2. College as an Investment Assume that 10% of us believe that college is not a good investment (based on a survey in *USA Today*).

a. Let A denote the event of selecting someone who believes that college is not a good investment. What does the event $\overline{A}$ denote?

b. Find the value of $P(\overline{A})$.

c. Find the probability of randomly selecting three different people and finding that each of them has the belief that college is not a good investment.

d. The given rate of 10% is based on results from Internet users who chose to respond to a question posted on the *USA Today* web site. What is this type of sample called? What does this suggest about the accuracy of the 10% rate?

3. Birth Weights Birth weights in the United States have a distribution that is approximately normal with a mean of 3369 g and a standard deviation of 567 g (based on data from "Comparison of Birth Weight Distributions between Chinese and Caucasian Infants," by Wen, Kramer, Usher, *American Journal of Epidemiology,* Vol. 172, No. 10).

a. One definition of a premature baby is that the birth weight is below 2500 g. If a baby is randomly selected, find the probability of a birth weight below 2500 g.

b. Another definition of a premature baby is that the birth weight is in the bottom 10%. Find the birth weight that is the cutoff between the bottom 10% and the top 90%.

c. A definition of a "very low birth weight" is one that is less than 1500 g. If a baby is randomly selected, find the probability of a "very low birth weight."

d. If 25 babies are randomly selected, find the probability that their mean birth weight is greater than 3400 g.

4. POTUS The accompanying graph is a histogram of ages of U.S. presidents at the time they were inaugurated (from Data Set 12 in Appendix B).

a. Identify two features of the vertical scale that cause the graph to be somewhat misleading.

b. Does the histogram appear to show data from a population having a normal distribution? Explain.

c. From the graph, identify the lowest and highest possible ages, then use the range rule of thumb to estimate the standard deviation of the ages. How does the result compare to the standard deviation of 6.6 years calculated from the original list of sample values?