

- 1) A population is the complete collection of all elements. A sample is a subset of elements drawn from a population. A parameter is a numerical measurement describing some characteristic of a population. A statistic is a numerical measurement describing some characteristic of a sample. A census is the collection of data from every element in a population; a sample is a subset of a population.
- 2) Qualitative data can be separated into categories that are distinguished by nonnumeric characteristics. Quantitative data consist of numbers representing counts or measurements. Examples will vary.
- 3) Continuous numerical data result from infinitely many possible values that can be associated with points on a continuous scale so that there are no gaps or interruptions. Discrete data result from either a finite number of possible values or a countable number of possible values. Examples will vary.
- 4) In an observational study, we observe and measure specific characteristics, but we don't attempt to manipulate or modify the subjects being studied. In an experiment we apply some treatment and then proceed to observe its effects on the subjects. In the experiment, the group receiving the treatment is called the treatment group. The placebo group is the group that is not given the treatment.
- 5) In random sampling, each member of the population has an equal chance of being selected. Random sampling provides us with the best representative sample in which all groups of the population are approximately proportionately represented. Careless sampling can easily result in a biased sample which may be useless.
- 6) Stratified sampling subdivides the population into at least two different subpopulations and then draws a sample from each stratum. Systematic sampling selects a beginning point and then selects every k th element in the population. In cluster sampling, the population is divided into sections, then sections are randomly selected, and then all members of the randomly selected sections are surveyed. Convenience sampling uses readily available results. Examples will vary.
- 7) No. In terms of income, the teacher's friends are unlikely to be representative of all adults in the United States. So a sample from this group, however well selected, is unlikely to be representative of all adults in the United States.
- 8) B
- 9) A
- 10) B
- 11) A
- 12) A
- 13) B
- 14) A
- 15) C
- 16) C
- 17) B
- 18) C
- 19) C
- 20) C
- 21) C
- 22) D
- 23) B
- 24) E
- 25) C
- 26) C
- 27) C
- 28) B