

### Tap Calc, Regression, Linear Reg.

This activity assumes that you already know the steps to calculate a regression line as explained in video 411 and uses the same data set.

Enter the data into lists 1 and 2, and check that StatGraph1 is set to produce a scatter plot.

Check the settings are as shown, including Copy Residual is set to list3, which will automatically calculate the residuals ( $y - \hat{y}$ ) for each data point and place them in list3.


Tap **OK** to confirm Set Calculation settings.

The linear regression coefficients are displayed.

Tap **OK** to close the Stat Calculation window.

The regression line is drawn through the scatter plot.

In the upper window the residuals can be seen in list3.

Tap  in the top right hand corner of the screen to close the graph window.

|    | list1 | list2 | list3 |
|----|-------|-------|-------|
| 1  | 74    | 92    |       |
| 2  | 39    | 40    |       |
| 3  | 78    | 56    |       |
| 4  | 90    | 72    |       |
| 5  | 97    | 62    |       |
| 6  | 35    | 9     |       |
| 7  | 44    | 26    |       |
| 8  | 98    | 32    |       |
| 9  | 67    | 53    |       |
| 10 | 87    | 59    |       |
| 11 |       |       |       |
| 12 |       |       |       |
| 13 |       |       |       |
| 14 |       |       |       |
| 15 |       |       |       |
| 16 |       |       |       |
| 17 |       |       |       |
| 18 |       |       |       |

| Set Calculation |       |
|-----------------|-------|
| Linear Reg      |       |
| XList:          | list1 |
| YList:          | list2 |
| Freq:           | 1     |
| Copy Formula:   | Off   |
| Copy Residual:  | list3 |
| OK Cancel       |       |

| Stat Calculation |            |
|------------------|------------|
| Linear Reg       |            |
| y=a·x+b          |            |
| a                | =0.5807887 |
| b                | =8.9220782 |
| r                | =0.5777646 |
| r <sup>2</sup>   | =0.3338119 |
| MSe              | =432.93064 |
| OK Cancel        |            |

| Zoom Analysis Calc |       |       |        |
|--------------------|-------|-------|--------|
|                    | list1 | list2 | list3  |
| 1                  | 74    | 92    | 40.1   |
| 2                  | 39    | 40    | 8.4272 |
| 3                  | 78    | 56    | 1.7764 |
| 4                  | 90    | 72    | 10.807 |
| 5                  | 97    | 62    | -3.259 |
| 6                  | 35    | 9     | -20.25 |
| Cal▶               |       |       |        |
| [ 11]=             |       |       |        |

To create a residual plot:



Tap

Tap **SetGraph**.

Deselect Previous Reg.

Change the settings for StatGraph1 by selecting list1 and list3 as shown.



Tap

The residual plot is drawn in the bottom window.

