

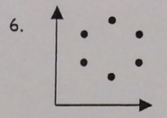
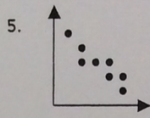
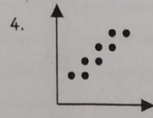
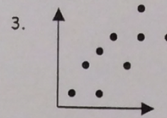
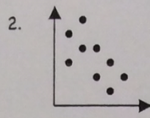
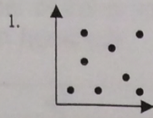
3) Merit Pay Scale: Weighted Average

At General Hospital, nurses are given performance evaluations to determine eligibility for merit pay raises. The supervisor rates the nurses on a scale of 1 to 10 (10 being the highest rating) for several activities: promptness, record keeping, appearance, and bedside manner with patients. Then an average is determined by giving a weight of 2 for promptness, 3 for record keeping, 1 for appearance, and 4 for bedside manner with patients.

- A) What is the average rating for a nurse with ratings of 9 for promptness, 7 for record keeping, 6 for appearance, and 10 for bedside manner?
- B) If her record keeping score and her appearance score were both increased to 8, what would her new average rating be?

Practice with Scatter Plots

Classify the scatter plots as having a positive, negative, or no correlation.



7. A history teacher asked her students how many hours of sleep they had the night before a test. The data below shows the number of hours the student slept and their score on the exam. Plot the data on a scatter plot.

| | | | | | | | | | | |
|-------------|----|----|----|----|----|----|----|----|----|----|
| Hours Slept | 8 | 7 | 7 | 8 | 6 | 5 | 7 | 4 | 9 | 7 |
| Test Score | 83 | 86 | 74 | 88 | 76 | 63 | 90 | 60 | 89 | 81 |

*Describe
the
Correlation*

8. Assume that during a three-hour period spent outside, a person recorded the temperature and their water consumption. The experiment was conducted on 7 randomly selected days during the summer. The data is shown in the table below.

| Day | Temp- erature (F) | Water Consumption (oz) |
|-----|-------------------------|------------------------------|
| 1 | 99 | 48 |
| 2 | 85 | 27 |
| 3 | 97 | 48 |
| 4 | 75 | 16 |
| 5 | 92 | 32 |
| 6 | 85 | 25 |
| 7 | 83 | 20 |

*Describe The
Correlation*

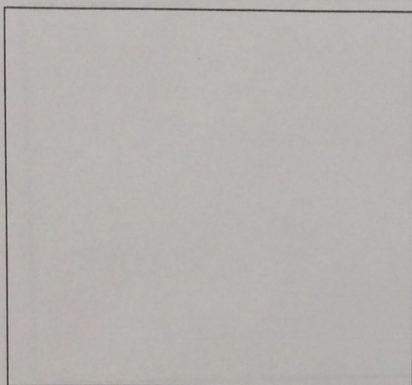
Identify the data sets as having a positive, a negative, or no correlation.

- The number of hours a person has driven and the number of miles driven
- The number of siblings a student has and the grade they have in math class
- The age of a car and the value of the car
- The number of weeks a CD has been out and the total sales
- The number of years a person went to school and their income
- The number of songs downloaded on your i-pod and the amount of memory available
- The amount of time spent on the computer instant messaging your friends and the number of computers in your house
- The age of a house and the number of people living in the house

The following table contains the advertising cost for a particular item and the number of items sold.

| Advertising Cost In hundreds of dollars | Number of items sold in hundreds |
|---|-------------------------------------|
| 1 | 47 |
| 2 | 52 |
| 3 | 55 |
| 4 | 68 |
| 5 | 73 |
| 9 | 83 |
| 10 | 86 |

(a) Use a graphing utility to create a scatterplot.



(b) Use the regression feature to find a linear model that fits the data.

$a =$

$b =$

$r =$

(c) How well does the equation best fit the data?

Strong
Correlation

moderate
Correlation

Weak

Correlation

No

Correlation

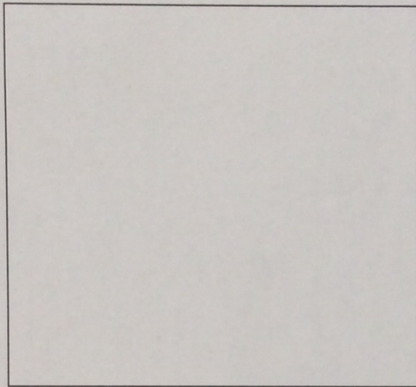
D. Use your equation to predict the demand when 1500 dollars is spent on advertising.

E. How much should be spent on advertising to increase the demand to 12,000 items?

This data set gives average weights for humans as a function of their height in the population of American women of age 30–39:

| | | | | | | | | | | | | | | | | |
|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|
| HT | 1.47 | 1.50 | 1.52 | 1.55 | 1.57 | 1.60 | 1.63 | 1.65 | 1.68 | 1.70 | 1.73 | 1.75 | 1.78 | 1.80 | 1.83 | Height (m) |
| WT | 52.21 | 53.12 | 54.48 | 55.84 | 57.20 | 58.57 | 59.93 | 61.29 | 63.11 | 64.47 | 66.28 | 68.10 | 69.92 | 72.19 | 74.46 | Mass (kg) |

(a) Use a graphing utility to create a scatterplot.



(b) Use the regression feature to find a linear model that fits the data.

a =

b =

r =

(c) How well does the equation bests fit the data?

Strong
Correlation

Moderate
Correlation

Weak

Correlation

No

Correlation

(d) Use the linear model to estimate the mass of a woman who is 1.66 m tall.
