Entering and Plotting Data Points (TI-83)

First, you need to enter your data points in the list editor. To do this, select $\boxed{\text{STAT}}$ $\boxed{\text{EDIT}}$. You should see headings L1, L2, and L3. List the input values from your data points under L1, and the output values under L2.

To display the data points that you just typed in, you need to tell the calculator that you want to plot your data points instead of a standard function $y = f(x)$. To do this, hit the $\boxed{\text{Y=}}$ key just like you would if you were going to plot a function defined as a formula, and then activate Plot1 at the top of your screen by placing the cursor over it and hitting $\boxed{\text{ENTER}}$. Plot1 should now be highlighted, and when you hit $\boxed{\text{GRAPH}}$, your data points will be plotted (along with any other functions or data that are active).

A couple of notes. If you don't see your data points when you hit $\boxed{\text{GRAPH}}$, that probably means that the viewing window that you last selected doesn't include your data points. You can have the calculator choose a viewing window for you that automatically includes all data points by selecting $\boxed{\text{ZOOM}}$ $\boxed{\text{9:ZoomStat}}$ and then hitting $\boxed{\text{GRAPH}}$. Also, your calculator will continue to display your data points every time you hit $\boxed{\text{GRAPH}}$ until you turn Plot1 off. To do this, just move the cursor to Plot1 and hit $\boxed{\text{ENTER}}$ so that Plot1 is no longer highlighted.

Finding a best-fit line (TI-83)

When data appears approximately linear, it is useful to have an equation for the line that best fits the data. It is not always possible, of course, to find a line that goes through every single data point that we have; but if the data is approximately linear, we can still find a line that is "as close as possible" to all the data points as a group.

For a given set of data, there are formulas which can be used to come up with this best-fit line by hand, but many scientific calculators have these formulas built in and will calculate the best-fit line for you after you enter the data.

To find the best-fit line on your calculator, first enter the data points in L1 and L2 as described above under "Entering and Plotting Data Points." At this point, there are two ways to ask your calculator to compute the best-fit line for you, both of which are listed below: (Note: LinReg stands for "Linear Regression" which is the name for the process of finding a best-fit line for a set of data.)

1. $\boxed{\text{STAT}}$ $\boxed{\text{CALC}}$ $\boxed{\text{4:LinReg(ax+b)}}$ $\boxed{\text{ENTER}}$

2. $\boxed{\text{STAT}}$ $\boxed{\text{CALC}}$ $\boxed{\text{4:LinReg(ax+b)}}$ $\boxed{\text{VARS}}$ $\boxed{\text{Y-VARS}}$ $\boxed{\text{1:Function}}$ $\boxed{\text{1:Y}_1}$

The first sequence will tell you what a and b are, so that the equation of your best-fit line will be $y = ax + b$. The second sequence goes a step farther and actually stores the best fit-line in the variable Y_1. (If you hit Y= after executing the second sequence above, you'll see the equation of your best-fit line as computed by the calculator.) That means that if you hit GRAPH, the calculator will plot your data points together with the best-fit line.

These two sheets are to prepare you for an activity I would like to do on Monday.
This may be a feature on your calculator that you do not know how to use.
Please do this worksheet this weekend so you can get familiar with this new feature.
Know where to locate these buttons and find the line, quadratic and exponential equations of best fit.
After you have done this activity sheet you may want to write up a list of the steps and button you need to find the line of best fit.

Following the steps on the other side of this paper find the line of best fit for this data listed below.

1. $x = L_1$ $y = L_2$

$x = L_1$	$y = L_2$
0	.4
3	1.18
5	1.7
20	5.6
-6	-1.16
-13	-2.98

Line of Best fit _____ $r =$
Then graph this line and see if the "line of best fit" passes through most of the points.

This time go through the step again using the data listed below.

2.

x	y
0	15
1	12.7
2	10
3	4
4	2.5
5	3.3
6	1
6.5	0.2

a) Line of best fit _____ $r =$ (if your calculator gives you this)

b) Finding the quadratic equation of best fit.
Now go to [Stat] [Calc] [5:QuadReg] [Vars][y-Var][1:function][2:Y_2]

   b) Quadratic of best fit _____ $r =$

c) Finding the exponential equation of best fit
Now go [Stat] [Calc] [0:ExpReg] [Vars][y-Var][1:function][3:Y_3]

   c) Exponential of best fit _____ $r =$