

## Math 225

## Quiz 1

Name: \_\_\_\_\_

1. The process of selecting a number of participants for a study in such a way that they represent the larger group from which they were selected is known as
  - a. random assignment.
  - ☒ b. sampling.
  - c. data collection.
  - d. inference.
2. Which of the following is NOT a type of probability sample?
  - ☒ a. Voluntary response sample
  - b. Simple random sample
  - c. Stratified sample
  - d. Multistage sample
  - e. All are probability samples.
3. Using a local telephone book to select a simple random sample will almost surely introduce what type of bias?
  - ☒ a. Under-coverage bias
  - b. Non-response bias
  - c. Response bias
  - d. Question wording bias
4. Ms. Washington is investigating teachers' attitudes toward year-round schooling. She is particularly interested in describing the attitudes of teachers from small, medium, and large schools. Which sampling procedure should be used by Ms. Washington to ensure her sample is representative of these types of schools?
  - a. Simple random sampling
  - ☒ b. Stratified random sampling
  - c. Systematic sampling
  - d. Convenience sampling
5. Mr. Marino has compiled a list of 1,348 students in his high school. He has selected a sample of 42 students by choosing every 14<sup>th</sup> student on this list. Which type of sampling is he using?
  - a. simple random sampling
  - b. stratified random sampling
  - c. cluster sampling
  - ☒ d. systematic random sampling
6. Suppose that the Department of Agriculture wishes to investigate the use of pesticides by farmers in California. A sample could be taken by identifying the different counties in California, and a random sample of these counties then be chosen. This would be a
  - a. simple random sample
  - b. multi-stage sample
  - ☒ c. cluster sample
  - d. stratified random sample
7. Medical experiments are often double-blind. This means that
  - a. All individual data are kept confidential.
  - ☒ b. Neither the subject nor the doctor/administrator knows which treatment the subject receives.
  - c. Doctors are not allowed to decide which treatment a patient will receive; subjects are randomly assigned to treatments.
  - d. The subjects in the control group receive a placebo treatment.
8. An advantage of experiments over observational studies is
  - ☒ a. An experiment can provide evidence of cause and effect.
  - b. An experiment can compare two or more groups.
  - c. An experiment can include explanatory and response variables.

9. A researcher wished to assess the importance of exercise in weight-loss programs. The participants in the study were randomly assigned to one of two groups. Over a two-month period, the first group followed a particular diet but was instructed to perform no exercise other than walking. The second group followed the same diet but also performed aerobic exercise for one hour each day. At the end of the two months, the weight loss of each participant was recorded. This is an example of

a. designed experiment  
b. observational study

10. We want to compare the systolic blood pressures of individuals before and after walking on a treadmill for an hour. This is an example of

a. block design  
b. completely randomized experiment  
c. matched pair design  
d. observational study

11. Which of the following is a quantitative variable?

a. gender  
b. mileage of a car  
c. whether a person is a college graduate or not  
d. zipcode

12. Which graphical display would be appropriate for the following question: "If You Could Not Find the Perfect Mate, Would You Marry Someone Else? Yes or No."

a. Histogram  
b. Stemplot  
c. Bar graph  
d. All of the above

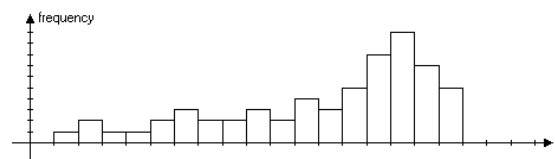
13. Here are the IQ scores of ten randomly selected eight-grade students:

145	139	126	122	125	130
96	110	118			

To make a stemplot of these scores, you would use as stems

a. 0 and 1.  
b. 09, 10, 11, 12, 13, and 14.  
c. 0, 2, 5, 6, 8, 9.  
d. 90, and 100.

14. What would be the best description of the shape of the following distribution?



a. skewed to the right, unimodal  
b. skewed to the left, unimodal  
c. skewed to the right, bimodal.  
d. skewed to the left, bimodal.

15. Which of the following variables yields data that would be suitable for use on a histogram?

a. color of hair  
b. brand of cell phone  
c. gender of an individual  
d. the time between two consecutive phone calls

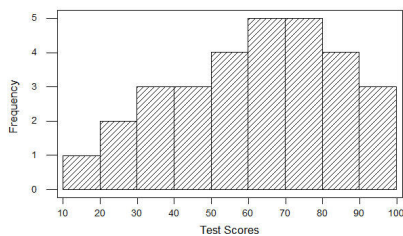
16. Which one of the following statements is NOT true?

a. The bars of the bar graph never touch each other.  
b. One disadvantage of histograms is that you can't see the individual values.  
c. The percentages in a pie chart must add up to 100%.  
d. The leaves of the stemplot are the first digits of the data.

17. Which one of these variables most likely to give a bimodal distribution?

- ☒ a. life expectancy in Europe and Africa
- b. test scores
- c. age of death from natural causes
- d. salary of employees at a large firm

18. The distribution of test scores of 30 students in a statistics exam is given below. What percentage of students got F on the test if the professor gives F's for 40 points or below?



- a.  $3/30 = 10\%$
- ☒ b.  $6/30 = 20\%$
- c.  $9/30 = 30\%$
- d. Can't tell from the graph.

19. Refer back to the histogram in question 18. What is the best description of shape of the distribution?

- a. The distribution is slightly skewed to the right.
- ☒ b. The distribution is slightly skewed to the left.
- c. The distribution is roughly symmetric.
- d. The distribution is bimodal, and symmetric.

20. Refer back to the histogram in question 18. Which one of the following statements best describes the center and the spread?

- ☒ a. The center is somewhere between 60 and 70, and the spread is about 10 to 100.
- b. The center is around 80, and the spread is about 0-100.

c. The center is around 50, and the spread is about 90.

d. The center is around 70, and the spread is 10 to 90.