SCORE_____

1. Identify the type of sample described below:

[5 points]

A farmer wishing to find the average milk yield of each type of cow in his herd which consists of Guernsey, Ayrshire, Holstein and Jersey cows. He divides up his herd into the four sub-groups and takes a sample of 20 by randomly selected 5 from each group.

2. Classify each of the following attributes as nominal, ordinal, discrete or continuous:

   (a) State of birth for someone born in the U.S.

   [3 points]

   (b) Price of a textbook

   [3 points]

   (c) Actual weight of coffee in a 1-lb can.

   [3 points]

   (d) Political party

   [3 points]

3. Pie charts are used to describe what types of data.

[5 points]

4. Consider the set of all SU students this fall. Suppose you are interested in the current grade point average (GPA) for this group.

(a) Define the population and the variable of interest.

[4 points]

(b) Is the variable qualitative or quantitative?

[4 points]

(c) Suppose you determine the GPA of every student in our MATH 155 class. Would this determination represent a census or a sample? If sample, is it a good representation of the population?

[4 points]

(d) If you determine the GPA of every student in our MATH 155 class and calculate the average, how much reliability does your calculation have as an "estimate" of the class average GPA? of the SU students average GPA?

[4 points]

5. Construct a stem & leaf plot for the following data set:

$$154, 142, 137, 133, 122, 126, 135, 135, 108, 120, 127, 134, 122$$

[5 points]

6. The exam scores for the students in a finance class are as follows

88	82	89	70	85
63	100	86	67	39
90	96	76	34	81
64	75	84	89	96

Construct a frequency distribution which includes relative and cumulative frequency.

[6 points]

7. Construct a histogram for the frequency distribution constructed in question #6.

[6 points]

8. Given the following qualitative data set ("What brand of car do you drive?" asked to 30 randomly selected students), construct a frequency distribution and bar graph.

[10 points]

Ford, Chevy, Honda, Toyota, Nissan, chevy, Toyota, Honda, Chevy, Toyota, Nissan, Ford, Toyota, Nissan, Chevy, Ford, Nissan, Toyota, Nissan, Ford, Chevy, Toyota, Nissan, Honda, Chevy, Chevy, Honda, Ford, Toyota, Nissan

10. To determine whether using a cell phone while driving increases the risk of an accident, a researcher examines accident reports to obtain data about the number of accidents in which a driver was talking on a cell phone.

(a) Is this a randomized experiment or an observational study?

[5 points]

(b) Assume that the accident reports show that people were more likely to have an accident while talking on a cell phone. Could this result be due to confounding? Explain.

[5 points]

11. Which of the following is the best description of a randomized experiment?

[5 points]

(a) an experiment in which the outcomes are random

(b) an experiment in which the treatments are assigned randomly to experimental units

(c) an experiment in which the experimental units are selected at random

(d) an experiment in which the investigators are chosen at random

12. An experiment that tends to overestimate or underestimate the true value is said to be:

[5 points]

(a) flagrant.

(b) biased.

(c) un-randomized.

(d) randomized.

13. A market researcher selects 500 people from each of 10 cities. This is an example of what type of sampling:

[5 points]

(a) Convenience

(b) Cluster

(c) Stratified

(d) Random

(e) Systematic

14. Construct the relative and cumulative frequency distribution and the frequency polygon for the following:

[10 points]

Speed	# of cars
0 - 29	4
30 - 59	16
60 - 89	60
90 - 119	20