

**Final Exam Review****CHAPTER ONE**

Write an algebraic expression/sentence for each verbal expression.

- the sum of 24 and a number
- the product of a number and 12
- five times the difference of  $a$  and  $b$  decreased by  $c$
- twice the sum of 3 times a number and 4
- 3 less than 5 times a number cubed

$$24 + x$$

$$12x$$

$$5(a-b) - c$$

$$2(3x+4)$$

$$5x^3 - 3$$

Write an algebraic sentence for each verbal sentence.

- five times the number  $a$  increased by 24 is 92
- eight decreased by 3 times  $x$  is the same as  $x$  plus 12
- 27 minus 12 times  $n$  squared is equal to 38

$$5a + 24 = 92$$

$$8 - 3x = x + 12$$

$$27 - 12n^2 = 38$$

Write a verbal expression for the algebraic expression.

- $4x^2 - 3x$  four times  $x$  squared minus three times  $x$
- $3(5z + 2)$  three times the sum of five times  $z$  and two
- $\frac{6k^3}{3}$  six times  $k$  cubed divided by 3

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

12.  $\frac{x}{3} - 2 = 4$  No solution

$$x=0 \rightarrow 0 \neq 6$$

$$x=3 \rightarrow 1 \neq 6$$

$$x=5 \rightarrow \frac{5}{3} \neq 6$$

$$x=8 \rightarrow \frac{8}{3} \neq 6$$

$$x=10 \rightarrow \frac{10}{3} \neq 6$$

13.  $\frac{40}{x} - 4 = 0$

$\{10\}$

$$x=0 \rightarrow \text{undef.}$$

$$x=3 \rightarrow \frac{40}{3} \neq 4$$

$$x=5 \rightarrow 8 \neq 4$$

$$x=8 \rightarrow 5 \neq 4$$

$$x=10 \rightarrow \checkmark$$

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

14.  $x - 2 < 6$

$\{5, 6, 7\}$

15.  $x + 5 > 13$

$\{9\}$

Use the distributive property to simplify each expression.

16.  $4(5a - 1)$

$20a - 4$

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

$25a + 15b - 5c$

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

$-27x^2 + 9x - 24$

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

<b>Number of Months</b>	1	2	3	4	5
<b>Total Cost (\$)</b>	12	24	36	48	60

19. Identify the independent variable. (x) # of Months

20. Identify the dependent variable. (y) Total Cost (\$)

21. Use the data in the table to find the cost of the subscription (magazine) for one year. \$144

22. Use the data in the table to find the cost of the subscription for two years. \$288

Solve the equation.

23.  $105 = x - 52$

$x = 157$

24.  $x + 36 = 87$

$x = 51$

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

$n = \frac{11}{9}$

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

$n = 40$

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

$x = \frac{8}{3}$

28.  $9b = 108$

$b = 12$

29.  $5x - 8 = -43$

$x = -7$

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

$k = 32$

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

$b = 12$

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

$x = 2$

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

$a = 3$

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

$x = -20$

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

a) Find the discount amount at 15%.

Discount: \$120

b) Find the new sales price.

Sale Price: \$680

c) Find the sales tax at 6%.

Sales Tax: \$40.80

d) Find the final price.

Final Price: \$720

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

Sales Tax  $\boxed{\$1.20}$

Final Price  $\boxed{\$25.20}$

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

Discount  $\boxed{\$13.75}$

Final Price  $\boxed{\$41.24}$

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

Final Price  $\boxed{\$90.00}$

**Write an equation to model each situation.**

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

$$\underline{P = 4g}$$

40. Fitness 19 charges a \$150 membership fee plus \$20 per month.

$$\underline{P = 20m + 150}$$

41. A snowman is 35 inches tall, but melts 5 inches per day.

$$\underline{H = 35 - 5d}$$

## CHAPTER TWO

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

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

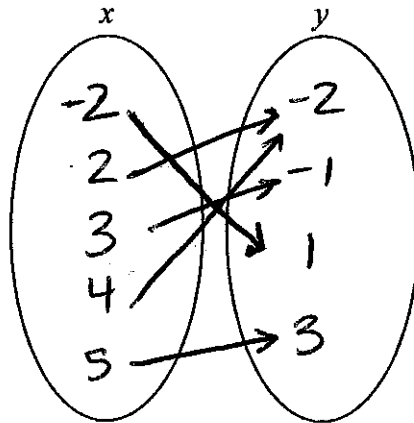
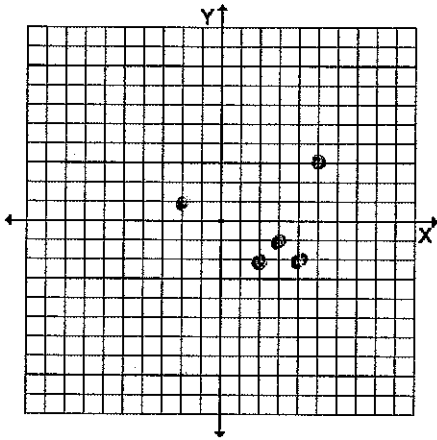
$$\boxed{\{(4, -4)\}}$$

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

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

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.  $x = \{-2, 2, 3, 4, 5\}$

46. List the range.  $y = \{-2, -1, 1, 3\}$

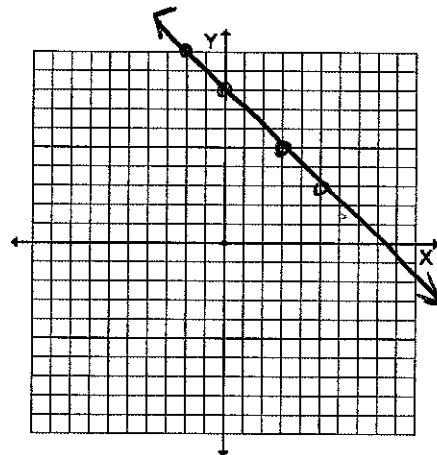
47. List the inverse.  $\{(1, 3), (3, 5), (-1, -2), (-2, 4), (-2, 2)\}$

48. Is the relation above a function? Yes

**Find the range for the given domain. Graph the solution set.**

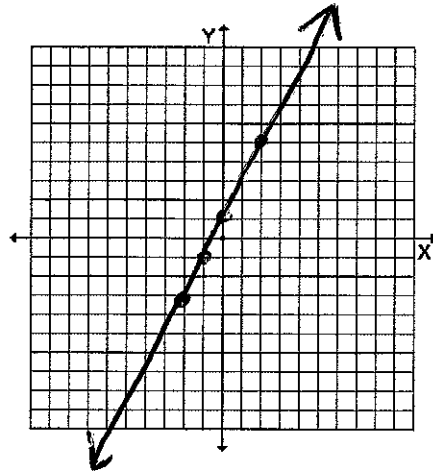
49.  $y = 8 - x$  for  $x = \{-2, 0, 3, 5\}$

$x$	$y$
-2	10
0	8
3	5
5	3

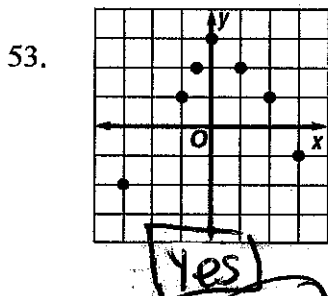
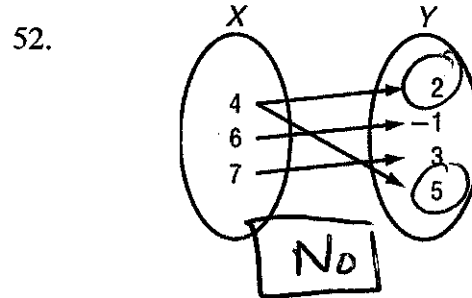
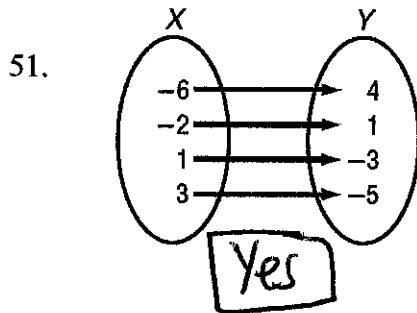


50.  $y = 2x + 1$  for  $x = \{-2, -1, 0, 2\}$

x	y
-2	-3
-1	-1
0	1
2	5



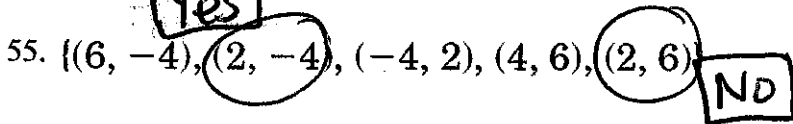
For numbers 51-55, determine whether each relation is a function. Write yes or no.



54. 

x	y
1	-5
-4	3
7	6
1	-2

**No**



Find each value.

56.  $f(x) = 3x + 5$  Find  $f(2)$ .  **$f(2) = 11$**

57.  $g(x) = x^2 - 3x + 2$  Find  $g(-2)$ .  **$g(-2) = 12$**

58.  $g(x) = 3x^2 - 4x$  Find  $g(-5)$ .  **$g(-5) = 95$**

**CHAPTER THREE**

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

59.  $y = -12 + 4x$

$4x - y = 12$

60.  $5 - 2y = 3x$

$3x + 2y = 5$

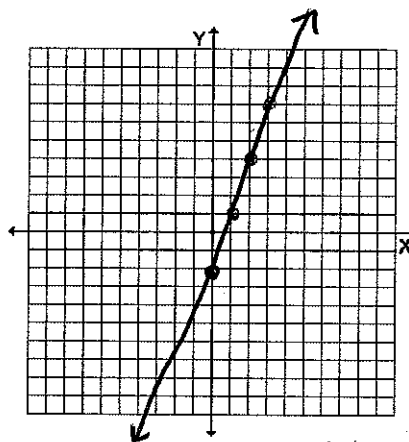
61.  $\frac{1}{3}y = -4 - 2x$

$6x + y = -12$

Graph the equations.

62.  $y = 3x - 2$

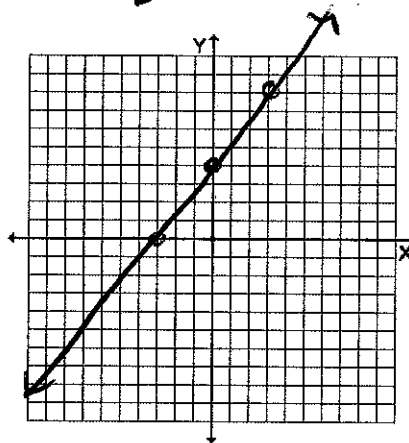
62.



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

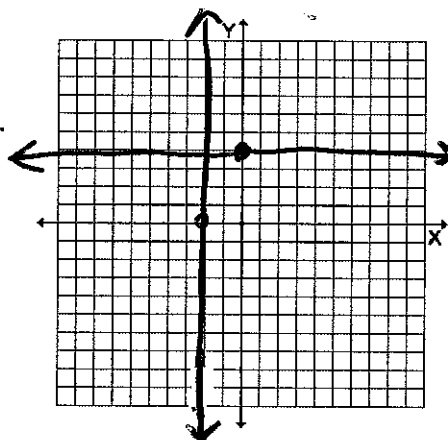
$y = \frac{4}{3}x + 4$

63.



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

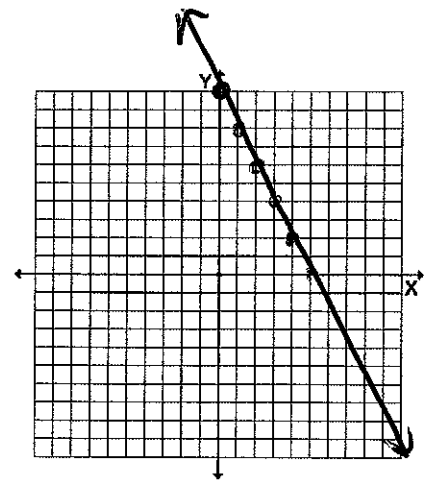
64.



65.  $4x + 2y = 20$

$y = -2x + 10$

65.



Slope:  $m = \frac{y_2 - y_1}{x_2 - x_1}$

Direct Variation:  $y = kx$

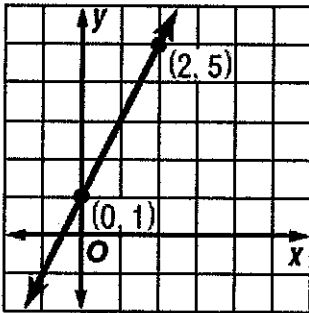
Slope-intercept form:  $y = mx + b$

Standard form:  $Ax + By = C$

Point-slope form:  $y - y_1 = m(x - x_1)$

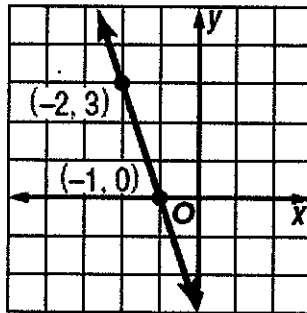
Find the slope of the line that passes through each pair of points.

66.



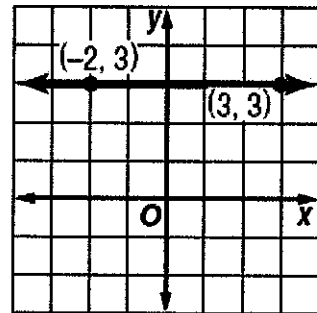
$m = 2$

67.



$m = -3$

68.



$m = 0$

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

$m = 1$

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

$m = -3$

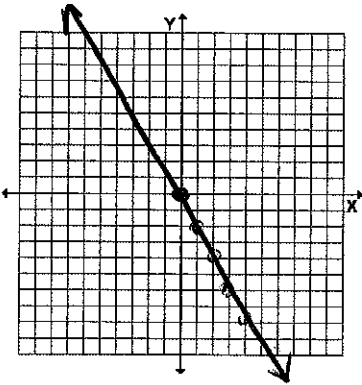
71. (-3,10) (-3,7)

$m = \text{undefined}$

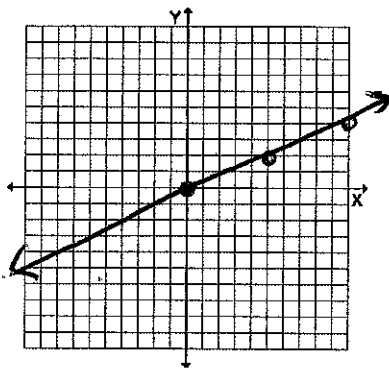


Graph each equation.

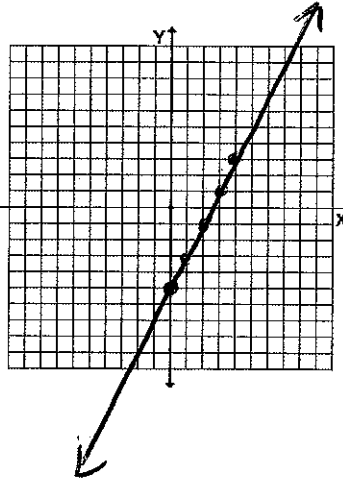
72.  $y = -2x$



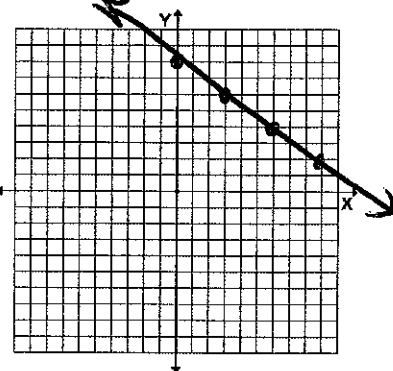
73.  $y = \frac{2}{5}x$



74.  $y = 2x - 5$



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



**CHAPTER FOUR**

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

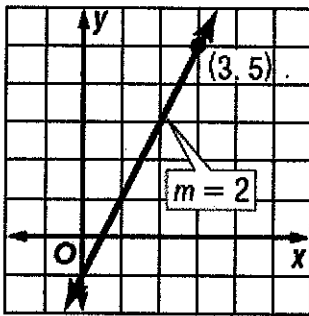
76.  $m = -3$  (2, 2)

$y = -3x + 8$

77.  $m = 8$  (-4, 6)

$y = 8x + 38$

78.



$y = 2x - 1$

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

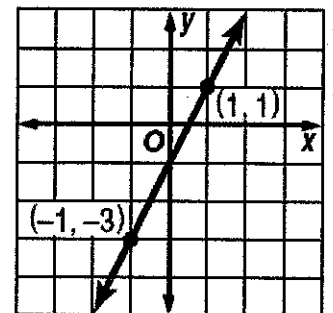
79. (-1, 6) (3, -2)

$y = -2x + 4$

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

$y = -5x + 10$

81.



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

82.  $3x - 4y = 8$

$$y = \frac{3}{4}x - 2$$

83.  $-6x + 2y = 24$

$$y = 3x + 12$$

84.  $-x - 3y = 27$

$$y = -\frac{1}{3}x - 9$$

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.  $m = -\frac{5}{4}$   $(-5, -1)$

$$y = -\frac{5}{4}x - \frac{29}{4}$$

86.  $m = -1$   $(1, -6)$

$$y = -x - 5$$

87.  $m = 3$   $(-2, -11)$

$$y = 3x - 5$$

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

88.  $(-2, 2)$   $y = 4x - 2$

$$y = 4x + 10$$

89.  $(4, -2)$   $2x + y = 3$

$$y = -2x + 6$$

90.  $(-3, 4)$   $y = \frac{2}{3}x - 1$

$$y = \frac{2}{3}x + 6$$

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

91.  $(4, -1)$   $2y = 4x - 8$

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

92.  $(0, -2)$   $y = -7x + 3$

$$y = \frac{1}{7}x - 2$$

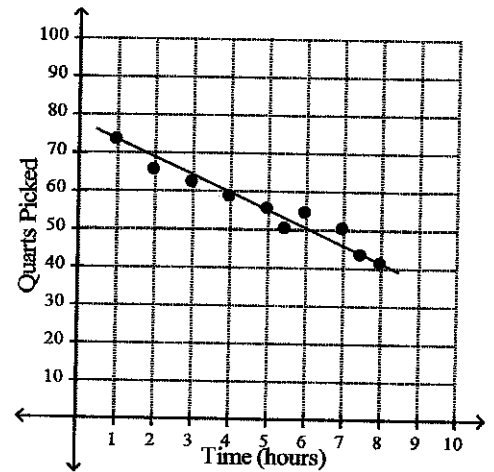
93.  $(3, -3)$   $y = \frac{3}{4}x + 5$

$$y = -\frac{4}{3}x + 1$$

### 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.

$$y = -\frac{32}{7}x + \frac{543}{7}$$

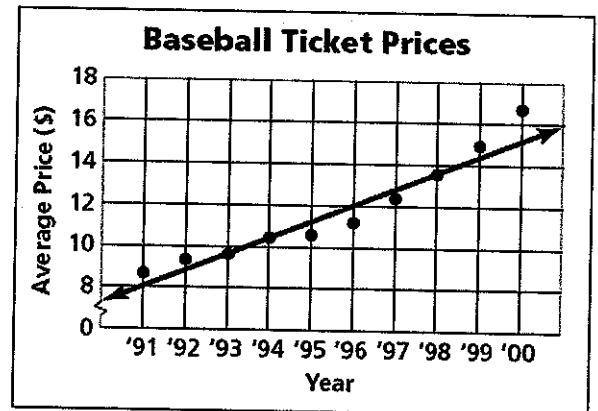


95. Use the scatter plot that shows the number of quarts of strawberries picked each hour. Predict the number of quarts that will be picked in the tenth hour.

$$31.86$$

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.

$$y = .8x - 1584.8$$



Source: Team Marketing Report, Chicago

97. Predict the price of the ticket in 2005. \$16.00

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

Solve the inequality.

99.  $x - 7 \leq 9$

$x \leq 16$

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

$x < \frac{9}{2}$

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

$x < -10$

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

$t > 112$

103.  $-3x < 45$

$x > -15$

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

$w > -6$

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

$n < 3$

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

$w > -2$

**CHAPTER FIVE**

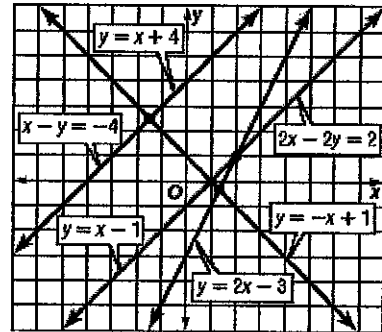
Use the graph to the right to determine the number of solutions each system has.

107.  $y = x + 4$   
 $2x - 2y = 2$

no solution

108.  $y = -x + 1$   
 $x - y = -4$

one solution



Use substitution to solve the system of equations.

109.  $y = 3x - 1$   
 $x - 2y = -1$

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

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

no solution

Use elimination to solve the system of equations. (L7-3)

111.  $2x + 3y = 19$   
 $3x - 3y = 1$

$$\begin{array}{l} x = 4 \\ y = \frac{11}{3} \end{array}$$

112.  $5s - t = 6$   
 $5s + 2t = 3$

$$\begin{array}{l} s = 1 \\ t = -1 \end{array}$$

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

113.  $6x + 4y = 20$   
 $4x - 2y = 4$

$$\begin{array}{l} x = 2 \\ y = 2 \end{array}$$

114.  $4x - 2y = 32$   
 $-3x - 5y = -11$

$$\begin{array}{l} x = 7 \\ y = -2 \end{array}$$

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

$$\begin{array}{l} J = 11 \\ A = 17 \end{array}$$

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

$$\begin{array}{l} x = 23 \\ y = 18 \end{array}$$

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?

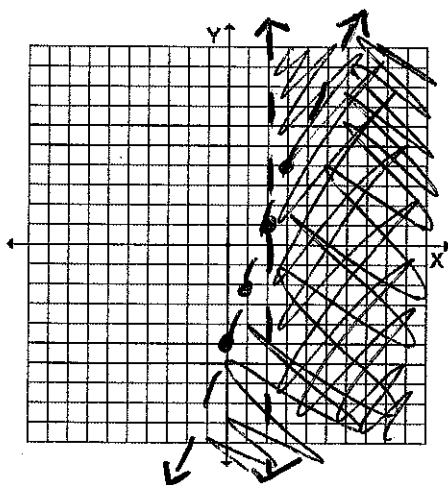
$$\begin{aligned} g &= 8.50 \\ h &= 6.50 \end{aligned}$$

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.

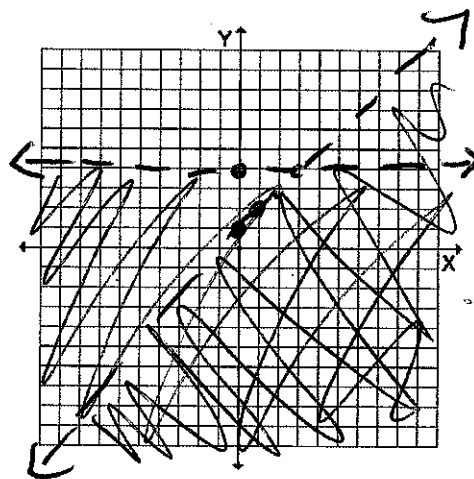
$$\begin{aligned} s &= 2.50 \\ h &= 4.99 \end{aligned}$$

Graph.

119.  $x > 2$   
 $y < 3x - 5$

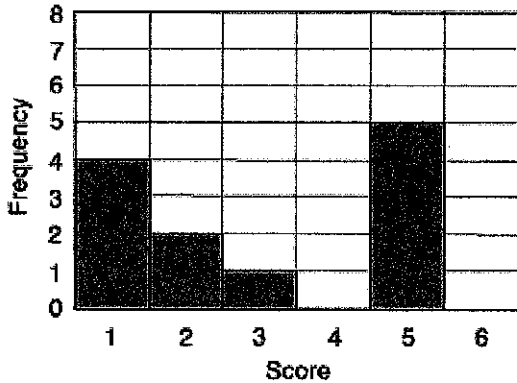


120.  $y < 4$   
 $y < x + 1$



## 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.

$$4 + 2 + 1 + 5 = 12 \text{ children}$$

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

Mean score	<u>3</u>	add scores and divide by # of children
Median score	<u>2.5</u>	add middle #'s and divide by 2
Mode score	<u>5</u>	most repeated
Range of scores	<u>4</u>	largest - smallest

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.

4	2
6	7
7	3 5 8
8	2 4 6
9	0 1 4 9

42 67 73 75 78 82 <sup>83</sup> 84 86 90 91 94 99

b. Create a Box and Whiskers Graph using the five point summary.

Minimum 42 Q1 74 Median 83 Q3 90.5 Maximum 99

