CHAPTER 1 SOLUTIONS

Exercises 1.1

1.1 (a) The *population* is the collection of all individuals or items under consideration in a statistical study.

(b) A *sample* is that part of the population from which information is obtained.

1.2 The two major types of statistics are descriptive and inferential statistics. Descriptive statistics consists of methods for organizing and summarizing information. Inferential statistics consists of methods for drawing and measuring the reliability of conclusions about a population based on information obtained from a sample of the population.

1.3 Descriptive methods are used for organizing and summarizing information and include graphs, charts, tables, averages, measures of variation, and percentiles.

1.4 Descriptive statistics are used to organize and summarize information from a sample before conducting an inferential analysis. Preliminary descriptive analysis of a sample may reveal features of the data that lead to the appropriate inferential method.

1.5 (a) An *observational study* is a study in which researchers simply observe characteristics and take measurements.

(b) A *designed experiment* is a study in which researchers impose treatments and controls and *then* observe characteristics and take measurements.

1.6 Observational studies can reveal only association, whereas designed experiments can help establish causation.

1.7 This study is inferential. Data from a sample of Americans are used to make an estimate of (or an inference about) average TV viewing time for all Americans.

1.8 This study is descriptive. It is a summary of the average salaries in professional baseball, basketball, and football for 2005 and 2011.

1.9 This study is descriptive. It is a summary of information on all homes sold in different cities for the month of September 2012.

1.10 This study is inferential. National samples are used to make estimates of (or inferences about) drug use throughout the entire nation.

1.11 This study is descriptive. It is a summary of the annual final closing values of the Dow Jones Industrial Average at the end of December for the years 2004-2013.

1.12 This study is inferential. Survey results were used to make percentage estimates on which college majors were in demand among U.S firms for all graduating college students.

1.13 (a) This study is inferential. It would have been impossible to survey all U.S. adults about their opinions on Darwinism. Therefore, the data must have come from a sample. Then inferences were made about the