

Name: _____ Date: _____

1. Find the slope of the line passing through the points $(9, -4)$ and $(9, -7)$.
2. Find the slope of the line passing through the points $(2.8, 0.4)$ and $(-2.9, 1.8)$.
3. Find the coordinates of the x -intercept and the y -intercept.
 $-x - 3y = -6$
4. Find the coordinates of the x -intercept.
 $-6x + y = 6$
5. Write the equation in the slope-intercept form.
 $-2x + 7y = -56$
6. $4x - y = 5$
 - (i) Write the equation in the slope-intercept form.
 - (ii) Find the slope and y -intercept.
 - (iii) Draw the graph of the line.
7. Find the slope.
 $7x - 5y = -29$
8. Find the y -intercept.
 $-7x + y = -14$
9. A newspaper advertisement costs \$7.25 per week to run the ad plus a setup charge of \$50.00. Find the cost of running the ad for 6 weeks.
10. The number of women who use a computer at work in Elbonia can be modeled by the equation $y = 7,777x + 12,926$, where x is the number of years from now. How many Elbonian women will be using a computer at work 10 years from now if this trend continues?
11. Solve the system by graphing.
 $x - 2y = 8$
 $x + y = -1$

12. Solve the system by substitution.

$$x - 3y = 17$$

$$-x - y = 7$$

13. Solve the system by addition/subtraction.

$$-x - y = 7$$

$$x - 4y = -4$$

14. Solve the system by addition/subtraction.

$$3x - y = -19$$

$$x + 2y = 10$$

15. Solve the system.

$$-2x + 2y = 8$$

$$-x + 5y = -4$$

16. Solve the system.

$$2x - 2y = 4$$

$$-4x + 4y = -8$$

17. Solve the system.

$$-x - y = -4$$

$$-4x - 4y = -15$$

18. Angus invested \$31,000, part at 8% and part at 1%. If the total interest at the end of the year is \$1,500, how much did he invest at each rate?

19. Adult tickets for a play cost \$17 and child tickets cost \$3. If there were 22 people at a performance and the theatre collected \$234 from ticket sales, how many adults and how many children attended the play?

20. The difference between the ages of two friends is 4 years. The sum of their ages is 76 years. Find their ages.

21. Find the solution set for the system of linear inequalities.

$$3x - y < 2$$

$$x + y \geq 2$$

22. Find the solution set for the system of linear inequalities.

$$x \geq 2$$

$$y > -3$$

23. Find the solution set for the system of linear inequalities.

$$x - y \leq 3$$

$$x + 2y \leq 6$$

24. Find the solution set for the system of linear inequalities.

$$3x + y < 2$$

$$6x + 2y > -6$$

25. Express 0.65 as a percent.

26. Express 0.953 as a percent.

27. Express 4.97 as a percent.

28. Express 43% as a decimal.

29. Express 79.4% as a decimal.

30. Express 260% as a decimal.

31. Find the sales tax and total cost of an item that costs \$149.95 if the tax rate is 7%.

32. A car seat cover with an original price of \$349.95 is on sale for 70% off. Find the sale price.

33. A real estate agent received a 4% commission on the sale of a home. If his commission was \$26,160, how much did the home sell for?

34. The average teachers' and superintendents' salaries for a school district was \$49,871. Nine years later, the new average was \$59,388. Find the percent increase to the nearest tenth of a percent.

35. The total real estate commission for a real estate company was \$50 million in 2008, an increase of \$4 million over the year 2004. What was the percent increase? Round answer to the nearest tenth of a percent.

36. Find the missing value.

Principal	Rate	Time	Simple Interest
\$22,000	11%	2 years	

37. Find the missing value.

Principal	Rate	Time	Simple Interest
\$14,500	3%		\$1,740.00

38. Find the missing value.

Principal	Rate	Time	Simple Interest
\$3,400		7.5 years	\$4,462.50

39. Find the missing value.

Principal	Rate	Time	Simple Interest
	4%	7.5 years	\$4,530.00

40. Find the future value of the loan.

$$P = \$6,100, r = 4\%, t = 6 \text{ years}$$

41. Find the future value of the loan.

$$P = \$4,100, r = 6.5\%, t = 4 \text{ months}$$

42. Stanley borrowed \$10,200 for 3.5 years. The simple interest is \$1,606.50. Find the rate.

43. Find the maturity value.

Principal	Rate	Compounded	Time
\$1,250	14%	Quarterly	2.5 years

44. Find the compound interest.

Principal	Rate	Compounded	Time
\$3,450	2%	Annually	8 years

45. Find the maturity value.

Principal	Rate	Compounded	Time
\$1,650	18.5%	Semiannually	8 years

46. Find the compound interest.

Principal	Rate	Compounded	Time
\$2,500	20%	Semiannually	4 years

47. Find the future value of an annuity if you invest \$650 quarterly for 2 years at 4.5% compounded quarterly.
48. Find the future value of an annuity if you invest \$2,400 annually for 4.5 years at 13% compounded annually.
49. As part of his retirement planning, Mr. Jones purchases an annuity that pays 16% compounded quarterly. If the quarterly payment is \$2,500, how much will Mr. Jones have saved in 2 years?
50. Joan purchased a refrigerator for \$1,250. She made a down payment of \$70 and paid \$126 a month for 12 months. Find the total installment price of the refrigerator.

51. Stephen purchased a diamond engagement ring for \$3,000. His down payment was \$900, and he made 24 monthly payments of \$96.91. Find the APR from the table below.

Number of Payments	Annual Percentage Rate					
	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%
24	\$6.37	\$6.91	\$7.45	\$8.00	\$8.54	\$9.09

(Finance charge per \$100 of amount financed)

Number of Payments	Annual Percentage Rate						
	9.0%	9.5%	10.0%	10.5%	11.0%	11.5%	12.0%
24	\$9.64	\$10.19	\$10.75	\$11.30	\$11.86	\$12.42	\$12.98

(Finance charge per \$100 of amount financed)

52. A \$2,400 loan is to be paid off in 18 monthly payments of \$158.37. The borrower decides to pay off the loan after 5 payments. Find the amount of interest saved using the rule of 78s.
53. Roger borrowed \$400.00 for 1 year. His payments are \$34.50 a month. If he decides to pay the loan off after 8 months, find the amount of interest that he will save. (Use the rule of 78s.)
54. Phil had an unpaid balance of \$1,992.50 on his credit card statement at the beginning of October. He made a payment of \$430.00 during the month. If the interest rate on Phil's credit card was 7.5% per month on the unpaid balance, find the finance charge and the new balance on November 1.
55. Janice had an unpaid balance of \$1,293.21 on her credit card statement at the beginning of December. She made a payment of \$145.00 during the month, and made purchases of \$167.64. If the interest rate on Janice's credit card was 2.5% per month on the unpaid balance, find her finance charge and the new balance on January 1.

56. A credit card statement showed these transactions during June.

June 1	Previous balance	\$126.46
June 4	Purchases	\$59.62
June 13	Payment	\$85.00
June 26	Purchases	\$158.44

The credit card has an interest rate of 18% on the average daily balance. Find the average daily balance, the finance charge for the month, and the new balance on July 1. [Hint: Remember that June has 30 days.]

57. Raoul's credit card statement showed these transactions during May.

May 1	Previous balance	\$304.29
May 6	Payment	\$100.00
May 10	Purchases	\$58.10
May 15	Payment	\$100.00
May 26	Purchases	\$114.73

The interest rate is 18% per month on the average daily balance. Find the average daily balance, the finance charge for the month, and the new balance on June 1. [Hint: Remember that May has 31 days.]

58. A house sells for \$314,500 and a 25% down payment is made. A 15-year mortgage at 6.5% was obtained.

- (i) Find the down payment.
- (ii) Find the amount of the mortgage.
- (iii) Find the monthly payment.
- (iv) Find the total interest paid.

Monthly Payment per \$1000 of Mortgage (Includes Principal and Interest)		
Rate (%)	Number of years	
	15	30
6.5	\$8.71	\$6.32
7	\$8.99	\$6.65
7.5	\$9.28	\$6.99
8	\$9.56	\$7.34

59. A house sells for \$401,500 and a 35% down payment is made. A 15-year mortgage at 6.5% was obtained. Find the monthly payment and the total interest paid.

Monthly Payment per \$1000 of Mortgage (Includes Principal and Interest)		
Rate (%)	Number of years	
	15	30
6.5	\$8.71	\$6.32
7	\$8.99	\$6.65
7.5	\$9.28	\$6.99
8	\$9.56	\$7.34

60. A building sells for \$350,000.00. The buyer makes a 20% down payment and obtains a 30-year mortgage at 6.5%.

- (i) Find the down payment.
(ii) Find the amount of the mortgage.
(iii) Find the monthly payment.
(iv) Find the total interest paid.

Monthly Payment per \$1000 of Mortgage (Includes Principal and Interest)		
Rate (%)	Number of years	
	15	30
6.5	\$8.71	\$6.32
7	\$8.99	\$6.65
7.5	\$9.28	\$6.99
8	\$9.56	\$7.34

61. Evaluate $9!$

62. Evaluate the expression.
 $(3!)(2!)$

63. Evaluate the expression.
 $\frac{12!}{4!3!}$

64. How many different three letter permutations can be formed from the letters in the word *clipboard*?

65. How many different ways can 2 people stand in line at a cash register?
66. A babysitter has four lollipops of different colors. In how many ways can she give one lollipop to each of the four children she is watching?
67. How many 3-digit codes using the digits 0 through 9 are possible if repetitions are allowed?
68. A teacher has 16 boys and 14 girls in her class. In how many ways can she select 6 of the children to be in a play if she must select 3 boys and 3 girls.
69. If a die is rolled one time, find the probability of getting a 5.
70. If a die is rolled one time, find the probability of getting a number less than 4 and an even number.
71. A box contains five blue, eight green, and three yellow marbles. If a marble is selected at random, what is the probability that it is green?
72. A box contains five blue, eight green, and three yellow marbles. If a marble is selected at random, what is the probability that it is not yellow?
73. In a classroom, the students are 9 boys and 2 girls. If one student is selected at random, find the probability that the student is a boy.
74. A single card is drawn from an ordinary 52-card deck. Find the probability of getting a black card.
75. A single card is drawn from an ordinary 52-card deck. Find the probability of getting an 8 or a queen.
76. Two dice are rolled. Find the probability of getting a sum of 3 or 8.
77. Two dice are rolled. Find the probability of getting a sum less than or equal to 4.

78. In a class of 20 students, there are 12 girls and 8 boys. Three students are selected to be teacher's assistants. Find the probability that the group consists of all girls.
79. In a class of 20 students, there are 12 girls and 8 boys. Three students are selected to be teacher's assistants. Find the probability that the group consists of one girl and two boys.
80. When two dice are tossed, find the odds in favor of getting a sum of 10.
81. When two dice are tossed, find the odds against getting a sum of 8.
82. A person rolls two dice and wins if the sum is 7. What are the odds in favor of winning? What are the odds against winning?
83. The odds in favor of an event are 6:8. Find the probability that the event will occur.
84. Tickets for a drawing are sold for \$85 each. The holder of the winning ticket wins a cash prize of \$2000. If 1500 tickets are sold, find the expected value of the gain.
85. At a community college, there are 9 English instructors, 4 math instructors, and 6 history instructors. If one of these instructors is selected at random to serve on a committee, find the probability that the instructor is an English instructor or a history instructor.
86. A bookstore recorded the type of books 30 customers purchased during a weekend sale (R = romance novel, S = science fiction, N = nonfiction, C = children's fiction). Construct a frequency distribution for the data.

N	R	R	C	R	S
R	C	C	S	R	R
C	N	N	R	C	S
S	S	R	R	N	C
S	R	R	C	C	N

87. Fifty families reported their annual household income (in thousands of dollars). Construct a frequency distribution for the data using six classes.

41	18	104	36	29	62	53	65	80	99
23	55	32	44	67	21	89	31	57	70
15	92	76	38	56	23	17	150	34	87
95	76	21	33	59	88	102	34	51	73
16	95	41	72	18	23	76	59	42	95

88. Construct a stem leaf plot for the following data.

45	61	72	78	47	79
74	52	55	40	47	75
62	63	54	77	63	78
56	61	49	79	41	53
72	66	47	71	42	64

89. Construct a bar graph for the number of stray animals in a certain city.

<u>Animal</u>	<u>Number of strays</u>
Cats	723
Dogs	576
Rabbits	328
Lizards	491

90. The following frequency distribution shows for a certain high school the number of freshmen, sophomores, juniors, and seniors who smoke. Construct a bar graph for the data.

<u>Rank</u>	<u>Frequency</u>
Freshmen	14
Sophomores	20
Juniors	31
Seniors	35

91. The following frequency distribution shows for a certain high school the number of freshmen, sophomores, juniors, and seniors who smoke. Construct a pie chart for the data.

<u>Rank</u>	<u>Frequency</u>
Freshmen	14
Sophomores	20
Juniors	31
Seniors	35

92. A small company did a poll of how their employees commuted to work. Use the data to draw a pie chart.

<u>Method of commute</u>	<u>Number</u>
Car	15
Bus	11
Train	8
Bike	2
Walk	4

93. Construct a pie chart for the number of stray animals in a certain city.

<u>Animal</u>	<u>Number of strays</u>
Cats	723
Dogs	576
Rabbits	328
Lizards	491

94. The frequency distribution below was obtained by monitoring the number of vacation days per year taken by twenty-five employees. Construct a histogram for the data.

<u>Class limits</u>	<u>Frequency</u>
0-4	3
5-9	4
10-14	8
15-19	2
20-24	5
25-29	3

95. To obtain the frequency distribution below, twenty-three babies were monitored for how many times they cried during the night. Construct a histogram for the data.

<u>Class</u>	<u>Frequency</u>
0-2	4
3-5	6
6-8	9
9-11	3
12-14	1

96. Fifty ten-year-olds were monitored to determine the number of hours per week they spent watching television, surfing the net, and playing video games. The results were used to obtain the frequency distribution below. Construct a histogram for the data.

<u>Class</u>	<u>Frequency</u>
0-4	2
5-9	7
10-14	7
15-19	15
20-24	10
25-29	5
30-34	3
35-39	1

97. Find the mean.
18 20 2 20 14 7 16 5

98. Find the median.
22 23 18 35 44 38 27

99. Find the mode.
46 15 14 12 15 3 12 47

100. Find the midrange.
31 26 41 24 16 18 33 3

101. Find the range.
11 8 1 41 27 25 35 32

102. Find the variance and standard deviation.
43 48 27 48 12 2

103. For the 8 test scores shown, find the percentile rank of 62.
85 66 62 1 92 55 75 88

104. For the 8 test scores shown, which score corresponds to a percentile rank of 87.5?

49 21 34 56 23 31 8 63

105. Find Q_1 , Q_2 , and Q_3 for the ages of nine students.

18 20 21 19 17 36 22 19 24

106. Draw a scatter plot and describe the relationship.

x	10	8	7	12	14	5
y	20	19	17	25	28	9

107. Draw a scatter plot and describe the relationship.

x	7	1	3	5	6	2	4
y	10	11	4	3	5	6	3

108. Draw a scatter plot and describe the relationship.

x	3	6	7	5	1	4	2
y	10	1	2	10	5	6	3

109. Find the value for the correlation coefficient r .

x	2	7	3	4	5	1	6
y	6	1	5	3	6	12	2

110. Find the value for the correlation coefficient r .

x	21	30	25	24	29
y	40	32	39	30	42

111. Find the equation of the regression line and predict y when $x = 2.5$.

x	1	5	4	2	3	6
y	25	5	10	20	15	5

112. Find the equation of the regression line and predict y when $x = 10$.

x	2	4	3	5	1
y	11	19	17	22	8

113. For the following data

- (a) Draw a scatter plot.
- (b) Find the value for r .
- (c) Test the significance of r at the 5% level and at the 1% level.
- (d) If r is significant, find the regression line and draw the line on the scatter

plot.

- (e) Describe the nature of the relationship if one exists.
- (f) Predict y when $x = 20$.

x	4	1	3	2	5	7	6
y	14	6	9	9	17	20	16

114. For the following data

- (a) Draw a scatter plot.
- (b) Find the value for r .
- (c) Test the significance of r at the 5% level and at the 1% level.
- (d) If r is significant, find the regression line and draw the line on the scatter

plot.

- (e) Describe the nature of the relationship if one exists.
- (f) Predict y when $x = 41$.

x	10	8	15	14	20	17
y	114	108	77	87	75	94

Answer Key

1. Undefined

$$\frac{75}{49}$$

2. $\frac{49}{75}$

3. x-int: (6, 0); y-int: (0, 2)

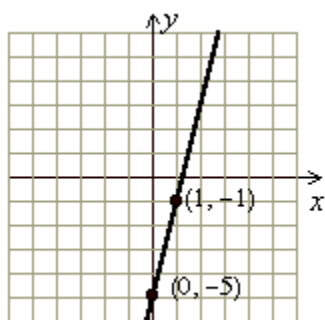
4. (-1, 0)

5. $y = \frac{7}{10}x + 10$

6. (i) $y = 4x - 5$

(ii) slope = 4, y-int = (0, -5)

(iii)



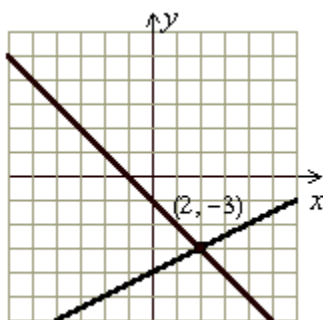
7. $\frac{1}{5}$

8. (0, -14)

9. \$93.50

10. 90,696 women

11. (2, -3)



12. (-1, -6)

13. $\left(\frac{34}{13}, -\frac{28}{13}\right)$

14. (-4, 7)

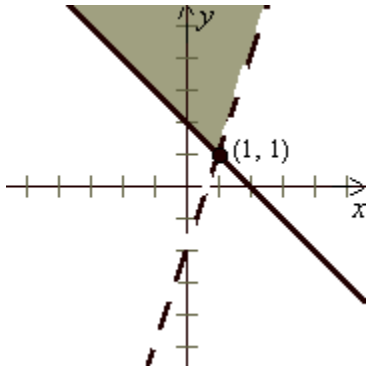
15. (-6, -2)

16. The system is dependent. The solution set is $\{(x, y) \mid x - y = 2\}$.

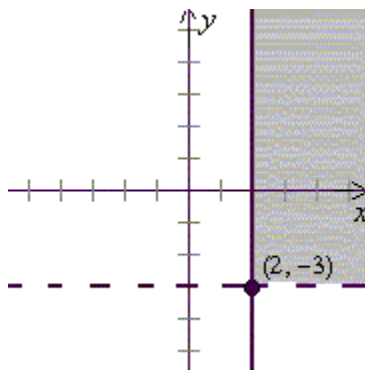
17. The system is inconsistent. The solution set is \emptyset .

18. \$17,000 at 8% and \$14,000 at 1%
 19. 12 adults and 10 children
 20. 40 and 36

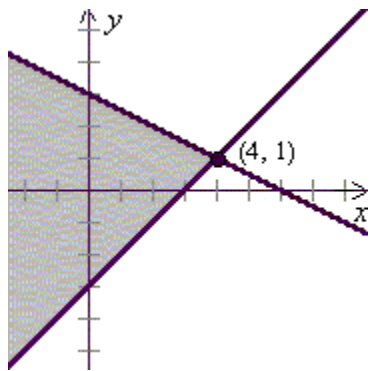
21.



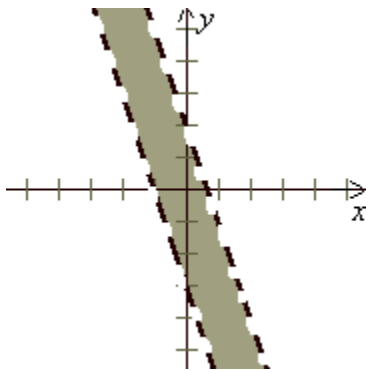
22.



23.



24.



(Each tickmark represents 1 unit.)

25. 65%
 26. 95.3%

27. 497.0%
28. 0.43
29. 0.794
30. 2.6
31. sales tax = \$10.50, total cost = \$160.45
32. \$104.99
33. \$654,000
34. 19.1%
35. 15.4%
36. \$192.50
37. 4 years
38. 7%
39. \$15,900
40. \$7,564.00
41. \$4,188.83
42. 4.5%
43. \$753.53
44. \$5,631.96
45. \$7,099.40
46. \$980.73
47. \$5,409.42
48. \$13,536.32
49. \$23,035.57
50. \$1,582.00
51. 10%
52. \$239.82
53. \$1.79
54. Finance charge = \$149.44; new balance = \$1,711.94
55. Finance charge = \$32.33; new balance = \$1,348.18
56. Average daily balance = \$155.52; finance charge = \$27.99; new balance = \$287.51
57. Average daily balance = \$229.02; finance charge = \$41.22; new balance = \$318.34
58. (i) Down payment = \$78,625.00
(ii) Amount of mortgage = \$235,875.00
(iii) Monthly payment = \$2,054.47
(iv) Total interest paid = \$133,929.60
59. Monthly payment = \$2,273.09; total interest paid = \$148,181.20
60. (i) Down payment = \$70,000.00
(ii) Amount of mortgage = \$280,000.00
(iii) Monthly payment = \$1,769.60
(iv) Total interest paid = \$357,056.00
61. 362,880
62. 1,440
63. 332,640
64. 504

65. 2
 66. 24 ways
 67. 1000
 68. 203,840
 69. $\frac{1}{6}$
 70. $\frac{1}{6}$
 71. $\frac{1}{2}$
 72. $\frac{13}{16}$
 73. $\frac{1}{8}$
 74. $\frac{1}{2}$
 75. $\frac{2}{13}$
 76. $\frac{7}{36}$
 77. $\frac{1}{6}$
 78. $\frac{11}{57}$
 79. $\frac{28}{95}$
 80. 1:11
 81. 31:5
 82. In favor: 1:5; against: 5:1

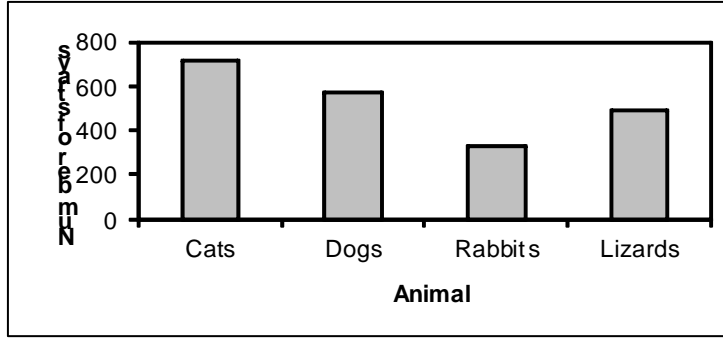
- $\frac{3}{7}$
 83. $\frac{3}{7}$
 84. $-\$83.67$
 $\frac{9}{11}$
 85. $\frac{9}{11}$

86. Type	Tally	Frequency
R	### ###	11
S	###	6
N	###	5
C	###	8

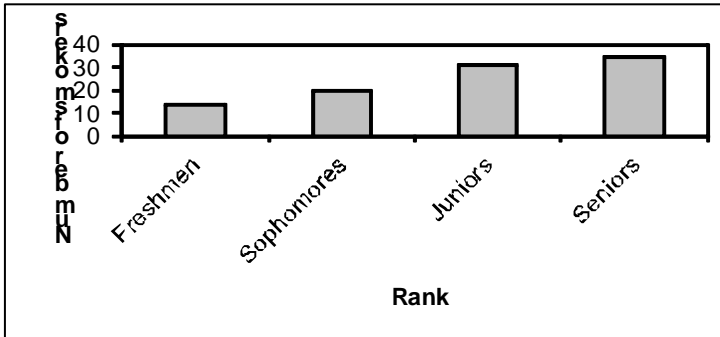
87. Class	Tally	Frequency
15-37	### ### ###	17
38-60	### ###	12
61-83	### ###	10
84-106	### ###	10
107-129		0
130-152		1

88. Stems	Leaves
4	0 1 2 5 7 7 7 9
5	2 3 4 5 6
6	1 1 2 3 3 4 6
7	1 2 2 4 5 7 8 8 9 9

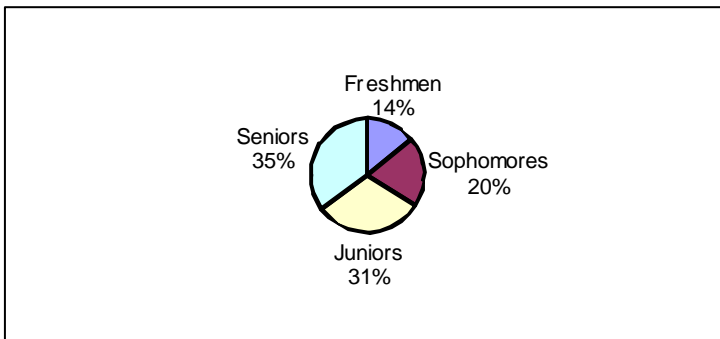
89.



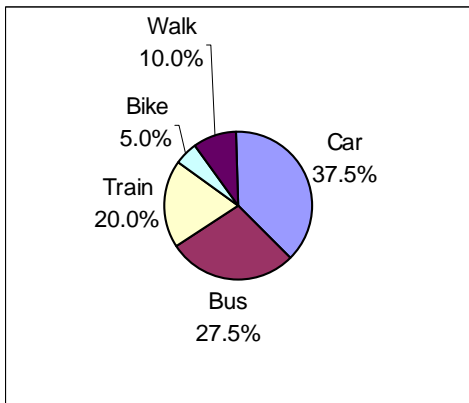
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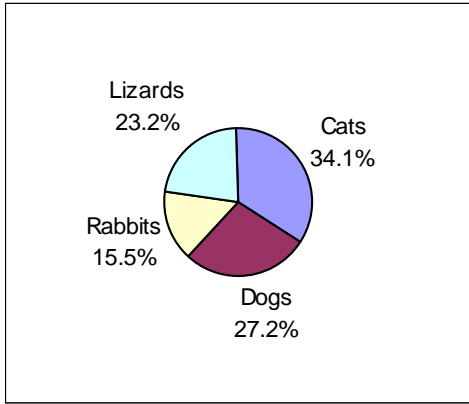
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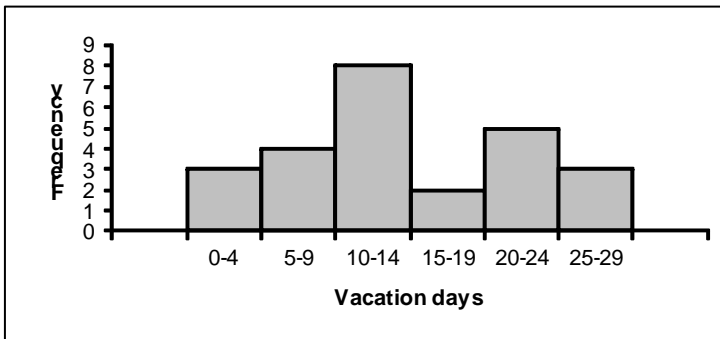
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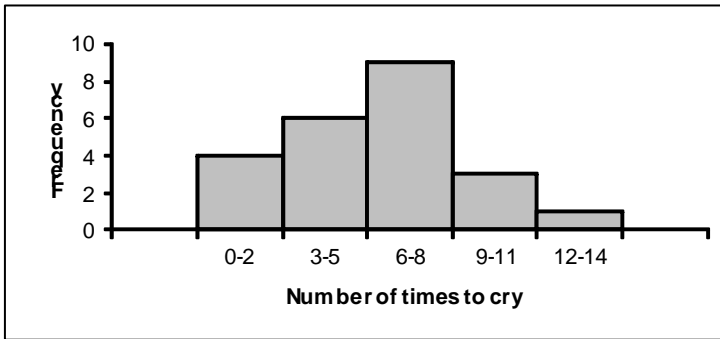
93.



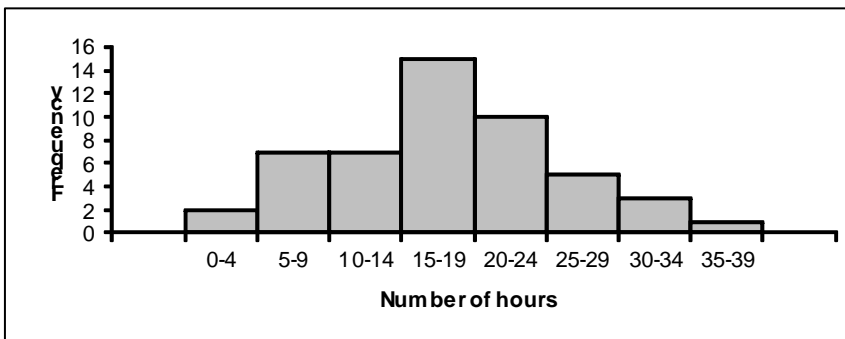
94.



95.



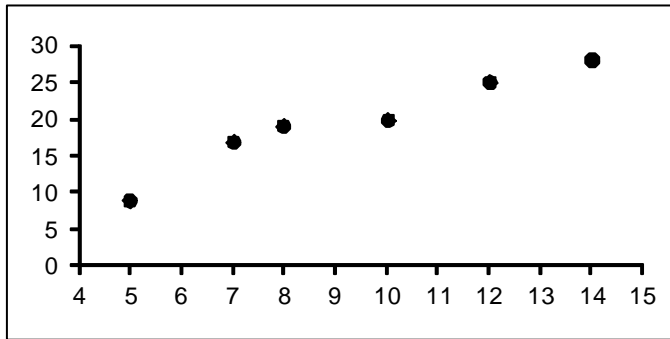
96.



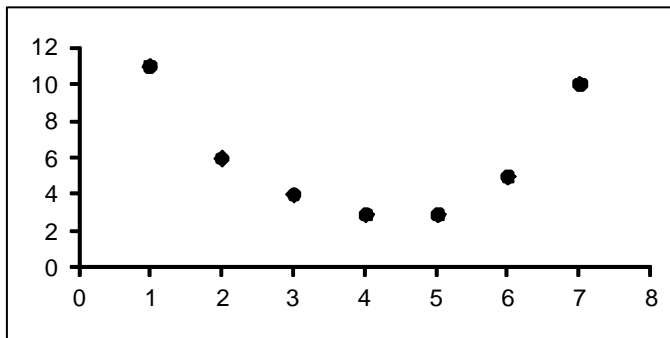
97. 12.75

98. 27

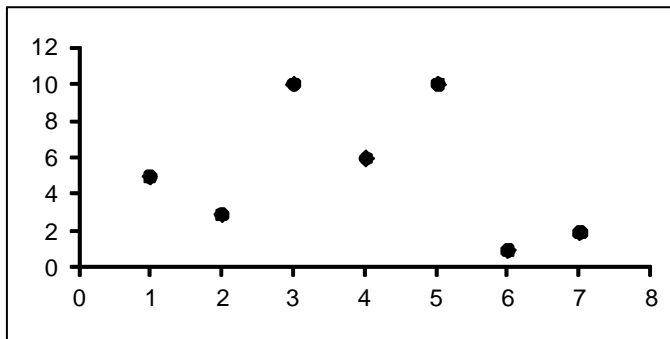
99. Two modes: 15 and 12
 100. 22
 101. 40
 102. variance = 386.8, standard deviation = 19.67
 103. 25th percentile
 104. 63
 105. $Q_1 = 18.5$, $Q_2 = 20$, $Q_3 = 23$
 106. A positive linear relationship exists.



107. A nonlinear relationship exists.

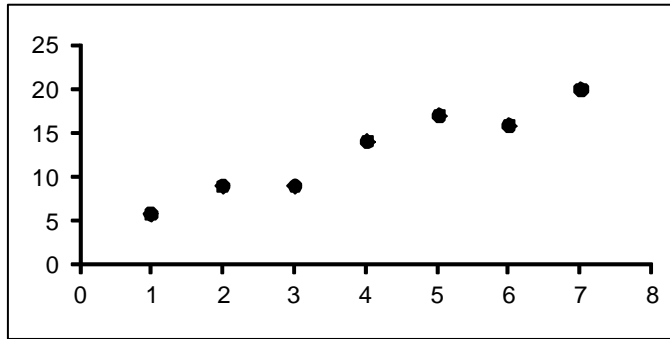


108. No relationship exists.



109. -0.845
 110. 0.567
 111. $y = 28.3 - 4.3x$. When $x = 2.5$, y is predicted to be about 17.6.
 112. $y = 4.6x + 5$
 When $x = 10$, y is predicted to be about 51.

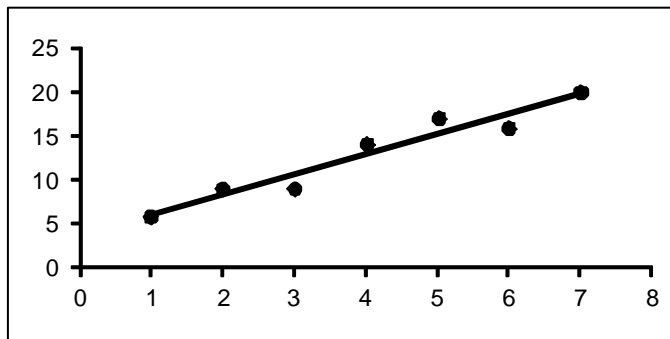
113. (a)



(b) $r = 0.968$

(c) r is significant at 5% and at 1%

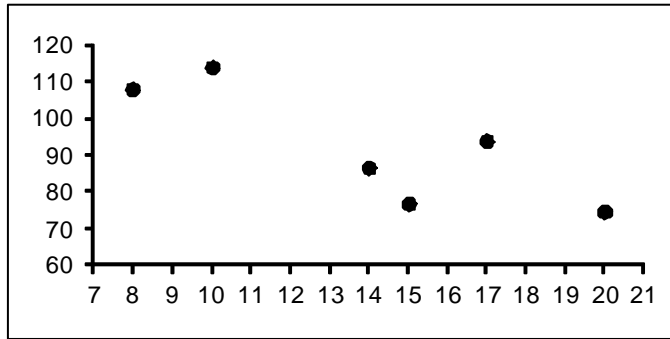
(d) $y = 3.9 + 2.3x$



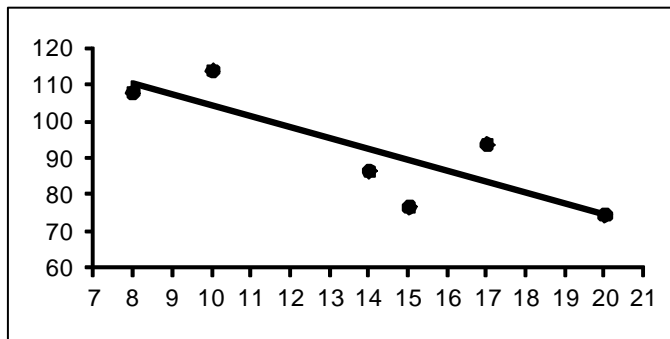
(e) A positive linear relationship exists.

(f) When $x = 20$, y is predicted to be about 49.9.

114. (a)



- (b) $r = -0.832$
- (c) r is significant at 5%, but not at 1%
- (d) $y = 134.6 - 3.0x$



- (e) A negative linear relationship exists.
- (f) When $x = 41$, y is predicted to be about 11.6.