

Math 4311 Exam Three Review

1. In a random sample of 100 apples from an orchard, the average mass was 123 grams, and the standard deviation was 18 grams. Test whether the average mass of the apples differs from 120 grams using a significance level of $\alpha = 0.05$. Also, find the p -value for the test.
2. In a random sample of 20 apples from an orchard, the average mass was 123 grams, and the standard deviation was 18 grams. Test whether the average mass of the apples differs from 150 grams using a significance level of $\alpha = 0.01$, and calculate the p -value.
3. In a random sample of 50 people, 7 had diabetes. Test whether the percentage of people in the population with diabetes differs from 10% at the 5% significance level, and calculate the p -value for the test.
4. A sample of 90 students from University A had an average SAT score of 1215, and the standard deviation was 249. At University B, a sample of 70 students had an average SAT score of 1167, and the standard deviation was 186. Test whether there is a difference in the average SAT scores of these universities at the 1% significance level, and calculate the p -value.
5. A sample of size 2000 from Country A contained 635 obese people, and a sample of size 2000 from Country B contained 542 obese people. Test whether the percentage of obese people in Country A differs from the percentage of obese people in Country B at the 5% significance level, and calculate the p -value.
6. The following table shows preop and postop values of voice grade (G) for 9 patients involved in a study of ATFV therapy. Are the postop values of grade statistically significantly lower than the preop values? What is the p -value for this test?

Preop	1.5	2.75	1.5	2	3	2.25	1	2.25	1.25
Postop	1	2	0.5	0.5	1	1.75	2.5	1.5	1.25