The Candy Machine

1. Suppose a VERY large candy machine has 15% orange candies. Imagine taking an SRS of 25 candies from the machine and observing the sample proportion $\hat{p}$ of orange candies.

(a) What is the mean of the sampling distribution of $\hat{p}$? Why?

(b) Check to see if the 10% condition is met.

(c) Find the standard deviation of the sampling distribution of $\hat{p}$.

(d) Is the sampling distribution of $\hat{p}$ approximately Normal? Check to see if the Normal condition is met.

(e) If the sample size were 75 rather than 25, how would this change the sampling distribution of $\hat{p}$? How would this impact the Normal condition?
Planning for College

2. The superintendent of Miami-Dade County Public Schools wants to know what proportion of middle school students in his district are planning to attend a four-year college or university. Suppose that 80% of all middle school students in his district are planning to attend a four-year college or university. What is the probability that a SRS of size 125 will give a result within 7 percentage points of the true value?

Who owns a Harley?

3. Harley-Davidson motorcycles make up 14% of all the motorcycles registered in the United States. You plan to interview an SRS of 500 motorcycle owners. How likely is your sample to contain 20% or more who own Harleys?