Math 1600, Section 1, Fall 2010 – Statistics
Final Review Sheet

See review sheet for Midterm 2 and all previous quizzes and exams.
This is only intended as a guide.

Some problems from the book: 10.4, 3,14, 3.15, 3.16, 3.17, 3.24

1. A random sample of 2000 people from the labor force or a large city are interviewed, and 175 of them are found to be unemployed.
   a. Estimate the rate of unemployment based on the data.
   b. Establish a 98% error margin for your estimate.

2. While estimating a population proportion using a large sample, it is reported that the point estimate of p is $\hat{p} = .32$ and its 90% error margin is .08. Using this information find:
   a. A 95% confidence interval for p,
   b. The sample size n that was used in the study.

3. From telephone interviews with 980 adults, it was found that 78% of those persons supported tougher legislation for antipollution measures. Does this poll substantiate the conjecture that more than 75% of the adult population is in favor of tougher legislation for antipollution measures? (Note that you cannot use the results of the survey until step d.)
   a. Formulate the hypotheses.
   b. State the test statistic and the form of the rejection region.
   c. With $\alpha = .03$ determine the rejection region.
   d. Calculate the test statistic from the data.
   e. Draw your conclusion (this should include a computation of the P-value). Write the final conclusion as a sentence that answers the question in the problem statement..

4. Do problem 10.12 on page 405 of our book.
5. Do problem 10.13 on page 405 of our book.
6. Do problem 10.41 on page 418 of our book.
7. Do problem 10.42 on page 418 of our book.

8. For data from a set of n=10 observations, one has calculated the 95% confidence interval for σ and obtained the result (4.05, 10.75).
   a. What was the standard deviation *s* for the sample? (Hint: Examine how s enters the formula of a confidence interval.)
   b. Calculate a 90% confidence interval for σ.

9. Given the following, compute a 95% confidence interval for the population mean, μ.
$n = 17$, $\sum x_i = 220$, $\sum (x_i - \bar{x})^2 = 75$

10. A manager wants to estimate the time it takes to process an order. A random sample of 6 recent orders yields the following times:
    28 26 25 30 22 34
Determine a 90% confidence interval for the true time to fill orders. State any assumptions you make.