

## Tip™ 1: Resetting Your Calculator

You can easily reset all default, or factory, settings on your calculator from the **MEMORY** menu. Resetting the default settings ensures that all calculators show exactly the same results in the same form.

Resetting defaults does not erase any lists, programs, or variables stored in memory.

**Note:** You should reset your calculator's default settings to ensure that the results you see on your calculator will match the results in all example screens in the Tip™s.

Resetting your calculator to the defaults	For more information
Resets all mode and window format defaults.	Tip 2: <i>Adjusting Your Calculator Settings</i>
Turns off function plots.	Tip 3: <i>Graphing a Function in the Standard Window</i>
Resets window values to <b>ZStandard</b> .	Tip 5: <i>Adjusting the Viewing Window</i>
Turns off statistical plots.	Tip 7: <i>Creating a Statistical Plot</i>

### Calculator Keys Used in This Tip™

**2nd** [MEM] 7:Reset 2:Defaults 2:Reset

### Tip™ Highlights



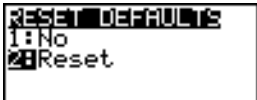
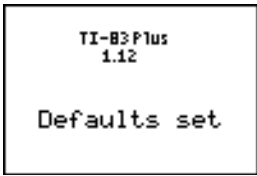
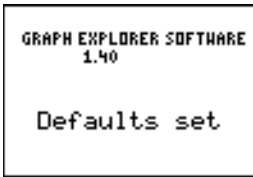
Your calculator contains many settings that control the interpretation of results and graphs. For example, you can control how the calculator:



- Displays mathematical results (for example, with floating or fixed decimal notation).
- Interprets and displays graphs and statistical plots (for example, scale of the **X**-axis and **Y**-axis).

**Note:** Types of settings vary between the TI-83 Plus and the TI-73. For more information, see the calculator guidebook.

**Try-It!™ on Your TI-83 Plus or TI-73**

Reset the calculator defaults.

To Do This	Press	Display (TI-83 Plus shown)
1. Display the <b>MEMORY</b> menu and select <b>Reset</b> .	<b>2nd</b> [MEM] <b>7:Reset</b>	 <pre> MEMORY 1:About 2:Mem Mgmt/Del... 3:Clear Entries 4:ClrAllLists 5:Archive 6:UnArchive 7:Reset...                 </pre>
2. Select <b>Defaults</b> .	<b>2:Defaults</b>	 <pre> ARCHIVE ALL 1:All RAM... 2:Defaults...                 </pre>
3. Select <b>Reset</b> to reset the calculator.	<b>2:Reset</b>	 <pre> RESET DEFAULTS 1:No 2:Reset                 </pre>
4. Clear the screen and return to the Home screen.	<b>CLEAR</b>	 <pre> TI-83 Plus 1.12  Defaults set                 </pre> <p>TI-83 Plus</p>  <pre> GRAPH EXPLORER SOFTWARE 1.40  Defaults set                 </pre> <p>TI-73</p>

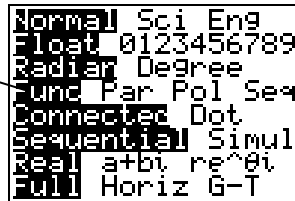
You are now ready to work through the  Tips. Remember, resetting the calculator ensures that you get the same results shown in all  Tips examples.

After you become familiar with your calculator, it will not be necessary to reset it every time because you will know how you have changed the settings, and you will understand the results the calculator displays in light of those changes.

## Tip™ 2: Adjusting Your Calculator Settings

You can control how the calculator displays results and graphs by changing settings. For example, the mode settings screen is displayed below (varies slightly for the TI-73). The highlighted settings are the ones that are selected.

All highlighted settings are selected.



### Calculator Keys Used in This Tip™

- **MODE**
- **2nd** [FORMAT]

### Tip™ Highlights

This Tip shows how to change settings on two frequently-used screens—the mode screen and the window format screen. For more information about settings, see the calculator guidebook.

- Mode (**MODE**) settings determine how the calculator interprets and/or displays numbers and results.
- Window format (**2nd** [FORMAT]) settings determine how the calculator interprets and/or displays graphs.

**Note:** The TI-83 Plus and the TI-73 mode and window format screens are slightly different.

TI-83 Plus		TI-73	
Mode screen	Window Format Screen	Mode screen	Window Format Screen

In the Try-It! example, you will select new calculator settings following these main steps.

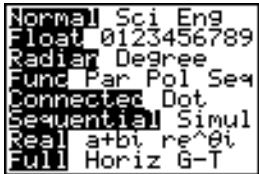

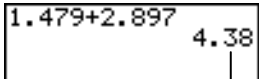
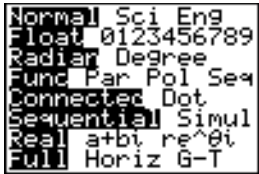
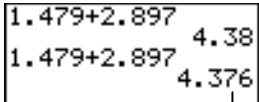
1. Display the setting screen.
2. Press **↓**, **↑**, **←**, or **→**, as necessary, to highlight the setting you want to select.
3. Press **ENTER** to select it.

**Note:** The examples in the next section assume that the calculator has been reset to the default settings as described in Tip 1: *Resetting Your Calculator*.

## Try-It!™ on Your TI-83 Plus or TI-73

### Change a Mode Setting



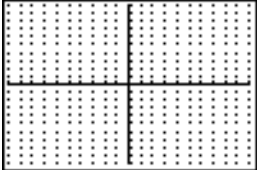
Change the mode setting so that results display to 2 decimal places.

To Do This	Press	Display (TI-83 Plus shown)
1. Display the mode settings screen.  <b>Note:</b> The TI-73 mode screen varies slightly from the TI-83 Plus.	[MODE]	
2. Change the decimal notation setting from <b>Float</b> to <b>2</b> .	↓ until <b>Float</b> is highlighted → until <b>2</b> is highlighted [ENTER] to select	
3. Press [2nd] [QUIT] to return to the Home screen, and clear the current line, if needed.  <b>Tip:</b> Pressing [2nd] [QUIT] always takes you back to the Home screen, except in the Topics in Algebra 1 application.	[2nd] [QUIT] [CLEAR]	
4. Calculate $1.479 + 2.897$ .	1 [.] 4 7 9 [+] 2 [.] 8 9 7 [ENTER]	 <p>The calculator rounds the result to 2 decimal places.</p>
5. Change the decimal notation setting back to <b>Float</b> .  <b>Note:</b> <b>Float</b> displays a number up to 10 digits.	[MODE] ↓ until <b>Float</b> is highlighted [ENTER] to select	
6. Return to the Home screen.	[2nd] [QUIT]	
7. Calculate $1.479 + 2.897$ again.  <b>Tip:</b> On the TI-73, you can press [↔] [↔] to highlight a previous entry on the Home screen, and then press [ENTER] to paste it to the current line.	[2nd] [ENTRY] to display the previous entry [ENTER]	 <p>The calculator displays up to 10 digits.</p>

**Try-It!™ on Your TI-83 Plus or TI-73 (continued)**

**Change a Window Format Setting**

To display a grid on the graph screen, select **GridOn** from the window format screen.

To Do This	Press	Display (TI-83 Plus shown)
1. Display the window format screen.  <b>Note:</b> The TI-73 mode screen varies slightly from the TI-83 Plus.	$\boxed{2\text{nd}}$ $\boxed{[FORMAT]}$	 <pre> RectGC PolarGC CoordOn CoordOff GridOff GridOn AxesOn AxesOff LabelOff LabelOn ExprOn ExprOff                     </pre>
2. Change the grid setting from <b>GridOff</b> to <b>GridOn</b> .	$\boxed{\downarrow}$ until <b>GridOff</b> is highlighted  $\boxed{\rightarrow}$ until <b>GridOn</b> is highlighted  $\boxed{[ENTER]}$ to select	 <pre> RectGC PolarGC CoordOn CoordOff GridOff GridOn AxesOn AxesOff LabelOff LabelOn ExprOn ExprOff                     </pre>
3. Show the graph screen. Notice both the grid and axes are on.	$\boxed{[GRAPH]}$	

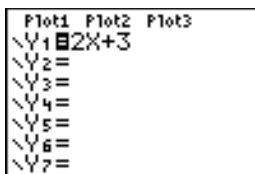
**On Your Own**

$\boxed{[MODE]}$  Change your mode setting ( $\boxed{[MODE]}$ ) to scientific notation (**Sci**). Do some calculations on the Home screen. Try  $25 \times 63$ . Notice how the calculator displays scientific notation. Is this the way you write scientific notation? Explain how this setting affects your results.

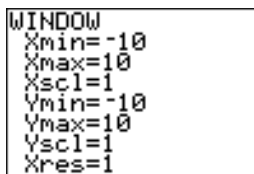
$\boxed{[GRAPH]}$  Turn the grid off on the graph screen. Check this by pressing  $\boxed{[GRAPH]}$ .

## Tip™ 3: Graphing a Function in the Standard Window

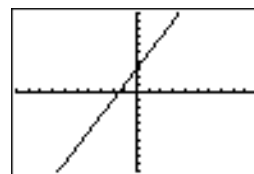
You can graph a function on the graph screen. First, enter the function in the Y= editor, and then you can graph the function in the standard graphing window. Screens on the TI-73 may vary.



Y1=2x+3 in the Y= editor



Standard Graphing Window



Graph of Y1=2x+3

### Calculator Keys Used in This Tip™

- $\boxed{Y=}$
- $\boxed{\text{GRAPH}}$
- $\boxed{\text{TRACE}}$

### Tip™ Highlights

In the Try-It! example, you will graph a function following these main steps.

1. Enter the function in the Y= editor ( $\boxed{Y=}$ ).
2. Graph the function on the graph screen ( $\boxed{\text{GRAPH}}$ ).

**Note:** If you reset your calculator defaults (Tip 1: *Resetting Your Calculator*), the graphing window sets up the following boundaries for the X and Y values:  $-10 \leq X \leq 10$  and  $-10 \leq Y \leq 10$ .

3. Press  $\boxed{\text{TRACE}}$ . Then press  $\boxed{\rightarrow}$  or  $\boxed{\leftarrow}$  to move the cursor from one plotted point to another. Tracing the graph displays the (X,Y) values at the bottom of the screen.

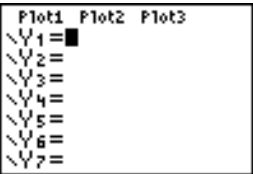

For some functions, the graphing window has to be adjusted so that you can see your graph. This Tip uses the standard window settings ( $-10 \leq X \leq 10$  and  $-10 \leq Y \leq 10$ ). The function selected for the example on the next page displays the graph in this window. For more information on adjusting window settings on the **WINDOW** menu, see Tip 5: *Adjusting the Viewing Window*.

**Note:** The examples in the next section assume that the calculator has been reset to the default settings as described in Tip 1: *Resetting Your Calculator*.

**Try-It!™ on Your TI-83 Plus or TI-73**

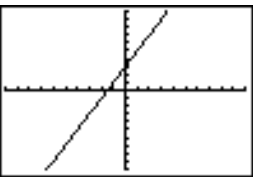
**Enter the Function**

Enter  $y = 2x + 3$  as  $Y_1=2X+3$  in the Y= editor.

To Do This	Press	Display (TI-83 Plus shown)
1. Enter the Y= editor.  <b>Note:</b> The TI-73 Y= editor varies slightly from the TI-83 Plus. The TI-73 lets you enter up to 4 functions.	$Y=$	
2. Clear $Y_1$ and enter the function, $2X+3$ .  <b>Note:</b> On the TI-73, use $\text{X}$ rather than $\text{X,T,Θ,n}$ .  <b>Note:</b> The equal sign next to the function is highlighted. This means that the function is selected or turned on and will be graphed. If other functions are selected, press $\text{↓}$ and $\text{↑}$ as necessary to position the cursor over the = sign and press enter to turn off the function.	CLEAR 2 $\text{X,T,Θ,n}$ + 3	

**Display the Graph**

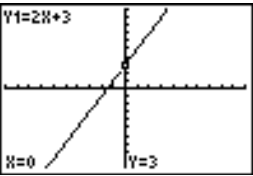
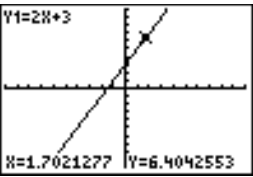
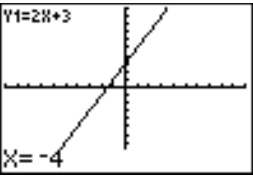
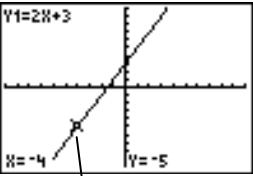
Display the graph of  $Y_1=2X+3$  on the graph screen.

To Do This	Press	Display (TI-83 Plus shown)
1. Display the graph.	GRAPH	

**Try-It!™ on Your TI-83 Plus or TI-73 (continued)**

**Trace the Graph**

Trace the (X,Y) values for  $Y1=2X+3$  on the graph screen.

To Do This	Press	Display (TI-83 Plus shown)
1. Enter trace mode.	<b>TRACE</b>	
2. Trace the (X,Y) values along the graph.  X and Y values display at the bottom of the screen.	<b>▶</b> and <b>◀</b>	
3. Quickly find Y when X=-4.	<b>(-)</b> <b>4</b>	
4. Notice that when X=-4 then Y=-5.	<b>ENTER</b>	

**On Your Own**

Display a grid on the graph screen by selecting **GridOn** in the window format screen (**2nd** **[FORMAT]**).

Define  $Y2= -X+6$ .

Graph  $Y1=2X+3$  and  $Y2= -X+6$  at the same time and compare. Now trace along each function to find the point of intersection. Record the point of intersection.

**Hint:** Use **◀** and **▶** to move between functions.

Graph  $Y2$  only.

**Hint:** You must deselect  $Y1$  so that the calculator does not graph it. To deselect  $Y1$ , highlight its equal sign (=) in the Y= editor with the cursor, and then press **ENTER**. Notice the equal sign is no longer highlighted.

## Tip™ 4: Creating a Table

You can automatically create a table of values ( $X, Y$ ) based on functions in the  $Y=$  editor. For example, if  $Y=2X+3$  is defined in the  $Y=$  editor, a corresponding table of ( $X, Y$ ) values could look like this:

A screenshot of the TI-84 Plus calculator's Y= editor. The screen shows three plot columns: Plot1, Plot2, and Plot3. Under Plot1, Y1 is set to 2X+3. Y2, Y3, Y4, Y5, Y6, and Y7 are all set to =.

$Y_1=2x+3$  in the  $Y=$  editor

A screenshot of the TI-84 Plus calculator's TABLE screen. The screen shows a table with two columns: X and Y1. The X values are 0, 1, 2, 3, 4, 5, and 6. The corresponding Y1 values are 3, 5, 7, 9, 11, 13, and 15. The cursor is positioned at the bottom left of the table.

X	Y1
0	3
1	5
2	7
3	9
4	11
5	13
6	15

Table for  $Y_1=2x+3$

### Calculator Keys Used in This Tip™

- $2^{nd}$  [TABLE]
- $2^{nd}$  [TBLSET]

### Tip™ Highlights

In the Try-It! example, you will display the table values ( $X, Y$ ) for a function defined in the  $Y=$  editor following these main steps.

1. Define a function ( $Y_1=2X+3$ ) in the  $Y=$  editor ( $Y=$ ).
2. Set up your table in the **TABLE SETUP** screen ( $2^{nd}$  [TBLSET]).
3. Display the table ( $2^{nd}$  [TABLE]).

The following settings in the table setup ( $2^{nd}$  [TBLSET]) screen determine how the table is displayed.

- **TblStart** — First  $X$  value.
- $\Delta Tbl$  — Amount by which  $X$  values increase and decrease (for example, if  $\Delta Tbl=5$ , then  $X$  values increase or decrease by 5).
- **Auto** or **Ask** — Allows you to choose whether or not to display automatically the independent ( $X$ ) or dependent ( $Y$ ) variable values.

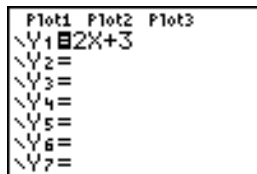
For more information about table settings, see the calculator guidebook.

**Note:** The examples in the next section assume that the calculator has been reset to the default settings as described in Tip 1: *Resetting Your Calculator*.

**Try-It!™ on Your TI-83 Plus or TI-73**

**Enter the Function**

Enter  $Y_1=2X+3$  in the Y= editor (Y=). See Tip 3: *Graphing a Function in the Standard Window* for step-by-step instructions for defining functions. Your Y= editor should look like this.



**Change the Table Settings**

Define the following settings for your table: **TblStart=50** and **ΔTbl=5**.

To Do This	Press	Display (TI-83 Plus shown)
1. Display the table setup screen.	<b>2nd</b> [TBLSET]	<p>TABLE SETUP TblStart=0 ΔTbl=1 Indent: <b>Auto</b> Ask Depend: <b>Auto</b> Ask</p>
2. Change the following settings: <b>TblStart=50, ΔTbl=5.</b>  <b>Note:</b> Indpnt:Auto and Depend:Auto are the defaults.	<b>CLEAR</b> <b>50</b> <b>↓</b> <b>CLEAR</b> <b>5</b>	<p>TABLE SETUP TblStart=50 ΔTbl=5 Indent: <b>Auto</b> Ask Depend: <b>Auto</b> Ask</p>

**Try-It!™ on Your TI-83 Plus or TI-73 (continued)**

**Display the Table**

Display the table for  $Y_1=2X+3$  on the graph screen.

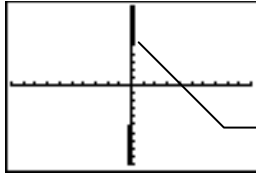
To Do This	Press	Display (TI-83 Plus shown)
1. Display the table.	$\boxed{2nd}$ [TABLE]	
2. Scroll through the table values with the arrow keys.  <b>Note:</b> Notice that when you press $\boxed{\uparrow}$ and move to the top of the $Y_1$ column, the cursor moves to $Y_1$ instead of displaying $Y$ -values that are off the screen. The function is displayed on the edit line and can be changed.	$\boxed{\leftarrow}$ , $\boxed{\rightarrow}$ , $\boxed{\downarrow}$ , or $\boxed{\uparrow}$ as necessary	

**On Your Own**

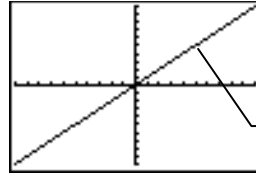
- Try to display more (X,Y) values. Set  $\Delta Tbl=1$  (pronounced “delta table”) and display the table again. Then set  $\Delta Tbl=.1$  and display the table. Notice how the table values differ.
- Enter  $Y_2=-X+6$  in the Y= editor. Display the table of values for both  $Y_1$  and  $Y_2$ . Is  $Y_1$  ever equal to  $Y_2$ ?  
  
**Hint:** Set  $TblStart=0$  and  $\Delta Tbl =1$  and search through the table.
- Change the mode ( $\boxed{MODE}$ ) setting from **Normal** to **Sci**. Display the table. Notice how this affects the table values.
- Go to the table setup screen and figure out what the **Depend: Ask** setting does.  
  
**Hint:** To reveal an invisible  $Y$  value in the table, place the cursor on that space and press  $\boxed{ENTER}$ .

## Tip™ 5: Adjusting the Viewing Window

You can adjust the viewing window for a specific graph. For example, with the **ZStandard** viewing window default values of  $-10 \leq X \leq 10$  and  $-10 \leq Y \leq 10$ , the graph of  $Y1=50X$  appears as shown in the screen below on the left.  $Y$  increases so rapidly in relation to  $X$  that this line is not easily seen in this window. You can adjust the window (**WINDOW**) values by scaling the  $X$  axis and  $Y$  axis to see the graph in a better perspective.



$Y1=50X$  viewed with the default window values.



$Y1=50X$  viewed with adjusted window values.

### Calculator Keys Used in This Tip™

- **WINDOW**
- **ZOOM**

### Tip™ Highlights

*Window values* put specific boundaries on the graph screen. **ZOOM** (**ZOOM**) functions automatically adjust window values for you; however, you can manually set window values using the window (**WINDOW**) menu. You can set minimum and maximum  $X$  and  $Y$  values (**Xmin**, **Xmax**, **Ymin**, and **Ymax**), and you can set the scale (distance between tick marks) of the  $X$  axis and  $Y$  axis (**Xscl** and **Yscl**).

In the **Try-It!** example, you will adjust the viewing window values in two ways.

- Automatically adjust them by selecting a zoom function from the **ZOOM** (**ZOOM**) menu.
- Manually adjust them using the window (**WINDOW**) menu.

In the example that follows, you see how to change window (**WINDOW**) values to see a different perspective of the graph of  $Y1=50X$ .

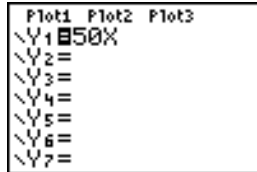
**Note:** The examples in the next section assume that the calculator has been reset to the default settings as described in

Tip 1: *Resetting Your Calculator.*

**Try-It!™ on Your TI-83 Plus or TI-73**

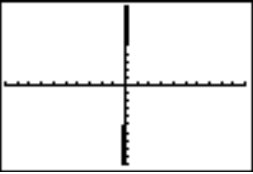
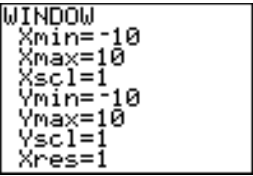
**Enter the Function**

Enter  $Y_1=50X$  in the Y= editor ( $\boxed{Y=}$ ). See Tip 3: *Graphing a Function in the Standard Window* for step-by-step instructions for defining functions. Your Y= editor should look like this.



**Display the Function on the Graph Screen**

**Note:** The window values shown here are the default window values, also equivalent to **ZStandard** ( $\boxed{\text{ZOOM}}$ ) ( $-10 \leq X \leq 10$ ;  $-10 \leq Y \leq 10$ ).

To Do This	Press	Display (TI-83 Plus shown)
1. Graph $Y_1$ .	$\boxed{\text{GRAPH}}$	
2. Display the window settings menu. <b>Note:</b> This window shows (X,Y) values so that $-10 \leq X \leq 10$ and $-10 \leq Y \leq 10$ . This is equivalent to the default <b>ZStandard</b> setting.	$\boxed{\text{WINDOW}}$	

**Define a Different Viewing Window for Your Graph**

View the table of (X,Y) values created by  $Y_1=50X$  to help you redefine window values. Start the table at -3 and increment the values by 1. See Tip 4: *Creating a Table* for step-by-step instructions for creating a table.

**Tip:** You can choose any X values for the table. For this exercise, you view a table of values when  $-3 \leq X \leq 3$ . When you set the table to start at -3 with increments of 1, you can see the relationship between X and Y near the origin of the graph.

Your table should look like this:


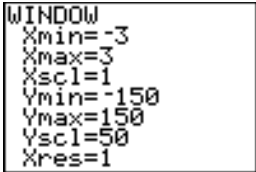
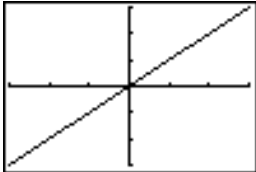
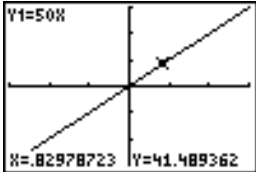
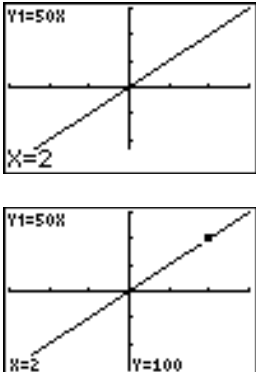
X	Y1
-3	-150
-2	-100
-1	-50
0	0
1	50
2	100
3	150

X = -3

**Try-It!™ on Your TI-83 Plus or TI-73 (continued)**

**Define a Different Viewing Window for Your Graph (continued)**

Notice in the table that when  $-3 \leq X \leq 3$ , the  $Y$  values range from  $-150 \leq Y \leq 150$ . Since  $Y$  increases by 50 each time  $X$  increases by 1, you can set the  $Yscl$  to 50 and leave  $Xscl$  set at 1. Now, create a window to see the graph for this domain and range by changing the window values.

To Do This	Press	Display (TI-83 Plus shown)
<p>1. Display the window settings screen.</p> <p><b>Note:</b> Window settings screen is slightly different on the TI-73.</p>	<p><b>WINDOW</b></p>	
<p>2. Define the values so that <b>Xmin = -3, Xmax = 3, Xscl = 1, Ymin = -150, Ymax = 150, and Yscl = 50.</b></p> <p><b>Note:</b> This changes the settings so that: <math>-3 \leq X \leq 3</math> and <math>-150 \leq Y \leq 150</math>. Since <math>Xscl=1</math> and <math>Yscl=50</math>, there is one unit between each tick mark on the <math>X</math> axis and 50 units between each tick mark on the <math>Y</math> axis.</p> <p>TI-73: <math>\Delta X</math> scales automatically, based on <math>Xmin</math> and <math>Xmax</math>. See the calculator guidebook for details.</p>	<p><b>(-)</b> 3    <b>▼</b> (to Xmax)            3        <b>▼</b> (to Ymin)  <b>(-)</b> 150   <b>▼</b> (to Ymax)            150     <b>▼</b> (to Yscl)            50</p>	
<p>3. Graph <b>Y1=50X</b> in this different window.</p> <p><b>Note:</b> Remember that each tick mark on the <math>X</math> axis represents 1 unit, while each one on the <math>Y</math> axis represents 50. It's always important to know the scale of your graphs so that you understand the graph you are viewing.</p>	<p><b>GRAPH</b></p>	
<p>4. Trace the graph.</p> <p><b>Note:</b> Each tick mark on the <math>X</math> axis is 1 and on the <math>Y</math> axis is 50.</p>	<p><b>TRACE</b>  <b>◀</b> or <b>▶</b> as necessary</p>	
<p>5. Display the <math>Y</math> value when <math>X=2</math>.</p> <p><b>Tip:</b> You can go directly to any coordinate pair on the graph by entering the value you want.</p>	<p><b>2</b> <b>ENTER</b></p>	

**Try-It!™ on Your TI-83 Plus or TI-73 (continued)**

**Using ZDecimal—the Friendly Window**

- Display and trace the graph  $Y_2=2x$ , using **ZDecimal** window values. **ZDecimal** lets you trace the **X** values by tenths (.1, .2, .3, ...).
- Multiply **Xmin**, **Xmax**, **Xscl**, **Ymin**, **Ymax**, and **Yscl** by 100 in the window menu, and trace the function. This lets you trace the **X** values by tens.

To Do This	Press	Display (TI-83 Plus shown)
<p>1. Turn off the graph and table of <math>Y_1=50X</math> and enter <math>Y_2=2x</math> in the Y= editor.</p> <p><b>Note:</b> On the TI-73, use <math>\boxed{x}</math> rather than <math>\boxed{X.T.\ominus.n}</math>.</p>	$\boxed{Y=}$ $\boxed{\leftarrow}$ $\boxed{\text{ENTER}}$ $\boxed{\downarrow}$ $\boxed{\rightarrow}$ $\boxed{\text{CLEAR}}$ $\boxed{2}$ $\boxed{X.T.\ominus.n}$	
<p>2. Graph <math>Y_2=2x</math> using <b>ZDecimal</b> window values.</p>	$\boxed{\text{ZOOM}}$ $\boxed{\downarrow}$ until <b>ZDecimal</b> is highlighted $\boxed{\text{ENTER}}$	
<p>3. Trace the graph.</p> <p><b>Note:</b> Notice that the window is set up so that the <b>X</b> values are tracing by tenths.</p>	$\boxed{\text{TRACE}}$ $\boxed{\leftarrow}$ or $\boxed{\rightarrow}$ as necessary	
<p>4. Multiply <b>Xmin</b>, <b>Xmax</b>, <b>Xscl</b>, <b>Ymin</b>, <b>Ymax</b>, and <b>Yscl</b> by 100.</p> <p><b>Tip:</b> Press <math>\boxed{2nd}</math> <math>\boxed{\rightarrow}</math> to move the cursor to the end of a window setting line.</p> <p><b>Note:</b> TI-83 Plus: See the calculator guidebook for details about <b>Xres</b>. It is not discussed in this Tip. TI-73: See the calculator guidebook for details about <math>\Delta X</math>. It is not discussed in this Tip.</p>	$\boxed{\text{WINDOW}}$ Repeat for each value: $\boxed{2nd}$ $\boxed{\rightarrow}$ $\boxed{x}$ $\boxed{100}$ $\boxed{\text{ENTER}}$	
<p>5. Trace the graph.</p> <p><b>Note:</b> Notice that the window is set up so that the <b>X</b> values are tracing by tens.</p>	$\boxed{\text{TRACE}}$ $\boxed{\leftarrow}$ or $\boxed{\rightarrow}$ as necessary	

**On Your Own**

**Graph  $Y_1=.1X$ .** How can you set an appropriate viewing window for this graph?

**Hint:** Make a table of values for  $Y_1=.1X$  and use the table information to change the window values. Try finding the best values to choose when  $-5 \leq X \leq 5$ . If  $X=5$ ,  $Y=.1(5)=.5$ . Therefore, the **Y** values need to be very small. Try changing **Ymin**, **Ymax**, and **Yscl**.

## Tlp™ 6: Using Lists

You can enter lists of different kinds of data into the list editor. For example, let's look at two students' test scores.

- Jamal's test scores are 80, 85, 90, 75, and 85.
- Jian's test scores are 85, 70, 75, 95, and 100.

You can create two separate lists in the list editor containing these scores. Then, on the Home screen, you can find the sum of the elements of both lists, and then divide by the number of elements (5) to calculate each student's test average or mean.

L1 lists Jamal's scores.

L1	L2	L3	Z
80	85		
85	70		
90	75		
75	95		
85	100		
---			
L2(6) =			

mean(L2) 85

You can find the mean or median on the Home screen.

### Calculator Keys Used in This Tlp™

- $\boxed{2\text{nd}}$  [CATALOG] (to access the **ClearAllLists** and **SetUpEditor** commands)
- TI-83 Plus:  $\boxed{2\text{nd}}$  [LIST], [STAT]
- TI-73: [LIST],  $\boxed{2\text{nd}}$  [STAT]

### Tlp™ Highlights

Both the TI-83 Plus and the TI-73 have two menus—**OPS** and **MATH**—that contain various list commands that help you find mean, median, and much more. For more information on all menu items, see the calculator guidebook.

TI-83 Plus:

$\boxed{2\text{nd}}$  [LIST]  $\blacktriangleright$   $\blacktriangleright$

```
NAMES OPS MATH
1:min(
2:max(
3:mean(
4:median(
5:sum(
6:prod(
7:stdDev(
```

TI-73:

$\boxed{2\text{nd}}$  [STAT]  $\blacktriangleright$   $\blacktriangleright$

```
Ls OPS MATH CALC
1:min(
2:max(
3:mean(
4:median(
5:mode(
6:stdDev(
7:sum(
```

In the Try-It! example, you will use the **ClearAllLists** and **SetUpEditor** commands, which are located in the **CATALOG** ( $\boxed{2\text{nd}}$  [CATALOG]) on both the TI-83 Plus and the TI-73. These commands clear and set up the list editor as described below.

- **ClearAllLists** erases all elements of all existing lists on your calculator. The list names are still in memory, but the lists are empty. You cannot get the list elements back.
- **SetUpEditor** removes all list names from the list editor except the default list names, **L1** through **L6**. It also creates one blank list after **L6**.

**Note:** The examples in the next section assume that the calculator has been reset to the default settings as described in

Tlp 1: *Resetting Your Calculator*.

## Try-It!™ on Your TI-83 Plus or TI-73

### Set Up the List Editor

Use the commands **ClearAllLists** and **SetUpEditor** to reset the list editor.

To Do This	Press	Display (TI-83 Plus shown)
<p>1. Display the list editor.</p> <p><b>Note:</b> Your list editor may vary. The following commands will clear and set up lists <b>L1</b> through <b>L6</b> in your list editor.</p>	<p>TI-83 Plus:  <math>\boxed{\text{STAT}}</math> <b>1:Edit</b></p> <p>TI-73:  <math>\boxed{\text{LIST}}</math></p>	
<p>2. Return to the Home screen and clear it. Then clear all lists in the list editor by selecting <b>ClearAllLists</b>.</p> <p><b>Note:</b> This command clears all elements from the lists. The list names are still in memory, but the lists are empty.</p> <p><b>Hint:</b> In the <b>CATALOG</b>, you can go to the first item starting with a particular letter:</p> <p>TI-83 Plus: Press <b>C</b> (<math>\boxed{\text{PRGM}}</math>). Notice that you are already in <b>ALPHA</b> mode since the <math>\alpha</math> displays in the upper right corner.</p> <p>TI-73: Press <math>\boxed{2\text{nd}}</math> [<math>\boxed{\text{TEXT}}</math>], highlight <b>C</b>, and then press <math>\boxed{\text{ENTER}}</math>.</p>	<p><math>\boxed{2\text{nd}}</math> [<math>\boxed{\text{QUIT}}</math>] <math>\boxed{\text{CLEAR}}</math>  <math>\boxed{2\text{nd}}</math> [<math>\boxed{\text{CATALOG}}</math>]</p> <p><math>\blacktriangledown</math> until <b>ClrAllLists</b> is selected</p> <p><math>\boxed{\text{ENTER}}</math>  <math>\boxed{\text{ENTER}}</math></p>	
<p>3. Setup the list editor with <b>SetUpEditor</b>.</p> <p><b>Hint:</b> You also can select <b>SetUpEditor</b> on the TI-83 Plus by pressing <math>\boxed{\text{STAT}}</math> <b>5</b>.</p>	<p><math>\boxed{2\text{nd}}</math> [<math>\boxed{\text{CATALOG}}</math>]</p> <p><math>\blacktriangledown</math> until you highlight <b>SetUpEditor</b></p> <p><math>\boxed{\text{ENTER}}</math>  <math>\boxed{\text{ENTER}}</math></p>	
<p>4. Display the list editor.</p> <p><b>Note:</b> Lists <b>L1</b> through <b>L6</b> appear and are clear, and there is a blank list following <b>L6</b>.</p>	<p>TI-83 Plus:  <math>\boxed{\text{STAT}}</math> <b>1:Edit</b></p> <p>TI-73:  <math>\boxed{\text{LIST}}</math></p>	

**Try-It!™ on Your TI-83 Plus or TI-73 (continued)**

**Enter the Lists**


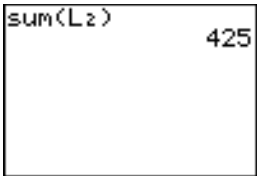
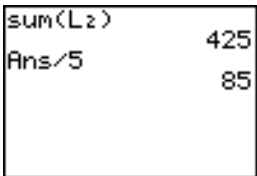
In the list editor, enter Jamal's scores as  $L1=\{80,85,90,75,85\}$  and Jian's scores as  $L2=\{85,70,75,95,100\}$ .

To Do This	Press	Display (TI-83 Plus shown)
1. Enter data into L1.	80 <input type="checkbox"/> 85 <input type="checkbox"/> 90 <input type="checkbox"/> 75 <input type="checkbox"/> 85 <input type="checkbox"/>	
2. Enter data into L2.	<input type="checkbox"/> (to place the cursor under L2) 85 <input type="checkbox"/> 70 <input type="checkbox"/> 75 <input type="checkbox"/> 95 <input type="checkbox"/> 100 <input type="checkbox"/>	

**Try-It!™ on Your TI-83 Plus or TI-73 (continued)**

**Display the Sum and Average of All Elements in a List**


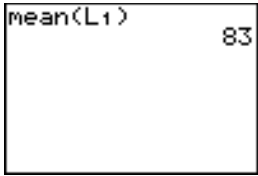

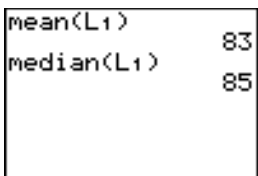
On the Home screen, find the sum of Jian’s test scores (L2).

To Do This	Press	Display (TI-83 Plus shown)
<p>1. Return to the Home screen and clear the current line, if needed.</p> <p><b>Tip:</b> Once you exit the application, you can press <math>\boxed{2\text{nd}} \boxed{\text{QUIT}}</math> to return to the Home screen from any menu or command.</p>	<p><math>\boxed{2\text{nd}} \boxed{\text{QUIT}} \boxed{\text{CLEAR}}</math></p>	
<p>2. Select <b>sum(</b> from the <b>MATH</b> menu.</p>	<p>TI-83 Plus:  <math>\boxed{2\text{nd}} \boxed{\text{LIST}} \boxed{\blacktriangleright} \boxed{\blacktriangleright}</math>  <b>5:sum(</b></p> <p>TI-73:  <math>\boxed{2\text{nd}} \boxed{\text{STAT}} \boxed{\blacktriangleright} \boxed{\blacktriangleright}</math>  <b>7:sum(</b></p>	 <p>sum(</p>
<p>3. Select the list (L2) you want, and display the sum.</p>	<p>TI-83 Plus:  <math>\boxed{2\text{nd}} \boxed{\text{LIST}}</math>  <b>2:L2</b> <math>\boxed{\text{ENTER}}</math></p> <p>TI-73:  <math>\boxed{2\text{nd}} \boxed{\text{STAT}}</math>  <b>2:L2</b> <math>\boxed{\text{ENTER}}</math></p>	
<p>4. Divide L2 by 5 (the number of test scores) to find the average (or mean) of the list of the scores.</p> <p><b>Note:</b> <b>Ans</b> is the previous <i>answer</i>, 425.</p>	<p><math>\boxed{\div} \boxed{5}</math>  <math>\boxed{\text{ENTER}}</math></p> <p><b>Ans = 425</b></p>	

**Try-It!™ on Your TI-83 Plus or TI-73 (continued)**

**Find the Mean and Median of a Set of Data**




On the Home screen, find the mean and median of Jamal's test scores (L1).

To Do This	Press	Display (TI-83 Plus shown)
1. Return to the Home screen and clear the current line, if needed.	$\boxed{2\text{nd}} \boxed{[\text{QUIT}]} \boxed{[\text{CLEAR}]}$	
2. Select <b>mean(</b> from the <b>MATH</b> menu.	TI-83 Plus: $\boxed{2\text{nd}} \boxed{[\text{LIST}]} \boxed{\blacktriangleright} \boxed{\blacktriangleright}$ <b>3:mean(</b>  TI-73: $\boxed{2\text{nd}} \boxed{[\text{STAT}]} \boxed{\blacktriangleright} \boxed{\blacktriangleright}$ <b>3:mean(</b>	
3. Select the list (L1) that you want, and then calculate the mean.	TI-83 Plus: $\boxed{2\text{nd}} \boxed{[\text{LIST}]} \boxed{1:\text{L1}} \boxed{)}$ $\boxed{[\text{ENTER}]}$  TI-73: $\boxed{2\text{nd}} \boxed{[\text{STAT}]} \boxed{1:\text{L1}} \boxed{)}$ $\boxed{[\text{ENTER}]}$	
4. Select <b>median(</b> from the <b>MATH</b> menu.	TI-83 Plus: $\boxed{2\text{nd}} \boxed{[\text{LIST}]} \boxed{\blacktriangleright} \boxed{\blacktriangleright}$ <b>4:median(</b>  TI-73: $\boxed{2\text{nd}} \boxed{[\text{STAT}]} \boxed{\blacktriangleright} \boxed{\blacktriangleright}$ <b>4:median(</b>	
5. Select the list (L1) that you want, and then display the median.	TI-83 Plus: $\boxed{2\text{nd}} \boxed{[\text{LIST}]} \boxed{1:\text{L1}} \boxed{)}$ $\boxed{[\text{ENTER}]}$  TI-73: $\boxed{2\text{nd}} \boxed{[\text{STAT}]} \boxed{1:\text{L1}} \boxed{)}$ $\boxed{[\text{ENTER}]}$	



 **Try-It!™ on Your TI-83 Plus or TI-73 (continued)****On Your Own**

- 
- Calculate the 1-variable statistics analysis for
- L1**
- using the
- 1-Var Stats**
- command on the Home screen. Use the arrow keys (
- 
- and
- 
- ) to view all of the information about
- L1**
- .

Select the **1-Var Stats** command from this menu:

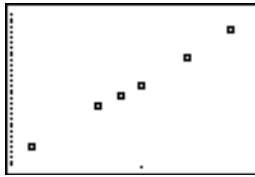
- TI-83 Plus:  **CALC** menu
- TI-73:   **CALC** menu

**Hint:** Select the **1-Var Stats** command first, and then select **L1**. For more information about **1-Var Stats**, see the calculator guidebook.

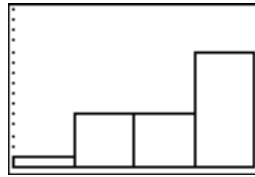
- 
- If you are already familiar with statistical plots, find the quartile statistics in the list of data that was generated above, and draw a box plot of the data. For help, see
- 
- Tip 7:
- Creating a Statistical Plot*
- .

## Tip™ 7: Creating a Statistical Plot

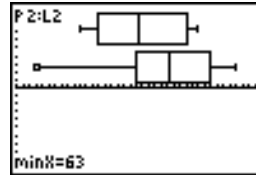
Statistical plots are graphs of data values that have been stored in lists. You can create several types of statistical plots, such as scatter plots, histograms, box plots, and pie charts (TI-73 only).



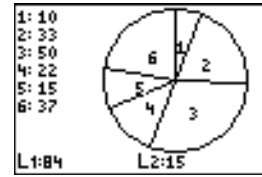
Scatter Plot



Histogram



Box Plot



Pie Chart (TI-73 only)

### Calculator Keys Used in This Tip™

- TI-73:  $\boxed{2\text{nd}}$   $\boxed{\text{PLOT}}$
- TI-83 Plus:  $\boxed{2\text{nd}}$   $\boxed{\text{STAT PLOT}}$
- $\boxed{\text{ZOOM}}$  **ZoomStat**

### Tip™ Highlights

In the Try-It! example, you will graph a statistical plot following these main steps.

1. Enter all necessary lists in the list editor.
2. Define your statistical plot in the stat plot editor.
3. Display the statistical plot by pressing  $\boxed{\text{ZOOM}}$  (**ZoomStat**).

Pressing  $\boxed{\text{TRACE}}$  allows you to move the cursor from one plotted point to another using  $\boxed{\rightarrow}$  and  $\boxed{\leftarrow}$ . It also displays the values (X,Y) at the bottom of the screen. For more information about statistical plot options, see the calculator guidebook.

**Note:** The examples in the next section assume that the calculator has been reset to the default settings as described in Tip 1: *Resetting Your Calculator*.

**Try-It!™ on Your TI-83 Plus or TI-73**

You have collected the measurements (in inches) of how far a boy from age 5 to age 14 could throw a ball above his head. The following data was recorded. Create a scatter plot ( $\text{L}\cdot\text{L}\cdot$ ) based on these lists, where **L1** = Age in years and **L2** = Distance in inches.

Age in years (L1)	Distance in inches (L2)
5	66.9
8	75.8
9	77.7
10	79.9
12	85.8
14	91.7

**Enter the Lists in the List Editor**

See Tip 6: *Using Lists* for step-by-step instructions for entering lists of data (remember to use **ClearAllLists** and **SetUpEditor**). Your list editor should look like this:

L1	L2	L3	2
5	66.9		
8	75.8		
9	77.7		
10	79.9		
12	85.8		
14	91.7		
L2(?) =			

**Define the Statistical Plot**

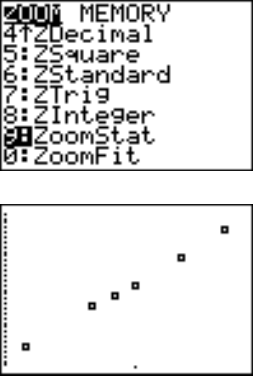
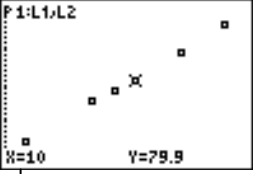
Define **Plot1** as a scatter ( $\text{L}\cdot\text{L}\cdot$ ) plot where **Xlist=L1** and **Ylist=L2**.

To Do This	Press	Display (TI-83 Plus shown)
1. Display the <b>STAT PLOTS</b> screen.	TI-83 Plus: [2nd] [STAT PLOT]  TI-73: [2nd] [PLOT]	
2. Display the <b>Plot1</b> settings screen.	<b>1:Plot1</b>	
3. Select <b>On</b> to turn on <b>Plot1</b> .  <b>Note:</b> Scatter ( $\text{L}\cdot\text{L}\cdot$ ), is already selected because you reset the calculator for this Tip. <b>Xlist</b> and <b>Ylist</b> do not have to be changed because, by default, they already match our selected lists.	[ENTER]	

**Try-It!™ on Your TI-83 Plus or TI-73 (continued)**

**Display the Statistical Plot on the Graph Screen**

Display the statistical plot on the graph screen using the **ZoomStat** command and trace it.

To Do This	Press	Display (TI-83 Plus shown)
<p>1. Select <b>ZoomStat</b> from the <b>ZOOM</b> menu.</p>	<p>TI-83 Plus:  <math>\boxed{\text{ZOOM}}</math>  <b>9:ZoomStat</b></p> <p>TI-73:  <math>\boxed{\text{ZOOM}}</math>  <b>7:ZoomStat</b></p>	 <p>The top image shows the ZOOM menu with options: MEMORY, 4:ZDecimal, 5:ZSquare, 6:ZStandard, 7:ZTrig, 8:ZInteger, 9:ZoomStat, and 0:ZoomFit. The bottom image shows a scatter plot with several data points on a coordinate plane.</p>
<p>2. Trace along the statistical plot.</p> <p><b>Note:</b> P1:L1,L2 in the upper left corner shows that the lists L1 and L2 contain the data for the graph. The data points are displayed at the bottom of the screen.</p>	<p><math>\boxed{\text{TRACE}}</math>  <math>\boxed{\rightarrow}</math> or <math>\boxed{\leftarrow}</math> as necessary</p>	<p>L1 and L2 contain the data for this graph.</p>  <p>The image shows the same scatter plot with a cursor on one of the points. The text 'P1:L1,L2' is in the top left corner, and 'X=10' and 'Y=79.9' are displayed at the bottom of the screen.</p> <p>(X,Y) coordinates of the data point at the cursor location.</p>

**Try-It!™ on Your TI-83 Plus or TI-73 (continued)**

**On Your Own**

1. Enter the following math test scores in **L1** and **L2**.

Scores (L1)	Frequency (L2)
99	4
96	4
92	3
88	2
84	3
78	2
74	2
70	1
66	1
64	1

2. Set up the histogram ( $\overline{\text{HIST}}$ ) where **Xlist=L1** and **Freq=L2** in the **STAT PLOTS** menu.
3. Graph the histogram using **ZoomStat**, and then trace ( $\overline{\text{TRACE}}$ ) the histogram. Letter grades correspond to these test scores: A = 100–90; B = 89–80; C = 79–70; D = 69–60; F = 59–0. Did the graph display the way you expected? Why is it necessary to change the window values manually?
4. Change the window values manually to group the data in intervals of 10. Remember that you want the data grouped in intervals of 10 so you can see how many test scores fall into the grade categories given above. You can tell the calculator to do this by setting **Xscl=10** on the graphing window ( $\overline{\text{WINDOW}}$ ). **Xmin** should be a little less than the lowest score and **Xmax** should be a little higher than the highest score to display a nice graph. Try setting the window as **Xmin=50, Xmax=100, Ymin= -4, Ymax=15, and Yscl=10**.
5. Graph and trace the histogram again to see why these settings show the grades grouped by scores that match the letter grades A, B, C, D, and F.

**Hint:** Remember that if you have functions defined and turned on in the Y= editor, the calculator graphs these at the same time as the stat plot. To turn off a function, highlight the = sign next to it, and then press  $\overline{\text{ENTER}}$ .

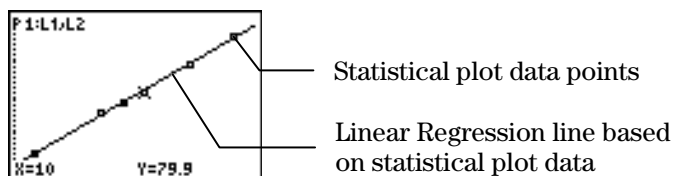
Or you can select **FnOff**. To do this:

- On the TI-83 Plus: Press  $\overline{\text{VAR}} \rightarrow$  **4:On/Off 2:FnOff**
- On the TI-73: Press  $\overline{\text{2nd}} \overline{\text{VAR}} \rightarrow$  **2:Y-Vars 6: FnOff**

## Tip™ 8: Finding the Best Line of Fit for a Set of Data

Both the TI-83 Plus and the TI-73 have regression commands that automatically find the closest equation to your statistical plot data. The **LinReg(ax+b)** command finds the closest linear equation  $y=ax+b$  and displays the values for **a** (slope) and **b** (y-intercept) on the Home screen.


You can save this equation in the Y= editor so that you can graph the regression equation and the statistical plot data at the same time, and then compare the two.




### Calculator Keys Used in This Tip™

- TI-83 Plus: **[STAT]** **[▶]** (**CALC** menu) **LinReg(ax+b)**
- TI-73: **[2nd]** **[STAT]** **[↓]** (**CALC** menu) **LinReg(ax+b)**


### Tip™ Highlights

This  Tip shows you how to use **LinReg(ax+b)** on the Home screen to find the linear regression of two list names, **XList (L1)** and **YList (L2)**. You will use the same list values that you used to define the statistical plot.


**Note:** For more information about statistical plots, see  Tip 7: *Creating a Statistical Plot*.

In the  Try-It! example, you will find a linear regression following these main steps.

1. Select **LinReg(ax+b)** from the **[STAT]** **CALC** menu.
2. Enter the two list names that define the statistical plot.
3. Save the equation in the Y= editor.
4. Graph the statistical plot and the linear regression.


**Note:** The examples in the next section assume that the calculator has been reset to the default settings as described in  Tip 1: *Resetting Your Calculator*.

### Try-It!™ on Your TI-83 Plus or TI-73

You have collected the measurements (in inches) of how far a boy could throw a ball above his head from age 5 to age 14. The following data was recorded. Create a scatter () plot based on these lists, where **Xlist=L1** and **Ylist=L2**.


Age in years (L1)	Distance in inches (L2)
5	66.9
8	75.8
9	77.7
10	79.9
12	85.8
14	91.7

#### Enter the Lists for the Statistical Plot

See  Tip 6: *Using Lists* for step-by-step instructions for entering lists of data. Your list editor should look like this:

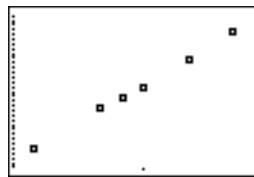
L1	L2	L3	2
5	66.9		
8	75.8		
9	77.7		
10	79.9		
12	85.8		
14	91.7		
-----			
L2(?) =			

#### Create a Scatter Statistical Plot for L1 and L2

See  Tip 7: *Creating a Statistical Plot* for step-by-step instructions for creating a scatter statistical plot. Your statistical plot editor and scatter plot (using **ZoomStat**) should look like this:



Stat Plot Editor

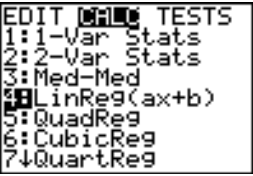
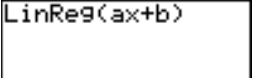
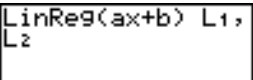
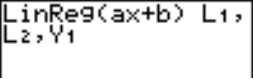
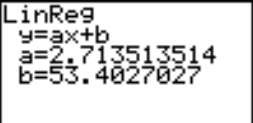
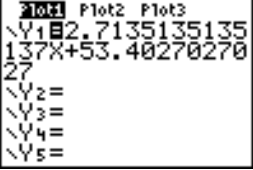


Graph of Plot

**Note:** The stat plot editor in the TI-73 looks slightly different.

**Try-It!™ on Your TI-83 Plus or TI-73 (continued)**
**Find the Linear Regression for the Scatter Plot**


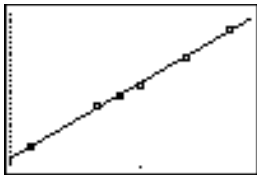
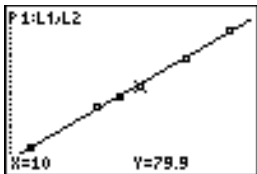
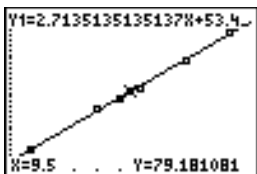
 Find the regression (the line which best fits the data) for **L1** and **L2** using **LinReg(ax+b)**.

To Do This	Press	Display (TI-83 Plus shown)
1. Return to the Home screen, and clear it.	$\boxed{2nd}$ $\boxed{[QUIT]}$ $\boxed{[CLEAR]}$	
2. Select <b>LinReg(ax+b)</b> from the <b>STAT</b> <b>CALC</b> menu.	TI-83 Plus: $\boxed{[STAT]}$ $\boxed{\blacktriangleright}$ <b>4:LinReg(ax+b)</b>  TI-73: $\boxed{2nd}$ $\boxed{[STAT]}$ $\boxed{\blacktriangleleft}$ <b>5:LinReg(ax+b)</b>	  
3. Select the lists <b>L1</b> and <b>L2</b> .	TI-83 Plus: $\boxed{2nd}$ $\boxed{[LIST]}$ <b>1:L1</b> $\boxed{,}$ $\boxed{2nd}$ $\boxed{[LIST]}$ <b>2:L2</b> $\boxed{,}$  TI-73: $\boxed{2nd}$ $\boxed{[STAT]}$ <b>1:L1</b> $\boxed{,}$ $\boxed{2nd}$ $\boxed{[STAT]}$ <b>2:L2</b> $\boxed{,}$	
4. Display <b>Y-VARS</b> menu. Then select the Y variable ( <b>Y1</b> ) from the <b>FUNCTION</b> menu. 5. Calculate the regression equation.	TI-83 Plus: $\boxed{[VARS]}$ $\boxed{\blacktriangleright}$ <b>1:Function</b> <b>1:Y1</b> $\boxed{[ENTER]}$  TI-73: $\boxed{2nd}$ $\boxed{[VARS]}$ <b>2:Y-Vars</b> <b>1:Y1</b> $\boxed{[ENTER]}$	  
6. Display the Y= editor.  <b>Note:</b> Both <b>Y1</b> and <b>Plot1</b> are highlighted. This means that both graph and the plot are turned on.	$\boxed{Y=}$	


 **Try-It!™ on Your TI-83 Plus or TI-73 (continued)**

**Graph the Statistical Plot and the Linear Regression**

Graph and trace the statistical plot and linear regression at the same time and compare them.

To Do This	Press	Display (TI-83 Plus shown)
<p>1. Select the <b>ZoomStat</b> function to display the statistical plot and the regression on the graph screen at the same time.</p>	<p>TI-83 Plus:  <input type="button" value="ZOOM"/>  <b>9:ZoomStat</b></p> <p>TI-73:  <input type="button" value="ZOOM"/>  <b>7:ZoomStat</b></p>	 
<p>2. Trace the function or the statistical plot.</p> <p><b>Notes:</b> The function or plot being traced is displayed in the upper left corner of the screen. The <b>X</b> and <b>Y</b> coordinates display at the bottom of the screen.</p>	<p><input type="button" value="TRACE"/>  <input type="button" value="←"/> or <input type="button" value="→"/> to trace a function  <input type="button" value="↑"/> and <input type="button" value="↓"/> to move between functions</p>	 <p>Tracing along the stat plot</p>  <p>Tracing along the line</p>

**On Your Own**

 Use the function to predict approximately how far you think the boy can throw the ball above his head at 18 years old. Do you think the line will give a good idea of how high this person will be able to throw the ball when he is 35? Explain your thoughts.

**Hint:** Use the table to determine the value of **Y<sub>1</sub>** when **X=18**.

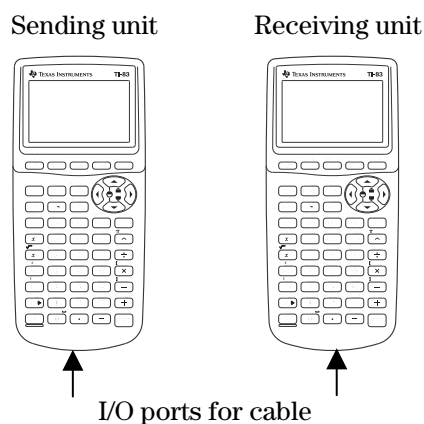
## Tip™ 9: Sending and Receiving Data between Calculators

You can send and receive data between calculators using the **SEND** and **RECEIVE** menus.

To connect two calculators using the unit-to-unit cable, which comes packaged with your calculator, use the I/O (input/output) port located at the center of the bottom edge of the calculator.

- Insert either end of the unit-to-unit cable into the I/O calculator port.
- Insert the other end of the cable into the I/O port of the other calculator.

**Tip:** The cable must be *firmly* inserted into the I/O port. If you receive a “link error,” make sure the cable is completely inserted.



### Calculator Keys Used in This Tip™

- TI-83 Plus: **2nd** **[LINK]**
- TI-73: **[APPS]** **1:Link**

### Tip™ Highlights

You can send or receive many types of data such as lists, programs, pictures, and applications that can be shared.

To communicate between two calculators, you must set up one calculator to send the data and the other calculator to receive the data.

**Note:** You can only link two TI-73 calculators or two TI-83 Plus calculators. You cannot link a TI-73 and a TI-83 Plus.

## Tip Highlights (continued)

In the Try-It! example, you will link two calculators and send lists of data from one calculator to the other following these main steps.

### Receiving Data

After you link the calculators using the unit-to-unit cable, set up one calculator to receive data by following these steps:

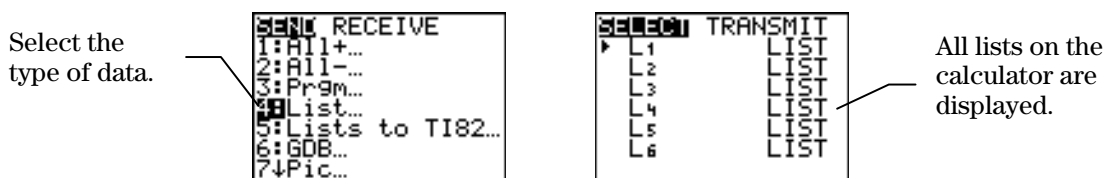
1. Display the link menu.
  - TI-83 Plus: **2nd** **[LINK]**
  - TI-73: **[APPS]** **1:Link**
2. Press **[▶]** to display the **RECEIVE** menu.
3. Select **1:Receive**. The message **Waiting...** and the busy indicator are displayed. The calculator is ready to receive transmitted items.

### Sending Data

After you link the calculators using the unit-to-unit cable and have one calculator waiting to receive data, set up the other calculator to send data by following these steps:

1. Display the link menu.
  - TI-83 Plus: **2nd** **[LINK]**
  - TI-73: **[APPS]** **1:Link**
2. Select the type of data (for example, lists) that you want to send. The corresponding **SELECT** screen is displayed. Each **SELECT** screen is displayed initially with no items selected.

**Note:** The **All+** menu item selects all items on your calculator that can be transmitted. The **All-** menu item deselects all items that you have selected to transmit.



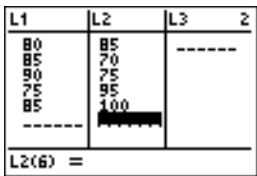
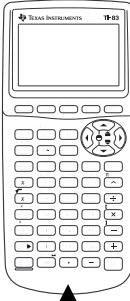
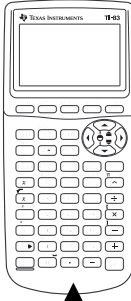


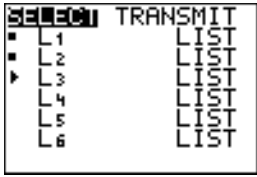
3. Press **[▲]** and **[▼]** to move the selection cursor (**▶**) to an item you want to select or deselect.
4. Press **[ENTER]** to select or deselect an item. Selected names are marked with a box (**■**). You can select more than one if you want.

**Try-It!™ on Your TI-83 Plus or TI-73**


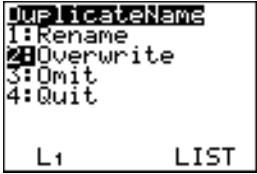
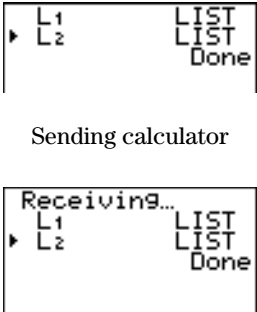
Transfer **L1** and **L2** from one calculator to another one. Use **L1** and **L2** as defined in

Tip 6: *Using Lists*.

- **L1={80,85,90,75,85}**
- **L2={85,70,75,95,100}**

To Do This	Press	Display (TI-83 Plus shown)
1. On the sending calculator, enter the lists above in the list editor.	TI-83 Plus: [STAT] 1:Edit  TI-73: [LIST]	
2. Link the two calculators using the unit-to-unit cable.		<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Sending unit</p>  </div> <div style="text-align: center;"> <p>Receiving unit</p>  </div> </div> <p style="text-align: center;">Connect the calculators with the cable using the I/O ports.</p>
3. On the receiving calculator, select <b>Receive</b> .  Confirm that <b>Waiting...</b> is displayed on the screen. Your calculator is now ready to receive the lists.	TI-83 Plus: [2nd] [LINK] [>] 1:Receive  TI-73: [APPS] 1:Link [>] 1:Receive	
4. On the sending calculator, display the <b>SEND</b> menu, and then select <b>List</b> .	TI-83 Plus: [2nd] [LINK] 4: List  TI-73: [APPS] 1:Link 4: List	
5. Select <b>L1</b> and <b>L2</b> .  <b>Note:</b> The selected lists are marked with a box (■).	[ENTER] [>] [ENTER]	

**Try-It!™ on Your TI-83 Plus or TI-73 (continued)**

<p>6. Send the lists to the receiving calculator using the <b>TRANSMIT</b> menu.</p>	<p>▶ <b>1:Transmit</b></p>	
<p>7. If the lists have been previously defined, the receiving calculator asks you if you want to:</p> <p><b>1: Rename</b> <b>2: Overwrite</b> <b>3: Omit</b> <b>4: Quit</b></p> <p>Select <b>Overwrite</b> for each list.</p>	<p><b>2:Overwrite</b></p>	
<p>The name and type of each data item are displayed line by line on the sending unit as the item is transmitted, and then on the receiving unit as each item is accepted.</p> <p>After both lists are transmitted, the message, <b>Done</b>, is displayed on both calculators.</p>		

**On Your Own**

Enter a function in the Y= editor and send it to another calculator.

## ☎ T1p™ 10: Managing Your Calculator's Memory

You can check available memory, manage memory, and get information about your calculator by selecting items from the **2nd** [MEM] **MEMORY** menu. For example, you can find your calculator ID number, which is necessary for registering and installing some applications. A delete menu item lets you delete any type of data (variables, lists, programs, applications, etc.) so that you can set up your calculator with the information you need for your current classes. You can change the data for future classes.



TI-83 Plus



TI-73

### Calculator Keys Used in This ☎ T1p™

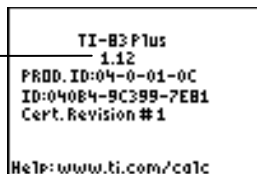
**2nd** [MEM]

### ☎ T1p™ Highlights

The **About** screen displays:

- Your calculator operating system version number
- Your calculator ID number, which is used to register and install or reinstall an application

The operating system version number



TI-83 Plus



TI-73

The calculator ID number

As new operating system versions become available, you can download them from the Texas Instruments website. To obtain some applications from Texas Instruments, you must provide your calculator ID number, which is unique to your calculator.

The **Mem Mgmt/Del** menu item lets you delete variables, lists, programs, applications, etc., so that you can set up your calculator with the information you need for your current classes.

The **Reset** menu item lets you reset your calculator default settings. Resetting all RAM on your calculator:

- Restores memory to the factory settings.
- Deletes all programs.



**Note:** Resetting RAM does NOT erase applications.

To find out more about resetting defaults, see ☎ T1p 1: *Resetting Your Calculator*.

**Try-It!™ on Your TI-83 Plus or TI-73**

**Displaying the About Screen**



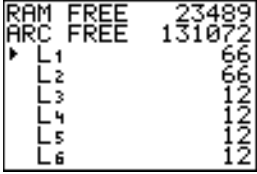
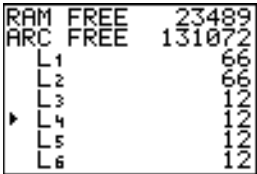
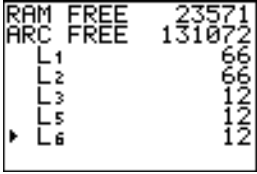
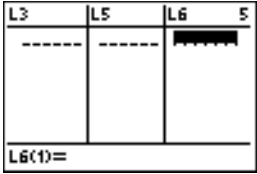
Display your calculator's **About** screen and find the operating system version number and the ID number.

To Do This	Press	Display (TI-83 Plus shown)
1. Select <b>About</b> from the <b>MEMORY</b> menu.	$\boxed{2nd}$ [MEM] <b>1:About</b>	 <pre> MEMORY 1:About 2:Mem Mgmt/Del... 3:Clear Entries 4:ClrAllLists 5:Archive 6:UnArchive 7↓Reset...                     </pre>
2. Notice the operating system version number under the name of the calculator ( <b>1.12</b> ) and the <b>ID</b> number composed of 14 numbers and letters.		 <pre> TI-83 Plus 1.12 PRD. ID:04-0-01-0C ID:04084-9C399-7EB1 Cert. Revision #1  Help: www.ti.com/calc                     </pre>

**Try-It!™ on Your TI-83 Plus or TI-73 (continued)**

**Deleting Items**

Delete **L4** from your calculator's memory.

To Do This	Press	Display (TI-83 Plus shown)
<p>1. Display the <b>MEMORY</b> menu and select <b>Mem Mgmt/Del</b>.</p> <p><b>Note:</b> The TI-73 screen looks somewhat different.</p>	<p>TI-83 Plus:  <math>\boxed{2\text{nd}}</math> <math>\boxed{[\text{MEM}]}</math>  <b>2:Mem Mgmt/Del</b></p> <p>TI-73:  <math>\boxed{2\text{nd}}</math> <math>\boxed{[\text{MEM}]}</math>  <b>4:Delete</b></p>	 <pre> MEMORY 1:About 2:Mem Mgmt/Del... 3:Clear Entries 4:ClrAllLists 5:Archive 6:UnArchive 7:Reset...                     </pre>
<p>2. Select the category, <b>List</b>.</p> <p>All existing lists on your calculator display on this screen and the number of bytes of RAM that they use (<b>L1=66</b> bytes, etc.).</p>	<p>TI-83 Plus:  <b>4&gt;List</b></p> <p>TI-73:  <b>3&gt;List</b></p>	 <pre> RAM FREE 23489 ARC FREE 131072 1:All... 2:Real... 3:Complex... 4&gt;List... 5:Matrix... 6:Y-Vars...                     </pre>  <pre> RAM FREE 23489 ARC FREE 131072 L1 66 L2 66 L3 12 L4 12 L5 12 L6 12                     </pre>
<p>3. Move the cursor so that it points to <b>L4</b>.</p>	<p><math>\blacktriangledown</math> to <b>L4</b></p>	 <pre> RAM FREE 23489 ARC FREE 131072 L1 66 L2 66 L3 12 L4 12 L5 12 L6 12                     </pre>
<p>4. Delete <b>L4</b>.</p> <p><b>Note:</b> Notice that no confirmation message displayed when you deleted this item. Confirmation messages only display when you delete an item from Flash ROM (an application) or when you delete an archived item. If an item has an asterisk (*) next to it, it is archived (TI-83 Plus only).</p>	<p>TI-83 Plus:  <math>\boxed{\text{DEL}}</math></p> <p>TI-73:  <math>\boxed{\text{ENTER}}</math></p>	 <pre> RAM FREE 23571 ARC FREE 131072 L1 66 L2 66 L3 12 L5 12 L6 12                     </pre>
<p>5. <b>L4</b> no longer displays in the list editor. Use the arrow key (<math>\blacktriangleright</math>) to scroll through the lists.</p> <p><b>Tip:</b> See Tip 6: <i>Using Lists</i> for information on how to use the <b>SetUpEditor</b> to put <b>L4</b> back into the list editor.</p>	<p>TI-83 Plus:  <math>\boxed{\text{STAT}}</math> <b>1:Edit</b> <math>\blacktriangleright</math></p> <p>TI-73:  <math>\boxed{\text{LIST}}</math> <math>\blacktriangleright</math></p>	 <pre> L3  L5  L6  S ----- L6(1)=                     </pre>