

PSYC 610 – Practice Problems

Z-tests and one-sample t-tests: Directional and non-directional tests

1. The mean Verbal SAT score for the population of first students at Radford is 520. The standard deviation of scores in this population is 95. An investigator believes that the mean Verbal SAT of first year psychology majors is significantly different from the mean score of the population. The mean of a sample of 36 first year psychology majors is 548. Please test the investigator's prediction using an alpha level of .05.

- a. Please state both the null and alternative hypotheses.
- b. Please write a decision rule that states when the investigator should reject the null hypothesis.
- c. Please show all calculations needed to generate the appropriate statistic.
- d. State your decision as to whether the investigator should reject the null hypothesis.
- e. State the conclusion the investigator is entitled to draw.

2. The mean Verbal SAT score for the population of first students at Radford is 520. An investigator believes that the mean Verbal SAT of first year psychology majors is significantly greater than the mean score of the population. The mean of a sample of 36 first year psychology majors is 548. The standard deviation of scores in this sample is 95. Please test the investigator's prediction using an alpha level of .05.

- a. Please state both the null and alternative hypotheses.
- b. Please write a decision rule that states when the investigator should reject the null hypothesis.
- c. Please show all calculations needed to generate the appropriate statistic.
- d. State your decision as to whether the investigator should reject the null hypothesis.
- e. State the conclusion the investigator is entitled to draw.

3. The mean number of close friends for the population of people living in the U.S. is 5.7. The standard deviation of scores in this population is 1.3. An investigator predicts that the mean number of close friends for introverts will be significantly different from the mean of the population. The mean number of close friends for a sample of 26 introverts is 6.5. Do these data support the investigator's prediction? Use an alpha level of .05.

- a. Please state both the null and alternative hypotheses.
- b. Please write a decision rule that states when the investigator should reject the null hypothesis.
- c. Please show all calculations needed to generate the appropriate statistic.
- d. State your decision as to whether the investigator should reject the null hypothesis.
- e. State the conclusion the investigator is entitled to draw.

4. The mean number of close friends for the population of people living in the U.S. is 5.7. An investigator predicts that the mean number of close friends for introverts will be significantly less than the mean of the population. The mean number of close friends for a sample of 26 introverts is 6.5. The standard deviation of scores in this sample is 1.3. Do these data support the investigator's prediction? Use an alpha level of .05.

- a. Please state both the null and alternative hypotheses.
- b. Please write a decision rule that states when the investigator should reject the null hypothesis.
- c. Please show all calculations needed to generate the appropriate statistic.
- d. State your decision as to whether the investigator should reject the null hypothesis.
- e. State the conclusion the investigator is entitled to draw.