

SPREADSHEET GUIDE - PART ONE(a)

Getting Started for Beginners

The following part of the spreadsheet manual gives you practical information about getting ready to use the Notebook spreadsheet, the screen, the keyboard and some other points you will need to know to use it effectively. Most of these points are covered later in the manual but this first introduction may avoid some puzzlement. If you don't understand some of this section at this stage, don't worry, be prepared to re-read the section at a later stage.

Using the Notebook spreadsheet

At any time, while using the Notebook, you can switch to using the spreadsheet by holding down the Yellow key and pressing the White key. After a moment or two you should see a screen like this.



Just like in the word processor, you have three possible options. The first, accessed by pressing the Red key, is where you first begin and will start the spreadsheet program with nothing loaded. You can then start a completely blank sheet and input your data.

By pushing the Green key you will see a list of any worksheets that you have already created. From this you can select one of the stored worksheets (name ending .MEM) and the spreadsheet will be started with that file loaded in for you to continue work on it.

The Blue key from the above screen also accesses a list of spreadsheet files but when you select one it is loaded and a print operation is started.

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takes up the majority of the bottom of the display, above this is a three line status area giving further information on the state of the sheet.

Press the **[F1]** key. Notice that the display switches to show you as much of the worksheet as possible. Fifteen lines of data cells are shown. Only the top line is used to show you the column labels. You can continue to type in commands to the spreadsheet although you won't be able to see what you are typing. You switch back and forth between this enlarged display and the normal display each time the **[F1]** key is pressed. Even when you are part way through entering a command, you can switch between the normal and this enlarged display. Switch back to the normal display now.

Starting with the top line of the status area, on the leftmost side is a figure showing the co-ordinates of the currently active cell (A1 in this case). This is followed, to the right of the dividing line, by the CONTENTS LINE which will display the information that is actually held in the current cell, as opposed to the information that has been calculated and displayed in the worksheet area. (At present it is just blank because no data has been entered).

You will often find that the value shown on the contents line is quite different to the value shown in the worksheet area of the display. The way the values in worksheet display are shown is completely dependent on what display format has been chosen for them. Formats are an important topic to understand when using a spreadsheet and the subject is covered in quite some detail later in the manual.

On the right side of the top line is the co-ordinate of the bottom right cell in the currently defined sheet - J200 in this case. This gives you an indication of the size of the work area. In this case there are 10 columns (labelled A..J) and 200 lines (1..200).

When you first start to use the spreadsheet you will also see the letter "c" in the top right corner. This indicates that Caps Lock is switched on. Caps Lock will always be switched on when you start to use the spreadsheet and will be restored to its former setting when you stop using the spreadsheet. The reason that it is switched on is that normally you will work in columns A..Z and it ensures that when you enter co-ordinates you use the upper case letters. When you come to type in text, such as labels, you may find it easiest to switch Caps Lock off by pressing the **[Caps Lock]** key.

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To begin to actually use the spreadsheet, start at the above screen by pressing the Yellow and White keys, then press the Red key to select the "Start a new Worksheet" option. You will then see the opening screen of the spreadsheet:

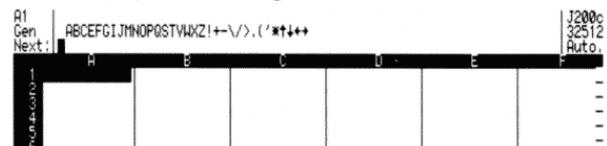


Don't do anything yet but note that the only options open to you at this stage would be to make a sheet of predetermined size and format, restart at the point you had reached when you last used the spreadsheet, copy in an existing worksheet or to start a new one from scratch (by inserting new columns and lines). "Which files" will list any worksheet files already stored in the Notebook. "Auto" lets you switch off the automatic recalculation feature before loading in a large and complex sheet. The Demo option will give you access to some special demonstration worksheets built into the Notebook.

Details of the screen.

To introduce you to the spreadsheet's normal working display here is a quick rundown of what the various pieces of information on the screen stand for. If you have not used a spreadsheet program before you should not worry if you can't take it all in at once. Just use this section for reference as you progress through the tutorial course.

Press the **[M]** key to select "Make sheet" and then press the **[Enter]** key. This makes a blank sheet with 10 columns and 200 lines where each cell will display numbers in a general numeric format.



The screen is divided into two main areas, the worksheet itself which

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The second line begins with a shortened description of the display format that is in operation on the current cell. This currently shows "Gen" which means that the active cell (A1) has a General format.

Next to this is the prompt line on which you are presented with a summary of all the keypress options available to you at that time.

The prompt line that you saw on first starting the spreadsheet presented you with the options:-

Make sheet, Restart, Copy, Insert, Which files, Auto., Demo, Quit

This is typical of the Notebook spreadsheet prompt lines and the meaning of each of the commands can be looked up in the manual. Because you used the **[M]** option (Make blank sheet) you are now presented with this line:

ABCEFGIJMNOPOSTVWXZ|+-\>.('*†↓←→

This line can be regarded as the central command panel for the spreadsheet. At this point there is almost every available option open to you, in fact there are so many that it is impossible for the prompt line to give any more help than to provide you with the first letter of each command name that is available (single letter mnemonics).

If at any time you cannot remember what any letter or symbol stands for, consult the built-in manual by pressing the **[F1]** key and the Notebook spreadsheet will be able to provide you with a more detailed explanation of the available options. If you do press **[F1]** you will see the first 16 lines of help information. Press any key, **[Enter]** for example, to see the subsequent pages of information. After the last you will return to the same prompt.

All commands that are available with the spreadsheet work on a system whereby you are provided with prompts to remind you of what is available.

You select the desired command by a one letter keypress based on a mnemonic of the full command name. You will find this a very convenient and easy method to use but you must get used to not attempting to type the command in full or you may end up in some unexpected places. Don't worry if this happens - just press **[F1]** and you will be back to something you recognise with no harm done.

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Watch the prompt line while you are finding your feet to keep track of all the available options.

At the right hand end of the second screen line is a figure representing the number of bytes of available memory left in your current sheet. A byte is just a technical word meaning a storage location that can hold one character. The spreadsheet will keep track of how many bytes are free and will not let you lose your work if all the memory is used up.

The Notebook spreadsheet has three ways of working depending on how much memory is free when it is started. If there is 65,000 bytes (or more) of free RAM available then it will start up in a way that provides you with about 32512 bytes of storage for spreadsheet data. If, however, you have already stored quite a lot of information in your Notebook then the available memory may be more restricted and you will see that there are only 20224 or even 8064 bytes free when you first start. If you put a PCMCIA memory card into your Notebook and store most of your data on that then you will always have the maximum amount of memory free for spreadsheets.

NOTE: The graphics facilities of the spreadsheet require a lot of memory to work and will only be available when you have more than 65,000 bytes free in upper memory before you start the spreadsheet.

The last line of the status area begins with the prompt **Next:** followed by the entry line. The entry line displays the commands or data that you are currently typing into the sheet. In the case of the commands each single keypress is expanded into the full command word, or words, that it represents.

Finally, on this line may (or may not) be the message **Auto**, which, if present, signifies that the Automatic calculation feature is in operation. You will learn more about this later.

There is a flashing block after the word **Next:** which shows your current position on the entry line as you type. Normally this would be referred to as a cursor (just like the "cursor" in the word processor). However, the spreadsheet has a second, usually larger, cursor which shows which is the active cell. For this reason, the cursor on the text entry line will always be referred to as the CUE in the spreadsheet section of the manual to avoid confusion.

You probably know about upper and lower case characters. You hold down a shift key while typing a letter to get the upper case capital form. Notice that the first 26 columns in any sheet are labelled A..Z in upper case and you must type any cell co-ordinates in the correct case. If you type a..z when you really mean A..Z you will actually be trying to select columns in the range 26..52. To help you, Caps Lock is switched on when you start the spreadsheet so that you don't need to remember to hold down [Shift] when typing A..Z. In fact, while Caps Lock is on (indicated by a "c" at the top right of the display) you will find that [Shift] switches back to using the lower case letters.

There is also a second form of shift key which is marked Control. This is held down in the same way as the shift while a letter is typed. [Ctrl]-H means hold down the [Ctrl] and type the letter following the dash, in this case, [H].

The [Esc] key is well named and very important. It is used to let you exit without harm from any commands that you may have set into motion and then regretted. You are returned back to the primary command prompt ABC etc.. If you press [Esc] a further time from here you will leave the spreadsheet and return to the previous Notebook menu. If you subsequently restart the spreadsheet and wish to continue from exactly where you left off you just need to select the Restart option from the opening screen. (This actually reloads a temporary copy of your work from a file called RESTART.MEM. This will be explained later).

Most of the alphanumeric keys will be used at one time or another to represent various choices for the single-key-entry commands.

It is possible that you may be able to enter commands faster than the Notebook spreadsheet can process them. The spreadsheet has a built in type ahead facility which stores these commands until they can be processed. If the commands cannot be accepted you will hear a beep and whatever you typed will be ignored.

Keys used to move the cursor

The cell cursor can be moved around the worksheet using the arrow keys - [Up], [Down], [Left] and [Right]. If you try to move off the top, bottom or edge of the sheet you will see the message "outside worksheet".

The main worksheet will be formed below the entry line. As you selected the Make blank sheet option from the opening screen, the area is already filled with cells that are 12 characters wide and in General format. (Formats will be explained in more detail later). These cells are labelled 1 to 12 vertically and A to F horizontally. The blank sheet is actually 10 columns wide and 200 lines deep. You can add further columns using the Insert command.

Unlike many other spreadsheet programs you are not limited by available memory to how large the sheet can be. Any Notebook worksheet can be up to 52 columns and 255 lines, regardless of available memory, because unoccupied cells do not consume any space. As you fill cells the available memory will be reduced and this is what will actually limit how much data you have in a spreadsheet. As a rough guide, the maximum number of occupied cells you can have is about 1,800 but this depends on the contents of the cells.

The final thing to be learnt is there is a second type of worksheet display that you can toggle on or off with [X] (for eXchange) command. In this case each cell shows the information that was entered directly into it irrespective of the result of any calculations or of the selected display formats. This option will only be of use when you have entered some data into the worksheet.

When you use the X command it may be necessary to make adjustments to the column widths to be able to view all of the data or formulae that have been entered.

When you switch the formula display in this way, if you press the [F2] key the free memory value will change. The value now shown is the amount of space available for cell indices. Each time you enter data into a cell the data itself is stored and the "normal" free memory figure is reduced but, in addition to this, an entry is made in an index table to keep track of which cells are occupied. This second free memory figure shows you how much free space is remaining in the index table.

The Keyboard

Again, for reference purposes, here is a rundown of some of the keys you will be using most often. Don't worry about trying to remember it all first time, practice will make them familiar.

As well as using the arrow keys to move the active cell cursor, the keys [Up], [Down], [Left], [Right] can also be used to move around the sheet acting as mnemonics for the commands Up, Down, Left and Right. These have the additional advantage that they can easily be incorporated into a command Macro. (A macro is just a technical word meaning a list of stored commands. This is explained later in the manual) For those who prefer to use a diamond shaped layout of cursor control keys the



keys may be used in conjunction with Control, [Ctrl]. In summary, the keys you may use to move the active cell cursor by single cell movements are:

- [Up], U, [Ctrl]-W cursor up
- [Down], D, [Ctrl]-Z cursor down
- [Left], L, [Ctrl]-A cursor left
- [Right], R, [Ctrl]-D cursor right

Each press of the arrow keys will move the cursor by one cell. You can also make bigger movements to navigate around your worksheet more quickly. When pressed with Shift, [Shift], and Control, [Ctrl], the arrow keys have the following effect:

- [Shift]-[Up] or - Move up a page
- [Shift]-[Down] or + Move down a page
- [Ctrl]-[Left] jump to left edge on current line
- [Ctrl]-[Right] jump to right edge on current line
- [Ctrl]-[Up] jump to top cell in current column
- [Ctrl]-[Down] jump to bottom cell in current column
- [Ctrl]-[Home] jump to cell at top left of defined worksheet
- [Ctrl]-[End] jump to cell at bottom right of defined worksheet.

The [Ctrl]-[Home] Jump command can also be used to jump the cursor to a selected cell.

How to Get Help

If, at any time, you find that you do not recognise or cannot remember the prompts that are displayed on the screen, pressing the **[F1]** key will call up explanatory text that may be sufficient to answer all of your queries.

You can summon a help screen at any time, except when editing a cell.

The first 16 lines of help information are displayed. Press any key to see the next 16 lines and so on until you have seen all of the help text. After the last key press you will be returned to the point at which you pressed **[F1]**. Press **[ESC]** to leave help early.

The help that you call up is "context sensitive". What this means is that if you have started to use a particular command and then press **[F1]**, the help you receive will relate to that command. So, for example, if you press **[F]** (which selects the Format command) and then press **[F1]** the help you receive will describe the Format command. At the opening screen and main ABCEF... prompt the help you get is more general.

Terminology

Before we can go on to discuss the finer features of the spreadsheet we must first deal with some matters of terminology. Throughout this manual the program that you use to enter numerical data is called the SPREADSHEET and the collection of data you build with it is called a WORKSHEET. In other programs you may often see the word spreadsheet used to describe both the program itself and the worksheets that are produced by it. This can be confusing so is not done in this manual.

The worksheet is like an enormous piece of paper divided into a grid by vertical COLUMNS and horizontal rows or LINES. By convention the lines are numbered down the page from 1 and the columns are labelled alphabetically from left to right starting with A, B to Z, followed by a, b, to z (If you use a..z where you meant to use A..Z you will get unexpected results or an 'Out of Range' error message.). Caps Lock is normally switched on to help you to enter A..Z. Press **[Caps Lock]** if you want to switch it off while entering text information.

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You will find that as you move the current cell cursor position your view of the sheet will move with it, changing the cells that are displayed. In computer terms you have a scrolling window onto the sheet.

As well as entries, columns and lines the spreadsheet is also able to manipulate specified BLOCKS of the worksheet. Consider a block as a rectangular area of the sheet which you define by giving the co-ordinate of the top left and then the bottom right corners. You will find this feature very useful. It will allow you to collect your information together and then rearrange it in any way you like. The defined block can even be as big as the whole sheet if you wish to duplicate all of your work to date.

The full list of the parts of the worksheet is:

Entry	a single cell.
Column	a vertical band.
Line	a horizontal row.
Block	a rectangle from within the sheet.
All	the whole of the sheet.

You will see later that only a couple of the commands, Blank and Copy, can work on all five options. You will always be reminded which options are available via prompts displayed on the screen.

What to do when you make a mistake

You will always know when you have made a mistake because the spreadsheet will give you a beep and an explanation of your error. It will make sure that whatever mistake you make it will do no harm to your work. Just press the **[ESC]** key to back up the cue to the place before your mistake. The spreadsheet usually checks for a mistake as each key is pressed and so you will rarely have to make long corrections.

If you change your mind about an entry and want to abandon what you are doing just press the **[ESC]** key. This will stop the current entry and return the worksheet to the exact state before you started the entry.

Of course the spreadsheet cannot catch mistakes in your logic that are still legal commands.

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The smallest unit of the worksheet is a CELL, produced at the crossing point of one line and one column. Each cell is referred to by its column and line co-ordinates. e.g. A1, B12 etc. The cell is where you enter each individual unit of your data, and each piece of data is known as an ENTRY. The entry can be of three types: text, numbers or a mathematical formula known as an EXPRESSION that resolves to a numerical value.

Since you are concerned with entering information into one cell at a time, the currently active cell position is shown on screen by a CELL CURSOR cell printed in inverse text. Information about the current cell is displayed on top of the screen, as described above.

The lines of the sheet are, again by convention, only one character deep. The cells are displayed with the boundaries shown by upright bar characters '|'. However, the size of each cell is not in fact limited by the size of the display, but rather can hold any length of data you wish to enter up to a maximum determined by the width of the screen. If the display size is smaller than the length of the data then the spreadsheet displays as much of it as it can if text, or some warning characters (***) if numbers so you are not misled by truncated figures. In either case no information is lost.

Any data, text or numeric, that will be used by the program in its calculations or other manipulations must, by necessity, be restricted by the maximum size of the cell, but it is important to understand that it is not restricted by the apparent size of the cell on the screen, which can be shortened down to only one character wide.

The Notebook spreadsheet will display as much of the information held in that cell as is possible given the limitation of the display and of the display FORMAT (don't worry about what a Format is just now, it will be dealt with in more detail later). The true value of the data is used in all calculations regardless of the way it looks in the worksheet display.

As an exception to the above rule it is possible to specify that Text data should be spread over several cells to act as permanently visible comments on the data that is being displayed. This is known as a HEADING.

The worksheet itself can be many times larger than can fit on screen at any one time - in fact up to a maximum of 52 columns by 255 lines.

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Saving your worksheets

When you have typed data into a worksheet it is temporarily stored in the working memory of the spreadsheet program while you are still working on it. To save it so that you can later load it back and continue working on it you must store it in a FILE. The word file is just a computer jargon word which means a stored collection of data. The documents in the word processor are also files but the word "document" is a more meaningful description.

To save information to a file all you need to do is type **[C][A][name]** which means Copy All of the worksheet to a File with name "name". Choose your own file name which can be from 1 to 8 letters long. This is not like the word processor where you can have a 12 character name. The reason may become apparent if you later look at the list of stored worksheet files. You will see that the letters .MEM have been added automatically to the name you gave - possibly making it a full 12 characters long. This is because the spreadsheet only recognises files whose names end with a full stop followed by either MEM, TXT, DAT or DIF - this is explained later.

When you next start the spreadsheet you can select an existing file from the list stored worksheets screen to reload your existing work and carry on. Alternatively, you can select the start a new worksheet option and then use the **[C][F]** command (Copy File) to load a worksheet file back into the spreadsheet program.

In other programs you might be accustomed to using Save and Load to accomplish the same function. In the Notebook spreadsheet both saving and loading are achieved using different forms of the Copy command.

Leaving the Notebook spreadsheet

If at any time you want to leave the spreadsheet you can either just press **[ESC]** at the main ABCEF... prompt or press **[Q]** to select the Quit command. Your work up to this point will automatically be saved in a file called RESTART.MEM. This file is automatically updated and overwritten every time you use the Quit command or leave by pressing **[ESC]**.

This is an EMERGENCY ONLY save of your work and normally you should copy all your work to file with your own choice of name. Just type **[C][A][MYWORK]** (Copy All of the sheet to a file with the

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name MYWORK) and your work will be saved in a file called MYWORK.MEM. This is explained in more detail later on in the manual.

When you next use the spreadsheet, you can select the Restart option at the opening screen to automatically reload the RESTART.MEM file so that you can continue work from where you left off. Alternatively, you can just pick RESTART.MEM from the list of stored worksheets. Remember that RESTART.MEM will be overwritten next time you quit from the spreadsheet.

If a request is made to see the stored files whilst the spreadsheet is being used, only those files whose names have the last four characters .MEM, .TXT, .DAT or .DIF are displayed. When using the word processor, if you look at the list of stored documents you will see the spreadsheet files listed but you won't be able to edit them using the word processor (except .TXT files).

Running the sample worksheets provided

Built into your Notebook are seven example worksheets. They are used throughout this manual to illustrate the operation of the program and you could also use them as the basis of your own work by loading one in, modifying it for the way you want to work and then saving it under a new name.

When you first start, the demonstration files are hidden away in the read only memory of your Notebook so that they do not waste any of the valuable RAM space but you can easily copy them out into RAM, while the spreadsheet is being used, so that they can be worked on. From the very opening menu of the spreadsheet choose the "Demos" command by pressing $\left[\text{P} \right]$. After this the example files will be listed and can then be loaded into the program. When you stop using the spreadsheet the example files will be deleted from RAM to conserve space.

To look at the file called SALES.MEM notice that a Copy command has already been started so you just need to type SALES $\left[\text{P} \right]$ to complete copying the file and you will then see it on the screen. (You don't need to type .MEM as that is added for you automatically).

SALES.MEM is a sample commission calculation showing the results based on a stepping scale and a sliding scale.

TAX.MEM is an example of a self employed tax calculation. This uses a function POS specially created for tax calculations. This makes no change if the argument is positive but gives a value of zero if the argument is negative.

ADLIST.MEM is an example of using the spreadsheet to hold a name and address list. The spreadsheet's sorting and searching functions can be used to operate on the data and it is possible to print mailing labels from it - this is explained later in the manual.

TBEAM.MEM shows how an engineer might work out the properties of a Tbeam. With routines like this whole books of formulae and tabulated results can be dispensed with.

IRR.MEM shows how to work out the internal rate of return. The program in this case actively searches for an answer as this is the only way this problem can be solved. This worksheet uses DO and WHILE and several other useful functions. You won't be able to prepare this type of worksheet until you are quite experienced but it does show the level of sophistication to which you can go.

PLOT1.MEM and PLOT2.MEM are worksheets set up for graphics. See the tutorial section that deals with using the Trace command for details of how to use the graphics.

When you leave the spreadsheet program, the demo files are erased from the Notebook's RAM to conserve space. If you really wanted to keep one available then you must save it under a new name before you stop the spreadsheet. Because any sheets called SALES.MEM, TAX.MEM, ADLIST.MEM, TBEAM.MEM, IRR.MEM, PLOT1.MEM or PLOT2.MEM are erased when you leave the spreadsheet you must NEVER use these names yourself or your work will be erased.

New users of the spreadsheet may now like to continue reading Part Two - the Tutorial Guide. The following section is a quick start guide for people who are already familiar with the operation of a spreadsheet program.