



MIDDLE SCHOOL

Algebra 1 Honors

Summer Review

Dear Algebra Students,

Welcome to 8th grade Honors Algebra 1. In preparation for finishing Algebra 1, doing some geometry and trigonometry and topics in Algebra 2, it is important to master certain algebra concepts. The Algebra classes should complete this review over the summer. It will be graded as a **test** and is due the day you return to school. Please use your textbook and notes for help. Have a wonderful summer!

Sincerely,

Mrs. Lewis

Matching. Write the correct letter next to each.

- | | | |
|----------|--|---|
| 1. _____ | $6(ab) = (6a)b$ | a. Distributive Property |
| 2. _____ | $5 \leq 9$, so $5 - 3 \leq 9 - 3$ | b. Division Property of Equality |
| 3. _____ | $(5 + 2) + 8 = 5 + (2 + 8)$ | c. Subtraction Property of Inequality |
| 4. _____ | $78 + 15 = 15 + 78$ | d. Associative Property of Addition |
| 5. _____ | $7 > 4$, so $7(-3) < 4(-3)$ | e. Commutative Property of Addition |
| 6. _____ | $6(-3x + 9) = -18x + 54$ | f. Associative Property of Multiplication |
| 7. _____ | $10 = 5(2)$, so $10 + 2 = 5(2) + 2$ | g. Addition Property of Equality |
| 8. _____ | $8 = 4 + 4$, so $\frac{8}{2} = \frac{4 + 4}{2}$ | h. Multiplication Property of Inequality |

Find the mean, median, and mode for each set of data. Round to the nearest tenth when necessary.

32 43 40 39 38 43 40 42 43 44 43 41

9. Mean: _____ 10. Median: _____ 11. Mode: _____

5.7 5.9 5.3 4.9 4.9 5.0 5.2 5.3 5.4

12. Mean: _____ 13. Median: _____ 14. Mode: _____

State the following formulas, definitions, or equations – draw pictures

15. Pythagorean Theorem

16. Natural Numbers

17. Whole Numbers

18. Integers

19. Rational Numbers

20. Irrational Numbers

21. Real Numbers

22. Slope/Intercept form of a linear equation

23. Standard form of a linear equation

24. Formula for finding the slope of a line from two points. (x_1, y_1) (x_2, y_2)

25. Perimeter of a rectangle

Area of a rectangle

26. Area of a triangle

27. Area of a circle

Circumference of a Circle

28. Area of a parallelogram

Area of a trapezoid

Solve. Round to the nearest tenth where necessary.

29. What is 30% of 320?

30. What percent of 86 is 40?

Simplify. Reduce fractions to lowest terms. (No Calculator)

31. $4 \times \frac{3}{5}$

32. $\frac{4}{9} \div 2\frac{2}{3}$

33. $\frac{5}{8} + \frac{3}{10}$

34. $4\frac{1}{2} - 2\frac{2}{3}$

Simplify

35. $4.8 + 3.47 + .029$

36. $10 - 5.78$

37. $.003 \times .024$

38. $14.07 \div .7$

Simplify each expression. Show all steps

39. $4(3x - 6) - 4(x - 3)$

40. $3 \times 12 \div 4 + 8 \div 4$

Solve each equation. Show all steps.

41. $2x - 4 = 8$

42. $\frac{4y-3}{8} = 2$

43. $3(x + 4) = 4(x - 6)$

44. $3(x + 4) - 5(x + 2) = 6(x - 5) - 4x$

45. $\frac{1}{2}(4x + 8) = \frac{2}{3}(9x - 6)$

46. $\frac{3x-4}{2} = \frac{4x+6}{3}$

Write an inequality to model each situation.

47. There were less than 100 people (p) at the movie. _____

48. The high temperature (t) will be no more than 64 degrees Fahrenheit. _____

Solve each inequality. Graph the solution on a Number Line.

49. $4x - 6 > 10$

50. $6x + 3 \leq -2x + 19$



51. $8y > -16$ or $-3y + 5 > 8$

52. $|g + 3| < 7$



53. $-8 < 2x + 6 \leq 4$

54. $-4|3x| - 6 < -30$



Probability

You have a bag containing 8 red, 5 blue, 4 white, and 3 black marbles. One marble is selected at random. Find the probability of choosing each of the following.

55. $P(\text{white or black})$

56. $P(\text{not blue})$

Combined Probability

You have a bag containing 8 red, 5 blue, 4 white, and 3 black marbles. One marble is selected at random. Find the probability of choosing each of the following.

57. Find the probability of choosing a blue marble, replacing it and choosing another blue marble.

58. Find the probability of choosing a red marble, NOT replacing it and choosing another red marble.

Write an equation from the problem and solve.

59. A supertanker leaves port traveling north at an average speed of 5 knots. Three hours later, a cruise ship leaves the same port heading south at an average speed of 19 knots. How many hours after the cruise ship sails will the two ships be 209 nautical miles apart? (1 knot = 1 nautical mile per hour.)

60. 5 more than 3 times a number is the same as 10 less than 6 times the number. Find the number.

61. An airplane flies from New Orleans, Louisiana, to Atlanta, Georgia, at an average rate of 350 miles per hour. The airplane then returns at an average rate of 250 miles per hour. The total travel time is 3 hours. Find the flying time from New Orleans to Atlanta.

Write an equation for the problem and solve.

62. A man earns \$2750 a month. Last month he spent \$800 on rent. What percent of his income was spent on rent?

63. The sum of 3 consecutive integers is 372. What are the 3 integers?

Find the domain and range of each function.

64. $\{(3, -1), (5, 5), (7, 3), (8, -2)\}$

65. $\{(-3, 2), (0, 1), (2, -3)\}$

Evaluate each function rule for $x = -3$.

66. $f(x) = x^2 - 2x - 3$

67. $g(x) = |2x - 5| + 1$

Find the range of each function for the given domain.

68. $f(x) = -3x + 2$ $\{-1, \frac{1}{2}, 3\}$

$f(x) = x^2 - x + 2$ $\{-2, 2, 3\}$

69. $f(x) = x^2 - x + 2$ $\{-2, 2, 3\}$

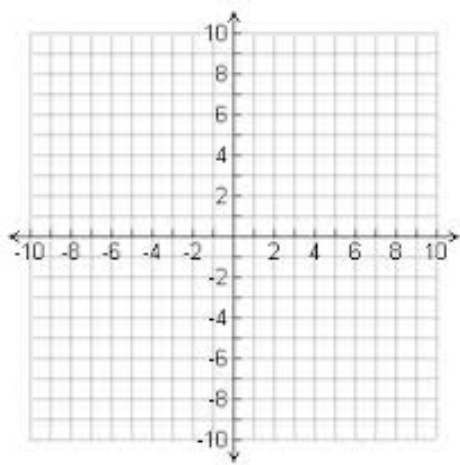
$f(x) = |x - 3| + 4$ $\{2, 3, 4\}$

Find the slope and y-intercept and graph

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

m =

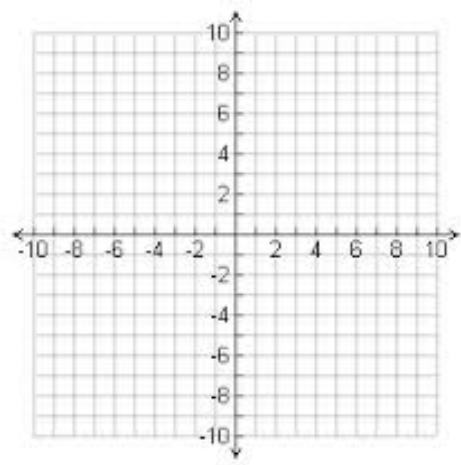
b =



71. $f(x) = -4x + 1$

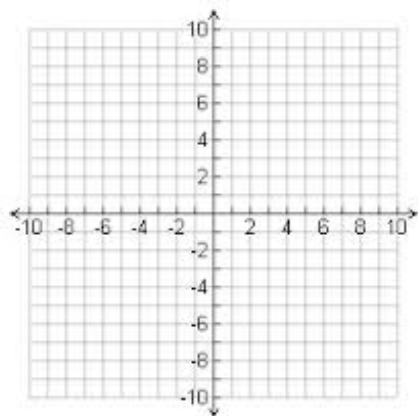
m =

b =

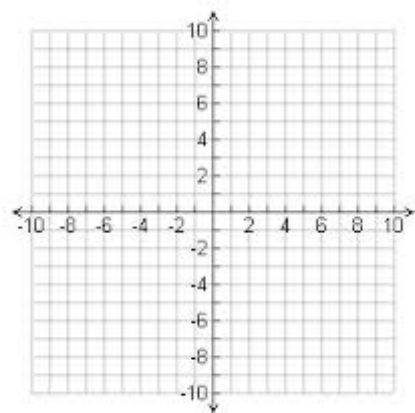


Write an equation of the direct variation that includes the given point. Then Graph the equation

72. (3, -2)



73. (4, 8)



Make an equation of the line from the pair of points.

74. (4, 6) and (3, 8)

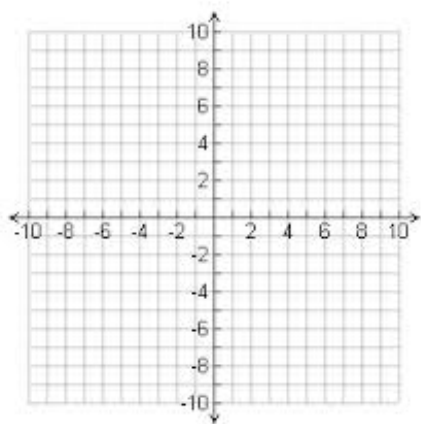
75. (-2, -3) and (2, -5)

Find the x and y intercepts and Graph the equation

76. $-3x + 2y = 12$

x-int.

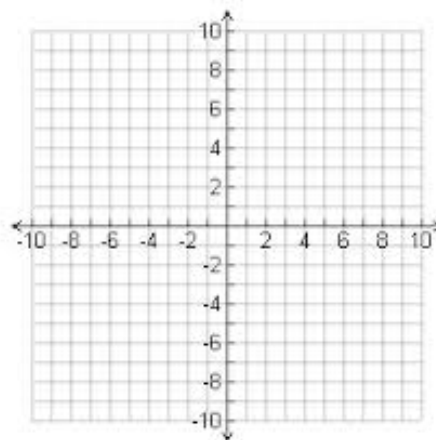
y-int.



77. $x - 2y = -4$

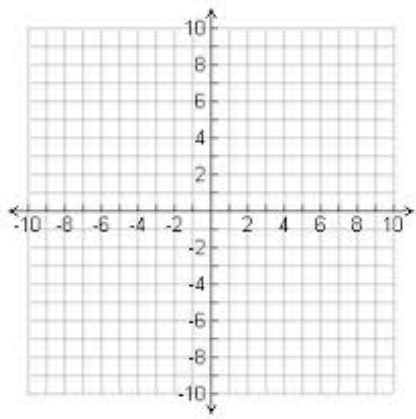
x-int.

y-int.

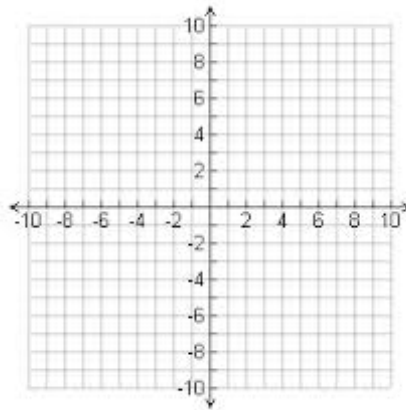


Graph each equation.

78. $x = 3$



79. $y = -4$



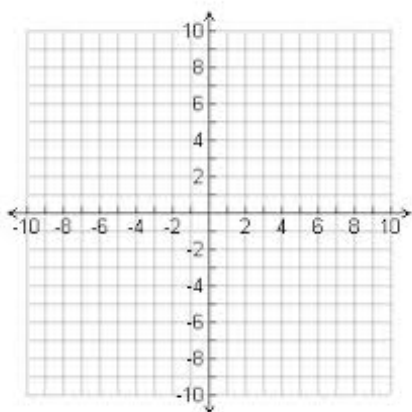
Write each equation in standard form using integers.

80. $y = \frac{2}{7}x + 2$

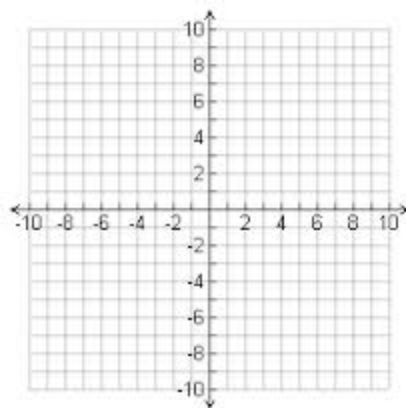
81. $y = -\frac{3}{5}x + 5$

Graph each equation by translating $y = |x|$

82. $y = |x + 2| - 3$



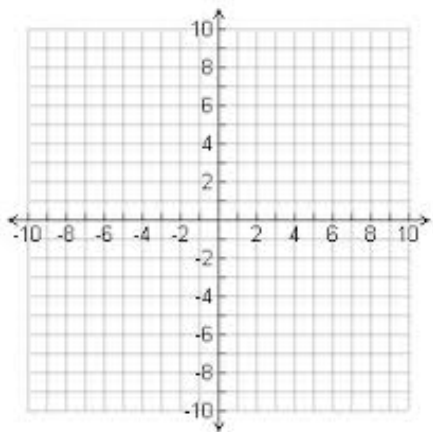
83. $y = -3|x| + 2$



Solve each System of Equations by Graphing

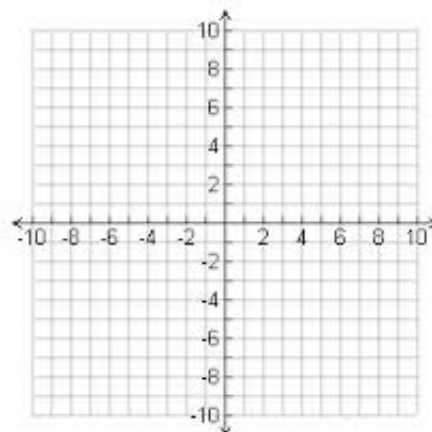
84. $y = 3x - 4$

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



85. $x + y = -9$

$y = \frac{3}{4}x + 5$



Solve each system of equations by Substitution

86. $y = 2x - 5$

$3x - 4y = 0$

87. $x + y = 6$

$2x = 4y - 12$

Solve each system of equations by Elimination

88. $4x + 2y = 10$

$$3x - 4y = 13$$

89. $3x + 7y = 6$

$$5x = 10 - 3y$$

Write two equations for each problem and solve.

90. The length of a rectangle is 3 more than twice the width. The perimeter of a rectangle is 36. Find the length and width.

91. A theater sold 400 tickets to a show and adult movie tickets cost \$10.00 and student tickets cost \$4.00. If the show made \$3,202, how many of each ticket were sold?

92. Four hamburgers and three fries cost \$17.00. Three hamburgers and five fries cost \$15.50 . What is the price of each.

Write two equations for each problem and solve.

93. Two juices are mixed together. Juice A has 20% sugar and Juice B has 6% sugar. How much of each juice should be used to make 20 Liters that is 10% sugar?

94. a. Write an EQUATION that is PARALLEL to $y = -2x - 4$ passing through point $(2, 8)$

b. Write an EQUATION that is PARALLEL to $2x + 3y = -4$ passing through point $(6, 8)$

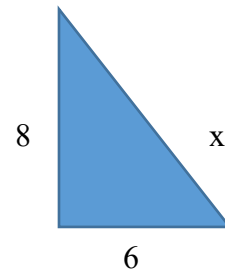
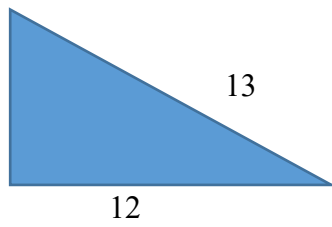
95. a. Write an EQUATION that is PERPENDICULAR to $y = 3x + 5$ passing through the point $(6, 7)$

b. Write an EQUATION that is PERPENDICULAR to $4x - 5y =$ passing through the point $(4, 2)$

96. In how many batting orders can you line up 9 baseball players? Show how you got your answer?

97. How many diagonals does a hexagon have? State the formula.

98. Solve for x using the Pythagorean Theorem



99. Find the area of the dark shaded region of the area of the square is 32 and the radius of the circle 4

