

Honors Algebra 2 Summer Assignment

To: All Students Taking Honors Algebra 2 for the school year 2017-2018

From: Mrs. Murphy

Contact Information: michele.murphy@carlisleindians.org

Dear Students and Parents,

Math skills build on previous skills. This assignment is a review of previously learned Algebra topics to prepare you for the Honors Algebra 2 curriculum. You should use your notes and the internet to help you. The following resources may also be helpful:

I will be offering FREE MATH TUTORING at location to be announced on dates to be announced. I will send out a text to you to let you know the dates, times, and location. Please come and work with us if you need help completing the summer assignment.

Remind 101 Text information: text @38g828 to number 81010

(if this does not work try: text @c38g828 to number 347-983-1122) – I strongly encourage all students to sign up for this remind text messaging and any parents who would also like to be informed.

Potential Internet Sources:

- www.khanacademy.org
- www.Purplemath.com
- www.aaamath.com
- [My website: http://mrsmurphyCarlisleMathStudents.wikispaces.com](http://mrsmurphyCarlisleMathStudents.wikispaces.com)

I will periodically check my email throughout the summer so if you have any questions please feel free to contact me.

Try to do as much of the packet as possible without your calculator. All work is to be shown on the packet. The packet is due the first day of school. We will have a summer assignment test during the first week of school. You are responsible to know how to do all of the types of problems in the review on that first test. On this test, you will not be permitted to use your notes.

Additionally, DO NOT WAIT UNTIL AUGUST TO START THIS!!! The intent is for you to do math consistently to stay fresh. Plan to spend 5 – 10 minutes per day on this all summer, not 5 hours on August 23rd.

Have a great summer! I look forward to meeting you in August!

Mrs. Murphy

Honors Algebra 2 Summer Assignment

1. Identify a pattern and find the next three numbers in the pattern: 5, 25, 125, 625, ...

2. Compare the two numbers. Use $<$ and $>$: $\sqrt{6}, 3$

Name the property of real numbers illustrated by each equation.

3. $a(b + c) = ab + ac$

4. $4 \cdot 8 = 8 \cdot 4$

Write an algebraic expression that models the word phrase.

5. the product of 11 and the difference of 4 and a number r

6. Evaluate the expression for the given values of the variables: $6c + 5d - 4c - 3d + 3c - 6d$; $c = 4$ and $d = -2$

7. Simplify by combining like terms: $3 - 2(2r - 4)$

Write an algebraic expression to model each situation.

8. You fill your car with gasoline at a service station for \$2.75 per gallon. You pay with a \$50 bill. How much change will you receive if you buy g gallons of gasoline? How much change will you receive if you buy 14 gallons?

Solve each equation. Check your answers. Leave your answer in reduced, improper fractional forms or as an integer. Do not leave your answer as a decimal or mixed number!

9. $8z + 12 = 5z - 21$

10. $7b - 6(11 - 2b) = 10$

11. $10k - 7 = 2(13 - 5k)$

12. $\frac{1}{2}x - \frac{2}{3} = 4x$

13. $-5 + 7(3x - 6) = -173$

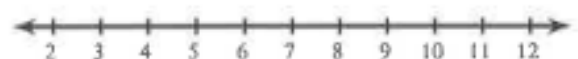
14. Solve the formula for the indicated variable: $V = \frac{1}{3}\pi r^2 h$, for h

15. A desktop computer now sells for 15% less than it did last year. The current price is \$425. What was the price of the computer last year?

Solve each inequality. Graph the solution on the number line for only the ones that have a number line given.

16. $4a < 2a - 7$

17. $2(y - 3) + 7 < 21$

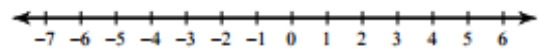


18. $110 \geq 2n - 2(1 + 8n)$

19. $-7(m + 7) \leq -91$

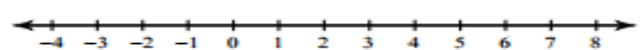
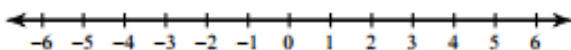
Solve each compound inequality. Graph the solution.

20. $n + 1 \leq -3$ or $-4n < -8$



21. $-3 < m - 5 < -1$

22. $-33 \leq -7n - 12 < -26$



Solve each equation. Check your answers.

23. $|3x - 6| - 7 = 14$

24. $|-4 + 5x| = 16$

25. $-5|3 + 4k| = -115$

26. $3|3 - 5r| - 3 = 18$

27. $2 - 5|5m - 5| = -73$

Solve each inequality.

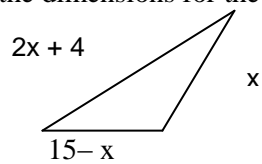
28. $|2t + 7| \geq 4$

29. $3|2z + 5| + 2 \leq 8$

30. $|x - 2| - 5 < -2$

31. $9|3n - 2| + 6 > 51$

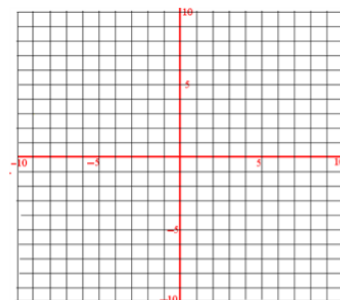
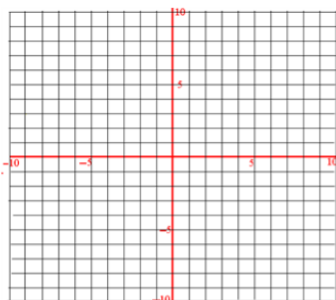
32. Find the dimensions for the triangle if the perimeter is 35 feet.



33. Graph using slope-intercept form: Identify your slope and y-intercept

a. $f(x) = \frac{-5}{2}x - 3$

b. $5x - 10y = 30$

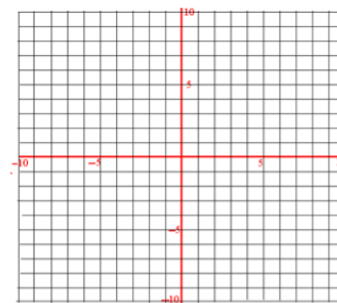
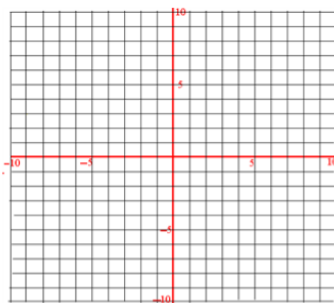
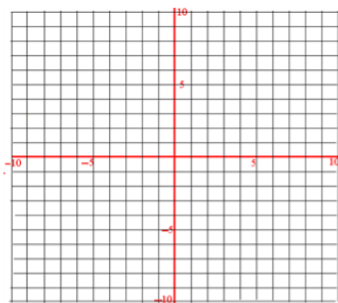


34. Graph the inequalities:

b. $y < -4$

b. $y \leq 3x + 11$

c. $9x - 9y > -36$



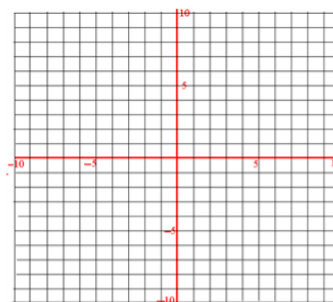
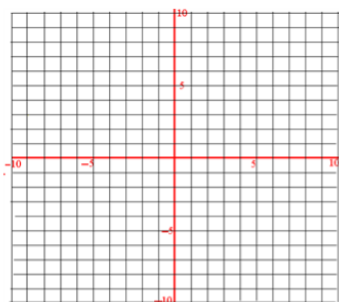
35. Graph the function:

a.

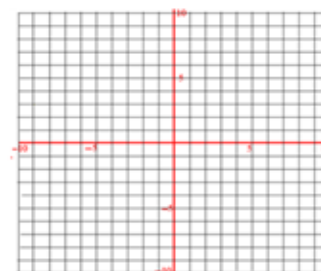
$$f(x) = \begin{cases} 2x + 13 & \text{if } x \geq -5 \\ x + \frac{1}{2} & \text{if } x < -5 \end{cases}$$

b.

$$f(x) = \begin{cases} -1 & \text{if } 0 \leq x < 1 \\ -3 & \text{if } 1 \leq x < 2 \\ -5 & \text{if } 2 \leq x < 3 \\ -7 & \text{if } 3 \leq x < 4 \\ -9 & \text{if } 4 \leq x < 5 \end{cases}$$

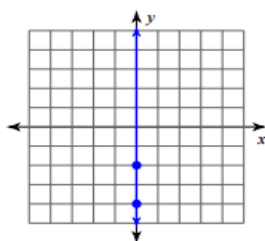


36. Graph the function $f(x) = -|x - 8| + 1$ Identify the vertex, tell whether it opens up or down, if the graph is wider or narrower or the same as $y = |x|$.

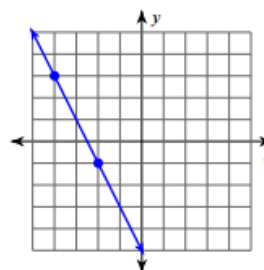


37. Find the slope of each line. Leave answers as reduced, improper fractions or integers. No decimals or mixed numbers!

a.



b.

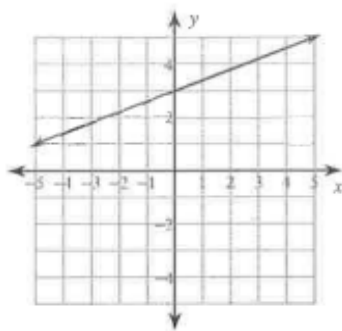


c. $(-4, 7), (-6, -4)$

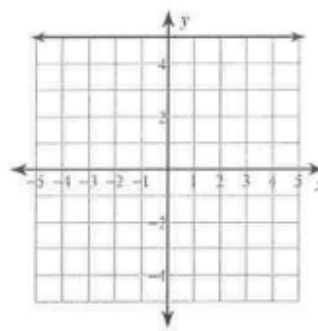
d. $(3, -20), (5, 8)$

38. Write the slope intercept form of the equation of the line.

a.



b.



39. If $f(x) = -x^2 + 10$. Find $f(4)$. What does the answer represent?

40. When given equations of lines, how do you know when 2 lines are parallel? When two lines are perpendicular?

41. Write an equation of a line:

a. That passes through (2, 0) and (4, -6)

b. that passes through (1, -1) and is perpendicular to the line $f(x) = \frac{-1}{2}x + 6$

c. that passes through (4, 6) and is parallel to the line that passes through (6, -6) and (10, -4)

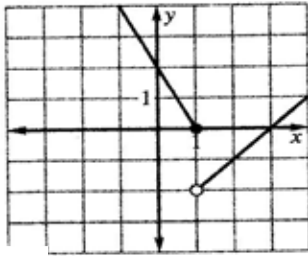
42. The variables x and y vary directly. Write an equation that relates the variables when $x = 6$ and $y = 3$. Then find x when $y = -5$.

43. Describe the transformations

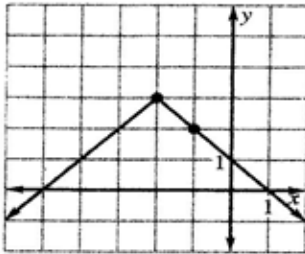
a. $g(x) = f(x) - 3$

b. $g(x) = 2f(x) + 1$

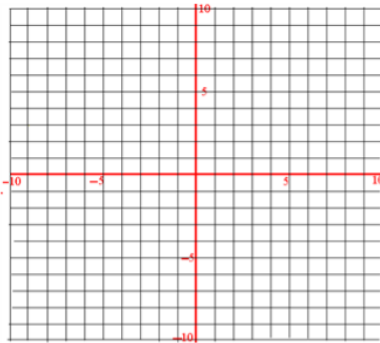
44. Write a piecewise function for the graph.



45. Write an equation for the absolute value graph.



46. Graph the equation with x and y intercepts: $2x - 4y = 12$



47. Graph the linear system and tell how many solutions it has. If there is exactly one solution, estimate the solution and check it algebraically. You may use a graphing calculator for help with graphing the line. Show the work for putting it in slope intercept form.

a. $y = x + 1$
 $y = -x + 3$

b. $x + 2y = -2$
 $-3x - 6y = 6$

Solve each system by substitution

48. $y = -3x + 5$
 $5x - 4y = -3$

49. $-5x + y = -2$
 $-3x + 6y = -12$

Solve each system by elimination.

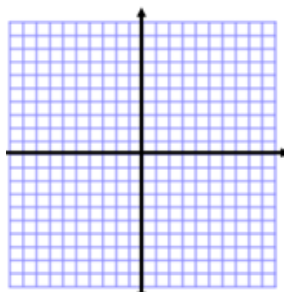
50. $7x + 2y = 24$
 $8x + 2y = 30$

51. $-4x + 9y = 9$
 $x - 3y = -6$

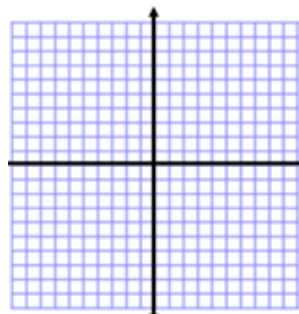
52. $5x + 4y = -14$
 $3x + 6y = 6$

Graph the system of linear inequalities

53. $x + 2y \geq 4$
 $x - y \leq 3$



54. $x \geq 0$
 $y > 0$
 $2x + y \leq 4$



55. Solve the system using any algebraic method.

Postcard stamps are 20¢ each, while letter stamps are 33¢ each. If you have 50 stamps worth \$12.60, how many of each type do you have?

Find the distance between each pair of points. Leave your answer in simplified radical form or as an integer.

56. $(-2, 3), (-7, -7)$

57. $(5, 9), (-7, -7)$

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

58. $(-4, 4), (5, -1)$

59. $(-1, -6), (-6, 5)$

Simplify. Leave your answer in simplified radical form.

60.

$$\frac{4\sqrt{20}}{2\sqrt{16}}$$

61.

$$\frac{3\sqrt{6}}{\sqrt{25}}$$

62.

$$\sqrt{16u^4v^3}$$

63.

$$2\sqrt{8p^2q^3r}$$

64.

$$-2\sqrt{48a^3b^4c^2}$$

Solve each proportion. Leave your answer in reduced, improper fractional form as an integer. Do not leave your answer as a decimal or mixed number!

65.

$$\frac{5}{r-9} = \frac{8}{r+5}$$

66.

$$\frac{n-5}{n+8} = \frac{2}{7}$$

Factor the common factor out of each expression.

67. $-70p^3 + 28p + 21$

68. $14 + 4x^2 + 4x^3$

69. $-6k^3 - 20k^2 + 8k$

Factor completely.

70. $b^2 - b - 56$

71. $5v^2 + 55v + 90$

72. $x^2 + 2x - 48$

73. $v^2 + 20v + 100$

Solve each equation by factoring.

73. $m^2 - 24 = -2m$

74. $n^2 + n = 0$

75. $b^2 - 9 = 0$

Simplify. Your answer should contain only positive exponents.

76. $\left(\frac{x^2 \cdot x^{-2} y^2}{yx^{-2}}\right)^{-4}$

77. $\frac{a^{-1} \cdot 2a^{-4}b^{-3}}{(b^{-4})^3}$

78. $\frac{(2y^2)^2}{2x^4 \cdot 2x^2 y^4}$

Find each product.

79. $(8x + 2)(3x + 5)$

80. $(2m - 1)(6m + 6)$

81. $(7r - 8)(6r + 8)$

Solve each equation the quadratic formula. Leave your answer as a reduced, improper fraction or an integer. No decimals or mixed numbers.

82. $2a^2 = -9a + 81$

83. $11v^2 = 3 - 3v$

Evaluate each expression. Leave answers as reduced, improper fractions or integers. No decimals or mixed numbers.

84. $2\frac{5}{6} \div 4 + \frac{4}{3}$

85. $2\frac{3}{4} + 1\frac{1}{5} + 1\frac{5}{6}$

86. $3\frac{4}{5} - \left(1 + \frac{7}{4}\right)$

87. $4\frac{1}{2} - \left(-\frac{9}{8}\right)$

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

89. $\left(-\frac{4}{3}\right) + \frac{3}{5}$

Find each product. Leave answers as reduced, improper fractions or integers. No decimals or mixed numbers.

90. $(2)\left(-\frac{6}{5}\right)$

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

Find each quotient. Leave answers as reduced, improper fractions or integers. No decimals or mixed numbers.

92.

$$3\frac{3}{10} \div \frac{2}{2}$$

93.

$$5\frac{4}{9} \div \frac{2}{5}$$

94.

$$-\frac{3}{2} \div \frac{1}{3}$$

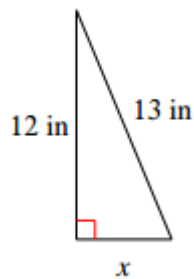
Simplify each expression.

95. $-2x + 11 + 6x$

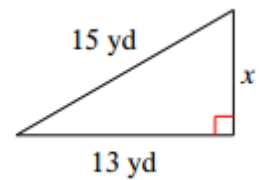
96. $9a + 10(6a - 1)$

Find the missing side of each triangle. Leave answers as reduced, improper fractions, simplified radicals or integers. No decimals or mixed numbers.

97.



98.



Find the missing side of each right triangle. Side c is the hypotenuse. Sides a and b are the legs. Leave your answers in simplest radical form.

99. $a = 11 \text{ m}$, $c = 15 \text{ m}$

Evaluate each expression.

100. $40 \div 4 - (5 - 3)$