

TI Technology Guide for *Heat Watch*

TI-83 Plus and TI-83 Plus Silver Edition

Creating Lists of Data, Displaying the Graph, Using the Regression Capabilities of the Handheld

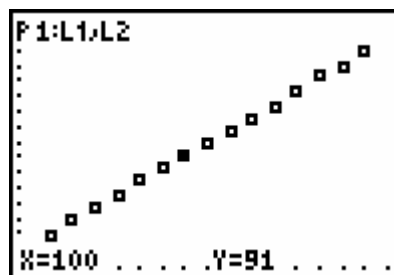
Press **[STAT]** and select **1:Edit** to access the List Editor window. Be sure to clear any existing data in the lists by highlighting the list name, then pressing **[CLEAR]** **[ENTER]**.

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

Move the cursor to the first data position in L1 and enter the temperatures from the “Humidity makes air feel even hotter” graphic. Move the cursor to the first data position in L2 and enter the corresponding heat index values.

L1	L2	L3	1
70	64	-----	
75	69		
80	73		
85	78		
90	83		
95	87		
100	91		
L1 = (70, 75, 80, 85...			

Press **[GRAPH]** to view the data. L1 (temperature) is on the horizontal axis, and L2 (heat index) is on the vertical axis. To insure all the data points are visible, press **[ZOOM]** and select **9:ZoomStat**, which automatically adjusts the window. Press **[TRACE]** and use the arrow cursor keys to display the values of the data points.



To use the regression capabilities, press **[STAT]** **[>]** to access the CALC menu. Select **4:LinReg(ax+b)**, since the graph appears linear.

EDIT	TESTS
1:1-Var Stats	
2:2-Var Stats	
3:Med-Med	
4:LinReg(ax+b)	
5:QuadReg	
6:CubicReg	
7:QuartReg	

At the blinking cursor, press

$\boxed{2\text{nd}} \boxed{\text{STAT}} \mathbf{1: L1} \boxed{\text{ENTER}}$

$\boxed{\cdot}$ (above the $\boxed{7}$)

$\boxed{2\text{nd}} \boxed{\text{STAT}} \mathbf{2: L2} \boxed{\text{ENTER}} \boxed{\cdot}$

$\boxed{\text{VARS}} \boxed{\blacktriangleright} \boxed{\text{ENTER}}$ to display the VARS Y-VARS FUNCTION secondary menu, and then press 1 to select **1:Y1**.

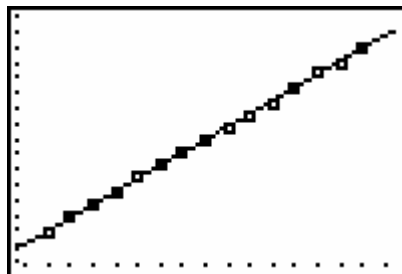
L1, L2, and Y1 are pasted to the home screen as arguments to LinReg(ax+b).

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

Press $\boxed{\text{ENTER}}$ to execute LinReg(ax+b). The linear regression for the data in L1 and L2 is calculated. Values for a and b are displayed on the home screen. The linear regression equation is stored in Y1.

```
LinReg
y=ax+b
a=.855
b=5.025
```

Press $\boxed{\text{GRAPH}}$. The regression line and the scatter plot are displayed simultaneously.



Press $\boxed{\text{Y=}}$ to view the equation. 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 $\boxed{\text{ENTER}}$ 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.

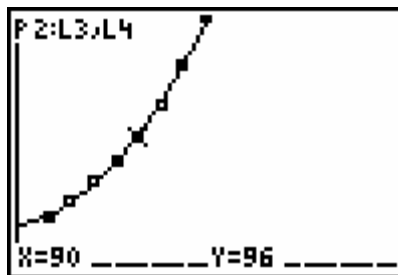
```
Plot1 Plot2 Plot3
Y1=.855X+5.025
Y2=
Y3=
Y4=
Y5=
Y6=
Y7=
```

Repeat these steps for finding the models for the remaining sections, entering the data in L3, L4, L5, and L6, and using the quadratic and cubic regression settings as appropriate for Y2 and Y3.

The following page shows screenshots for the quadratic regression and settings for displaying both the linear and quadratic data and functions simultaneously.

L3	L4	L5	4
70	69	-----	
75	75		
80	81		
85	88		
90	96		
95	107		
100	120		

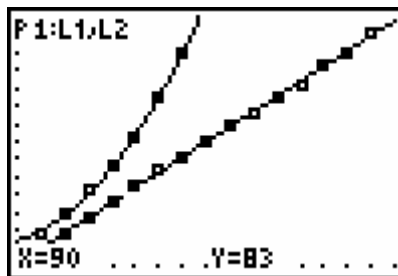
L4 = {69, 75, 81, 88...



QuadReg
 $y = ax^2 + bx + c$
 $a = .0328571429$
 $b = -3.910952381$
 $c = 182.7$

L2	L3	L4	4
64	69	70	
69	75	75	
73	81	80	
78	88	85	
83	96	90	
87	107	95	
91	120	100	

L4(1)=70



~~Y1=~~ ~~Y2=~~ Plot3
 $\setminus Y_1 = .855X + 5.025$
 $\setminus Y_2 = .03285714285$
 $714X^2 + -3.910952$
 $3809531X + 182.700$
 00000002
 $\setminus Y_3 =$
 $\setminus Y_4 =$