

Name \_\_\_\_\_  
 Section \_\_\_\_\_  
 Date \_\_\_\_\_

### **$t$ -Test (Standard Error of the Estimate)**

Read the chapter in your text that corresponds to  $t$ -Test (Standard Error of the Estimate) and define the following terms:

- Estimated Standard Error \_\_\_\_\_  
\_\_\_\_\_
- $t$ -Statistic \_\_\_\_\_  
\_\_\_\_\_
- Degrees of Freedom \_\_\_\_\_  
\_\_\_\_\_
- $t$  Distribution \_\_\_\_\_  
\_\_\_\_\_
- Type I Error \_\_\_\_\_
- Type II Error \_\_\_\_\_
- Two-Tailed Test \_\_\_\_\_
- One-Tailed Test \_\_\_\_\_
- Criterion of Significance (aka Alpha) \_\_\_\_\_  
\_\_\_\_\_

### **SPSS Lab - $t$ -Test (SEM)**

Dr. Dennis is the principal of a newly formed charter high school, Diamond Point High, that has been the target of criticism by parents who think that the school is not preparing students for college. In his defense, Dr. Dennis points out that the current year's University Entrance exam (UEE) among his 50 senior students was approximately 514, well above the UEE population average of 500. You have been contacted by the State Department of Education to determine statistically whether a sample mean of 514 is significantly different from the population mean of 500.

- $H_0$ : \_\_\_\_\_
- $H_1$ : \_\_\_\_\_

➤ Alpha: \_\_\_\_\_ Why? \_\_\_\_\_

The 50 student UEE scores are as follows:

504, 510, 526, 638, 465, 445, 560, 499, 503, 498, 399, 450, 510, 515, 445, 430, 200, 545, 610, 740, 567, 489, 478, 450, 567, 456, 509, 523, 514, 496, 610, 578, 577, 455, 500, 523, 526, 503, 567, 545, 410, 478, 435, 511, 510, 600, 624, 534, 555, 610

Begin the statistical analysis by entering these data into the SPSS Data Editor:

- Open the SPSS Data Editor and enter data into the columns. (Refer to "Data Input and the SPSS Screen" for the procedure for opening SPSS on the GCC network and entering data into the Data Editor.)
- Use two columns headed by the variables "Subject" and "UEEscore."
- Number each score under "subject" (1 through 50) and then enter each UEE score.
- Check your data before beginning the data analysis. There are 50 UEE scores corresponding to 50 students.
- Begin the  $t$  Test by clicking on "Analyze" on the menu bar at the top of the screen moving to "Compare Means" and then clicking on "One-Sample  $t$  Test."
- The One-Sample  $t$  Test dialog box will display the two variables. Click on "UEEscore" to move it into the window on the right.
- Click in the box below the window labeled "Test Value" and type in "500" (no quotes) to indicate that the value to which we are comparing our sample mean is 500 (population mean for the UEE). Click on "OK" to begin the statistical analysis.
- Answers the following questions to help statistically and practically answer the research question:

Descriptive Statistics for Diamond Point High seniors who took the UEE:

N \_\_\_\_\_  
 Mean \_\_\_\_\_  
 St. Deviation \_\_\_\_\_  
 SEM \_\_\_\_\_

Inferential statistics results for one-sample *t*-test:

$t_{ob}$  \_\_\_\_\_  
 df \_\_\_\_\_  
 Sig./*p* value (2-tailed) \_\_\_\_\_  
 Decision about  $H_0$     \_\_\_\_\_ Reject  $H_0$     \_\_\_\_\_ Fail to Reject (Retain)  $H_0$

Statistical Notation: \_\_\_\_\_

In actual words, based upon the outcome of this one-sample *t*-Test, what is your conclusion about the performance of the seniors at Diamond Point High compared with the population of Seniors taking the UEE?

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Effect size: \_\_\_\_\_

➤ Turn in this sheet as well as a copy of your Data Editor and Output Page.