

Practice question assignment _ Hypothesis Testing and *t*-test

1. Principal of a local high school says her seniors score higher than the state average on a test of Mechanical Ability. The state reports the mean of this exam to be 50 with a standard deviation of 14. The mean for a sample of 49 seniors at her high school was reported to be 53.4.

a) What is the null hypothesis and alternative hypothesis?

b) Test the null hypothesis (i.e., one-tailed test and $\alpha = .01$)

2. Below are arithmetic test scores of Ms. Teachwell's fourth grade class. The statewide average on this same test for all fourth graders is 77.0. The statewide standard deviation is 7.0. You want to know if the performance of Ms. Teachwell's class is typical of the state's fourth graders. Test the null hypothesis (i.e., two-tailed test and α level is .05)

72	91	74	83	94	75	89	82	73	67	82	83
79	82	82	80	81	92	80	70	74	78	92	81
75	76	90	72	77	68						

a) What is the null hypothesis and alternative hypothesis?

b) Test the null hypothesis (i.e., two-tailed test and $\alpha = .05$)

3. The data below represents hypothetical SAT scores of NSU students. Given NSU's tradition of academic excellence, it is believed that NSU students score higher on the SAT than the general population. Test this assumption, given a population mean of 1000.

Student	Score	Student	Score	Student	Score
1	1050	6	1075	11	1220
2	1200	7	1100	12	1080
3	1100	8	1025	13	1110
4	1130	9	1000	14	1050
5	1160	10	1000	15	1140

a) What is the null hypothesis and alternative hypothesis?

b) Complete the hypothesis testing using $\alpha = .05$ (Show all the calculation steps)

c) Estimate population mean for 95% of confidence interval

4. You are interested in comparing the levels of stress between graduate students in a psychology program with graduate students in a business program. You give them a scale with range of 0 (no stress) to 7 (extremely stressed) and obtain the following data:

Psychology	Business
1	6
5	6
0	2
4	3
2	1
7	7

a) What is the null hypothesis and alternative hypothesis?

b) Complete the hypothesis testing using $\alpha = .05$ and $\alpha = .01$ (Show all the calculation steps)

c) Estimate population mean difference for 95% and 99% of confidence interval