

USING TECHNOLOGY TO CREATE MATHEMATICAL MODELS OF DATA

USING A TI-84 TO CREATE A LINE OF BEST FIT OR AN EXPONENTIAL CURVE OF BEST FIT

1. Press the STAT button (second row of buttons, near the center).
2. Press 1 for Edit.
3. Enter the values of the independent variable for L1 and the dependent variable for L2.
4. Press the 2ND key (upper left corner) and the Y= key (under the graphing window, just above the 2ND key, to pull up the STAT PLOT window. Press Enter to Select 1.
5. On the new menu, make sure Plot1, ON, and the first graphic listed under type (which looks like a scatter plot) are highlighted.
6. Press the ZOOM key (centered under the graphing window) and the number 9 for ZoomStat. You should now see your scatter plot.
7. Press the STAT button again, then the right arrow so that CALC is highlighted at the top of the graphing window.
8. Scroll down to 4 for a linear regression (LinReg) or 10 for an exponential regression (ExpReg).
9. Press the 2ND button and the number 1. L1 should now be displayed on your screen. This defines the independent variable. Press the comma button (right above 7), then pressed 2ND and the number 2. You should see L2 displayed. This defines the dependent variable. Press the comma button again, then the VARS button (under the arrow keys). Press the right arrow to highlight Y-VARS, and then press enter twice. You should now see Y1 displayed. Your calculator will store the equation of the line of best fit as Y1.
10. Press enter, and you should see "LinReg" at the top of your screen followed by $y=ax+b$ and the values of a and b . This is the equation of the line of best fit. The value of the slope is equal to a , and the y-intercept equals b .
11. If you want, you can press the graph button to see the line of best fit graphed with the scatterplot you made from your data. You can also use the trace feature or any other commands to explore values on this line of best fit.

USING EXCEL TO CREATE A LINE OF BEST FIT OR AN EXPONENTIAL MODEL

1. Enter the data into two adjacent columns. The value of the independent variable should be on the left, and the value of the dependent variable should be on the right.
2. Highlight the data in the two columns and go to the Insert tab to choose scatter from the menu bar. A scatterplot should appear.
3. Click on the scatterplot, and a new menu, Chart Layouts, should appear. Click on the third option (which should appear to show a line of best fit). A line of best fit should appear on your chart.
4. Left click on the line of best fit to select it, then right click and choose Format Trendline from the menu. A window should appear.
5. If you want the chart to display an exponential curve, click on the appropriate button at the top of the window. At the bottom of the window, check the box for "Display Equation on chart," then press close.
6. You should now see the equation of the line of best fit or exponential curve on your scatter plot.