Math 220 : Elementary Statistics — Kane Nashimoto
Exam 1 - Ch. 1, 2, 3, 4
Fall 2006 — Name : _____

Directions: This exam contains six problems worth a total of 100 points. For each computational problem, you must first write the formula to be used and present all your subsequent work in order to receive full or partial credit. Circle your final answers.

1. Survey data on amount of exercise (in minutes per day) showed a unimodal distribution with a mean of 28 and a standard deviation of 9. The median was 22.

   (a) What do the relative locations of the mean and median tell you about the skewness of the distribution of the data? (8 pts.)

   (b) One respondent of the survey indicated that she exercised 20 minutes. Compute the z-score for her exercise time. (8 pts.)

2. A researcher intended to investigate whether Americans traveled less in recent years due to the rising gas prices. He distributed a survey, containing a series of questions about vacationing, traveling, daily commuting, etc., to a random sample of 500 people in Missouri.

   (a) Based on the researcher's intent, what would the ideal target population be for his study? (8 pts.)

   (b) To what population can the researcher generalize his findings? (8 pts.)

3. For each of the following, determine whether the data are categorical or numerical. For numerical data, further determine whether they are discrete or continuous. (4 pts. ea.)

   (a) Amounts of wine (in ounces) served for four customers ... _____

   (b) Prices (in dollars) of a certain model car at 20 dealers ... _____

   (c) Head-to-tail lengths of 20 snakes ..... _____

   (d) Colors of denim jeans worn by eight students ..... _____

4. Briefly, but clearly, describe an example of a study in which there is a potential non-response bias. (10 pts.)

5. Featured below are exam scores for a sample of five students enrolled in an upper-level math course.

$$X: \{64,\ 72,\ 81,\ 55,\ 77\}$$

   (a) Compute the sample mean and sample standard deviation. (16 pts.)

   (b) One problem in the exam was "very difficult" and the instructor decided to give 5 points to every student. What would the resulting mean and standard deviation be? Give the actual values. No substantial computation is necessary to answer this question. (10 pts.)

6. The stem-and-leaf display below, for a data set with 35 observations, is constructed using a stem width of 1.

Stem	Leaf
3	11222455555667789
4	012333455788888899

   (a) List (*i*) the smallest value, (*ii*) the median value, and (*iii*) the largest value in the data. (8 pts.)

   (b) What can you do to make this display more suitable for the current data? Explain, but do not actually construct a new display. (8 pts.)