Chapter 1—Statistics and Scientific Method

MULTIPLE CHOICE

1. Which method of knowing is used in the following example? An individual accepts as true that there is an afterlife because a minister asserts such is the case.
   a. Method of Authority
   b. Method of Intuition
   c. Scientific Method
   d. Rationalism

   ANS: A PTS: 1

2. Which method of knowing is used in the following example? An individual accepts as true that black holes exist because 10 physics Nobel laureates assert such is the case.
   a. Method of Authority
   b. Method of Intuition
   c. Scientific Method
   d. Rationalism

   ANS: A PTS: 1 MSC: WWW

3. Which method of knowing is used in the following example? You have been struggling to determine the underlying explanation for the sadness you have been feeling for the past couple of months. Since you haven't come up with the explanation, you give up on the struggle and decide to just go on with your life. Two days later, an explanation pops into your consciousness that you are convinced is correct.
   a. Method of Authority
   b. Method of Intuition
   c. Scientific Method
   d. Rationalism

   ANS: B PTS: 1 MSC: WWW

4. In acquiring knowledge the method that employs logic, reasoning and objective assessment is referred to as ____.
   a. the method of authority
   b. intuition
   c. rationalism
   d. scientific method

   ANS: D PTS: 1 MSC: WWW

   Exhibit 1-1
   Let's assume you are conducting an experiment to determine the effect of a new drug on the incidence of epileptic seizures. You select 20 epileptics from the 150 epileptics being treated at a nearby hospital and administer the drug to them. You record the number of seizures in each of the 20 subjects for one month.

5. Refer to Exhibit 1-1. The new drug is an example of a(n) ____.
   a. dependent variable
   b. constant
   c. statistic
   d. independent variable

ANS: D PTS: 1

6. Refer to Exhibit 1-1. Incidence of seizures is an example of a(n) ____.
   a. dependent variable
   b. constant
   c. statistic
   d. independent variable

   ANS: A PTS: 1

7. Refer to Exhibit 1-1. The 20 subjects constitute ____.
   a. the dependent variable
   b. the sample
   c. a statistic
   d. the independent variable

   ANS: B PTS: 1

8. Refer to Exhibit 1-1. The 150 epileptics constitute ____.
   a. the dependent variable
   b. a parameter
   c. a statistic
   d. the independent variable

   ANS: B PTS: 1

9. Refer to Exhibit 1-1. The number of seizures for each of the 20 subjects constitutes ____.
   a. the dependent variable
   b. data
   c. a statistic
   d. the independent variable

   ANS: B PTS: 1

10. Refer to Exhibit 1-1. Then you record the number of seizures in each of the 20 subjects for one month without the drug. Being compulsive, you also record the number of seizures for the remaining 130 epileptics for one month. The number of seizures for each of the 130 epileptics constitutes ____.
    a. the dependent variable
    b. data
    c. a statistic
    d. independent variable

    ANS: B PTS: 1

11. Refer to Exhibit 1-1. The average (mean) number of seizures for the 20 subjects is called ____.
    a. the dependent variable
    b. data
    c. a statistic
    d. a parameter

    ANS: C PTS: 1

Exhibit 1-2
In order to estimate the average (mean) weight of all professional football players, an investigator determines the weight of the "Dallas Cowboy" players.

12. Refer to Exhibit 1-2. Weight is an example of a(n) ____.
    a. independent variable
    b. constant
    c. statistic
    d. dependent variable

    ANS: D PTS: 1

13. Refer to Exhibit 1-2. The weight of each Dallas Cowboy is(are) called ____.
    a. constants
    b. data
    c. parameters
    d. statistics

    ANS: B PTS: 1

14. Refer to Exhibit 1-2. The Dallas Cowboys are a ____.
    a. population
    b. parameter
    c. sample
    d. statistic

    ANS: C PTS: 1

15. Refer to Exhibit 1-2. All professional football players constitute a ____.
    a. population
    b. parameter
    c. sample
    d. statistic

    ANS: A PTS: 1

16. Refer to Exhibit 1-2. The average (mean) weight of the Dallas Cowboys is called a ____.
    a. population
    b. parameter
    c. sample
    d. statistic

    ANS: D PTS: 1

17. Refer to Exhibit 1-2. The average (mean) weight of all professional football players is called a ____.
    a. population
    b. parameter
    c. sample
    d. statistic

    ANS: B PTS: 1

Exhibit 1-3
In order to estimate the amount of TV watched by New York City adults, a sociologist surveys a random sample of adults from this city.

18. Refer to Exhibit 1-3. The obtained raw scores are called ____.
    a. data
    b. constants

c. statistics
d. populations

ANS: A PTS: 1

19. Refer to Exhibit 1-3. The average (mean) of the raw scores is a ____.
a. population
b. sample
c. statistic
d. parameter

ANS: C PTS: 1

20. Refer to Exhibit 1-3. All of the New York City adults constitute a ____.
a. population
b. sample
c. statistic
d. parameter

ANS: A PTS: 1

Exhibit 1-4
In order to estimate the height of all students at your university, let's assume you have measured the height of all psychology majors at the university.

21. Refer to Exhibit 1-4. The resulting raw scores are called ____.
a. constants
b. data
c. coefficients
d. statistics

ANS: B PTS: 1

22. Refer to Exhibit 1-4. The height scores of all psychology majors constitute a ____.
a. population
b. sample
c. parameter
d. statistic

ANS: B PTS: 1

23. Refer to Exhibit 1-4. If you had measured the height scores of all students at your university, these scores would constitute a ____.
a. population
b. sample
c. parameter
d. statistic

ANS: A PTS: 1

24. Refer to Exhibit 1-4. If you had measured the height scores of all students at your university, the average (mean) of these scores would constitute a ____.
a. population
b. sample
c. parameter
d. statistic

ANS: C PTS: 1

25. Refer to Exhibit 1-4. The average (mean) value of the measured height scores constitutes a ____.
    a. population
    b. sample
    c. parameter
    d. statistic

    ANS: D PTS: 1

Exhibit 1-5
In order to estimate the attention level of college undergraduates in the United States, a psychologist measures the attention span of the undergraduates at a local university.

26. Refer to Exhibit 1-5. The mean of these scores is a ____.
    a. parameter
    b. population
    c. statistic
    d. sample

    ANS: C PTS: 1

27. Refer to Exhibit 1-5. The undergraduates at the local university are a ____.
    a. parameter
    b. population
    c. sample
    d. statistic

    ANS: C PTS: 1

Exhibit 1-6
In order to estimate the ratio of white to black students in his college, a professor determines the proportion of whites and blacks in his class.

28. Refer to Exhibit 1-6. The resulting proportion is called a ____.
    a. population
    b. sample
    c. parameter
    d. statistic

    ANS: D PTS: 1

29. Refer to Exhibit 1-6. The students in the professor's class are called a ____.
    a. sample
    b. population
    c. statistic
    d. parameter

    ANS: A PTS: 1

30. Refer to Exhibit 1-6. The students of the entire college are called a ____.
    a. sample
    b. population
    c. statistic
    d. parameter

ANS: B PTS: 1

31. Inferential statistics ____.
    a. is the same as descriptive statistics
    b. also uses methods of descriptive statistics
    c. allows one to make inferences about a sample based on population data
    d. allows one to make inferences about a population based on sample data
    e. b and d

    ANS: E PTS: 1

32. Descriptive statistics are used to ____.
    a. calculate the mean and standard deviation of a sample
    b. calculate the mean and standard deviation of a population
    c. graph a distribution of raw scores
    d. b and c
    e. a, b and c

    ANS: E PTS: 1 MSC: WWW

33. In the equation $Y = bX + a$, b is a(n) ____.
    a. independent variable
    b. dependent variable
    c. constant
    d. coefficient
    e. c and d

    ANS: E PTS: 1

34. When one analyzes data based on a sample, one calculates a ____.
    a. parameter
    b. variable
    c. constant
    d. statistic

    ANS: D PTS: 1 MSC: WWW

35. Mathematical methods used to draw tentative conclusions about a population based on sample data are referred to as ____.
    a. descriptive statistics
    b. sample statistics
    c. inferential statistics
    d. random sampling
    e. magic

    ANS: C PTS: 1 MSC: WWW

36. The variable that the experimenter manipulates is called the ____.
    a. independent variable
    b. dependent variable
    c. constant variable
    d. experimental variable

    ANS: A PTS: 1

37. From which of the following studies can one most reasonably determine cause and effect?
    a. correlational study
    b. true experiment
    c. naturalistic observation
    d. all of the above equally well

    ANS: B PTS: 1 MSC: WWW

38. In inferential statistics the object is usually to generalize from a ____ to a ____.
    a. data; variable
    b. sample; population
    c. population; sample
    d. constant; variable

    ANS: B PTS: 1 MSC: WWW

39. For a list of sample data the lowest and highest score values are examples of ____ statistics.
    a. inferential
    b. sample
    c. population
    d. descriptive

    ANS: D PTS: 1 MSC: WWW

40. To avoid unknown, systematic factors that may bias the results of an experiment, the experimenter should select a ____ sample from a population and use controlled conditions.
    a. wise
    b. small
    c. random
    d. single

    ANS: C PTS: 1

41. Descriptive statistics are helpful in ____ and ____ raw data.
    a. generalizing; inferring
    b. organizing; tenderizing
    c. confusing; confounding
    d. summarizing; characterizing

    ANS: D PTS: 1 MSC: WWW

42. This question has been omitted from the ExamView test bank. To maintain the integrity of the numbering system between the printed copy and ExamView, this question has been marked "do not use on test" in ExamView's question information dialog.
    a. not available
    b. not available
    c. not available
    d. not available

    ANS: A PTS: 1

43. Pick the best answer from the following statements.
    a. The measurements that are made on the subjects of an experiment are called data.
    b. A statistic is a number calculated on sample data that quantifies a characteristic of the sample.
    c. A parameter is a number calculated on population data that quantifies a characteristic of

the population.
d. All of the above statements are true.

ANS: D PTS: 1

44. A statistic is defined as ____.
a. the score on the dependent variable of a particular subject in the sample
b. a number calculated on population data that quantifies a characteristic of the population
c. a number calculated on sample data that quantifies a characteristic of the sample
d. the number of subjects in the sample

ANS: C PTS: 1

45. A parameter is defined as ____.
a. the score on the dependent variable of a particular subject in the population
b. a number calculated on population data that quantifies a characteristic of the population
c. a number calculated on sample data that quantifies a characteristic of the sample
d. the number of individuals in the population

ANS: B PTS: 1

46. Data is defined as ____.
a. the measurements that are made on the subjects of an experiment
b. the score on the dependent variable of a particular subject in the sample
c. the score on the dependent variable of a particular subject in the population
d. the number of individuals in the sample

ANS: A PTS: 1

47. A sample is defined as ____.
a. the subjects in an experiment
b. the complete set of individuals, objects, or scores that the investigator is interested in studying
c. a subset of the population
d. a and c
e. a and b

ANS: D PTS: 1

48. A population is defined as ____.
a. the complete set of individuals living in Seattle in a study interested in the complete set of individuals living in the US.
b. the complete set of individuals the investigator wishes to generalize to from an experiment.
c. the complete set of individuals, objects, or scores that the investigator is interested in studying
d. a and c
e. b and c

ANS: E PTS: 1

49. The independent variable in an experiment is defined or identified as ____.
a. "IQ", in an experiment studying the effect of early education on IQ.
b. the variable that is systematically manipulated by the experimenter
c. the variable the experimenter measures to determine if there is a real effect
d. "Early Education", in an experiment studying the effect of Early Education on IQ

e. b and d

ANS: E PTS: 1

50. The dependent variable in an experiment is defined or identified as ____.
    a. the variable the experimenter measures to determine if there is a real effect
    b. the variable that is systematically manipulated by the experimenter
    c. "IQ", in an experiment studying the effect of Early Education on IQ
    d. "Early Education", in an experiment studying the effect of Early education on IQ
    e. a and c
    f. a and d

    ANS: E PTS: 1 MSC: WWW

51. A variable is defined or identified as ____.
    a. "Early Education", in an experiment studying the effect of Early Education on IQ
    b. a characteristic of some event, object or person that has the same value regardless of differing times or conditions.
    c. a characteristic of some event, object, or person that may have different values at different times depending on the conditions.
    d. "IQ", in an experiment studying the effect of Early Education on IQ
    e. a and d
    f. a, c, and d

    ANS: F PTS: 1

TRUE/FALSE

1. A sample is a subset of a population.

   ANS: T PTS: 1

2. The dependent variable is the variable that is systematically manipulated.

   ANS: F PTS: 1

3. The independent variable is the variable that is measured to determine the effect of the independent variable.

   ANS: F PTS: 1

4. A statistic is to a sample as a parameter is to a population.

   ANS: T PTS: 1 MSC: WWW

5. Descriptive statistics involves characterizing the obtained data.

   ANS: T PTS: 1

6. Inferential statistics uses the sample data to generalize to populations.

   ANS: T PTS: 1

7. Observational studies involve the manipulation of variables by the investigator.

ANS: F PTS: 1 MSC: WWW

8. True experiments involve the manipulation of variables by the investigator.

   ANS: T PTS: 1

9. Observational studies involve the use of independent variables.

   ANS: F PTS: 1

10. The method of authority is opposed to the scientific method.

    ANS: T PTS: 1

11. Intuition is often used as part of the scientific method.

    ANS: T PTS: 1

12. Data are an indispensable part of the scientific method.

    ANS: T PTS: 1 MSC: WWW

13. The only value of random sampling is to achieve a representative sample.

    ANS: F PTS: 1 MSC: WWW

14. One is able to determine cause and effect from observational studies.

    ANS: F PTS: 1

15. In an experiment conducted to determine the effect of testosterone on aggression, testosterone is the independent variable.

    ANS: F PTS: 1

16. Statistical methods that use sample data to make statements about populations are called inferential statistics.

    ANS: T PTS: 1

17. The goal of descriptive statistics is solely to summarize and organize data.

    ANS: F PTS: 1 MSC: WWW

18. In order to determine cause and effect, a researcher needs to do a true experiment.

    ANS: T PTS: 1 MSC: WWW

DEFINITIONS

1. Define parameter.

ANS:
Answer not provided.

PTS: 1

2. Define statistic.

ANS:
Answer not provided.

PTS: 1 MSC: WWW

3. Define dependent variable.

ANS:
Answer not provided.

PTS: 1

4. Define independent variable.

ANS:
Answer not provided.

PTS: 1

5. Define data.

ANS:
Answer not provided.

PTS: 1

6. Define descriptive statistics.

ANS:
Answer not provided.

PTS: 1

7. Define inferential statistics.

ANS:
Answer not provided.

PTS: 1 MSC: WWW

SHORT ANSWER

1. A developmental psychologist conducts an experiment to determine if exposure to an enriched environment shortly after birth will cause increased brain development. Twenty two-month-old rats are randomly selected from a pool of one thousand two-month-old rat pups. Ten of the twenty pups are exposed to an enriched environment for three weeks and the other ten to the usual environment for the same period of time. At a suitable time after the exposure, the psychologist measures the number of neurons per cm^3 in the brain of each rat. A comparison is then made of the mean number of neurons per cm^3 for each group. Identify the following:

   a. The population
   b. The sample
   c. The independent variable
   d. The dependent variable
   e. Any statistics

   ANS:
   Answer not provided.

   PTS: 1 MSC: WWW

2. Compare the method of authority with the scientific method.

   ANS:
   Answer not provided.

   PTS: 1

3. What is the major difference between descriptive and inferential statistics? Illustrate, using an example.

   ANS:
   Answer not provided.

   PTS: 1 MSC: WWW

4. Compare intuition and scientific method as methods of knowing.

   ANS:
   Answer not provided.

   PTS: 1

5. How does natural observation research differ from true experiments?

   ANS:
   Answer not provided.

   PTS: 1

6. A scientist asserts that properly collected data are essential to the scientific method. Is she correct? Explain.

   ANS:
   Answer not provided.

PTS: 1