

Exam

Name _____

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

- 1) 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?
- A) No; no B) Yes; no C) Yes; yes D) No; yes

Answer: C

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

- 2) Determine the type of sampling used: systematic, convenience, stratified, or cluster.
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 200th home on the list.

Answer: Systematic

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

- 3) A _____ is the complete collection of all measurements or data, whereas, a _____ is a subcollection of members selected from the complete collection.
- A) population; sample B) population; parameter
C) sample; population D) sample; census

Answer: A

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

- 4) Determine which of the four levels of measurement (nominal, ordinal, interval, or ratio) is most appropriate.
The cholesterol level for patients at a hospital is noted as optimal, borderline high, and high.

Answer: Ordinal

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

- 5) Determine the type of sampling used: systematic, convenience, stratified, or cluster.
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.
- A) Systematic B) Convenience C) Stratified D) Cluster

Answer: D

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

- 6) Identify the type of observational study: cross-sectional, retrospective, or prospective.
Scientists studying pelican injuries due to fishing line entanglement collect data from reports measuring the number of injured pelicans over the past 12 years.

Answer: Retrospective

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

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

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.

- A) Systematic B) Convenience C) Stratified D) Cluster

Answer: C

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

Geneticists studying the biodiversity of roses collect data from reports classifying the number of varieties during the past 30 years.

- A) Prospective B) Retrospective C) Cross-sectional

Answer: B

9) Determine which of the four levels of measurement is most appropriate.

Biologists monitor the air temperature of the Biosphere 2 in Oracle, Arizona.

- A) Nominal B) Ordinal C) Interval D) Ratio

Answer: C

10) 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?

- A) No; no B) Yes; yes C) No; yes D) Yes; no

Answer: B

11) Determine which of the four levels of measurement is most appropriate.

Scientists classify the four major deserts in North America using different regions: the Great Basin, the Mojave, the Sonoran, and the Chihuahuan.

- A) Nominal B) Ordinal C) Interval D) Ratio

Answer: A

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

12) Determine which of the four levels of measurement (nominal, ordinal, interval, or ratio) is most appropriate.

Biologists measure the water temperature of Lake Okeechobee

Answer: Interval

13) Determine which of the four levels of measurement (nominal, ordinal, interval, or ratio) is most appropriate.

Doctors measure the weights (in pounds) of diabetic patients.

Answer: Ratio

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

A researcher from the county school system is studying the effects of an intervention on the growth mindset on school performance. He plans to follow the children who participated in this intervention for the next 5 years to see if performance differs for those who participated from those who didn't.

Answer: Prospective

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

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

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.

A) Retrospective

B) Cross-sectional

C) Prospective

Answer: A

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

16) Identify the sample.

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.

Answer: 250 randomly selected undergraduate students from five randomly selected U.S. universities

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

17) In a cross-sectional study, data are _____.

A) collected in the future from groups that share common factors

B) collected from a past time period

C) observed, measured, and collected at one point of time

D) observed, measure, and collected over a period of time

Answer: C

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

To conduct a study of hospital admittance procedures, a list of hospital locations according to county is compiled. All the hospitals from 20 randomly selected counties are selected to be surveyed.

A) Systematic

B) Convenience

C) Stratified

D) Cluster

Answer: D

19) Determine whether the given value is a statistic or a parameter.

In studying the loggerhead turtle on Anna Maria Island, FL, scientists observe the average (mean) number of hatchlings in all 253 nests.

A) Statistic

B) Parameter

Answer: B

20) Determine whether the given value is a statistic or a parameter.

A sample of Sidewinder, or Horned, Rattlesnakes is found to have an average (mean) length of 26 inches.

A) Statistic

B) Parameter

Answer: A

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

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 200th home on the list.

A) Systematic

B) Convenience

C) Stratified

D) Cluster

Answer: A

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

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

The number of caterpillars from a sample of 55 milkweed plants is 185.

Answer: Discrete

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

- 23) Determine whether the given description corresponds to an observational study or an experiment.
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.

A) Observational study

B) Experiment

Answer: B

- 24) Determine whether the given description corresponds to an observational study or an experiment.
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.

A) Experiment

B) Observational study

Answer: A

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

- 25) Identify the population.

A researcher randomly selects 40 male prairie chickens at the Crane Meadows Nature Center in Nebraska to study their mating rituals.

Answer: All the male prairie chickens at the Crane Meadows Nature Center in Nebraska

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

- 26) Determine which of the four levels of measurement is most appropriate.

Physicians rank the severity of asthma using mild intermittent asthma, mild persistent asthma, moderate persistent asthma, severe persistent asthma, or brittle asthma.

A) Nominal

B) Ordinal

C) Interval

D) Ratio

Answer: B

- 27) Determine which of the four levels of measurement is most appropriate.

Doctors measure the weights (in pounds) of preterm babies.

A) Nominal

B) Ordinal

C) Interval

D) Ratio

Answer: D

- 28) Determine which of the four levels of measurement is most appropriate.

The income range of attendees at a research conference is gathered as upper, middle, and low levels.

A) Nominal

B) Ordinal

C) Interval

D) Ratio

Answer: B

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

- 29) Would an observational study or an experiment be more appropriate to investigate the effects on humans of a substance known to be toxic? Explain.

Answer: Observation

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

- 30) Determine whether the given value is a statistic or a parameter.
Nurses measure and calculate the average (mean) body temperature for all 187 patients at a regional hospital.
A) Parameter B) Statistic

Answer: A

- 31) Determine which of the four levels of measurement is most appropriate.
Biologists measure the water temperature of the Merrimack River in New Hampshire.
A) Nominal B) Ordinal C) Interval D) Ratio

Answer: C

- 32) Identify the type of observational study: cross-sectional, retrospective, or prospective.
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.
A) Prospective B) Retrospective C) Cross-sectional

Answer: A

- 33) Determine the type of sampling used: systematic, convenience, stratified, or cluster.
To obtain a sample of diabetics, a graduate student contacts nearby hospitals for a list of names.
A) Systematic B) Convenience C) Stratified D) Cluster

Answer: B

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

- 34) To assess the variation in measurement (in mL) of pre-filled vials containing Albuterol, manufacturers select every 100th vial beginning at a random moment. Does this sampling plan result in a random sample? Simple random sample?

Answer: Yes; no

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

- 35) Determine whether the given description corresponds to an observational study or an experiment.
In a study of the Bald Eagle population, the number of breeding pairs is counted.
A) Observational study B) Experiment

Answer: A

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

- 36) Determine whether the given value is a statistic or a parameter.
Park rangers identified the average (mean) number of reported bear sightings in all 32 state parks.

Answer: Parameter

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

- 37) Determine whether the given values are from a discrete or a continuous data set.
People are asked to state how many times in the last month they visited their family doctor.
A) Continuous B) Discrete

Answer: B

38) Determine whether the given values are from a discrete or a continuous data set.
A sample of male Bighorn sheep has an average (mean) horn base circumference of 43.2 centimeters.
A) Continuous B) Discrete
Answer: A

39) Determine the type of sampling used: systematic, convenience, stratified, or cluster.
Biologists studying the pH level of state waterways obtain a sample of streams from a randomly generated list by selecting every 5th stream on the list.
A) Systematic B) Convenience C) Stratified D) Cluster
Answer: A

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

40) Determine the type of sampling used: systematic, convenience, stratified, or cluster.
To obtain a sample of females with rotator cuff injuries, a researcher asks people she sees at her gym whether they have had such an injury.
Answer: Convenience

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

41) To assess the variation in measurement (in cubic centimeters) of pre-filled syringes containing experimental cervical cancer vaccine, manufacturers select every 200th syringe beginning at a random moment. Does this sampling plan result in a random sample? Simple random sample?
A) No; no B) Yes; no C) Yes; yes D) No; yes
Answer: B

42) Determine whether the given values are from a discrete or a continuous data set.
The number of hatchlings from a sample of 45 bluebird nests is 135.
A) Continuous B) Discrete
Answer: B

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

43) Would an observational study or an experiment be more appropriate for investigating the effects on fertilizer on plant growth? Explain.
Answer: Experiment

44) Determine which of the four levels of measurement (nominal, ordinal, interval, or ratio) is most appropriate.
Marine Biologists classify turtles in the state of Florida using 5 different species: Loggerhead, Green Turtle, Leatherback, Hawk's Bill, and Kemp's Ridley.
Answer: Nominal

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

45) Determine whether the given description corresponds to an observational study or an experiment.
In a study of cold symptoms, the body temperatures of study participants were taken.
A) Experiment B) Observational study
Answer: B

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

- 46) Explain the difference between stratified and cluster sampling.

Answer: In both cluster sampling and stratified sampling, sub-groups (clusters or strata) are formed. However, in stratified sampling, all strata are used and a sample is selected from each strata. In cluster sampling, a sample of the clusters is first selected, then all members of those clusters are selected.

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

- 47) Determine whether the given values are from a discrete or a continuous data set.
The mean number of times that a sample of 50 adults have visited their dentist is 2.3 times.

Answer: Discrete

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

- 48) Determine whether the given value is a statistic or a parameter.

A sample of Medtronic's rechargeable implanted spine stimulator batteries lasted an average (mean) of nine years.

A) Parameter

B) Statistic

Answer: B

- 49) A _____ is the complete collection of all measurements or data, whereas, a _____ is a subcollection of members selected from the complete collection.

A) population; parameter

B) sample; population

C) sample; census

D) population; sample

Answer: D

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

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.

A) Retrospective

B) Cross-sectional

C) Prospective

Answer: C

- 51) Determine whether the given values are from a discrete or a continuous data set.

The Produce for Better Health Foundation manages the campaign advocating consumers to eat "5 Fruits and Vegetables A Day for Better Health" and gathers data on the number of servings of fruit and vegetables that a sample of Americans ate yesterday

A) Discrete

B) Continuous

Answer: A

- 52) Determine the type of sampling used: systematic, convenience, stratified, or cluster.

To obtain a sample of pregnant women, a researcher contacts her son's preschool teacher for a list of names.

A) Systematic

B) Convenience

C) Stratified

D) Cluster

Answer: B

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

- 53) Determine whether the given value is a statistic or a parameter.

A sample of patients had kidney transplants that lasted an average (mean) of 15 years.

Answer: Statistic

- 54) Determine whether the given description corresponds to an observational study or an experiment.
Felines with diabetes are randomly divided into three treatment groups (oral insulin, injected insulin, and a control group) to compare differences in glucose levels.

Answer: Experiment

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

- 55) Determine which of the four levels of measurement is most appropriate.
Doctors measure the weights (in pounds) of pregnant women.

A) Nominal B) Ordinal C) Interval D) Ratio

Answer: D

- 56) Determine which of the four levels of measurement is most appropriate.

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.

A) Nominal B) Ordinal C) Interval D) Ratio

Answer: A

- 57) Determine the type of sampling used: systematic, convenience, stratified, or cluster.

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.

A) Systematic B) Convenience C) Stratified D) Cluster

Answer: C

- 58) Identify the population.

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.

A) Graduate students from U.S. universities
B) Undergraduate students from U.S. universities
C) Smokers in the U.S.
D) 500 undergraduate students from 10 U.S. universities

Answer: B

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

A) Yes; yes B) Yes; no C) No; no D) No; yes

Answer: B

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

- 60) Determine whether the given description corresponds to an observational study or an experiment.

A doctor gives a new medication to half of his patients with the flu and a placebo to the other half of his patients with the flu.

Answer: Experiment

Answer Key

Testname: CH01

- 1) C
- 2) Systematic
- 3) A
- 4) Ordinal
- 5) D
- 6) Retrospective
- 7) C
- 8) B
- 9) C
- 10) B
- 11) A
- 12) Interval
- 13) Ratio
- 14) Prospective
- 15) A
- 16) 250 randomly selected undergraduate students from five randomly selected U.S. universities
- 17) C
- 18) D
- 19) B
- 20) A
- 21) A
- 22) Discrete
- 23) B
- 24) A
- 25) All the male prairie chickens at the Crane Meadows Nature Center in Nebraska
- 26) B
- 27) D
- 28) B
- 29) Observation
- 30) A
- 31) C
- 32) A
- 33) B
- 34) Yes; no
- 35) A
- 36) Parameter
- 37) B
- 38) A
- 39) A
- 40) Convenience
- 41) B
- 42) B
- 43) Experiment
- 44) Nominal
- 45) B
- 46) In both cluster sampling and stratified sampling, sub-groups (clusters or strata) are formed. However, in stratified sampling, all strata are used and a sample is selected from each strata. In cluster sampling, a sample of the clusters is first selected, then all members of those clusters are selected.
- 47) Discrete
- 48) B

Answer Key

Testname: CH01

- 49) D
- 50) C
- 51) A
- 52) B
- 53) Statistic
- 54) Experiment
- 55) D
- 56) A
- 57) C
- 58) B
- 59) B
- 60) Experiment