TEST BANK

Understanding
STATISTICS
IN THE BEHAVIORAL SCIENCES

ROBERT R.
PAGANO **9**E

Chapter 2--Basic Mathematical and Measurement Concepts

1. Given the following subjects and scores, which symbol would be used to represent the score of 3?

Subject	1	2	3	4	5
Score	12	21	8	3	30

A. X_8
B. X^8
C. X^4_3
D. X^3_2

2. We have collected the following data:

$$X_1 = 6, X_2 = 2, X_3 = 4, X_4 = 1, X_5 = 3$$

For these data, $\sum_{i=1}^{N-1} X_i$ is equal to _____.

A. 16
B. 10
C. 7
D. 13

3. Reaction time in seconds is an example of a(n) _____ scale.

A. ratio
B. ordinal
C. interval
D. nominal

4. After performing several clever calculations on your calculator, the display shows the answer 53.655001. What is the appropriate value rounded to two decimal places?

A. 53.65
B. 53.66
C. 53.64
D. 53.60

5. Consider the following points on a scale:

If the scale upon which A, B, C, and D are arranged is a nominal scale, we can say _____.

A. $B = 2A$
B. $B - A = D - C$
C. both a and b
D. neither a nor b

6. When rounded to two decimal places, the number 3.175000 becomes _____.

A. 3.17
B. 3.20
C. 3.18
D. 3.10

7. **Exhibit 2-1**
Given the following data:

$$X_1 = 1, X_2 = 4, X_3 = 5, X_4 = 8, X_5 = 10$$

Refer to Exhibit 2-1. Evaluate S X.

A. 1
B. 18
C. 27
D. 28

8. **Exhibit 2-1**
Given the following data:

$$X_1 = 1, X_2 = 4, X_3 = 5, X_4 = 8, X_5 = 10$$

Refer to Exhibit 2-1. Evaluate S X^2.

A. 56
B. 784
C. 206
D. 28

9. **Exhibit 2-1**
   Given the following data:

   $$X_1 = 1, X_2 = 4, X_3 = 5, X_4 = 8, X_5 = 10$$

   Refer to Exhibit 2-1. Evaluate $(S\ X)^2$.

   A. 56
   B. 784
   C. 206
   D. 28

10. **Exhibit 2-1**
    Given the following data:

    $$X_1 = 1, X_2 = 4, X_3 = 5, X_4 = 8, X_5 = 10$$

    Refer to Exhibit 2-1. Evaluate $\displaystyle\sum_{i-2}^{4} X_i$.

    A. 17
    B. 27
    C. 28
    D. 23

11. **Exhibit 2-1**
    Given the following data:

    $$X_1 = 1, X_2 = 4, X_3 = 5, X_4 = 8, X_5 = 10$$

    Refer to Exhibit 2-1. Evaluate $\displaystyle\sum_{i-2}^{N} X_i + 5$.

    A. 53
    B. 47
    C. 48
    D. 32

12. **Exhibit 2-1**
Given the following data:
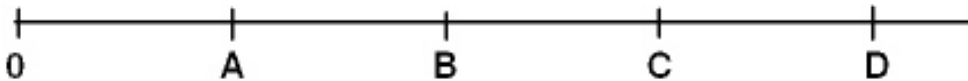
$X_1 = 1, X_2 = 4, X_3 = 5, X_4 = 8, X_5 = 10$

Refer to Exhibit 2-1. Evaluate $\sum_{i=2}^{N} (X_i + 5)$.

A. 47
B. 53
C. 48
D. 32

13. A discrete scale of measurement _____.

A. is the same as a continuous scale
B. provides exact measurements
C. necessarily uses whole numbers
D. b and c

14. Consider the following points on a scale:
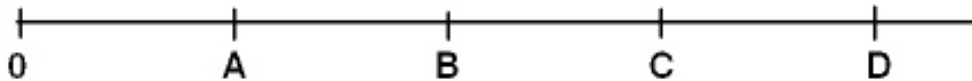
If the scale upon which A, B, C, and D are arranged is an interval scale, we can say _____.

A. $B = 2A$
B. $B - A = D - C$
C. both a and b
D. neither a nor b

15. The number 83.476499 rounded to three decimal places is _____.

A. 83.477
B. 83.480
C. 83.476
D. 83.470

16. The number 99.44650 rounded to two decimal places is _____.

A. 99.45
B. 99.46
C. 99.44
D. 99.40

17. "Brand of soft drink" is measured on a(n) _____.

    A. nominal scale
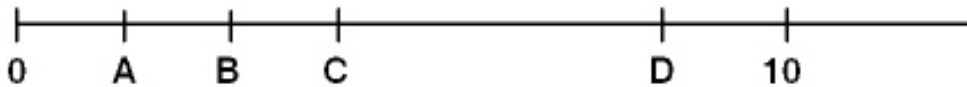   B. ordinal scale
    C. interval scale
    D. ratio scale

18. At the annual sailing regatta, prizes are awarded for 1st, 2nd, 3rd, 4th, and 5th place. These "places" comprise a(n) _____.

    A. nominal scale
    B. ordinal scale
    C. interval scale
    D. ratio scale

19. Which of the following numbers is rounded incorrectly to two decimal places?

    A. 10.47634 ® 10.48
    B. 15.36485 ® 15.36
    C. 21.47500 ® 21.47
    D. 8.24501 ® 8.25
    E. 6.66500 ® 6.66

20. Consider the following points on a scale:

    If the scale upon which points A, B, C, and D are shown is an ordinal scale, we can meaningfully say _____.

    A. $B - A < D - C$
    B. $B < C/2$
    C. $B = 2A$
    D. $C > B$

21. A continuous scale of measurement is different than a discrete scale in that a continuous scale _____.

    A. is an interval scale, not a ratio scale
    B. never provides exact measurements
    C. can take an infinite number of intermediate possible values
    D. never uses decimal numbers
    E. b and c

22. Sex of children is an example of a(n) _____ scale.

    A. ratio
    B. nominal
    C. ordinal
    D. interval

23. Which of the following variables has been labeled with an incorrect measuring scale?

    A. the <u>number of students</u> in a psychology class – ratio
    B. <u>ranking</u> in a beauty contest – ordinal
    C. <u>finishing order</u> in a poetry contest – ordinal
    D. <u>self-rating of anxiety level</u> by students in a statistics class – ratio

24. A nutritionist uses a scale that measures weight to the nearest 0.01 grams. A slice of cheese weighs 0.35 grams on the scale. The variable being measured is a _____.

    A. discrete variable
    B. constant
    C. continuous variable
    D. random variable

25. A nutritionist uses a scale that measures weight to the nearest 0.01 grams. A slice of cheese weighs 0.35 grams on the scale. The true weight of the cheese _____.

    A. is 0.35 grams
    B. may be anywhere in the range 0.345-0.355 grams
    C. may be anywhere in the range 0.34-0.35 grams
    D. may be anywhere in the range 0.34-0.36 grams

26. In a 10-mile cross-country race, all runners are randomly assigned an identification number. These numbers represent a(n) _____.

    A. nominal scale
    B. ratio scale
    C. interval scale
    D. ordinal scale

27. In a 10-mile cross-country race, a comparison of each runner's finishing time would represent a(n) _____.

    A. nominal scale
    B. ratio scale
    C. interval scale
    D. ordinal scale

28. The sum of a distribution of 40 scores is 150. If we add a constant of 5 to each score, the resulting sum will be ____.

   A. 158
   B. 350
   C. 150
   D. 195

29. **Exhibit 2-2**
   Given the following set of numbers:

   $X_1 = 2, X_2 = 4, X_3 = 6, X_4 = 10$

   Refer to Exhibit 2-2. What is the value for S X?

   A. 12
   B. 156
   C. 480
   D. 22

30. **Exhibit 2-2**
   Given the following set of numbers:

   $X_1 = 2, X_2 = 4, X_3 = 6, X_4 = 10$

   Refer to Exhibit 2-2. What is the value of S X^2?

   A. 156
   B. 22
   C. 480
   D. 37

31. **Exhibit 2-2**
   Given the following set of numbers:

   $X_1 = 2, X_2 = 4, X_3 = 6, X_4 = 10$

   Refer to Exhibit 2-2. What is the value of X_4^2?

   A.   4
   B.   6
   C. 100
   D. 10

32. **Exhibit 2-2**
Given the following set of numbers:

$$X_1 = 2, X_2 = 4, X_3 = 6, X_4 = 10$$

Refer to Exhibit 2-2. What is the value of $(S\ X)^2$?

A. 480
B. 484
C. 156
D. 44

33. **Exhibit 2-2**
Given the following set of numbers:

$$X_1 = 2, X_2 = 4, X_3 = 6, X_4 = 10$$

Refer to Exhibit 2-2. What is the value of N?

A. 2
B. 4
C. 6
D. 10

34. **Exhibit 2-2**
Given the following set of numbers:

$$X_1 = 2, X_2 = 4, X_3 = 6, X_4 = 10$$

Refer to Exhibit 2-2. What is the value of $(S\ X)/N$?

A. 5
B. 4
C. 6
D. 5.5

35. Classifying subjects on the basis of sex is an example of using what kind of scale?

A. nominal
B. ordinal
C. interval
D. ratio
E. bathroom

8

36. Number of bar presses is an example of a(n) _____ variable.

    A. discrete
    B. continuous
    C. nominal
    D. ordinal

37. Using an ordinal scale to assess leadership, which of the following statements is appropriate?

    A. *A* has twice as much leadership ability as *B*
    B. *X* has no leadership ability
    C. *Y* has the most leadership ability
    D. all of the above

38. The number of legs on a centipede is an example of a(n) _____ scale.

    A. nominal
    B. ordinal
    C. ratio
    D. continuous

39. What are the real limits of the observation of 6.1 seconds (measured to the nearest second)?

    A. 6.05–6.15
    B. 5.5–6.5
    C. 6.0–6.2
    D. 6.00–6.20

40. What is 17.295 rounded to one decimal place?

    A. 17.1
    B. 17.0
    C. 17.2
    D. 17.

41. What is the value of 0.05 rounded to one decimal place?

    A. 0.0
    B. 0.1
    C. 0.2
    D. 0.5

42. The symbol "S" means:

    A. add the scores
    B. summarize the data
    C. square the value
    D. multiply the scores

43. A therapist measures the difference between two clients. If the therapist can say that Rebecca's score is higher than Sarah's, but can't specify how much higher, the measuring scale used must have been a(n) _____ scale.

    A. nominal
    B. ordinal
    C. interval
    D. ratio

44. An individual is measuring various objects. If the measurements made are to determine into which of six categories each object belongs, the measuring scale used must have been a(n)_____ scale.

    A. nominal
    B. ordinal
    C. interval
    D. ratio

45. If an investigator determines that Carlo's score is five times as large as the score of Juan, the measuring scale used must have been a(n) _____ scale.

    A. nominal
    B. ordinal
    C. interval
    D. ratio

46. **The following problem(s) are for your own use in evaluating your skills at elementary algebra. If you do not get all the problem(s) correct you should probably review your algebra.**

    Where $3X = 9$, what is the value of X?

    A. 3
    B. 6
    C. 9
    D. 12

47. **The following problem(s) are for your own use in evaluating your skills at elementary algebra. If you do not get all the problem(s) correct you should probably review your algebra.**

    For $X + Y = Z$, X equals _____.

    A. $Y + Z$
    B. $Z - Y$
    C. Z/Y
    D. Y/Z

48. **The following problem(s) are for your own use in evaluating your skills at elementary algebra. If you do not get all the problem(s) correct you should probably review your algebra.**

$1/X + 2/X$ equals ____.

A. $2/X$
B. $3/2X$
C. $3/X$
D. $2/X^2$

49. **The following problem(s) are for your own use in evaluating your skills at elementary algebra. If you do not get all the problem(s) correct you should probably review your algebra.**

What is $(4 - 2)(3×4)/(6/3)$?

A. 24
B. 1.3
C. 12
D. 6

50. **The following problem(s) are for your own use in evaluating your skills at elementary algebra. If you do not get all the problem(s) correct you should probably review your algebra.**

$6 + 4´3 - 1$ simplified is ____.

A. 29
B. 48
C. 71
D. 17

51. **The following problem(s) are for your own use in evaluating your skills at elementary algebra. If you do not get all the problem(s) correct you should probably review your algebra.**

$X = Y/Z$ can be expressed as ____.

A. $Y = (Z)(X)$
B. $X = Z/Y$
C. $Y = X/Z$
D. $Z = X + Y$

52. **The following problem(s) are for your own use in evaluating your skills at elementary algebra. If you do not get all the problem(s) correct you should probably review your algebra.**

2^4 equals ____.

A. 4
B. 32
C. 8
D. 16

53. **The following problem(s) are for your own use in evaluating your skills at elementary algebra. If you do not get all the problem(s) correct you should probably review your algebra.**

$\sqrt{81}$ equals ____.

A. ±3
B. ±81
C. ±9
D. ±27

54. **The following problem(s) are for your own use in evaluating your skills at elementary algebra. If you do not get all the problem(s) correct you should probably review your algebra.**

$X(Z + Y)$ equals ____.

A. $XZ + Y$
B. $ZX + YX$
C. $(X)(Y)(Z)$
D. $(Z + Y)/X$

55. **The following problem(s) are for your own use in evaluating your skills at elementary algebra. If you do not get all the problem(s) correct you should probably review your algebra.**

$1/2 + 1/4$ equals ____.

A. 1/6
B. 1/8
C. 2/8
D. 3/4

56. **The following problem(s) are for your own use in evaluating your skills at elementary algebra. If you do not get all the problem(s) correct you should probably review your algebra.**

X^6/X^2 equals ____.

A. X^8
B. X^4
C. X^2
D. X^3

57. When doing summation, the number above the summation sign indicates the term ending the summation and the number below indicates the beginning term.

True   False

58. $S\,X^2$ and $(S\,X)^2$ generally yield the same answer.

True   False

59. With nominal scales there is a numerical relationship between the units of the scale.

True   False

60. If IQ was measured on a ratio scale, and John had an IQ of 40 and Fred an IQ of 80, it would be correct to say that Fred was twice as intelligent as John.

True   False

61. An ordinal scale possesses the attributes of magnitude and equal interval.

True   False

62. Most scales used for measuring psychological variables are either ratio or interval.

True   False

63. Measurement is always approximate with a continuous variable.

True   False

64. It is standard practice to carry all intermediate calculations to four more decimal places than will be reported in the final answer.

True   False

65. In rounding, if the remainder beyond the last digit is greater than 1/2, add one to the last digit. If the remainder is less than 1/2, leave the last digit as it is.

True   False

66. It is legitimate to do ratios with interval scaling.

    True   False

67. The number of students in a class is an example of a continuous variable.

    True   False

68. The real limits of a discrete variable are those values that are above and below the recorded value by one half of the smallest measuring unit of the scale.

    True   False

69. When rounding, if the decimal remainder is equal to 1/2 and the last digit of the answer is even, add 1 to the last digit of the answer.

    True   False

70. A fundamental property of a nominal scale is equivalence.

    True   False

71. An interval scale is like a ratio scale, except that the interval scale doesn't possess an absolute zero point.

    True   False

72. A discrete variable requires nominal or interval scaling.

    True   False

73. Classifying students into whether they are good, fair, or poor speakers is an example of ordinal scaling.

    True   False

74. Determining the number of students in each section of introductory psychology involves the use of a ratio scale.

    True   False

75. In a race, Sam came in first and Fred second. Determining the difference in time to complete the race between Sam and Fred involves an ordinal scale

    True   False

76. If the remainder of a number = 1/2, we always round the last digit up.

    True   False

77. Define continuous variable.

78. Define discrete variable.

79. Define interval scale.

80. Define nominal scale.

81. Define ratio scale.

82. Define real limits of a continuous variable.

83. How does an interval scale differ from an ordinal scale?

84. Give two differences between continuous and discrete scales.

85. What are the four types of scales and what mathematical operations can be done with each?

86. Prove algebraically that

$$\sum_{i=1}^{N}(X_i + a) = \sum_{i=1}^{N} X_i + Na$$

87. What is a discrete variable? Give an example.

88. Student A claims that because his IQ is twice that of Student B, he is twice as smart as Student B. Is student A correct? Explain.

89. What is meant by "the real limits of a continuous variable."

90. The faculty of a psychology department are trying to decide between three candidates for a single faculty position. The department chairperson suggests that to decide, each faculty person should rank order the candidates from 1 to 3, and the ranks would then be averaged. The candidate with the highest average would be offered the position. Mathematically, what is wrong with that proposal?

Chapter 2--Basic Mathematical and Measurement Concepts Key

1.   Given the following subjects and scores, which symbol would be used to represent the score of 3?

Subject	1	2	3	4	5
Score	12	21	8	3	30

A. X_8
B. X_3^8
C. X_4
D. X_2^3

2.   We have collected the following data:

$$X_1 = 6, X_2 = 2, X_3 = 4, X_4 = 1, X_5 = 3$$

For these data, $\sum_{i=1}^{N-1} X_i$ is equal to _____.

A. 16
B. 10
C.   7
D. 13

3.   Reaction time in seconds is an example of a(n) _____ scale.

A. ratio
B. ordinal
C. interval
D. nominal

4.   After performing several clever calculations on your calculator, the display shows the answer 53.655001. What is the appropriate value rounded to two decimal places?

A. 53.65
B. 53.66
C. 53.64
D. 53.60

5.   Consider the following points on a scale:

If the scale upon which A, B, C, and D are arranged is a nominal scale, we can say ____.

A. $B = 2A$
B. $B - A = D - C$
C. both a and b
D. neither a nor b

6.   When rounded to two decimal places, the number 3.175000 becomes ____.

A. 3.17
B. 3.20
C. 3.18
D. 3.10

7.   **Exhibit 2-1**
Given the following data:

$$X_1 = 1, X_2 = 4, X_3 = 5, X_4 = 8, X_5 = 10$$

Refer to Exhibit 2-1. Evaluate S X.

A. 1
B. 18
C. 27
D. 28

8.   **Exhibit 2-1**
Given the following data:

$$X_1 = 1, X_2 = 4, X_3 = 5, X_4 = 8, X_5 = 10$$

Refer to Exhibit 2-1. Evaluate S X^2.

A. 56
B. 784
C. 206
D. 28

9.   **Exhibit 2-1**
     Given the following data:

$$X_1 = 1, X_2 = 4, X_3 = 5, X_4 = 8, X_5 = 10$$

     Refer to Exhibit 2-1. Evaluate $(S\ X)^2$.

     A.   56
     B. 784
     C.   206
     D.   28

10. **Exhibit 2-1**
     Given the following data:

$$X_1 = 1, X_2 = 4, X_3 = 5, X_4 = 8, X_5 = 10$$

     Refer to Exhibit 2-1. Evaluate $\sum\limits_{i-2}^{4} X_i$.

     A. 17
     B.   27
     C.   28
     D.   23

11. **Exhibit 2-1**
     Given the following data:

$$X_1 = 1, X_2 = 4, X_3 = 5, X_4 = 8, X_5 = 10$$

     Refer to Exhibit 2-1. Evaluate $\sum\limits_{i-2}^{N} X_i + 5$.

     A.   53
   B.   47
     C.   48
     D. 32

3

12. **Exhibit 2-1**
    Given the following data:

    $$X_1 = 1, X_2 = 4, X_3 = 5, X_4 = 8, X_5 = 10$$

    Refer to Exhibit 2-1. Evaluate

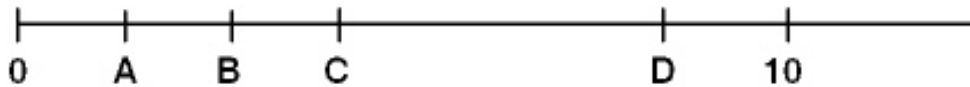 $$\sum_{i=2}^{N}(X_i + 5)$$

    A. 47
    B. 53
    C. 48
    D. 32

13. A discrete scale of measurement _____.

    A. is the same as a continuous scale
    B. provides exact measurements
    C. necessarily uses whole numbers
    D. b and c

14. Consider the following points on a scale:

    If the scale upon which A, B, C, and D are arranged is an interval scale, we can say _____.

    A. $B = 2A$
    B. $B - A = D - C$
    C. both a and b
    D. neither a nor b

15. The number 83.476499 rounded to three decimal places is _____.

    A. 83.477
    B. 83.480
    C. 83.476
    D. 83.470

16. The number 99.44650 rounded to two decimal places is _____.

    A. 99.45
    B. 99.46
    C. 99.44
    D. 99.40

4

17. "Brand of soft drink" is measured on a(n) _____.

   A. nominal scale
   B. ordinal scale
   C. interval scale
   D. ratio scale

18. At the annual sailing regatta, prizes are awarded for 1st, 2nd, 3rd, 4th, and 5th place. These "places" comprise a(n) _____.

   A. nominal scale
   B. ordinal scale
   C. interval scale
   D. ratio scale

19. Which of the following numbers is rounded incorrectly to two decimal places?

   A. 10.47634 ® 10.48
   B. 15.36485 ® 15.36
   C. 21.47500 ® 21.47
   D. 8.24501 ® 8.25
   E. 6.66500 ® 6.66

20. Consider the following points on a scale:

   If the scale upon which points A, B, C, and D are shown is an ordinal scale, we can meaningfully say _____.

   A. $B - A < D - C$
   B. $B < C/2$
   C. $B = 2A$
   D. $C > B$

21. A continuous scale of measurement is different than a discrete scale in that a continuous scale _____.

   A. is an interval scale, not a ratio scale
   B. never provides exact measurements
   C. can take an infinite number of intermediate possible values
   D. never uses decimal numbers
   E. b and c

5

22.   Sex of children is an example of a(n) _____ scale.

      A. ratio
      B. nominal
      C. ordinal
      D. interval

23.   Which of the following variables has been labeled with an incorrect measuring scale?

      A. the <u>number of students</u> in a psychology class – ratio
      B. <u>ranking</u> in a beauty contest – ordinal
      C. <u>finishing order</u> in a poetry contest – ordinal
      D. <u>self-rating of anxiety level</u> by students in a statistics class – ratio

24.   A nutritionist uses a scale that measures weight to the nearest 0.01 grams. A slice of cheese weighs
      0.35 grams on the scale. The variable being measured is a _____.

      A. discrete variable
      B. constant
      C. continuous variable
      D. random variable

25.   A nutritionist uses a scale that measures weight to the nearest 0.01 grams. A slice of cheese weighs
      0.35 grams on the scale. The true weight of the cheese _____.

      A. is 0.35 grams
      B. may be anywhere in the range 0.345-0.355 grams
      C. may be anywhere in the range 0.34-0.35 grams
      D. may be anywhere in the range 0.34-0.36 grams

26.   In a 10-mile cross-country race, all runners are randomly assigned an identification number. These
      numbers represent a(n) _____.

      A. nominal scale
      B. ratio scale
      C. interval scale
      D. ordinal scale

27.   In a 10-mile cross-country race, a comparison of each runner's finishing time would represent a(n)
      _____.

      A. nominal scale
      B. ratio scale
      C. interval scale
      D. ordinal scale

28.   The sum of a distribution of 40 scores is 150. If we add a constant of 5 to each score, the resulting sum will be _____.

A. 158
B. 350
C. 150
D. 195

29.   **Exhibit 2-2**
Given the following set of numbers:

$$X_1 = 2, X_2 = 4, X_3 = 6, X_4 = 10$$

Refer to Exhibit 2-2. What is the value for S X?

A. 12
B. 156
C. 480
D. 22

30.   **Exhibit 2-2**
Given the following set of numbers:

$$X_1 = 2, X_2 = 4, X_3 = 6, X_4 = 10$$

Refer to Exhibit 2-2. What is the value of S X^2?

A. 156
B. 22
C. 480
D. 37

31.   **Exhibit 2-2**
Given the following set of numbers:

$$X_1 = 2, X_2 = 4, X_3 = 6, X_4 = 10$$

Refer to Exhibit 2-2. What is the value of X_4^2?

A.   4
B.   6
C. 100
D. 10

32. **Exhibit 2-2**
Given the following set of numbers:

$$X_1 = 2, X_2 = 4, X_3 = 6, X_4 = 10$$

Refer to Exhibit 2-2. What is the value of $(S\ X)^2$?

A. 480
B. 484
C. 156
D. 44

33. **Exhibit 2-2**
Given the following set of numbers:

$$X_1 = 2, X_2 = 4, X_3 = 6, X_4 = 10$$

Refer to Exhibit 2-2. What is the value of N?

A. 2
B. 4
C. 6
D. 10

34. **Exhibit 2-2**
Given the following set of numbers:

$$X_1 = 2, X_2 = 4, X_3 = 6, X_4 = 10$$

Refer to Exhibit 2-2. What is the value of $(S\ X)/N$?

A. 5
B. 4
C. 6
D. 5.5

35. Classifying subjects on the basis of sex is an example of using what kind of scale?

A. nominal
B. ordinal
C. interval
D. ratio
E. bathroom

8

36. Number of bar presses is an example of a(n) _____ variable.

   A. discrete
   B. continuous
   C. nominal
   D. ordinal

37. Using an ordinal scale to assess leadership, which of the following statements is appropriate?

   A. *A* has twice as much leadership ability as *B*
   B. *X* has no leadership ability
   C. *Y* has the most leadership ability
   D. all of the above

38. The number of legs on a centipede is an example of a(n) _____ scale.

   A. nominal
   B. ordinal
   C. ratio
   D. continuous

39. What are the real limits of the observation of 6.1 seconds (measured to the nearest second)?

   A. 6.05–6.15
   B. 5.5–6.5
   C. 6.0–6.2
   D. 6.00–6.20

40. What is 17.295 rounded to one decimal place?

   A. 17.1
   B. 17.0
   C. 17.2
   D. 17.

41. What is the value of 0.05 rounded to one decimal place?

   A. 0.0
   B. 0.1
   C. 0.2
   D. 0.5

42. The symbol "S" means:

   A. add the scores
   B. summarize the data
   C. square the value
   D. multiply the scores

43. A therapist measures the difference between two clients. If the therapist can say that Rebecca's score is higher than Sarah's, but can't specify how much higher, the measuring scale used must have been a(n) _____ scale.

   A. nominal
   B. ordinal
   C. interval
   D. ratio

44. An individual is measuring various objects. If the measurements made are to determine into which of six categories each object belongs, the measuring scale used must have been a(n)_____ scale.

   A. nominal
   B. ordinal
   C. interval
   D. ratio

45. If an investigator determines that Carlo's score is five times as large as the score of Juan, the measuring scale used must have been a(n) _____ scale.

   A. nominal
   B. ordinal
   C. interval
   D. ratio

46. **The following problem(s) are for your own use in evaluating your skills at elementary algebra. If you do not get all the problem(s) correct you should probably review your algebra.**

   Where $3X = 9$, what is the value of X?

   A. 3
   B. 6
   C. 9
   D. 12

47. **The following problem(s) are for your own use in evaluating your skills at elementary algebra. If you do not get all the problem(s) correct you should probably review your algebra.**

   For $X + Y = Z$, X equals _____.

   A. $Y + Z$
   B. $Z - Y$
   C. Z/Y
   D. Y/Z

48.   **The following problem(s) are for your own use in evaluating your skills at elementary algebra. If you do not get all the problem(s) correct you should probably review your algebra.**

$1/X + 2/X$ equals ____.

A. $2/X$
B. $3/2X$
C. $3/X$
D. $2/X^2$

49.   **The following problem(s) are for your own use in evaluating your skills at elementary algebra. If you do not get all the problem(s) correct you should probably review your algebra.**

What is $(4 - 2)(3×4)/(6/3)$?

A. 24
B.   1.3
C. 12
D.   6

50.   **The following problem(s) are for your own use in evaluating your skills at elementary algebra. If you do not get all the problem(s) correct you should probably review your algebra.**

$6 + 4´3 - 1$ simplified is ____.

A. 29
B. 48
C. 71
D. 17

51.   **The following problem(s) are for your own use in evaluating your skills at elementary algebra. If you do not get all the problem(s) correct you should probably review your algebra.**

$X = Y/Z$ can be expressed as ____.

A. $Y = (Z)(X)$
B. $X = Z/Y$
C. $Y = X/Z$
D. $Z = X + Y$

52.   **The following problem(s) are for your own use in evaluating your skills at elementary algebra. If you do not get all the problem(s) correct you should probably review your algebra.**

2^4 equals ____.

A. 4
B. 32
C. 8
D. 16

53.   **The following problem(s) are for your own use in evaluating your skills at elementary algebra. If you do not get all the problem(s) correct you should probably review your algebra.**

$\sqrt{81}$ equals ____.

A. ±3
B. ±81
C. ±9
D. ±27

54.   **The following problem(s) are for your own use in evaluating your skills at elementary algebra. If you do not get all the problem(s) correct you should probably review your algebra.**

$X(Z + Y)$ equals ____.

A. $XZ + Y$
B. $ZX + YX$
C. $(X)(Y)(Z)$
D. $(Z + Y)/X$

55.   **The following problem(s) are for your own use in evaluating your skills at elementary algebra. If you do not get all the problem(s) correct you should probably review your algebra.**

$1/2 + 1/4$ equals ____.

A. 1/6
B. 1/8
C. 2/8
D. 3/4

56. **The following problem(s) are for your own use in evaluating your skills at elementary algebra. If you do not get all the problem(s) correct you should probably review your algebra.**

X^6/X^2 equals _____.

A. X^8
B. X^4
C. X^2
D. X^3

57. When doing summation, the number above the summation sign indicates the term ending the summation and the number below indicates the beginning term.

TRUE

58. S X^2 and $(S\ X)^2$ generally yield the same answer.

FALSE

59. With nominal scales there is a numerical relationship between the units of the scale.

FALSE

60. If IQ was measured on a ratio scale, and John had an IQ of 40 and Fred an IQ of 80, it would be correct to say that Fred was twice as intelligent as John.

TRUE

61. An ordinal scale possesses the attributes of magnitude and equal interval.

FALSE

62. Most scales used for measuring psychological variables are either ratio or interval.

FALSE

63. Measurement is always approximate with a continuous variable.

TRUE

64. It is standard practice to carry all intermediate calculations to four more decimal places than will be reported in the final answer.

FALSE

65. In rounding, if the remainder beyond the last digit is greater than 1/2, add one to the last digit. If the remainder is less than 1/2, leave the last digit as it is.

TRUE

66.   It is legitimate to do ratios with interval scaling.

        <u>FALSE</u>

67.   The number of students in a class is an example of a continuous variable.

        <u>FALSE</u>

68.   The real limits of a discrete variable are those values that are above and below the recorded value by one half of the smallest measuring unit of the scale.

        <u>FALSE</u>

69.   When rounding, if the decimal remainder is equal to 1/2 and the last digit of the answer is even, add 1 to the last digit of the answer.

        <u>FALSE</u>

70.   A fundamental property of a nominal scale is equivalence.

        <u>TRUE</u>

71.   An interval scale is like a ratio scale, except that the interval scale doesn't possess an absolute zero point.

        <u>TRUE</u>

72.   A discrete variable requires nominal or interval scaling.

        <u>TRUE</u>

73.   Classifying students into whether they are good, fair, or poor speakers is an example of ordinal scaling.

        <u>TRUE</u>

74.   Determining the number of students in each section of introductory psychology involves the use of a ratio scale.

        <u>TRUE</u>

75.   In a race, Sam came in first and Fred second. Determining the difference in time to complete the race between Sam and Fred involves an ordinal scale

        <u>FALSE</u>

76.   If the remainder of a number = 1/2, we always round the last digit up.

        <u>FALSE</u>

77. Define continuous variable.

    Answer not provided.

78. Define discrete variable.

    Answer not provided.

79. Define interval scale.

    Answer not provided.

80. Define nominal scale.

    Answer not provided.

81. Define ratio scale.

    Answer not provided.

82. Define real limits of a continuous variable.

    Answer not provided.

83. How does an interval scale differ from an ordinal scale?

    Answer not provided.

84. Give two differences between continuous and discrete scales.

Answer not provided.

85. What are the four types of scales and what mathematical operations can be done with each?

Answer not provided.

86. Prove algebraically that

$$\sum_{i=1}^{N}(X_i + a) = \sum_{i=1}^{N}X_i + Na$$

Answer not provided.

87. What is a discrete variable? Give an example.

Answer not provided.

88. Student A claims that because his IQ is twice that of Student B, he is twice as smart as Student B. Is student A correct? Explain.

Answer not provided.

89. What is meant by "the real limits of a continuous variable."

Answer not provided.

90.   The faculty of a psychology department are trying to decide between three candidates for a single faculty position. The department chairperson suggests that to decide, each faculty person should rank order the candidates from 1 to 3, and the ranks would then be averaged. The candidate with the highest average would be offered the position. Mathematically, what is wrong with that proposal?

        Answer not provided.