Final Exam Review

CHAPTER ONE

Write an algebraic expression/sentence for each verbal expression.

1. the sum of 24 and a number   _____

2. the product of a number and 12   _____

3. five times the difference of *a* and *b* decreased by *c*   _____

4. twice the sum of 3 times a number and 4   _____

5. 3 less than 5 times a number cubed   _____

Write an algebraic sentence for each verbal sentence.

6. five times the number a increased by 24 is 92   _____

7. eight decreased by 3 times x is the same as x plus 12   _____

8. 27 minus 12 times n squared is equal to 38   _____

Write a verbal expression for the algebraic expression.

9. $4x^2 - 3x$ _____

10. $3(5z + 2)$ _____

11. $\dfrac{6k^3}{3}$ _____

Find the solution set of the equation if the replacement set is $x = \{0, 3, 5, 8, 10\}$.

     12. $\dfrac{x}{3} - 2 = 4$ 13. $\dfrac{40}{x} - 4 = 0$

Find the solution set of the inequality if the replacement set is x = {5, 6, 7, 8, 9}.

14. $x - 2 < 6$

15. $x + 5 > 13$

Use the distributive property to simplify each expression.

16. $4(5a - 1)$

17. $5(5a + 3b - c)$

18. $-3(9x^2 - 3x + 8)$

The following table shows the monthly charges for subscribing to a sports magazine.

Number of Months	1	2	3	4	5
Total Cost ($)	12	24	36	48	60

19. Identify the independent variable. (x) _____

20. Identify the dependent variable. (y) _____

21. Use the data in the table to find the cost of the subscription (magazine) for one year. _____

22. Use the data in the table to find the cost of the subscription for two years. _____

Solve the equation.

23. $105 = x - 52$

24. $x + 36 = 87$

25. $-\dfrac{1}{3} + n = \dfrac{8}{9}$

26. $\dfrac{n}{5} = 8$

27. $\dfrac{1}{4}x = \dfrac{2}{3}$

28. $9b = 108$

2

29. $5x - 8 = -43$

30. $8 - \dfrac{3}{8}k = -4$

31. $\dfrac{b}{3} - 6 = -2$

32. $5x - 3 = 13 - 3x$

33. $4(2a - 1) = -10(a - 5)$

34. $\dfrac{2x + 7}{3} = -11$

35. A new TV has a price of $800.

    a) Find the discount amount at 15%.   Discount: _____

    b) Find the new sales price.   Sale Price: _____

    c) Find the sales tax at 6% .   Sales Tax: _____

    d) Find the final price.   Final Price: _____

36. The cost of a CD is $24. If the sales tax is 5%, find the <u>sales tax and final price</u>.

37. The cost of a Detroit Lions Jersey is $54.99. If it is on sale for 25% off,
    find the <u>discount and final price.</u>

38. Find the <u>final price</u> for a camera that originally costs $120 and has a discount of 25%.

Write an equation to model each situation.

39. Gasoline costs $4 per gallon. The total price of g gallons is P.   _____

40. Fitness 19 charges a $150 membership fee plus $20 per month.   _____
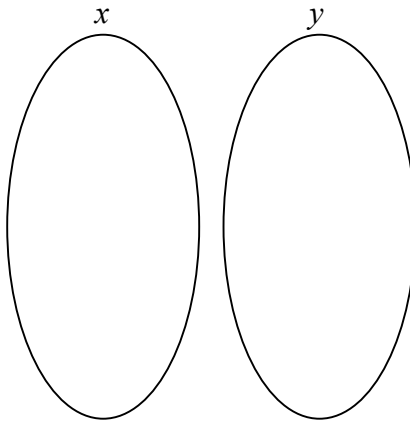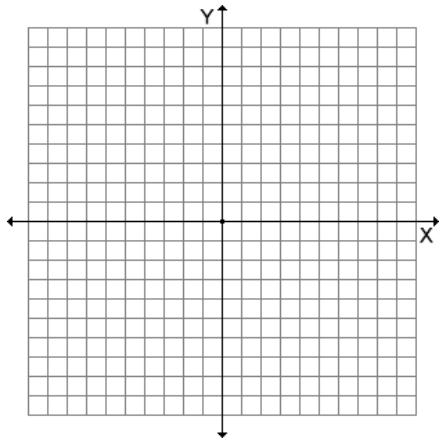
41. A snowman is 35 inches tall, but melts 5 inches per day.   _____

CHAPTER TWO

Find the solution set for the equation given the replacement set.

42. $4x - 6y = 40$ $\{(6,-5),(0,-6),(4,-4),(3,-2)\}$

43. $y = 7 - 2x$ $\{(3,1),(4,-1),(-1,5),(5,-3)\}$

44. Express the relation as a graph, a mapping, and a table.

$$\{(3, -1), (5, 3), (-2, 1), (4, -2), (2, -2)\}$$

45. List the domain. _____

46. List the range. _____

47. List the inverse. _____

48. Is the relation above a function? _____

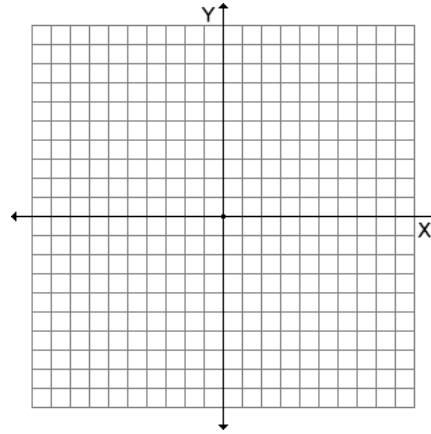**Find the range for the given domain. Graph the solution set.**
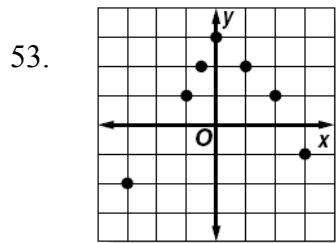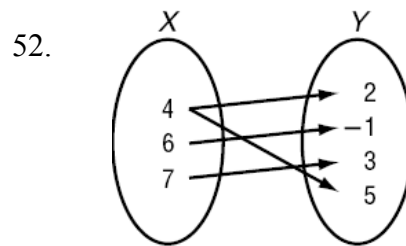
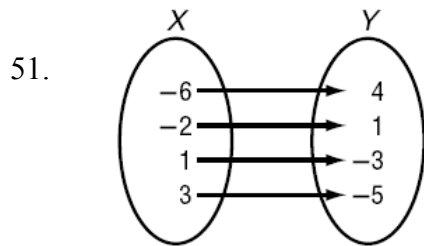49. $y = 8 - x$ $for x = \{-2,0,3,5\}$

x	y
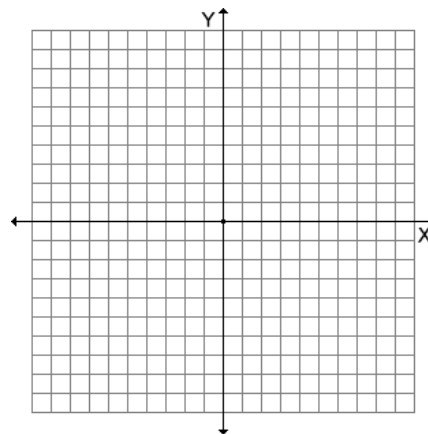
50. $y = 2x + 1$ $for x = \{-2, -1, 0, 2\}$

x	y

For numbers 51-55, determine whether each relation is a function.   Write yes or no.

51.

52.

53.

54.

x	y
1	−5
−4	3
7	6
1	−2

55. $\{(6, -4), (2, -4), (-4, 2), (4, 6), (2, 6)\}$

Find each value.

56. $f(x) = 3x + 5$ $Find \ f(2).$

57. $g(x) = x^2 - 3x + 2$ $Find \ g(-2).$

58. $g(x) = 3x^2 - 4x$ $Find \ g(-5).$

6

CHAPTER THREE

Write the linear equations in standard form. $Ax + By = C$

59. $y = -12 + 4x$

60. $5 - 2y = 3x$

61. $\dfrac{1}{3}y = -4 - 2x$

Graph the equations.

62. $y = 3x - 2$ 62.
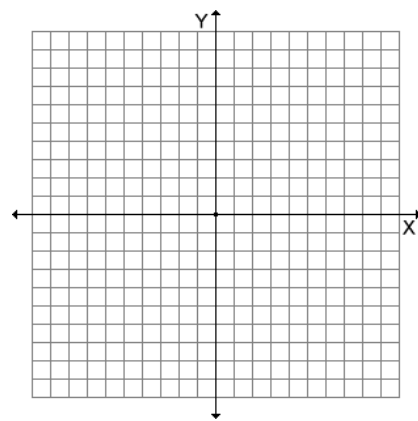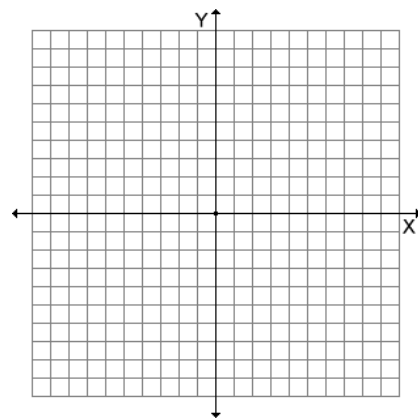

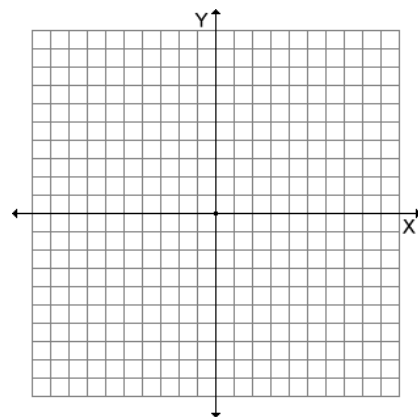
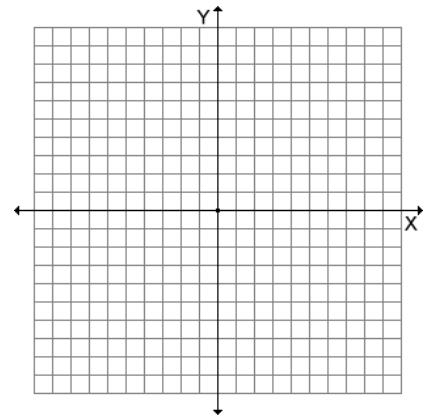63. $-4x + 3y = 12$ 63.

64. $y = 4$ *and* $x = -2$ 64.

65. $4x + 2y = 20$
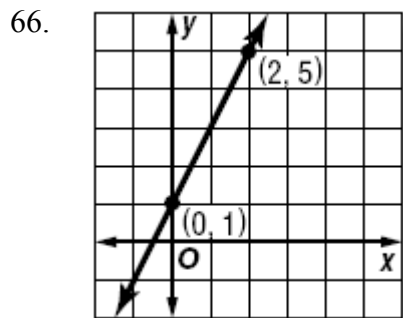
65.

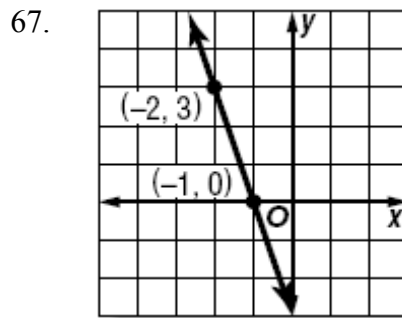Slope: $m = \dfrac{y_2 - y_1}{x_2 - x_1}$ Direct Variation: $y = kx$ Slope-intercept form: $y = mx + b$

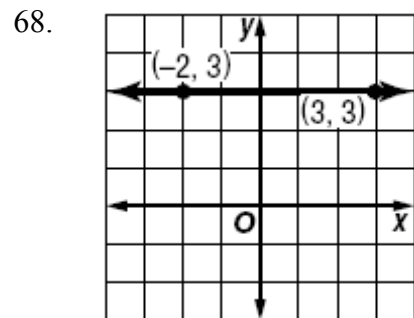Standard form: $Ax + By = C$ Point-slope form: $y - y_1 = m(x - x_1)$

Find the slope of the line that passes through each pair of points.

66.

$m = $ _____

67.

$m = $ _____

68.

$m = $ _____

69. $(2,5)$ $(3,6)$

$m = $ _____

70. $(-5,-8)$ $(-8,1)$

$m = $ _____

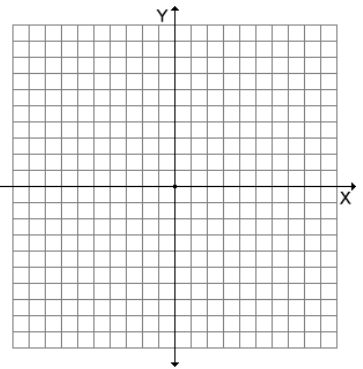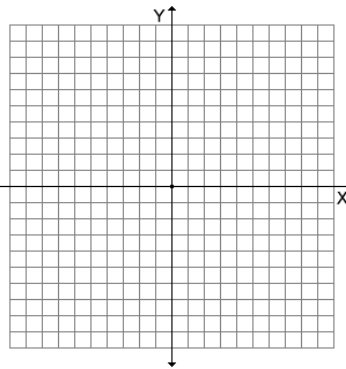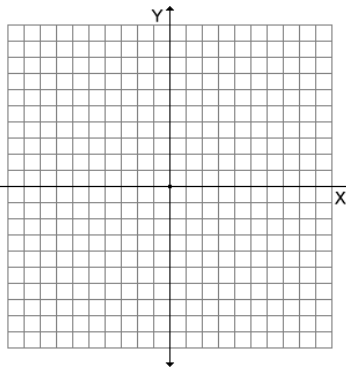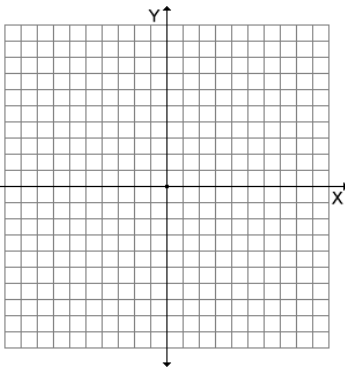71. $(-3,10)$ $(-3,7)$

$m = $ _____

8

Graph each equation.

72. $y = -2x$

73. $y = \dfrac{2}{5}x$

74. $y = 2x - 5$

75. $y = -\dfrac{2}{3}x + 8$

CHAPTER FOUR

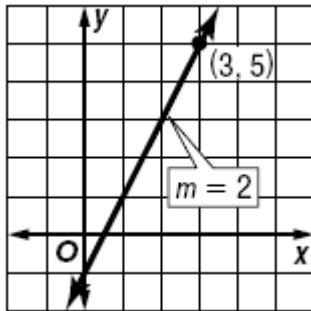**Write an equation of the line that passes through each point with the given slope. Show work!**

76. $m = -3$ (2, 2)   _____

77. $m = 8$ (−4, 6)   _____

78.   _____

(3, 5)

$m = 2$

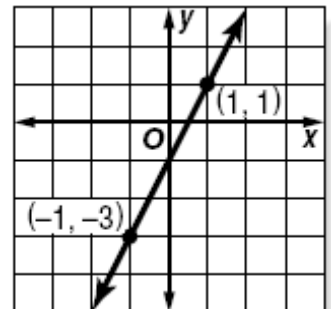**Write an equation of the line that passes through each pair of points.** Show work!

79.   (−1, 6) (3, −2)

80. *x*-intercept: 2
     y-intercept: 10

81.

(1, 1)

(−1, −3)

9

Convert from standard from into slope-intercept form. $y = mx + b$

82. $3x - 4y = 8$ 83. $-6x + 2y = 24$ 84. $-x - 3y = 27$

Use point-slope form to write an equation of the line that passes through each point with the given slope. $y - y_1 = m(x - x_1)$

85. $m = -\dfrac{5}{4}$ $(-5, -1)$ 86. $m = -1$ $(1, -6)$ 87. $m = 3$ $(-2, -11)$

Write the slope-intercept form for an equation of the line that passes through the given point and is <u>parallel</u> to the graph of the each equation. (L5-6)

88. $(-2, 2)$ $y = 4x - 2$ 89. $(4, -2)$ $2x + y = 3$ 90. $(-3, 4)$ $y = \dfrac{2}{3}x - 1$
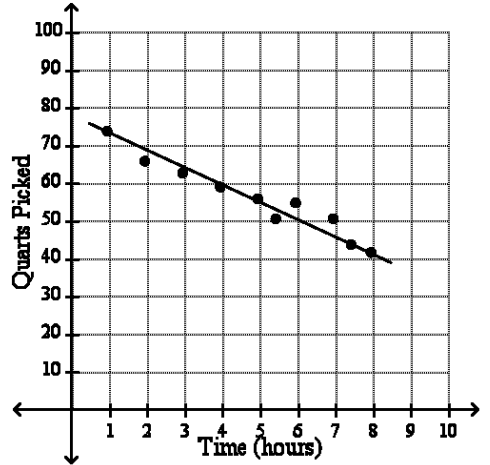
Write the slope-intercept form for an equation of the line that passes through the given point and is <u>perpendicular</u> to the graph of the each equation. (L5-6)

91. $(4, -1)$ $2y = 4x - 8$ 92. $(0, -2)$ $y = -7x + 3$ 93. $(3, -3)$ $y = \dfrac{3}{4}x + 5$

Strawberries Picked

94. Use the scatter plot that shows the number of quarts of strawberries picked each hour. Use the points (1, 73) and (8, 41) to write the slope-intercept form of an equation for the line of fit shown in the scatter plot.

95. Use the scatter plot that shows the number of quarts of strawberries picked each hour. Predict the number of quarts that will be picked in the tenth hour.

96. The scatter plot shows the average price of a major-league baseball ticket from 1991 to 2000. Use the points (1993, 9.60) and (1998,13.60) to write the slope-intercept form of an equation for the line of fit shown in the scatter plot.

Baseball Ticket Prices
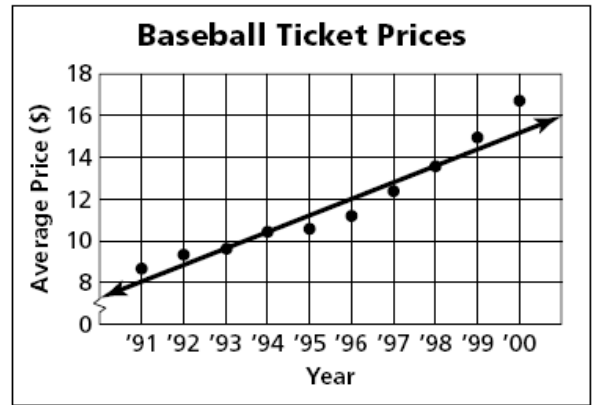
Source: Team Marketing Report, Chicago

97. Predict the price of the ticket in 2005. _____

98. Describe the slope (positive, negative, no correlation, etc.) _____

Solve the inequality.

99. $x - 7 \leq 9$

100. $-2x + 1 > -8$

101. $-\dfrac{1}{2}x > 5$

102. $\dfrac{t}{8} > 14$

103. $-3x < 45$

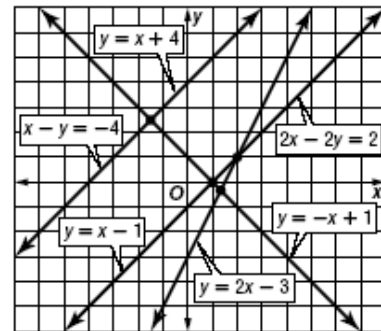104. $4w + 3 > 2w - 9$.

105. $9n - 24n + 45 > 0$.

106. $-6(w + 1) < 2(w + 5)$

CHAPTER FIVE

Use the graph to the right to determine the number of solutions each system has.

107. $\begin{array}{l} y = x + 4 \\ 2x - 2y = 2 \end{array}$

108. $\begin{array}{l} y = -x + 1 \\ x - y = -4 \end{array}$

Use substitution to solve the system of equations.

109. $\begin{array}{l} y = 3x - 1 \\ x - 2y = -1 \end{array}$

110. $\begin{array}{l} y = -x + 3 \\ x + y = -1 \end{array}$

Use <u>elimination</u> to solve the system of equations. **(L7-3)**

111. $\begin{array}{l} 2x + 3y = 19 \\ 3x - 3y = 1 \end{array}$

112. $\begin{array}{l} 5s - t = 6 \\ 5s + 2t = 3 \end{array}$

Use <u>elimination by multiplication</u> to solve the system of equations. **(L7-4)**

113. $\begin{array}{l} 6x + 4y = 20 \\ 4x - 2y = 4 \end{array}$

114. $\begin{array}{l} 4x - 2y = 32 \\ -3x - 5y = -11 \end{array}$

115. Anna is 5 years less than twice the age of Jill. If their ages total 28, how old is Anne?

116. The sum of two numbers is 41. Their difference is 5. What are the numbers?

117. At a sale on winter clothing, Codey bought two pairs of gloves and four hats for $43.00. Tori bought two pairs of gloves and two hats for $30.00. What was the price for a hat?
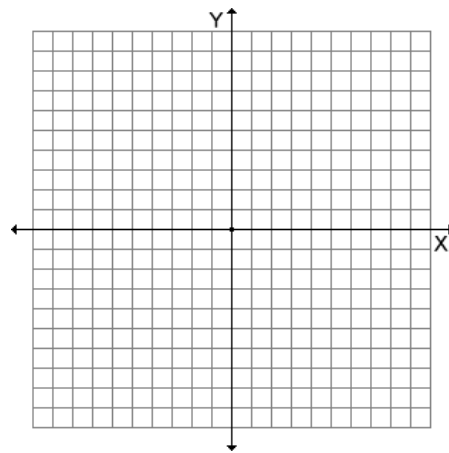
118. The cost of 2 hamburgers and 3 salads is $17.48. The cost of 4 hamburgers and 2 salads is $24.96. Find the cost of one salad.
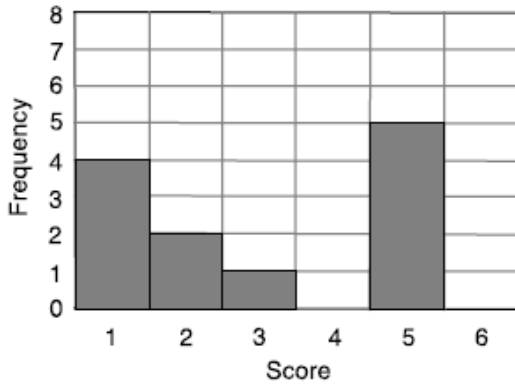
Graph.

119. $x > 2$
$y < 3x - 5$
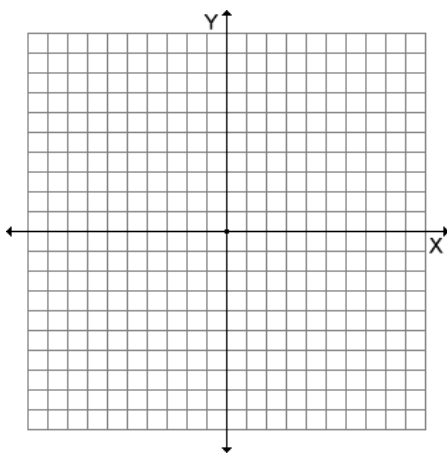
120. $y < 4$
$y < x + 1$

Boy Bands

121 The bar chart represents the scores from a quiz.
     Children were asked to name six boy bands in 30 seconds.
     Each score represents the number of correctly named bands.

a. How many children were involved in the quiz? Show how you obtain your answer.

_____

_____

b. Complete the table with values for the Mean, Median, Mode, and Range of scores.
   Explain how you calculate each answer.

Mean score	---------	
Median score	---------	
Mode score	---------	
Range of scores	---------	

122. Use the test grade data below to answer the following questions:

75, 73, 42, 67, 78, 99, 84, 91, 82, 86, 94, 90

a. Create a Stem and Leaf Plot using the test data.
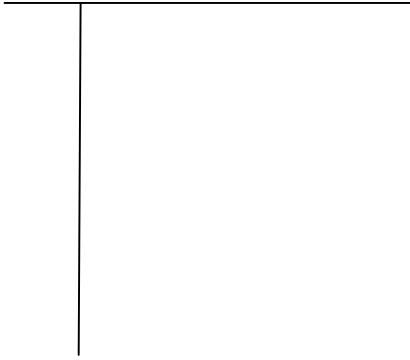
b. Create a Box and Whiskers Graph using the five point summary.

Minimum _____ Q1 _____ Median _____ Q3 _____ Maximum _____