Math 153 - Quiz 1

January 18, 2018

Name key

Score _____

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

1. (1 point) A researcher is interested in determining how U.S. senators feel about a certain issue. The researcher interviews 18 senators. Identify the population and the sample.

   POPULATION: THE 100 U.S. SENATORS

   SAMPLE: THE 18 SENATORS ACTUALLY SELECTED

2. (1 point) The average age of those killed in the World Trade Center attacks is 40 years. Is this number a parameter or a statistic? Briefly explain your reasoning.

   IT IS A PARAMETER BECAUSE IT DESCRIBES THE POPULATION, NOT A SAMPLE.

3. (1 point) It has been observed that the more violent a particular society is, the more left-handed people it has. Can we conclude that left-handed people are violent? Explain.

   NO, AN OBSERVED CORRELATION DOES NOT IMPLY CAUSATION.

4. (2 points) Determine the level of measurement. Choose from nominal, ordinal, interval, or ratio.

   (a) Distances that students commute to school

   RATIO

   (b) Places of athletes finishing a marathon

   ORDINAL

5. (1 point) Suppose you were assigned the task of analyzing the data shown here.

$$19, 25, 87, 34, 68, 73, 87, 12, 50, 45, 86, 72$$

What is wrong with this assignment?

THE DATA ARE NOT IN CONTEXT. IT IS NOT CLEAR WHAT THEY REPRESENT OR WHAT SHOULD BE DONE TO ANALYZE.

6. (1 point) A ten-student committee is formed by selecting 6 full-time students and 4 part-time students at random. Is this a simple random sample? Explain.

NO, NOT ALL SAMPLES OF 10 ARE EQUALLY LIKELY. IN FACT, A SAMPLE OF 10 FULL-TIME STUDENTS IS IMPOSSIBLE.

7. (3 points) Ten students are to be selected from a group of 100 students.

   (a) Explain how you could do so with systematic sampling.

HAVE THE STUDENTS COUNT OFF FROM 1 TO 10. THEY SELECT EVERY STUDENT WHO WAS A 10.

   (b) Explain how you could do so with stratified sampling.

SEPARATE THE STUDENTS INTO 5 DIFFERENT GROUPS BASED ON THEIR AGES. THEN SELECT TWO STUDENTS FROM EACH GROUP.

   (c) Explain how you could do so with cluster sampling.

SEPARATE THE STUDENTS INTO 10 GROUPS OF 10. THEN CHOOSE 1 GROUP AT RANDOM.