

## TECHNOLOGY CORNER for Section 10.2, Page 647

### 24. Two-sample t tests on HP Prime

You can use HP Prime to perform a two-sample t test using either raw data or summary statistics. Let's use HP Prime to carry out the test of  $H_0: \mu_1 - \mu_2 = 0$  versus  $H_a: \mu_1 - \mu_2 > 0$  from the calcium and blood pressure example.

1. Record the data.

- Open the Statistics 1Var app. Enter the 10 calcium readings in D1 and the 11 placebo readings in D2.

	D1	D2	D3	D4
1	7	-1		
2	-4	12		
3	18	-1		
4	17	-3		
5	-3	3		
6	-5	-5		
7	1	5		
8	10	2		
9	11	-11		
10	-2	-1		

2. Set up the test.

- Open the Inference app and select Significance Test and T-Test:  $\mu_1 - \mu_2$ . For the alternative hypothesis  $H_a$ , select  $\mu_1 > \mu_2$ .

Method: Hypothesis test  
 Type: T-Test:  $\mu_1 - \mu_2$   
 Alt Hypoth:  $\mu_1 > \mu_2$

- Press **Num** and tap **Import**. In the **App** field for the first sample, select *Statistics 1Var*; in the **Column** field, select *D1*. In the **App** field for the second sample, select *Statistics 1Var*; in the **Column** field, select *D2*. Tap **OK**.

App: Statistics 1Var    D1  
 $\bar{x}_1$ : 5  
 $s_1$ : 10  
 $n_1$ : 8.74325136574

App: Statistics 1Var    D2  
 $\bar{x}_2$ : -0.272727272727  
 $s_2$ : 11  
 $n_2$ : 5.90069333368

- The values of  $\bar{x}$ ,  $s$ , and  $n$  shown for each sample will be pasted into the Inference app Numeric view. Enter  $\alpha = 0.05$  and leave **Pooled** unchecked.

$\bar{x}_1$ : 5     $\bar{x}_2$ : -0.2727272727  
 $s_1$ : 8.74325136574     $s_2$ : 5.90069333368  
 $n_1$ : 10     $n_2$ : 11

$\alpha$ : 0.05  
 Pooled:

- Tap **Calc** to see the results numerically

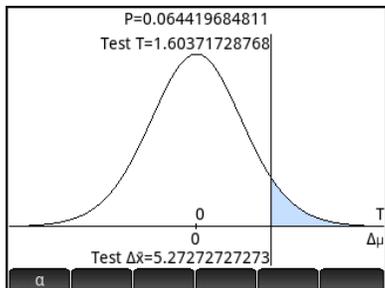
Result	1
Test T	1.60371728768
Test $\Delta\bar{x}$	5.27272727273
P	0.064419684811
DF	15.5905129687
Crit. T	1.74870046224
Crit. $\Delta\bar{x}$	11.0221325388

Fail to reject  $H_0$  at  $\alpha=0.05$

- Tap **OK** to return to Numeric view

3. You can also view the confidence interval graphically.

- Press **Plot** **Setup** to see Plot view. The test probability is shown at the top, with the test  $t$  and  $\Delta\bar{x}$  values.



- Tap  **$\alpha$**  for an alternate view of the test results

Here, the area associated with the alternative hypothesis and  $\alpha$ -level is shown shaded in blue.

The test  $t$  and  $\Delta\bar{x}$  values are shown as well.

The test values are close to but not in the shaded reject region. You can press **▲** and **▼** to increase and decrease the  $\alpha$ -level dynamically.

