

1. A researcher uses an anonymous survey to investigate the study habits of American college students. The entire group of American college students is an example of a \_\_\_\_.

- a. sample
- b. statistic
- c. population
- d. parameter

*ANSWER:* c

*REFERENCES:* 1.1 Statistics, Science, and Observations

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Apply

2. A researcher uses an anonymous survey to investigate the study habits of American college students. Based on the set of 56 surveys that were completed and returned, the researcher finds that these students spend an average of 4.1 hours each week working on course material outside of class. For this study, the set of 56 students who returned surveys is an example of a \_\_\_\_.

- a. parameter
- b. statistic
- c. population
- d. sample

*ANSWER:* d

*REFERENCES:* 1.1 Statistics, Science, and Observations

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Apply

3. A researcher uses an anonymous survey to investigate the study habits of American college students. Based on the set of 56 surveys that were completed and returned, the researcher finds that these students spend an average of 4.1 hours each week working on course material outside of class. For this study, the average of 4.1 hours is an example of a \_\_\_\_.

- a. parameter
- b. statistic
- c. population
- d. sample

*ANSWER:* b

*REFERENCES:* 1.1 Statistics, Science, and Observations

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Apply

4. A researcher is interested in the eating behavior of rats and selects a group of 25 rats to be tested in a research study. The group of 25 rats is an example of a \_\_\_\_.

- a. sample
- b. statistic
- c. population
- d. parameter

*ANSWER:* a

*REFERENCES:* 1.1 Statistics, Science, and Observations

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Apply

5. A researcher is curious about the average monthly cell phone bill for all high school students in the state of Florida. If this average could be obtained, it would be an example of a \_\_\_\_.

- a. sample
- b. statistic
- c. population
- d. parameter

**ANSWER:** d

**REFERENCES:** 1.1 Statistics, Science, and Observations

**QUESTION TYPE:** Multiple Choice

**KEYWORDS:** Bloom's: Apply

6. Although a research study is typically conducted with a relatively small group of participants known as a \_\_\_\_\_, most researchers hope to generalize their results to a much larger group known as a \_\_\_\_\_.

- a. sample; population
- b. statistic; sample
- c. population; sample
- d. parameter; population

**ANSWER:** a

**REFERENCES:** 1.1 Statistics, Science, and Observations

**QUESTION TYPE:** Multiple Choice

**KEYWORDS:** Bloom's: Understand

7. The relationship between a statistic and a parameter is the same as the relationship between \_\_\_\_\_.

- a. a sample and a population
- b. a statistic and a parameter
- c. a parameter and a population
- d. descriptive statistics and inferential statistics

**ANSWER:** a

**REFERENCES:** 1.1 Statistics, Science, and Observations

**QUESTION TYPE:** Multiple Choice

**KEYWORDS:** Bloom's: Understand

8. Statistical methods that organize, summarize, or streamline data are called \_\_\_\_\_.

- a. parameters
- b. statistics
- c. descriptive statistics
- d. inferential statistics

**ANSWER:** c

**REFERENCES:** 1.1 Statistics, Science, and Observations

**QUESTION TYPE:** Multiple Choice

**KEYWORDS:** Bloom's: Remember

9. A characteristic that describes a sample, usually a numerical value, is called a \_\_\_\_\_.

- a. parameter
- b. statistic
- c. variable
- d. constant

**ANSWER:** b

**REFERENCES:** 1.1 Statistics, Science, and Observations

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Remember

10. A researcher records the change in weight (gain or lost) during the first semester of college for each individual in a group of 25 freshmen, and calculates the average change in weight. The average is an example of a \_\_\_\_.

- a. parameter
- b. statistic
- c. variable
- d. constant

*ANSWER:* b

*REFERENCES:* 1.1 Statistics, Science, and Observations

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Apply

11. The average verbal SAT score for the entire class of entering freshmen is 530. However, if you select a sample of 20 freshmen and compute their average verbal SAT score you probably will not get exactly 530. What statistical concept is used to explain the natural difference that exists between a sample mean and the corresponding population mean?

- a. statistical error
- b. inferential error
- c. sampling error
- d. parametric error

*ANSWER:* c

*REFERENCES:* 1.1 Statistics, Science, and Observations

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Apply

12. A researcher conducts an experiment to determine whether moderate doses of St. John's wort have any effect on memory for college students. For this study, what is the independent variable?

- a. The amount of St. John's wort given to each participant
- b. The memory score for each participant
- c. The group of college students
- d. Whether or not they are full-time students

*ANSWER:* a

*REFERENCES:* 1.2 Data Structures, Research Methods, and Statistics

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Apply

13. A recent study reports that elementary school students who were given a nutritious breakfast each morning had higher test scores than students who did not receive the breakfast. For this study, what is the independent variable?

- a. The students who were given the nutritious breakfast
- b. The students who were not given the nutritious breakfast
- c. Whether or not a breakfast was given to the students
- d. The test scores for the students

*ANSWER:* c

*REFERENCES:* 1.2 Data Structures, Research Methods, and Statistics

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Apply

14. In a correlational study, \_\_\_\_.
- a. one variable is measured and two groups are compared
  - b. two variables are measured and two groups are compared
  - c. one variable is measured and there is only one group of participants
  - d. two variables are measured and there is only one group of participants

*ANSWER:* d

*REFERENCES:* 1.2 Data Structures, Research Methods, and Statistics

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Understand

15. In the simplest experimental study, \_\_\_\_.
- a. one variable is measured and two groups are compared
  - b. two variables are measured and two groups are compared
  - c. one variable is measured and there is only one group of participants
  - d. two variables are measured and there is only one group of participants

*ANSWER:* a

*REFERENCES:* 1.2 Data Structures, Research Methods, and Statistics

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Understand

16. In a research study comparing attitude scores for males and females, participant gender is an example of what kind of variable?
- a. an independent variable
  - b. an dependent variable
  - c. a quasi-independent variable
  - d. a quasi-dependent variable

*ANSWER:* c

*REFERENCES:* 1.2 Data Structures, Research Methods, and Statistics

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Apply

17. In an experiment comparing two methods for teaching social skill training to children with autism, the independent variable is \_\_\_\_ and the dependent variable is \_\_\_\_.
- a. teaching methods; the autistic children
  - b. the autistic children; the social skills that are learned
  - c. the social skills that are learned; the autistic children
  - d. teaching methods; the social skills that are learned

*ANSWER:* d

*REFERENCES:* 1.2 Data Structures, Research Methods, and Statistics

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Apply

18. Which description provides an example of a discrete variable?
- a. The time each student arrives in a psychology class
  - b. The gender of each student in a psychology class
  - c. The amount of time to solve a problem
  - d. The amount of weight gained for each freshman at a local college

*ANSWER:* b

*REFERENCES:* 1.3 Variables and Measurement

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Apply

19. Which description provides an example of a continuous variable?

- a. The gender of each student in a psychology class
- b. The number of males in each class offered by the college
- c. The amount of time to solve a problem
- d. The number of children in a family

*ANSWER:* c

*REFERENCES:* 1.3 Variables and Measurement

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Apply

20. If a variable can be divided into an infinite number of fractional parts, then it is a(n) \_\_\_\_ variable.

- a. independent
- b. dependent
- c. discrete
- d. continuous

*ANSWER:* d

*REFERENCES:* 1.3 Variables and Measurement

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Understand

21. Using letter grades (A, B, C, D, and E) to classify student performance on an exam is an example of measurement on a(n) \_\_\_\_ scale of measurement.

- a. nominal
- b. ordinal
- c. interval
- d. ratio

*ANSWER:* b

*REFERENCES:* 1.3 Variables and Measurement

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Apply

22. Determining the class standing (1<sup>st</sup>, 2<sup>nd</sup>, and so on) for the graduating seniors at a high school would involve measurement on a(n) \_\_\_\_ scale of measurement.

- a. nominal
- b. ordinal
- c. interval
- d. ratio

*ANSWER:* b

*REFERENCES:* 1.3 Variables and Measurement

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Apply

23. What additional information is obtained by measuring two individuals on an interval scale compared to an ordinal scale?

- a. Whether the measurements are the same or different
- b. The direction of the difference
- c. The size of the difference
- d. Whether the measurement is numerical

*ANSWER:* c

*REFERENCES:* 1.3 Variables and Measurement

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Understand

24. Determining a person's reaction time (in milliseconds) would involve measurement on a(n) \_\_\_\_ scale of measurement.

- a. nominal
- b. ordinal
- c. interval
- d. ratio

*ANSWER:* d

*REFERENCES:* 1.3 Variables and Measurement

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Apply

25. After measuring two individuals, a researcher can say that Tom's score is four points higher than Bill's. The measurements must come from a(n) \_\_\_\_ scale.

- a. nominal
- b. ordinal
- c. interval
- d. interval or ratio

*ANSWER:* d

*REFERENCES:* 1.3 Variables and Measurement

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Apply

26. What is the first step to be performed in the following mathematical expression?  $(\Sigma X)^2$

- a. Square each score.
- b. Add the scores.
- c. Add the squared scores.
- d. Square the sum of the scores.

*ANSWER:* b

*REFERENCES:* 1.4 Statistical Notation

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Understand

27. What is the final step to be performed in the following mathematical expression?  $(\Sigma X)^2$

- a. Square each score.
- b. Add the scores.
- c. Add the squared scores.
- d. Square the sum of the scores.

*ANSWER:* d

*REFERENCES:* 1.4 Statistical Notation

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Understand

28. What is the final step to be performed when computing  $\Sigma(X - 2)^2$ ?

- a. Square each value.
- b. Subtract 2 points from each score.
- c. Sum the squared values.
- d. Subtract  $2^2$  from each  $X^2$  value.

*ANSWER:* c

*REFERENCES:* 1.4 Statistical Notation

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Understand

29. What is the value of  $(\Sigma X)^2$  for the following scores? Scores: 1, 5, 2

- a. 10
- b. 16
- c. 30
- d. 64

*ANSWER:* d

*REFERENCES:* 1.4 Statistical Notation

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Understand

30. What is the value of  $\Sigma X^2$  for the following scores? Scores: 1, 0, 2, 4

- a. 14
- b. 21
- c. 28
- d. 49

*ANSWER:* b

*REFERENCES:* 1.4 Statistical Notation

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Understand

31. What is the value of  $\Sigma X + 1$  for the following scores? Scores 1, 0, 2, 4

- a. 8
- b. 10
- c. 11
- d. 14

*ANSWER:* a

*REFERENCES:* 1.4 Statistical Notation

*QUESTION TYPE:* Multiple Choice

*KEYWORDS:* Bloom's: Understand

32. What is the value of  $\Sigma(X + 1)$  for the following scores? Scores: 1, 0, 1, 4

- a. 4
- b. 6

- c. 9
- d. 10

**ANSWER:** d

**REFERENCES:** 1.4 Statistical Notation

**QUESTION TYPE:** Multiple Choice

**KEYWORDS:** Bloom's: Understand

33. What is the value of  $\Sigma(X - 1)^2$  for the following scores? Scores: 1, 2, 1, 4

- a. 10
- b. 16
- c. 36
- d. 49

**ANSWER:** a

**REFERENCES:** 1.4 Statistical Notation

**QUESTION TYPE:** Multiple Choice

**KEYWORDS:** Bloom's: Understand

34. What is the value of  $(\Sigma X)^2$  for the following scores? Scores: 1, 0, 2, 4

- a. 14
- b. 21
- c. 28
- d. 49

**ANSWER:** d

**REFERENCES:** 1.4 Statistical Notation

**QUESTION TYPE:** Multiple Choice

**KEYWORDS:** Bloom's: Understand

35. What is the value of  $\Sigma X + 1$  for the following scores? Scores: 1, 6, 3

- a. 10
- b. 11
- c. 13
- d. 16

**ANSWER:** b

**REFERENCES:** 1.4 Statistical Notation

**QUESTION TYPE:** Multiple Choice

**KEYWORDS:** Bloom's: Understand

36. What is the value of  $\Sigma(X + 1)$  for the following scores? Scores: 2, 4, 7

- a. 10
- b. 11
- c. 13
- d. 16

**ANSWER:** a

**REFERENCES:** 1.4 Statistical Notation

**QUESTION TYPE:** Multiple Choice

**KEYWORDS:** Bloom's: Understand

37. What is the value of  $\Sigma(X - 2)$  for the following scores? Scores: 2, 3, 5

- a. 4
- b. 6
- c. 8
- d. 10

ANSWER: a

REFERENCES: 1.4 Statistical Notation

QUESTION TYPE: Multiple Choice

KEYWORDS: Bloom's: Understand

38. What is the value of  $\Sigma(X - 2)^2$  for the following scores? Scores: 2, 3, 5

- a. 8
- b. 10
- c. 16
- d. 36

ANSWER: b

REFERENCES: 1.4 Statistical Notation

QUESTION TYPE: Multiple Choice

KEYWORDS: Bloom's: Understand

39. You are instructed to subtract four points from each score and find the sum of the resulting values. How would this set of instructions be expressed in summation notation?

- a.  $\Sigma X - 4$
- b.  $\Sigma (X - 4)$
- c.  $4 - \Sigma X$
- d.  $\Sigma(4 - X)$

ANSWER: b

REFERENCES: 1.4 Statistical Notation

QUESTION TYPE: Multiple Choice

KEYWORDS: Bloom's: Understand

40. You are instructed to subtract four points from each score, square the resulting value, and find the sum of the squared numbers. How would this set of instructions be expressed in summation notation?

- a.  $\Sigma X - 4^2$
- b.  $(\Sigma X - 4)^2$
- c.  $\Sigma(X - 4)^2$
- d.  $\Sigma X^2 - 4$

ANSWER: c

REFERENCES: 1.4 Statistical Notation

QUESTION TYPE: Multiple Choice

KEYWORDS: Bloom's: Understand

41. Using the average score to describe a sample is an example of inferential statistics.

- a. True
- b. False

ANSWER: False

REFERENCES: 1.1 Statistics, Science, and Observations

QUESTION TYPE: True / False

**KEYWORDS:** Bloom's: Understand

42. A researcher is interested in the average income for registered voters in the United States. The entire group of registered voters is an example of a population.

- a. True
- b. False

**ANSWER:** True

**REFERENCES:** 1.1 Statistics, Science, and Observations

**QUESTION TYPE:** True / False

**KEYWORDS:** Bloom's: Apply

43. The average score for a population is an example of a statistic.

- a. True
- b. False

**ANSWER:** False

**REFERENCES:** 1.1 Statistics, Science, and Observations

**QUESTION TYPE:** True / False

**KEYWORDS:** Bloom's: Understand

44. A researcher interested in vocabulary development obtains a sample of three-year-old children to participate in a research study. The average score for the group of 20 is an example of a parameter.

- a. True
- b. False

**ANSWER:** False

**REFERENCES:** 1.1 Statistics, Science, and Observations

**QUESTION TYPE:** True / False

**KEYWORDS:** Bloom's: Apply

45. The goal for an experiment is to demonstrate that changes in one variable are responsible for causing changes in a second variable.

- a. True
- b. False

**ANSWER:** True

**REFERENCES:** 1.2 Data Structures, Research Methods, and Statistics

**QUESTION TYPE:** True / False

**KEYWORDS:** Bloom's: Understand

46. In an experimental study, individuals in a control condition receive the experimental treatment.

- a. True
- b. False

**ANSWER:** False

**REFERENCES:** 1.2 Data Structures, Research Methods, and Statistics

**QUESTION TYPE:** True / False

**KEYWORDS:** Bloom's: Understand

47. A correlational study typically uses only one group of participants but measures two different variables (two scores) for each individual.

- a. True

b. False

*ANSWER:* True

*REFERENCES:* 1.2 Data Structures, Research Methods, and Statistics

*QUESTION TYPE:* True / False

*KEYWORDS:* Bloom's: Understand

48. A correlational study is used to examine the relationship between two variables but cannot determine whether it is a cause-and-effect relationship.

a. True

b. False

*ANSWER:* True

*REFERENCES:* 1.2 Data Structures, Research Methods, and Statistics

*QUESTION TYPE:* True / False

*KEYWORDS:* Bloom's: Understand

49. A recent report concluded that children with siblings have better social skills than children who grow up as an only child. This is an example of an experimental study.

a. True

b. False

*ANSWER:* False

*REFERENCES:* 1.2 Data Structures, Research Methods, and Statistics

*QUESTION TYPE:* True / False

*KEYWORDS:* Bloom's: Apply

50. A recent report concluded that college graduates have higher life-satisfaction scores than individuals who do not receive college degrees. For this study, graduating versus not graduating is an example of a quasi-independent variable.

a. True

b. False

*ANSWER:* True

*REFERENCES:* 1.2 Data Structures, Research Methods, and Statistics

*QUESTION TYPE:* True / False

*KEYWORDS:* Bloom's: Apply

51. The participants in a research study are classified as high, medium, or low in self-esteem. This classification involves measurement on a nominal scale.

a. True

b. False

*ANSWER:* False

*REFERENCES:* 1.3 Variables and Measurement

*QUESTION TYPE:* True / False

*KEYWORDS:* Bloom's: Apply

52. Constructs are external attributes or characteristics that can be directly observed to describe and explain behavior.

a. True

b. False

*ANSWER:* False

*REFERENCES:* 1.3 Variables and Measurement

*QUESTION TYPE:* True / False

**KEYWORDS:** Bloom's: Understand

53. Classifying people into two groups on the basis of gender is an example of measurement on an ordinal scale.
- a. True
  - b. False

**ANSWER:** False

**REFERENCES:** 1.3 Variables and Measurement

**QUESTION TYPE:** True / False

**KEYWORDS:** Bloom's: Understand

54. Students in an introductory art class are classified as art majors and non-art majors. This is an example of measurement on a nominal scale.

- a. True
- b. False

**ANSWER:** True

**REFERENCES:** 1.3 Variables and Measurement

**QUESTION TYPE:** True / False

**KEYWORDS:** Bloom's: Apply

55. To determine how much difference there is between two individuals, you must use either an interval or a ratio scale of measurement.

- a. True
- b. False

**ANSWER:** True

**REFERENCES:** 1.3 Variables and Measurement

**QUESTION TYPE:** True / False

**KEYWORDS:** Bloom's: Understand

56. If a researcher measures two individuals on a nominal scale, it is impossible to determine which individual has the larger score.

- a. True
- b. False

**ANSWER:** True

**REFERENCES:** 1.3 Variables and Measurement

**QUESTION TYPE:** True / False

**KEYWORDS:** Bloom's: Understand

57. If a researcher measures two individuals on an ordinal scale, then it is impossible to determine how much difference exists between the two people.

- a. True
- b. False

**ANSWER:** True

**REFERENCES:** 1.3 Variables and Measurement

**QUESTION TYPE:** True / False

**KEYWORDS:** Bloom's: Understand

58. For statistical purposes, there usually is not much difference between scores from an interval scale and scores from a ratio scale.

- a. True

b. False

*ANSWER:* True

*REFERENCES:* 1.3 Variables and Measurement

*QUESTION TYPE:* True / False

*KEYWORDS:* Bloom's: Understand

59. Recording the number of students who are absent each day at a high school would be an example of measuring a discrete variable.

a. True

b. False

*ANSWER:* True

*REFERENCES:* 1.3 Variables and Measurement

*QUESTION TYPE:* True / False

*KEYWORDS:* Bloom's: Apply

60. A high school gym teacher records how much time each student requires to complete a one-mile run. This is an example of measuring a continuous variable.

a. True

b. False

*ANSWER:* True

*REFERENCES:* 1.3 Variables and Measurement

*QUESTION TYPE:* True / False

*KEYWORDS:* Bloom's: Apply

61. In an introductory theater class, the professor records from the number of movies students watched the previous year. The teacher is measuring a discrete variable.

a. True

b. False

*ANSWER:* True

*REFERENCES:* 1.3 Variables and Measurement

*QUESTION TYPE:* True / False

*KEYWORDS:* Bloom's: Apply

62. The real limit separating two adjacent scores is located at the upper boundary, or at the higher score.

a. True

b. False

*ANSWER:* False

*REFERENCES:* 1.3 Variables and Measurement

*QUESTION TYPE:* True / False

*KEYWORDS:* Bloom's: Understand

63. An operational definition identifies a set of operations for measuring an external behavior and then uses the resulting measurement as a definition of a hypothetical construct.

a. True

b. False

*ANSWER:* True

*REFERENCES:* 1.3 Variables and Measurement

*QUESTION TYPE:* True / False

**KEYWORDS:** Bloom's: Remember

64. To compute  $(\Sigma X)^2$ , you first add the scores, then square the total.

- a. True
- b. False

**ANSWER:** True

**REFERENCES:** 1.4 Statistical Notation

**QUESTION TYPE:** True / False

**KEYWORDS:** Bloom's: Understand

65. The first step in computing  $\Sigma(X + 1)$  is to sum the scores.

- a. True
- b. False

**ANSWER:** False

**REFERENCES:** 1.4 Statistical Notation

**QUESTION TYPE:** True / False

**KEYWORDS:** Bloom's: Understand

66. For the following scores,  $\Sigma(X + 1) = 9$ . Scores: 1, 3, 0, 1

- a. True
- b. False

**ANSWER:** True

**REFERENCES:** 1.4 Statistical Notation

**QUESTION TYPE:** True / False

**KEYWORDS:** Bloom's: Understand

67. For the following scores,  $\Sigma(X + 1)^2 = 81$ . Scores: 1, 3, 0, 1

- a. True
- b. False

**ANSWER:** False

**REFERENCES:** 1.4 Statistical Notation

**QUESTION TYPE:** True / False

**KEYWORDS:** Bloom's: Understand

68. For the following scores,  $\Sigma(X - 1) = 10$ . Scores: 1, 3, 7

- a. True
- b. False

**ANSWER:** False

**REFERENCES:** 1.4 Statistical Notation

**QUESTION TYPE:** True / False

**KEYWORDS:** Bloom's: Understand

69. For the following scores,  $\Sigma X^2 = 35$ . Scores: 1, 3, 5

- a. True
- b. False

**ANSWER:** True

**REFERENCES:** 1.4 Statistical Notation

**QUESTION TYPE:** True / False

**KEYWORDS:** Bloom's: Understand

70. For the following scores,  $\Sigma X^2 = 49$ . Scores: 1, 4, 2, 0

- a. True
- b. False

**ANSWER:** False

**REFERENCES:** 1.4 Statistical Notation

**QUESTION TYPE:** True / False

**KEYWORDS:** Bloom's: Understand

71. Statistical techniques are classified into two major categories: descriptive and inferential. Describe the general purpose of each category.

**ANSWER:** The purpose of descriptive statistics is to simplify the organization and presentation of data. The purpose of inferential statistics is to use the limited data from a sample as the basis for making general conclusions about the population.

**REFERENCES:** 1.1 Statistics, Science, and Observations

**QUESTION TYPE:** Essay

**KEYWORDS:** Bloom's: Understand

72. Define the concept of "sampling error." Note: Your definition should include the concepts of sample, population, statistic, and parameter.

**ANSWER:** A *parameter* is a value that is obtained from a *population* of scores and is used to describe the population. A *statistic* is a value obtained from a *sample* and used to describe the sample. Typically it is impossible to obtain measurements for an entire population, so researchers must rely on information from samples; that is, researchers use statistics to obtain information about unknown parameters. However, samples provide only limited information about their populations. Thus, sample statistics are usually not identical to their corresponding population parameters. The error or discrepancy between a statistic and the corresponding parameter is called *sampling error*.

**REFERENCES:** 1.1 Statistics, Science, and Observations

**QUESTION TYPE:** Essay

**KEYWORDS:** Bloom's: Remember

73. Describe the sequence of mathematical operations that would be used to evaluate each of the following expressions.

- a.  $\Sigma X^2$
- b.  $(\Sigma X)^2$
- c.  $\Sigma X - 2$
- d.  $\Sigma(X - 2)$
- e.  $\Sigma(X - 2)^2$

**ANSWER:**

- a. To compute  $\Sigma X^2$ , you first square each score, then sum the squared values.
- b. To compute  $(\Sigma X)^2$ , you first sum the scores, then square the sum.
- c. To compute  $\Sigma X - 2$ , you first sum the scores, then subtract 2 from the sum.
- d. To compute  $\Sigma(X - 2)$  you first subtract 2 from each score, then sum the resulting values.
- e. To compute  $\Sigma(X - 2)^2$ , you first subtract 2 from each score, then square the resulting values, then sum the squared numbers.

**REFERENCES:** 1.4 Statistical Notation

**QUESTION TYPE:** Essay

**KEYWORDS:** Bloom's: Understand

74. Calculate each value requested for the following set of scores. Scores: 1, 2, 0, 4

- a.  $\Sigma X$
- b.  $\Sigma X^2$
- c.  $(\Sigma X)^2$

ANSWER: a. 7  
b. 21  
c.  $(7)^2 = 49$

REFERENCES: 1.4 Statistical Notation

QUESTION TYPE: Essay

KEYWORDS: Bloom's: Understand

75. Calculate each value requested for the following set of scores. Scores: 5, 2, 4, 2

- a.  $\Sigma X - 2$
- b.  $\Sigma(X - 2)$
- c.  $\Sigma(X - 2)^2$

ANSWER: a. 11  
b. 5  
c. 13

REFERENCES: 1.4 Statistical Notation

QUESTION TYPE: Essay

KEYWORDS: Bloom's: Understand

76. Calculate each value requested for the following set of scores: 

X	Y
1	5
3	1
0	-2
2	-4

X	Y
1	5
3	1
0	-2
2	-4

- a.  $\Sigma X$
- b.  $\Sigma Y$
- c.  $\Sigma X \Sigma Y$
- d.  $\Sigma XY$

ANSWER: a. 6  
b. 0  
c. 0  
d. 0

REFERENCES: 1.4 Statistical Notation

QUESTION TYPE: Essay

KEYWORDS: Bloom's: Understand