

Math 10 - Homework Chapter 7

1. High Fructose Corn Syrup (HFCS) is a sweetener in food products that is linked to obesity and type II diabetes. The mean annual consumption in the United States in 2008 of HFCS was 60 lbs with a standard deviation of 20 lbs. Assume the population follows a Normal Distribution.
 - a. In a sample of 16 Americans, what is the probability that the **sample mean** will exceed 57 pounds of HFCS per year?
 - b. In a sample of 16 Americans, what is the probability that the **sample mean** will be between 50 and 70 pounds of HFCS per year.
2. A normally distributed population of package weights has a *mean* of 63.5 g and a *standard deviation* of 12.2 g.
 - a. What percentage of this population weighs 66 g or more?
 - b. If you sample 16 packages, find the probability the sample **mean** is over 66 g. Compare answer to part a.
 - c. If you sample 49 packages, find the probability the sample **mean** is over 66 g. Compare answer to part a.

3. A pollster sampled 100 adults in California and asked a series of questions. The Central Limit Theorem for Proportions requires that $np > 10$ and $n(1-p) > 10$. Determine if these conditions are met for the following statements.
 - a. 61% of Californians live in Southern California.
 - b. 92% of Californians support Deferred Action for Childhood Arrivals (DACA)
 - c. 8% of Californians have a felony conviction.

4. 24% of Californians have visited Yosemite National Park. A pollster samples 1000 Californians.
 - a. Determine the expected value and standard deviation of the sample proportion.
 - b. Determine that the condition for normality is satisfied.
 - c. Determine the probability the sample proportion exceeds 0.40.