AS1 (Assignment 1): Unit 1

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

1. A researcher investigates the effects of amphetamine on memory. The researcher selects a random sample of 50 undergraduate students from a major New Jersey University. Half (25) of the students selected receive amphetamine while studying a word list and half (25) of the students receive a placebo. For this study

   a. Identify the population: Students at New Jersey University.

   b. Identify the sample: 50 Undergraduate students

2. Define the terms:

   a. Population: Is an entire group of people, animals, or corporations.

   b. Sample: Is a specific group of individuals selected from a population.

   c. Parameter: Summarized data from a population.

   d. Statistic: Summarized data from a sample.

3. Name 3 descriptive statistics methods

   1) Calculate the arithmetic average (mean).
   2) Construct a frequency table or a graph.
   3) Describe data, not explain it.

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

__T___4. A researcher calculates a mean from a population. Her mean is an example of a parameter.

___T__5. A researcher calculates a mean from a sample set of data. His mean is a statistic.

___F___6. The entire group of alcoholics in the state of NJ is an example of a population.

__F___7. A researcher who selects a sample from a population should expect no difference between the sample mean statistic 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 an ordinal scale.

__T___9. A continuous variable must be measured on a nominal or an ordinal scale.

__F__10. Students in an introductory art class are classified as art majors and non-art majors. This is an example of measurement on an ordinal scale.

__T___11. Men's shirt sizes are classified as small, medium, large, and extra-large. This is an example of measurement on an interval scale.

__T___12. A researcher records the number of errors a rat makes running a maze. 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 a nominal or interval scale of measurement.

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

___F___15. Recording the number of students who are absent each day at a high school would be an example of measuring a continuous variable.

___F___16. A track coach records how much time each runner takes to complete the 100-yard dash. This is an example of measuring a discrete variable.

___T___17. Gender is a discrete variable while age is a continuous 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 population.

__F___19. To compute $(\Sigma X)^2$, you have to remember to first square all of the scores.

__T___20. For the following scores, 1, 3, 5, $\Sigma X^2 = 35$.

__F___21. For the following scores, 4, 4, 2, 0, $(\Sigma X)^2 = 36$.

22. Statistical techniques are classified into two major categories: Name the categories and differentiate one major difference between them:

The two major categories that statistical techniques are classified into are descriptive statistics and inferential statistics. One major difference between both categories is that descriptive statistics can only describe the data, while inferential statistics can only explain the data.

23. You (1) select 30 people from a population, (2) measure the IQ of those 30 people, and (3) calculate a mean statistic = 110. What should you expect as far as the mean parameter? That is, would you expect the corresponding mean parameter to also be 110?

I should expect that the mean parameter to be an average for the 30 people in that population. I would expect the corresponding mean parameter to also still be 110.

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

N = _8___ ΣX = _22___ ΣX^2 = _112__ $(\Sigma X)^2$ = __484____

25. For the following set of scores, find the value of each expression: 10, 11, 10, 9, 7

ΣX = ___47_____

ΣX^2 = _451_____

$(EX)^2$ = __2,209_____

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

X
4
0
-3

a. ΣX = _____1_____

b. ΣX^2 = __25_____

c. $(EX)^2$ = ____1_____

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

X
6
-2
3
-1

n= __4_

EX= ____8___

EX^2 = __50_____

$(EX)^2$ = __64____

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	4	3	
B	0	7	
C	-1	5	
D	3	2	

$\Sigma X =$ ___6___

$\Sigma Y =$ ___17___

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

X
2
4
0
-2

n= ___4____

EX= __4____

EX^2 =___24_____

$(EX)^2$ = ___16____