Test Bank for Statistics for the Behavioral Sciences 9th Edition by Gravetter and Wallnau

Multiple-Choice Questions

Note: Questions identified with (www) are available to students as a practice quiz on the cengage.com/psychology/gravetter website.

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(n) _____.
  a. sample
  b. statistic
  c. population
  d. parameter

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(n) _____.
  a. parameter
  b. statistic
  c. population
  d. sample

3. (www) 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(n) _____.
  a. parameter
  b. statistic
  c. population
  d. sample

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

5. A researcher is curious about the average monthly cell phone bill for 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

6. (www) 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

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.

8. (www) Statistical methods that organize, summarize, or simplify data are called _____.
    a. parameters
    b. statistics
    c. descriptive statistics
    d. inferential statistics

9. A characteristic, usually a numerical value, that describes a sample is called a _____.
    a. parameter
    b. statistic
    c. variable
    d. constant

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

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

12. A researcher conducts an experiment to determine whether moderate doses of St. Johns Wort have any effect of memory for college students. For this study, what is the independent variable?
        a. the amount of St. Johns Wort given to each participant
        b. the memory score for each participant
        c. the group of college students
        d. cannot answer without more information

13. (www) 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

14. In a correlational study
        a. 1 variable is measured and 2 groups are compared
        b. 2 variables are measured and 2 groups are compared
        c. 1 variable is measured and there is only 1 group of participants
        d. 2 variables are measured and there is only 1 group of participants

15. In an experimental study
        a. 1 variable is measured and 2 groups are compared
        b. 2 variables are measured and 2 groups are compared
        c. 1 variable is measured and there is only 1 group of participants
        d. 2 variables are measured and there is only 1 group of participants

16. For 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. a dependent variable
        c. a quasi-independent variable
        d. a quasi-dependent variable

17. For an experiment comparing two methods for teaching social skill training to autistic children, 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

18. Which of the following is an example of a discrete variable?
       a. the age of each student 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

19. (www) Which of the following is 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. number of children in a family

20. If it is impossible to divide the existing categories of a variable, then it is an example of a _____ variable.
       a. independent
       b. dependent
       c. discrete
       d. continuous

21. (www) 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

22. Determining the class standing (1st, 2nd, 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

23. (www) What additional information is obtained by measuring two individuals on an interval scale compared to a ordinal scale?
  a. whether the measurements are the same or different
  b. the direction of the difference
  c. the size of the difference
  d. none of the other options is correct

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

25.   After measuring two individuals, a researcher can say that Tom's score is 4 points higher than Bill's. The measurements must come from a(n) _____ scale.
  a. nominal
  b. ordinal
  c. interval
  d. interval or ratio

26. (www) What is the first step to be performed in the following mathematical expression? $2(\Sigma X)$
  a.   Square each score.
  b.   Add the scores.
  c.   Add the squared scores.
  d.   Square the sum of the scores.

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.

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

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

30. What is the value of ΣX^2 for the following scores?
   a. 14
   b. 21   Scores: 1, 0, 2, 4
   c. 28
   d. 49

31. What is the value of $\Sigma X + 1$ for the following scores?
   a. 8
   b. 10   Scores: 1, 0, 2, 4
   c. 11
   d. 14

32. (www) What is the value of $\Sigma(X + 1)$ for the following scores?
   a. 4
   b. 6   Scores: 1, 0, 1, 4
   c. 7
   d. 10

33. What is the value of $\Sigma(X - 1)^2$ for the following scores?
   a. 10
   b. 16   Scores: 1, 2, 1, 4
   c. 36
   d. 49

34. What is the value of $(\Sigma X)^2$ for the following scores?

   b. 21   Scores: 1, 0, 2, 4
   c. 28
   d. 49

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

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

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

38. (www) 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

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. $\Sigma(4 - X)$

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. $\Sigma X^2 - 4$

True/False Questions

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

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.

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

44. A researcher interested in vocabulary development obtains a sample of 3-year-old children to participate in a research study. The average score for the group of 20 is an example of a parameter.

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

46. An experimental research study typically involves measuring two scores for each individual in one group of participants.

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

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

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.

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.

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.

52. A discrete variable must be measured on a nominal or an ordinal scale.

53. Classifying people into two groups on the basis of gender is an example of measurement on an ordinal scale.

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.

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

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

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.

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

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

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.

61. In an introductory theater class, the professor records each student's favorite movie from the previous year. The teacher is measuring a discrete variable.

62. A data set is described as consisting of n = 15 scores. Based on the notation being used, the data set is a sample.

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

64. The first step in computing $\Sigma(X + 1)$, is to add 1 point to each score.

65. For the following scores, $\Sigma X^2 = (\Sigma X)^2$. Scores: 1, 1, 1, 1

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

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

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

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

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

Other Exam Items

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

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

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

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

74.   Calculate each value requested for the following set of scores. Scores: 1, 2, 0, 4
    a. ΣX
    b. ΣX^2
    c. $(\Sigma X)^2$

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. $\Sigma(X - 2)^2$

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

	X	Y
a. ΣX	1	5
b. ΣY	3	1
c. $\Sigma X \Sigma Y$	0	-2
d. ΣXY	2	-4

Answers for Multiple-Choice Questions (with section and page numbers from the text)

1. c, 1.2, p. 5	11. c, 1.2, p. 8	21. b, 1.4, p. 23	31. a, 1.5, p. 29
2. d, 1.2, p. 6	12. a, 1.3, p. 16	22. b, 1.4, p. 23	32. d, 1.5, p. 28
3. b, 1.2, p. 7	13. c, 1.3, p. 16	23. c, 1.4, p. 24	33. a, 1.5, p. 29
4. a, 1.2, p. 6	14. d, 1.3, p. 12	24. d, 1.4, p. 24	34. d, 1.5, p. 28
5. d, 1.2, p. 7	15. a, 1.3, p. 16	25. d, 1.4, p. 24	35. b, 1.5, p. 29
6. a, 1.2, p. 6	16. c, 1.3, p. 18	26. b, 1.5, p. 27	36. d, 1.5, p. 28
7. a, 1.2, p. 7	17. d, 1.3, p. 16	27. d, 1.5, p. 28	37. a, 1.5, p. 28
8. c, 1.2, p. 7	18. b, 1.4, p. 21	28. c, 1.5, p. 29	38. b, 1.5, p. 29
9. b, 1.2, p. 7	19. c, 1.4, p. 21	29. d, 1.5, p. 28	39. b, 1.5, p. 28
10. b, 1.2, p. 7	20. b, 1.4, p. 21	30. b, 1.5, p. 28	40. c, 1.5, p. 28

Answers for True/False Questions (with section and page numbers from the text)

41. F, 1.2, p. 8	51. F, 1.4, p. 23	61. T, 1.4, p. 21
42. T, 1.2, p. 5	52. F, 1.4, p. 21	62. T, 1.5, p. 27
43. F, 1.2, p. 7	53. F, 1.4, p. 23	63. T, 1.5, p. 28

44. F, 1.2, p. 7	54. T, 1.4, p. 23	64. T, 1.5, p. 28
45. T, 1.3, p. 14	55. T, 1.4, p. 24	65. F, 1.5, p. 28
46. F, 1.3, p. 13	56. T, 1.4, p. 23	66. T, 1.5, p. 28
47. T, 1.3, p. 13	57. T, 1.4, p. 24	67. F, 1.5, p. 29
48. T, 1,3, p. 13	58. T, 1.4, p. 25	68. F, 1.5, p. 28
49. F, 1.3, p. 16	59. T, 1.4, p. 21	69. T, 1.5, p. 28
50. T, 1.3, p. 18	60. T, 1.4, p. 21	70. F, 1.5, p. 28

Answers for Other Exam Items

71. 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.

72. 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*.

73. a. To compute ΣX^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.

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

75. a. 11
   b. 5
   c. 13

76. a. 6
   b. 0
   c. 0
   d. 0