

Chapter 6

1. Association Suppose you were to collect data for each pair of variables. You want to make a scatterplot. Which variable would you use as the explanatory variable and which as the response variable? Why? What would you expect to see in the scatterplot? Discuss the likely direction, form, and strength.

- b) Apples: circumference (inches), weight (ounces)
- c) College freshmen: shoe size, grade point average
- d) Gasoline: number of miles you drove since filling up, gallons remaining in your tank
- a) Apples: weight in grams, weight in ounces

23. Roller coasters Most roller coasters get their speed by dropping down a steep initial incline, so it makes sense that the height of that drop might be related to the speed of the coaster.

[MINITAB EXPRESS]

- a) Does the scatterplot indicate that it is appropriate to calculate the correlation? Explain.
- b) What is the correlation of *Speed* and *Drop*? Describe the association.

25. Streams and hard water In a study of streams in the Adirondack Mountains, display the relationship found between the water's pH and its hardness (measured in grains).

[MINITAB EXPRESS]

Is it appropriate to summarize the strength of association with a correlation? Explain.

33. Height and reading A researcher studies children in elementary school and finds a strong positive linear association between height and reading scores.

- a) Does this mean that taller children are generally better readers?
- b) What might explain the strong correlation?

37. Baldness and heart disease Medical researchers followed 1435 middle-aged men for a period of 5 years, measuring the amount of *Baldness* present (none = 1, little = 2, some = 3, much = 4, extreme = 5) and presence of *Heart Disease* (No = 0, Yes = 1). They found a correlation of 0.089 between the two variables. Comment on their conclusion that this shows that baldness is not a possible cause of heart disease.