TI-83/83 Plus: Hypothesis Testing for Two-Sample Mean with σ Unknown

The following pages contain some instructions on the usage of the TI-83/83 Plus graphing calculator.

The example used below is taken out of David Moore's text titled "The Basic Practice of Statistics, 2nd Edition".

Example#7.9 Social insight among men and women p. 398: The Chapin Social Insight Test is a psychological test designed to measure how accurately a person appraises other people. The possible scores on the test range from 0 to 41. During the development of the Chapin test, it was given to several different groups of people. Here are the results for male and female college students majoring in the liberal arts.

Group	Sex	n	$\bar{x}$	s
1	Male	133	25.34	5.05
2	Female	162	24.94	5.44

Do these data support the contention that female and male college students differ in average social insight?

Press $\boxed{\text{STAT}}$. Press $\boxed{\triangleright}$ two times to scroll right to the TESTS menu option. Press $\boxed{\triangledown}$ three times to move the cursor down to **4:2-SampTTest**, which stands for two-sample t test with σ unknown. At this point, your screen should look like the screen on the left given below.

Press $\boxed{\text{ENTER}}$ to select **4:2-SampTTest** and go into the STAT TESTS menu screen. At this point, your screen should look like the screen in the middle given above with the cursor blinking over either the **Data** or **Stats** input options. You may possibly have different numbers. Scroll over to the **Stats** input option and press $\boxed{\text{ENTER}}$ to select that option. At this point, your screen should look like the screen on the right given above. You may possibly have different numbers.

Press $\boxed{\triangledown}$ to scroll down to $\bar{x}$ **₁:** Type in 25.34 for the male sample mean. Press $\boxed{\triangledown}$ to move the cursor down to **Sx1:** Type in 5.05 for the male sample standard deviation, s_1. Press $\boxed{\triangledown}$ to move the cursor down to **n1:** Type in 133 for the male sample size, n_1. Press $\boxed{\triangledown}$ to scroll down to $\bar{x}$ **₂:** Type in 24.94 for the female sample mean. Press $\boxed{\triangledown}$ to move the cursor down to **Sx2:** Type in 5.44 for the female sample standard deviation, s_2. Press $\boxed{\triangledown}$ to move the cursor down to **n2:** Type in 162 for the female sample size, n_2.

Press $\boxed{\triangledown}$ to move the cursor down to μ_1**:**$\neq\mu_2$ **<**μ_2 **>**μ_2. Since the alternative hypothesis for this example is a two-sided alternative hypothesis, scroll over to the $\neq\mu_2$ option and

press ENTER to select that option. Press ▼ to move the cursor down to **Pooled:** To indicate that this is a general two-sample procedure, scroll over to **No** option and press ENTER to select that option. Press ▼ to move the cursor down to **Calculate** option. At this point, your screen should look like the screen on the left given below with the cursor blinking over the **Calculate** option.

```
2-SampTTest       2-SampTTest       2-SampTTest
↑n1:133           μ1≠μ2             μ1≠μ2
 x̄2:24.94         t=.6536989197     ↑x̄2=24.94
 Sx2:5.44         P=.5138263391      Sx1=5.05
 n2:162           df=288.5762887     Sx2=5.44
 μ1:≠μ2 <μ2 >μ2   x̄1=25.34           n1=133
 Pooled:No Yes    ↓x̄2=24.94          n2=162
 Calculate Draw
```

Press ENTER to select the **Calculate** option. Your calculated result screen should look like the screen in the middle given above. Press ▼ several times to get to the end of the calculated result screen. Your screen should look like the screen on the right given above.

The two-sample t statistic rounded to four decimal places is 0.6537 and the P-value from t(288.58) distribution is 0.5138. There is no evidence of a male/female difference in mean social insight score.

We could also draw the standard normal distribution curve with the observed value of t and the computed P-value indicated by the shaded regions of the curve.

Press STAT . Press ▶ two times to scroll right to the TESTS menu option. Press ▼ three times to move the cursor down to **4:2-SampTTest** Press ENTER to select **4:2-SampTTest** and go into the STAT TESTS menu screen. Scroll all the way down to the **Calculate Draw** option. Press ▶ to move the cursor over the **Draw** option. Press ENTER to select this option. Your screen should look like the screen given below.

```
t=.6537        p=.5138
```