TI-84 Plus CE
Science Tools App

Learn more about TI Technology through the online help at education.ti.com/eguide.

Important Information

For more information, view the expanded Apps Guidebook at *education.ti.com/go/download*.
Choose **Applications** as your technology and then select:
Guidebook for TI-83 Plus/TI-84 Plus.
Note: The expanded guidebooks contain comprehensive information, but some content may refer to older versions of the App.

The TI-83 Plus/TI-84 Plus App guidebooks contain:

- Getting started activities
- Comprehensive feature information
- Step-by-step functional details

Note: Some functionality may differ on the CE graphing calculators.

Contents

Using Science Tools App

Science Tools App allows you to perform unit conversions on your calculator. App elements include:

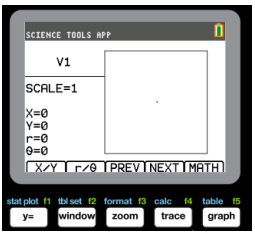
- Significant Figures Calculator
- Constants and Conversions

  Note: The values of constants in the Unit Converter tool are the latest values recommended by the Committee on Data for Science and Technology (CODATA) and the National Institute of Standards and Technology (NIST). For more information, check the NIST web site at http://physics.nist.gov/.

- Data and Graph Wizard
- Vector Calculator

Example Activity – Science Tool

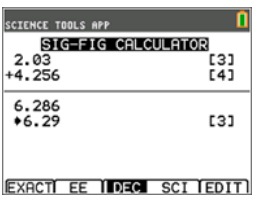
Tip: Options display at the bottom of the screen to help you navigate and perform specific tasks.
To select one of these options, press the graphing key directly below it.
For example, to select **[X,Y]**, press [f(x)].



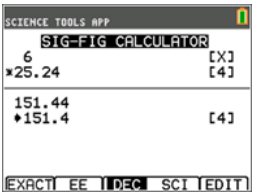
Exploring the Significant Figures Calculator

1. To begin:
   a) Press [apps].
   b) Use the [◀] [▶] [▲] [▼] keys to highlight and choose SciTools.
   c) Press [enter].
   d) Press any key to enter the Science Tools App.

2. Choose **1:SIG-FIG CALCULATOR**.
3. Key in **2.03 + 4.256** and press [enter].
   Notice how the environment takes into account the number of significant digits when performing computations.

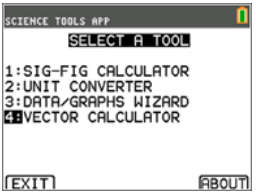


4. Press [enter] to clear the screen.
5. Key in 6.0 and press **[EXACT]** ([y=]).
   Note: This marks 6.0 as an exact value and will not affect the number of significant figures in the final result.
6. Press [×] and input **25.24**.
7. Press [enter].



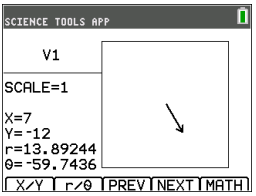
Exploring the Vector Calculator

1. To begin:
   a) Press [apps].
   b) Use the [◀] [▶] [▲] [▼] keys to highlight and choose SciTools.
   c) Press [enter].
   d) Press any key to enter the Science Tools App.
2. Choose **4:Vector CALCULATOR**.

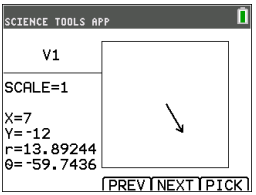


To draw a vector graphically:

a) Press **[X/Y]** ([y=]) to input a vector's coordinates.
b) Key in **7** for the X-value.
c) Key in **-12** for the Y-value.
d) Press [graph].
   Note: The App computes "r" and "θ" values .



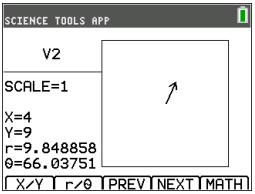
3. Press **[MATH]** ([graph]).
4. Choose **V1** (the first vector) by pressing the **[PICK]** ([graph]) button.
5. Choose **[+]** ([y=]) and then press **[NEXT]** ([trace])to find the second vector. Once found, press **[PICK]**. Notice how the resultant vector is computed and drawn.



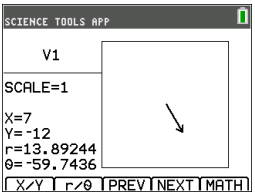
Exploring the Vector Calculator

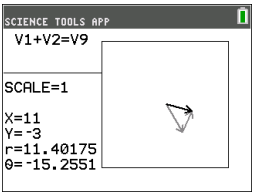
1. Continuing from the previous example, press [2nd] [quit] to return to the SELECT A TOOL screen.
2. Choose **4:VECTOR CALCULATOR**.
3. **Draw 2 Vectors:**

   a) Press **[X/Y]** to input V1 coordinates.
   b) Enter **7** for the X-value and press [enter].
   c) Enter **-12** for the Y-value and press [enter].
   d) Press **[VIEW]**.
      Note: The App computes "r" and "θ" values .
   e) Press **[NEXT]** to enter V2 coordinates.
   f) Press **[X/Y]**.
   g) Enter **4** for the X-value and press [enter].
   h) Enter **9** for the Y-value and press [enter].



4. **Vector Calculations:**
   a) Press **[MATH]**.
      Note: This is the **[MATH]** shortcut key at the bottom of the screen and not the [math] key on the graphing calculator. In this case, press the [graph] key to get **[MATH]**.
   b) Choose **V1** (the first vector) by selecting **[PICK]**.
   c) Choose **[+]** and then press **[NEXT]** to find the second vector.
   d) Once found, press **[PICK]**.
      Notice how the resultant vector is computed and drawn.





Menus and Functions

- Use [2nd] [quit] to return to the Main Menu from the science tools.

Menus	Functions
Main Menu	
1: Sig-Fig Calculator	Display the significant digits and figures calculator tool.

Menus	Functions
2: Unit Converter	Display the unit converter tool.
3: Data/Graphs Wizard	Display the data/graphs wizard.
4: Vector Calculator	Display the vector calculator.
Exit	Exit the application.
About	App version number information.
Sig-Fig Calculator Menu	
Exact	Set a value as “exact” so that it will not be subject to rounding.
EE	Enter a value in scientific notation.
Dec / Sci	Specify whether results are displayed in decimal notation (DEC) or scientific notation (SCI).
Edit	Edit the previous calculation.
Unit Converter Menu	
Constant	Displays the **CONSTANTS** menu.
Convert	Returns to the **UNIT CONVERTER** menu.
Expt	Pastes (exports) the constant to the home screen. You must exit the application to view the home screen.
Edit	Copies the constant to a conversion screen. If the constant corresponds to a conversion category, the category is automatically selected. If it does not correspond to a conversion category, the **UNIT CONVERTER** menu is displayed. After you select a conversion category, the constant is pasted into the conversion screen.
Copy	Display the **UNIT CONVERTER** menu. After you select another conversion category, the converted value is pasted into the conversions screens.
Edit	Allows you to edit the converted value.
Data/Graphs Wizard Menu	
Data	Enter or edit data in lists
Plot	Plot data.
Stat	Analyse data.
Vector Calculator Menu	

Menus	Functions
X/Y	Enter x and y coordinates for the head of the vector.
r/θ	Enter r and θ coordinates for the head of the vector.
Prev	Display the previous screen.
Next	Display the next vector screen.
Math	Display the vector maths operators at the bottom of the screen (+, -, •, x) .
View	Display all of the values for the vector (x, y, r and θ) .
Pick	Select the current vector for a vector maths operation.

Error Messages

Error Message	Description
Arithmetic Error	This is a general error caused by a limitation error (such as an overflow error when a result is ≥ 1E100) or a mathematical error (such as divide-by-zero).
Err: Memory	This error occurs when the graphing calculator does not have enough free RAM to perform the operation. Also, if the unit has less than XXXX bytes, the application will not start.
Fit Error	This error occurs when a regression fit cannot be performed on a scatterplot or xyline plot, because the data in the lists is not compatible with that type of regression. The error also occurs if you press on to break (stop) a regression fit calculation in progress.
Input Error	This error occurs when an invalid entry is entered into an editor field. For example, an error occurs if you enter 1..2 instead of 1.2.
Stat Error	This error occurs if you select STAT to perform a one-variable statistical calculation on a list containing data that is incompatible with one-variable analysis.

General Information

Online Help

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Contact TI Support

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Service and Warranty Information

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Select your country for information about the length and terms of the warranty or about product service.

Limited Warranty. This warranty does not affect your statutory rights.