

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Provide an appropriate response.

- 1) Based on a random sample of 1000 people, a researcher obtained the following estimates of the percentage of people lacking health insurance in one U.S. city.

Age	Percentage not covered
18-24	28.2
25-39	24.9
40-54	19.1
55-65	16.5

Classify the study as either descriptive or inferential.

A) Descriptive

B) Inferential

Answer: B

Objective: (1.1) Classify Study as Descriptive or Inferential

- 2) The table below shows the number of homicides in the U.S. in each of the years 1989–1993.

Year	Murder and non-negligent manslaughter Number of offenses
1989	21,500
1990	23,440
1991	24,700
1992	23,760
1993	24,530

Classify the study as either descriptive or inferential.

A) Descriptive

B) Inferential

Answer: A

Objective: (1.1) Classify Study as Descriptive or Inferential

Answer the question.

- 3) 100,000 randomly selected adults were asked whether they drink at least 48 oz of water each day and only 45% said yes. Identify the sample and population.

A) Sample: all adults ; population: the 100,000 selected adults

B) Sample: the 45% of adults who drink at least 48 oz of water; population: all adults

C) Sample: the 100,000 selected adults; population: all adults

D) Sample: the 100,000 selected adults; population: the 45% of adults who drink at least 48 oz of water

Answer: C

Objective: (1.1) Identify Sample and Population

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

4) In a group of 500 men and women, those who smoked did worse on tests of reaction time than those who did not smoke.

A) Designed experiment

B) Observational study

Answer: B

Objective: (1.1) Classify Observational Study or Designed Experiment

5) A researcher wished to assess the importance of exercise in weight-loss programs. 412 people, all considered to be at least 20 pounds overweight, volunteered to participate in a study. The participants were randomly assigned to one of two groups. Over a two-month period, the first group followed a particular diet but were instructed to perform no exercise other than walking. The second group followed the same diet but also performed aerobic exercise for one hour each day. At the end of the two months, the weight loss of each participant was recorded. The average weight loss was calculated for each group and it was found that the average weight loss for the second group was significantly greater than the average weight loss for the first group.

A) Designed experiment

B) Observational study

Answer: A

Objective: (1.1) Classify Observational Study or Designed Experiment

List all possible samples from the specified population.

6) The members of a board of directors have the following roles: president (P), vice president (V), secretary (S), treasury (T), and fundraiser (F). Consider these board members to be a population of interest. List the 10 possible samples (without replacement) of size two from this population of five board members.

A) P,P P,V P,S P,T P,F V,V V,S V,T V,F S,S

B) S,T S,F T,P T,V T,S T,F F,P F,V F,S F,T

C) P,V P,S P,T P,F V,S V,T V,F S,T S,F T,F

D) P,V P,S P,T P,F V,P V,S V,T V,F S,P S,V

Answer: C

Objective: (1.2) List all Possible Samples

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.

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
B,E,J D,E,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?

A) $\frac{1}{20}$

B) $\frac{1}{2}$

C) $\frac{3}{20}$

D) $\frac{1}{3}$

Answer: A

Objective: (1.2) Find Probability from List of Samples

- 8) An education researcher randomly selects 38 schools from one school district and interviews all the teachers at each of the 38 schools. Identify the type of sampling used in this example.
- A) Stratified sampling
 - B) Simple random sampling
 - C) Cluster sampling
 - D) Systematic random sampling

Answer: C

Objective: (1.3) Identify Method of Sampling Used

- 9) At a college there are 120 freshmen, 90 sophomores, 110 juniors, and 80 seniors. A school administrator selects a simple random sample of 12 of the freshmen, a simple random sample of 9 of the sophomores, a simple random sample of 11 of the juniors, and a simple random sample of 8 of the seniors. She then interviews all the students selected. Identify the type of sampling used in this example.
- A) Simple random sampling
 - B) Systematic random sampling
 - C) Cluster sampling
 - D) Stratified sampling

Answer: D

Objective: (1.3) Identify Method of Sampling Used

- 10) A pollster uses a computer to generate 500 random numbers and then interviews the voters corresponding to those numbers. Identify the type of sampling used in this example.
- A) Simple random sampling
 - B) Stratified sampling
 - C) Cluster sampling
 - D) Systematic random sampling

Answer: A

Objective: (1.3) Identify Method of Sampling Used

- 11) A newly-premiered play just ended that evening at a local theater. Theater management briefly interviews every seventh person leaving the theater to see if that person will recommend the play at that theater to other people. Identify the type of sampling used in this example.
- A) Multistage sampling
 - B) Systematic sampling
 - C) Cluster sampling
 - D) Stratified sampling

Answer: B

Objective: (1.3) Identify Method of Sampling Used

- 12) Several watch-dog consumer groups have criticized the fast food industry for serving food with excessive fat content. One watch-dog announced that it will randomly select one fast food chain per week. The watch-dog will then decide, as a group, to purchase one item off the menu that has been advertised the most on television and in the newspapers. The watch-dog will then have that heavily-advertised, just-purchased item professionally sampled for fat content. Weekly results will be posted on the watch-dog's website. For this scenario, what best describes the watch-dog's sampling activities each week?

- A) Multistage sampling
- B) Systematic sampling
- C) Stratified sampling
- D) Cluster sampling

Answer: A

Objective: (1.3) Identify Method of Sampling Used

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 experimental units (subjects).
- A) The diastolic blood pressures of the participants
 - B) The treatment (i.e., placebo, low dosage of drug, or high dosage of drug)
 - C) The three different groups
 - D) The participants in the experiment

Answer: D

Objective: (1.4) Identify Elements of Designed Experiment I

- 14) 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.
- A) The treatment received (placebo, low dosage, high dosage)
 - B) Change in diastolic blood pressure
 - C) The participants in the experiment
 - D) The dosage of the drug

Answer: B

Objective: (1.4) Identify Elements of Designed Experiment I

- 15) 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 factor.
- A) The experimental drug
 - B) The participants in the experiment
 - C) The dosage of the drug
 - D) Diastolic blood pressure

Answer: A

Objective: (1.4) Identify Elements of Designed Experiment I

- 16) 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 levels of the factor.
- A) Diastolic blood pressure at the start, diastolic blood pressure at the end
 - B) The experimental drug
 - C) High blood pressure, low blood pressure
 - D) Placebo, low dosage, high dosage

Answer: D

Objective: (1.4) Identify Elements of Designed Experiment I

- 17) 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 experimental 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 treatments.
- A) Low dosage of drug, high dosage of drug
 - B) Diastolic blood pressure at start, diastolic blood pressure at end
 - C) Placebo, low dosage of drug, high dosage of drug
 - D) The experimental drug

Answer: C

Objective: (1.4) Identify Elements of Designed Experiment I

- 18) A herpetologist performed a study on the effects of the body type and mating call of the male bullfrog as signals of quality to mates. Four life-sized dummies of male bullfrogs and two sound recordings provided a tool for testing female response to the unfamiliar frogs whose bodies varied by size (large or small) and color (dark or light) and whose mating calls varied by pitch (high, normal, or low). The female bullfrogs were observed to see whether they approached each of the four life-sized dummies. Identify the levels of each factor.
- A) Body size has three levels: large, medium, and small. Body color has three levels: dark, medium, and light. Mating call pitch has two levels: high and low.
 - B) Body size has two levels: large and small. Body color has two levels: dark and light. Mating call pitch has three levels: high, normal, and low.
 - C) There are three levels: body size, body color, and mating call pitch
 - D) Body size has three levels: large, medium, and small. Body color has three levels: dark, medium, and light. Mating call pitch has three levels: high, normal, and low.

Answer: B

Objective: (1.4) Identify Elements of Designed Experiment II

- 19) A herpetologist performed a study on the effects of the body type and mating call of the male bullfrog as signals of quality to mates. Four life-sized dummies of male bullfrogs and two sound recordings provided a tool for testing female response to the unfamiliar frogs whose bodies varied by size (large or small) and color (dark or light) and whose mating calls varied by pitch (high, normal, or low). The female bullfrogs were observed to see whether they approached each of the four life-sized dummies. Identify the response variable.
- A) Whether or not the male frogs were large and light-colored
 - B) Whether or not (yes or no) the female frogs approached a male dummy
 - C) Large and small; dark and light; call and no call
 - D) The four life-sized dummy male bullfrogs

Answer: B

Objective: (1.4) Identify Elements of Designed Experiment II

20) 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 two different teachers (Juliana and Felix) 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 treatments.

A) Juliana, Felix, Sonia, and Helen

B) Juliana and method A, Juliana and method B, Juliana and method C, Felix and method A, Felix and method B, Felix and method C

C) Teaching method and teacher

D) Method A, method B, method C

Answer: B

Objective: (1.4) Identify Elements of Designed Experiment II