

Chapter 1 – TI Calculator Basics

In this chapter we introduce our calculator companion to *Intro Stats* (3rd ed.) by giving an overview of Texas Instruments' graphing calculators: the TI-83, -83+, -84+, and -89. Read this chapter carefully in order to familiarize yourself with the keys and menus most utilized in this manual. You will also learn how to set the correct **MODE** on the calculators to ensure that you will obtain the same results as this companion does. You will learn other useful skills such as adjusting the screen contrast and checking the battery strength.

Aside from the above technical skills, you will learn some basic skills that are particularly useful throughout your study of *IntroStats*. Throughout this companion, we will present the uses of these calculators by illustrating their use on actual textbook examples or exercises. Since Chapter 1 is an introductory chapter in the text, we will take the opportunity in Chapter 1 of this companion to introduce you to skills which you will find necessary throughout the other chapters. These skills include Home screen calculations and saving and editing lists of data in the STAT(istics) editor.

KEY DIFFERENCES BETWEEN THE 83/84 SERIES AND THE 89 SERIES

All calculators in the TI-83/84/89 series have built-in statistical capabilities. Although a few statistical functions are “native” on the TI-89, most of the topics covered in a normal Statistics course require downloading the Texas Instruments Statistics with List Editor application which is free. Download requires the TI-Connect cable. The software (infstats.89g) can be found in the program archive on the TI website at <ftp://ftp.ti.com/pub/graph-ti/calcul-apps/89/math/stat/>. This manual assumes the statistics application has been loaded on the calculator. If you have the newer TI-89 Titanium edition, the statistics application comes pre-loaded, and the TI-Connect cable is included with the calculator.

The TI-83 and -84 series calculators are essentially keystroke-for-keystroke compatible; however, the 84 does have some additional capabilities (some additional statistical distributions and tests, for example) with the latest version of the operating system, version 2.41 which is also available for download at http://education.ti.com/educationportal/sites/US/productDetail/us_ti84p.html. The regular TI-83 does not have the ability to use APPS (applications) which are in some cases extensive programs. If you have one of these regular calculators, you will not be able to use the APPS included on the CD-Rom accompanying the text to load data sets, but will have to key them in yourself. (If you have the cable and TI-Connect software, these can be loaded from the .txt files included on the CD in the same manner as 89's – see page 12 for details). Regular TI-83 users will, however be able to use the programs on the CD for such applications as analysis of variance and multiple regression.

There are some major differences in calculator operation and menu systems which will, in some cases necessitate separate discussions of procedures for the TI-83/84 and TI-89 calculators. Some of these become apparent in the next section. Not only are there differences between the three series, but there is also a difference in operation between the TI-89 and the TI-89 Titanium edition. On the Titanium, all “functions” on the calculator are essentially applications – when a regular TI-89 is turned on, the user is on the “home screen” similar to that for the TI-83 and -84. When the Titanium edition is first turned on, one must scroll using the arrow keys to locate the desired application – we'll say more about this later.

KEYBOARD AND NOTATION

All TI keyboards have 5 columns and 10 rows of keys. This may seem like a lot, but the best way to familiarize yourself with the keyboard is to actually work with the calculator and learn out of necessity. The keyboard layout is identical on the 83+ and 84+, and differs from the 83 by the substitution of the **APPS** key for the **MATRIX** key. The layout of the 89 (and 89 Titanium) keyboard is similar, but some functions have been relocated. You will find the following keys among the most useful and thus they are found in prominent positions on the keyboard.

- The cursor control keys **◀**, **▶**, **▲** and **▼** are located toward the upper right of your keyboard. These keys allow you to move the cursor on your screen in the direction which the arrow indicates.

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- The $\boxed{Y=}$ key is in the upper left of the 83 and 84 keyboards. It is utilized more in other types of mathematics courses (such as algebra) than in a statistics course; however you will use the $\boxed{2nd}$ function above it quite often. This is the STAT PLOT menu on the 83/84 series. We will discuss $\boxed{2nd}$ functions shortly. On TI-89 calculators, the Y= application is accessed by pressing $\boxed{\blacklozenge}\boxed{F1}$. The STAT PLOT menu on the TI-89 series is found inside the Statistics application.
- The \boxed{ON} key is in the bottom left of the keyboard. Its function is self-explanatory. To turn the calculator off, press $\boxed{2nd}\boxed{ON}$.
- The \boxed{ENTER} key is in the bottom right of the keyboard. You will usually need to press this key in order to have the calculator actually do what you have instructed it to do with your preceding keystrokes.
- The \boxed{GRAPH} key is in the upper right of the keyboard. On the TI-89, GRAPH is $\boxed{\blacklozenge}\boxed{F3}$.

As mentioned briefly above, most keys on the keyboard have more than one function. The primary function is marked on the key itself and the alternative functions are marked in color above the key. The color depends on the calculator model. Below you will be instructed on how to engage the functions which appear in color.

The $\boxed{2nd}$ Key

The color of this key varies with calculator model. On 83's and 89's this is a yellow key near the top left. On 84's and the 89 Titanium, the key is blue but is also at the top left. If you wish to engage a function which appears in the corresponding color above a key, you must first press the $\boxed{2nd}$ key. You will know the second key is engaged when the cursor on your screen changes to a blinking \blacksquare . As an example, on a TI-83 or -84 if you wish to call the STAT PLOTS menu which is in color above the $\boxed{Y=}$ key, you will press $\boxed{2nd}\boxed{Y=}$.

The \boxed{ALPHA} Key

You will also see characters appearing in a second color above keys which are mostly letters of the alphabet. This is because there are some situations in which you will wish to name variables or lists and in doing so you will need to type the letters or names. If you wish to type a letter on the screen you must first press the \boxed{ALPHA} key. The color of this key depends on the model of calculator: on the TI-83 it is blue; on the 84, green; on the 89, purple; and on the 89 Titanium, white. On 83's and 84's it is directly under the $\boxed{2nd}$ key; it is one place to the right of that on both 89's. You will know the \boxed{ALPHA} key has been engaged when the cursor on the screen turns into a blinking \blacksquare . After pressing the \boxed{ALPHA} key you should press the key above which your letter appears. As an example if you wish to type the letter E on an 83 or 84, press $\boxed{ALPHA}\boxed{SIN}$ (because E is above \boxed{SIN}). To get the same letter E on an 89, press $\boxed{ALPHA}\boxed{\div}$.

Note: If you have a sequence of letters to type, you will want to press $\boxed{2nd}\boxed{ALPHA}$. This will engage the colored function above the \boxed{ALPHA} key which is the A-LOCK function. It locks the calculator into the Alpha mode, so that you can repeatedly press keys and get the alpha character for each. Otherwise, you would have to press \boxed{ALPHA} before each letter. Press \boxed{ALPHA} again to release the calculator from the A-LOCK mode.

Some General Keyboard Patterns and Important Keys

1. The top row on 83's and 84's is for plotting and graphing. On 89's these functions are accessed by preceding the desired function with $\boxed{\blacklozenge}$.
2. The second row from the top has the important QUIT function ($\boxed{2nd}\boxed{MODE}$ on 83's and 84's, $\boxed{2nd}\boxed{ESC}$ on 89's). On 83's and 84's it also contains the keys useful for editing (\boxed{DEL} , $\boxed{2nd}\boxed{DEL}$ (INS), $\boxed{\leftarrow}$, $\boxed{\rightarrow}$, $\boxed{\uparrow}$ and $\boxed{\downarrow}$). INS and DEL on 89's are both combination commands: INS is $\boxed{2nd}\boxed{\leftarrow}$ and DEL is $\boxed{\blacklozenge}\boxed{\leftarrow}$.

- The **[MATH]** key in the first column on 83's and 84's leads to a set of menus of mathematical functions. Several other mathematical functions (like x^2) have keys in the first column. On a TI-89, **[2nd][5]** leads to the Math menu.
- The keys for arithmetic operations are in the last column (**[÷]** **[×]** **[−]** **[+]**).
Note: On all input screens, the **[÷]** shows as /, and the **[×]** shows as *. On both 89 models, when the command is transferred to the display area the * is replaced with a · and division looks like a fraction.
- The **[STAT]** key, on 83's and 84's will be basic to this course. Submenus from this key allow editing of lists, computation of statistics, and calculations for confidence intervals and statistical tests. On 89's with the statistics application, one starts the application using the key sequences **[♦][APPS]** and selecting the Statistics application. On the 89 Titanium, quit the current application (**[2nd][ESC]**) and locate the **Stats/ListEditor** application, and press **[ENTER]** to start the application. On 83's and 84's the second function of the **[STAT]** key is **LIST**. This key and its submenus allow one to access named lists and perform list operations and mathematics.
- The **[VARS]** key on 83's and 84's allows one to access named variables. On TI-89's this is **[2nd][−]** which is named **[VAR-LINK]**; it is used for both lists and variables.
- [2nd][VARS]** calls the distributions (**Distr**) menu. This is used for many probability calculations. To get this menu on a TI-89, press **[F5]** from within the **Stats/ListEditor** application.
- The **[)]** key is located in the sixth row directly above the **[7]** key on 83's and 84's, while on 89's it is above the **[9]** key. It is used quite often for grouping and separating parameters of commands.
- The **[STO▶]** key is used for storing values. It is located near the bottom left of the keyboard directly above the **[ON]** key on all the calculators. It appears as a **➔** on the display screen.
- The **[−]** key on the bottom row (to the left of **[ENTER]**) is the key used to denote negative numbers. It differs from the subtraction key **[−]**.

Note: The **[−]** shows as $\bar{}$ on the screen, smaller and higher than the subtraction sign.

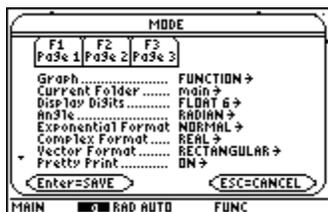
SETTING THE CORRECT MODE

If your answers do not show as many decimal places as the ones shown in this companion or if you have difficulty matching any other output, check your **MODE** settings. Below we instruct on setting the best **MODE** settings for our work. These are the ones we have used throughout this companion.

On an 83 or 84, Press the **[MODE]** key (second row, second column). You should see a screen like the one on the right. If your calculator has been used previously by you or someone else the highlighted choices may differ. If your screen does have different highlighted choices use the **[▲]** and **[▼]** keys to go to each row with a different choice and press **[ENTER]** when the blinking cursor is on the first choice in each row. This will highlight and select that choice. Continue until your screen looks exactly like the screen to the right. Press **[2nd][MODE]** (**QUIT**) to return to the Home Screen.



On TI-89's, the default mode is to give “exact” answers. For statistical calculations, you will want to change the mode to give decimal approximations. To set this option, press **[MODE]**. Press **[F2]** to proceed to the second page of settings, then arrow to **Exact/Approx** and use the right and down arrows to change the setting to **3:Approximate**. Press **[ENTER]** to complete the set-up. The sequence of screens is shown below.



SCREEN CONTRAST ADJUSTMENT AND BATTERY CHECK

To adjust the screen contrast, follow these steps:

To increase the contrast on a TI-83 or -84, press and release the $\boxed{2nd}$ key and hold down the $\boxed{\blacktriangle}$ key. You will see the contrast increasing. There will be a number in the upper-left corner of the screen which increases from 0 (lightest) to 9 (darkest). On a TI-89, press $\boxed{\blacktriangle}$.

To decrease the contrast, press and release the $\boxed{2nd}$ key and hold down the $\boxed{\blacktriangledown}$ key. You will see the contrast decreasing. The number in the upper-left corner of the screen will decrease as you hold. The lightest setting may appear as a blank screen. If this occurs, simply follow the instructions for increasing the contrast, and your display will reappear. On a TI-89, press $\boxed{\blacktriangledown}$.

When the batteries are low, the display begins to dim (especially during calculations) and you must adjust to a higher contrast setting than you normally use. If you have to set the contrast setting to 9, you will soon need to replace the four AAA batteries. With newer versions of the operating system, your calculator will display a low-battery message to warn you when it is time to change the batteries. After you change batteries, you will need to readjust your contrast as explained above.

Note: It is important to turn off your calculator and change the batteries as soon as you see the “low battery” message in order to avoid loss of your data or corruption of calculator memory. Change batteries as quickly as possible. Failure to do so may result in the calculator resetting memory to factory defaults (losing any data or options which have been set).

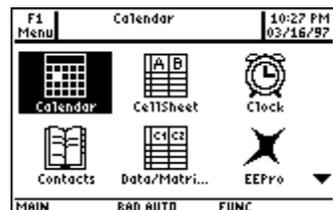
A SPECIAL WORD ABOUT THE TI-89 TITANIUM

On the TI-89 Titanium, most important functions which on other calculators are accessed by keystrokes, are applications (Apps). When the calculator is first turned on, you will be presented with a graphical menu of these applications, as at right. Paging through the screen to find the one you want can be tiresome and time consuming. There is a way to customize this screen so that you only see those applications you want to see.

On the screen above, press $\boxed{F1}$. Press the right arrow key to expand menu selection 1:Edit Categories. You will be presented with a list of possible categories. Press $\boxed{3}$ to select option 3:Math.

On this screen, use the down arrow to page through the list of applications. When you find one you want to be displayed, press the right arrow key to place a checkmark in the box. The screen at right shows that the Data/Matrix Editor and the Home screen have been selected. For this statistics course, you will want these applications, along with the Stats/List Editor and Y= applications. Press \boxed{ENTER} when you have finished making your selections.

On this calculator, pressing $\boxed{2nd}\boxed{ESC}$ (Quit) will return you to the applications selection screen. There are two useful shortcuts between applications. The first is pressing the \boxed{HOME} key, which takes you directly to the Home screen. The other useful shortcut is pressing $\boxed{2nd}\boxed{APPS}$ which allows you to toggle between two applications.



HOME SCREEN CALCULATIONS

The following examples illustrate some techniques which will be useful in performing home screen computations. These examples also point out the importance of correctly using parentheses in calculations.

Example 1:
$$\frac{98.20 - 98.60}{0.62}$$

We will calculate the value in two ways. In doing so, we will intentionally make a mistake to show you how to correct errors using the **DEL** key. We will also discuss the **Ans** and **Last Entry** features.

Type $98.20 - 97..60$ (an intentional mistake).

A calculator screen showing the input $98.20-97..60$. The cursor is positioned at the second decimal point after the 7.

To correct the mistake, use the **←** cursor key to move backward until your cursor is blinking on one of the double decimal points. Press **DEL** (on an 89, **↔** or position the cursor to the right of the character to be deleted and press **←**) and the duplicate decimal point will be deleted. Now press **←** until the cursor is blinking on the 7. Type an 8, and it will replace the incorrect 7. On an 89, move the cursor to the right of the error, press **←** and then type the correct 8. Press **ENTER** for the numerator difference of -4 as shown in the top of the screen below.

Press **□**. (Note that “Ans/” appears on the screen). Type $.62$ and press **ENTER** for the result of $-.645$.

Note: **Ans** represents the last result of a calculation which was displayed alone and right-justified on the Home screen. Pressing **□** without first typing a value called for something to be divided, so **Ans** was supplied.

A calculator screen showing the input $98.20-98.60$ resulting in $-.4$. Below that, $Ans/.62$ is shown, resulting in $-.6451612903$.

To do the calculation in one step, press **2nd** **ENTER**. This calls the “last entry” to the screen. (in this case $Ans/0.62$). Press **2nd** **ENTER** again to get back to $98.20-98.60$. Press the **↔** key to move to the front of the line. On an 89, press **2nd** **↔**.

A calculator screen showing a list of calculations: $98.2 - 98.6 = -.4$, $-.4 / .62 = -.645161$, and $98.2 - 98.6 = -.4$, $-.4 / .62 = -.645161$. The bottom of the screen shows $(98.2-98.6)/.62$ and the status bar indicates MAIN, END APPROX, FUNC, 3/30.

On an 83 or 84, you will need to press **2nd** **DEL** (for **INS**); 89’s are always in insert mode. You will see a blinking underline cursor. Type **(** to insert a left parenthesis before the first 9. Press **↔** (**2nd** **↔** on an 89) to jump to the end of the line. Type **)** **□** 0.62 to see the result. Press **ENTER** for the same result as before.

Example 2
$$\sqrt{\frac{(5-7)^2 + (12-7)^2 + (4-7)^2}{3-1}}$$

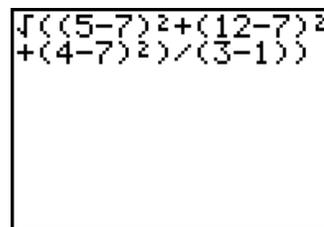
In this example, we will use the **ANS** function, illustrate syntax errors and show how to store quantities using variable names. Type $(5-7)^2+(12-7)^2+(4-7)^2$ as in the screen. Press **ENTER** for the value 38. (Use the **x²** key for the exponent 2.)

A calculator screen showing the input $(5-7)^2+(12-7)^2+(4-7)^2$ resulting in 38. Below that, $\sqrt{(Ans/(3-1))}$ is shown, resulting in 4.358898944.

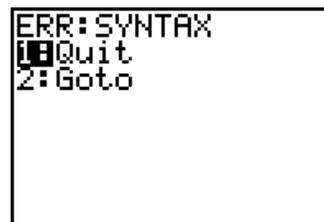
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Press $\boxed{2\text{nd}} \boxed{x^2} \boxed{2\text{nd}} \boxed{(-)} \boxed{\div}$ and then type (3-1). Press $\boxed{\text{ENTER}}$ for the desired results at the bottom of screen (8). Note that the $\boxed{2\text{nd}} \boxed{x^2}$ sequence is the $\sqrt{\quad}$ function on an 84 or 84+; on an 89 it is $\boxed{2\text{nd}} \boxed{\times}$. The $\boxed{2\text{nd}} \boxed{(-)}$ sequence calls the last answer, Ans back to the screen.

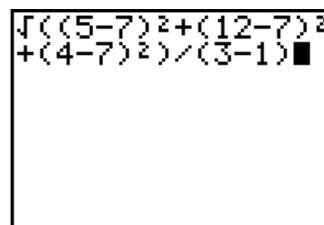
In the screen at right, we attempted to do the whole exercise in one step.



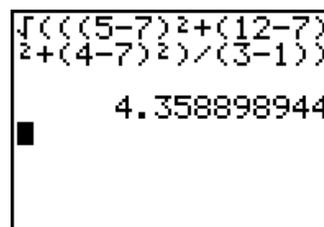
Pressing $\boxed{\text{ENTER}}$ brings this message because we have made an error. Press 2 to “goto” the error.



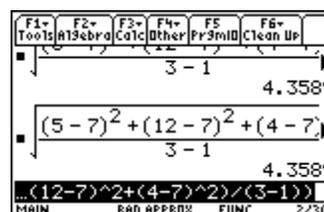
We get this screen which has a blinking cursor on the last parenthesis. This means we have an extra right parenthesis which has no matching left parenthesis.



This screen shows the result when we go back and insert the missing left parenthesis into the calculation. We get the same result as before.



The screen at right shows the same calculation done on an 89 calculator. One important difference here is that the 89 does not have the $\boxed{x^2}$ key. To exponentiate to any power, use the $\boxed{\wedge}$ key followed by the desired power. Also notice the $\boxed{\blacktriangleright}$ at the right of the output display. This is a cue that there is more to be seen. Press the up arrow to highlight the output display, then press to right arrow to scroll to the end.



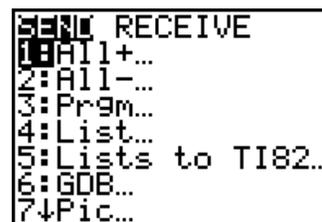
SHARING DATA

Sharing data between calculators (TI-83/84)

Data and programs may be shared between calculators using the communications cable which is supplied. The TI-83 and 84 series can share any TI-83/84 information with the exception of flash applications and their associated variables.

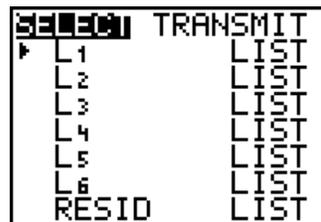
On the TI-83/83+, the I/O port is at the base of the calculator. On the TI-84/84+, you can use either the USB port or the I/O port on the top to link to another 84 series calculator. To link to an 83 series, you must use the I/O port. Connect the appropriate cable to the ports. On both calculators, press $\boxed{2\text{nd}} \boxed{\text{X.T.O.n}}$ to activate the LINK menu.

On the receiving calculator, press $\boxed{\blacktriangleright}$ to highlight RECEIVE, then press



[ENTER]. The calculator will display the message “Waiting...”
The rolling cursor on the upper right indicates the calculator is working.

On the sending calculator, use the arrow keys to select the type of information to send. For example sending lists, either arrow to 4:List and press [ENTER] or press [4]. The screen at right will be shown. To select items to send, move the cursor to the item, press [ENTER] to select it. After selecting all items to send, press [▶] to highlight TRANSMIT, then press [ENTER].

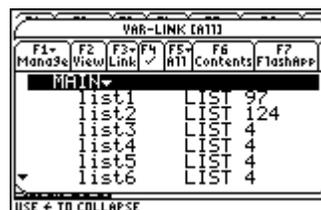


Sorry, TI-83's and -84's cannot communicate with TI-89's.

Sharing Data between calculators (TI-89 Series)

Data and programs may be shared between calculators using the communications cable which is supplied. The TI-89 can only communicate with the other TI-89's and TI-92s.

Connect the supplied cable to the port at the base of each calculator.
On both calculators press [2nd][=] to activate the VAR-LINK menu.



On the receiving calculator, press [F3] to select Link, ⊖ to highlight Receive, then press [ENTER]. The screen reverts to main VAR-LINK Menu with a “Waiting to receive” message at the bottom.



On the sending calculator, use the arrow keys to select the item to send, then press [F4] to “check” the item. The example at right will send list1 and list2.



Now press [F3] to select Link, then [ENTER] to select menu choice 1:Send to TI-89/92Plus which is highlighted by default.



An analogous procedure can be used to send applications between calculators. Applications (such as the Statistics with List Editor) are selected from the [F7]FlashApp menu (press [2nd][F2] for [F7].)

Sharing data between the calculator and a computer

Data lists, screen shots and programs may be shared between the calculator and either Microsoft Windows or Macintosh computers using a special cable and either the TI-Connect or TI-Graph Link software. Cables for the TI-83 are available for either serial or USB computer ports and can be found through many outlets such as OfficeMax, and Amazon.com. The software can be downloaded free through the Texas Instruments website at education.ti.com. The needed USB cable and computer software are included with the TI-84 and -89 models.

Correcting Mistakes with DEL and INS

In the screen above, we can delete the 45 by using the \leftarrow key until it is highlighted and then pressing **DEL** (\leftarrow on an 89).

To insert a 2 above the 3 move the cursor to the 3 then press **2nd** **DEL** (**2nd** \leftarrow on an 89) (to choose **INS** or insert mode). Note a 0 was inserted where you wanted the 2 to go. Just type over the place-holding 0 with the value you want.

L1	L2	L3	1
1	31		-----
0	1		
3	1		
4	11		
5	2		
-----	2		
	4		
	7		

L1(2)=0

Clearing Lists without Leaving the STAT Editor

Suppose you wish to clear a list, say L2, while you are still in the STAT Editor. You should use the cursor to highlight the name of the list at the top. With the name highlighted, press **CLEAR** and you will see this. Press **ENTER** and the contents of the list will be cleared. *Make sure not to press DEL* or the list will be deleted entirely and you will have to use **SetUpEditor** as described below to retrieve it.

L1	L2	L3	2
1	31		-----
0	1		
3	1		
4	11		
5	2		
-----	2		
	4		
	7		

L2 =

Deleting a List from the STAT Editor:

If you wish to delete a list from your STAT Editor, simply highlight the list name and press **DEL**. The name and the data are gone from the Editor but not from the memory. To recover a list inadvertently deleted, use **SetUpEditor** as described below.

SetUpEditor

Setting up the editor will remove unwanted lists from view. It also will recover lists which have inadvertently been deleted. On an 83 or 84, if you want the STAT Editor to be restored to its original condition (with lists L1 to L6 only), press **STAT** **5** **ENTER**. Often students find this necessary because they have inadvertently deleted one of the original lists.

SetUpEditor	
	Done

On an 89, in the Statistics Editor, press **F1** (**Tools**), then select option 3: **Setup Editor**. You will see the screen at right. Leave the box empty and press **ENTER** to return to the six default lists.

F1	F2	F3	F4	F5	F6	F7
Tools	Plots	List	Calc	Distr	Tests	Ints
list1	list2	list3	list4			
Setup Editor...						
1.	Lists To View:					
2.	Enter=OK					ESC=CANCEL
11						
27						
52						
list1(1)=31.						
MAIN	END APPROX	FUNC				

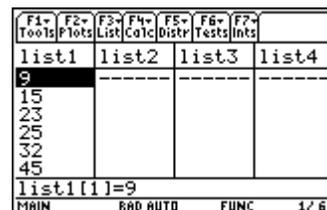
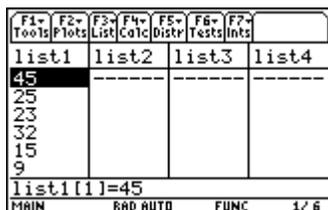
Using SetUp Editor to Name a List:

On a TI-83 or -84 home screen, press **STAT** **5** to call **SetUpEditor**. Now type **IDS, STU, L1**. You will have to be careful to keep pressing the **ALPHA** key before each character or release the alpha lock (**2nd** **ALPHA**) to type the commas. Then press **ENTER**. Then press **STAT** **1** to view your lists.

SetUpEditor	
IDS, STU,L1	Done

Sorting Lists (TI-89)

While in the List Editor, press **F3** for the List menu, press **⌵** followed by **ENTER** or **2** to select List Ops, then press **ENTER** to Select 1:Sort List, **2nd** **-** (Var-Link) and use the arrows to select the list to be sorted. Press the right arrow if necessary to change the sort order (use **⏭** to activate the menu choices). Press **ENTER** to carry out the command.



USING THE SUPPLIED CD-ROM DATA SETS

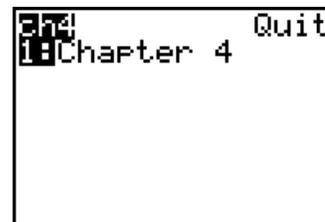
TI-83/84 Procedure

The CD-Rom supplied with the text includes applications which will load pre-entered lists of data for use with either the TI-83+ or TI-84 series calculators. (Regular TI-83 calculators do not have the application feature). Data sets are also available on the companion web site wps.aw.com/aw_deveaus_stats_series. To use the applications, load the CD on the computer; it should automatically start and present an initial *ActivStats* screen. There is a button on the lower left of the screen which is labeled Datasets. Click on the Datasets button, then click on the TI-applications folder. There is an application for each chapter of the text. With the calculator connected to the computer (with the graph-link or direct USB cable for TI-84's), right click on the desired chapter's application, and select "Send to TI device" from the pull-down menu. An interim screen will show the desired application. Click the "Send to Device" button at the bottom of the screen. If sending the app to a TI-84, nothing will display. If sending to a TI-83+, you will see a message that the calculator is receiving the application. When finished, the calculator screen will be blank and the transfer window on the computer will disappear.

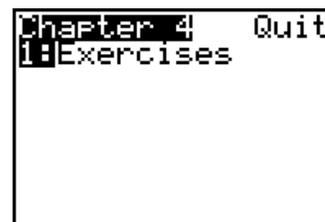
To use the lists, start the application for the appropriate chapter. Press **APPS**. Locate the application for the chapter you want. The screen shown at right will begin the Chapter 4 application.



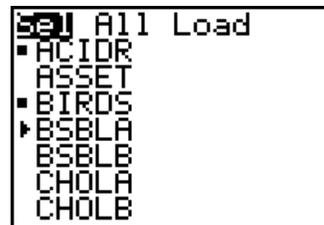
You will briefly see an introductory screen, then the one at right. Press **ENTER** to proceed. This is mainly to verify that you have the correct chapter's application selected. If you have selected the wrong chapter, press **▸** to highlight **Quit** and press **ENTER** to exit the application.



The next screen works similarly to the one before. To proceed to the exercise datasets press **ENTER**, or press **▸** to highlight **Quit** and press **ENTER** to exit the app.



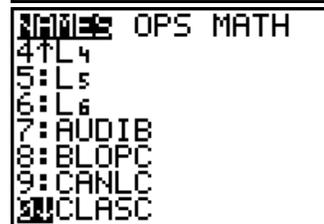
Now we can select the data sets to load into active memory. The lists are all named mnemonically and listed alphabetically to correspond with the subject of the problem. Select lists to load by moving the cursor to the list name and pressing **ENTER**. When finished selecting lists, press the right arrow key to highlight Load and press **ENTER**. The screen at right will load the lists associated with Acid Rain (problem 45), and Bird species (problem 40).



After moving the cursor to Load, you will see the screen at right. You have two options. Selecting 2: Load will load the lists into memory, but they are not accessible except through the [LIST] menu (**2nd**[STAT]). If you select 1: SetUpEditor the first selection (1: AddtoEditor) will allow you to add these the selected lists at the end of the normal Statistics List Editor.



When using the lists for graphics or statistics, you will have to access the lists by name through the LIST menu (**2nd**[STAT]). Any time one would normally give a default L1 through L6 list name by pressing **2nd**n, where n is the number of the list, press **2nd**[STAT] for the list names screen, then arrow down to place the cursor at the appropriate list name and press **ENTER** to select it.



TI-89 Series Procedure

The CD-Rom supplied with the text includes data sets which can be downloaded into TI-89 calculators (they are also included on the book’s website). If you have the connect cable and TI-connect software, this can save the time involved in entering the data manually. To use the data sets, load the CD on the computer; it should automatically start and present an initial *ActivStats* screen. There is a button on the lower left of the screen which is labeled Datasets. Click on the Datasets button, then click on the TI Files folder.

There are folders for each chapter of the text. Click on the appropriate chapter. The files are text (xxxxx.txt) files, which are named mnemonically to agree with the subject matter of problems. For example, in Chapter 4, acid rain is the subject of problem 45 and its data set is acidr.txt; the number bird species is the subject of problem 40 and its data set is birds.txt. Click on the appropriate data set and it will be opened (on a PC) by Notepad. Use the mouse and drag to highlight the list of data. Press CTRL-C (or Edit, Copy using the pull-down menu) to copy the data.

With TI-Connect, open the TI Data Editor. Click the blank page icon to open a new variable. Click to place the cursor at the top of the list (where there is a 0 placeholder), and press CTRL-V (or Edit, Paste from the pull-down menu) to paste the data into the list. Click in the beige area at the top of the list, and you will be prompted to give the list a name of up to six characters. Once the list is named, click Actions on the menu bar, then click Send Selected Items. The list will be sent to the TI-89 calculator and be given the name you have selected. Use the list just as you would any other.

MEMORY MANAGEMENT

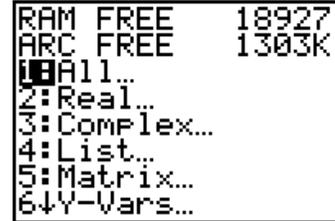
Too many applications loaded or lists in active memory can overload the calculator. Just as a computer disk can be filled up, so can memory on the calculator. The TI calculators have two types of memory – RAM and archival. If you use the applications supplied on the CD (on a TI-83/84), these are loaded into archival memory. Active lists are in RAM.

TI-83/84 Procedure

To find out the current free memory status, press **2nd**+ (MEM) and select option 2:Mem Mgmt/Del.



The screen at right shows my calculator currently has 18,927 bytes (characters) of free RAM and 1303Kilobytes of free archival memory.



If you need to free some memory, decide the type. If you want to delete some lists, for example, select 4:List. Move the cursor to the lists you wish to delete and press **DEL** for each one. The can also be done for any applications you no longer need from previous chapters, but use choice 5:Archive to access the list of archived applications.

TI-89 Series Procedure

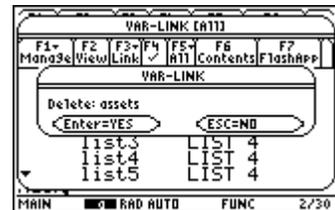
To find out the current free memory status, press **2nd**[6]. The screen at right shows I currently have 194,232 free bytes of RAM and 338096 free bytes of Flash memory free. Pressing **F1** here will reset RAM, Flash, or all memory to either totally blank or factory default settings. I do not recommend either of these options under normal circumstances. Resetting Flash, for example would erase the Statistics Flash application, which would then need to be reloaded.



To delete lists which are no longer needed, press **2nd**- (VAR-LINK). Move the cursor to highlight the list to be deleted, then press **F1**. Press **ENTER** to select option 1:Delete.



You will be prompted to verify that the selected item is to be deleted. Press **ENTER** to confirm the deletion, or **ESC** to cancel. You can continue this process to delete all unneeded lists.



WHAT CAN GO WRONG?

Why is my list missing?

By far the most common error, aside from typographical errors is improper deletion of lists. When lists seem to be “missing” the user has pressed **DEL** rather than **CLEAR** in attempting to erase a list. Believe it or not, the data and the list are still in memory. To reclaim the missing list press **STAT** and select choice 5:SetUpEditor followed by **ENTER** to execute the command. Upon return to the Editor, the missing list will be displayed.

