

## Chapter 3 Review

This chapter presented fundamentally and critically important measures that are essential for effectively describing, exploring, and comparing data. Here are key skills that should be mastered upon completion of this chapter:

- Calculate measures of center by finding the mean and median (Section 3-2).
- Calculate measures of variation by finding the standard deviation, variance, and range (Section 3-3).
- *Understand* and *interpret* the standard deviation by using tools such as the range rule of thumb (Section 3-3).
- Compare data values by using  $z$  scores, quartiles, or percentiles (Section 3-4).
- Investigate the spread of data by constructing a boxplot.

### Chapter Quick Quiz

1. Find the mean of these times that American Airlines flights used to taxi to the Los Angeles terminal after landing from a flight: 12 min, 8 min, 21 min, 17 min, 12 min. (Data are from Data Set 15 in Appendix B.)
2. What is the median of the sample values listed in Exercise 1?
3. What is the mode of the sample values listed in Exercise 1?
4. The standard deviation of the sample values in Exercise 1 is 5.0 min. What is the variance (including units)?
5. The taxi-in times for 48 flights that landed in Los Angeles have a mean of 11.4 min and a standard deviation of 7.0 min. What is the  $z$  score for a taxi-in time of 6 min?
6. You plan to investigate the variation of taxi-in times for flights that have landed in Los Angeles. Name at least two measures of variation for those data.
7. Consider a sample taken from the population of all taxi-in times for all flights that land in Los Angeles. Identify the symbols used for the sample mean and the population mean.
8. Consider a sample taken from the population of all taxi-in times for all flights that land in Los Angeles. Identify the symbols used for the sample standard deviation, the population standard deviation, the sample variance, and the population variance.
9. Approximately what percentage of taxi-in times is less than the 75th percentile?
10. For a sample of motorcycle speeds, name the values that constitute the 5-number summary.

### Review Exercises

1. **Ergonomics** When designing an eye-recognition security device, engineers must consider the eye heights of standing women. (It's easy for men to bend lower, but it's more difficult for women to rise higher.) Listed below are the eye heights (in millimeters) obtained from a simple random sample of standing adult women (based on anthropometric survey data from Gordon, Churchill, et al.). Use the given eye heights to find the (a) mean; (b) median; (c) mode; (d) midrange; (e) range; (f) standard deviation; (g) variance; (h)  $Q_1$ ; (i)  $Q_3$ .

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