STAT/MA 41600
In-Class Problem Set #35: November 5, 2018

1. Suppose a certain candy maker produces pieces of chocolate with average weight 0.8 ounces, and a standard deviation of 0.12 ounces. If the weight is assumed to be Normally distributed, what is the probability that the weight of a randomly chosen piece of chocolate will exceed 1 ounce?

2. Choose 6 pieces of candy from the candy maker in question 1, and assume that their weights are independent. What is the probability that exactly 3 of the 6 pieces will each exceed 1 ounce, and the other 3 will be less than 1 ounce?

3. Suppose that X is a Normal random variable with expected value $\mathbb{E}(X) = 3$ and standard deviation $\sigma_X = .4$.
3a. Calculate $P(|X - 3| > .1)$.
3b. Calculate $P(|X - 2.8| > .1)$.

4. In a certain class, the student scores are approximately normally distributed, with mean 72.5% and standard deviation 6.9%.
4a. What percent of students score above 80%?
4b. Suppose that we interview students until we meet a student who has a score above 80%. (Suppose all scores are independent.) Let X denote the number of students that we interview during this process. What kind of random variable is X? What is/are the parameter(s)? What are the values of $\mathbb{E}(X)$ and $\mathrm{Var}(X)$?