

Science Tools

CATEGORY

Reference, Tool

DESCRIPTION

Science Tools APP enhances the flexibility of the TI calculator, especially for the science classroom.



DIDACTICAL SUGGESTIONS

The student can do unit conversions, as well as use the graphing and vector tool, handle constants and conversions and deal with significant figures easily. Science Tools APP as a tool as well as a reference can be used as a technological learning environment by dealing with science tasks in the classroom.

Science Tools consists of four tools:

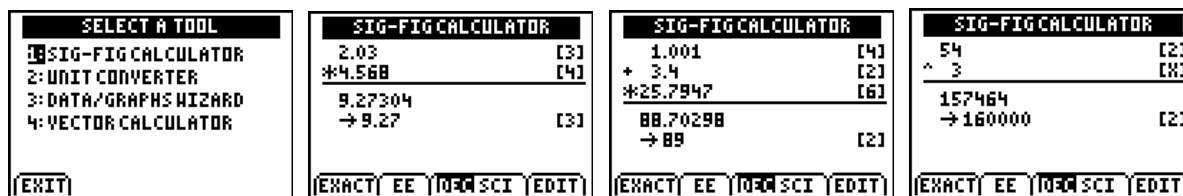
- the Sig-Fig Calculator,
- the unit Converter,
- the Data/Graphs Wizard,
- the Vector Calculator.

a. The SIG-FIG CALCULATOR

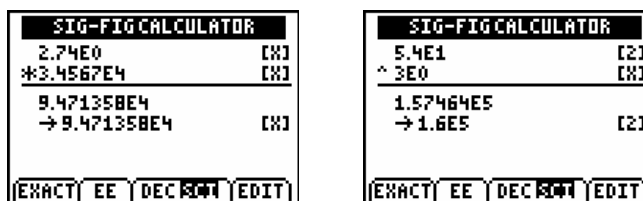
The results of this calculator tool are rounded to the correct number of significant figures.

Any combination of addition, subtraction, multiplication, division and raising a value to a power can be used. Multiplication and division are performed first if no parentheses are used.

If a value is set as EXACT, it will not be subject to rounding.



If you have to calculate 2.74×34567 in scientific notation, you have to select SCI.



A conventional calculator doesn't consider precision. It shows results with the maximum number of digits that it can display. The calculated results should be rounded to the correct number of significant figures. The Sig-Fig Calculator tool automatically applies the common rounding rules.

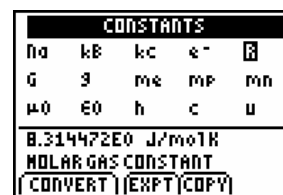
b. The UNIT CONVERTER

The conversions are displayed at the bottom the screen. If EXPT is selected, the result will be pasted (exported) to the home screen.



The CONSTANT screen displays the following options:

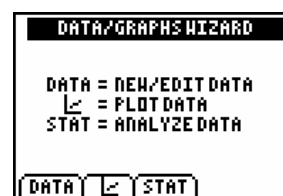
CONVERT returns to the UNIT CONVERTER menu
 EXPT pastes the constant to the home screen
 EDIT copies the constant to a conversion screen



c. The DATA/GRAPH WIZARD

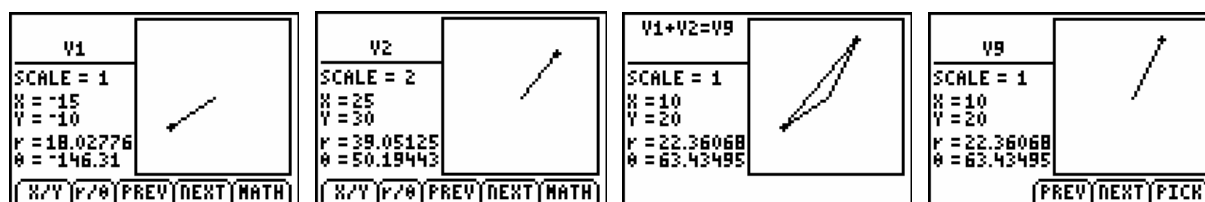
This wizard provides an easy way to perform basic, common tasks associated with:

- Entering, viewing or editing data,
- Viewing and analyzing data graphically,
- Finding a best fit function for the data,
- Performing basic statistical analysis of the data.



d. The VECTOR CALCULATOR

The vector calculator allows the user to construct vectors and perform basic vector operations. Vectors are graphically displayed on the screen and stored to V1 through V9. After creating vectors the following vector operations can be performed: addition, subtraction, scalar multiplication (dot product) or vector multiplication (cross product).



POINT OF VIEW

If students want to get used to this diverse application they have to deal intensively with it. It provides a lot of possibilities and calculations, and students have to invest a big amount of time to learn about the right use of the software.

Only with the use of the Sig-Fig Calculator tool the students can display the significant figures of entered values, perform mathematical operations using either decimal or scientific notation and display the results with the correct number of significant figures or convert entries in decimal notation to scientific notation and vice versa. And the Sig-Fig Calculator tool is only one out of the four different tools of the Science Tools APP. Unfortunately this useful and powerful software isn't very widely used, because of the time necessary to get used to the full scale of the tool.