

Department of Computer Applications
23MX11 – MFCS – Hypothesis Testing – Tutorial sheet

1. An online grocery shop claims that the mean delivery time is less than 120 minutes with a standard deviation of 30 minutes. A random sample of 49 orders is delivered with a mean of 100 minutes. At 95% confidence level, is there enough evidence to support the claim?
2. The mean weight of the rubber gasket is 60 grams with a standard deviation of 48. Furthermore, a researcher thinks that material X will have a significant impact on the weight of a gasket. A random sample of 64 gaskets collected and the mean weight is 68 grams. At 95% confidence level test the material X had an effect.
3. The population of all verbal GRE scores are known to have a standard deviation of 8.5. The UW Psychology department hopes to receive applicants with a verbal GRE scores over 210. This year, the mean verbal GRE scores for the 42 applicants was 212.79. Using a value of $\alpha = 0.05$ is this new mean significantly greater than the desired mean of 210?
4. Suppose you start up a company that has developed a drug that is supposed to increase IQ. You know that the standard deviation of IQ in the general population is 15. You test your drug on 36 patients and obtain a mean IQ of 97.65. Using an alpha value of 0.05, is this IQ significantly different than the population mean of 100?
5. Suppose the courage of psychologists has a population that is normally distributed with a standard deviation of 10. You decide to sample 57 psychologists from this population and obtain a mean courage of 34.81 and a standard deviation of 9.0579. Using an alpha value of $\alpha = 0.05$, is this observed mean significantly greater than an expected courage of 34?
6. Suppose the amount of beer has a population that is normally distributed with a standard deviation of 9. You are walking down the street and sample 67 beer from this population and obtain a mean amount of -0.54 and a standard deviation of 9.9197. Using an alpha value of $\alpha = 0.05$, is this observed mean significantly less than an expected amount of 0?
7. Suppose the anxiety of movies has a population that is normally distributed with a standard deviation of 1. Let's sample 40 movies from this population and obtain a mean anxiety of 94.1 and a standard deviation of 1.2039. Using an alpha value of $\alpha = 0.05$, is this observed mean significantly greater than an expected anxiety of 94?