1. A company database contains the following information about each employee: age, date hired, sex (male or female), ethnic group (Asian, black, Hispanic, etc.), job category (clerical, management, technical, etc.), yearly salary. Which of the following lists of variables are *all* numerical?

(a) age, sex, ethnic group. (b) sex, ethnic group, job category

(c) ethnic group, job category, yearly salary. (d) yearly salary, age.

(e) age, date hired.

2. Which of the following data types would be considered categorical data?

(a) weight of newborn elephants (b) zip codes in New York State

(c) height of basketball players (d) grade point average of seniors

(e) number of pets in a household

3. Many people have trouble falling asleep. Researchers wish to determine if a new drug will help these sleep sufferers. To determine if the new medication is more effective than two of the popular sleep-inducing products currently on the market, the researchers use 140 volunteers who report having trouble sleeping. Sixty of the volunteers are randomly assigned to the new drug, and 40 each are randomly assigned to the other two sleep-inducing products. Researchers monitored each person and recorded how long it took them to fall asleep, how long they slept, and how many times they woke up in the night.

a) Is this an experiment or an observational study?

b) What are the individuals?

c) What variables were measured?

4. Two groups of students were tested to compare their speed working math problems. Each group was given the same problems. One group used calculators and the other group computed without calculators.

a) Identify the control group.

b) Identify the treatment group.

5. Does talking on mobile phones while driving distract people? Researchers measured the reaction times of 38 study participants as they talked on mobile phones and found that the average level of distraction from their driving was rated 2.25 out of 5.

a) Does this represent a census? Why or why not?

b) Who is the population:

Short Answer:

1. What is Statistics?
2. What is the difference between a sample and a census?
3. What is the main difference between an observational study and an experimental study?
4. What are the four steps of the statistical problem-solving process?

True or False: If False, then explain.

1. Individuals are the entire group about which we want information.
2. A variable is a data value which occurs most in a survey.
3. An experiment imposes some treatment on individuals in order to observe their responses.
4. An observational study measures variables, but does not attempt to influence the responses.
5. Quantitative variables total up the number of variables in a statistical study.
6. A sample is a part of the population from which we collect data.
7. A population is the entire group of individuals about which we want information.
8. A categorical variable uses numerical values for which adding and averaging make sense.

Extended Answers:

A study was conducted to see what quick service restaurant most people preferred at the food court at Town Center Mall. Several people were place at various areas of the food court and they counted how many people ate at each restaurant between the hours of 11:00am-2:00pm. The survey was conducted each day for 1 week and the results were calculated.

* 1. Experimental or Observational?
  2. Who are the individuals?
  3. What is the variable?

1. A study was conducted to determine if bags of Spud Plain Potato Chips actually contain 28.3 grams of chips. Random samples from around the state of Georgia were collected from several different grocery stores (Publix, Kroger, Wal-Mart, Target Superstore, Piggly Wiggly, etc.). The chips were poured from each bag and weighed.
2. What population is represented?
3. What is the sample?
4. Do you think this sample will provide accurate information?

Refer to the diagram to the right:

1. Do you think the data was obtained through experiment or observation?
2. Who are the individuals in this study?
3. A group of students is interested in knowing if there is a correlation between attending an SAT Prep class and scores achieved on the SAT Examination. The students go online and collect their data from each state website of both students who took an SAT Prep class and those that did not take an SAT Prep class. They randomly select 100 who did take the class and 100 who did not from each state. A statistical analysis is performed.
   1. What is the question of interest?
   2. What is the population studied?
   3. Did they take a sample or study the entire population?
   4. Did they perform an observational or experimental study? How do you know?