

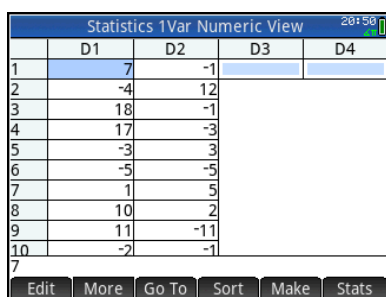
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24. Two-sample t tests on HP Prime

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.

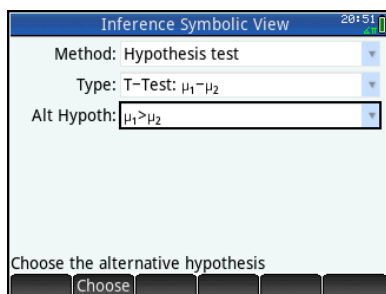
- Open the Statistics 1Var app. Enter the 10 calcium readings in D1 and the 11 placebo readings in D2.



	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.

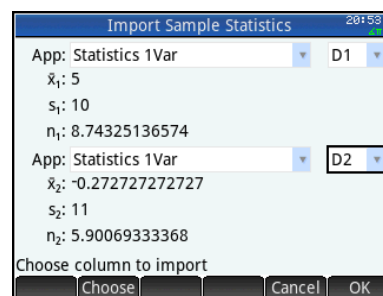
- Open the Inference app and select Significance Test and T-Test: $\mu_1 - \mu_2$. For the alternative hypothesis H_a , select $\mu_1 > \mu_2$.



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

Choose the alternative hypothesis

- 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**.



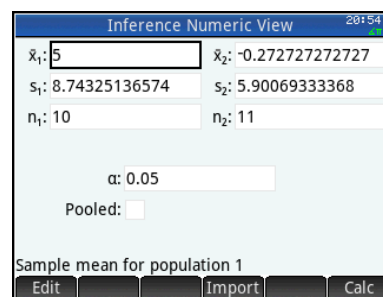
Import Sample Statistics

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

App: Statistics 1Var D2
 \bar{x}_2 : -0.2727272727
 s_2 : 11
 n_2 : 5.90069333368

Choose column to import

- 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.



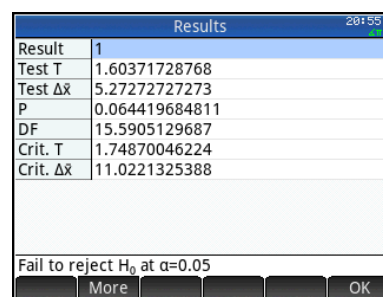
Inference Numeric View

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

α : 0.05
 Pooled: ☐

Sample mean for population 1

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




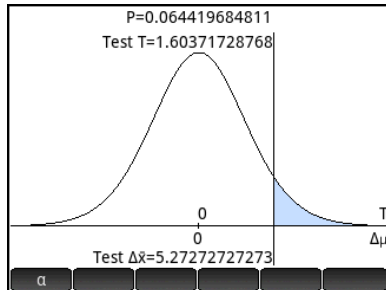
Result	1
Test T	1.60371728768
Test $\Delta\bar{x}$	5.27272727273
P	0.064419684811
DF	15.5905129687
Crit. T	1.74870046224
Crit. $\Delta\bar{x}$	11.0221325388

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



- Tap **α** for an alternate view of the test results

Here, the area associated with the alternative hypothesis and α -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 α -level dynamically.

