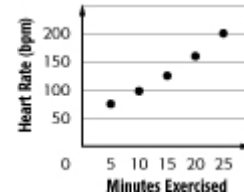


Lesson 9-8

Example 1 Identify a Relationship

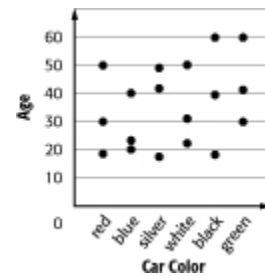
Explain whether a scatter plot of the data for the minutes exercised and the corresponding heart rate might show a *positive*, *negative*, or *no* relationship.



As the number of minutes you exercise increases, the heart rate increases also. Therefore, the scatter plot shows a positive relationship.

Example 2 Identify a Relationship

Explain whether a scatter plot of the data for the color car you drive and your age show a *positive*, *negative*, or *no* relationship.



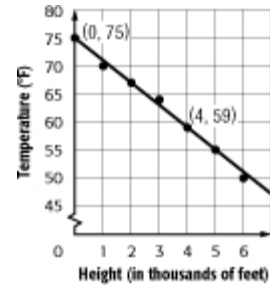
Your age does not depend on the color of car you drive. Therefore, the scatter plot shows no relationship.

Example 3 Line of Fit

MOUNTAINS The air temperatures at various heights on a mountain are given. Make a scatter plot using the data. Then draw a line that best seems to represent the data.

Mountain Height(feet)	0	1,000	2,000	3,000	4,000	5,000	6,000
Temperature (°F)	75	70	67	64	59	55	50

Graph each of the data points. Draw a line that best fits the data.



Example 4 Line of Fit

Write an equation for this line of fit.

The line passes through the points at (0, 75) and (4, 59). Use these points to find the slope of the line.

$$m = \frac{y_2 - y_1}{x_2 - x_1} \quad \text{Definition of slope}$$

$$m = \frac{59 - 75}{4 - 0} \quad (x_1, y_1) = (0, 75), (x_2, y_2) = (4, 59)$$

$$m = \frac{-16}{4} \text{ or } -4 \quad \text{The slope is } -4, \text{ and the } y\text{-intercept is } 75.$$

Use the slope and the y -intercept to write the equation.

$$y = mx + b \quad \text{Slope-intercept form}$$

$$y = -4x + 75 \quad \text{The equation for the line of fit is } y = -4x + 75.$$

Example 5 Line of Fit

Use the equation to predict the temperature at a height of 7,000 feet.

$$y = -4x + 75 \quad \text{Equation for the line of fit}$$

$$y = -4(7) + 75 \text{ or } 47 \quad \text{The temperature will be about } 47^\circ\text{F}.$$