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.

Tap **Calc**, **Regression**, **Linear Reg**.

Check the settings are as shown, including Copy Formula is set to y1, which will automatically copy the regression line into the first function (y1) in the graph editor.
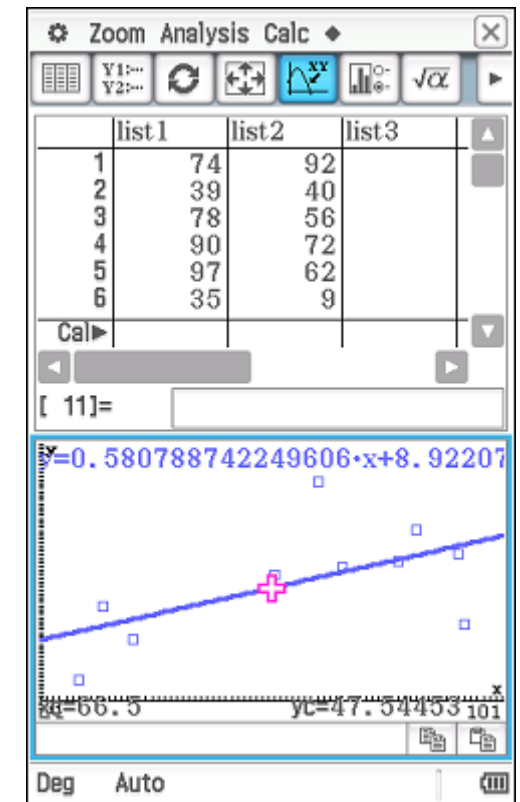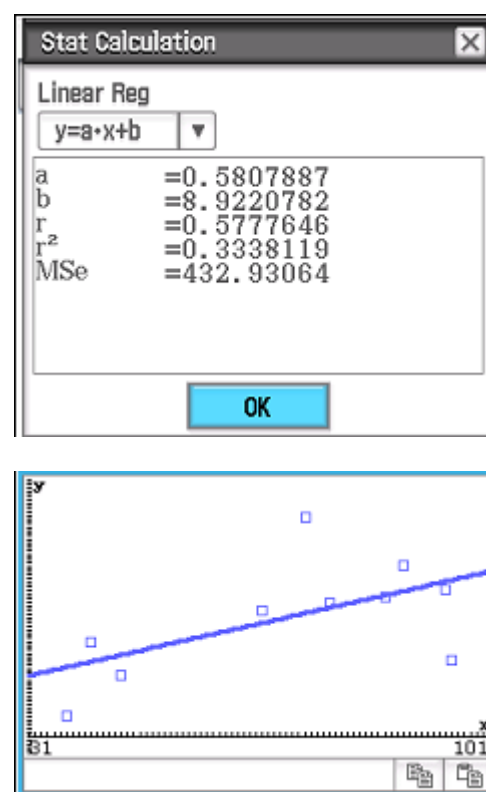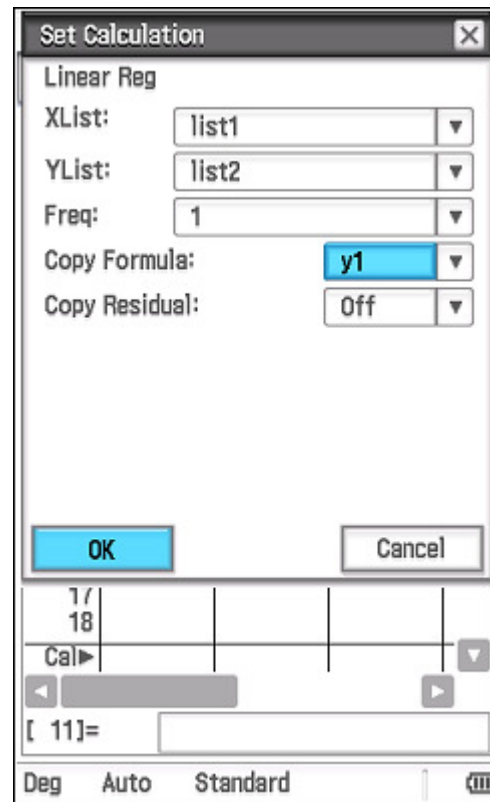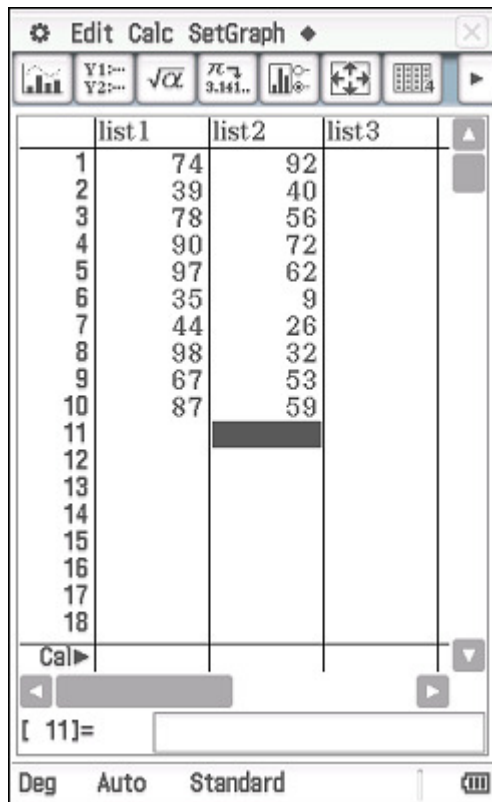
Tap **OK** to confirm Set Calculation settings.

The linear regression coefficients are displayed.

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

The regression line is drawn through the scatter plot.

Tap to enter Trace mode and use the left and right cursor keys to trace along the regression line and observe the x and y-coordinates displayed at the bottom of the screen.

Find the expected value of y when x = 90.

Method 1:
Whilst in Trace mode, press the 9 key, complete the x-value to be 90 and then tap **OK**.

The cursor has jumped to (90, 61.193), and so the predicted value is 61.193.

Extrapolation: Eg predict y when x=120.

Note that attempting to trace to points outside of the visible screen will give rise to a Domain error. Tap Cancel, zoom out and try again.

Method 2:

Tap on $\boxed{\sqrt{\alpha}}$ to open up the main window.

Use the **abc** tab to type y1(90) and tap **EXE**.

This action substitutes the number 90 into the function (the regression line) stored in y1 resulting in 61.193.

This method is suitable for values involving extrapolation as the y1(120) calculation shows.