Introductory Statistics (IS) / Elementary Statistics (ES): Chapter 1 Form A Exam

Name _____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Provide an appropriate response.

1) The table below shows the number of new AIDS cases in the U.S. in each of the years 1989–1994.

Year	New AIDS cases
1989	33,643
1990	41,761
1991	43,771
1992	45,961
1993	103,463
1994	61,301

Classify the study as either descriptive or inferential.

1) _____

Answer the question.

2) A magazine publisher always mails out a questionnaire six months before a subscription ends. This questionnaire asks its subscribers if they are going to renew their subscriptions. On average, only 7% of the subscribers respond to the questionnaire. Of the 7% who do respond, an average of 47% say that they will renew their subscription. This 7% who respond to the questionnaire are known as what?

2) _____

Identify the study as an observational study or a designed experiment.

3) An educational researcher used school records to determine that, in one school district, 84% of children living in two–parent homes graduated high school while 75% of children living in single–parent homes graduated high school.

3) _____

Provide an appropriate response.

4) Why do statisticians sometimes use inferential statistics to draw conclusions about a population? In what situations might a statistician draw conclusions about a population using descriptive statistics only?

4) _____

Identify the study as an observational study or a designed experiment.

5) A clinic gives a drug to a group of ten patients and a placebo to another group of ten patients to find out if the drug has an effect on the patients' illness.

5) _____

List all possible samples from the specified population.

6) The six members of a board of directors are Sam (S), Laurie (L), Peggy (P), Jorges (J), Max (M), and Claude (C). Consider these board members to be a population of interest. List the 15 possible samples (without replacement) of size four from this population of six board members.

6) _____

Provide an appropriate response.

7) The finalists in an essay competition are Lisa (L), Melina (M), Ben (B), Danny (D), Eric (E), and Joan (J). Consider these finalists to be a population of interest. The possible samples (without replacement) of size three that can be obtained from this population of six finalists are as follows.

7) _____

    L,M,B L,M,D L,M,E L,M,J L,B,D L,B,E
    L,B,J L,D,E L,D,J L,E,J M,B,D M,B,E
    M,B,J M,D,E M,D,J M,E,J B,D,E B,D,J

   If a simple random sampling method is used to obtain a sample of three of the finalists, what are the chances of selecting Ben, Danny, and Joan?

Use the random number table in Appendix A to obtain the required list of random numbers.

8) A company employs 5382 people and wishes to interview a random sample of 14 of them with regard to the company's health insurance policy. Construct a list of 14 random numbers between 1 and 5382 that can be used in obtaining the required simple random sample. Use the random number table and use as your starting point the digits 0691 in row 3, columns 30–33.

8) _____

Provide an appropriate response.

9) A political researcher wishes to gauge political sentiment regarding a proposed tax cut. He obtains a list of 1000 email addresses from an internet provider, uses a random number table to select a random sample of 100 of these addresses, emails the people in the sample and requests that they respond to his questions by email. Do you think that the group of people who respond is likely to be representative of all registered voters? Explain your answer.

9) _____

10) True or false? In simple random sampling, each possible sample is equally likely to be the one obtained.

10) _____

11) From a group of 496 students, every 49th student starting with the 3rd student is selected. Identify the type of sampling used in this example.

11) _____

12) Describe the steps involved when using stratified random sampling with proportional allocation. What are the advantages of this sampling method?

12) _____

A designed experiment is described. Identify the specified element of the experiment.

13) In a clinical trial, 780 participants suffering from high blood pressure were randomly assigned to one of three groups. Over a one-month period, the first group received a low dosage of an experimental drug, the second group received a high dosage of the drug, and the third group received a placebo. The diastolic blood pressure of each participant was measured at the beginning and at the end of the period and the change in blood pressure was recorded. Identify the response variable.

13) _____

14) An education researcher was interested in examining the effect of the teaching method and the effect of the particular teacher on students' scores on a reading test. In a study, there are four different teachers (Juliana, Felix, Sonia, and Helen) and three different teaching methods (method A, method B, and method C). The number of students participating in the study is 258. Students are randomly assigned to a teaching method and teacher. Identify the experimental units (subjects).

14) _____

Provide an appropriate response.

15) In a designed experiment, explain the difference between the treatments and the factors.

15) _____