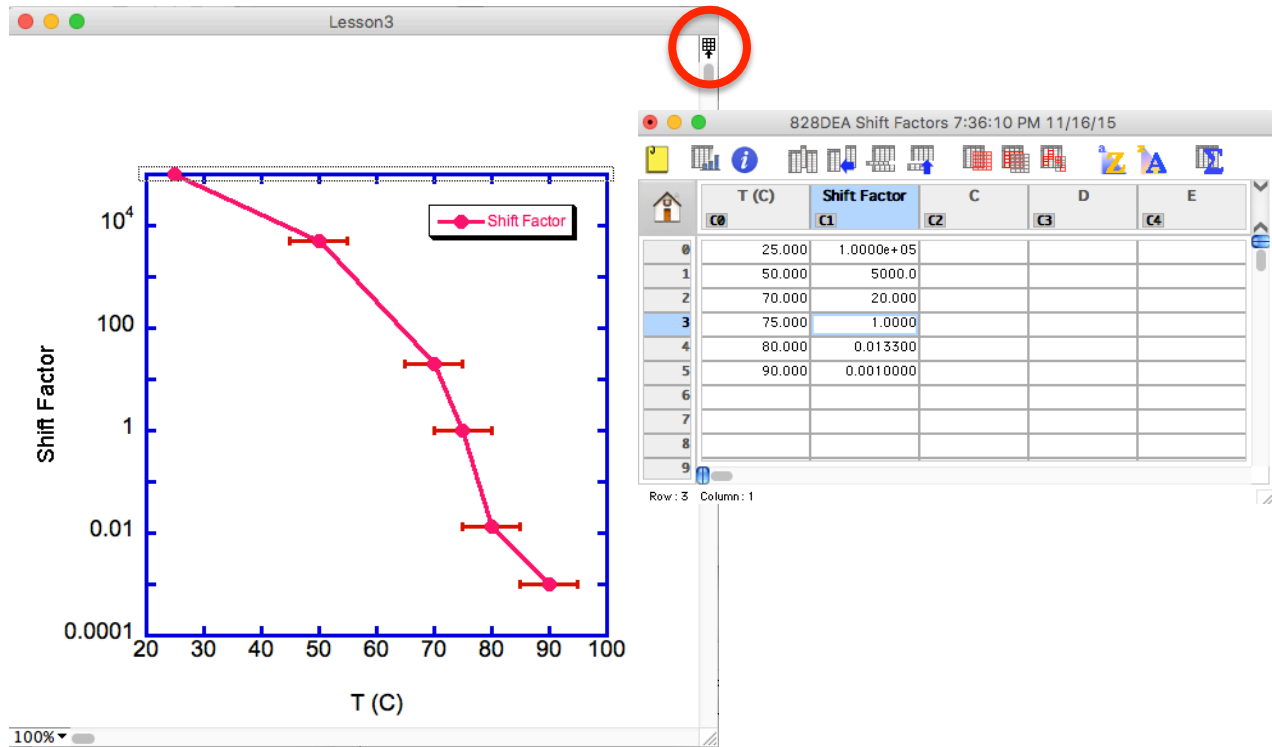


Lesson 3_Working With Columns and Curvefits

Goal: to manipulate data in columns and to do simple curve fits

1) Open up the plot saved from Lesson 2 (double click on it) and “extract” the data by clicking on the gridiron at the upper right (in circle)



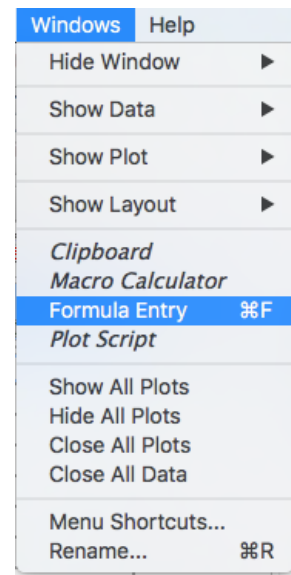
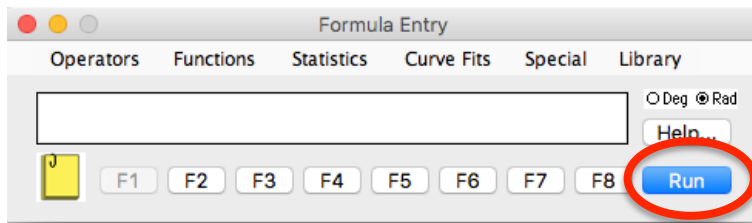
2) Label columns 1000/T and ln(shift factor)

The screenshot shows the same data table as before, but with two additional columns: '1000/T' and 'ln(shift factor)'. The table is titled '828DEA Shift Factors 7:36:10 PM 11/16/15'.

	T (C)	Shift Factor	1000/T	ln(shift factor)	E
0	25.000	1.0000e+05			
1	50.000	5000.0			
2	70.000	20.000			
3	75.000	1.0000			
4	80.000	0.013300			
5	90.000	0.0010000			
6					
7					
8					
9					

The status bar at the bottom indicates 'Row: 0 Column: 3'.

3) From the “Windows” pull down menu select “Formula Entry”



4) In the Formula Entry type:
 $c2=1000/(273.15+c0);c3=\ln(c1)$
 and hit run.

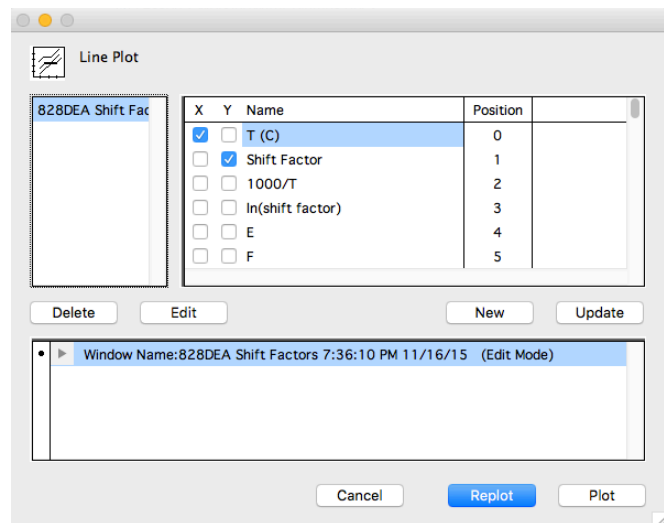
NOTE: the “;” separates the equations and you have 8 formula entries that you can use: F1 through F8

The screenshot shows a data table titled '828DEA Shift Factors 7:36:10 PM 11/16/15'. The table has columns for T (C), Shift Factor, 1000/T, ln(shift factor), and E. The data is as follows:

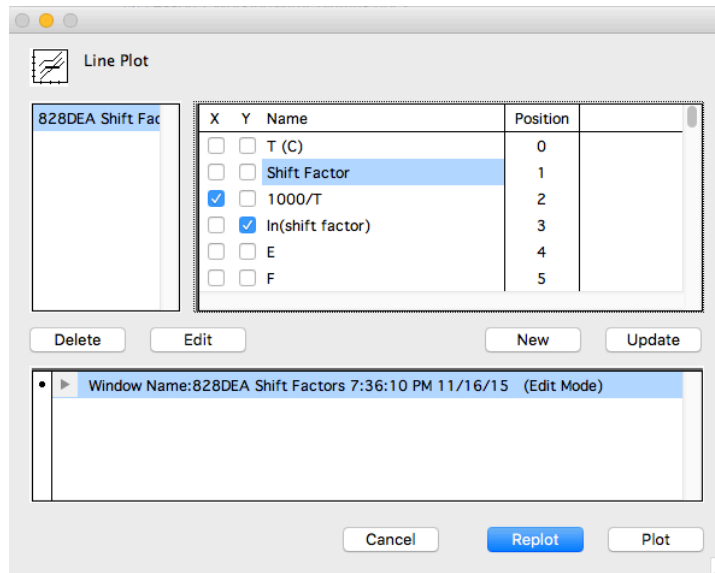
	T (C)	Shift Factor	1000/T	ln(shift factor)	E
0	25.000	1.0000e+05	3.3540	11.513	
1	50.000	5000.0	3.0945	8.5172	
2	70.000	20.000	2.9142	2.9957	
3	75.000	1.0000	2.8723	0.0000	
4	80.000	0.013300	2.8317	-4.3200	
5	90.000	0.0010000	2.7537	-6.9078	
6					
7					
8					
9					

5) Now replot this data (this is tricky so pay attention). Click on the PLOT and then select Gallery->linear->line like before.

NOTE: if you are still on the data window, you will create a NEW plot and you will need to reset the formatting (font sizes etc)

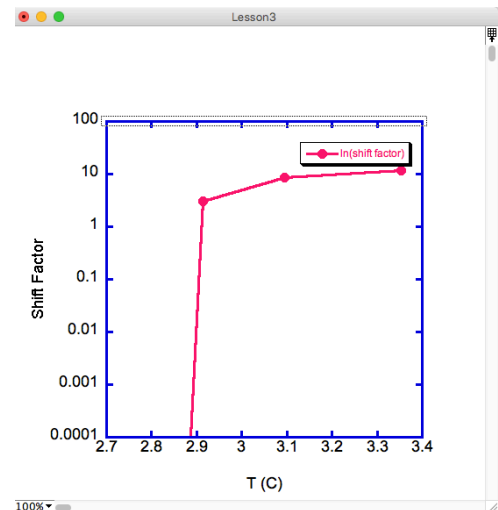
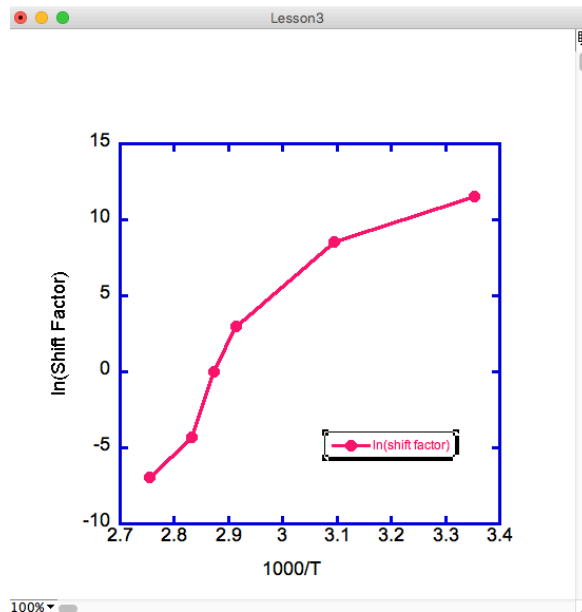


6) select $1000/T$ for X and $\ln(\text{shift factor})$ for Y (and de-select shift factor for Y)

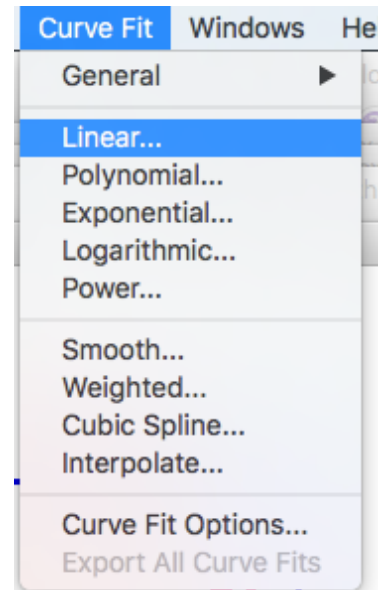
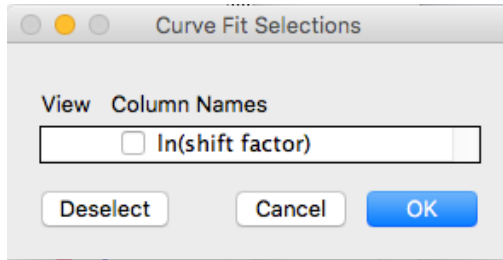


7) Click “update” and REPLOT (again plot will create a new plot and you will need to redo the formatting)

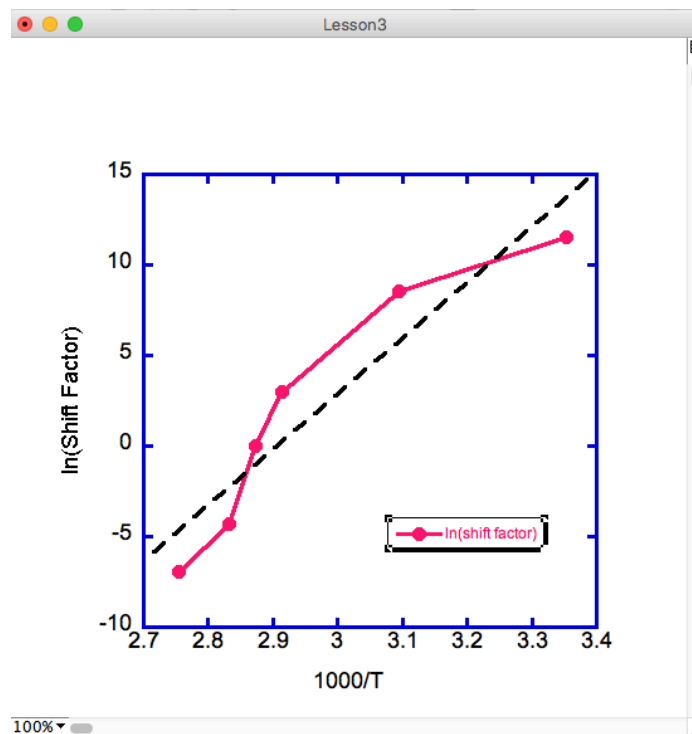
8) Double click on axis labels and change; change scale to linear; drag the legend; drag axis label a little closer. (these are things you learn in a previous lesson)



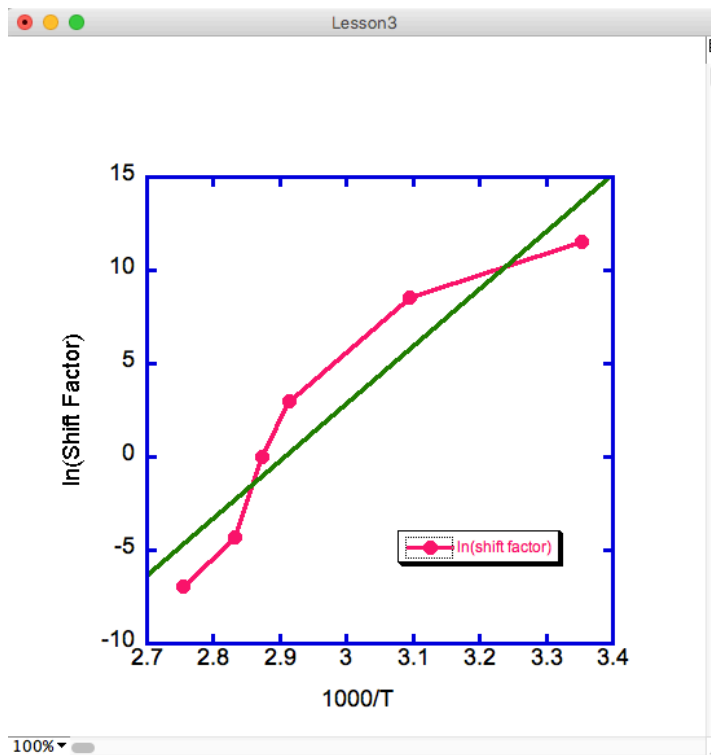
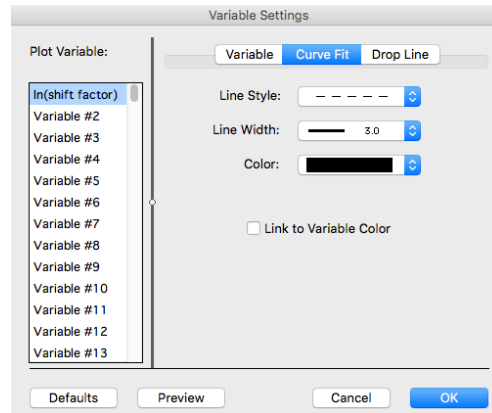
9) Let's do a quick curve fit. If this data followed an Arrhenius form (which it doesn't), on this log vs. $1/T$ scale, the data would be a straight line. With the plot selected, select curvefit->linear



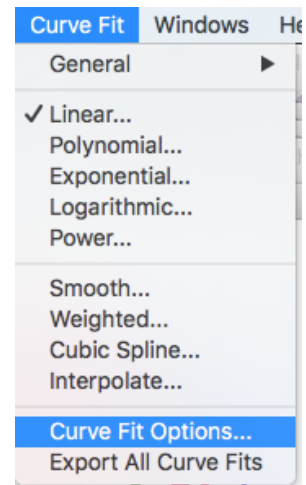
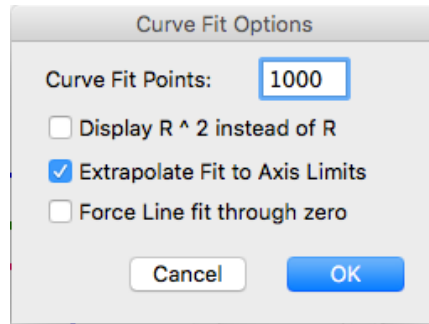
10) check ln(shift factor) and click OK



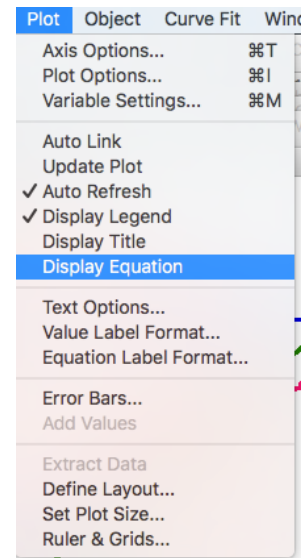
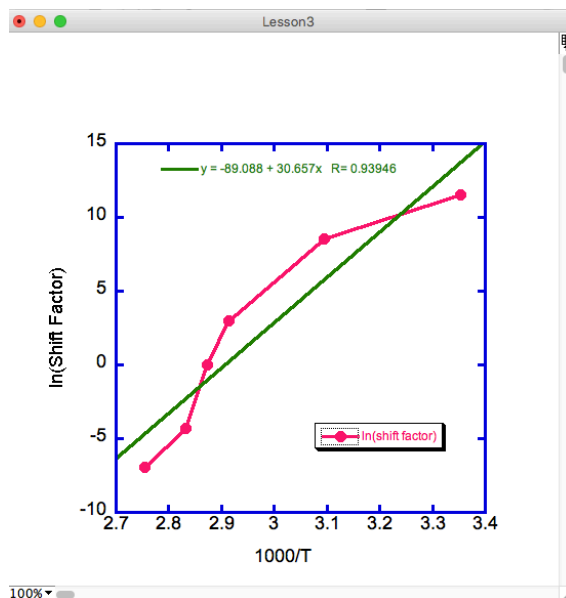
11) Change line width of curve fit. Double click symbol in legend. Select “Curve Fit” and choose a solid line and, oh, green.



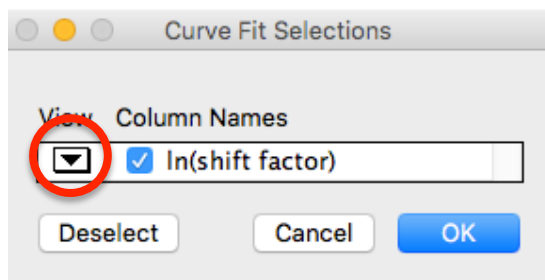
12) Let's take a look at the curvefit options. Set the number of points to 1000 and click OK



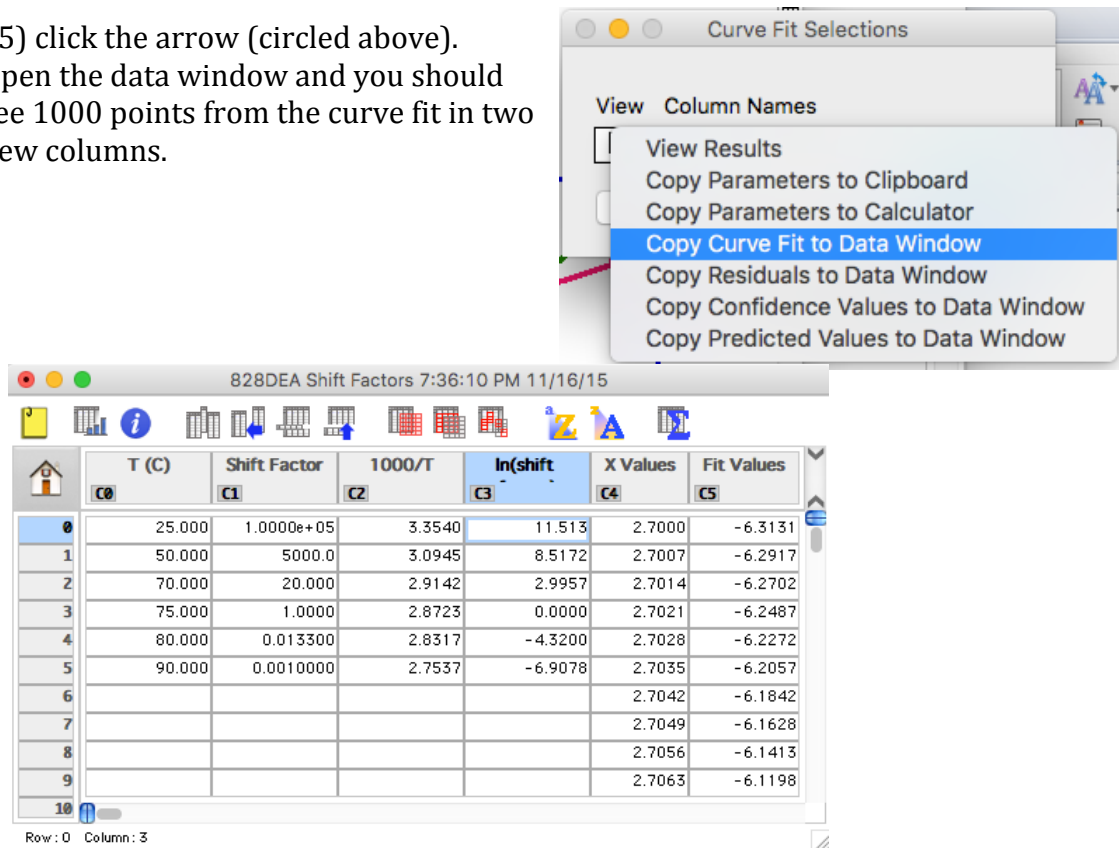
13) Put the equation on the figure.



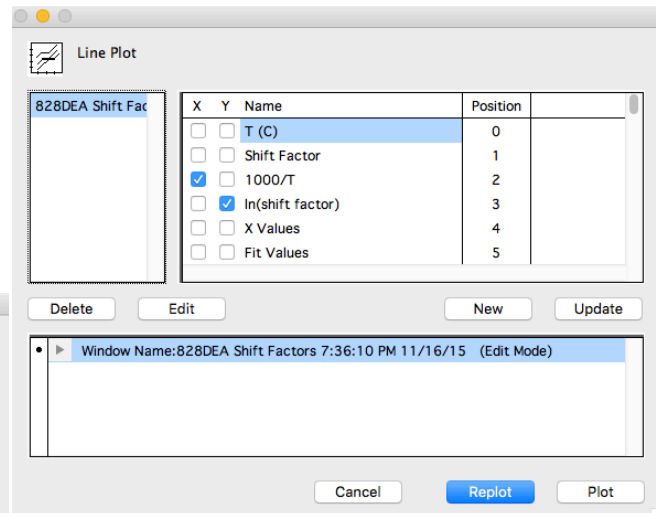
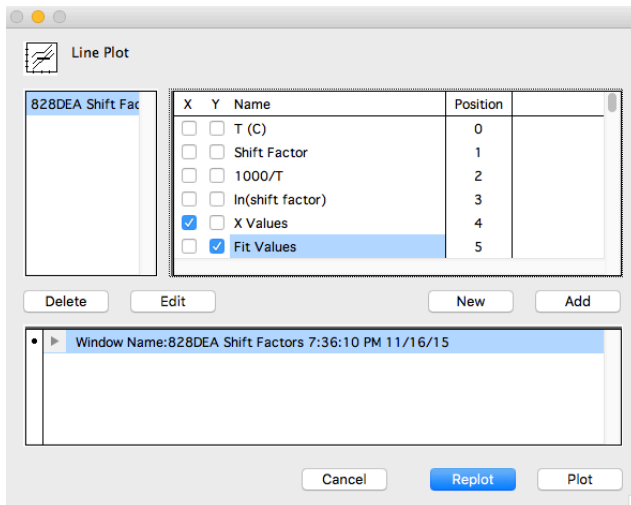
14) It is often useful to extract the curve fit points into the data file. Select curvefit->linear. You will now see an extra arrow under view (this is because there is an existing fit).



15) click the arrow (circled above).
Open the data window and you should see 1000 points from the curve fit in two new columns.



16) Instead of using the curve fit, you can now plot the curve fit data. With the PLOT selected (click on the plot to bring it to the front), select gallery->linear->line.
NOW BE CAREFUL. Click "New" and select X values and Fit values; click "Add"; Click "Replot"



17) turn off the symbols and turn on the line and change the axis limits...

