2. z Score Using the sample data from Exercise 1, find the z score corresponding to the eye height of 1642 mm. Is that eye height unusual? Why or why not?

3. Boxplot Using the same standing heights listed in Exercise 1, construct a boxplot and include the values of the 5-number summary. Does the boxplot indicate that the data are from a population with a normal (bell-shaped) distribution? Explain.

4. ZIP Codes An article in the *New York Times* noted that these new ZIP codes were created in New York City: 10065, 10021, 10075. Find the mean of these three numbers. What is fundamentally wrong with this result?

5. Comparing BMI The body mass indices (BMI) of a sample of males have a mean of 26.601 and a standard deviation of 5.359. The body mass indices of a sample of females have a mean of 28.441 and a standard deviation of 7.394 (based on Data Set 1 in Appendix B). When considered among members of the same gender, who has the relatively larger BMI: a male with a BMI of 28.00 or a female with a BMI of 29.00? Why?

6. Movies: Estimating Mean and Standard Deviation Consider the prices of regular movie tickets (not 3-D, and not discounted for children or seniors).

a. Estimate the mean price.

b. Use the range rule of thumb to make a rough estimate of the standard deviation of the prices.

7. Professors: Estimating Mean and Standard Deviation Use the range rule of thumb to estimate the standard deviation of ages of all teachers at your college.

8. Aircraft Design Engineers designing overhead bin storage in an aircraft must consider the sitting heights of male passengers. Sitting heights of adult males have a mean of 914 mm and a standard deviation of 36 mm (based on anthropometric survey data from Gordon, Churchill, et al.). Use the range rule of thumb to identify the minimum "usual" sitting height and the maximum "usual" sitting height. Which of those two values is more relevant in this situation? Why?

9. Interpreting a Boxplot Shown below is a boxplot of a sample of 20 brain volumes (cm^3). What do the numbers in the boxplot represent?

10. Mean or Median? A statistics class with 40 students consists of 30 students with no income, 10 students with small incomes from part-time jobs, and a professor with a very large income that is well deserved. Which is better for describing the income of a typical person in this class: mean or median? Explain.

Cumulative Review Exercises

Please be aware that some of the following problems may require knowledge of concepts presented in previous chapters.

1. Designing Gloves An engineer is designing a machine to manufacture gloves and she obtains the following sample of hand lengths (mm) of randomly selected adult males (based on anthropometric survey data from Gordon, Churchill, et al.):

173 179 207 158 196 195 214 199

a. Are exact hand lengths from a population that is discrete or continuous?

b. What is the level of measurement of the hand lengths? (nominal, ordinal, interval, ratio)