Online Math 21 – Chapter 11 Project

1) Two Proportion Test

In a study of 1054 people who were 60 or older, New York City researchers found that 19 of the 459 women and 11 of the 595 men had lung cancer. At the 0.01 level of significance, test the claim that men over 60 are less likely to get lung cancer than women over 60.

2) Two Proportion Randomization Test

A research company conducted a survey in which they asked, "How many tattoos do you currently have on your body?"

- Of the 60 males surveyed, 9 responded that they had at least one tattoo.
- Of the 110 females surveyed, 14 responded that they had at least one tattoo.

Test the claim that the proportion of males that have a tattoo is the same as the proportion of females that have a tattoo, at the 0.05 level of significance.

3) Paired Difference Test

In a study of a new wonder diet, a sample of 10 patients was taken. Here are there weights before and after.

Before	209	178	169	212	180	192	158	180	211	193
After	196	171	170	207	177	190	159	180	203	183

Test at the 0.01 level of significance the claim that this diet is effective, in other words, that the diet will reduce the weight of a person.

4) Wilcoxon Signed Ranks Test

To test the belief that sons are taller than their fathers, a student randomly selects 13 fathers who have adult male children. She records the height of both the father and son in inches and obtains the following data. Test the claim that sons are taller than their fathers at the 0.05 level of significance.

Family	1	2	3	4	5	6	7	8	9	10	11	12	13
Father	70.3	67.1	70.9	66.8	72.8	70.4	71.8	70.1	69.9	70.8	70.2	70.4	72.4
Son	74.1	69.2	66.9	69.2	68.9	70.2	70.4	69.3	77.8	72.3	69.2	68.6	73.9

5) Two Mean Test

A high school instructor is curious to see the effect that an open-notes policy would have on tests. He allows one of his classes to use their notes on their test, while his other class takes the test without them. Here are the scores.

With Notes
86, 95, 97, 98, 53, 84, 91, 64, 97, 97, 97, 84, 64, 94, 73

Without Notes
70, 92, 97, 50, 81, 97, 84, 61, 98, 98, 58, 23, 69, 84, 91, 78

At the 0.05 level, test the claim that the use of notes produces a higher mean test score.

6) Mann Whitney Test

A researcher plans soybeans in two types of plots: “No till” and “Chisel plowed”. The data represent the number of pods on a random sample of soybean plants for the two plot types.

Plot Type	**Pods**								
No till	34	30	31	27	40	33	37	42	39
Chisel plowed	34	37	24	23	32	33	27	34	5

At the 0.05 level of significance, test the claim that the mean number of pods for “Chisel plowed” is less than “No till”.