

## Algebra 2 Honors Summer Packet Summer 2010

Many topics that we will study next year in your mathematics class build on topics that you have already learned in previous classes. Since many of you have been away from these ideas for a long period of time, you might need a refresher in order to be up to speed at the beginning of the course. **Please work through the problems in this packet, showing all appropriate work on a separate sheet of paper. All work and answers not on a separate sheet of paper will not be graded and result in a zero. Do Not write on this packet. Please keep your work labeled and organized, in numerical order. Box all answers.** If you are unfamiliar with a term or type of problem, refer to your notes or go online to various help sites for mathematics. The skills covered are part of the foundation for your course. Master of these skills is assumed. Have this packet ready for the first day of class. A calculator may **only** be used for problems #143 - 150. This packet will be collected and you should expect to be tested on this review material. We look forward to working with you next year!

This packet will be collected on **Friday, August 13<sup>th</sup>, 2010** for all regular classes, and on **Wednesday, August 11<sup>th</sup>, 2010** for first semester block class.

### Helpful Websites:

[www.algebra.com](http://www.algebra.com)

[www.gomath.com](http://www.gomath.com)

[www.algebrahelp.com](http://www.algebrahelp.com)

## Algebra 2 Honors Summer Packet

Date \_\_\_\_\_ Period \_\_\_\_\_

**Evaluate each expression. All Answers should be in fraction form.**

1)  $\left(-3\frac{3}{4}\right) - 4\frac{3}{8}$

2)  $4\frac{1}{3} - 5\frac{1}{6}$

3)  $1\frac{3}{4} - 1\frac{2}{7}$

4)  $(-8) - \frac{3}{4}$

5)  $\frac{13}{8} + \left(-1\frac{1}{3}\right)$

6)  $\frac{1}{3} - \left(-\frac{5}{7}\right)$

7)  $4\frac{5}{6} - \frac{5}{3}$

8)  $3 - \left(-1\frac{6}{7}\right)$

**Find each product. All Answers should be in fraction form.**

9)  $\left(3\frac{5}{6}\right)\left(-\frac{3}{2}\right)$

10)  $\left(-\frac{1}{2}\right)\left(\frac{3}{2}\right)$

11)  $\left(\frac{8}{9}\right)\left(-\frac{4}{3}\right)$

12)  $\left(-\frac{1}{5}\right)\left(-\frac{9}{5}\right)$

13)  $\left(-1\frac{2}{3}\right)\left(-\frac{2}{5}\right)$

14)  $\left(-3\frac{3}{8}\right)\left(-\frac{1}{3}\right)$

15)  $\left(-3\frac{7}{9}\right)\left(\frac{6}{5}\right)$

16)  $\left(2\frac{2}{5}\right)\left(-\frac{1}{9}\right)$

**Find each quotient. All Answers should be in fraction form.**

17)  $3\frac{1}{6} \div \frac{-5}{4}$

18)  $2\frac{1}{4} \div \frac{-3}{2}$

19)  $1 \div 1\frac{1}{5}$

20)  $-1\frac{4}{9} \div -2$

21)  $\frac{9}{10} \div \frac{1}{2}$

22)  $\frac{-5}{8} \div \frac{-1}{3}$

23)  $\frac{-9}{7} \div \frac{-3}{2}$

24)  $1 \div 3\frac{3}{8}$

**Evaluate each using the values given.**

25)  $x + \frac{z}{2} - z^2$ ; use  $x = 4$ , and  $z = -2$

26)  $\frac{p + 2 + n^3}{3}$ ; use  $n = -1$ , and  $p = 8$

27)  $x + z + \frac{zx}{6}$ ; use  $x = 10$ , and  $z = 6$

28)  $y - x - 7 - |-8|$ ; use  $x = 6$ , and  $y = -1$

29)  $r - 5 + p - \frac{q}{5}$ ; use  $p = -6$ ,  $q = 5$ , and  $r = 5$

30)  $z^2 + x + z - z$ ; use  $x = -9$ , and  $z = 2$

31)  $a(b - |c - b|)$ ; use  $a = 8$ ,  $b = 4$ , and  $c = -8$

32)  $j^2(kj - j)$ ; use  $j = -3$ , and  $k = 2$

33)  $8 - x + 1 - z + x$ ; use  $x = -7$ , and  $z = -9$

34)  $m - p + 8 - (p - p)$ ; use  $m = -1$ , and  $p = 3$

35)  $\frac{z}{3} + x - |x|$ ; use  $x = -5$ , and  $z = 9$

36)  $\frac{m}{4}(n - p) + p$ ; use  $m = -8$ ,  $n = 2$ , and  $p = -1$

**Solve each equation.**

37)  $-(7x - 8) = -5(x + 6)$

38)  $-10(8m + 2) = -6(m - 9)$

39)  $-3 + 7(r + 9) = 9 - (r + 5)$

40)  $10n - 2n = -(n + 9) + 9(n + 11)$

41)  $-12 - 6(x + 7) = -11(x + 9)$

42)  $-7(n + 4) = -2(2n + 8)$

43)  $8(b - 10) = -(b - 10)$

44)  $13 - x = -6(2x + 3) + 11(x + 2)$

45)  $-12(n - 2) = -4(6 - n)$

46)  $-10(1 - 5v) - 11v = 2 - (12 - 4v)$

47)  $8(1 + 3a) = 8(1 - 12a)$

48)  $5(v + 5) + 4v = 4 - 3(7 + 11v)$

**Solve each equation. All Answers should be in fraction form.**

49)  $-\frac{5}{3}\left(2\frac{3}{4} + p\right) = -\frac{121}{12}$

50)  $-1\frac{4}{5}\left(-\frac{7}{6} + k\right) = -\frac{42}{25}$

51)  $4\frac{1}{6}n + \frac{7}{4} = -\frac{23}{4}$

52)  $2\frac{3}{4}m + \frac{15}{8} = \frac{13}{4}$

53)  $-2\frac{1}{10}r - \frac{3}{2} = \frac{12}{5}$

54)  $2\left(1\frac{3}{4} + m\right) = \frac{73}{14}$

**Solve each system by graphing.**

55)  $y = -4x - 3$   
 $y = x + 2$

56)  $y = -x + 2$   
 $y = -2$

57)  $y = -x - 1$   
 $y = \frac{1}{2}x + 2$

58)  $y = 7x - 3$   
 $y = x + 3$

**Solve each system by substitution.**

59)  $x - 6y = -16$   
 $-4x + 3y = 22$

60)  $x + 3y = -21$   
 $-x + 2y = -4$

61)  $x - y = -3$   
 $-3x + 4y = 17$

62)  $x + 2y = -8$   
 $7x - 3y = -5$

$$\begin{aligned} 63) \quad & -x + 8y = -18 \\ & 2x + y = -15 \end{aligned}$$

$$\begin{aligned} 64) \quad & -7x - 4y = -3 \\ & x - 2y = -15 \end{aligned}$$

**Solve each system by elimination.**

$$\begin{aligned} 65) \quad & -16x + 7y = -17 \\ & 8x - 6y = 26 \end{aligned}$$

$$\begin{aligned} 66) \quad & -10x - 2y = -18 \\ & -20x + y = 9 \end{aligned}$$

$$\begin{aligned} 67) \quad & -5x - 3y = -8 \\ & 2x + 6y = 8 \end{aligned}$$

$$\begin{aligned} 68) \quad & 12x + y = -9 \\ & 6x - 4y = -18 \end{aligned}$$

$$\begin{aligned} 69) \quad & -5x + 10y = -25 \\ & 6x + 5y = 13 \end{aligned}$$

$$\begin{aligned} 70) \quad & -7x + 6y = -8 \\ & 10x + 2y = 22 \end{aligned}$$

71) The senior classes at High School A and High School B planned separate trips to the water park. The senior class at High School A rented and filled 5 vans and 8 buses with 251 students. High School B rented and filled 4 vans and 2 buses with 82 students. Every van had the same number of students in it as did the buses. Find the number of students in each van and in each bus.

72) Danielle and Perry each improved their yards by planting hostas and ornamental grass. They bought their supplies from the same store. Danielle spent \$16 on 1 hosta and 2 bunches of ornamental grass. Perry spent \$101 on 5 hostas and 13 bunches of ornamental grass. Find the cost of one hosta and the cost of one bunch of ornamental grass.

**Find each product.**

$$73) (-2v + 5)(5v - 3)$$

$$74) (-7a - 1)(-3a + 2)$$

$$75) (-7x + 2)(4x + 1)$$

$$76) (-3x + 7)(3x - 4)$$

$$77) (6k - 8)(-6k - 5)$$

$$78) (2n + 4)(3n - 8)$$

$$79) (3n + 4)^2$$

$$80) (6b + 2)^2$$

$$81) (2x + 4)(2x - 4)$$

$$82) (8v + 7)^2$$

$$83) (6x - 5)(-7x^2 + 4x - 3)$$

$$84) (2p - 3)(-7p^2 + 8p - 3)$$

$$85) (-6n - 8)(-n^2 - 3n + 8)$$

$$86) (6m - 3)(3m^2 + 4m - 8)$$

$$87) (-7r^2 + 2r - 2)(4r^2 - 7r - 6)$$

$$88) (-2x^2 - x - 1)(-6x^2 + 4x - 5)$$

**Factor each completely.**

$$89) 6a^2 + 36a$$

$$90) 6x^2 + 12x - 378$$

$$91) n^2 - 6n - 16$$

$$92) x^2 - 7x + 10$$

$$93) r^2 - 7r + 10$$

$$94) b^2 + b$$

$$95) 3v^2 + 15v$$

$$96) 2n^2 + 10n - 48$$

$$97) 2v^2 - 8v - 120$$

$$98) 3x^2 - 12x - 63$$

$$99) x^2 - 4x + 3$$

$$100) x^2 + 5x - 36$$

$$101) x^2 + 8x + 15$$

$$102) 4b^2 + 32b + 28$$

103)  $x^2 + 10x + 25$

104)  $25p^2 - 40p + 16$

105)  $9m^2 - 30m + 25$

106)  $25n^2 - 30n + 9$

107)  $16r^2 - 8r + 1$

108)  $x^2 - 2x + 1$

**Find the distance between each pair of points. Round your answer to the nearest hundredth if necessary.**

109)  $(-2, -3), (6, -4)$

110)  $(-6, -7), (1, 5)$

111)  $(1, -7), (4, -4)$

112)  $(4, -3), (-8, -5)$

113) Show that the triangle with vertices  $(0, 2)$ ,  $(7, 4)$ , and  $(2, -5)$  is an isosceles triangle.

114) Find the value of  $y$  such that the points  $(0, 2)$  and  $(12, y)$  are 13 units apart. (Hint: There are two answers. Can you explain why?)

**Find the midpoint of the line segment with the given endpoints.**

115)  $(-1, 4), (-3, -4)$

116)  $(-4, -6), (3, 4)$

117)  $(2, 6), (-1, 1)$

118)  $(6, 4), (6, 2)$

119) The coordinates of A and C are  $(-1, 2)$  and  $(5, -3)$  respectively. If B is the midpoint of line segment AC, what are the coordinates of B?

**Given the midpoint and one endpoint of a line segment, find the other endpoint.**

120) Endpoint:  $(-8, -3)$ , midpoint:  $(-3, -3)$

121) Endpoint:  $(6, -7)$ , midpoint:  $(-8, -3)$

**Find the slope of the line through each pair of points. All Answers should be in fraction form if necessary.**

122)  $(-2, -1), (9, 5)$

123)  $(-15, -12), (7, -7)$

124)  $(14, 8), (-9, 11)$

125)  $(10, -4), (-19, -15)$

**Find the value of  $x$  or  $y$  so that the line through the points has the given slope.**

126)  $(-4, y)$  and  $(8, -5)$ ; slope:  $-\frac{1}{2}$

127)  $(-9, -8)$  and  $(x, -2)$ ; slope:  $\frac{6}{7}$

128)  $(x, 7)$  and  $(4, 0)$ ; slope:  $-\frac{7}{6}$

129)  $(x, -6)$  and  $(5, 3)$ ; slope:  $-\frac{9}{4}$

**Write the slope-intercept form of the equation of the line through the given point with the given slope. Leave all answers as fractions if necessary.**

130) through:  $(4, 1)$ , slope =  $\frac{1}{2}$

131) through:  $(-3, 5)$ , slope =  $-\frac{8}{3}$

132) through:  $(2, -3)$ , slope =  $-\frac{3}{2}$

133) through:  $(-1, 3)$ , slope =  $-3$

134) through:  $(-5, 0)$ , slope =  $\frac{1}{5}$

135) through:  $(4, -4)$ , slope =  $-\frac{5}{4}$

136) through:  $(-3, -1)$ , parallel to  $y = \frac{4}{3}x + 5$

137) through:  $(-2, 5)$ , parallel to  $y = -\frac{3}{2}x - 1$

138) through:  $(2, 4)$ , perp. to  $x = 0$

139) through:  $(5, -5)$ , perp. to  $y = \frac{5}{9}x + 5$

**Write each number in scientific notation.**

140) 800000

141) 50000

142)  $900 \times 10^{-8}$

**Find each percent change. State if it is an increase or a decrease.**

143) From 69 to 11

144) From 65 to 47

145) From 72 to 7

146) From 75 to 72

147) From 79 to 68

148) From 82 to 64

149) From 66 to 22

150) From 88 to 24