Unit 5 – The Normal Distribution
Homework #8 (Unit 5 – Normal part 2 of 2)

Due: Monday November 2, 2015
Last submission date for credit: November 9, 2015

1. **This exercise gives you additional practice in calculating probabilities under normal curves with non-zero mean and non-unit variance.**

Suppose that, in a certain population, the distribution of GRE scores is normal with mean $\mu=600$ and standard deviation $\sigma=80$.

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

2. **Ditto**

The Chapin Social Insight Test evaluates how accurately the subject appraises other people. In the reference population used to develop the test, Chapin Social Insight Test scores are distributed normal with mean $\mu=25$ and standard deviation $\sigma=5$.

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. **(For the advanced reader) This exercise is purposely more thoughtful and asks you to think a bit about the meaning of the ideas in unit 5. There is not an explicit example that you can mimic. Tip – Give it a try for a few minutes. Then, if you have no idea how to proceed, please consult the solutions.**

A normal distribution has mean $\mu=100$ and standard deviation $\sigma=15$ (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