STAT/MA 41600
In-Class Problem Set #36: November 7, 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 weights are assumed to be Normally distributed random variables, and there are 24 such candies in a bag, what is the probability that the weight of a bag will exceed 20 ounces?

2. Suppose that we compare the weights of two pieces of the chocolate from question 1. What is the probability that the differences of their weights are less than 0.1 ounce?

3. Consider 10 independent Normal random variables that each have expected value 3 and standard deviation 0.4. Let Y denote the sum of these 10 random variables. Find $P(Y > 29)$.

4. In a certain class, the student scores are approximately normally distributed, with mean 72.5% and standard deviation 6.9%. Also suppose that the scores of the students are independent.

Let $X_1, \ldots, X_5$ be the scores of five students, and let $Y = (X_1 + \cdots + X_5)/5$ be the average of those five scores. Find the probability that Y exceeds 75%.