MATH 210 - Test #1 - 2/25/99

Show all work for full credit! Points in [brackets] sum to 100.

Part A - Descriptive Statistics

1. Consider the following set of 13 data values: 4 5 6 6 7 7 7 8 8 9 10 11 12 [24]

a. Compute the 5-number summary, indicating how you derived your results.

b. Use the 5-number summary to draw a boxplot for this data

c. Based on boxplot, is the data fairly symmetric or is it skewed? **Explain!**

d. Compute the mean of this data and explain how it relates to the median, given the shape of the distribution.

2. The following side-by-side stemplot compares hours studied per week by 32 men and 34 women at Manchester. (The units for the "leaves" are hours.)

[25]

```
WOMEN      MEN

       |1|  01
       | |  233
       | |  455
    66 | |  6677
   988 | |  88899
  1000 |2|  0001
 33322 | |  2223
 44455 | |  444
  7666 | |  667
   888 | |
    00 |3|
    22 | |
    54 | |
     7 | |
     9 | |  8
```

a. What is the lowest study time for the men's data?

b. Describe the men's distribution (i.e., overall shape and any exceptions) using appropriate terminology.

c. Describe the women's distribution (i.e., overall shape and any exceptions) using appropriate terminology.

d. What obvious differences are there between the men's and women's data? (Think about center, variation and shape.)

e. Use the IQR test to determine if the high value in the men's data should be considered an outlier.

Part C - Normal Calculations

Suppose the age of people in the United States is normally distributed with a mean of 45 years and a standard deviation of 15.
[24]

1. What percent of the population is less than 22 years old?

2. What percent is above 90 years old?

3. What percent is between 22 and 30 years old?

4. Find the 60^{th} percentile for age in the United States.

Part B - Miscellaneous

1. CNN News has a daily "Quick Vote" poll on their website, `cnn.com`. Suppose they ask the following question: "Do you think the World Wide Web is a good place to find reliable news?" Why would this poll likely be biased if you were trying to reach a conclusion about the entire U.S. population? (Just saying a certain group is excluded is not sufficient — you must provide *specific* reasons why bias is likely and whether the poll results are likely to over or underestimate how favorably people view the Web as a news source.)

[7]

2. In a randomized-comparative experiment explain *how* and *why* the following are used:

[9]

a. the control group

b. random assignments

c. a placebo

3. You are told that the amount you sleep per night is 2.5 standard deviations above the mean for Manchester students. Assuming the amount of sleep for M.C. students is normally distributed, how do you compare to the rest of the student body. **Be specific!**

[6]

4. You have a list of 50 people from which you wish to choose a random sample of 5 people.

[5] Use Line122 of Table B to choose your sample — make clear how the list and table are used and which people are selected. **Use the back of the previous sheet to answer.**