Unit 5 – The Normal Distribution
Week #8 - Practice Problems

~~**Due: Monday November 10, 2008**~~
Revised Due Date: Monday November 17, 2008

The following is a nice URL on the web that illustrates the connection between a random variable X that is distributed Normal(μ,σ^2) and a standard normal deviate Z that is distributed Normal(0,1).

It's also a useful tool for checking your work.

http://www.coe.tamu.edu/~strader/Mathematics/Statistics/NormalCurve/

1. Suppose the distribution of GRE scores satisfies the assumptions of normality with a mean score of μ=600 and a standard deviation of σ=80.

   a. What is the probability of a score less than 450 or greater than 750?
   b. What proportion of students have scores between 450 and 750?
   c. What score is equal to the 95th percentile?

2. The Chapin Social Insight Test evaluates how accurately the subject appraises other people. In the reference population used to develop the test, scores is normally distributed with mean μ=25 and standard deviation σ=5. The range of possible scores is 0 to 41.

   a. What proportion of the population has scores below 20 on the Chapin test?
   b. What proportion has scores below 10?
   c. How high a score must you have in order to be in the top quarter of the population in social insight?

3. A normal distribution has mean μ=100 and standard deviation σ=15 (for example, IQ). Give limits, symmetric about the mean, within which 95% of the population would lie:

   a. Individual observations.
   b. Means of 4 observations.
   c. Means of 16 observations.
   d. Means of 100 observations.
   e. Write down an expression for the width of the limits symmetric about the mean, within which 95% of the population of means of samples of size n would lie.