\*\*If we have a sample size of 100 and the estimate of the population proportion is 0.10, the mean of the sampling distribution of the sample proportion is:
A. 0.0009
B. 0.10
C. 0.03
D. 0.90
E. 0.09

\*\*When carrying out a large sample test of H0: *μ*=10 vs. Ha: *μ* ≠ 10 by using a p-value, we reject H0 at level of significance *α* when the p-value is:
A. Greater than *α/*2
B. Greater than *α*
C. Less than *α*
D. Less than *α/*2
E. Less than Z*α*

\*\*A small town has a population of 20,000 people. Among these 1,000 regularly visit a popular local bar. A sample of 100 people who visit the bar is surveyed for their annual expenditures in the bar. It is found that on average each person who regularly visits the bar spends about $1500 per year in the bar with a standard deviation of $120. Construct a 99 percent confidence interval around the mean annual expenditure in the bar.
((show work))

\*\*The weight of a product is measured in pounds. A sample of 50 units is taken from a batch. The sample yielded the following results: $\overbar{X}$  =75 lbs. and s=10 lbs. Calculate a 99 percent confidence interval for **µ** .  ((Show work))

\*\*The average waiting time per customer at a fast food restaurant has been 7.5 minutes. The customer waiting time has a normal distribution. The manager claims that the use of a new cashier system will decrease the average customer waiting time in the store. Based on a random sample of 16 customer transactions the mean waiting time is 6.3 minutes and the standard deviation is 2 minutes per customer. Test the manager’s claim at 5% and 1% significance level tests.
((show work))

\*\*In an early study, researchers at an Ivy University found that 33% of the freshmen had received at least one A in their first semester. Administrators are concerned that grade inflation has caused this percentage to increase. In a more recent study, of a random sample of 500 freshmen, 185 had at least one A in their first semester Calculate the appropriate test statistic to test the hypotheses related to the concern and test at 5% and 1%. ((show work))

\*\*A microwave manufacturing company has just switched to a new automated production system. Unfortunately, the new machinery has been frequently failing and requiring repairs and service. The company has been able to provide its customers with a completion time of 6 days or less. To analyze whether the completion time has increased, the production manager took a sample of 36 jobs and found that the sample mean completion time was 6.5 days with a sample standard deviation of 1.5 days. At significance levels of .05 and .10, test whether the completion time has increased. Indicate which test you are performing; show the hypotheses, the test statistic and the critical values and mention whether one-tailed or two-tailed.