Confidence Intervals (II)

1. (Hypothetical) A survey organization seeks to estimate the outcome of an upcoming election. They conduct several independent simple random samples of registered voters. For each sample find a 95% confidence interval on the percentage of registered voters who intend to vote for the Coffee Party candidate.

Sample 1: 15 Coffee Party voters out of 100 voters polled.

Sample 2: 30 Coffee Party voters out of 225 voters polled.

Sample 3: 100 Coffee Party voters out of 1000 voters polled.

2. A box contains tickets with 1s and tickets with 0s. Suppose that the fraction of tickets with 1s is 50%. What is the chance that a random sample of 100 tickets having 40% 1s?

3. Repeat #2 if the sample size is 1000.

4. Repeat #2 if the sample size is 10,000.

5. Four hundred draws are made at random with replacement from a box of numbered tickets; 150 are positive. Find a 95% confidence interval for the percent of positive tickets in the box. Someone tells you that 50% of the tickets in the box show positive numbers. Do you believe it? Justify your answer.