Name: _____ **Period:** ____ **Teacher:** _____ **Date:** _____

DHS Algebra 1 Fall 2012: Semester Review

1.3 - Translating Expressions

Simplify each of the following.

1. _____ $4 \times 5^2 - 8$.

2. _____ $3 + 3(4 + 5)^3$.

Evaluate each expression.

3. $3x^3 + x^2 - 2y$ when $x = 2$ & $y = 6$

_____

4. $\dfrac{bc}{b+c}$ when $b = 6$ & $c = 14$

_____

For #5-7, translate the verbal phrases into a mathematical expression.

5. _____ The difference of 12 and a number m.

6. _____ The quotient of twice a number p and 14.

7. _____ 6 more than 4 times a number w.

8. _____ Translate the following into a simplified unit rate. $\dfrac{80 \; miles}{16 \; hours}$

Solve the word problem.

9. Tickets to a sports museum costs $19.95 each. There is a $4 charge for each order no matter how many tickets are ordered.

_____ <u>Write an expression</u> for the cost (in dollars) of ordering tickets.

_____ Then, <u>find the total cost</u> if you order 6 tickets.

1.4 - Writing Equations & Inequalities

10. What is the difference between an expression and an equation?

_____

Write an equation or an inequality for #11-14.

11. _____ The sum of 56 and a number t is equal to 88.

12. _____ The difference of a number p and 14 is equal to 48.

13. _____ The product of 4 and a number k is at most 51.

14. _____ The difference of 22 and the quotient of a number m and 4 is 54.

Check whether the given number is a solution of the equation or inequality. (yes or no)

15. _____ $6f - 7 = 29;\ 5$

16. _____ $\dfrac{x-5}{3} \geq 5.9;\ 23$
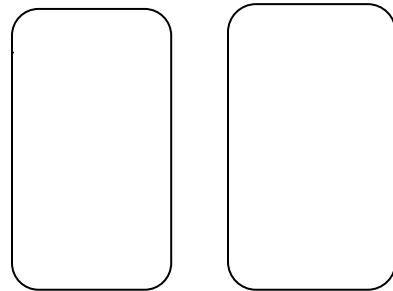
1.6 - Representing Functions as Rules & Tables

17.   Use the table below to answer the following questions.

Input	Output
0	0
3	0.55
8	4.5
15	6.25
19	8.0

a) _____   Is the pairing a function or a relation?

b) _____   Identify the range.

c) _____   Identify the domain.

18.   Draw a mapping of the pairing in the boxes to the right.

x	y
3	- 6
7	8
7	12
11	17
15	20

19.   Make an input-output table to represent the function $y = 8x - 6$.

Use $-6, -4, -\dfrac{1}{2}, \dfrac{3}{4}, and\ 3$ for your <u>domain</u> values.

Identify the <u>independent</u> and <u>dependent</u> quantities for #18-19.

20.

Number of gallons of gas bought	Total cost of gas

21.

Amount of money saved	Time saving money

Write a function rule for each of the following.

22.

Input	Output
2	4
3	6
4	8
9	18
10	20

Function Rule: _____

23.

Input	Output
0	12
1	12.75
5	15.75
12	21
16	24

Function Rule: _____

1.7 - Representing Functions as Graphs

24. **Make a table of values** for the equation $y = 2x + 1$. Then, **graph the function**.

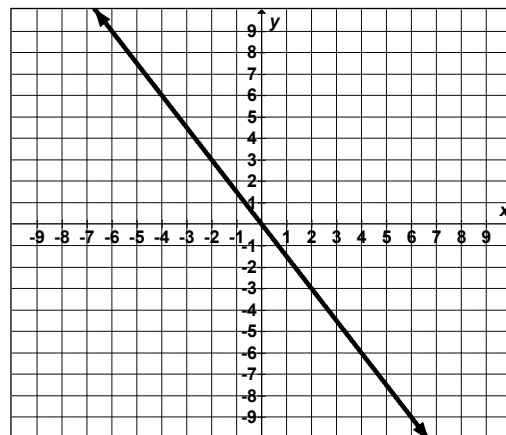| x	y
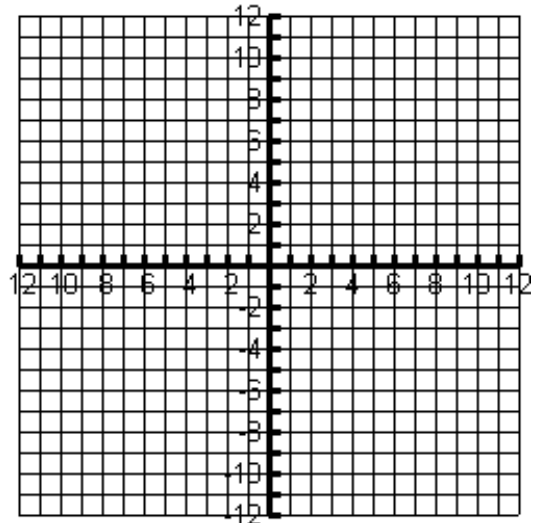
25. Identify the **function rule** from the graph to the right.
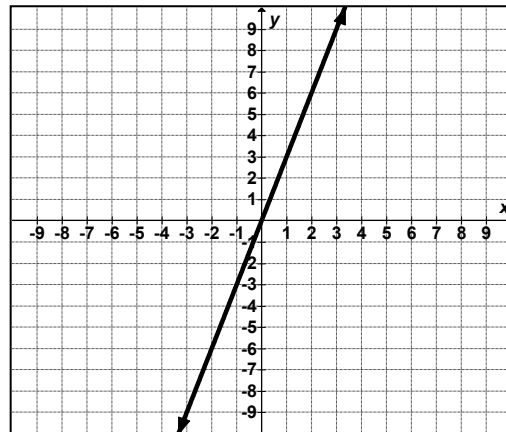
Function Rule: _____

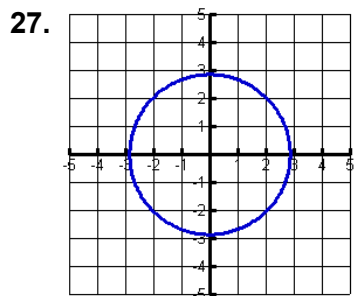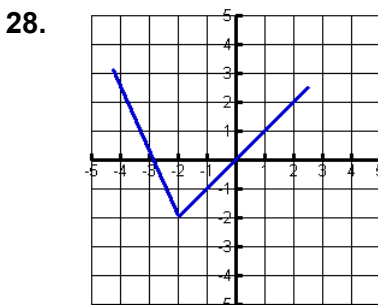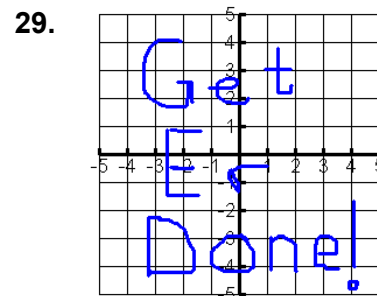**26.** Identify the **function rule** from the graph to the right.

Function Rule: _____

Does each graph represent a function? Why or why not?

27.

28.

29.

_____   _____   _____

3.1 – 3.4 Solving Equations

Solve.

30. $a + 15 = -28$ _____

31. $-15 = b - 46$ _____

32. $-17.5 = -7d$ _____

33. $\dfrac{d}{9} = -11.2$ _____

34. $5g - 9 = 21$ _____

35. $6c + 8 = 62$ _____

36. $\dfrac{m}{2} - 6 = 22$ _____

37. $12 = \dfrac{4}{7}a + 8$ _____

38. $8s + 4s = 168$

_____

39. $42 = 18b - 4b + 7b$

_____

Write an _equation_ for the function described. Then find the _input._

40. The output of a function is fourteen less than six times the input. Find the input when the output is twenty-two.

Equation: _____   Input: _____

Identify the <u>terms</u>, <u>like terms</u>, <u>coefficients</u>, and <u>constant terms</u> of the expression.

41. $8x - 4 + 5x + 6 - 9 - \dfrac{1}{2}x + \dfrac{2}{3}$ Terms: _____   Like Terms: _____

Coefficients: _____   Constants: _____

Simplify each expression.

42. $7(w - 5) + 3w$ _____

43. $15t - (t - 4)$ _____

44. $5(n + 7) - 4(3 + n) - 3$ _____

45. $-\dfrac{3}{4}(12m - 8)$ _____

Solve.
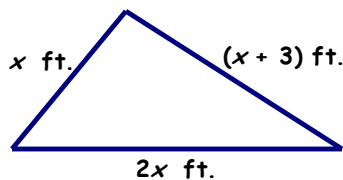
46. $b + 5b - 10 = 14$ _____

47. $35 = -5 + 2r - 7r$ _____
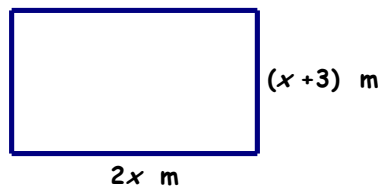
48. $27 = 3c - 3(6 - 2c)$ _____

49. $\dfrac{3}{4}(n + 3) = 9$ _____

Determine the value of x **for the triangle or rectangle.**

50.   Perimeter = 23 ft

x ft.   (x + 3) ft.

2x ft.

51.   Perimeter = 24 m

(x +3) m

2x m

<u>Solve.</u>

52. $11y - 4 = 6y + 1$ _____

53. $5(1 + 4m) = 2(3 + 10m)$ _____

54. $5.4t + 14.6 - 10.1t = 12.8 - 3.5t - 0.6$

55. $2(3g + 2) = \dfrac{1}{2}(12g + 8)$ _____

6.1 - 6.2 - Solving Inequalities

Write an inequality statement that describes the situation.

56. You must be at least 16 years old to go on a field trip.

56. _____

57. A child must be taller than 48 inches to get on an amusement ride.

57. _____

Solve each inequality and **graph** each solution.

58. $9.4 \le t - 3.5$

58. _____

59. $\dfrac{g}{-6} > 20$

59. _____

60. $-90 \ge -4t$

60. _____

61. $-5 - 3p > 2p + p + 7$

61. _____

62. $2(a + 4) \le 16$

62. _____

63. $3(2v - 4) \le 2(3v - 6)$

63. _____

Translate the verbal sentence into an inequality. Then solve and graph your solution.

64. Six less than the product of 3 and b is less than 60.

64. _____

3.5 - Write Ratios & Proportions / 3.6 - Solving Proportions Using Cross Products

65. _____ Write a ratio of two quantities in **three different ways.**

Tell whether each ratio is in simplest form. If not, write in simplest form.

66. $14\ to\ 18$ _____

67. $28\ to\ 32$ _____

Which pairs of ratios could form a proportion? Write "Yes" or "No Chanci"

68. $\dfrac{6}{8}, \dfrac{15}{20}$ _____

69. $-\dfrac{4.8}{4}, -\dfrac{6.4}{5}$ _____

Use proportion to solve each of the following.

70. $\dfrac{v}{20} = \dfrac{8}{4}$ _____

71. $-\dfrac{4.5}{x} = -\dfrac{1.8}{5}$ _____

72. $\dfrac{m+3}{8} = 40$ _____

73. $-\dfrac{3}{11} = \dfrac{5-h}{h+1.4}$ _____

Write the sentence as a proportion. Then, solve the proportion.

74.   12 is to 18 as d is to 27

75.   21 is to t as 40 is to 28.

_____

_____

Word Problems. Use a proportion to solve.

76.   A blueprint scale for Kumal's pool is 1in: 12ft. The width of his pool is 48 ft.
   What is the width of the pool on the blueprint?

_____

Given the following figures are similar, determine the variable or missing side for the question below. *(Note: when figures are similar, the sides are proportional).*

77.
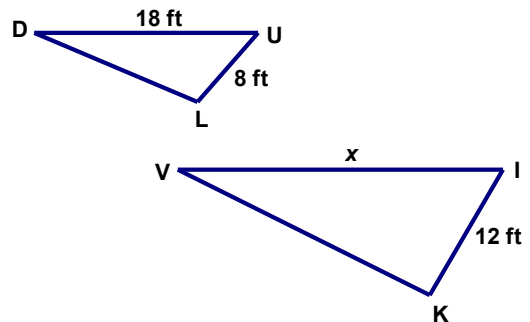
78. $\triangle RED \sim \triangle FIN$. The length of $RE = 10$. The length of $RD = 24$. Find the length of FN if the length of FI is 30. (Hint: Draw matching diagrams).

3.7 - Solve Percent Problems/ Percent of Change

Model with an equation and then solve.

79. _____ What percent of 51 is 17?   **80**. _____ 9% of 315 is what?

81. _____ 24 is 150% of what?

Solve percent problems. Find the percent for each below. Round your answer to the nearest hundredth.

82. _____ A $3.00 tip for a $18.70 taxi fare. **83**. _____ 90 rock CDs out of 125 CDs.

WORD PROBLEMS. Set up a proportion and solve.

84. Albe has to save 15% of his monthly income. If his monthly take home pay is $2450, how much will he save?

_____

85. **The circle graph shows the results of a radio survey in which 250 listeners were asked to rate a song sung by 75 cent.**

A) How many of the listeners who participated in the survey are "tired" of the song?

_____

B) How many listeners who participated in the survey "love" the song?

_____

RADIO SURVEY

Tired of 36%
Like 26%
Love 14%
Dislike 13%
Not familiar with 11%
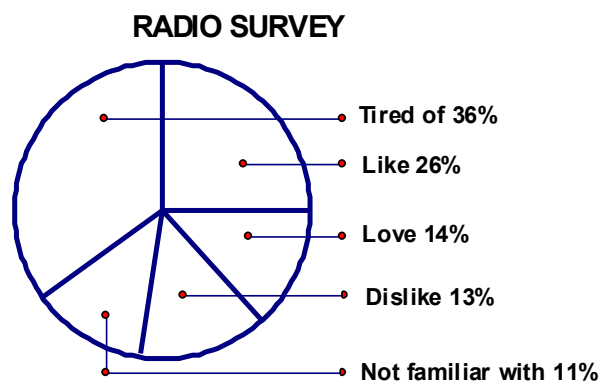
Find the percent of change for each of the following.   Identify it as an increase or decrease.

(Remember: Percent of Change = Difference/Original)

86. POC:_____ _____ Original: 36 ft; New: 45 ft

87. POC: _____ _____ Original: 540 miles;   New: 160 miles

Algebraic Properties

Which property is illustrated for each question below.

88. _____ $x \cdot 4 = 4x$ **89**. _____ $6(-8x - 4 + 2) = -48x - 24 + 12$

3.8 - Literal Equations

Solve the formula for the indicated variable.
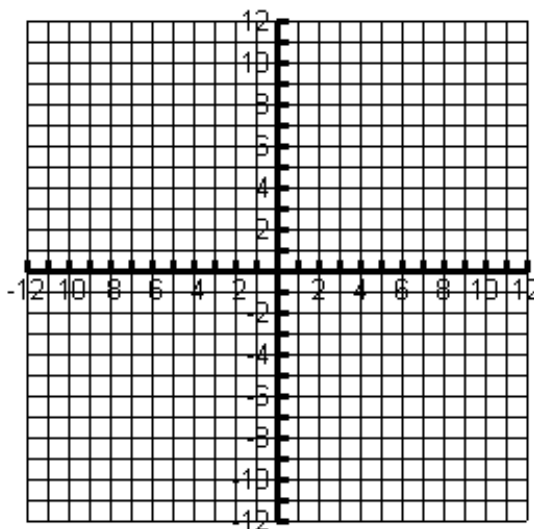
90. _____ $V = lwh$ **Solve for** w.   **91**. _____ $A = \dfrac{1}{2}bh$ **Solve for** b.

4.1 - Link Functions to Charts, Graphs & Mapping/ 4.2 - Graph Linear Equations

92. <u>Graph the function</u> with the given domain.   Then <u>identify the range</u> of the function.

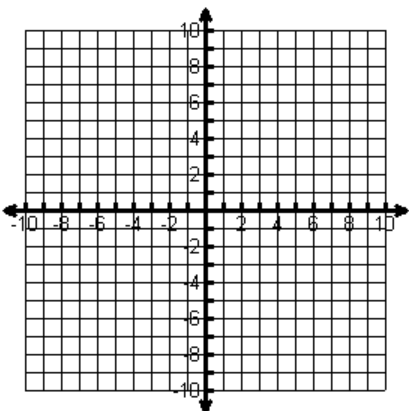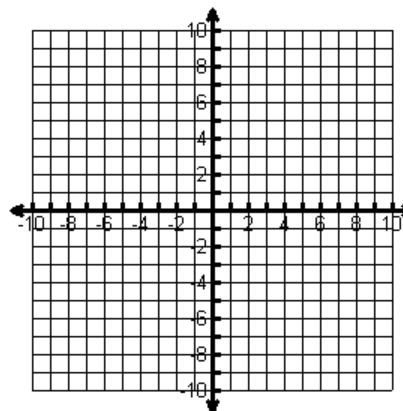**Function:** $y = 6x - 2$ **Domain:** $-2, -1, \ 0, \ 1, \ 2$

x	$y = 6x - 2$	y

Range: _____

Graph each of the equations below.

93. $-6x + y = 11$

94. $x = -8$

Solve the equation for y. **(Hint: get** y **by itself).**

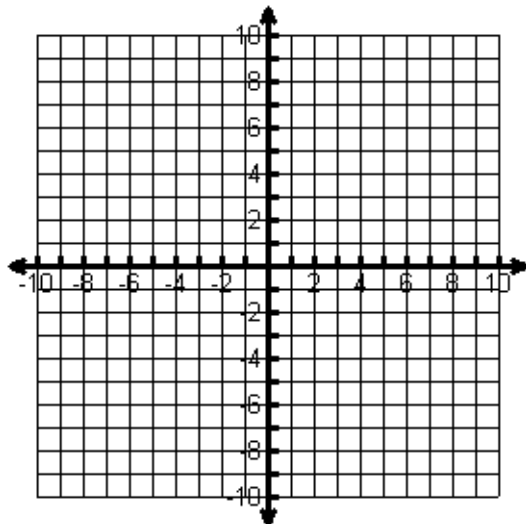**95.** _____ $6x - 3y = -9$ **96.** _____ $8x + 2y = 10$

Find the $x-$ **intercept and the** y **- intercept of the graph and then graph the equation below.**

97. $-3x + 9y = 18$

      x **- intercept:** _____

      y **- intercept:** _____

4.4 – Finding Slope & Rate of Change
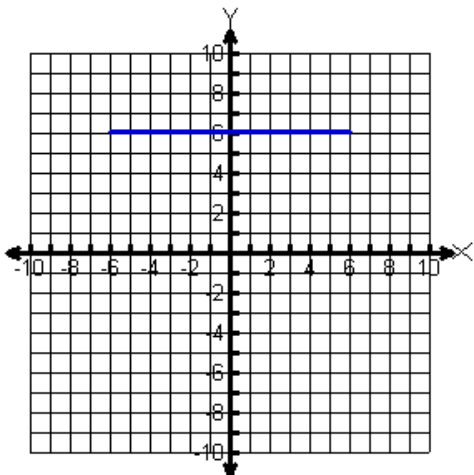
Slope formula: _____

Determine the slope for each of the following.
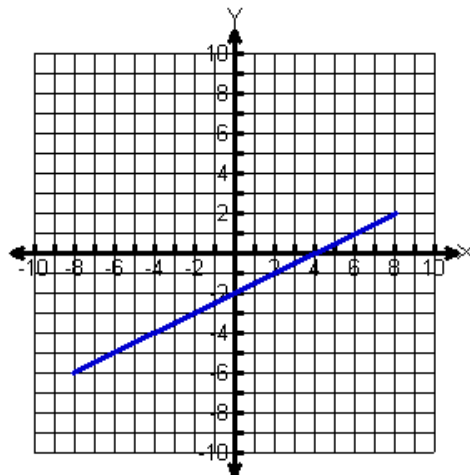
98. _____ (2, 1) and (8, 4)   **99.** _____ (3, 14) and (3, 5)

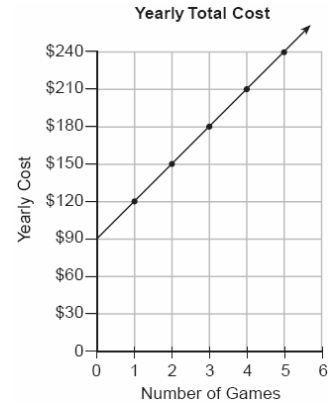**Provide the slope for each of the following.**

100. Slope: _____   **101.** Slope: _____

Find the rate of change for the data graphed on the line.

102. _____

Yearly Total Cost

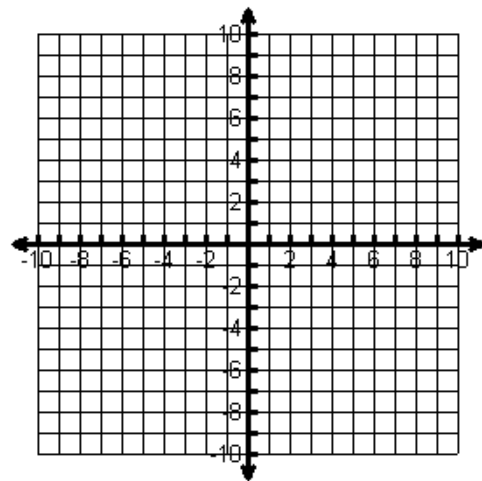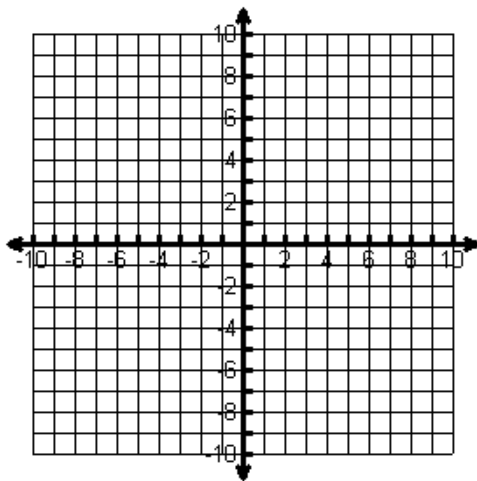**4.5 - Graph Using Slope & y-intercept**

Re-write each equation in slope-intercept form. Then, identify the slope and the y-intercept of the line and graph the equation.

103. $y = 4 - 8x$

Slope: _____ y -intercept: _____

104. $-8x + 2y = 14$

Slope: _____ y -intercept: _____

Tell whether the equations of the two lines below are parallel.

105. _____ $y = 8x - 3; \quad 8x + y = 3$

106. _____ $2x + y = 5; \quad 6y + 12x = 30$
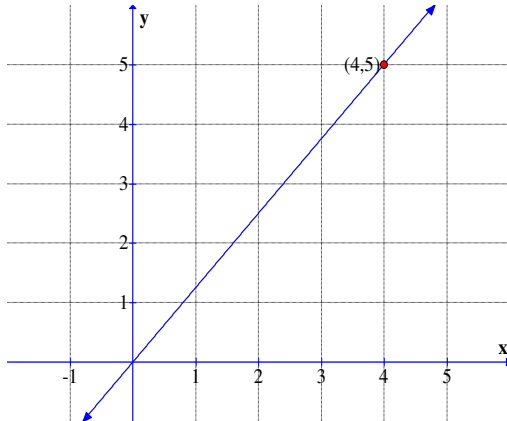
4.6 - Direct Variation

107. Tell whether the table represents a direct variation.   If so, write the direct variation equation.

Direct variation: *Yes / No*

$y =$ _____

x	-3	6	-9	12	-15
y	-2	4	-6	8	-10

108. The graph of the direct variation equation is shown below. Write the direct variation equation.
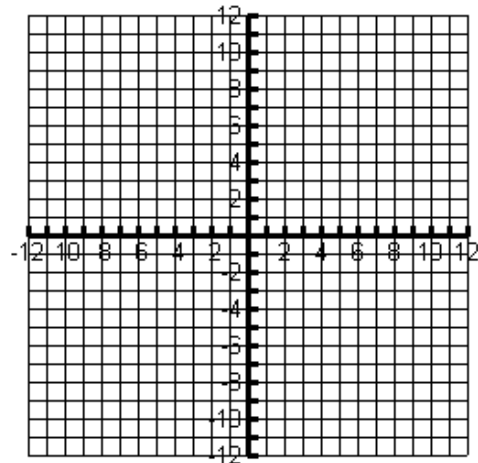

4.7 – Graphing Linear Functions

109. Evaluate the function when $x = -2,\ 0,\ 3$. **Identify the range** and **graph** the function.

$g(x) = -3x + 5$
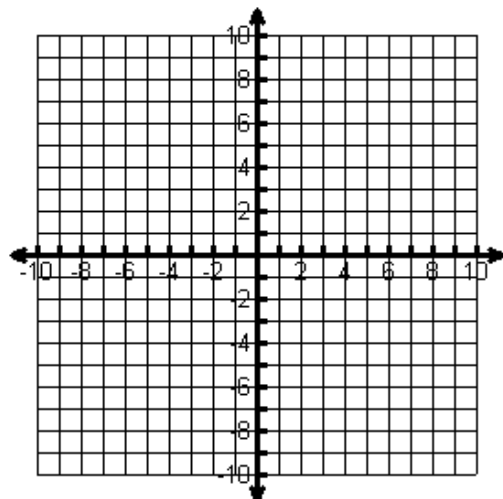
Range: {   }

110. Graph the two functions: **1)** $f(x) = x$. **2)** $f(x) = x + 3$

Identify the parent function:

_____

Describe a similarity with the two functions:

_____

Describe a difference with the two functions:

_____

5.1-5.4 – Write Linear Equations

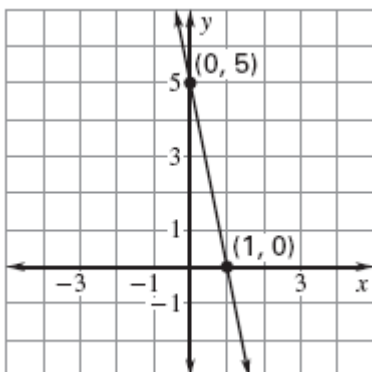**Slope-Intercept form of a linear equation:** _____

Point-Slope form of a linear equation: _____

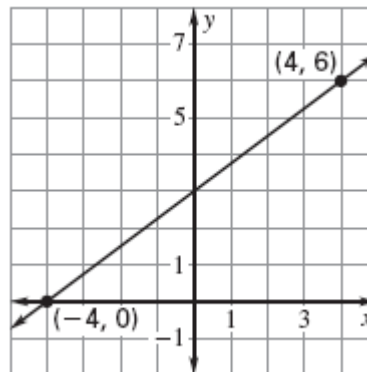**Standard Form of a linear equation:** _____

Write the equation of the line in slope-intercept form with the given slope and y-intercept.

111. _____ slope: 7; y-intercept: 4   **112.** _____ slope: -3; y-intercept: 5

Write the equation of the line shown.

113.

114.

_____   _____

Write an equation of the line that passes through the given points.

115. _____ $(-6, 0), \ (0, -24)$ **116.** _____ $(-1, -9), \ (6, 5)$

Write an equation of the line that passes through the given point and has the given slope m.

117. _____ $(5, 1), \ m = 2$ **118.** _____ $(10, 3), \ m = -2$

Write an equation in point-slope form of the line that passes through the given point and has the given slope m.

119. _____ $(-8, 2), \ m = 5$

120. Which equation represents the line that passes through the point $(-6,\ 2)$ and has a slope of -1.

    A) $y+2=-(x+6)$ **B)** $y+2=-(x-6)$

    C) $y-2=-(x+6)$ **D)** $y+1=-2(x+6)$

5.4 - Write Linear Equations in Standard Form

121. Which equation in <u>standard form</u> $(Ax+By=C)$ represents line that passes through the two given points $(3,\ 9),\ (1,\ 1)$.

    A) $-3x+y=4$ **B)** $-4x+y=-3$

    C) $3x-y=4$ **D)** $4x-y=3$

5.5 - Write Equations of Parallel & Perpendicular Lines

122. Two lines are parallel if the slopes of the lines are the _____, while two lines are

    considered _____ if the slopes are _____ _____.

Determine which lines, if any are parallel or perpendicular.

123.   **a)** $y=4x-2$ **b)** $y=-\dfrac{1}{4}x$ **c)** $y=-4x+1$

_____

124.   **a)** $y=\dfrac{3}{5}x+1$ **b)** $5y=3x-2$ **c)** $10x-6y=-4$

_____

5.6 - Fit a Line to Data

125. Which scatter diagram shows the strongest positive correlation?

A)   **B)**   **C)**   **D)**