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AS1 (Assignment 1): Unit 1

Introduction to Terminology, Scales of Measurement, Notation and Basic Computation

1. A researcher is investigating the effectiveness of a treatment for adolescent boys taking medication for depression. A group of 30 boys is selected and half receive the new treatment in addition to their medication and the other half continue to take their medication without treatment. For this study

    a. Identify the population: Adolescent boys taking medication for depression.

    b. Identify the sample: <u>A group of 30 boys.</u>

2. Define the terms:

    a. Population = The entire group a researcher is interested in studying.

    b. Sample= <u>A group of individuals that take part in a study who are selected from a population.</u>

    c. Parameter = Summarized data from a population.

    d. Statistic = Summarized data from a sample.

3. Name 3 descriptive statistics methods

    1) Measures of Frequency

    2) Measures of central tendency

    3) Measures of variability

Please place a T if the statement is true and an F if the statement is falsa in the space provided.

__F____4. A researcher calculates a mean from a sample. Her mean is an example of a parameter.

_F____5. A researcher calculates a mean from a population set of data. His mean is a statistic.

_T_____6. The entire group of voters in Florida is an example of a population.

__T___7. A researcher who selects a sample from a population should expect some difference between the sample mean and the true population parameter.

__F___8. The participants in a research study are classified as high, medium, or low in self-esteem. This classification involves measurement on a nominal scale.

___F__9. A discrete variable must be measured on a nominal or an ordinal scale.

__T___10. 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.

__F___11. Men's shirt sizes are classified as small, medium, large, and extra-large. This is an example of measurement on a nominal scale.

_T____12. A researcher records the number of mathematics problems answered correctly during a 15 minute period. This is an example of measurement on a ratio scale.

__T___13. To determine how much difference there is between two individuals, you must use either an interval or a ratio scale of measurement.

__F___14. If a researcher measures two individuals on a nominal scale, it is impossible to determine which individual has the larger score.

__T___15. Recording the number of students who are absent each day at a high school would be an example of measuring a discrete variable.

_T____16. 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.

___T__17. A researcher records the gender of each child born in the county hospital during the month of June. This researcher is measuring discrete a variable.

___F__18. A data set is described as consisting of n = 15 scores. Based on the notation being used, the data set is a sample.

_F____19. To compute $(\Sigma X)^2$, you first add the scores, then square the total.

__T__20. For the following scores, 1, 2, 5, $\Sigma X^2 = 30$.

__F__21. For the following scores, 1, 4, 2, 0, $(\Sigma X)^2 = 21$.

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

Descriptive describes the data (what) and inferential explains the data (why)

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

A researcher is only able to study a sample of the entire population. Therefore, he should expect a difference between the population parameter and the sample statistic.

24. Calculate each value requested for the following set of scores. Scores: 1, 7, 6, 4, 3, 0

N = __6__ ΣX = __21__ ΣX^2 = ___111____ $(\Sigma X)^2$ = __441____

25. For the following set of scores, find the value of each expression: 12, 14, 10, 9

$$\Sigma X \ = \ \_\_\_45_____$$

$$\Sigma X^2 = \_\_\_521_____$$

$$(EX)^2 = \_\_\_2025\_\_\_\_\_$$

26. For the following set of scores, find the value of each expression

X_
5
1
3

    a. $\Sigma X \ = \ \_\_\_9_____$

    b. $\Sigma X^2 = \_\_\_\_35_____$

    c. $(EX)^2 = \_\_\_\_81\_\_\_\_\_$

27. For the following set of scores, find the value of each expression:

X_
6
-2
0
-3
-1

n= _5___

EX= __0____

$EX^2 = \_\_-\_\_\_\_\_$

$(EX)^2 = \_\_0\_\_\_$

28. Two scores, X and Y, are recorded for each of $n = 4$ subjects. For these scores, find the value of each expression.

Subject	X	Y
A	3	4
B	0	7
C	-1	5
D	2	2

$\Sigma X = \_\_\_4\_\_$

$\Sigma Y = \_\_\_18\_\_\_$

29. For each set of scores at the right, find the value of each expression.

X
1
6
2
3

n= ___4___

EX= __12___

$EX^2 = \_\_50\_\_\_\_$

$(EX)^2 = \_\_144\_\_\_$