

## TECHNOLOGY CORNER for Section 12.1, Page 756

### 29. Linear t-test on HP Prime

Let's use the data from the crying and IQ study to perform a linear t-test on the population regression line using HP Prime.

#### 1. Set up the test.

- Press **Apps** and tap the *Inference* app icon. The app opens in Symbolic view.
- Tap the **Method** field and choose Regression. Tap the **Type** field and choose Linear t test. Tap the **Alt Hypoth** field and select  $\beta_1 > 0$ .

Inference Symbolic View

Method: Regression

Type: Linear t test

Alt Hypoth:  $\beta_1 > 0$

Choose the alternative hypothesis

Choose None Less Greater Equal

#### 2. Enter the data.

- Press **Num** to enter Numeric view. To delete existing data, press **Shift** **Esc** and select All.

- Enter the crycounts in XList and the IQ data in YList. The data can be found on Page 754.

	Xlist	Ylist
1	10	87
2	12	97
3	9	103
4	16	106
5	18	109
6	15	114
7	12	119
8	20	132
9	16	136
10	33	159

Edit More Go To Import Make Calc

#### 3. View the results.

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


	Stats
Test T	3.06548937901
P	0.002052650085
DF	36
b <sub>0</sub>	91.2682986486
b <sub>1</sub>	1.49289659811
serrLine	17.4987212245
serrSlope	0.487001066888
serrInter	8.93421517581
r	0.454972515275
R <sup>2</sup>	0.20699989655

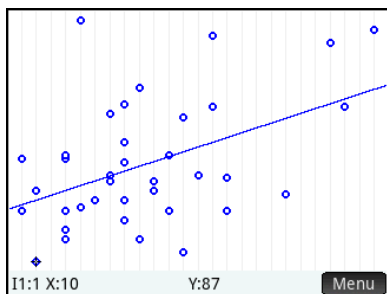
3.06548937901


More OK

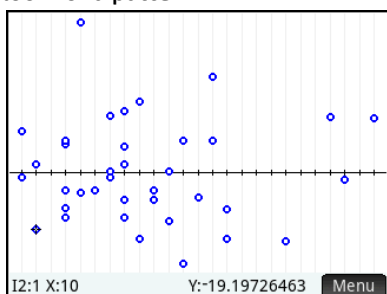
The results agree with our previous calculations. The results include the t-value ( $t=3.065489$ ) and its associated probability ( $p=0.002053$ ). The results also include the slope ( $b_1=1.492897$ ) and its standard error ( $serrSlope=0.487001$ ), the intercept ( $b_0=91.268299$ ) and its standard error ( $serrInter=8.934215$ ), the standard deviation of the residuals ( $serrLine=17.498721$ ), the correlation coefficient ( $r=0.454973$ ) and the coefficient of determination ( $R^2=0.207$ ). Note that the *Inference* app can also calculate confidence intervals for slopes and intercepts individually; this is covered in HP Prime Technology Corner 28.


## 4. Check conditions.

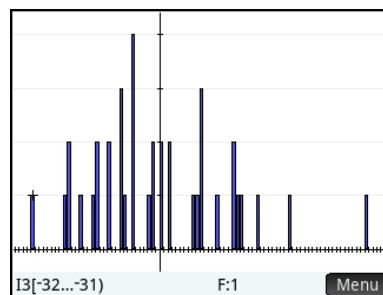
- To obtain a quick scatter plot, residual plot, histogram, and normal probability plot press  and tap *Autoscale*.





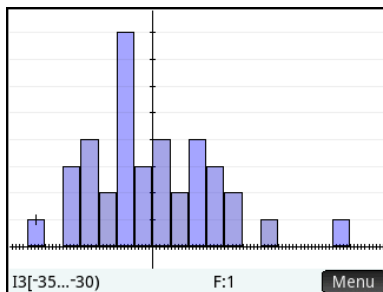
- Press  to move to the residual plot and look for a pattern.




- Press  again to move to the histogram of the residuals to check for approximate normality.



By default, the bin width is set to 1, Press   to change the value of the bin width (Hwidth).



- Press  again to move to the normal probability plot of the residuals and check for linearity

