Supplementary Practice Questions

***\*These questions will help prepare you for your quiz next week\****

Question 1:

After deducting grants based on need, the average cost to attend the University of Southern California (USC) is $27,175 (US News and World Report, America’s Best Colleges, 2009, ed.). Assume the population standard is $7400. Suppose that a random sample of 60 USC students will be taken from this population.

a. What is the value of the standard error of the mean?

b. What is the probability that the sample mean will be more than $27, 175?

c. What is the probability that the sample mean will be within $1000 of the population mean?

d. How would the probability in part (c) change if the sample size were increased to 100?

Question 2:

A production process is checked periodically by a quality control inspector. The inspector selects simple random samples of 30 finished products and computes the sample mean product weights x. If test results over a long period of time show that 5% of the x values are over 2.1 pounds and 5% are under 1.9 pounds, what are the mean and standard deviation for the population of products produced with this process?

Question 3:

Advertisers contract with Internet service providers and search engines to place ads on websites. They pay a fee based on the number of potential customers who click on their ad. Unfortunately, click fraud – the practice of someone clicking an ad solely for the purpose of driving up advertising revenue – has become a problem. 40% of advertisers claim they have been a victim of click fraud (Business Week, March 13, 2006). Suppose a simple random sample of 380 advertisers will be taken to learn more about how they are affected by this practice.

a. What is the probability that the sample proportion will be within + .04 of the population proportion experience click fraud?

b. What is the probability that the sample proportion will be greater than .45?