TI-83, 84 Calculator Procedures

General Points:
- The TI shows the entire entry on the screen at once. This makes correcting mistakes easier; you just use the arrow keys to go back and forth through what you input. Use the DEL and INS keys to delete/insert.
- If you input a long problem into the calculator and hit enter, only to see you made one little mistake somewhere, you can hit 2nd Enter(Entry). That will bring back up the entire expression you input and you can use the arrow keys to make corrections. Repeatedly hitting 2nd Enter will bring up older inputs.
- If you wanted to input something like \( \frac{4-3*2}{8-7(3-5)} \), it would have to be input as \((4-3*2) \div (8-7*(3-5))\), with parentheses around both the numerator and the denominator. The calculator needs to be told what is on top and what is on the bottom since it cannot see the bar. This will come up frequently in this class.
- The ANS key, which is above the (-) key next to the ENTER key, is temporary memory. If you input \(8 - 2*1.2\), the answer will of course be 5.6. Then, ANS will hold the value 5.6. If you hit 2nd, x², ANS, you will get the square root of 5.6, the ANSwer to \(8 - 2*1.2\). Then ANS has the value 2.366431913. This is a big help when your answers are decimals and you don’t want to and should not round these numbers to be used in later formulas. The ANS key ONLY holds the last thing the calculator calculated.
- If you calculate something and then need to use that answer in some other expression, you can use the STO> button to STOre that number in memory. For example, \((2-5.63)^4\) is 173.6306936 (\(^\) is your exponent button, “^” means “to the” power). You can then hit STO> (which is right above the ON button), X (which is right next to the green ALPHA button). On screen you will see Ans→X. So, it put the last answer into the variable X. You can then type X ÷5 and get 34.72613872, which is 173.6306936 ÷5.

A. Entering data into lists. Finding mean, median, mode, 5 number summary, sum of x, sum of x squared, etc, for a data set. (first used in Chapter 2 and 3)
   *If there is old information in the Lists you see, then you need to hit Stat, 4:ClrList, enter, and then enter the lists you need to clear separated by commas, and then enter. Or just highlight the list and hit clear. Don’t hit delete!
   *If the lists are screwed up somehow (maybe L1 is missing, or they are named funky things), then hit Stat, 5:SetUpEditor, Enter, Enter. If you then go back into your lists, they will be fine.
2. Enter your data into a list, L1, L2, L3, or whichever one is free. (Normally try to use L1 and L2.)
3. Once the data is entered, hit Stat, use the arrow key to go over one and highlight Calc, and then select the first option, 1-Var-Stats. Hit Enter.
4. Now, if your data is in L1, then you just need to hit Enter. If your data is in a different list, then you need to put that list name in after 1-Var-Stats before hitting enter. 1-Var-Stats defaults to L1.
5. A list of all the information will appear, and you can scroll up or down through it using the arrow keys. The minute you hit a different button, it will come out of the list, and you will need to go back into Stat, Calc, 1-Var-Stats.
6. You can also choose SORTA or SORTD from the main stat menu to sort your list in Ascending or Descending order. You’ll have to tell it which list to sort. List names are above the 1,2,3 ... keys.

B. Using the lists to help with standard deviation tables, etc … (Chapter 3)
1. Enter data into list L1. (see above for directions.)
2. You can now hit the right arrow and then the up arrow to highlight L2.
3. At the bottom left of the screen, you can see L2 = ____.
4. Now you can type, for instance, L1^2, by hitting 2nd, 1, x². (L1 is above the 1 key.)
5. Hit ENTER, and now L2 contains the squares of the data for L1.
6. You can define L2=____ however you need. (Such as L2 = L1 – mean for the other standard deviation formula.) And then define L3= L1^2. And so on.
7. Remember to use SetUpEditor (see A1 above) when the lists disappear or get weird.
C. DISTRibutions
a. For a binomial distribution, you are given \( n, p, q, \) and \( x \). \( n \) is the total number of trials, \( p \) and \( q \) are probabilities (success and failure), and \( x \) is the number of successes you want.

1. Say the probability someone likes liver is 10%, and we have 30 people. We want to find the probability that exactly 5 of them like liver, \( P(x = 5) \). This would be a particular probability, so we go to 2nd, Vars (DISTR is above that), scroll down to A:binompdf, and then enter in binompdf(30, 0.10, 5). The inputs for binompdf are \((n, p, x)\).

2. Now what if we want to know \( P(x < 5) \), probability that less than 5 people out of our 30 like liver? We need to use binomcdf, where c stands for cumulative, meaning it accumulates from 0 to whatever \( x \) you put in. binomcdf(30, 0.10, 4), since we are not including 5. If it was \( P(x \leq 5) \), then binomcdf(30, 0.10, 5). If \( P(x > 5) \), then \( 1 - \text{binomcdf}(30, 0.10, 5) \).

b. For a normal distribution, you are given the mean and the standard deviation, and then asked questions about probabilities between, above, and below several raw scores.

1. So say we have normal distribution of heights, with a mean height of 69 inches, and a standard deviation of 3 inches, and we want to know \( P(x < 65) \), or probability of picking someone shorter than 65 inches tall. We would then hit 2nd, Vars, 2: normalcdf, ENTER. The input is normalcdf (from, to, mean, sd) so we enter normalcdf(0, 65, 69, 3). (From 0 inches to 65 inches, with mean=69 and sd=3.)

2. If you are only asked for z-scores, like \( P(z > 1) \) or \( P(-1.4 < z < 2.3) \), then you don’t need to enter a mean and sd, it is defaulted to mean=0, sd=1. So for \( P(-1.4 < z < 2.3) \), I’d enter normalcdf(-1.4, 2.3).

3. If you want to go backwards and find out a z-score that has a certain percentage below it, you can use invnorm. Go to 2nd, VARS, 3:invnorm, ENTER. Then, if for example, we want to know what z-score has 45% below it, we enter invnorm(.45).

D. Linear Regression Analysis
1. Hit Stat, Edit. Enter your data into any two lists, preferably L1 and L2 since they are the default.
2. To create a scatter plot we need to get into Stat-Plot, which is above the Y= key, the upper left hand button.
3. Once in Stat-Plot, we select the first plot, highlight On and hit enter if it is not already turned on, select the first type of plot from the six available, make sure L1 and L2 are the x and y lists unless your data is in another set of lists, and then select the mark we want used.
4. Now, we hit Zoom, which is in the middle of the top buttons, and select the 9:ZoomStat. This will bring up our scatter plot; it ZOOMs in on the STATistical data. If you DON’T do this step, nothing might show on the screen.
5. If it says ERR: DIM MISMATCH, look at your lists. There may be one more entry in one list than the other, so the DIMensions aren’t the same. Or, if it says ERR: SYNTAX, look in the Y= area. If there are any equations or symbols in any of the “y =” spots, delete them.
6. Now, to find the line of best fit and correlation coefficient information, we hit Stat, Calc, 4:LinReg (ax + b). This will bring up values for a(slope), b(y-intercept), \( r^2 \), and \( r \). (*If r doesn’t show up, then hit 2nd, 0(Catalog), \( x^1 \), DiagnosticsOn, enter, enter.*)
7. Once you have the line of best fit, you must enter it into Y= and hit graph to see it fitted onto your data. If it doesn’t seem to fit the data, a mistake has occurred somewhere, go find it.
8. Don’t forget, every time you put new data into your lists, you must hit ZoomStat, the 9th option on the Zoom menu. That tells the calculator to go find the new data.

There are tons of resources on the internet for the TI 83, 84 calculator – guides, videos, tutorials, manuals … I’ve collected links to a few here - http://www.grossmont.edu/mathstudy/TIcalcHelp.asp