Homework Problems:

1. A popular popcorn company claims that that at least 90% of their kernels will pop when microwaved. A consumer's research company suspects that that the value of 90% is too high so they do a test. They take 15 packages of popcorn and microwave them in the same microwave oven for 3 minutes (recommended time) and count the total number of popped corn and un-popped corn. Test the company's claim at the 5% level and find a 95% confidence interval for the percentage of popped corn.

    Statistics: Popped corn: 10,881   Unpopped corn: 1,279

Test:

Given information:

Parameter of interest (appropriate to the problem situation):

Conditions:

Null and Alternative Hypotheses:

Appropriate statistic (either by shown formula or calculator – underline)

p-value _____

Conclusion regarding Ho: _____

Conclusion for problem (in clear English):

Confidence interval (either by shown formula or calculator – underline) _____

Meaning of confidence interval in words

How many popcorn kernels would we need to sample to estimate the percentage of popped corn with 95% confidence and margin of error no greater than .5%?

2. Back in the year 2000, a poll was done with the workers at the Pentagon (approximately 30,000 workers) to determine what percentage of the workers bought lunch in the cafeteria on a regular basis. The percentage was 18.4%. It is thought that with a greater selection, a greater percentage of people buy lunch currently. It is too difficult to ask every worker so a random sample of the 250 workers was used. It was found that 61 people buy their lunch on a regular basis. Check out the hypothesis with an appropriate test and construct and interpret a 95% confidence interval for the data.

Test:

Given information:

Parameter of interest (appropriate to the problem situation):

Conditions:

Null and Alternative Hypotheses:

Appropriate statistic (either by shown formula or calculator – underline)

p-value _____

Conclusion regarding Ho: _____

Conclusion for problem (in clear English):

Confidence interval (either by shown formula or calculator – underline) _____

Meaning of confidence interval in words

How many Pentagon workers would we need to sample to estimate the percentage of people buying lunch with 98% confidence and margin of error no greater than 2%?