distribution. Data sets with different shapes can have the same mean and standard deviation. To demonstrate this fact, use your calculator to find $\bar{x}$ and s for these two small data sets. Then make a stemplot of each and comment on the shape of each distribution.

Data A:	9.14	8.14	8.74	8.77
	9.26	8.10	6.13	3.10
	9.13	7.26	4.74	
Data B:	7.46	6.77	12.74	7.11
	7.81	8.84	6.08	5.39
	8.15	6.42	5.73	

34. Your data consist of observations on the age of several subjects (measured in years) and the reaction times of these subjects (measured in seconds). In what units are each of the following descriptive statistics measured?

(a) The mean age of the subjects
(b) The standard deviation of the subjects' reaction times
(c) The variance of the subjects' reaction times
(d) The median age of the subjects

■ **35.** This is a standard deviation contest! You must choose four numbers from the whole numbers 0 to 10, with repeats allowed.

(a) Choose four numbers that have the smallest possible standard deviation.
(b) Choose four numbers that have the largest possible standard deviation.
(c) Is more than one choice possible in part (a)? Explain.
(d) Is more than one choice possible in part (b)? Explain.

■ **36.** "Conservationists have despaired over destruction of tropical rainforest by logging, clearing, and burning." These words begin a report on a statistical study of the effects of logging in Borneo. [C. H. Cannon, D. R. Peart, and M. Leighton, Tree species diversity in commercially logged Bornean rainforest, *Science,* 281 (1998): 1366–1367.] Researchers compared forest plots that had never been logged (Group 1) with similar plots nearby that had been logged 1 year earlier (Group 2) and 8 years earlier (Group 3). All plots were 0.1 hectare in area. Here are the counts of trees for plots in each group, courtesy of Charles Cannon:

Group 1:	27	22	29	21	19	33
	16	20	24	27	28	19
Group 2:	12	12	15	9	20	18
	17	14	14	2	17	19
Group 3:	18	4	22	15	18	
	19	22	12	12		

Give a complete comparison of the three distributions, using both graphs and numerical summaries. To what extent has logging affected the count of trees? The researchers used an analysis based on $\bar{x}$ and s. Explain why this is reasonably well justified.


(Edward Parker/Alamy.)

5.8 Normal Distributions
5.9 The 68–95–99.7 Rule

37. Some teachers graded "on a curve" based on the belief that classroom test scores are normally distributed. One way of doing this is to assign a "C" to all scores within 1 standard deviation of the mean. Then, the teacher would assign a "B" to all scores between 1 and 2 standard deviations above the mean, an "A" to all scores more than 2 standard deviations above the mean, and use symmetry to define the regions for "D" and "F" on the left side of the normal curve. If 200 students take an exam, determine the number of students who would receive a B.

38. The length of human pregnancies from conception to birth varies according to a distribution that is approximately normal, with mean 266 days and standard deviation 16 days. Draw a normal curve for this distribution on which the mean and standard deviation are correctly located. (*Hint:* First draw the curve, then mark the axis.)

39. Figure 5.22 shows a smooth curve used to describe a distribution that is not symmetric. The mean and median do not coincide. Which of the points marked is the mean of the distribution, and which is the median? Explain your answer.

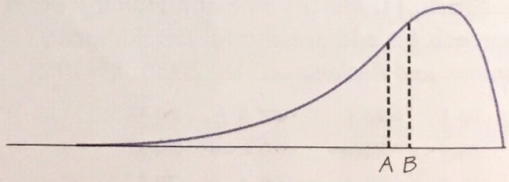

FIGURE 5.22 A curve describing a skewed distribution, for Exercise 39.

40. Sketch a smooth curve that describes a distribution that is symmetric but has two peaks (that is, two strong clusters of observations).