Virtual Lab #5

Determine the quantile from the t-distribution for each of the following:

n = 45, 99%

n=21, 90%

n=15, 95%

Problem #1

Build a 90% confidence interval for the true average daily sales in thousands of dollars for stores.

A sample of 100 stores was taken with a sample mean of $17.06K/day with a sample standard deviation of $5.12K.

What additional assumption do we need?

Create the Confidence Interval

Problem #2

An analyst for a printer manufacturer wants to estimate the mean number of pages printed before the ink runs out for a specific type of printer. The analyst wants a 95% confidence interval with a margin of error of 5 pages. A pilot study was conducted to show the sample standard deviation of printed pages before running out of ink was 15. What size sample does this analyst need to take?

Problem #3

The customer service call center for a company decided that clients should not be put on hold for more than 2 minutes. Recently a manager was concerned about clients being put on hold for too long. The manager calculated from a sample of 81 calls a sample average wait time on hold as 2.4 minutes with a standard deviation of 1.2 minutes. State the null and alternative hypotheses.

Problem #4

An analyst for an energy company wants to try and estimate the annual average energy usage in kWh for households in their region. They believe that the average household uses 10,500 kWh every year. If this estimate is too low, the company is subject to customer complaints from a lack of planned resources. If this estimate is too high, the company is subject to government fines. The analyst samples 121 households and finds that their annual energy usage is 11,000 kWh every year with a standard deviation of 250 kWh. State the null and alternative hypotheses.

Problem #5

A sample of 100 individuals was taken where 62 of the individuals had a certain attribute of interest.

What is the value of p-hat?

What is the standard error?

Assuming a 99% level of confidence, what is the margin of error?

What is the 99% confidence interval?