

Bell Ringer

Section 6.3

1. What are the minimum, first quartile, median, third quartile, and maximum of the data set below? Make a box-and-whisker plot for the data.

58 55 65 52 50 47 59 62 50

2. The table shows the number of times 8 students brought lunch to school over the past month. What box-and-whisker plot represents the data?

Student	Number of Lunches
Nancy	15
Carlos	7
Orlando	12
Russell	16
Betty	20
Misty	9
Carmen	18
Paula	13

3. Of 20 members of a club, 13 attended more than 70% of the meetings. What is the percentile rank of a 70% attendance rate?

Review.

4. Write the slope-intercept equation for the line with the given slope through the given point.
 $m = 3, (-1, 2)$

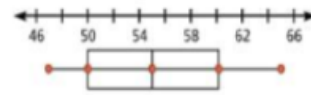
Solutions

Section 6.3

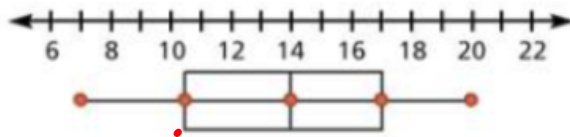
1. What are the minimum, first quartile, median, third quartile, and maximum of the data set below? Make a box-and-whisker plot for the data.

58 55 65 52 50 47 59 62 50

minimum: 47; first quartile: 50; median: 55; third quartile: 60.5; maximum: 65



2. The table shows the number of times 8 students brought lunch to school over the past month. What box-and-whisker plot represents the data?



Student	Number of Lunches
Nancy	15
Carlos	7
Orlando	12
Russell	16
Betty	20
Misty	9
Carmen	18
Paula	13

3. Of 20 members of a club, 13 attended more than 70% of the meetings. What is the percentile rank of a 70% attendance rate? **35th percentile**

Review.

$$\frac{7}{20} = 35\%$$

4. Write the slope-intercept equation for the line with the given slope through the given point. $m = 3, (-1, 2)$

$$y = 3x + 5$$

due tomorrow 6.3 #s 8-16, 19-22

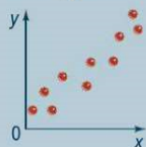
Scatter Plots and Trendlines!

In the Solve It, the number of albums downloaded per year and the number of CDs sold per year are related.

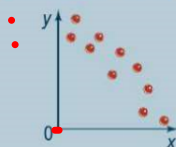
Essential Understanding You can determine whether two sets of numerical data are related by graphing them as ordered pairs. If the two sets of data are related, you may be able to use a line to estimate or predict values.

A **scatter plot** is a graph that relates two different sets of data by displaying them as ordered pairs. Most scatter plots are in the first quadrant of the coordinate plane because the data are usually positive numbers.

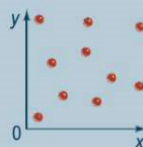
You can use scatter plots to find trends in data. The scatter plots below show the three types of relationships that two sets of data may have.



When y tends to increase as x increases, the two sets of data have a **positive correlation**.



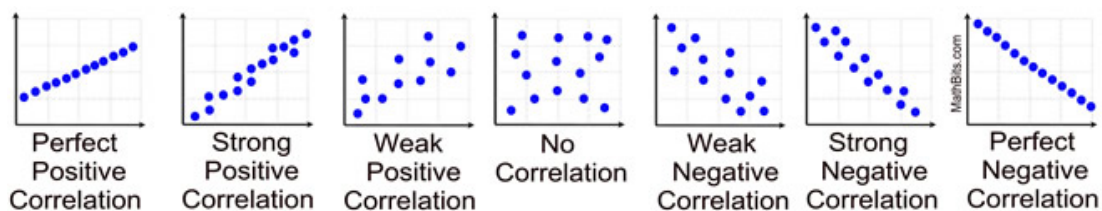
When y tends to decrease as x increases, the two sets of data have a **negative correlation**.



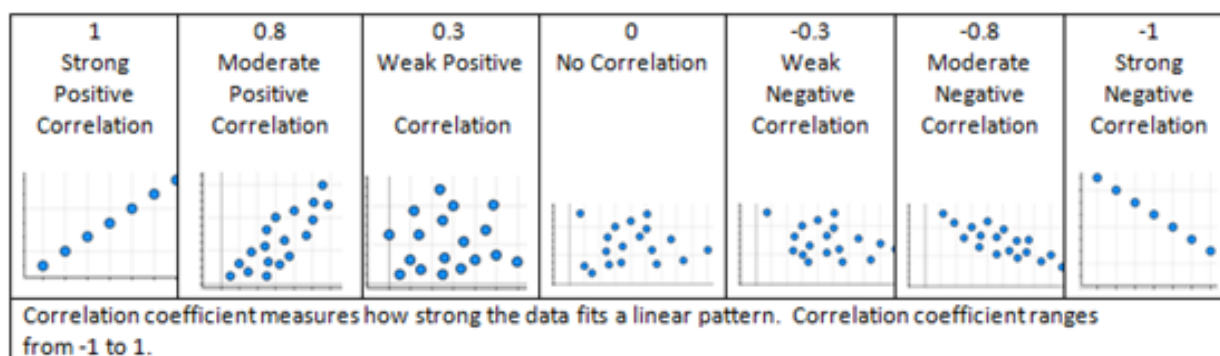
When x and y are not related, the two sets of data have **no correlation**.

p373

Correlation

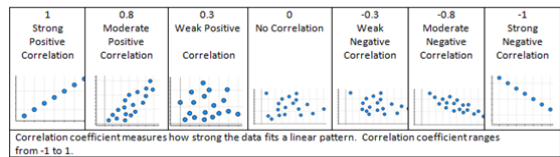
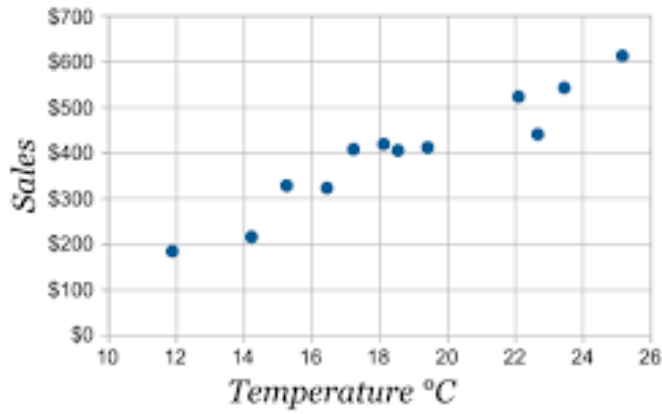


Correlation Coefficient, r

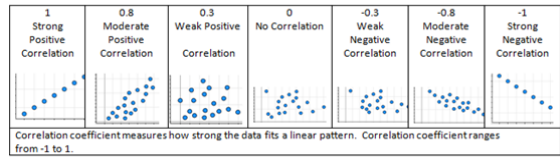


What type of correlation is shown?
 Estimate a correlation coefficient

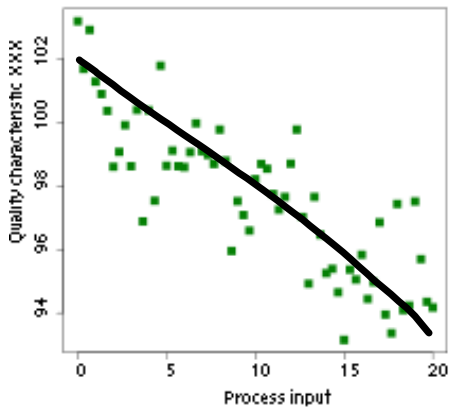
$r \approx .85$



What type of correlation is shown?
Estimate a correlation coefficient



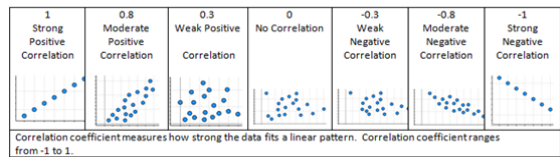
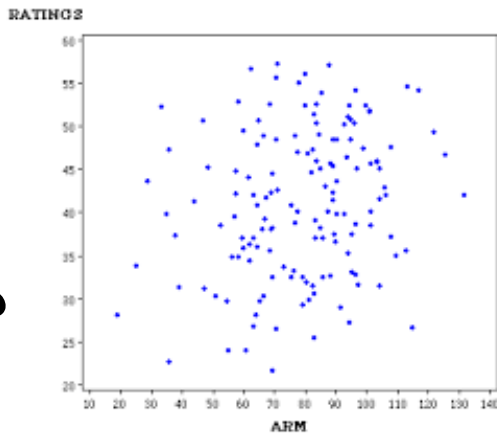
Scatterplot for quality characteristic XXX



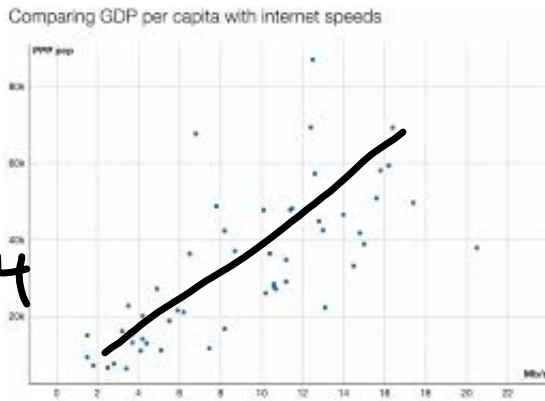
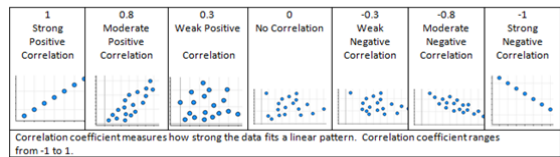
$r \approx .6$

What type of correlation is shown?
 Estimate a correlation coefficient

no
 $r = 0$



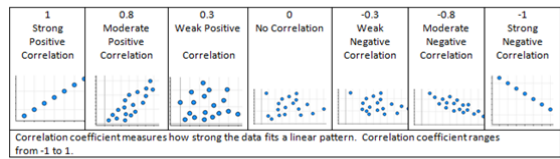
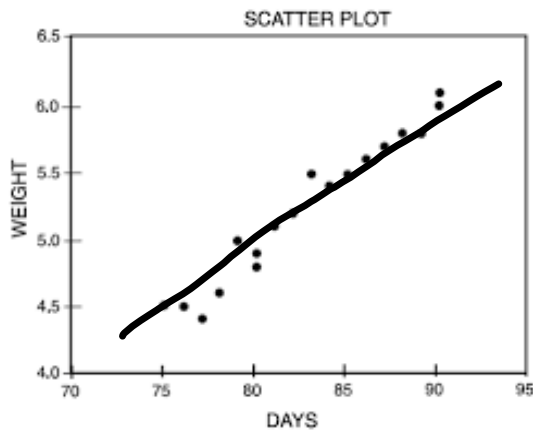
What type of correlation is shown?
 Estimate a correlation coefficient



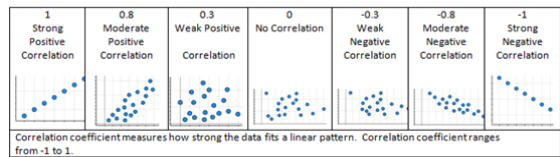
$r \approx .4$

What type of correlation is shown?
 Estimate a correlation coefficient

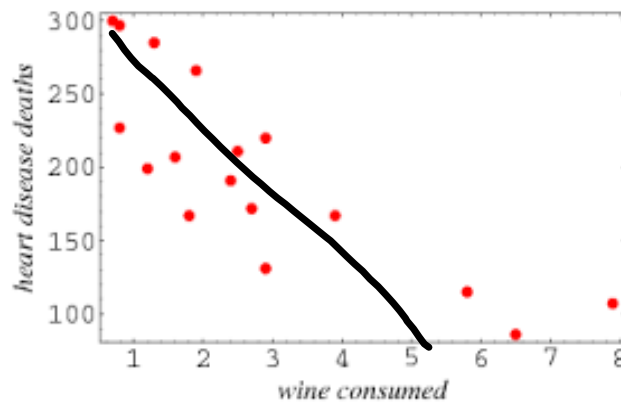
$r \approx .9$



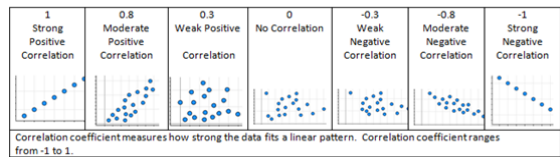
What type of correlation is shown?
 Estimate a correlation coefficient



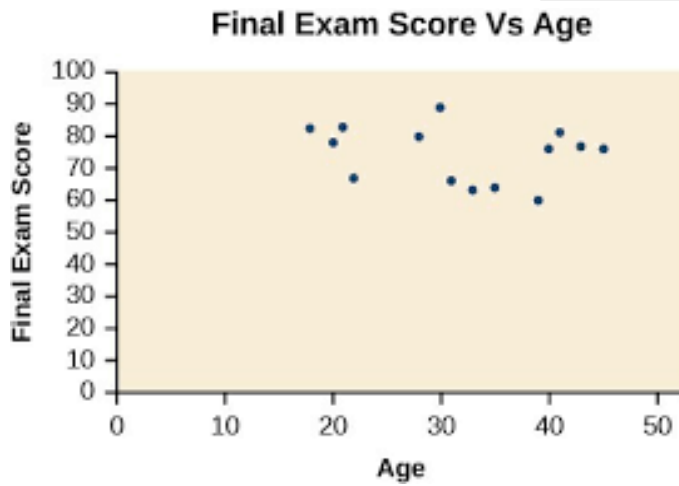
Weak neg
 $r = .2$



What type of correlation is shown?
 Estimate a correlation coefficient



$r = 0$



Describe the correlation for the scenario

Temperature and number
of hot chocolates sold



Describe the correlation for the scenario

Hours spent babysitting
and patience

neg

Describe the correlation for the scenario

Number of minutes spent
reading and number of
pages read

pos

Describe the correlation for the scenario

Number of pairs of shoes
owned and time spent
doing homework

none

Describe the correlation for the scenario

Time spent watching tv
and time spent playing
outside

neg

Vocab... (pg 375)

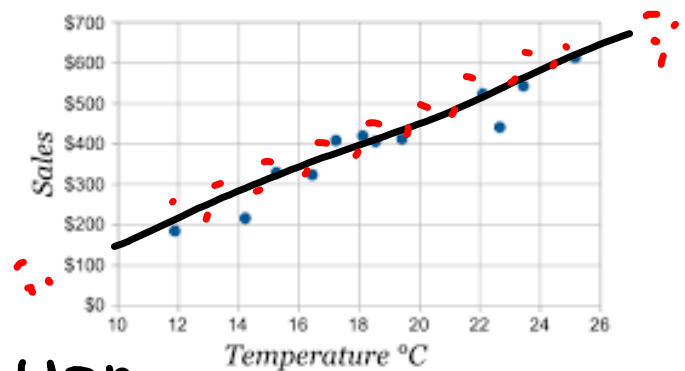
Trendline - line on scatter plot drawn near pts shows corr.

Interpolation -

estimate btwn 2 known values

Extrapolation -

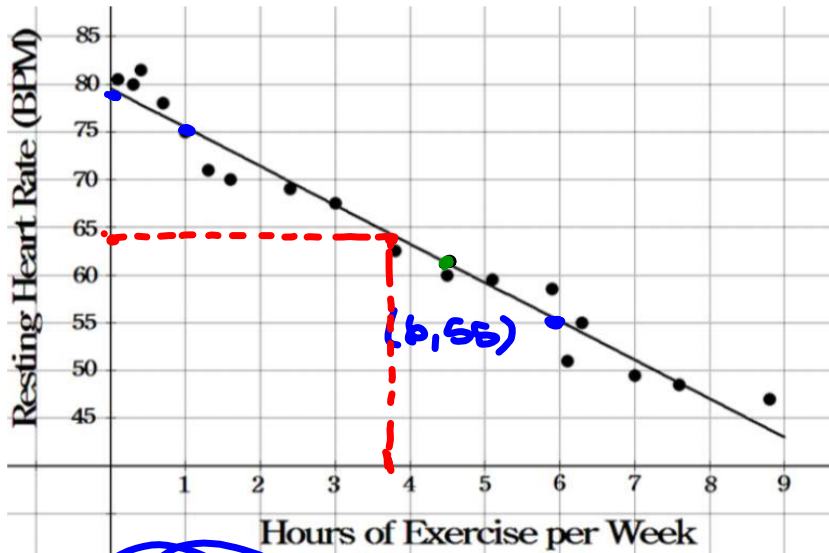
predict value outside known values



$$y = mx + b$$

Writing the equation of a trendline

Name _____ Scatter Plots and Trendlines Notes



12

Points on line (6, 55) and (1, 75)

Slope, m: $\frac{75 - 55}{1 - 6} = \frac{20}{-5} = -4$

Y-intercept, b: 79

Equation: $y = -4x + 79$

What will your resting heart rate be if you exercise 4.5 hrs/wk?

$y = -4(4.5) + 79 = 61$

What will your resting heart rate be if you exercise 12 hrs/wk?

$y = -4(12) + 79 = 31$

If your resting heart rate is 64, how many hours do you exercise a week?

$64 = -4x + 79$
 $-15 = -4x$
 $\frac{-15}{-4} = \frac{-4x}{-4}$
 $x = 3.75$

If your resting heart rate is 42, how many hours do you exercise a week?

$42 = -4x + 79$
 -79
 $-37 = -4x$
 $\frac{-37}{-4} = \frac{-4x}{-4}$
 $x = 9.25$

1. The scatter plot shows the weights y of an infant from birth through x months.

- a. At what age did the infant weigh 11 pounds?
- b. What was the infant's weight at birth?
- c. Draw a line that you think best approximates the points.

3 months
7 lbs

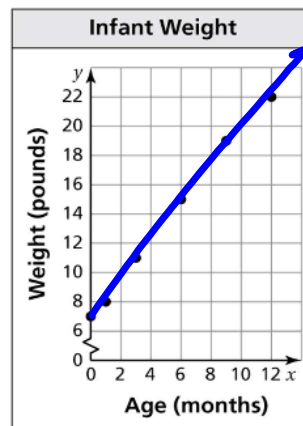
- d. Write an equation for your line.
- e. Use the equation to predict the weight of the infant at 18 months.

$y = 1.25x + 7$
 $y = x + 7$
 $y = \frac{4}{3}x + 7$

31 lbs, 29.5, 25

- f. Does the data show a *positive*, a *negative*, or *no* relationship?

pos



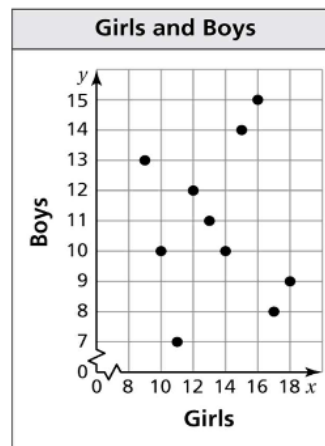
2. The scatter plot shows the relationship between the numbers of girls and the numbers of boys in 10 different classrooms.

- a. What type of relationship, if any, does the data show?
- b. Is it possible to find the line of fit for the data? Explain.
- c. Is it reasonable to use this scatter plot to predict the number of boys in the classroom based on the number of girls? Explain.

none

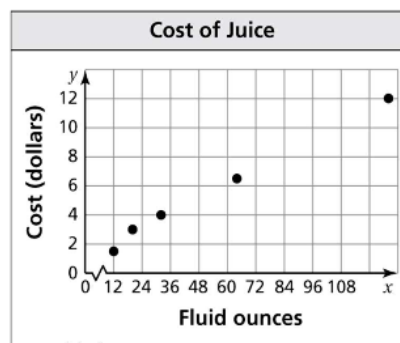
no

no



3. The scatter plot shows the costs y of bottles containing x fluid ounces of juice.

- a. How much does a 12 oz of juice cost?
- b. How many fluid ounces of juice can you purchase for \$12?
- c. Draw a line that you think best approximates the points.
- d. Write the equation for the trendline.



- e. Use the equation to predict the cost of a 256-fluid ounce container of juice.

- f. Does the data show a *positive*, a *negative*, or *no* relationship?

due Thursday 6.4A Trendlines

Name _____ 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:

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.
 $m \approx$ _____ $b \approx$ _____

d. Write a prediction function for the data set.

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

2.

a. Observations:

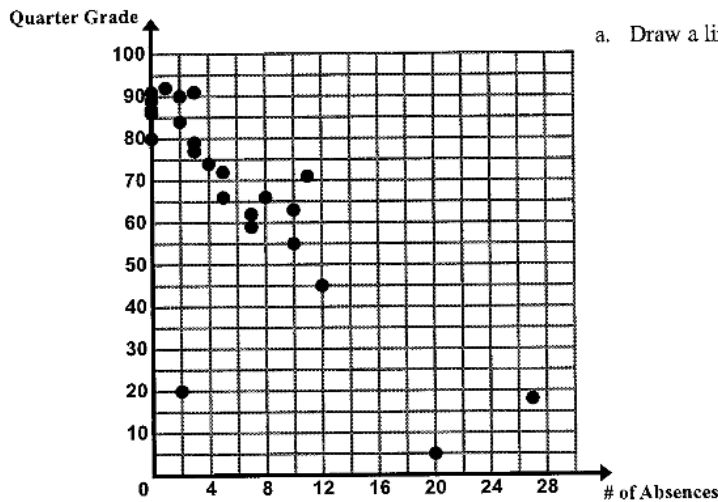
b. Using a ruler, draw a line of best fit through the data points that captures the general trend of the data.

c. Estimate the slope and y -intercept of your line.
 $m \approx$ _____ $b \approx$ _____

d. Write a prediction function for the data set.

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

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.

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

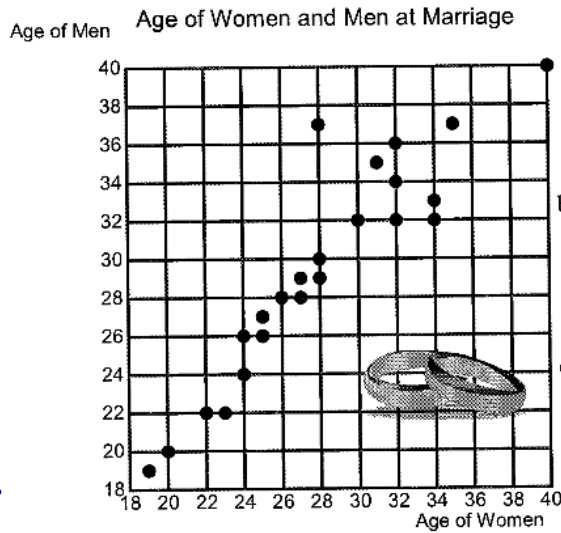
c. Explain the meaning of the slope and y -intercept in the context.

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

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

4
Bonus

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.

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

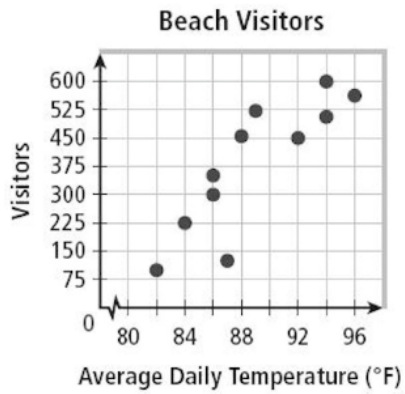
c. Draw a line of best fit on the scatter plot.

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

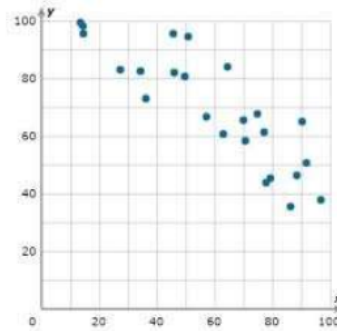
e. Use your prediction function to predict the age of a man when he gets married if the woman that he marries is 38.

Describe the correlation of each scatter plot and scenario.

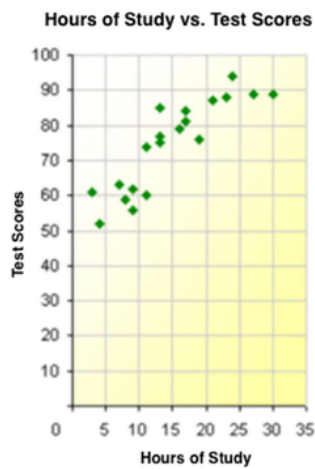
5.



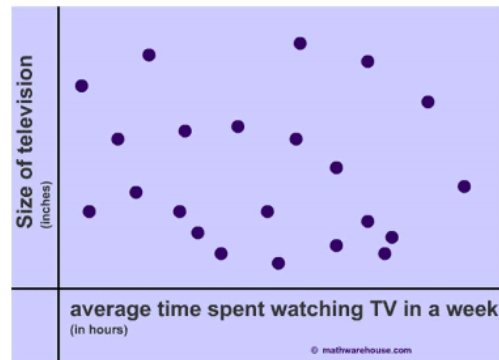
6.



7.



8.



9. Temperature and number of popsicles sold.

10. Number of books read and speeding tickets received.

11. Hours spent watching TV and test scores.

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

13. Hours spent working and money earned.

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

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

