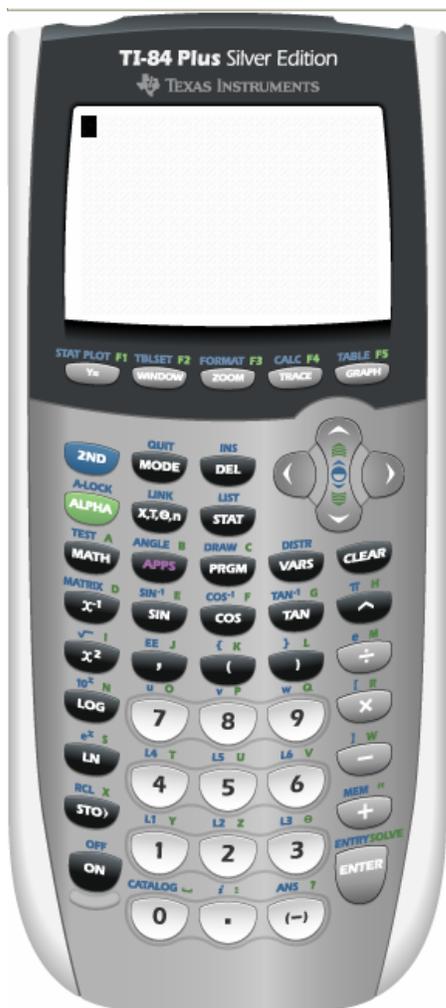


Introduction to the TI-84 Plus Graphing Calculator



Welcome to your new calculator. This is a picture of the TI-84 Plus calculator.

If you are using a TI-83 Plus, the calculator looks a little bit different, but the buttons are in the exact same place.

If you are using a TI-83 (not Plus) calculator, you do not have an APPS button, MATRX is in a different place, and you can see the Finance option. However, all other buttons are the same place.

Turn on, off, and set contrast:

To turn the calculator on, press **ON** in the lower left-hand corner of the calculator.

In order to see the numbers clearly, you want the print dark and the background light. You can darken

things by pressing **2nd** (near the upper left-hand corner) then **▲** (near the upper right-hand corner). In order to see a difference, you will

probably need to press **2nd** then **▲** several times. To lighten the print or background, press **2nd** then **▼** repeatedly.

To turn the calculator off, press **2nd** then **ON**.

The **2nd** and **ALPHA** keys

Notice that there are words above most keys. These are color coded to match the **2nd** and **ALPHA** keys. For instance, if you want to turn the calculator off, press **2nd** then **ON** because the word “Off” is written above the **ON** key in the same color as the **2nd** key.

Fractions

The fraction bar is another way of writing a division symbol. To evaluate $\frac{6}{8}$ in your calculator, press $\boxed{6}$ $\boxed{\div}$ $\boxed{8}$, then press $\boxed{\text{ENTER}}$. You should get .75. If you want the answer displayed as a simplified fraction instead of a decimal, press $\boxed{\text{MATH}}$, press $\boxed{1}$ (because one is the number beside the word FRAC), then press $\boxed{\text{ENTER}}$. You have just told the calculator to convert the answer that is in your calculator (the .75) into a simplified fraction, so the answer in your calculator should be $\frac{3}{4}$.

Evaluate $\frac{11+3}{6+3}$ in your calculator.

If your answer was 1.555555556, you entered the fraction correctly. (If your calculator displays fewer digits or has an “E” in the answer, please read the TROUBLESHOOTING help page).

If your answer was 14.5, you did not use parentheses correctly.

Every fraction contains parentheses that are understood but not written. The entire numerator of the fraction should be grouped in one set of parentheses, and the entire denominator should be grouped into another set of parentheses. This tells the calculator that you want to evaluate the numerator, evaluate the denominator, and then divide those

answers. To evaluate this fraction, press $\boxed{(}$ $\boxed{1}$ $\boxed{1}$ $\boxed{+}$ $\boxed{3}$ $\boxed{)}$ $\boxed{\div}$
 $\boxed{(}$ $\boxed{6}$ $\boxed{+}$ $\boxed{3}$ $\boxed{)}$ $\boxed{\text{ENTER}}$.

If you want to display the answer in fraction form, press $\boxed{\text{MATH}}$ $\boxed{1}$ (for FRAC) $\boxed{\text{ENTER}}$.

The calculator should display $\frac{14}{9}$. Notice that the calculator does not convert the simplified fraction into a mixed numeral. You will have to do that conversion by hand.

If you evaluate $\frac{11+3}{6+3}$ by hand, you will notice that you will never get the 6 that your calculator displayed at the end of 1.555555556. This is because the fives repeat forever (written as $1.\overline{5}$). Your calculator can not continue to display fives forever, so it rounds the final answer.

Negative Numbers

To enter -7 into your calculator, press $\boxed{(-)}$ $\boxed{7}$.

Your calculator knows the difference between a negative $\boxed{(-)}$ and a minus $\boxed{-}$. A negative (found under the 3 key) is used in front of a number to say that you want the opposite of 7. A minus (found to the right of the 6 key) is used between two numbers to subtract them.

Absolute Value

To evaluate $|-7|$, press **MATH**, **)** (to highlight NUM), **1** (for ABS), **(-)** **7** **)** (to close off the parentheses that the calculator started after Abs), and then press **ENTER** to get the answer 7.

Order of Operations

Your calculator has been programmed to follow the order of operations. To evaluate $-10 - 8 \div 2$, you need to evaluate the division before you subtract. Your calculator already knows this, so you can just press **(-)** **1** **0** **-** **8** **÷** **2** **ENTER** to get the answer of -14 .

Exponents

To tell the calculator that the next number is an exponent, press the **^** key under the clear button (not the up arrow).

To evaluate 15^3 , you would press **1** **5** **^** **3** **ENTER** and get the answer 3375.

We square numbers so often that the calculator has the special key **x²** that you can use instead of **^** **2**. To evaluate 5^2 , you can press **5** **^** **2** **ENTER** or **5** **x²** **ENTER** to get the answer 25. If you want to raise a negative number to a power, make sure that you enter the number in parentheses so that the calculator knows that the entire number (including the negative) should be raised to the power. To evaluate $(-3)^2$, you could press **(** **(-)** **3** **)** **^** **2** **ENTER** to get the answer 9.

Square Root

To evaluate $\sqrt{64}$, press **2nd** **x²** (because the $\sqrt{\quad}$ symbol is above the x^2 key), **6** **4** **)** **ENTER**.

Other Roots

To evaluate $\sqrt[6]{64}$, you can either press **6** **4** **^** **(** **1** **÷** **6** **)** **ENTER** (because a 6th root is the same as a $\frac{1}{6}$ th power) or **6** **MATH** **5** (for \sqrt{x}) **(** **6** **4** **)** **ENTER** to get the answer of 2.

ANS

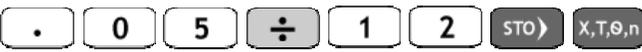
Your answers will be more exact if you use the entire answer that the calculator supplies rather than rounding the answer further.

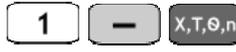
Let's say you wanted to calculate $\frac{.05}{12}$ then subtract that answer from 1. You would press

 to get the answer .0041666667. Then you would press  (because the word ANS is written above the negative key) . This will subtract the most recent answer in your calculator from 1 and result in the answer .9958333333.

STO

There are times when you will want to use the same answer in multiple future

calculations. You can store this answer using the  key. Let's rework the previous problem using this method. Press   to evaluate $\frac{.05}{12}$ and store the answer in "X". This answer will stay there until you

replace it, graph, or use the table. To complete the problem, press   to get .9958333333.

2nd ENTRY

If you entered a long problem into the calculator and made a mistake or if you have two problems that are very similar, you might want to use the 2nd ENTRY feature.

Let's calculate $7 - \frac{4}{5}$. You would press  to get the answer 6.2.

Now, if you want to calculate $7 + \frac{4}{5}$, you can press  to show your previous calculation on the screen. Then you can use the arrow keys to move to the minus and replace it with a plus then press  to evaluate the expression. That means you will press  to get the answer 7.8. You can use the  key to delete any symbols that you do not need in this calculation. You can press   to insert characters that you need to add.