

TI-84 Plus CE



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Quick Start

The TI-84 Plus CE is an easy-to-use graphing calculator that provides function graphing and data plotting as well as function and data analysis.

Turning the TI-84 Plus CE Power On and Off

Press **[ON]** to turn the power on; **[2nd] [OFF]** to turn it off.

Note: All settings and memory contents are retained by the Constant Memory™ function.

Using the **[2nd]** Key

The second function of each key is printed above the key in the same color as the **[2nd]** key. Some secondary keys enter a symbol or a function (such as $[\sqrt{\quad}]$, $[\text{SIN}^{-1}]$). Others display menus and editors.

- Press **[2nd] [ANGLE]** to view the **ANGLE** menu.

Using the **[ALPHA]** Key

Many keys also have a third function. These functions are printed above the keys in the same color as the **[ALPHA]** key. The third functions enter alpha characters, special symbols, and access **SOLVE**:

- Press **[ALPHA] [T]** to enter **T**.
- Press **[2nd] [A-LOCK]** to lock the alpha key in the on position and enter several alpha characters.
- Press **[ALPHA] [SOLVE]** to solve equations entered in the **Solver...** command. Solver is found in the **[MATH]** menu.

Battery Information

The TI-84 Plus CE graphing calculator comes equipped with a Li-ion rechargeable battery. Charge the battery for at least four hours to ensure optimum performance.


To maximize battery life, this graphing calculator is shipped in Deep Sleep mode. To wake the handheld from this mode, press **[on]** for at least 4 seconds or apply USB (computer or wall adapter) or TI Charging Station CE power. After waking the handheld, you can turn it on anytime by pressing **[on]**. To maximize battery life during extended storage periods, the Deep Sleep mode is enabled automatically after a period of being in the off state.

Keys and Screen Display

2nd key accesses the functions printed above each key that are the same color as the **2nd** key.

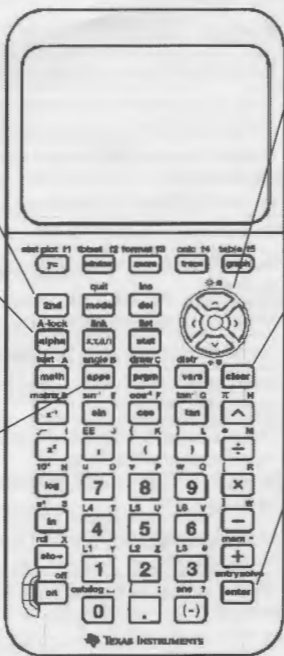
ALPHA key accesses the functions printed above each key that are the same color as the **ALPHA** key.

APPS key displays a menu that lists all installed applications.

 keys let you move the cursor in 4 directions.



CLEAR key clears an entry line or deletes an answer on the Home Screen.

ENTER key evaluates an expression, executes an instruction, or selects a menu item.



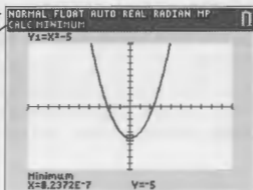
Screen Display

The TI-84 Plus CE screen features a status bar to indicate selected calculator mode settings, a context help line, and a battery charge status indicator.

Note: Pressing **2nd**  or  repeatedly will darken or lighten the screen to various brightness levels.

Mode settings

Context help



Status bar

Battery indicator shows the status of the battery charge.

Using Mode Settings

Mode settings control how numbers and graphs are displayed. Settings are retained when you turn off the calculator.

- Press **MODE** to access the mode setting screen.
- Press \downarrow or \uparrow to move the cursor to the line, press \rightarrow and \leftarrow to move the cursor to the settings you want, and press **ENTER**.

Mode settings with default settings highlighted:

<i>Setting</i>	<i>Result</i>
MATHPRINT CLASSIC	Controls whether inputs/outputs are displayed as they are in textbooks.
NORMAL SCI ENG	Numeric notation.
FLOAT 0123456789	Number of decimal places.
RADIAN DEGREE	Unit of angle measure.
FUNCTION PARAMETRIC POLAR SEQ	Type of graphing.
THICK DOT-THICK THIN DOT-THIN	Resets all Y= line styles.
SEQUENTIAL SIMUL	Graphs draw in sequence or simultaneously.
REAL $a+bi$ $re^{i\theta}$	Real, rectangular complex, or polar complex.
FULL HORIZONTAL GRAPH-TABLE	Sets full screen or horizontal or vertical split-screen modes.
FRACTION TYPE: n/d Un/d	Display as a simple fraction/mixed number.
ANSWERS: AUTO DEC	Displays answers in similar format to input, a decimal, or fraction (as supported).
STAT DIAGNOSTICS: OFF ON	Determines which information is displayed in a statistical regression calculation (r , r^2 , R^2).
STAT WIZARDS: ON OFF	Displays a syntax entry screen (wizard) for STAT CALC, DISTR DISTR, DISTR DRAW, seq(in LIST OPS and selected rand functions when ON.
SET CLOCK 04/03/14 03:51	Sets the calculator clock.
LANGUAGE	Select the language setting. Press \downarrow or \uparrow to move off the spinner to set the new language.

Using the Home Screen

The Home Screen is the primary screen of the TI-84 Plus CE. You can enter instructions and evaluate expressions from this screen (where the answers are also displayed). Return to the Home Screen from any other screen, by pressing $\boxed{2\text{nd}} \boxed{\text{QUIT}}$.

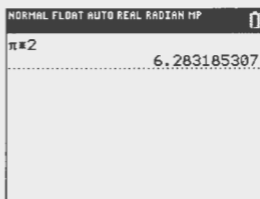


Entering an Expression

An expression on your TI-84 Plus CE consists of numbers, operators, variables, and functions. You can type an expression using the keypad and then evaluate it to a single answer.

1. Press $\boxed{2\text{nd}} \boxed{\pi} \boxed{\times} \boxed{2}$.
2. Press $\boxed{\text{ENTER}}$ to see the answer.

Note: You can change any expression on your screen by using the backspace $\boxed{\leftarrow}$ key, the delete $\boxed{\text{DEL}}$ key, or the insert $\boxed{2\text{nd}} \boxed{\text{INS}}$ keys.



Storing a Value

Your graphing calculator allows you to store numerical values. You can recall them from memory using variable names.

1. Press $\boxed{25} \boxed{\text{STO}\rightarrow} \boxed{\text{ALPHA}} \boxed{\text{A}}$.
2. Press $\boxed{\text{ENTER}}$.
3. Press $\boxed{2} \boxed{\times} \boxed{\text{ALPHA}} \boxed{\text{A}}$.
4. Press $\boxed{\text{ENTER}}$.



Using Menus and Using the CATALOG

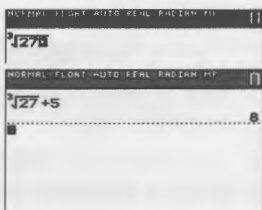
You can access many functions and instructions on the Home Screen by selecting from a menu. To select an item:

- Press the number/letter shown to the left of the menu.
- or -
- Use the cursor arrows keys \downarrow or \uparrow to highlight a menu item and press $\boxed{\text{ENTER}}$.

Some menus close automatically. You can also press $\boxed{2\text{nd}} \boxed{\text{QUIT}}$ to exit.

The following example shows how to select from a $\boxed{\text{MATH}}$ menu:

1. Press $\boxed{\text{math}}$.
2. Press 4 or $\downarrow \downarrow \downarrow \boxed{\text{enter}}$.
3. Press 2 7.
4. Press \rightarrow to move outside the MathPrint template.
5. Press $\boxed{+} \boxed{5} \boxed{\text{enter}}$.

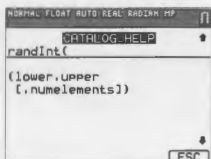
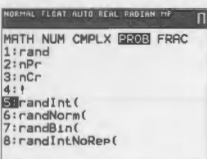


Using the CATALOG

CATALOG is an alphabetic list of all functions and instructions. Some of these items are also available on keys and menus. To insert an item:

1. Position the cursor where you want to insert the item.
2. Press $\boxed{2\text{nd}} \boxed{\text{CATALOG}}$.
3. Press \downarrow or \uparrow to move the \blacktriangleright indicator to the function or instruction.
4. Press $\boxed{\text{ENTER}}$. Your selection is pasted on the Home Screen.

Note: Use Catalog Help for more syntax help when needed. Select a menu item and press $\boxed{+}$. The built-in TI-84 Premium CE Catalog Help syntax editor provides the same functionality as the TI-84 Plus Catalog Help App.



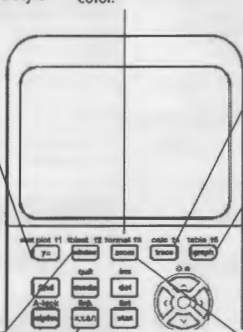
Graphing Keys and Backgrounds

[Y=] Displays the Y= Editor, where you can enter one or more functions or expressions to graph and change the graph color and line style.

[2nd] [FORMAT] Lets you change the graph format settings, the grid and axes color, and the background image and color.

[TRACE] Lets you move the cursor along the graphed function using **[←]** and **[→]**.

[GRAPH] Displays the graph you have defined.



[WINDOW] Lets you set the viewing window to produce the best display of your graph.

[X, T, Θ, n] Lets you enter one of the four variables depending upon the mode setting:
X (in Function mode)
T (in Parametric mode)
θ (in Polar mode)
n (in sequence mode)

[ZOOM] Lets you quickly adjust the window to a pre-defined setting.

Background Images

Pressing **[2nd] [FORMAT]** lets you change the graph format settings, including the Background. Various COLORS and Image Vars can be set as shown below. Background Image Vars can be created and loaded to the TI-84 Plus CE using free TI Connect™ CE software. Function colors and line styles are set in the **[Y=]** editor.



Graph with background image.

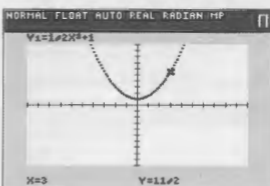
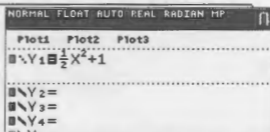
Graphing a Function

Use the $Y=$ editor to enter a function and display the graph (press CLEAR to clear a line if it is not empty).

To change the Y1 color and line style to Magenta/Dot-Thick:

1. Press $Y=$ to select Y1.
2. Press $\leftarrow \leftarrow \text{ENTER}$ to open the spinner and $\rightarrow \rightarrow \rightarrow \downarrow \leftarrow \leftarrow \leftarrow \text{ENTER}$ ENTER .
3. Press $\rightarrow \rightarrow 1 \text{ ALPHA } [F1] \text{ ENTER } 2 \rightarrow [X, T, \theta, n] x^2 + 1$.
4. Press \rightarrow to GRAPH .
5. Press TRACE and use the arrow key to trace along the curve.
6. Press 2nd $[\text{QUIT}]$ to leave the screen.

Note: Default settings are $-10 < x < 10$ and $-10 < y < 10$.

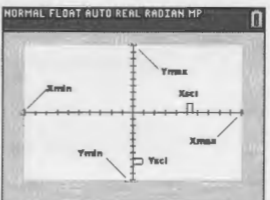
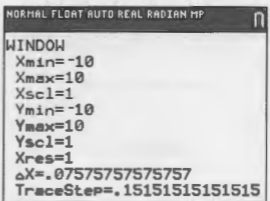


Setting the Graphing Window

To obtain the best view of the graph, you may need to change the boundaries of the window.

1. Open the editor by pressing WINDOW .
2. Move the cursor to highlight the value you want to change.
3. Type a value or an expression. Press CLEAR to clear the old value.
4. Press 2nd $[\text{QUIT}]$ to leave the screen.

Note: X_{\min} , X_{\max} , Y_{\min} , Y_{\max} , X_{scl} , and Y_{scl} represent the X and Y maximums and minimums and the X and Y scales.



Using Zoom

The TI-84 Plus CE has pre-defined window settings that let you quickly adjust the graph window to a pre-determined level of magnification and scale. To display this menu, press the **ZOOM** key:

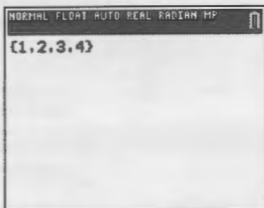
- | | |
|---------------|---|
| 1: ZBox | Lets you draw a box (using the cursor pad) to define the viewing window. |
| 2: Zoom In | After you position the cursor and press ENTER , magnifies the graph around the cursor. |
| 3: Zoom Out | After you position the cursor and press ENTER , displays more of the graph. |
| 4: ZDecimal | Sets the change in X and Y to increments of 0.1 when you use TRACE . |
| 5: ZSquare | Adjusts [Xmin, Xmax] for the set [Ymin, Ymax] to square aspect ratio. |
| 6: ZStandard | Sets the standard (default) window variables. |
| 7: ZTrig | Sets the built-in trigonometry window variables. |
| 8: ZInteger | After you position the cursor and press ENTER , X and Y trace on integer values. |
| 9: ZoomStat | Sets the values for currently defined statistical lists. |
| 0: ZoomFit | Adjusts [Ymin, Ymax] to view an entire graph in the [Xmin, Xmax] setting. |
| A: ZQuadrant1 | Only displays Quadrant 1. |
| B:-G: ZFrac | Sets the graphing window to support tracing on fraction values, where possible. |

Entering Data into Lists

You can enter data into lists using the $\boxed{\text{STO}}\blacktriangleright$ key or the statistical list editor.

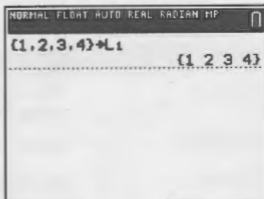
Creating L1 using the $\boxed{\text{STO}}\blacktriangleright$ key

1. Press $\boxed{2\text{nd}}\ \boxed{[]}\ \boxed{1}\ \boxed{,}\ \boxed{2}\ \boxed{,}\ \boxed{3}\ \boxed{,}\ \boxed{4}\ \boxed{2\text{nd}}\ \boxed{[]}$.



2. Press $\boxed{\text{STO}}\blacktriangleright\ \boxed{2\text{nd}}\ \boxed{[L1]}\ \boxed{\text{ENTER}}$ to store data.

Note: To enter a fraction, enter the numerator, $\boxed{\text{ALPHA}}\ \boxed{[F1]}\ \boxed{\text{ENTER}}$, and then the denominator.



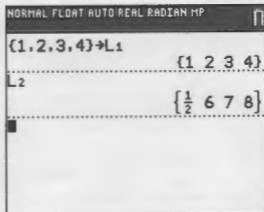
Creating L2 using the statistical list editor

1. Press $\boxed{\text{STAT}}\ \boxed{\text{ENTER}}\ \blacktriangleright$.
2. Press $\boxed{1}\ \boxed{\text{ALPHA}}\ \boxed{[F1]}\ \boxed{\text{ENTER}}\ \boxed{2}\ \boxed{\text{ENTER}}\ \boxed{6}\ \boxed{\text{ENTER}}\ \boxed{7}\ \boxed{\text{ENTER}}\ \boxed{8}\ \boxed{\text{ENTER}}$.

L1	L2	L3	L4	L5	2
1	$\frac{1}{2}$	-----	-----	-----	
2	6				
3	7				
4	8				

L2(5)=

3. Press $\boxed{2\text{nd}}\ \boxed{[\text{QUIT}]} \ \boxed{2\text{nd}}\ \boxed{[L2]}\ \boxed{\text{ENTER}}$.



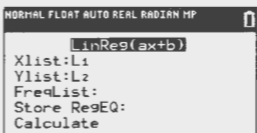
Statistics and Regression

Calculating a linear regression

1. Enter L1 and L2 as given in the "Entering Data into Lists" section.

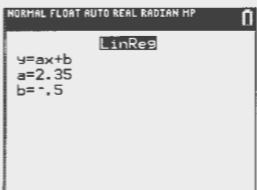
2. Press **STAT** **▶** **▼** **▼** **▼**.

3. Press **ENTER**.



4. Press **▼** **▼** **▼** **▼** **ENTER**.

(Press **CLEAR** to return to the home screen.)



Calculating statistical variables

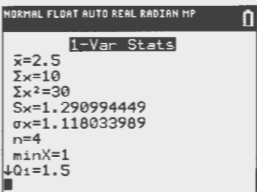
Calculate one- or two-variable statistics from list data.

One-variable statistic example:

1. Press **STAT** **▶** **ENTER**.



2. Press **2nd** **[L1]** **▼** **▼** **ENTER**.



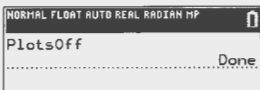
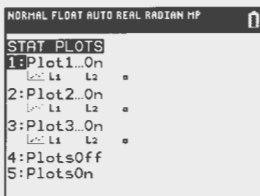
Plotting Data

When statistical data is stored in lists, you can display the data you have collected in a scatter plot, xyLine, histogram, box plot, or normal probability plot.

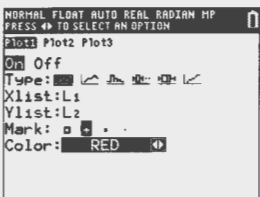
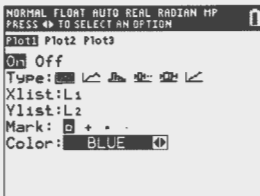
Selecting the lists you want to plot

1. Enter L1 and L2 as given in the "Entering Data into Lists" section.
2. To view the plots status, press $\boxed{2\text{nd}} \boxed{\text{STAT PLOT}}$. Press $\boxed{4} \boxed{\text{ENTER}}$ to turn off plots.

Note: $\boxed{2\text{nd}} \boxed{\text{STAT PLOT}} \boxed{5} \boxed{\text{ENTER}}$ turns all plots on.



3. To turn **Plot1** on, press $\boxed{2\text{nd}} \boxed{\text{STAT PLOT}} \boxed{\text{ENTER}} \boxed{\text{ENTER}}$.
4. To enter L1 as the X list, press $\boxed{\downarrow} \boxed{\downarrow} \boxed{2\text{nd}} \boxed{[L1]} \boxed{\text{ENTER}}$.
5. To enter L2 as the Y list, press $\boxed{2\text{nd}} \boxed{[L2]} \boxed{\text{ENTER}}$.
6. To select + as the plotting mark, press $\boxed{\rightarrow}$ $\boxed{\text{ENTER}}$.
7. To choose a different color, press $\boxed{\downarrow}$ and $\boxed{\leftarrow}$ or $\boxed{\rightarrow}$ until the preferred color is displayed.



Displaying plot and trace

Press $\boxed{\text{ZOOM}} \boxed{9} \boxed{\text{TRACE}}$ to display a scatter plot.
Press $\boxed{2\text{nd}} \boxed{[\text{QUIT}]}$ to return to the Home screen.

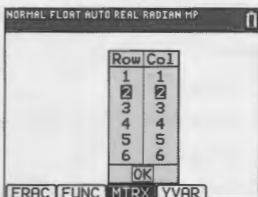
Creating a Matrix on the Home Screen

Use the matrix to enter values for equations.

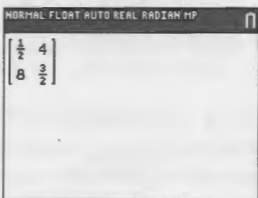
Creating a matrix

$$\begin{pmatrix} \frac{1}{2} & 4 \\ 8 & \frac{3}{2} \end{pmatrix} + \begin{pmatrix} \frac{7}{2} & 6 \\ 3 & \frac{7}{2} \end{pmatrix}$$

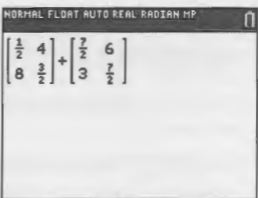
1. Press **ALPHA** **[F3]** **ENTER**.



2. Press **1** **ALPHA** **[F1]** **ENTER**
2 **▶▶** **4** **▶** **8** **▶** **3**
ALPHA **[F1]** **ENTER** **2** **▶▶**.

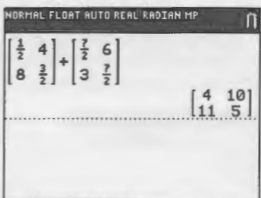


3. Press **+** **ALPHA** **[F3]**
ENTER.



4. Press **7** **ALPHA** **[F1]** **ENTER**
2 **▶▶** **6** **▶** **3** **▶** **7**
ALPHA **[F1]** **ENTER** **2**.

5. Press **ENTER**.



Grouping Files and Resetting Defaults

Grouping files

1. Press **[2nd] [MEM] 8 1** to select **Create New** on the **GROUP UNGROUP** screen.
2. Type a group name and press **[ENTER]**.
3. Navigate to the RAM files you want to group and select each file by moving the cursor to the file and pressing **[ENTER]**.
4. Press **[▶] 1** to select **Done**.

Note: Pic and Image Vars are only stored in Archive memory (not in RAM).

Ungrouping files

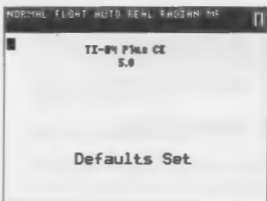
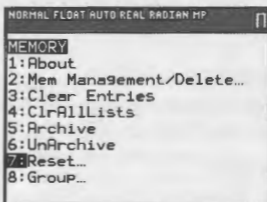
1. Press **[2nd] [MEM] 8 [▶]** to select **UNGROUP**.
2. Move the cursor to the group name that you want to ungroup and press **[ENTER]**.
3. Press **3** to select **Overwrite All**.

Note: Group files are only stored in Archive memory (not in RAM).

Resetting Defaults

If your calculator gives you unexpected results or your settings have changed, you can reset defaults on your TI-84 Plus C. Your language setting will be retained.

1. Press **[2nd] [MEM]**.
2. Press **7**.
3. Press **2**.
4. Press **2**.



Installing Apps and Transferring OS

Installing Applications

With free TI Connect™ CE software and a USB Computer Cable (included with your TI-84 Plus CE), you can link your graphing calculator to a personal computer and download free applications.

For more information and to download guidebooks, TI Connect™ CE software, applications, and OS updates, go to: <http://education.ti.com/go/download>

Running applications

Once you have downloaded an application, press the **[APPS]** key to run the applications on your TI-84 Plus CE graphing calculator.

Transferring the OS from Calculator to Calculator

You can transfer the OS from one TI-84 Plus CE graphing calculator to another, using a USB unit-to-unit cable.

Note: The TI-84 Plus CE calculator will not transfer the OS to other TI-84 Plus Family calculators.

Connect the two calculators by firmly inserting the USB cable ends into the calculators. The USB port is located on the right side of the calculator.

Transfer the OS as follows:

1. **On the receiving unit**

Press **[2nd]** **[LINK]** **[▶]** **[ENTER]**.

2. **On the sending unit**

Press **[2nd]** **[LINK]** **[▲]** **[▲]** **[ENTER]**.

Note: Although the TI-84 Plus CE, TI-84 Plus C, and TI-84 Plus family of graphing calculators share most files, some files will not share.

Quick Reference

Key	Action
ENTER	Executes an instruction and/or an expression.
CLEAR	Clears the current line. (If the cursor is on a blank line, clears everything on the Home Screen.)
2nd	Changes the cursor to I ; the next keystroke performs a 2nd operation. To cancel 2nd , press 2nd again.
← or →	Moves the cursor around within an expression.
2nd and ← or →	Moves the cursor to the beginning or end of an expression.
↓ ↑	Moves the cursor from line to line.
DEL	Deletes the character under the cursor.
2nd [INS]	Inserts additional characters at the cursor. Press the keys again to end the insertion.
ALPHA [A-LOCK]	Changes the cursor to I ; sets the alpha-lock; subsequent keystrokes paste alpha characters. To cancel ALPHA , press ALPHA again or press an arrow key.
ALPHA	Changes the cursor to I ; the next keystroke pastes an alpha character.
ALPHA ↑ or ALPHA ↓	Pages up or down to the next screen (on menus).
ALPHA [F1] – [F4]	Displays the shortcut menus, FRAC , FUNC , MTRX , and YVARS .
ALPHA [F1]	Pastes the MathPrint Fraction template.
ENTER	
2nd [ENTRY]	Places your last entry on the current entry line on the Home Screen.
2nd [ANS]	Places Ans (a reference to your last answer) on the current entry line on the Home Screen, allowing you to use the answer in the next calculation.
X, T, θ, n	Pastes an X in FUNCTION mode, a T in PARAMETRIC mode, a θ in POLAR mode, or an n in SEQ mode with one keystroke.
2nd [FORMAT]	Opens the Graph Format screen to select the axes color, grid format and color, background image or color, display axes labels, coordinate formats, and expressions.