

4.4**Scatter Plots and Lines of Fit**

For use with Exploration 4.4

Essential Question How can you use a scatter plot and a line of fit to make conclusions about data?

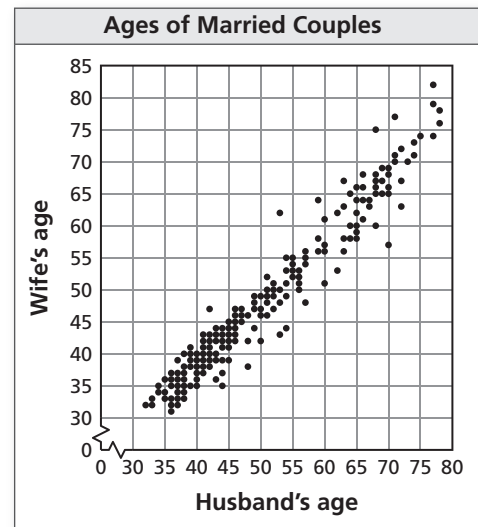
A **scatter plot** is a graph that shows the relationship between two data sets. The two data sets are graphed as ordered pairs in a coordinate plane.

1 EXPLORATION: Finding a Line of Fit

Go to *BigIdeasMath.com* for an interactive tool to investigate this exploration.

Work with a partner. A survey was taken of 179 married couples. Each person was asked his or her age. The scatter plot shows the results.

- a. Draw a line that approximates the data. Write an equation of the line. Explain the method you used.

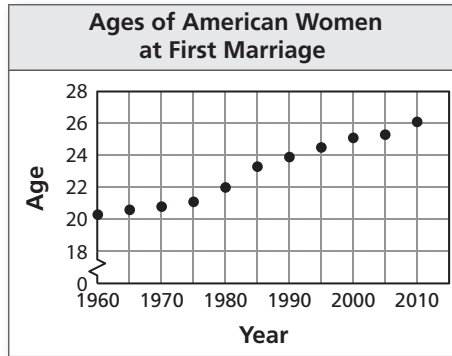


- b. What conclusions can you make from the equation you wrote? Explain your reasoning.

4.4 Scatter Plots and Lines of Fit (continued)**2 EXPLORATION: Finding a Line of Fit**

Go to *BigIdeasMath.com* for an interactive tool to investigate this exploration.

Work with a partner. The scatter plot shows the median ages of American women at their first marriage for selected years from 1960 through 2010.



- Draw a line that approximates the data. Write an equation of the line. Let x represent the number of years since 1960. Explain the method you used.
- What conclusions can you make from the equation you wrote?
- Use your equation to predict the median age of American women at their first marriage in the year 2020.

Communicate Your Answer

- How can you use a scatter plot and a line of fit to make conclusions about data?
- Use the Internet or some other reference to find a scatter plot of real-life data that is different from those given above. Then draw a line that approximates the data and write an equation of the line. Explain the method you used.

4.4**Notetaking with Vocabulary**

For use after Lesson 4.4

In your own words, write the meaning of each vocabulary term.

scatter plot

correlation

line of fit

Core Concepts**Scatter Plot**

A **scatter plot** is a graph that shows the relationship between two data sets. The two data sets are graphed as ordered pairs in a coordinate plane. Scatter plots can show trends in the data.

Notes:

4.4 Notetaking with Vocabulary (continued)**Using a Line of Fit to Model Data**

Step 1 Make a scatter plot of the data.

Step 2 Decide whether the data can be modeled by a line.

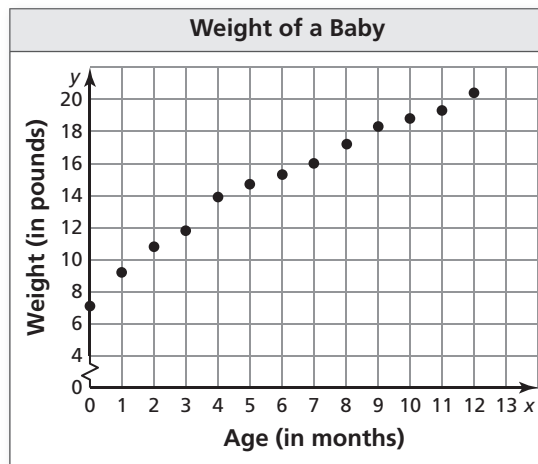
Step 3 Draw a line that appears to fit the data closely. There should be approximately as many points above the line as below it.

Step 4 Write an equation using two points on the line. The points do not have to represent actual data pairs, but they must lie on the line of fit.

Notes:

Extra Practice

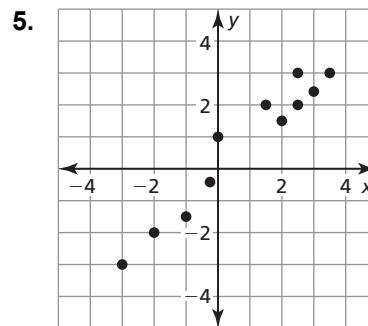
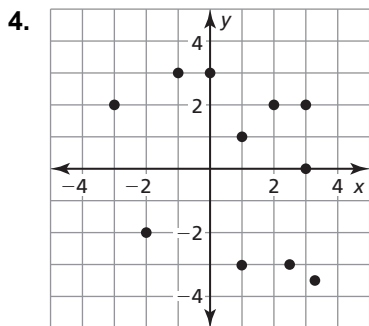
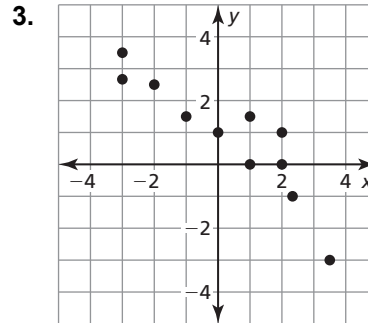
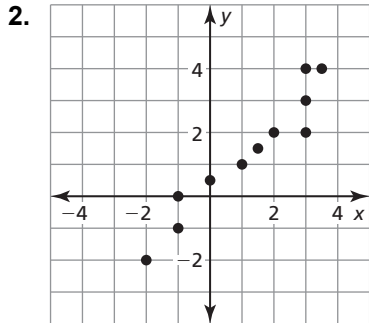
1. The scatter plot shows the weights (in pounds) of a baby over time.



- a. What is the weight of the baby when the baby is four months old?
- b. What is the age of the baby when the baby weighs 17.2 pounds?
- c. What tends to happen to weight of the baby as the age increases?

4.4 Notetaking with Vocabulary (continued)

In Exercises 2–5, tell whether x and y show a *positive*, a *negative*, or *no* correlation.



6. The table shows the depth y (in centimeters) of water filling a bathtub after x minutes.

Time (minutes), x	0	2	4	6	8	10	12
Depth (centimeters), y	6	8	11	14	17	20	24

a. Write an equation that models the depth of the water as a function of time.

b. Interpret the slope and y -intercept of the line of fit.