Determining Normality. ***In Exercises 9–12, refer to the indicated sample data and determine whether they appear to be from a population with a normal distribution. Assume that this requirement is loose in the sense that the population distribution need not be exactly normal, but it must be a distribution that is roughly bell-shaped.***

9. Flight Arrival Delays The arrival delay times (minutes) as listed in Data Set 15 in Appendix B.

10. Heights of Presidents The heights (cm) of the presidents of the United States as listed in Data Set 12 in Appendix B.

11. Blood Pressure The systolic blood pressure measurements of males as listed in Data Set 1 in Appendix B.

12. Secondhand Smoke The cotinine measurements of nonsmokers who were exposed to tobacco smoke at home or work, as listed in Data Set 9 in Appendix B.

Using Technology to Generate Normal Quantile Plots. ***In Exercises 13–16, use the data from the indicated exercise in this section. Use computer software (such as STATDISK, Minitab, Excel, or StatCrunch) or a TI-83/84 Plus calculator to generate a normal quantile plot. Then determine whether the data come from a normally distributed population.***

13. Exercise 9

14. Exercise 10

15. Exercise 11

16. Exercise 12

Constructing Normal Quantile Plots. ***In Exercises 17–20, use the given data values to identify the corresponding z scores that are used for a normal quantile plot, then identify the coordinates of each point in the normal quantile plot. Construct the normal quantile plot, then determine whether the data appear to be from a population with a normal distribution.***

17. Braking Distances A sample of braking distances (in feet) measured under standard conditions for a sample of large cars from Data Set 14 in Appendix B: 139, 134, 145, 143, 131.

18. Taxi Out Times A sample of flights is selected, and the times (minutes) required to taxi out for takeoff are 37, 13, 14, 15, 31, 15 (from Data Set 15 in Appendix B).

19. Brain Volumes A sample of human brain volumes (cm^3) is obtained from those listed in Data Set 6 from Appendix B: 1272, 1051, 1079, 1034, 1070, 1173, 1079, 1067.

20. M&M Weights A sample of weights (g) of M&Ms is obtained from those listed in Data Set 20 from Appendix B: 0.864, 0.825, 0.855, 0.942, 0.825, 0.869, 0.912, 0.887, 0.886.

6-6 Beyond the Basics

21. Transformations The heights (in inches) of men listed in Data Set 1 in Appendix B have a distribution that is approximately normal, so it appears that those heights are from a normally distributed population.

a. If 2 inches is added to each height, are the new heights also normally distributed?

b. If each height is converted from inches to centimeters, are the heights in centimeters also normally distributed?

c. Are the logarithms of normally distributed heights also normally distributed?

22. Earthquake Magnitudes Richter scale earthquake magnitudes are listed in Data Set 16 of Appendix B.

a. Determine whether those magnitudes are from a population with a normal distribution.