5. Left-Handedness According to data from the American Medical Association, 10% of us are left-handed.

a. If three people are randomly selected, find the probability that they are all left-handed.

b. If three people are randomly selected, find the probability that at least one of them is left-handed.

c. Why can't we solve the problem in part (b) by using the normal approximation to the binomial distribution?

d. If groups of 50 people are randomly selected, what is the mean number of left-handed people in such groups?

e. If groups of 50 people are randomly selected, what is the standard deviation for the numbers of left-handed people in such groups?

f. Use the range rule of thumb to determine whether it would be unusual to get 8 left-handed people in a randomly selected group of 50 people.

Technology Projects

Some methods in this chapter are easy with technology but very difficult without it. The two projects that follow illustrate how easy it is to use technology for assessing normality and finding binomial probabilities.

1. Assessing Normality It is often necessary to determine whether sample data appear to be from a normally distributed population, and that determination is helped with the construction of a histogram and normal quantile plot. Construction of a histogram is relatively simple but time-consuming, and construction of a normal quantile plot can be a real challenge without technology. This first project shows how easy it is to get those graphs by using STATDISK. With just a few clicks of a mouse, you can painlessly and quickly generate a histogram and normal quantile plot together. If STATDISK has not yet been used, it can be downloaded from www.statdisk.org.

The data sets in Appendix B are available by clicking on **Datasets** on the top menu bar, then selecting the textbook you are using. STATDISK can be used to assess normality of a sample by clicking on **Data** and selecting the menu item of **Normality Assessment.** Use the Normality Assessment feature with the female body measurements in Data Set 1 of Appendix B. For each of the 14 columns of data, determine whether the data appear to be from a normally distributed population.

2. Binomial Probabilities Section 6-7 described a method for using a normal distribution to approximate a binomial distribution. STATDISK, Minitab, Excel, StatCrunch, and the TI-83/84 Plus calculator are all capable of generating probabilities for a binomial distribution. Instructions for these different technologies are found in the Using Technology subsection at the end of Section 5-3. Instead of using a normal approximation to a binomial distribution, use technology to find the exact binomial probabilities in Exercises 9–12 of Section 6-7.