7.2 Given a normal distribution with $\mu = 50$ and $\sigma = 5$, if you select a sample of $n = 100$, what is the probability that $\overline{X}$ is

a. less than 47?
b. between 47 and 49.5?
c. above 51.1?
d. There is a 35% chance that $\overline{X}$ is above what value?

SELF TEST

7.8 According to the National Survey of Student Engagement, the average student spends about 17 hours each week preparing for classes; preparation for classes includes homework, reading and any other assignments. (Data extracted from "How much do you study...," **usat.ly/1QrG1aj**.) Assume the standard deviation of time spent preparing for classes is 4 hours. If you select a random sample of 16 students,

a. What is the probability that the mean time spent preparing for classes is at least 16 hours per week?
b. There is an 85% chance that the sample mean is less than how many hours per week?
c. What assumption must you make in order to solve (a) and (b)?

7.22 What is the difference between a population distribution and a sampling distribution?

7.28 The stock market in Sweden reported strong returns in 2014. The population of stocks earned a mean return of 11.9% in 2014. (Data extracted from *The Wall Street Journal*, January 2, 2015, p. C5.) Assume that the returns for stocks on the Swedish stock market were distributed as a normal variable, with a mean of 11.9 and a standard deviation of 20. If you selected a random sample of 16 stocks from this population, what is the probability that the sample would have a mean return

a. less than 0 (i.e., a loss)?
b. between −10 and 10?
c. greater than 10?