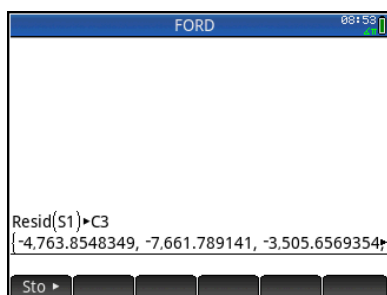


## TECHNOLOGY CORNER for Section 3.2, Page 175

### 9. Residual plots on HP Prime

Let's continue the analysis of the Ford F-150 miles driven and price data from the previous Technology Corner (page 171). You should have already made a scatterplot, calculated the equation of the least-squares regression line, and graphed the line on your plot. Now, we want to calculate residuals and make a residual plot. We can use the Statistic 2Var app function Resid to calculate the residuals and store them in a list. The syntax for the Resid function is  $\text{Resid}(S_n)$ , where  $S_n$  is one of the five Symbolic view definitions S1-S5.

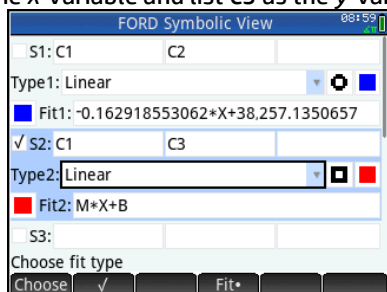
- Calculate the residuals and store them in list C3 of the Statistics 2Var app.
  - With S1 defined from the previous Technology Corner, press to go to Home view. Press , tap , tap *Statistics 2Var*, and select *Resid*. Enter S1 as the argument and tap after the right parenthesis. Tap then enter C3 and press .



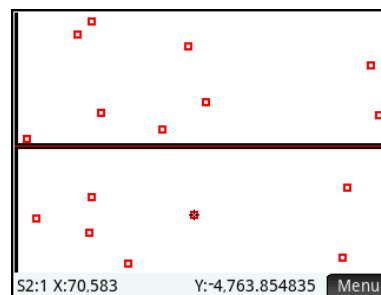
- Tap to see the residuals in list C3 of the Numeric view.

| FORD Numeric View |         |        |                |    |
|-------------------|---------|--------|----------------|----|
|                   | C1      | C2     | C3             | C4 |
| 1                 | 70,583  | 21,994 | -4,763.854     |    |
| 2                 | 129,484 | 9,500  | -7,661.789     |    |
| 3                 | 29,932  | 29,875 | -3,505.656     |    |
| 4                 | 29,953  | 41,995 | 8,617.764      |    |
| 5                 | 24,495  | 41,995 | 7,728.554      |    |
| 6                 | 75,678  | 28,986 | 3,058.215      |    |
| 7                 | 8,359   | 31,891 | -5,004.298     |    |
| 8                 | 4,447   | 37,991 | 458.363        |    |
| 9                 | 34,077  | 34,995 | 2,289.640      |    |
| 10                | 58,023  | 29,988 | 1,183.888      |    |
|                   |         |        | -4,763.8548349 |    |

- To plot the residuals press and uncheck S1 (select it and tap ). Specify S2 with list C1 as the x-variable and list C3 as the y-variable.



- Press and tap *Autoscale* to see the residual plot.



The x axis in the residual plot serves as a reference line: points above this line correspond to positive residuals and points below the line correspond to negative residuals.

- Press to return to Numeric view and tap .
  - Tap to see the sum of the residuals, which is very near zero. The standard deviation of the residuals is shown.

| FORD Numeric View |                 |
|-------------------|-----------------|
| S2                |                 |
| $\bar{y}$         | -0.00000005625  |
| $\Sigma Y$        | -0.0000009      |
| $\Sigma Y^2$      | 461,287,508.727 |
| $sY$              | 5,545.49371849  |
| $\sigma Y$        | 5,369.40120455  |
| $serrY$           | 1,386.37342962  |
| $ssY$             | 461,287,508.727 |

- Tap when you are done.