

ENM_104_SEATWORK

- 1.) The average height of students in a batch is 100 cm and the standard deviation is 15. However, Tedd believes that this has changed, so he decides to test the height of 75 random students in the batch. The average height of the sample comes out to be 105. Is there enough evidence to suggest that the average height has changed?(use $\alpha = 0.05$)
- 2.) An alternator manufacturer must produce its alternators so that they are 95% confident that it runs at less than 71.1o C under stress test in order to meet the production requirements for sale to the US government. The stress test is performed on random samples drawn from the production line on a daily basis. Today's sample of 7 alternators has a mean of 71.3o C and a standard deviation of 0.214o . Is there a production quality issue?
- 3.) A premium golf ball production line must produce all of its balls to 1.615 ounces in order to get the top rating (and therefore the top dollar). Samples are drawn hourly and checked. If the production line gets out of sync with a statistical significance of more than 1%, it must be shut down and repaired. This hour's sample of 18 balls has a mean of 1.611 ounces and a standard deviation of 0.065 ounces. Do you shut down the line?
- 4.) The CEO of a large electric utility claims that 80 percent of his 1,000,000 customers are very satisfied with the service they receive. To test this claim, the local newspaper surveyed 100 customers, using simple random sampling. Among the sampled customers, 73 percent say they are very satisfied. Based on these findings, can we reject the CEO's hypothesis that 80% of the customers are very satisfied? Use a 0.05 level of significance.
- 5.) Suppose the previous example is stated a little bit differently. Suppose the CEO claims that *at least* 80 percent of the company's 1,000,000 customers are very satisfied. Again, 100 customers are surveyed using simple random sampling. The result: 73 percent are very satisfied. Based on these results, should we accept or reject the CEO's hypothesis? Assume a significance level of 0.05