

## TI Technology Guide for More students apply early

### TI-83 Plus and TI-84 Plus Families

Creating Lists of Data, Finding the Mean for a List of Data, Displaying the Graph, Modeling Data with a Linear Function, Creating an Input/Output Table, Evaluating a Function

Creating Lists of Data

To enter the data from the Snapshot in the activity, press **[STAT]** and select **1:Edit** to access the **List Editor** window. Be sure to clear any existing data in the lists by highlighting the list name and pressing **[CLEAR][ENTER]**. If you see a list other than L1 through L6, press and select **[STAT]5:SetUpEditor [ENTER]** and then follow the above instructions.

L1	L2	L3	1
-----	-----	-----	
L1(1) =			

Move the cursor to the first data position in L1. Enter data from the Snapshot that represent the school year. Use 0 to represent the school year 1997-98. Move the cursor to the first data position in L2 and enter the corresponding number of students applying.

L1	L2	L3	1
0	41664	-----	
1	49856		
2	53917		
3	63449		
4	67154		
5	70186		
6	78847		
L1(1) = 0			

Move the cursor to the top of L3.

Press **[2nd][LIST][▶]** to OPS and select 7:ΔList(

Press **[2nd]L2 [ ) ] [ENTER]**

(In SE, Activity 1, Step 2, this keying sequence is shown correctly, but differently than what's above.)

I'm not sure what happened on the SE with the key strokes but what is listed above is correct. The key strokes on the SE activity will work but the right arrow key didn't show.

L1	L2	L3	3
0	41664	-----	
1	49856		
2	53917		
3	63449		
4	67154		
5	70186		
6	78847		
L3 = ΔList(L2)			

The values in L3 represent the consecutive differences between the data in L2, the increase in the number of students applying early.

L1	L2	L3	3
0	41664	8192	
1	49856	4061	
2	53917	9532	
3	63449	3705	
4	67154	3032	
5	70186	8661	
6	78847	-----	
L3(1) = 8192			

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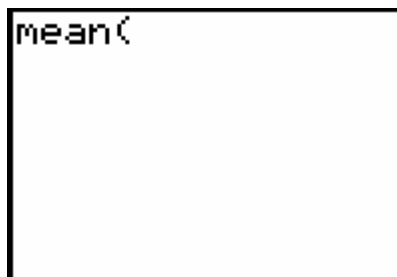
Finding the Mean for a List of Data

Press  $\boxed{2nd}\boxed{QUIT}$  to return to the home screen.

Press  $\boxed{2nd}\boxed{LIST}\boxed{\leftarrow}$  to  $\boxed{MATH}$  and select 3:mean(  
(In SE, Activity 1, Step 3, this keying sequence is shown correctly but differently than what's above. The terminology of "average" is used instead of "mean" also.)  
Again the left arrow key didn't show but the sequence will work. The terminology average is used below and shouldn't cause a problem.



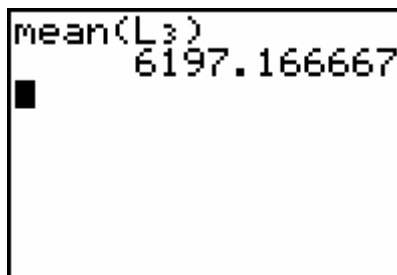
A screenshot of the TI-83 Plus MATH menu. The screen displays 'NAMES OPS' at the top right. Below it is a list of statistical functions: 1:min(, 2:max(, 3:mean(, 4:median(, 5:sum(, 6:Prod(, and 7:stdDev(.



A screenshot of the TI-83 Plus calculator showing the 'mean(' function entered on the screen.

Press  $\boxed{2nd}\boxed{L3}\boxed{ENTER}$ .

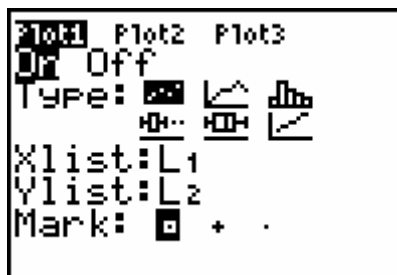
This represents the average (mean) increase in the number of students that are applying early.



A screenshot of the TI-83 Plus calculator showing the result of the mean function: mean(L3) followed by the value 6197.166667. A cursor is visible at the beginning of the next line.

Displaying the Graph

Access the STAT PLOTS menu screen by pressing  $\boxed{2nd}\boxed{Y=}$ . Select 1:Plot1 to get the screen shown at the right. Notice that Plot1 and On are highlighted. To turn on or off any plot, place the cursor over the name, press  $\boxed{ENTER}$ , then select either On or Off, and press  $\boxed{ENTER}$  again. This process acts like a toggle switch to turn the plots on and off the graphing display.



A screenshot of the TI-83 Plus STAT PLOTS menu. The screen shows 'Plot1' selected and 'On' highlighted. Other options include Plot2 and Plot3. The 'Type' field shows a scatter plot icon. The 'Xlist' is set to L1, 'Ylist' to L2, and 'Mark' to a square icon.

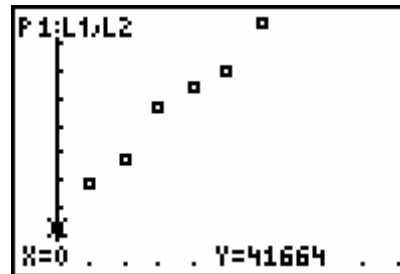
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To insure all the data points are visible, press **WINDOW** and enter values for the x-axis and y-axis that contain the range of values from the Snapshot. An example for the window settings is shown at the right.

```
WINDOW
Xmin=-1
Xmax=10
Xscl=1
Ymin=35000
Ymax=80000
Yscl=5000
Xres=1
```

Press **GRAPH** to view the data. L1 (years) are on the horizontal axis, and L2 (number of students) are on the vertical axis. Press **TRACE** and use the left and right arrow keys to read the values of the data points.



#### Modeling Data with a Linear Function

To use the regression capabilities, press **STAT** **▶** to access the CALC menu. Select 4:LinReg(ax+b) and enter **2nd**L1 $\square$ , **2nd**L2 $\square$ , press **VAR** **▶** **ENTER** **ENTER**.

```
LinReg(ax+b) L1,
L2,Y1
```

(what about r and  $r^2$  values?)(  $r^2=.9830157622$  and  $r=.9914715136$ ) I didn't think these were necessary for this activity.

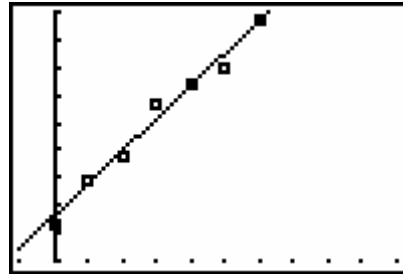
Press **ENTER** to have the handheld calculate the linear function that best models the data set.

```
LinReg
y=ax+b
a=5908.785714
b=42998.35714
```

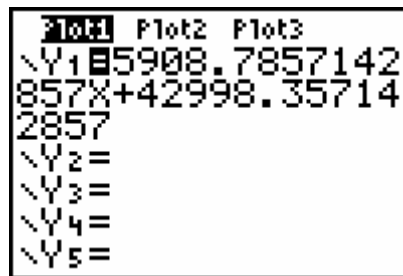
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Press **[GRAPH]**. The regression line and the scatter plot are displayed simultaneously.

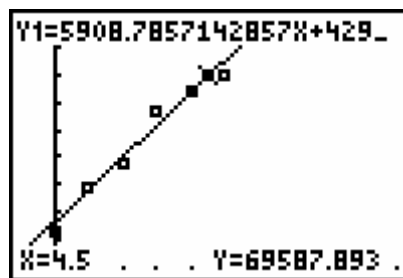


Press **[Y=]** to view the linear function. Notice that Plot 1 is highlighted, which indicates that the data points for L1 and L2 are showing on the graph. The = beside Y1 is also highlighted, which indicates that the linear function determined by the regression capabilities is also showing on the graph. Pressing **[ENTER]** when the cursor is in either of these highlighted areas acts as a toggle to turn on or off the display of that component on the graph.

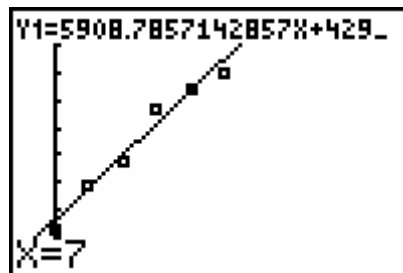


Press **[GRAPH]****[TRACE]** to see the coordinates. Press **[▲]** or **[▼]** to toggle between the scatter plot data and the linear function.

Looking in the upper left-hand corner of the screen will show you whether you are looking at data points for Plot1 or points from the equation found in Y1.



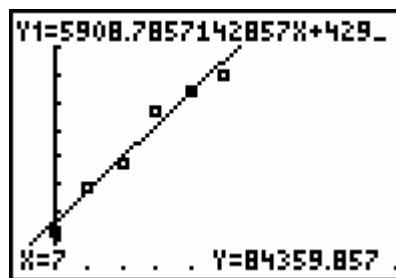
To find the expected number of students for the years from 2004 through 2007, move the blinking cursor so that it is on the linear function. Entering the x value will automatically display it at the bottom of the screen.



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Press **[ENTER]** and the corresponding number of students for that school year is displayed.



#### Creating an Input/Output Table

A second way to view the corresponding data is to use the table view. To access this feature, press **[2nd]** **[WINDOW]**. A sample of the TABLE SETUP screen is shown. **[TBLSET]** indicates the first x (independent) value of the table and  $\Delta Tbl$  indicates that the x values will increase or decrease by that value.

The TABLE SETUP screen shows the following settings:

- TblStart=0
- $\Delta Tbl=1$
- Indent: **Auto** Ask
- Depend: **Auto** Ask

Press **[2nd]** **[TABLE]** to show the table with values for the years and corresponding expected number of students. Use the down arrow key to scroll the table to find your answers.

X	Y1	
0	42998	
1	48907	
2	54816	
3	60725	
4	66634	
5	72542	
6	78451	

X=0

#### Evaluating a Function

A third way to determine the expected number of students for a given year is to evaluate the Y= function. Press **[2nd]** **[QUIT]** **[CLEAR]**.

Press **[VAR]** **[▶]** **[ENTER]** **[ENTER]**.

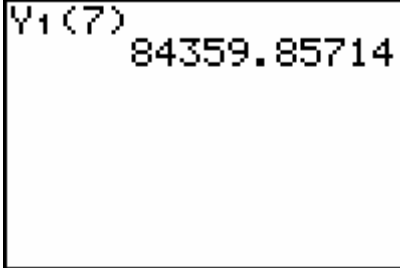
The calculator screen shows the variable name **Y1** in the top left corner, indicating that the Y= function is ready to be evaluated.

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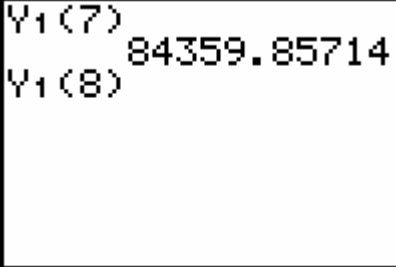
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Following the Y1 enter  $\boxed{1}\boxed{7}\boxed{0}$  and press  $\boxed{\text{ENTER}}$ .  
This represents the predicted number of students for  
2004-2005 school year.



Y1(7)  
84359.85714

Press  $\boxed{2\text{nd}}\boxed{\text{ENTER}}$ . This will recall the last  
command on the home screen. Now replace the 7  
with the appropriate value for the next school year.  
Press  $\boxed{\text{ENTER}}$ . Continue with this method until all  
expected values are found.



Y1(7)  
84359.85714  
Y1(8)