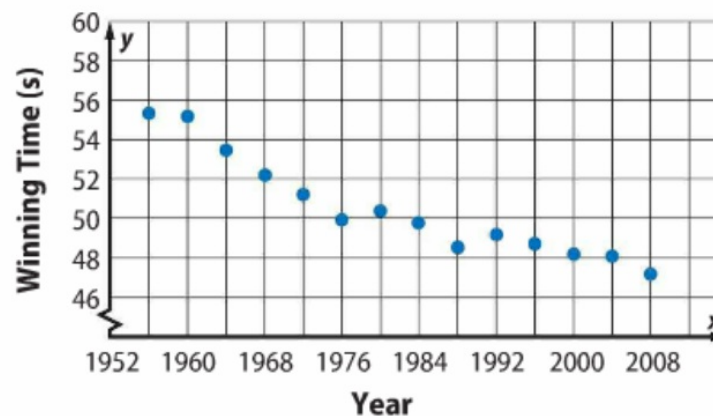


Got It? Do this problem to find out.

d. **Sample answer:**
The scatter plot shows a negative linear association. There are no clusters or outliers. The winning time in 2016 will be about 46.5 seconds.

Show your work.

d. Interpret the scatter plot shown for the men's Olympic 100-meter freestyle swim winning times. If an association exists, make a conjecture about the winning time in the 2016 Olympics.



Guided Practice



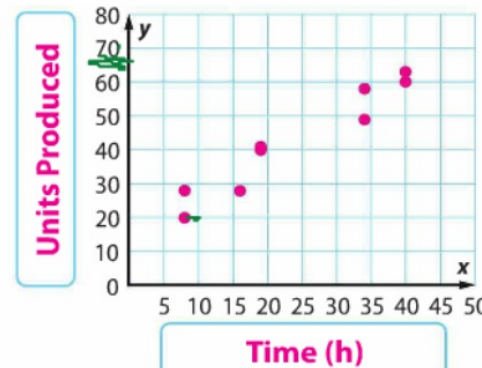
1. The table shows the number of units produced in a certain number of hours at a manufacturing plant. (Examples 1–3)

Time (h)	8	19	16	40	34	8	40	19	34
Units Produced	20	41	28	60	49	28	63	40	58

- a. Construct a scatter plot of the data.
- b. Interpret the scatter plot of the data.

Sample answer: The scatter plot shows a positive linear association. There are no clusters or outliers.

- c. Make a conjecture about the number of units produced in 50 hours. **about 70 units**



2. **e Building on the Essential Question** What are the inferences that can be drawn from sets of data points having a positive association and a negative association?

Sample answer: Sets of data points with positive associations indicate that the values of the two variables are increasing at the same time. A negative association indicates that as the value of the independent variable increases, the value of the dependent variable decreases.

Rate Yourself!

How confident are you about creating and interpreting scatter plots? Check the box that applies.



For more help, go online to access a Personal Tutor.



FOLDABLES Time to update your Foldable!

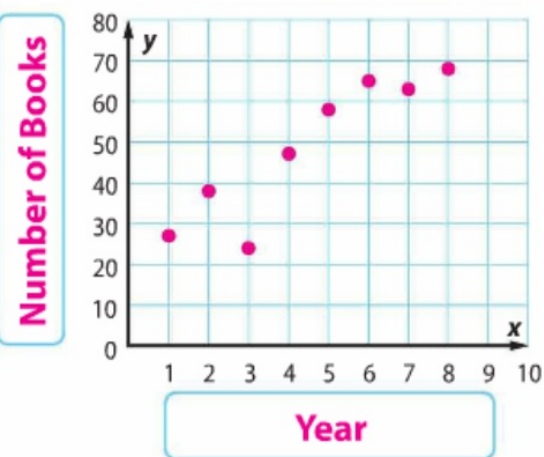
Independent Practice

Go online for Step-by-Step Solutions

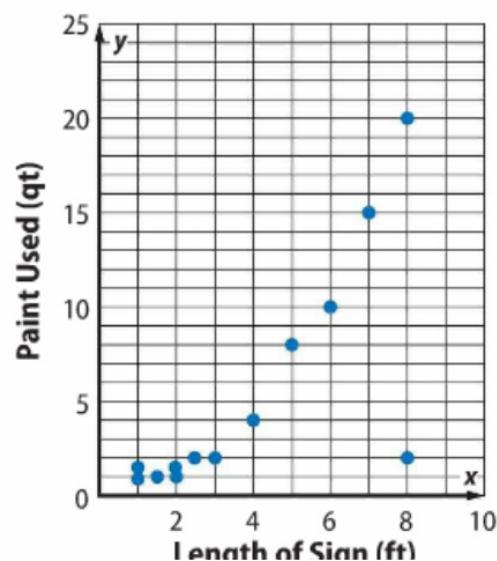


- 1 Construct a scatter plot of the number of books donated over time. (Example 1)

Year	1	2	3	4	5	6	7	8
Number of Books	27	38	24	47	58	65	63	68



2. Interpret the scatter plot of the data for the amount of paint used to paint signs of various lengths based on the shape of the distribution. (Example 2) **The scatter plot shows a positive association. The data appear to lie in the shape of a curve so the association is nonlinear. There is a cluster of data. Signs that were 1 to 3 feet in length used 1 or 2 quarts of paint. There is one outlier, an 8 foot sign only used 2 quarts of paint.**



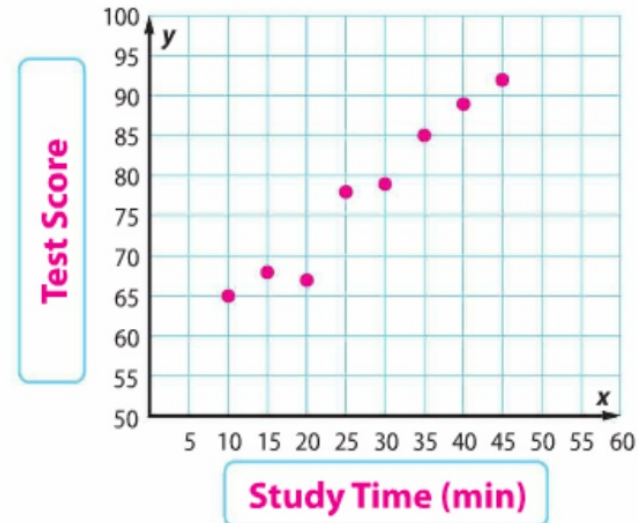
3. The table shows the amount of time different students studied for a test and their test scores. (Example 3)

Time (min)	10	15	20	25	30	35	40	45
Test Score	65	68	67	78	79	85	89	92

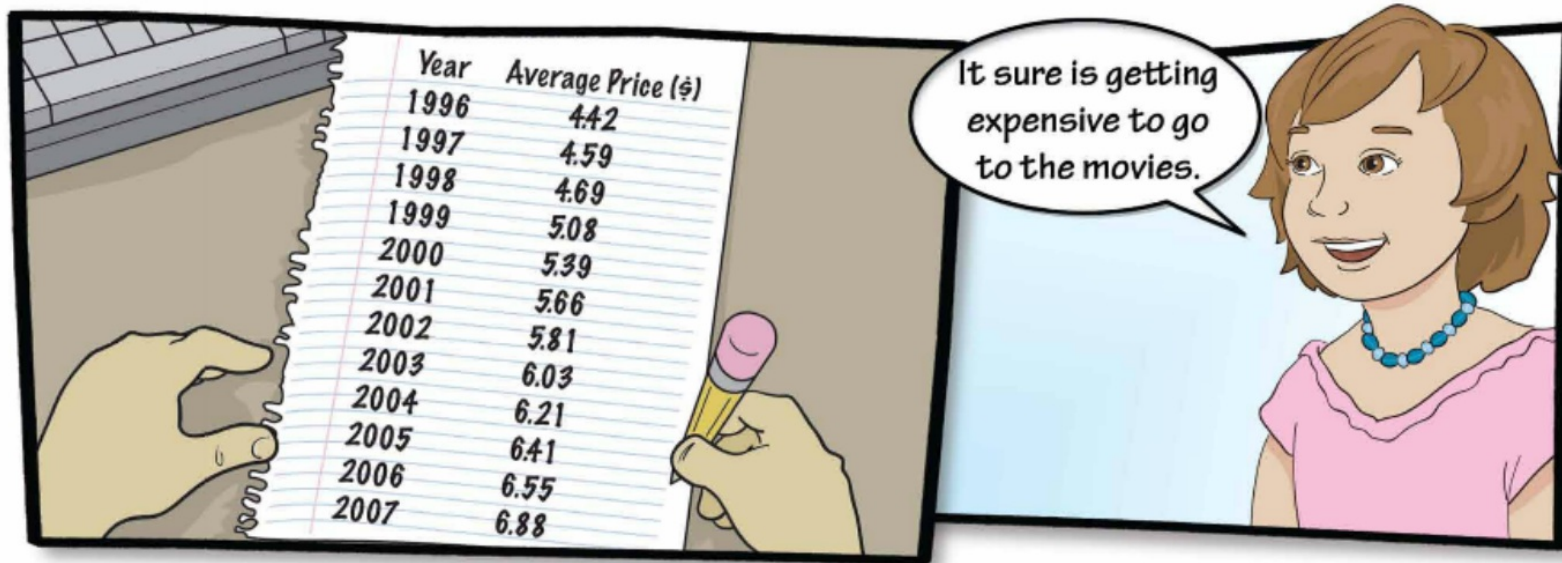
- a. Construct a scatter plot of the data.
b. Interpret the scatter plot of the data based on the shape of the distribution.

Sample answer: The scatter plot shows a positive linear association. There are no clusters or outliers.

- c. If a relationship exists, make a conjecture about the test score for a student who studied for 60 minutes. **about 98**



4. **CCSS Model with Mathematics** Refer to the graphic novel frame below for Exercises a–b.



- a. On a separate sheet of grid paper, construct a scatter plot of the data. The values for the horizontal axis should be years since 1995. **See Answer Appendix.**
- b. Do the data represent a *positive*, *negative*, or *no* association? Explain.
Positive; sample answer: As the years increase, the average ticket price increases.



H.O.T. Problems Higher Order Thinking

5. **CCSS Make a Conjecture** Suppose a scatter plot shows that as the values of x decrease, the values of y decrease. Does the scatter plot show a *positive, negative, or no* association? **positive**
6. **CCSS Persevere with Problems** Is it *always, sometimes, or never* true that a scatter plot that shows a positive association suggests that the relationship is proportional? Justify your answer. **Sometimes; sample answer: The price per gallon of gasoline would increase proportionally as the number of gallons bought increases. But, as the level of education increases, salary may or may not increase proportionally.**
7. **CCSS Reason Inductively** Complete the table that shows the side lengths of a square related to its perimeter and area. Would a scatter plot of the side length and perimeter or the side length and area represent a linear relationship? Explain. **side length and perimeter; Sample answer: The data would form a straight line.**

Side Length (units)	Perimeter (units)	Area (units ²)
1	4	1
2	8	4
3	12	9
4	16	16
5	20	25
6	24	36

