1.1 A newspaper headline reads, 

**U.S. TEENS TRUST, FEAR THEIR PEERS**

and the article explains that a telephone poll was conducted of 1055 persons 13 to 17 years old. Identify a statistical population and the sample.

1.2 Consider the population of all students at your college. You want to learn about total monthly entertainment expenses for a student.

(a) Specify the population unit.
(b) Specify the variable of interest.
(c) Specify the statistical population.

1.3 Consider the population of persons living in Chicago. You want to learn about the proportion which are illegal aliens.

(a) Specify the population unit.
(b) Specify the variable of interest.
(c) Specify the statistical population.

1.4 A student is asked to estimate the mean height of all male students on campus. She decides to use the heights of members of the basketball team because they are conveniently printed in the game program.

(a) Identify the statistical population and the sample.
(b) Comment on the selection of the sample.
(c) How should a sample of males be selected?

1.5 Psychologists asked 46 golfers, after they played a round, to estimate the diameter of the hole on the green by visually selecting one of nine holes cut in a board.

(a) Specify the population unit.
(b) Specify the statistical population and sample.

1.6 A phone survey in 2008 of 1010 adults included a response to the number of leisure hours per week. Identify the population unit, statistical population, and sample.

1.7 It is often easy to put off doing an unpleasant task. At a Web site, persons can take a test and receive a score that determines if they have a serious problem with procrastination. Should the scores from people who take this test on-line be considered a random sample? Explain your reasoning.

1.8 A magazine that features the latest electronics and computer software for homes enclosed a short questionnaire on a postcard. Readers were asked to answer questions concerning their use and ownership of various software and hardware products, and to then send the card to the publisher. A summary of the results appeared in a later issue of the magazine that used the data to make statements such as 40% of readers have purchased program X. Identify a population and sample and comment on the representativeness of the sample. Are readers who have not purchased any new products mentioned in the questionnaire as likely to respond as those who have purchased?

1.9 Each year a local weekly newspaper gives out “Best of the City” awards in categories such as restaurant, deli, pastry shop, and so on. Readers are asked to fill in their favorites on a form enclosed in this free weekly paper and then send it to the publisher. The establishment receiving the most votes is declared the winner in its category. Identify the population and sample and comment on the representativeness of the sample.

1.10 Which of the following are anecdotal and which are based on sample?

(a) Out of 200 students questioned, 40 admitted they lied regularly.
(b) Bobbie says the produce at Market W is the freshest in the city.
(c) Out of 50 persons interviewed at a shopping mall, 18 had made a purchase that day.

1.11 Which of the following are anecdotal and which are based on a sample?

(a) Tom says he gets the best prices on electronics at the www.bestelc.com Internet site.


4Harris Interactive telephone survey (October 16–19, 2008).

5http://psychologytoday.psychtests.com/tests/procrastination_access.html
(b) Out of 22 students, 6 had multiple credit cards.
(c) Among 55 people checking in at the airport, 12 were going to destinations outside of the continental United States.

1.12 What is wrong with this statement of purpose?

**PURPOSE:** Determine if a newly designed rollerball pen is comfortable to hold when writing.

Give an improved statement of purpose.

1.13 What is wrong with this statement of purpose?

**PURPOSE:** Determine if it takes too long to get cash from the automated teller machine during the lunch hour.

Give an improved statement of purpose.

1.14 Give a statement of purpose for determining the amount of time it takes to make hotel reservations in San Francisco using the Internet.

1.15 Thirty-five classrooms on campus are equipped for multimedia instruction. Use Table 1, Appendix B, to select 4 of these classrooms to visit and check whether or not the instructor is using the equipment during that day’s first hour lecture.

1.16 Fifty band members would like to ride the band bus to an out-of-town game. However, there is room for only 44. Use Table 1, Appendix B, to select the 44 persons who will go. Determine how to make your selection by taking only a few two-digit selections.

1.17 Eight young students need mentors. Of these, there are three whom you enjoy being with while you are indifferent about the others. Two of the students will be randomly assigned to you. Label the students you like by 0, 1, and 2 and the others by 3, 4, 5, 6, and 7. Then, the process of assigning two students at random is equivalent to choosing two different digits from the table of random digits and ignoring any 8 or 9. Repeat the experiment of assigning two students 20 times by using the table of random digits. Record the pairs of digits you draw for each experiment.

(a) What is the proportion of the 20 experiments that give two students that you like?
(b) What is the proportion of the 20 experiments that give one of the students you like and one other?
(c) What is the proportion of the 20 experiments that give none of the students you like?

1.18 According to the cause-and-effect diagram on page 17, where are the possible delays on the first floor?

1.19 Refer to the cause-and-effect diagram on page 17. The workers have now noticed that a delay could occur:

(i) On the fourth floor at the pharmacy
(ii) On the third floor at the practitioners’ station

Redraw the diagram and include this added information.

1.20 The United States Environmental Protection Agency reports that in 2006, each American generated 4.6 pounds of solid waste a day.

(a) Does this mean every single American produces the same amount of garbage? What do you think this statement means?
(b) Was the number 4.6 obtained from a sample? Explain.
(c) How would you select a sample?

1.21 As a very extreme case of self-selection, imagine a five-foot-high solid wood fence surrounding a collection of Great Danes and Miniature Poodles. You want to estimate the proportion of Great Danes inside and decide to collect your sample by observing the first seven dogs to jump high enough to be seen above the fence.

(a) Explain how this is a self-selected sample that is, of course, very misleading.
(b) How is this sample selection procedure like a call-in election poll?

---

6http://www.epa.gov/epawaste/nonhaz/index.htm