**MATH 308 -- EXAM 1 Sept 17, 2010**

**NAME:**

**SHOW ALL YOUR WORK.**

Please show all the formulas and facts you are using. Write down all the steps. It makes it easier to grade and give partial credit.

1. [30 pts] Do men and women marry at the same age? The file Ch05\_Marriage\_Age.xls contains the average age at marriage for men and women for (many) years from 1890 to 1998.
2. Construct histograms of the age at marriage for men and women. Bin (breaks) :

20.5, 21.5, 22.5,23.5, 24.5, 25.5, 26.5, 27.5, 28.5

1. Construct a comparative box plots and report the 5 number summaries for each group. Report any outliers.
2. Summarize your findings from these graphs. (Comment on the shape of the distributions, the median, the spread, outliers. Comment on differences).
3. [20 pts] Cholesterol levels of adult American women can be described by a Normal model with mean 185 mg/dL and a standard deviation of 25.
4. Draw the normal model. Clearly label it showing the 68-95-99.7 Rule.
5. In what interval would you expect the central 68% of cholesterol levels to be found?
6. About what percent of women would get cholesterol levels above 210?
7. About what percent of women would get cholesterol levels between 210 and 235?
8. What is the 90th percentile (top 10% cut off) of women’s cholesterol levels?
9. [10 pts] For a given data set, describe when you would use the mean and standard deviation to describe the data and when you would use the median and IQR.
10. [20 pts] NFL data from the 2006 football season reported the number of yards gained by each of the league’s 167 receivers. The data is in file Ch06\_Receivers.xls.
11. Use the method of comparing percentiles to determine whether the data is reasonably normal or not.
12. Do a histogram of the data. What is a better measure of center and spread, the mean and standard deviation or the median and IQR? Why?
13. [20 pts] A secretary entering the salary data into a Department of Mathematics spreadsheet accidentally put an extra “0” in Stanford University TA stipend, listing it as $200,000 instead of $20,000. Explain how this error will affect the summary statistics for the report on TA stipends in Department of Mathematics across USA:
14. Measures of center: median and mean.
15. Measures of spread: range, IQR and standard deviation.