

1-Variable Statistics on Your Calculator (Revised 2010)

ENTER THE DATA.

- **TI-84 (also TI-83, TI-84, TI-86, and similar models with “+” in their names)**
 1. Enter “STAT” mode.
 2. Select “EDIT”. You should see columns of lists, called either “L1”, “L2”, etc. or “xStat”, “yStat”, and “fStat”.
 3. Type the numbers you want in “L1” or “xStat”. If you are using a TI-86, type “1” beside each of the numbers in the “fStat” column. (Make sure you have the same number of “1’s” as there are numbers.)
 3. When you’re done, hit EXIT or QUIT to get back to the main screen.
- **Cheap Scientific Calculator**
 1. Enter “STATS” or “SD” mode.
 2. Type each number, followed by the data entry key (Data entry may be M+, DT, or Σ .)
- **TI-81 and TI-85**
 1. Enter “STAT” mode.
 4. Select “EDIT”. You should see a screen with choices like X1 and Y1, asking you to enter numbers.
 3. Type the numbers you want as the “X”s (X1, X2, X3, etc.), and make sure “1” appears for each “Y”. (The x’s are the numbers, and the y’s are the frequency of each number.)
 4. When you’re done, hit EXIT or QUIT to get back to the main screen.
- **Casio 9850GC**
 1. Enter “STAT” mode (Choice #2).
 2. Enter your data in “List1”. Hit EXE after each number.
- **Excel Spreadsheet**
 1. Open a blank spreadsheet. (Press “Ctrl-O” if nothing is open.)
 2. Type your numbers in column “A”. Just hit ENTER after each number.

CALCULATE STATISTICS.

- **All TI Graphing Calculators**
 1. Enter “STAT” mode.
 2. Select “CALC”.
 3. Select “One Variable Statistics” (which could be abbreviated in numerous ways), and then hit ENTER.
 4. A variety of statistics will appear on the screen, depending on which calculator you’re using. They all give the ones you need to know.
 \bar{x} is the mean, and S_x is the sample standard deviation.
- **Cheap Scientific Calculator**
 1. Look above keys for symbols that indicate various statistics.
 2. \bar{x} is the mean, and σ_{n-1} is often the sample standard deviation.
 3. You will usually have to hit “SHIFT”, “2nd” or “3rd” and then the key in question to get the statistics.
- **Casio 9850GC**
 1. On the same screen you entered your data, hit F2 (“CALC”).
 2. Next hit F1 (“1VAR”)
 3. The readout will give a variety of statistics. Most useful are \bar{x} (the mean) and σ_{n-1} (same as “s”, the standard deviation of the sample).

- **Excel Spreadsheet**

1. Go to an empty cell of the spreadsheet.
2. MEAN: Type $=average(a1: a\#)$... where # is the number of the last row in which you entered data and "a" is replaced with whichever column your numbers are in. Note that the equals sign, colon, and parentheses are important.
3. STANDARD DEVIATION: Type $=stdev(a1: a\#)$... where # is the number of the last row in which you entered data. Note that the equals sign, colon, and parentheses are important.

CLEARING THINGS.

- **TI-84 (Also 83, 82, and 86)**

1. In most cases, the quickest way to clear the data is to hit STAT, then EDIT. Place the cursor on the first line of the list, and just hit DEL (delete) repeatedly until the list is gone.
2. *Some* (but not all) TI-82s and TI-83s have a "Clear List" feature in the STAT menu. This feature seems to have changed as the models developed. If yours has this feature, you can just use it. On some TI-82s or TI-83s, you have to select the list you want to clear (shift 1 for "L1", for instance) after "Clear List".

- **Cheap Scientific Calculator**

1. On *most* scientific calculators, hitting "2nd" or "SHIFT", followed by the "AC" or "ON" key will clear the statistical memory.
2. To see if things worked, try calling up the mean. If you get an error, things were properly cleared. If you didn't look in your instruction manual to see how to clear the statistical memory.

- **TI-81 and TI-85**

1. Select "STATS", then "EDIT". One of the choices should indicate "Clear x/y", or something similar. Select this choice.
2. The screen should revert to X1, rather than a long list.

- **Casio 9850GC**

1. Enter "STAT" mode (Choice #2)
2. Hit F6 (looks like an arrow) to see additional options.
3. Choose F4 ("DEL-A" or "Delete All"). List 1 should be highlighted after you push F4.
4. Hit F1 to choose "YES" and delete the numbers in the list.

- **Excel Spreadsheet**

1. Just open a new blank spreadsheet. (Hit Ctrl-O if you have to.)

SORTING DATA ON A GRAPHING CALCULATOR

1. Enter the data as in the first step above.
2. Select "STAT".
3. Go to "Sort(A" to sort the data in ascending order (smallest to largest)
4. Hit "2nd" and then the "1" key to select the L1 list.
5. Hit "ENTER".

... OOPS, MY LIST DISAPPEARED

This is a fairly common issue on the TI-84 and similar calculators. Select "STAT".

1. Select "STAT".
2. In the "EDIT" menu, choose "SetUpEditor".
3. Hit "ENTER" twice.

Random Number Generator

Occasionally it can be useful to be able to generate random numbers. Your book has a random number table in it, but almost any calculator will also generate random numbers.

- **Cheap Scientific Calculator**

1. Most scientific calculators have a random number generator that is hidden above some key (often the “0” or “.”). It will probably say something like “RND#” in a different color from most of the operations on the calculator.
2. To access the key, hit “SHIFT”, “2nd”, or “3rd”, and then that key. You normally *don't* have to be in stats mode to use the key. (In fact, sometimes you *can't* use it in stats mode.)

- **TI Graphing Calculators**

1. Select the MATH menu. (How to do this varies by calculator; it is often a shift key.)
2. Select “Probability” (which could be abbreviated many ways) from the math menu.
3. Select “Random Number” (which could be abbreviated many ways), and press ENTER.

- **If your calculator won't generate random numbers**

1. Look at Table 1 in the back of your book.
2. “Randomly” pick a number in the table to start with. (Just close your eyes, and place your finger or pencil somewhere on the page.)
3. Treat the numbers as decimals (so the first one is essentially “.92630”). This is the same sort of result you would get with a calculator or computer program.
4. To get a series of random numbers, just keep reading down the table from the place you began.

The random number generator will give you a decimal between 0 and 1. What you almost always really want are random numbers between 1 and a certain value. There are two ways to do this:

Easy Way

- Think how many digits the maximum number you want is.
- Look at that many digits of the decimal on your calculator (or that many places in the table).
- If the digits are a number in your range, count that number. If they are too big, ignore them and try again.

Official Way

- Think what the biggest number you want is.
- Multiply the decimal on your calculator (or the numbers in the table—with a decimal point in front of them) by that biggest number. What you get is your answer.

If for some reason you want random numbers that don't begin with 1 ...

1. Subtract Biggest Possible Value — Smallest Possible Value. Call this “V”
2. Generate random numbers from between 1 and “V”, as described above.
3. Take 1 less than the smallest possible value. Call this W.
4. Add W to each of the numbers you got in Part 2 above. These are your answers.

Using a Graphing Calculator

BASIC MATH

- The **ENTER** key essentially means **=**.
 - **EXAMPLE:** To do $2 + 2$, press **2** **+** **2** **ENTER** ... The answer is 4.
- The **^** key (above divide) means “to the”. Use it to take powers.
 - **EXAMPLE:** To do 2^5 , press **2** **^** **5** **ENTER** ... The answer is 32.
- To use the features written above the keys in yellow, you must first press **2nd**.
 - **EXAMPLE:** To do $\sqrt{64}$, press **2nd** **x²** **6** **4** **ENTER** ... The answer is 8.
 - **NOTE:** On a TI-83, the screen will show parentheses “ $\sqrt{(64)}$ ” when you do a square root. You can close them, but you don’t have to.
- The divided by **÷** key shows up as a slash “/” on the screen. You can also use **÷** to enter fractions.
 - **EXAMPLE:** To type $\frac{1}{2}$, press **1** **÷** **2** .
- To enter a negative number, press **(-)** (next to the decimal point) before the number. The “minus” key (next to the press **6**) is just for subtraction.
 - **EXAMPLE:** To do $7 - -2$, press **7** **-** **(-)** **2** **ENTER** ... The answer is 9.
- If you get on some strange screen and don’t know where you are, press **2nd** and then **MODE** (“QUIT”) to get back to the main screen.

GRAPHING

- TO ENTER AN EQUATION: Press **Y=**. Then type the main part of the equation after “Y1=” on the screen.
- Use the **X,T,θ,n** key (just below “MODE”) any time you need “X” in an equation. Use any other symbols (like +, $\sqrt{\quad}$, etc.) exactly where they appear in the problem.
- If number fractions come up (like in the slope of a line), put the whole fraction in parentheses.
 - **EXAMPLE:** To graph $y = \frac{2}{3}x - 5$, press **Y=**. Then type $(2/3)X-5$
- If there is a fraction with “x” as part of it, put the whole top (the numerator) and the whole bottom (the denominator) separately in parentheses.
 - **EXAMPLE:** To graph $y = \frac{x+1}{x-3}$, press **Y=**. Then type $(X+1)/(X-3)$
- Press **GRAPH** to see what the graph looks like.
- Depending on what you’re doing in class, you may want to use the **WINDOW**, **TRACE**, or **ZOOM** keys to see specific areas of the graph. Ask your instructor for information on exactly how you are using these in your class.

COMMON PROBLEMS

- **I can't see the screen well.**
 - Press 2^{nd} \blacktriangle (up arrow) repeatedly. The screen will get darker each time you press it.
 - Press 2^{nd} \blacktriangledown (down arrow) repeatedly. The screen will get lighter each time you press it.
 - If you still can't see the screen clearly, try replacing your batteries (size AAA).
- **I get errors every time I try to graph.**
 - Press 2^{nd} $Y=$ ("STAT PLOT"). Then use the down arrow to choose #4 ("PlotsOff"). Finally press ENTER this turns off a feature that may be goofing up the grapher.
- **The graph doesn't look like it's supposed to.**
 - Press ZOOM . Then use the down arrow to choose #6 ("ZStandard"). Finally press ENTER . This resets the viewing window to the most common area.
- **I screwed up and typed the wrong thing.**
 - You can just type over what's there already. Use the \blacktriangleleft (left arrow) key to go back to the mistake, and then just type over it.
 - If you want to just start over, press the CLEAR key. If you're on the main screen, it will blank out everything. If you're graphing, it will clear out the equation that was there before.
 - If you want to get rid of an extra number you accidentally typed, use the arrow keys to move the cursor on top of it. Then press DEL . The extra number will disappear.
 - If you want to insert an extra number, use the arrow keys to find the place you want to put it. Then press 2^{nd} and then DEL ("INS"). You can now insert what is missing.
- **I cleared something out, but I want to see it again.**
 - On the main screen press 2^{nd} and then press ENTER ("ENTRY"). This will show the last thing you typed on the main screen.
 - You can press ENTER again to get the last answer.
 - You can type over the last entry to change some numbers and work out a similar problem.
- **I thought I did everything right, but I'm not getting the right answer.**
 - Double check to make sure everything is entered **EXACTLY** right. In particular, make sure you:
 - didn't confuse negative $(-)$ with minus $-$.
 - Used parentheses everywhere you needed to. (When in doubt, put things in parentheses.)
 - Pressed 2^{nd} to get features like $\sqrt{\quad}$ that are written above the keys.
 - Check to make sure your calculator is set in the correct mode.
 - Press MODE to see the modes.
 - The top line (**Normal** Sci Eng) should have "Normal" highlighted.
 - The second line (**Fl oat** 01234556789) should have "Float" highlighted.
 - If you're graphing, the line that says "**Func** Par Pol Seq" should have "Func" highlighted.
 - If something else is highlighted, use the arrow keys \blacktriangleright or \blacktriangleleft to choose the right one, and then press ENTER to select it.
 - Once things are correct, press 2^{nd} and then MODE ("QUIT) to get back to the main screen.