

Math 153 - Quiz 1

January 19, 2017

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary. YOU MUST WORK INDIVIDUALLY.

- (1 point) A student studied the relationship between countries' literacy rates and their gross domestic products (GDP). The student wrote, "There is a strong correlation between literacy rate and GDP. This shows that countries wanting to increase their standard of living should invest heavily in education." What is wrong with the student's conclusion?

CORRELATION DOES NOT IMPLY CAUSATION.

Follow-up question: The student's research involved a random sample of 15 countries of the world. Identify the population and the sample.

↗
 ALL COUNTRIES
 OF THE WORLD

↖ 15 COUNTRIES
 THE STUDENT CHOSE

- (1 point) Determine which of the four levels of measurement is most appropriate in each case.
 - The number of terms that a congressman has served.

RATIO

- The years that are leap years.

INTERVAL

3. (8 points) In a sample of 45 full-time PSC students, the average amount of time spent studying per week was 6.83 hours. Answer each question below and give a brief explanation.

(a) Are numbers of PSC students discrete or continuous?

DISCRETE (COUNT)

(b) Are weekly times spent studying discrete or continuous?

CONTINUOUS (MEASUREMENT)

(c) At what level of measurement are weekly times spent studying?

RATIO

(d) Is 6.83 a parameter or a statistic?

STATISTIC

(e) The sample data were obtained by asking students in the Student Success Center to complete a survey. Identify two different problems with this approach.

VOLUNTARY-RESPONSE SURVEY

SELF-REPORTED RESULTS

(f) When the average value was actually computed, Steve's calculator said the average was 6.833333333. Why do you suppose that Steve reported the number 6.83 rather than the number that the calculator gave?

I'M SURE THE DATA WERE NOT COLLECTED WITH A PRECISION OF 9 DIGITS. TO REPORT SUCH A PRECISE VALUE WOULD BE MISLEADING.

(g) Suppose the study described above was conducted by the director of the Student Success Center. The director claimed in her report that students spend "about 10 hours per week studying." Identify two different problems with this scenario.

SELF-INTEREST STUDY

DELIBERATE DISTORTION OF DATA

(h) The number 6.83 represents an average number of hours. What further information might you be interested in knowing if you were to try to draw a conclusion about student study habits?

ARE THERE OUTLIERS?

HOW ARE THE DATA SPREAD OUT?

WHAT TIME OF THE SEMESTER WERE

THE DATA COLLECTED?