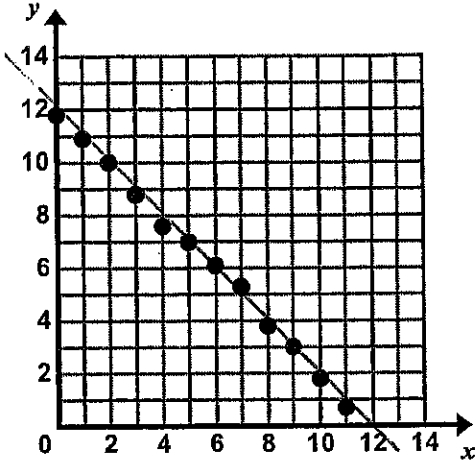


9.2 Assignment: Lines of Fit

Name Key Date \_\_\_\_\_ Period \_\_\_\_\_

Directions: In #1 and 2, observe the data sets and take note of any associations you see, draw a line of best fit, write a prediction function, and use your function to predict the value of  $y$  when  $x = 12$  and when  $x = 100$ .

1.



a. Observations:

negative, linear

b. Using a ruler, draw a line of best fit through the data points that captures the general trend of the data.

c. Estimate the slope and  $y$ -intercept of your line.

$m \approx -1$     $b \approx 12$

d. Write a prediction function for the data set.

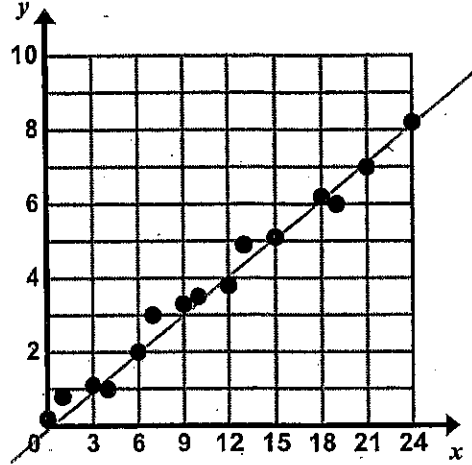
$y = -1x + 12$

e. Use your prediction function to find the value of  $y$  when  $x = 12$  and when  $x = 100$ .

12:  $y = 0$

100:  $y = -88$

2.



a. Observations:

pos, linear

b. Using a ruler, draw a line of best fit through the data points that captures the general trend of the data.

c. Estimate the slope and  $y$ -intercept of your line.

$m \approx \frac{1}{3}$     $b \approx 0$

d. Write a prediction function for the data set.

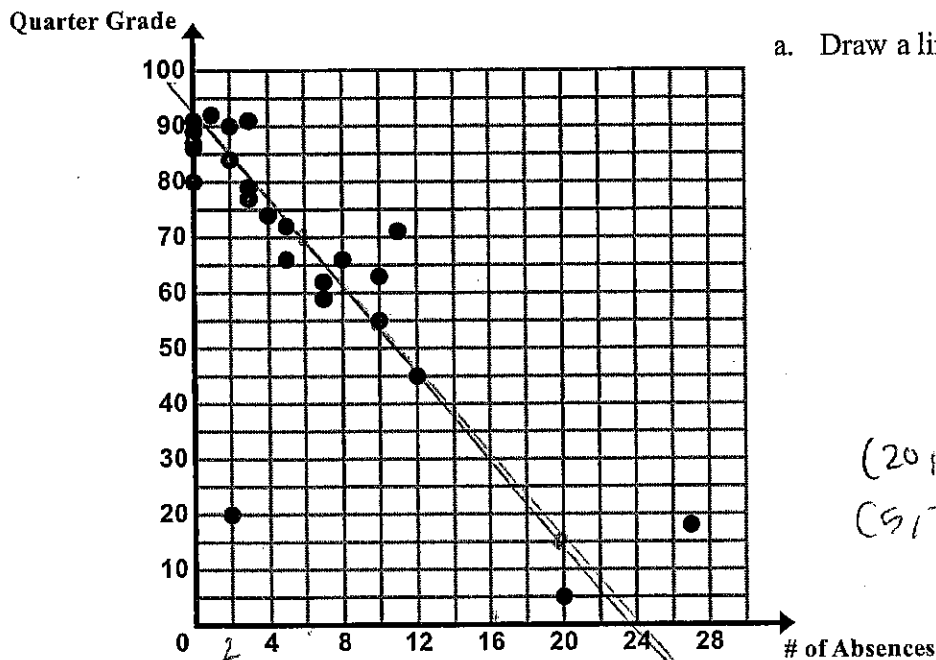
$y = \frac{1}{3}x + 0$

e. Use your prediction function to find the value of  $y$  when  $x = 12$  and when  $x = 100$ .

12:  $y = 4$

100:  $y = 33.\bar{3}$

3 The following scatter plot shows the final quarter grade in Ms. Ganchero's math class for students vs. the number of times they are absent.



a. Draw a line of best fit on the scatter plot.

$$\begin{matrix} (20, 19) \\ (9, 70) \end{matrix} \quad \frac{70-19}{9-20} = \frac{51}{-11} = -\frac{11}{3}$$

b. Write a prediction function for the line of best fit you drew.

$$y = -\frac{11}{3}x + 90$$

c. Explain the meaning of the slope and y-intercept in the context.

y-int: 0 absences  $\Rightarrow$  90 on quarter grade  
 slope: your grade drops 11 for every 3 absences

d. Use your prediction function to predict the final grade of a student who is absent 16 times.

$$y = -\frac{11}{3}(16) + 90 = 31.3 \text{ Quarter Grade}$$

e. Use your prediction function to predict how many times a student is absent who receives a final grade of 5 in the class.

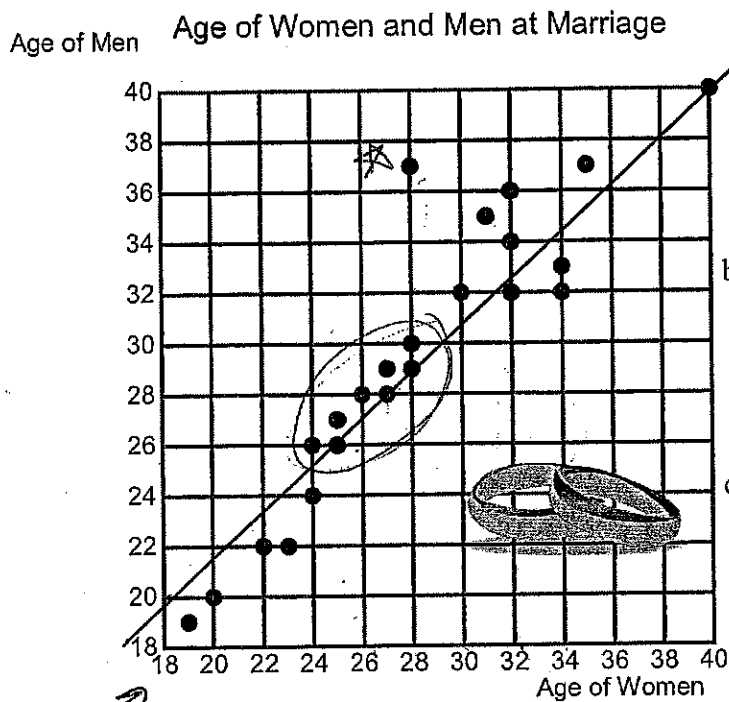
$$5 = -\frac{11}{3}x + 90$$

$$-90 \quad -90$$

$$\left(\frac{-3}{11}\right) \cdot -85 = -\frac{11}{3}x \cdot \left(\frac{3}{11}\right)$$

$$x \approx 23.2 \text{ so } 23 \text{ times}$$

4 Bethany is interested in the relationship between the age of when men and women get married. She surveys 24 couples and asks them the age in which they got married for the first time. A scatter plot of her data is below.



a. Describe the association between the two variables. Circle any clusters in the data. Put a star by any points that appear to be outliers.

POS, linear  
 cluster 24-28 women  
 26-30 men

b. Provide an explanation for any clusters of data or outliers.

mid-late 20s is a popular age  
 outlier - older man, younger wife

c. Draw a line of best fit on the scatter plot.

not 0

d. Write a prediction function for the line of best fit you drew.

$(27, 28)$   
 $(28, 29)$

$y = x$

e. Use your prediction function to predict the age of a man when he gets married if the woman that he marries is 38.

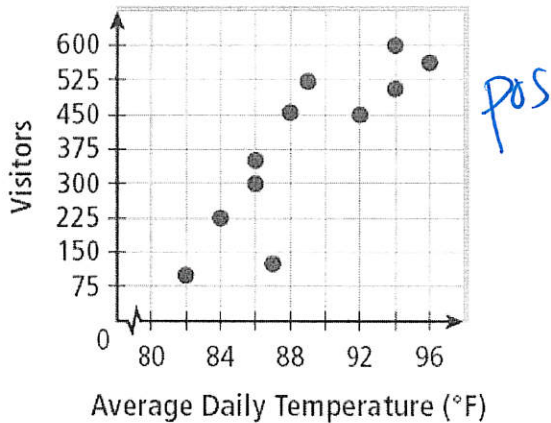
$38 = 38$

38 yrs old

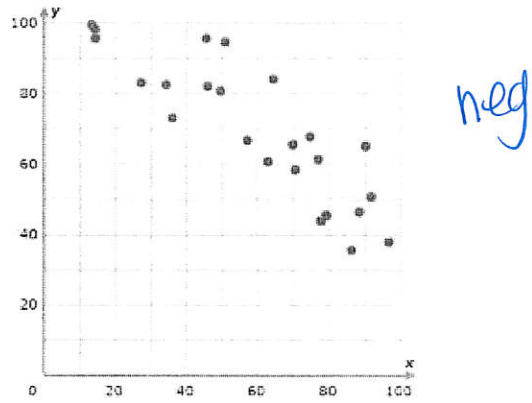
Describe the correlation of each scatter plot and scenario.

5.

Beach Visitors

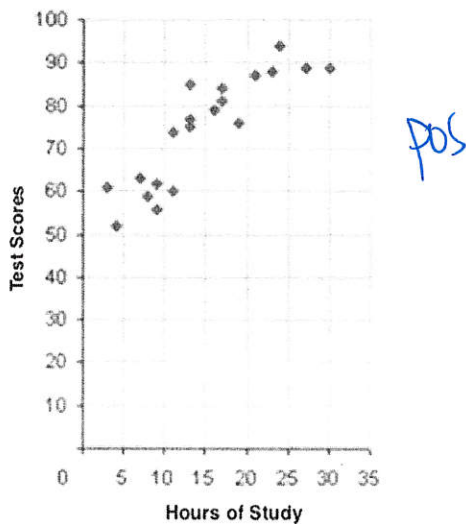


6.

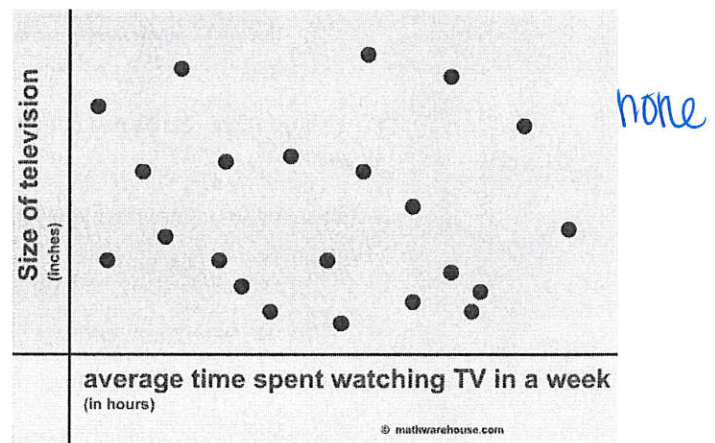


7.

Hours of Study vs. Test Scores



8.



9. Temperature and number of popsicles sold.

pos

10. Number of books read and speeding tickets received.

none

11. Hours spent watching TV and test scores.

neg

12. Number of times you complain each day and number of friends you have.

neg (none if your friends REALLY love you).

13. Hours spent working and money earned.

pos

14. Number of hours spent practicing free throws and free throws made in a game.

pos

15. Hours spent on phone and number of shoes owned.

none