TI-84 GRAPHING CALCULATOR
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Set Up & Troubleshooting
TI-84: Resetting the Calculator

1. If an error persists and resetting the DEFAULTS did not solve the problem, RESET the RAM.

Warning! All downloaded programs and lists will be deleted! Go to: [2nd] [MEM]. Press “7: Reset”. Press "1: ALL RAM". Then choose "1: NO" to abort or "2: Reset" to reset the ram.
1. Students may change their MODE settings.

Go to: [MODE]. Defaults are shown below.

2. Students may have a problem with their Axes, Grid, or Graph Display.

These are found at: [2nd] [FORMAT]. Defaults are shown below.

3. Students may leave their plots ON when they are normally OFF.

Stat Plots are at: [2nd] [STAT PLOT].
4. Reset Defaults.

Go to: [2nd] [MEM] "7: Reset". Press "2: Defaults". Press "2: Reset". Defaults should be set.
Entering Data
1. Use the SetUpEditor to retrieve any 'lost' lists. Go to [STAT] "5:SetUpEditor" [ENTER]. Then go back to [STAT] [ENTER]

![TI-84 Graphing Calculator](image1.png)

2. Clear any unwanted lists. Method 1: Move the cursor to the list name. Press [CLEAR]. Use the arrow keys to go down to the list.

![TI-84 Graphing Calculator](image2.png)


Note: To add more than one list, add a comma between the list names.
4. Modify a list item by moving the arrow keys to the item and typing another number.

5. Delete a list item by moving the arrow keys to the item. Press [DELETE].
6. To insert a number, use the arrow keys to position below the insert point. Press [2nd] "ins". Type in the new number over the automatic '0' insert. [ENTER].
1. Copy a list to another column.

Go to L2. The name should be highlighted. Then [2nd] "ins". 'Name' appears at the bottom. Type in the new name. [ENTER]. Then [2nd] L1. [Enter]

2. You can sort a list so that the numbers get larger (Sort A) or smaller (Sort D).

Go to [STAT] and choose "2: SortA( " or "3: SortD( ". Enter your list such as [2nd] "L1". [ENTER]. To view, go to [STAT] [ENTER].

3. You can also sort a list from the main screen.

Go to [2nd] "List" (above the [STAT] key). Right arrow to "OPS". Then choose "1: SortA( " or "2: SortD( " Type your list name and [ENTER].
Univariate Data
This tutorial describes the process for creating a histogram on a TI-84 Graphing Calculator.

Watch the 3 minute video or follow the steps below it.

TI-84 Video: Histograms  (YouTube) (Vimeo)

1. Turn your Stat Plot ON and select the Histogram Icon.

Select [2nd][Stat Plot]. Use the arrow keys to turn the Stat Plot "On". Press ‘ENTER’. Then use the arrow keys to select the Histogram Icon. Press ‘ENTER’ to select. Note: Be sure that there are no graphs in the [Y=] button that will graph over your histogram!
2. Go to STAT --> Edit. Press 'ENTER'.

3. Type values into L1. Press 'ENTER' after each entry.

4. Go to Zoom Stat (Zoom 9) to view and to create a friendly window.

After selecting ZOOM, press the number "9" on the key pad. Or use the arrow keys to scroll down to number 9 and press 'ENTER'.
5. Use the TRACE button and arrow keys to toggle through the bars of the histogram.

6. Change the bin by going into Window and changing the x scale.

Use the arrow keys to scroll down to the Xscl. Type in the new numbers. Press 'ENTER'.
7. Press GRAPH. The new histogram will reflect new heights of the bars with a different bin value.

Use the trace button and arrow keys to view the new values on the histogram.
TI-84: Box Plots

Click on the video or view the steps below it.

TI-84 Video: Box Plots (YouTube) (Vimeo)

1. Turn on the Stat Plot. Press [2nd] [Stat Plot]. Press 'Enter'. Press 'Enter' again to turn Plot 1 on.

Note: Be sure that there are no graphs in the [Y=] button that will graph over your Box Plot!

2. Select a Box Plot icon. The first one will show outliers. The second icon will not show the outliers.
3. Enter Data in L1 of [Stat]

4. View Box Plot by going to [ZOOM] 'Stat' (#9). Or use the arrow keys to scroll down to number 9. Press 'Enter'.
5. Press [Trace] and the arrow keys to view the values of the Min, Q1, Median, Q3, and Max.

![Trace screenshot](image1)

6. Go to the [2nd] [Stat]. In Plot1, use the arrow keys to the 2nd Box Plot. Press 'Enter'. This plot will not show the outliers.

![Box Plot screenshot](image2)
TI-84: Comparing Two Box Plots

This tutorial describes the process for comparing two Box Plots on the TI-84.

Click on the video and/or follow the steps below it.

T1-84 Video: Comparing Two Box Plots (YouTube) (Vimeo)

1. Press [2nd] [Stat Plot]. Turn on Plot 1. Press 'Enter' after each selection. Select the box plot of choice. Select L1 in the Xlist.

Note: Be sure that there are no graphs in the [Y=] button that will graph over your Box Plots!

4. Go to [ZOOM] [Stat] or [ZOOM] 9. Use the [TRACE] button and the arrow keys to view data in the box plots. Use the down arrow key to get to the 2nd Box Plot.

5. Go to [WINDOW] to reset the x-scale or to eliminate viewing the y-axis.
TI-84: Summarizing Data Numerically

1. First enter your data.

Go to: [STAT] "1: Edit". [ENTER].

2. To view the items in the summary, go to: [STAT] "Calc" "1: 1-Var Stats" [ENTER]. Use the arrow keys to scroll down.

3. An explanation of each piece of information is in the chart below.

<table>
<thead>
<tr>
<th>“1-Var Stats”</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\bar{x}$</td>
<td>mean of the list</td>
</tr>
<tr>
<td>$\Sigma x$</td>
<td>sum of the list</td>
</tr>
<tr>
<td>$\Sigma x^2$</td>
<td>sum of the squares of the values in the list</td>
</tr>
<tr>
<td>$sx$</td>
<td>standard deviation if the data is a sample from the population</td>
</tr>
<tr>
<td>$\sigma x$</td>
<td>standard deviation if the data is the whole population</td>
</tr>
<tr>
<td>$n$</td>
<td>number of items of data (sample size)</td>
</tr>
<tr>
<td>$\text{minX}$</td>
<td>minimum in the list</td>
</tr>
<tr>
<td>$Q1$</td>
<td>first quartile (median of the lower half of the data)</td>
</tr>
<tr>
<td>$\text{Med}$</td>
<td>median</td>
</tr>
<tr>
<td>$Q3$</td>
<td>third quartile (median of the upper half of the data)</td>
</tr>
<tr>
<td>$\text{maxX}$</td>
<td>maximum in the list</td>
</tr>
</tbody>
</table>
Bivariate Data
TI-84: Setting Up a Scatter Plot

1. Go to [2nd] "STAT PLOT". Make sure that only Plot1 is ON. Then go to Plot 1 and choose the Scatter Plot Icon in Type.

   Note: Be sure that the lists you will be using are indicated in the Xlist and the Ylist.

2. Go to Y1 and [Clear] any functions.

3. Go to [STAT] [EDIT]. Enter your data in L1 and L2.
4. Then go to [ZOOM] "9: ZoomStat" to see the scatter plot in a "friendly window".

5. Press [TRACE] and the arrow keys to view each data point.
TI-84: Non-Linear Regressions

1. Make sure your Plot 1 is ON. Select the Scatter Plots and the appropriate lists.

   Go to: [2nd] "Stat Plot". [Enter].

2. Clear all functions in [Y=]

3. Input data in L1 and L2.

   Go to [Stat] [Enter] to input data.
4. Graph data points.

Go to: [ZOOM] "9: ZoomStat".

5. Choose a regression from the list in [Stat] "CALC".

Go to: [STAT] "CALC". Use the arrow keys to select the desired regression. [ENTER]. [2nd] L1, [2nd] L2, [VARS] "YVARS" [ENTER] [ENTER] . Then [ENTER] again.

6. Go to [ZOOM] "9: ZoomStat" to view the data with the regression curve.
TI-84: Least Squares Regression Line (LSRL)

1. Enter your data in L1 and L2.
   Note: Be sure that your Stat Plot is on and indicates the Lists you are using.

2. Go to [STAT] "CALC" "8: LinReg(a+bx). This is the LSRL.

3. Enter L1, L2, Y1 at the end of the LSRL.
   [2nd] L1, [2nd] L2, [VARS] "Y-VARS" "Y1" [ENTER]

4. To view, go to [Zoom] "9: ZoomStat".
   Note: View individual data points using the [TRACE] button
1. To view the Correlation Coefficient, turn on "DiaGnosticOn"

[2nd] "Catalog" (above the '0'). Scroll to DiaGnosticOn. Enter] Enter] again. You only need to do this once unless you reset your calculator.

2. Now you will be able to see the 'r' and 'r^2' values.

Note: Go to [STAT] "CALC" "8:" [ENTER] to view.
1. Add the residuals to L3. There are two ways to add the residuals to a list.

1.1. Method 1:

Go to the main screen. [2nd] "list" [ENTER]. Scroll down and select RESID. [Enter]. [STO->] [2nd] "list". Select "3: L3" [ENTER].

1.2. Method 2:

Go to [Stat] "1: Edit". Select L3 with the arrow keys. [Enter] [2nd] "list". Scroll down and select RESID. [Enter] [Enter] again.
2. Turn off "Y1" in your functions list. Click on the = sign. Press [ENTER]. Press [ENTER] again to get it back.

3. Go to Stat Plots to change the lists in Plot1.
Change the Ylist to L3.

4. To view, go to [ZOOM] "9: ZoomStat".
Functions
TI-84: Entering Equations

1. Be sure that all of the Plots are turned off.

Go to: [2nd] [STAT PLOT]. Select "4: PlotsOff". Then press [ENTER]. This will turn off any plots that were on.

2. To clear functions, select them and press [CLEAR].

3. Enter functions in Y1. You can enter numerous functions by using the down arrow. Use the following hints for entering functions.

   • Use [x,t,theta,n] to type the variable "x".
   • Use the above and then the x squared button to type "x squared".
   • Use the caret key for variables with higher powers than "2".
   • Use the (-) at the bottom of the keyboard for a negative sign.
4. Disable a function by selecting the "=" sign and press [ENTER].

Note: To enable a function, select the "=" sign and press [ENTER].

5. To change the "look" of the function, select the symbol in front of the Y=. Then press [Enter] to go through the list of options.

Note: The second function will be bold when drawn.
TI-84: Displaying a Graph

1. Choose from a variety of items in the [ZOOM] menu.

[ZOOM] "6:ZStandard" is a common choice. From there you can zoom in or out.

2. Use [ZOOM] "1: ZBox" to zoom to a particular part of the graph.

Go to: [ZOOM] "1: ZBox". Use the arrow keys to position in the upper left corner of what you want. [ENTER]. Use the arrow keys to go down and to the right to form a box. [ENTER].
1. Press [Trace]. Then use the right and left arrow keys to move along the curve.

Note: The coordinates of the point show at the bottom of the screen.

2. Use the Up or Down arrow keys to switch functions. Then use the Right and Left arrow keys to trace.

3. Alternatively, [2nd] [CALC] provides a menu of items.

Choose "5: intersect". Move the cursor close to the point of intersection. [ENTER]. [ENTER]. [ENTER].
1. Set up your table.

Go to: [2nd] [TBLSET]. Choose your start value and your increment value (âˆ†Tbl). Leave the Indpnt; and Depend: to "Auto" to automatically generate the "x" and "y" values.

2. View the table.

Go to: [2nd] [Table]. Then use the Up and Down arrow keys to go through the list.

3. Add a second function into [Y=]. View both tables side by side.

Go to: [Y=] to input a second function. Go to: [2nd] [TABLE] to view.
4. Change the increment (\(^\uparrow\)Tbl) to get other values in the table.

![Table setup and values]

5. Control your table to the values you want only, change the Indpnt: to "Ask"

Go to: [2nd] [TBLSET]. Use the arrow keys to select "Ask". [ENTER]. Go to: [2nd] [TABLE]. Type in a desired x-value. [ENTER].

![Adjusted table setup and values]
Probability
1. Be sure you "seed" your calculator. This will ensure that the same random numbers do not appear on everyone's calculator. Enter a random number in the calculator such as the student ID number or telephone number. Then press [STO->] [MATH] "PRB" "1:rand".

Note: This step only needs to be completed once unless you reset the calculator! And you will not get the same numbers!

2. Specify the minimum and maximum integers possible, and how many random integers to generate. For example, [MATH] "PRB" "5:randInt(1,10,5)" [ENTER] generates 5 numbers between 1 and 10.

Note: Hit [Enter] to get 5 more random numbers between 1 and 10. Of course, you will not likely get the same random numbers.

3. To simulate flipping a coin, let '0' be heads and '1' be tails. For example, [MATH] "PRB" "5:randInt(0,1,6)" [ENTER] generates 6 numbers between 0 and 1. All of the '0's are Heads. All of the '1's are Tails!

The image below shows 3 heads and 3 tails. Then it shows 4 heads and 2 tails.
4. To simulate rolling dice, go to [MATH] "PRB" "5:randInt(1,6,2)" [ENTER] generates 2 numbers between 1 and 6.

The image below shows rolling a die three times and the results.

```
randInt(1,6,2)  \{3 5\}
randInt(1,6,2)  \{6 13\}
randInt(1,6,2)  \{3 33\}
```

5. You could also generate a lot of numbers and store them in a list. For example, [MATH] "PRB" "5:randInt(1,10,100" [ENTER] generates 100 numbers between 1 and 10. Then [STO->] [2nd] 'L1' will place the numbers in List 1.

```
Ans+L1
\{2 7 4 8 1 2 6 \}
randInt(1,10,10)
\{3 5 7 6 8 1 6 \}
Ans+L2
\{3 9 7 6 8 1 6 \}
```
CBL/CBR
TI-84: Data Logger with CBL/motion Detector or CBR

This tutorial will demonstrate how to use Data Logger on the TI graphing calculators to collect data using a CBL and motion detector.

1. Click on the purple APPS button. Choose the sixth item.
2. The following screen comes up. Press any button.

3. Choose the 2nd item "Data Logger".
4. With the arrow keys, choose the settings you would like.

a. For a motion detector, choose "Sonic". The other menu items appear after you choose "Sonic".

b. Choose the number of data points (Samples) you would like. Use the arrow keys to highlight the number 50. Then you can type the number of samples you want.

c. The Interval is in seconds. You may want to change the .05 to .01 or even smaller.

d. For the Units, choose M for meters and Ft for feet.

e. You want to plot in Real Time.

f. If you want step by step directions, leave the Directions ON.

Go to GO... and hit ENTER.

5. Choose the equipment you have. In this case, choose CBL.
6. Be sure you have your link cords to connect the CBL to the Graphing calculator.

The plug is on top for the Ti-84.

7. Find the "Sonic" plug on the side of the CBL. Plug in the motion detector.

8. Turn the CBL on.

Data should start collecting. You can hear tick tick sounds. The data is stored in the lists under TDist and Dist for x and y. Check out Managing Data Collected From Using a CBL/CBR and Graphing Calculator to work with the data generated.
9. If it doesn't work, check your cords. They need to be housed snuggly.

***LINK ERROR***
PUSH IN THE LINK CORD CONNECTORS FIRMLY THEN PRESS [ENTER].
Large Data Sets
TI-84: Checksums

1. Enter your data in L1.

In this case, the problem said the Checksum was 8,747.

2. To verify if you have the right checksum, go to: [STAT] "CALC" "1: 1-VAR STATS" [ENTER].

Since the sum of the data points was the same as the checksum given in the problem, it is likely that the data was inputted correctly.