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Name \_\_\_\_\_

**SHORT ANSWER. Using the following information, write the word, phrase, or value that best answers the problem.**

**Determine whether the given value is a statistic or a parameter.**

- 1) In studying the Loggerhead turtle on Anna Maria Island, FL, scientists observe the average (mean) number of hatchlings in all 253 nests.
- 2) A sample of Medtronic's rechargeable implanted spine stimulator batteries lasted an average (mean) of nine years.

**Determine whether the given values are from a discrete or a continuous data set.**

- 3) A sample of Dall sheep is measured to have an average (mean) horn length of 35.7 inches.
- 4) The number of hatchlings from a sample of 45 bluebird nests is 135.

**MULTIPLE CHOICE. Select the choice that best answers the problem.**

**Determine which of the four levels of measurement is most appropriate.**

- 5) Doctors measure the weights (in pounds) of preterm babies. What type of data is collected?
  - A) Nominal
  - B) Ordinal
  - C) Interval
  - D) Ratio
- 6) Ornithologists classify hummingbirds in the United States using 17 different species: Allen, Anna, Berylline, Black-chinned, Blue-throated, Broad-billed, Broad-tailed, Buff-bellied, Calliope, Costa, Lucifer, Magnificent, Ruby-throated, Rufous, Violet-crowned, White-eared, and Xantus. What type of data is collected?
  - A) Nominal
  - B) Ordinal
  - C) Interval
  - D) Ratio
- 7) The income range of attendees at a research conference is gathered as upper, middle, and low levels. What type of data is collected?
  - A) Nominal
  - B) Ordinal
  - C) Interval
  - D) Ratio

- 8) Biologists measure the water temperature of the Merrimack River in New Hampshire. What type of data is collected?
- A) Nominal
  - B) Ordinal
  - C) Interval
  - D) Ratio

**SHORT ANSWER. Using the following information, write the word, phrase, or value that best answers the problem.**

**Identify (a) the sample and (b) the population.**

- 9) A graduate student conducts a research study on undergraduate student smoking habits. She begins with a survey to 500 randomly selected undergraduate students from 10 randomly selected U.S. universities.
- 10) A researcher randomly selects 50 one-square meter locations at the Anna-Borrego Desert State Park in California to determine the survival rate of Desert poppies and Arizona lupines.

**Determine whether the given description corresponds to an observational study or an experiment.**

- 11) In a study of cold symptoms, the body temperatures of study participants were taken.
- 12) Children with attention deficit hyperactivity disorder are randomly divided into four treatment groups (the Tomatis Method, the Dore Method, the Brain Gym, and a control group) to compare differences in focus and concentration.

**Identify the type of observational study: cross-sectional, retrospective, or prospective.**

- 13) A researcher from the department of defense is studying the psychology of trauma. He plans to follow the children of service members who died in Afghanistan for the next 20 years.
- 14) Scientists studying the migration habits of Aleutian geese collect data from reports measuring the number of geese during "fly-offs" over the past 15 years.

**Determine the type of sampling used: systematic, convenience, stratified, or cluster.**

- 15) A county water quality control officer obtains a list of all residential addresses in the county and constructs a sample of homes to monitor by selecting every 200<sup>th</sup> home on the list.
- 16) To conduct a study of Johnson & Johnson shareholder attitudes, a list of shareholder zipcodes is compiled. All shareholders from 20 different zipcodes are selected to be surveyed.

- 17) To obtain a sample of pregnant women, a researcher contacts her son's preschool teacher for a list of names.
- 18) Biologists divide the regions where Red foxes are found into the Nearctic, Palearctic, Oriental, Ethiopian, and the Australian region. They plan to follow 100 female foxes from each region to find the average (mean) number of their offspring.

**The following questions relate to random samples and simple random samples.**

- 19) To assess the variation in measurement (in cubic centimeters) of a pre-filled syringes containing experimental cervical cancer vaccine, manufacturers select every 200<sup>th</sup> syringe beginning at a random moment. Does this sampling plan result in a random sample? Simple random sample?
- 20) To monitor levels of the giardia parasite in the Rio Grande, aquatic biologists collect test tube samples at various locations determined by a computer randomization program. Does this sampling plan result in a random sample? Simple random sample?

Answer Key

Testname: CHAPTER 1 FORM A

- 1) Parameter
- 2) Statistic
- 3) Continuous
- 4) Discrete
- 5) D) Ratio
- 6) A) Nominal
- 7) B) Ordinal
- 8) C) Interval
- 9) (a) sample - 500 undergraduate students from 10 U.S. universities; (b) population - undergraduate students from U.S. universities
- 10) (a) sample - 50 one-square meter locations at the Anna-Borrego Desert State Park in California; (b) population - one-square meter locations at the Anna-Borrego Desert State Park in California
- 11) Observational
- 12) Experiment
- 13) Prospective
- 14) Retrospective
- 15) Systematic
- 16) Cluster
- 17) Convenience
- 18) Stratified
- 19) Yes; No
- 20) Yes; Yes

Name \_\_\_\_\_

**SHORT ANSWER. Using the following information, write the word, phrase, or value that best answers the problem.**

**Determine whether the given value is a statistic or a parameter.**

- 1) Volunteers in Grayton Beach, FL identified the average (mean) number of hatchlings in all 79 Loggerhead turtle nests.
- 2) A sample of Sidewinder, or Horned, Rattlesnakes is found to have an average (mean) length of 26 inches.

**Determine whether the given values are from a discrete or a continuous data set.**

- 3) A sample of male Bighorn sheep has an average (mean) horn base circumference of 43.2 centimeters.
- 4) The Produce for Better Health Foundation manages the campaign advocating consumers to eat “5 Fruits and Vegetables A Day for Better Health”.

**MULTIPLE CHOICE. Select the choice that best answers the problem.**

**Determine which of the four levels of measurement is most appropriate.**

- 5) Doctors measure the weights (in pounds) of pregnant women. What type of data is collected?
  - A) Nominal
  - B) Ordinal
  - C) Interval
  - D) Ratio
- 6) Scientists classify the four major deserts in North America using different regions: the Great Basin, the Mojave, the Sonoran, and the Chihuahuan. What type of data is collected?
  - A) Nominal
  - B) Ordinal
  - C) Interval
  - D) Ratio
- 7) Physicians rank the severity of asthma using mild intermittent asthma, mild persistent asthma, moderate persistent asthma, severe persistent asthma, or brittle asthma. What type of data is collected?
  - A) Nominal
  - B) Ordinal
  - C) Interval
  - D) Ratio

- 8) Biologists monitor the air temperature of the Biosphere 2 in Oracle, Arizona. What type of data is collected?
- A) Nominal
  - B) Ordinal
  - C) Interval
  - D) Ratio

**SHORT ANSWER. Using the following information, write the word, phrase, or value that best answers the problem.**

**Identify (a) the sample and (b) the population.**

- 9) A graduate student conducts a research study on undergraduate student nutrition. She begins with a survey to 250 randomly selected undergraduate students from five randomly selected U.S. universities.
- 10) A researcher randomly selects 40 male prairie chickens at the Crane Meadows Nature Center in Nebraska to study their mating rituals.

**Determine whether the given description corresponds to an observational study or an experiment.**

- 11) In a study of the Bald Eagle population, the number of breeding pairs is counted.
- 12) Patients with severe heart failure were randomly assigned to two treatment groups to compare death and hospitalization rates. One group was treated with drug therapy while the other group was treated with a combination of drugs and an electrical device.

**Identify the type of observational study: cross-sectional, retrospective, or prospective.**

- 13) Climatologists studying global warming record the average (mean) temperature of the Earth and the change in size of the ice caps during the next 50 years.
- 14) Geneticists studying the biodiversity of roses collect data from reports classifying the number of varieties during the past 30 years.

**Determine the type of sampling used: systematic, convenience, stratified, or cluster.**

- 15) Biologists studying the pH level of state waterways obtain a sample of streams from a randomly generated list by selecting every 5<sup>th</sup> stream on the list.
- 16) To conduct a survey of the interest of U.S. citizens in Yellowstone National Park, a list of zipcodes is compiled. All citizens in 50 different zipcodes are selected to be mailed a survey.
- 17) To obtain a sample of diabetics, a graduate student contacts nearby hospitals for a list of names.



18) Medical researchers following living organ donors classify donors according to whether they donated a kidney, a portion of the liver, a portion of the lung, bone marrow, or blood. The general health of 200 donors from each category is monitored for five years.

**The following questions relate to random samples and simple random samples.**

19) To assess the variation in volume (in cubic centimeters) of different manufacturer's pre-filled hormone injections, reproductive biologists select every 50<sup>th</sup> syringe beginning at a random moment. Does this sampling plan result in a random sample? Simple random sample?

20) To monitor the population of Herring in Manchester, New Hampshire, fisheries biologists catch samples of the fish in a river at various locations determined by a computer randomization program. Does this sampling plan result in a random sample? Simple random sample?

Answer Key

Testname: CHAPTER 1 FORM B

- 1) Parameter
- 2) Statistic
- 3) Continuous
- 4) Discrete
- 5) D) Ratio
- 6) A) Nominal
- 7) B) Ordinal
- 8) C) Interval
- 9) (a) sample - 250 undergraduate students from five U.S. universities; (b) population - undergraduate students from U.S. universities
- 10) (a) sample - 40 male prairie chickens at the Crane Meadows Nature Center in Nebraska; (b) population - male prairie chickens at the Crane Meadows Nature Center in Nebraska
- 11) Observational
- 12) Experiment
- 13) Prospective
- 14) Retrospective
- 15) Systematic
- 16) Cluster
- 17) Convenience
- 18) Stratified
- 19) Yes; No
- 20) Yes; Yes