MATH 210 - Test #1 - 2/27/03

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

Part A - Descriptive Statistics

1. Construct a back-to-back stemplot of the following data. (Do *not* truncate or split stems!)
[5]

Men:	35	51	53	61	62	74	76	83	84	88	89
Women:	73	75	80	83	85	92	97	98	100	109	

2. Based on your stemplot, describe the differences between the men's and women's distributions. (Include the ideas of symmetry, center, and variation.)
[5]

3. For the men's data which will be lower, the mean or the median? **Justify your answer using your *stemplot* rather than doing specific calculations.**
[4]

5. Determine the 5-number summary for the men's data.
[5]

Min= Q_1= M= Q_3= Max=

6. Use the appropriate *numerical* test to determine if the value 35 is an outlier in the men's data.
[5]

7. Construct a boxplot of the men's data.
[5]

Part B - Random Sampling

You wish to estimate the mean hours that on-campus M.C. students watch TV during a typical day. On Sunday evening you pick up the student directory, randomly choose four pages and call everyone on those four pages. If someone answers you ask, "How many hours did you watch TV yesterday?"

1. For *this* survey identify:
[9]

   a. the population -

   b. the sampling frame -

   c. the sample -

2. Identify two possible biases in this polling technique. **Be sure to indicate *why the bias is present* and whether the mean computed from the sample would tend to be *too low or too high.***
[8]

   a.

   b.

3. The current student directory begins with page 14 and ends on page 40. Using Line 101 of Table B, determine which four pages will be selected for this survey. **Be sure to indicate how you used the information from Table B.**

[4]

Part C - Normal Distributions

The heights for young adult women and men in the U.S. are each normally distributed as follows.

	Mean (μ)	Std. Dev. (σ)
Women:	64.5 in.	2.5 in.
Men:	69.0 in.	2.4 in.

1. Kristen is 5 ft 8 in. (68 in.) and Nick is 5 ft. 10 in (70 in.). Use *z-scores* to compare their heights on a comparable scale. Which person would you conclude is actually "taller?"

[6]

2. What percent of young men are taller than Nick?

[6]

3. What percentage of young men are between 65 and 70 inches?

[6]

4. Compute the 90^{th} percentile for young men's heights.

[6]

5. Construct a range that contains "almost all" of young men's heights.

[6]

Part D - Miscellaneous

1. In a set of data, the proportion of observations having a certain value is called the (absolute / fractional / relative) frequency. [Circle *one*.]

[2]

2. Why are the median and IQR called resistant measures? (Include a definition of the term "resistant" and indicate what these measures are resistant to.)

[5]

3. State three characteristics of *any* normal curve.

[6]

a.

b.

c.

4. In a normal distribution the mean always corresponds to the _____ percentile.

[3]

5. What kind of pattern in a normal quantile plot indicates the data is approximately normal?

[4]