratic formula
 - square root
- Radicals
 - simplifying
 - adding & subtracting, multiplying, dividing
 - rationalizing the denominator
- Linear Equations
 - finding slope given 2 points, graph, table of values, equation
 - writing the equation of a line given 2 points, graph, table of values, point and slope
 - Slope-Intercept Form, Point-Slope Form, and Standard Form
- Solving Systems of Equations
 - Substitution
 - Elimination

Geometry Algebra Review

This assignment should be completed without the use of a calculator – Except where specified. Leave all answers in simplified radical form or improper fractions (no decimals). Answers are also found below so you can check your work.

Solve.

$$1. \frac{2}{3} + x = -\frac{5}{2} - \frac{5}{6}$$

$$2. \frac{1}{2}x + \frac{3}{2}x = x + \frac{9}{2} - \frac{1}{2}x$$

$$3. \frac{3}{2}x + \frac{1}{5}x = \frac{11}{6}x - \frac{2}{15}$$

Solve each equation for the indicated variable.

$$4. A = \frac{bh}{2}, \text{ for } b$$

$$5. A = \pi r^2, \text{ for } r$$

$$6. P = 2w + 2l, \text{ for } w.$$

$$7. V = \frac{4\pi r^3}{3}, \text{ for } r$$

$$8. A = \frac{(b_1 + b_2)h}{2}, \text{ for } b_1$$

$$9. d = \sqrt{x^2 + y^2}, \text{ for } y$$

Solve.

$$10. \frac{27}{4} = \frac{m}{4}$$

$$11. \frac{x}{4} = \frac{9}{x}$$

$$12. \frac{7}{2} = \frac{a+3}{5}$$

$$13. \frac{4x-2}{3} = \frac{2x}{7}$$

$$14. \frac{x-2}{3} = \frac{2x+8}{6x}$$

Solve.

$$15. 7 + 8y > 2y - 12$$

$$16. 5 - 4y < 37$$

$$17. 6m - 14 > 18 - 10m$$

Simplify the following expressions.

$$18. \frac{7^5}{7^3}$$

$$19. \left(\frac{4}{3}\right)^{-2}$$

$$20. (x^4y^3)(x^5y)$$

$$21. (-2x^5y^6)^3$$

$$22. \frac{3a^2x^3}{18a^4x^2}$$

$$23. \left(\frac{12a^4x^3}{18a^4x^7}\right)$$

Multiply.

24. $(x+5)(x-3)$

25. $(2x-5)(3x-7)$

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

27. $(2x-6)(2x+6)$

28. $(x+9)^2$

29. $(4x-11)^2$

Factor (#30-38) and Solve (#39-47).

30. $x^2 - 49$

31. $x^2 - 64$

32. $x^2 - 1$

33. $4a^2 - 36$

34. $144y^2 - 100$

35. $16n^2 - 81$

36. $x^2 + 8x + 16$

37. $a^2 + 10a + 25$

38. $n^2 - 2n + 1$

39. $x^2 - 14x + 49 = 0$

40. $16x^2 + 24x + 9 = 0$

41. $25x^2 - 60x + 36 = 0$

42. $x^2 + 2x - 35 = 0$

43. $x^2 + 20x + 64 = 0$

44. $x^2 + 8x - 48 = 0$

45. $2x^2 - 12x + 10 = 0$

46. $3x^2 + 26x + 16 = 0$

47. $6x^2 - 12x - 18 = 0$

Simplify each radical expression. * Leave your answers in simplest radical form!!!* (This means no decimals and no radicals in any denominators)

48. $\sqrt{27}$

49. $\sqrt{48}$

50. $\sqrt{80}$

51. $\sqrt{18}$

52. $\sqrt{250}$

53. $\sqrt{\frac{9}{16}}$

54. $\sqrt{\frac{9}{32}}$

55. $\frac{\sqrt{3}}{\sqrt{5}}$

56. $\frac{6}{\sqrt{3}}$

57. $\sqrt{\frac{1}{8}}$

58. $10\sqrt{5} + 3\sqrt{5}$

59. $\sqrt{80} - \sqrt{45}$

60. $(3\sqrt{3})(7\sqrt{6})$

61. $(\sqrt{3})(\sqrt{6})$

Solve by completing the square.

62. $x^2 + 8x - 17 = 0$

63. $x^2 - 4x - 16 = 0$

64. $x^2 + 10x + 18 = 0$

Solve by the quadratic formula.

65. $3x^2 + 8x + 2 = 0$

66. $5x^2 + 3x - 16 = 0$

67. $3x^2 + 8x + 10 = 0$

For each of the following equations or inequalities:

a) identify the slope

b) identify the x- and y-intercept

c) graph

68. $y = x - 2$

69. $2x + 4 = y$

70. $5y + 2x = 10$

71. $2y + 4x = 14$

72. $3y - 4x = 9$

73. $x = 4$

74. $y = -5$

75. $y \geq 3x + 1$

76. $4y < 6x - 8$

77. $2y - 3x \leq 12$

78. $3x - 6y > 36$

Find the slope of the line that passes through the following points.

79. (6, 8) & (-2, -4)

80. (-3, 0) & (-3, 5)

81. (5, 1) & (-1, 1)

82. (3, 4) & (5, -8)

Write the slope-intercept form of the equation of each line.

83. $3x - 2y = -16$

84. $13x - 11y = -12$

85. $6x + 5y = -15$

Find the equation of the line through the given point with given slope. Write the answer in slope-intercept form.

86. through (1, 2); $m = 7$

87. through (3, 1); $m = -1$

88. through (-2, 5); $m = -4$

89. through (2, 1); undefined slope

90. through (6, -2); $m = 0$

Write the equation of a line in point-slope form with the given conditions.

91. Parallel to $y = 2x - 10$ and passes through $(4, 2)$.

92. Perpendicular to $y = \frac{2}{3}x + 8$ and passes through $(-3, 7)$

93. Parallel to $y = \frac{9}{7}x - 11$ and passes through $(0, -4)$

94. Perpendicular to $2y - 10 = -x$ and passes through the point $(-5, -1)$

Solve each system by graphing. You must use the graphing calculator in order to complete these problems. Reminder, write answers as improper fractions (where necessary).

95. $y = -3x + 5$
 $y = 2x + 10$

96. $x + y = 6$
 $x - y = 4$

97. $x + y = 3$
 $2x - y = 2$

Solve each system by either substitution or elimination method.

98. $y = 7x + 5$
 $y = 4x - 10$

99. $5x + 2y = 22$
 $x + 2y = 14$

100. $2x + 5y = 2$
 $3x - 2y = 3$

101. $x - y = 9$
 $3x + y = 11$

102. $y = 7 - 2x$
 $5y = -3x + 7$

103. $6x + 3y = 0$
 $8x + 5y = 8$

104. $x = 8 + 3y$
 $2x - 5y = 8$

105. $3x + 2y = 71$
 $y = 4 + 2x$

Honors Geometry Algebra Review Answers

1) $x = -4$

2) $x = 3$

3) $x = 1$

4) $b = \frac{2A}{h}$

5) $r = \pm \sqrt{\frac{A}{\pi}}$

6) $w = \frac{P-2l}{2}$

7) $r = \sqrt[3]{\frac{3V}{4\pi}}$

8) $b_1 = \frac{2A}{h} - b_2$

9) $y = \pm \sqrt{d^2 - x^2}$

10) $m = 27$

11) $x = \pm 6$

12) $a = \frac{29}{2}$

13) $x = \frac{7}{11}$

14) $x = 4, x = -1$

15) $y > \frac{-19}{6}$

16) $y > -8$

17) $m > 2$

18) 49

19) $\frac{9}{16}$

20) $x^9 y^4$

21) $-8x^{15} y^{18}$

22) $\frac{x}{6a^2}$

23) $\frac{2}{3x^4}$

24) $x^2 + 2x - 15$

25) $6x^2 - 29x + 35$

26) $x^2 - 16$

27) $4x^2 - 36$

28) $x^2 + 18x + 81$

29) $16x^2 - 88x + 121$

30) $(x-7)(x+7)$

31) $(x-8)(x+8)$

32) $(x-1)(x+1)$

33) $4(a-3)(a+3)$

34) $4(6y-5)(6y+5)$

35) $(4n-9)(4n+9)$

36) $(x+4)^2$

37) $(a+5)^2$

38) $(n-1)^2$

39) $x = 7$

40) $x = \frac{-3}{4}$

41) $x = \frac{6}{5}$

42) $x = -7, x = 5$

43) $x = -16, x = -4$

44) $x = -12, x = 4$

45) $x = 5, x = 1$

46) $x = \frac{-2}{3}, x = -8$

47) $x = 3, x = -1$

48) $3\sqrt{3}$

49) $4\sqrt{3}$

50) $4\sqrt{5}$

51) $3\sqrt{2}$

52) $5\sqrt{10}$

53) $\frac{3}{4}$

54) $\frac{3\sqrt{2}}{8}$

55) $\frac{\sqrt{15}}{5}$

56) $2\sqrt{3}$

Honors Geometry Algebra Review Answers

$$57) \frac{\sqrt{2}}{4}$$

$$58) 13\sqrt{5}$$

$$59) \sqrt{5}$$

$$60) 63\sqrt{2}$$

$$61) 3\sqrt{2}$$

$$62) x = -4 \pm \sqrt{33}$$

$$63) x = 2 \pm 2\sqrt{5}$$

$$64) x = -5 \pm \sqrt{7}$$

$$65) x = \frac{-4 \pm \sqrt{10}}{3}$$

$$66) x = \frac{-3 \pm \sqrt{329}}{10}$$

$$67) x = \emptyset \text{ (no solutions)}$$

For the problems #68-78 the graphs are on the following pages.

$$68) m = 1; (2,0) (0,-2)$$

$$69) m = 2; (-2,0) (0,4)$$

$$70) m = \frac{-2}{5}; (5,0) (0,2)$$

$$71) m = -2; \left(\frac{7}{2}, 0\right) (0, 7)$$

$$72) m = \frac{4}{3}; \left(\frac{-9}{4}, 0\right) (0, 3)$$

$$73) m = \text{no slope}; (4,0) \text{ none}$$

$$74) m = 0; \text{none } (0,-5)$$

$$75) m = 3; \left(\frac{-1}{3}, 0\right) (0,1)$$

$$76) m = \frac{3}{2}; \left(\frac{4}{3}, 0\right) (0,-2)$$

$$77) m = \frac{3}{2}; (-4,0) (0,6)$$

$$78) m = \frac{1}{2}; (12,0) (0,-6)$$

$$79) m = \frac{3}{2}$$

$$80) \text{no slope}$$

$$81) m = 0$$

$$82) m = -6$$

$$83) y = \frac{3}{2}x + 8$$

$$84) y = \frac{13}{11}x + \frac{12}{11}$$

$$85) y = \frac{-6}{5}x - 3$$

$$86) y = 7x - 5$$

$$87) y = -x + 4$$

$$88) y = -4x - 3$$

$$89) x = 2$$

$$90) y = -2$$

$$91) y - 2 = 2(x - 4)$$

$$92) y - 7 = \frac{-3}{2}(x + 3)$$

$$93) y + 4 = \frac{9}{7}(x - 0)$$

$$94) y + 1 = 2(x + 5)$$

$$95) (-1, 8)$$

$$96) (5, 1)$$

$$97) \left(\frac{5}{3}, \frac{4}{3}\right)$$

$$98) (-5, -30)$$

$$99) (2, 6)$$

$$100) (1, 0)$$

$$101) (5, -4)$$

$$102) (4, -1)$$

$$103) (-4, 8)$$

$$104) (-16, -8)$$

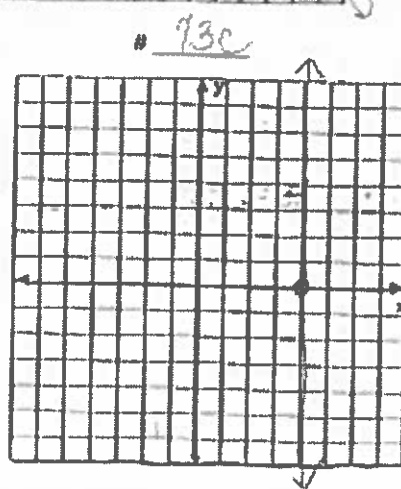
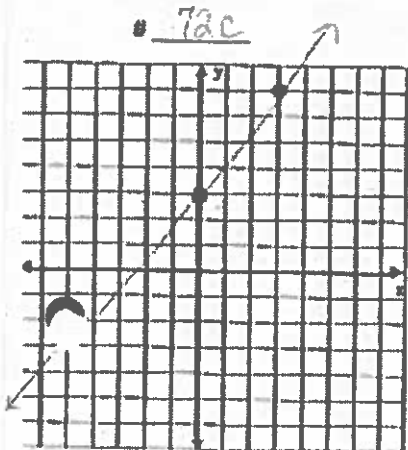
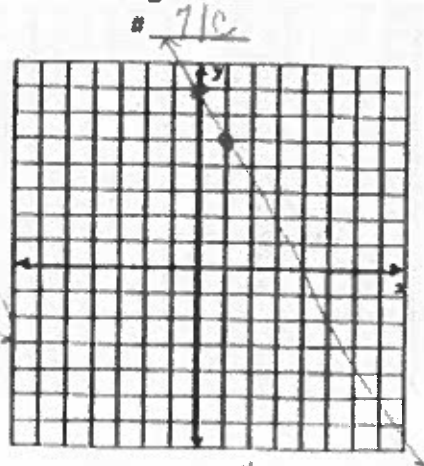
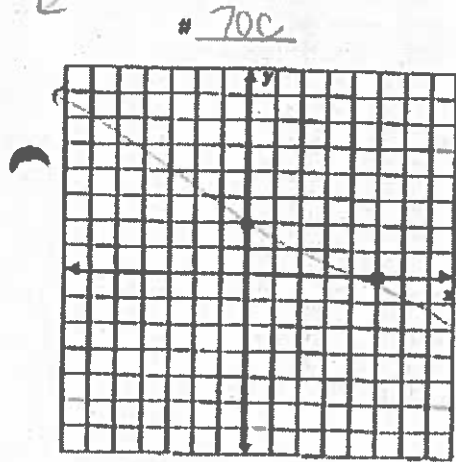
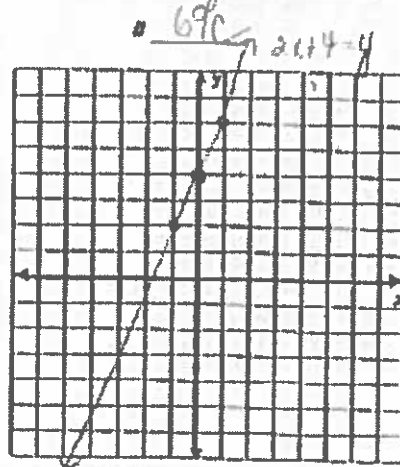
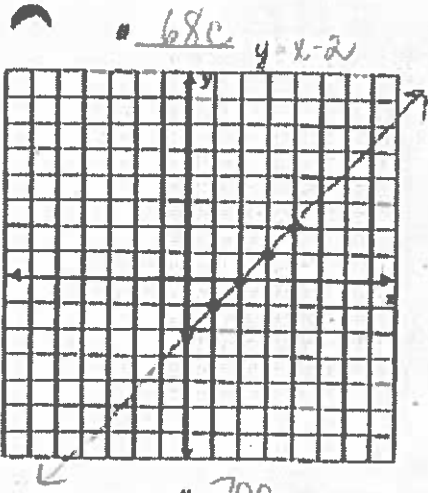
$$105) (9, 22)$$

Honors Geometry Algebra Review Answers

Name KEY

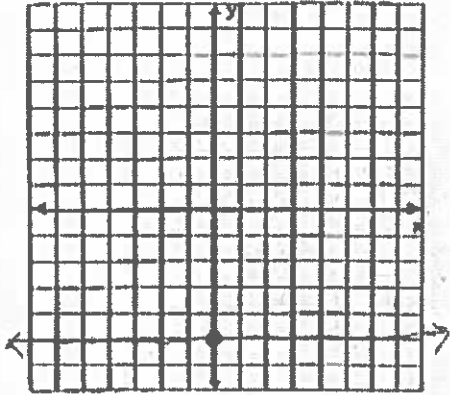
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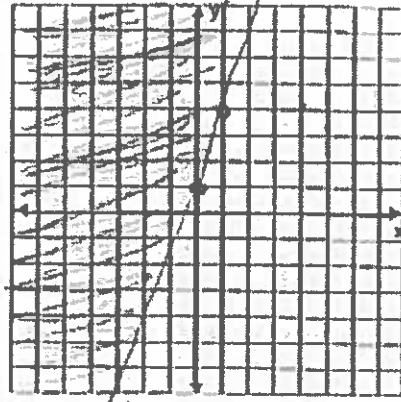


Honors Geometry Algebra Review Answers

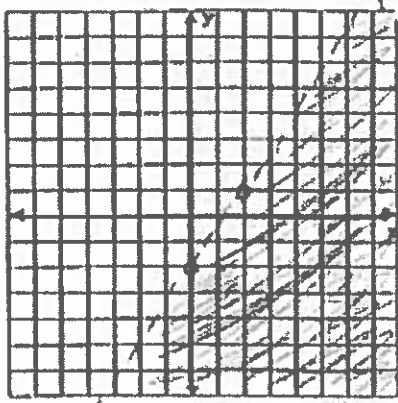
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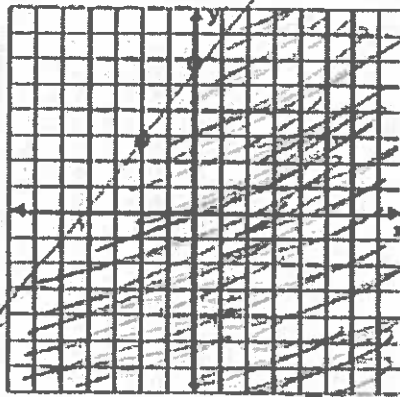
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