Kerry Ojakian's MTH 23.5 Class
Due Date: NOT TO HAND IN (for your review)

HW #4

The Assignment

Note: This assignment is NOT to hand in, but for practice. There are a lot more practice problems at Webwork (HW 16 - an extra credit assignment). This assignment is meant to fill in some gaps and emphasize a few important problems.

1. Compute a 93% Chebyshev interval for some data that has mean 100 and standard deviation 10.

2. Suppose two 6-sided dice are rolled (each die is numbered 1 to 6).

   (a) What is the probability that the sum of the dice is 4?

   (b) What is the probability that the first die roll is even and the second is odd?

3. Suppose the probability of getting sick is 0.25, and the probability of getting caught in a storm is 0.3. Suppose the probability of getting sick *and* caught in a storm is 0.1.

   (a) What is the probability of getting sick or getting caught in a storm?

   (b) Based on the probabilities, is getting sick independent of getting caught in a storm?

   (c) What is the probability of getting sick given that you get caught in a storm?

4. Suppose 15% of senior citizens (people 65 years of age and older) get the flu each year and 24% of people under 65 years old get the flu each year. Also suppose that the population consists of 12% senior citizens.

   (a) If you choose a random person from the population, what is the probability that she is a senior citizen?

   (b) What is the probability that a random person is under 65 years of age?

   (c) What is the probability that a a person gets the flu given that she is a senior citizen?

   (d) What is the probability that a randomly selected person is both a senior citizen and gets the flu?

   (e) What is the probability that person selected at random is a person under age 65 who will get the flu?

5. Suppose that a store makes over \$800 on 60% of the days.

   (a) Suppose the store is open for 20 days. What is the probability that the store will make over \$800 every day?

   (b) Suppose the store is open for 10 days. What is the probability that the store will make over \$800 for at least 6 days?

   (c) Suppose the store is open for 10 days. What is the probability that the store will make **less than** \$800 for at least 6 days?

6. Suppose X is normaly distributed with a mean of 30 and standard deviation of 5. Find the following in **two ways**: 1) Using the Empircal Rule (show your work along with a sketch of the associated area, 2) Using an Excel command (write down your Excel commands).

   (a) $P(X < 35)$

   (b) $P(X > 25)$

   (c) $P(25 < X < 40)$

7. Do the last question again (just using Excel commands) if instead of using X, we take 7 samples from X and find their mean.