



**Series 100/VisiCalc®
Version A.01.03**



Hewlett-Packard Company
Personal Software Division
3410 Central Expressway
Santa Clara, Ca. 95051

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Printing History

New editions of this manual will incorporate all material since the previous edition. Update packages may be used between editions and contain replacement and additional pages to be merged into the manual by the user.

The manual printing date and part number indicate its current edition. The printing date changes when a new edition is printed. (Minor corrections and updates which are incorporated at reprint do not cause the date to change.)

First Edition – December 1983

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Warning: This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC Rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this computer. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

What is VisiCalc, Version A.01.03?

Version A.01.03 of VisiCalc is an enhanced version of the original VisiCalc for the HP 150. It is the product of an ongoing effort to provide you with an up-to-date, quality spreadsheet program for your HP 150.

Specifically, Version A.01.03 of VisiCalc for your HP 150 provides enhancements that let you:

- Monitor worksheet size.
- Utilize more of your HP 150 memory for your worksheets.
- Change the logged (default) disc and/or directory from within VisiCalc.

This, and the following information sheets, explain the additional features you'll find in version A.01.03. They are provided to give you immediate information about this version without your having to wait for future manual updates. Since these are addendum sheets to your VisiCalc manual, you should file them with the manual or keep them some place where you can refer to them readily.

If you're currently using VisiCalc on the HP 150, you should use the INSTALL utility to remove your current version, then install this new version (refer to your Owner's manual if you have questions about how to use the INSTALL utility).

HP Computer Museum
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Monitoring Worksheet Size

When you're creating new worksheets, or altering existing ones, you occasionally need to monitor your worksheet size. This is necessary because worksheets can grow to such a size that they cannot be handled on your HP 150. The maximum size of your worksheets depends on the amount of memory you have on your HP 150.

This version of VisiCalc calculates and displays the amount of memory that is available for your worksheet as you're using it. The available memory is expressed as a percent of the total memory available for worksheets on your computer. The "Available Memory" percent is displayed on the right edge of the prompt line (third line from the top of the display).

For example, let's suppose that your HP 150 has 256K of memory. After subtracting space occupied by the MS-DOS, P.A.M. and VisiCalc programs, the total memory available for worksheets on your computer is approximately 50K. You begin to use VisiCalc, and you notice that available memory for the worksheet you're using is 1%. This means that you can expand this particular worksheet by 500 characters (50K times 1%) before reaching the maximum worksheet size limit.

If your HP 150 computer has additional memory, all of the additional memory is available for worksheets. For example, if you have a total of 512K of memory on your HP 150, the amount of memory available for worksheets is approximately 306K (50K + 256K). A 1% on the prompt line in this example, means that you can expand your worksheet by approximately 3,060 characters (306K times 1%) before it reaches maximum size.

NOTE

Because worksheet elements (labels, formulas, and values) that you may use require different amounts of memory, it is difficult to estimate exactly how many worksheet cells is equivalent to the 3,060 characters of available memory.

When you expand your worksheet beyond the maximum size, by inserting a row, for instance, you see:

Out of worksheet memory. Type RETURN to continue.

on the top of the display. The operation that you were performing is terminated without being completed, but you can continue with worksheet operations that do not expand the worksheet size. At some point, you need to reduce the worksheet size, by deleting a row, for instance, then complete the operation that was terminated.

When your worksheet is large, and uses most of the available memory, you notice that some operations take a little longer to perform. This happens because parts of the VisiCalc program have to share the same memory area to perform their functions. In order to do this, they take turns "rolling" in and out of memory from disc.

Utilizing More of Your HP 150 Memory for Your Worksheets

If you need to create or use worksheets which are too large for your computer's available memory, you have two alternatives. The more obvious alternative is to consider whether your total computer requirements indicate that you should invest in additional memory.

If it doesn't make sense to upgrade your memory, your other alternative is to use VisiCalc independently of P.A.M. This provides approximately 60K of additional memory for your worksheets, but it means that you cannot perform File Manager operations from VisiCalc. The **File Manager** function key is inoperative, and you see the message:

File Manager not available. Type RETURN to continue.

whenever you touch it.

The following procedures explain how you set up and use VisiCalc independently of P.A.M. Refer to the Owner's manual for details on how to perform these procedures.

Setting up the Operating System Disc:

- Format a blank disc and name the disc volume, "NO-PAM".
- Copy the HP 150 SYS-MASTER Disc programs to the NO-PAM disc (you can use `Copy System` in the Format utility).
- Copy COMMAND.COM from the HP 150 SYS-MASTER Disc to the NO-PAM disc.
- Finally, rename file CONFIG.SYS to CONFIG.SAV on the NO-PAM disc.

You should now have the following files on your NO-PAM disc:

```
CONFIG.SAV  PAM.MSG  PAM.BAT  PAMCODE.EXE  COMMAND.COM
```

Setting up the VisiCalc Disc:

- Format a blank disc and name the disc volume, "VC".
- Install VisiCalc onto the VC disc.
- Delete the tutorial worksheet files (files with extensions of .VC) on the VC disc. This frees plenty of space on the disc for the file you're going to copy in the next step.
- Copy COMMAND.COM from the HP 150 SYS-MASTER Disc to the VC disc.

You should now have these files on your VC disc:

```
VISICALC.RM$  VCRUN.EXE      VCLIB.PAS  VISICALC.OVL  
VISICALC.HLP  VISICALC.MSG  VC.BAT     COMMAND.COM
```

Using VisiCalc:

Now, when you're ready to use VisiCalc, you:

- Insert the NO-PAM disc into drive A, and the VC disc into drive B.
- Hold down the `CTRL` and `Shift` keyboard keys, then type `Reset Break`. You are prompted by MS-DOS for the date and time. Next, you see `A>`.
- Type `B:`, then `Return`.
- Type `VC`, then `Return`.

Changing the Logged (Default) Disc and/or Directory from Within VisiCalc

The facility to permanently change the disc drive and/or the directory path that VisiCalc uses is available by entering File Manager. Now, you can perform this function from within VisiCalc.

In VisiCalc, you have two ways to change the disc drive and/or directory. You can touch the function key **Choose Dir** which is a new option of **Load & Store**. You can also choose the new **\chdir** option of the **STORAGE** command (/S).

With both methods, you see the message:

Storage: Current Directory

on the prompt line and the default disc drive/directory path on the input line. You type **Backspace** to erase the designations you want to change, then type the correct information followed by **Return**. For example, if you want to change the disc drive name from "B" on the input line to "A", you type **Backspace** as many times as necessary to erase the "B". Then type **A:**, then **Return**. You can also use **Edit** to make the corrections (see the **Edit** function key in the VisiCalc manual).

You see the message:

Bad directory. Type Y to reinput, Backsp to cancel
when a disc is not inserted in the drive you specify, or when the directory does not exist on the specified disc.

You always have the ability to change the logged disc and/or directory from within VisiCalc regardless of whether you are using VisiCalc independently of P.A.M. (see the previous section).



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INTRODUCING SERIES 100/VISICALC



What is Series 100/VisiCalc?

Series 100/VisiCalc is a powerful tool that you can use with your HP Personal Computer. It is a "tablet" or "worksheet" on which you perform comprehensive calculations. You can then manipulate these calculations and view the different results much more readily than with conventional tools, such as the calculator.

There are many ways you can use VisiCalc. It provides you with planning tools, such as business/home budgeting and analysis, investment analysis, inventory and sales analysis. In addition, many record keeping tasks are managed more efficiently such as income tax preparation, balancing checkbooks, and keeping business registers.

Once you have defined a task, you have the flexibility of specifying your own formulas and requirements for its solution. VisiCalc remembers your specifications and lets you alter them as the need arises. As you enter numbers on your worksheet, formulas which use these numbers are automatically calculated showing you the effects immediately.

This calculation facility makes VisiCalc a powerful planning and forecasting tool. You may examine various alternatives effortlessly, and in a way that would be difficult and time-consuming manually. For example, imagine that you are doing sales projections using VisiCalc. You may want to know the effects of different sales levels on your company's profit. What are the consequences of selling 200 units a month instead of 175? Trying out these "what if" situations is very easy. It involves entering only a few key figures, and watching VisiCalc refigure the entire worksheet, based on those new numbers.

A unique characteristic about VisiCalc which makes it doubly useful is its ease of use. Using it is as easy as pointing your finger to information on the worksheet. The HP Touch® feature allows you to get your work done quickly and without a lot of the traditional typing at the keyboard. In addition, the Help feature is available continuously to give you detailed information on the operation of VisiCalc.

HP Touch is a registered trademark of Hewlett-Packard Inc.

What You Need to Use VisiCalc

You need the following components to use VisiCalc:

- An HP 150 Personal Computer with a minimum of 256K of user memory.
- A dual micro-floppy or fixed disc drive supported on the HP 150 Personal Computer.
- An HP printer (optional).
- This manual, and the VisiCalc Master Disc.
- Extra formatted discs for storing worksheets.

NOTE








The *HP 150 Personal Computer Owner's Manual* lists all supported disc drives and printers that you can use with your HP 150 Personal Computer. Refer to the chapter on installing your equipment for complete details.

As with other HP applications, you should make a working copy of your VisiCalc Master disc. The working copy is the one you work with regularly. You should store your original VisiCalc Master Disc away in a safe place. Refer to the *HP 150 Personal Computer Owner's Manual* for instructions on how to make working copies.

Differences Between HP 120/125 VisiCalc and HP 150 VisiCalc

If you are used to working with VisiCalc on the HP 120 or HP 125, you should review the following summary. It compares the products highlighting differences. The differences can affect the results you obtain when you want to process your HP 120/HP 125 worksheets on the HP 150. Also, you need to understand the HP 150 VisiCalc functionality to utilize the product correctly and to avoid usage discrepancies.

VisiCalc Feature	HP 150	HP 120/HP 125
Hardware/software requirements	256K, 2 discs MS-DOS	64K, 1 disc CP/M
Worksheet files	HP 120/HP 125 worksheets read and processed properly.	Only processes HP 150 (VC) files if no unique HP 150 features are used.
Moving around on the worksheet, specifying cell names	HP Touch gives you an alternate way to locate cells on the worksheet. You can also use it to specify cell names when using commands and function keys.	You use the cursor control keys to locate cells on the worksheet. You can only use these keys to specify cell names when typing formulas.
Function keys	Touching the function keys at the bottom of the screen display (or typing the corresponding key on the keyboard) lets you conveniently perform most of the commands.	Not available.
Printing	Expanded features include: Prints cell formulas and descriptors. Printer Configuration lets you specify your own unique printing requirements, which can be saved for later use.	Prints cell contents only. You cannot flexibly adjust printing characteristics.

VisiCalc Feature	HP 150	HP 120/HP 125
Cell attributes: Protect and Hide	This new feature lets you prevent the typing of cell contents and formulas. It also lets you prevent the display of cell contents in the window. You can specify attributes globally also. When you do this, you can use the  key to skip over protected cells. (see the ATTRIBUTE command and the Attrib & Globals function key.	Not available.
Cell editing	You can use more keys when you perform cell editing functions (see the Edit function key). These include  and  and  . You can also move directly to the beginning and end of the input line during editing by typing  and  .	You use the cursor control and  keys to perform cell editing functions.
Multiple windows	You can specify as many windows as you need.	You can use a maximum of two windows.
Help	You can request assistance with feature details at any time.	Not available.
@NPV function	Computes Net Present Value using any initial investment figure.	Computes Net Present Value without using an initial investment figure (it assumes zero).
@INT function	Returns a more precise result since the HP 150 computes with greater precision than the HP 120/HP 125.	Returns a result of less precision.

VisiCalc Feature	HP 150	HP 120/HP 125
Blanking cells	You can blank single cells, columns or rows.	You blank only single cells.
Cell formatting	You can use multiple formats for the same cells. New options include the numeric currency and repeating label formats. A centering option is added to the justification format.	A limited number of formats are available. These are right and left justification, dollar, integer, default and general.
Column widths	You can set widths for individual columns.	You set the width for all columns.
Replicating cells	You can copy cell elements independently. You can specify that all cell references be adjusted automatically or remain unaltered.	You copy all cell elements, and are prompted for cell reference adjustment.
The File Manager function key	You can perform any file operations you need to perform at any time.	You can do a file-by-file directory lookup only while performing the STORAGE command.

Getting Familiar with Your VisiCalc Materials

When you purchase Series 100/VisiCalc, you receive a set of materials that are "packaged" in a binder. The binder consists of the following materials:

- One VisiCalc Master Disc, which contains the VisiCalc programs and the sample worksheets (one of which is used in the GETTING STARTED section of the manual).
- This manual.
- A Quick Reference Guide.

The Organization of This Manual

The manual is organized so that you can find the information you need quickly. It is essentially structured in a series of levels progressing from a general overview of the product to a detailed explanation of specific features. It is hoped that this approach proves useful to you irrespective of the exposure you have had to spreadsheet products or to computers. The following gives a brief summary of the content and approach of the main sections:

INTRODUCING SERIES 100/VISICALC

This section gives you a general overview of the VisiCalc. It tells you what equipment and materials you need to use it. It also gives you a comparison of features between HP 120/HP 125 VisiCalc and HP 150 VisiCalc.

GETTING STARTED

This section consists of step-through exercises designed to teach important concepts of VisiCalc. Subjects are presented in a way that is understandable by persons unfamiliar with other worksheet products. It is highly recommended that you complete the lessons as the first step in working with this product. A sample worksheet stored on disc is used for ease and speed in learning.

USING VISICALC

This section gives you a checklist of the most important worksheet procedures you'll need to know. The procedures either give you the detailed information or tell you where in this manual you can find the information.

If you have never used worksheet products before, you should review this section before starting to build your own worksheets.

If you are familiar with other worksheet products, you can use these sections as a quick reference to general procedures.

FOR YOUR REFERENCE

The material covered in these sections are detailed specifications on commands, function keys and functions. These chapters are presented in a purely reference fashion. Familiarity with worksheet concepts is assumed.

One final point...This manual deals only with material relevant to the VisiCalc product. For information about the HP 150 Personal Computer, hardware installation, etc. refer to the *HP 150 Personal Computer Owner's Manual*.

Where To Go From Here

The best way to learn to use VisiCalc is to try it. Don't be afraid to experiment and make mistakes. You cannot damage either the computer or the VisiCalc program. As you practice, you'll gain familiarity and confidence in using the product. The GETTING STARTED lessons give a guided learning approach which is appropriate if you are unfamiliar with worksheet products. You can learn the key features of VisiCalc in an hour or so, and you'll find that you are immediately able to solve relatively simple problems. As you gain more experience, you'll discover a broad range of features that are available to you.

To begin VisiCalc, make your working copy of the VisiCalc Master Disc as specified in the *HP 150 Personal Computer Owner's Manual*.

Now you're ready to begin using VisiCalc. If worksheets are new to you, begin with the GETTING STARTED lessons. If you feel comfortable with worksheet concepts, you can begin using VisiCalc right away. You can use the USING VISICALC and the FOR YOUR REFERENCE sections for details as you need them.

GETTING STARTED



Introduction

This section consists of four lessons. Each lesson gives you a guided approach to learning. You are presented with concepts, then you are given exercises which illustrate these ideas. You receive specific suggestions on what to do when you have difficulty doing these exercises.

The purpose of the lessons is to give you a good idea of the major concepts and features of VisiCalc. Many details are not covered. Lesson 4 is the QUESTION AND ANSWER section. It attempts to fill in some of the details not included in the lessons, and suggests where in this manual you can look for more complete descriptions of specific features.

Lesson 1

Introduction

In this lesson, you will learn many of the basic concepts of VisiCalc. Specifically, you will learn:

- Parts of the worksheet and computer display
- How to start the VisiCalc program
- How to move around on the worksheet
- How to type labels
- How to correct typing errors
- How to type values
- How to end a VisiCalc session

Worksheet Orientation

Before you start to work with VisiCalc, you need to become acquainted with the parts of the VisiCalc display, and some general concepts about the way you use this spreadsheet program.

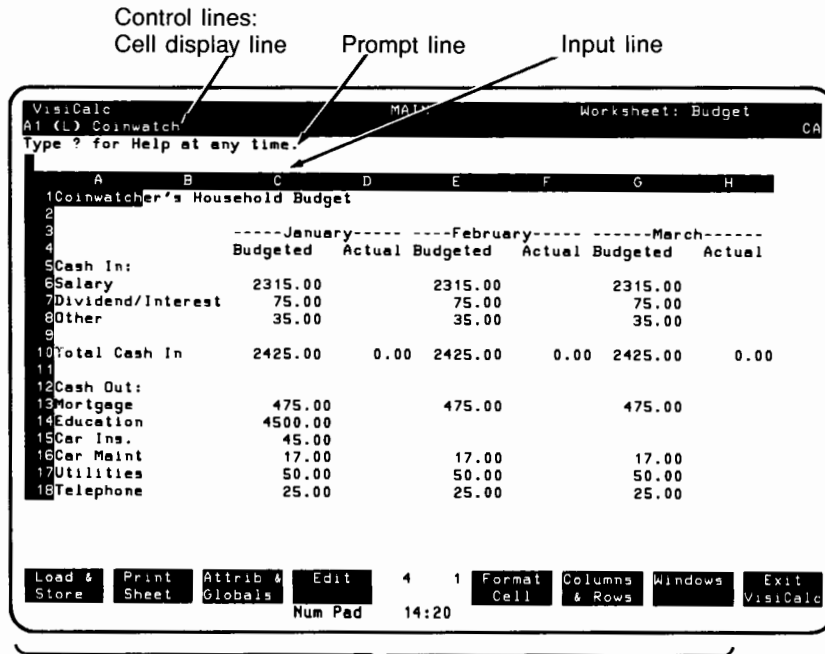
Let's look at a typical worksheet as it would appear on your VisiCalc display. The middle section that you see on the screen, with highlighted borders on the top and left, is the *window* of the worksheet. You view parts of the worksheet in this area. When your worksheets are large, you can slide the window to any area of the your worksheet. This "*scrolling*" is like sliding a worksheet paper around on your desk, so that you can see different parts more readily.

Above the window are four lines. The first gives identifying information about the application, such as the name (Visicalc), menu level ("MAIN"), and the name of the worksheet you are currently working on. The next three lines are *VisiCalc control lines*. They guide and instruct you on how to use VisiCalc. Each of the control lines has a specific function which you will learn as you go through the lessons. They are, from line two:

- *cell display line*
- *prompt line*
- *input line*

The message `Type ? for Help at any time.` appears on the prompt line frequently. It reminds you that you can get instant Help information on whatever worksheet operation you may be performing. You will learn more about getting Help in the last lesson.

At the bottom of the display you see a series of highlighted blocks. These are the *Main function keys* and they let you perform many operations in VisiCalc. As you go through the exercises in each lesson, you'll learn how these keys are used. Remember that you can use them by touching their labels on the screen or by typing the corresponding key on the keyboard (f1 to f8).

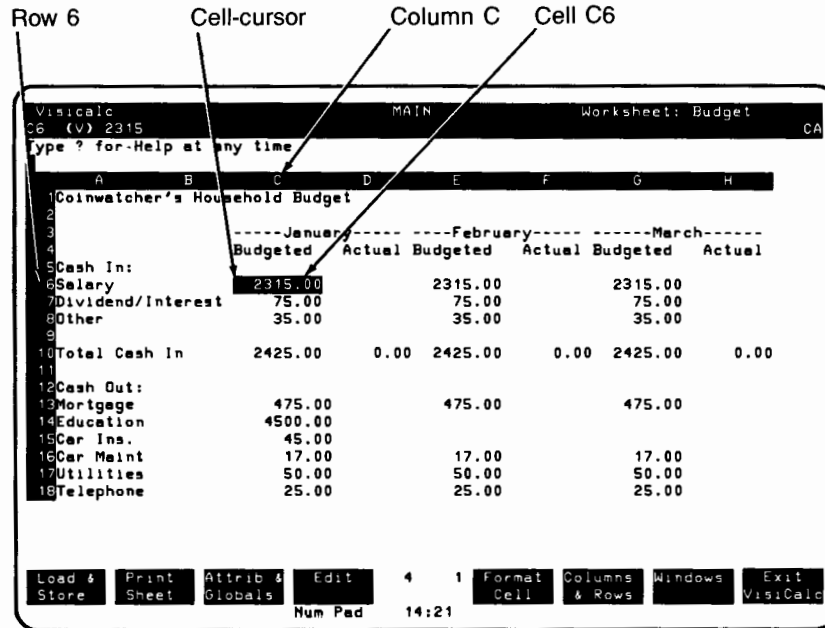


Main Function keys

The window is divided in a grid-like fashion. It consists of *columns* and *rows*. Columns have alphabetical names, and the rows have numeric names.

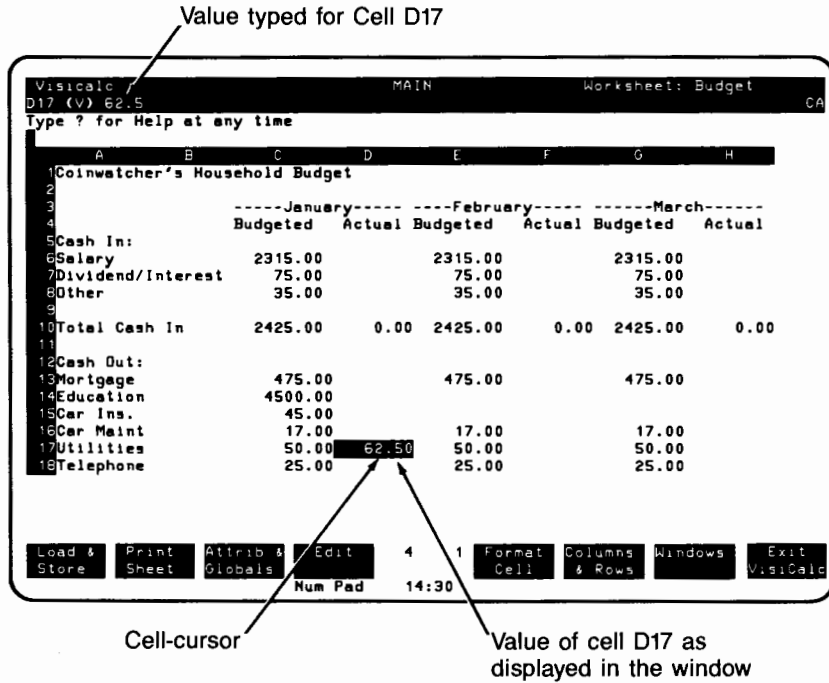
The intersection points of columns and rows are *cells*. Cell names, then, are these intersection points. For example, the cell at the intersection of column C, row 6 is named C6.

The *cell-cursor* (enhanced block) lets you move to cells on the worksheet. One of the first things you learn in this lesson is how to move the cell-cursor. In this figure you see the cell-cursor located at cell C6.



When you use the worksheet, you type values into the cells much as you would write them onto a paper worksheet. With VisiCalc though, you type all cell data in one place on the display. This place is the input line. When you finish typing, you see the information appear in the worksheet cell.

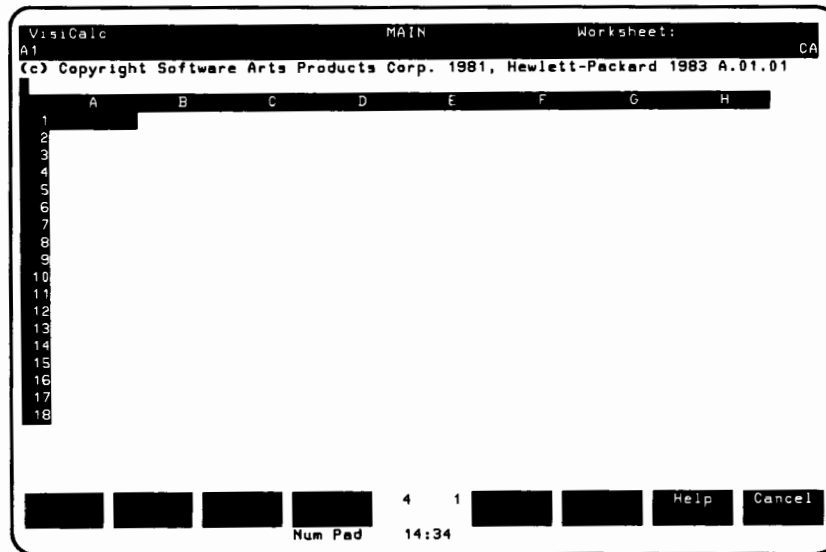
For example, suppose that you want to enter \$62.50 for January's Actual Utilities on the worksheet you see. The Actual Utilities cell is located at the intersection of column D and row 17. You move the cell-cursor to that cell on the worksheet, then type 62.5 on the input line. When you finish typing 62.5, this number is displayed in cell D17 and also on the cell display line.



Starting the VisiCalc Program

A reminder again before you get underway. You should be using a working copy of VisiCalc. If you have not made a Work Disc, pause here and make the copy. Use the *HP 150 Personal Computer Owner's Manual* for instructions on how to do this.

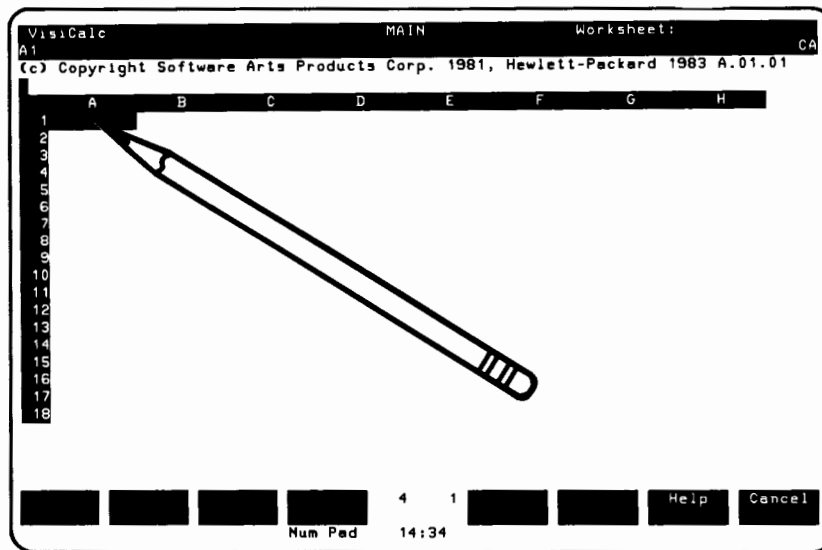
When you are ready to begin, insert the VisiCalc disc into one of the disc drives, and then follow the procedures in the *HP 150 Personal Computer Owner's Manual* for starting up an application. Select VisiCalc on the P.A.M. display, then touch **Start Applic.** In a few moments you see the VisiCalc display which looks like this:



If VisiCalc does not appear as one of the applications on the P.A.M. display, the VisiCalc disc may not be inserted into one of your disc drives. Ensure that the VisiCalc disc is inserted, press **Reread Discs**, then start up the application as described in the *HP 150 Personal Computer Owner's Manual*).

Moving Around on the Worksheet

Now you are ready to use the worksheet. Look at the window on your computer display and find the cell-cursor. You see it covering cell A1. As you have already learned, you write into cells on the worksheet according to the location of the cell-cursor. You can think of the cell-cursor as the point of your pencil or pen.



Moving Inside the Window

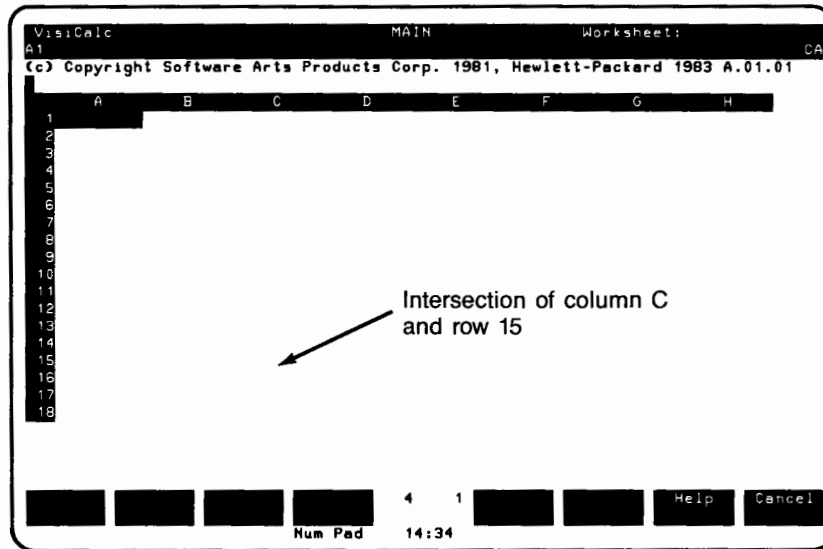
As you have learned, the visible portion of the worksheet is the window. Before you learn to write onto the worksheet, you need to locate the cell first. Let's try moving the cell-cursor to a cell that you see in the window.

Exercise 1 Move the cell-cursor to cell C15.

You do this:

In case of difficulty:

1. Find the intersection of column C and row 15 in the window.



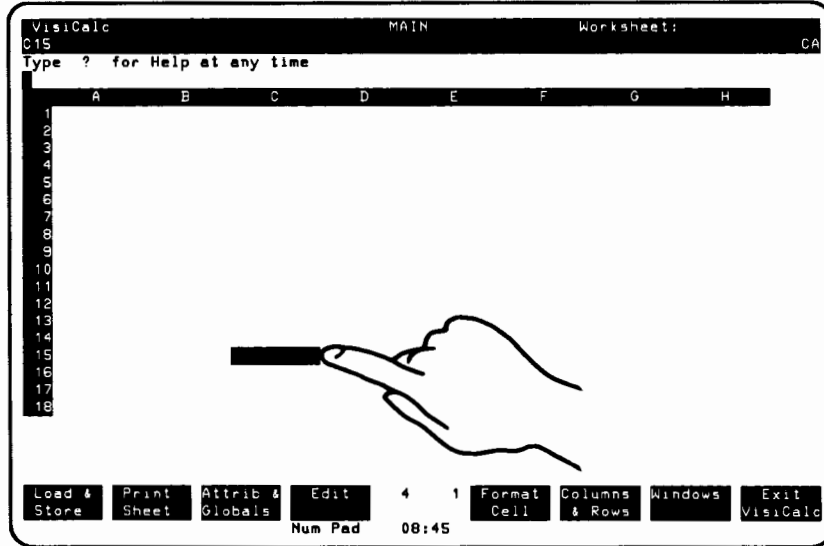
You do this:

In case of difficulty:

2. Touch the intersection of column C and row 15 briefly, then release.

2. If you touched some other cell, simply try again.

Notice how the cell-cursor follows your finger when it is touching the display. As soon as you release your finger, the cell-cursor stops moving.



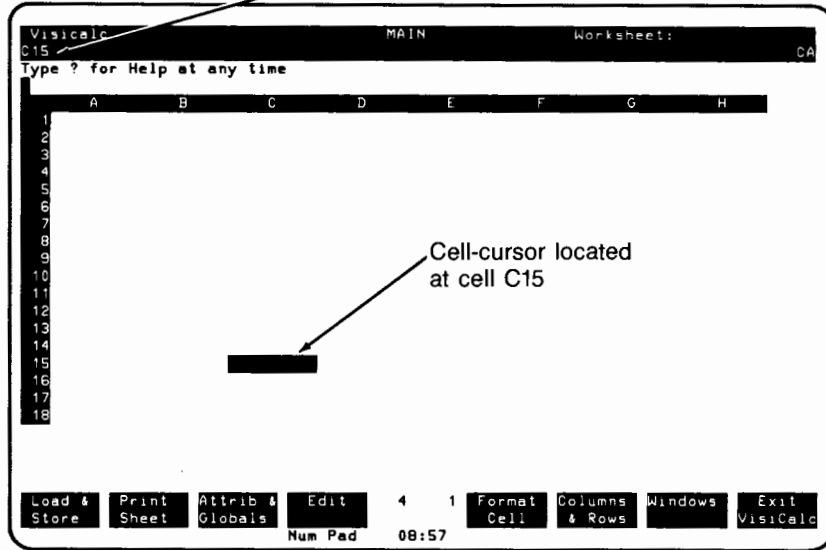
NOTE

Since a cell is selected when you release your finger, you can take your time moving the cell-cursor around. Just keep touching the display until you have located the cell you want.

When you locate a cell, the cell-cursor covers it in the window. You also see the cell's coordinates on the cell display line.

Practice touching other cells until you feel comfortable with moving the cell-cursor around in the window.

Cell-cursor location shown
on cell display line



Moving Outside the Window

When you are working with large worksheets, you need to move to cells that are not in the viewing area, or window. To do this, you move the cell-cursor to the area of the worksheet you want to work with, and the window is scrolled automatically.

Exercise 2 Move the cell-cursor to cell B25.

You do this:

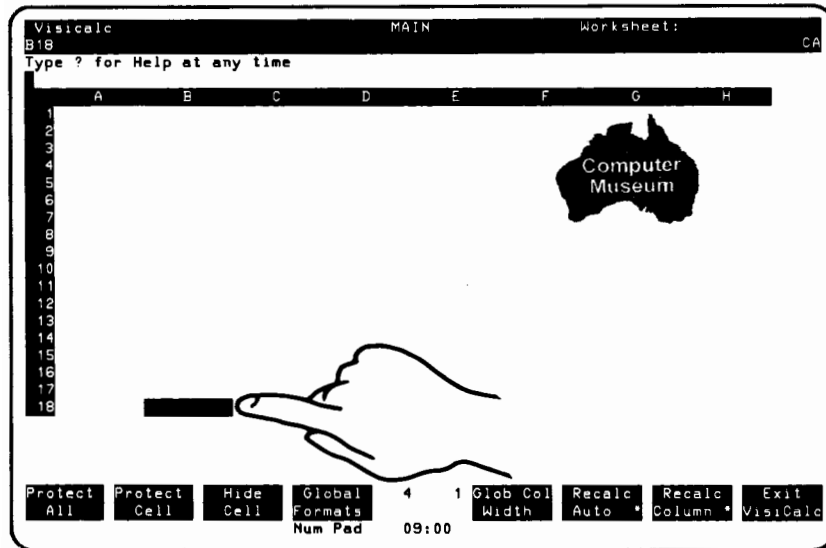
1. Touch cell B18.

In case of difficulty:

1. Try again if you touched the wrong cell.

If you touched a function key by accident, touch

Cancel, Done, or VisiCalc Main, then start again.



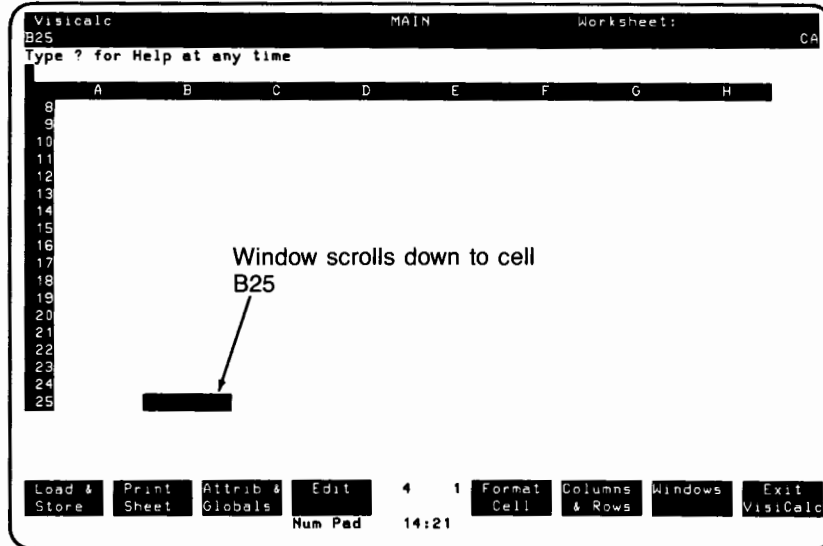
You do this:

2. Type **▼**

Hold the key down until you see row 25 appear at the bottom of the window.


In case of difficulty:

2. If you hold the key down too long, the cell-cursor is positioned past cell B25. That's OK since cell B25 should still be visible. Now touch cell B25.



As you hold **▼** down, notice that the row headings change and the window is adjusted downward. The window is being adjusted automatically for you. (when you need to move the window upwards, type **▲** the same way you typed **▼**).

NOTE

You could have located cell B25 by omitting step 1 and holding down  until the cell appeared.

The previous exercise showed you how to scroll the window vertically, that is, from the top of the worksheet to the bottom. Now let's scroll the window sideways.




Exercise 3 Move the cell-cursor to cell K10.

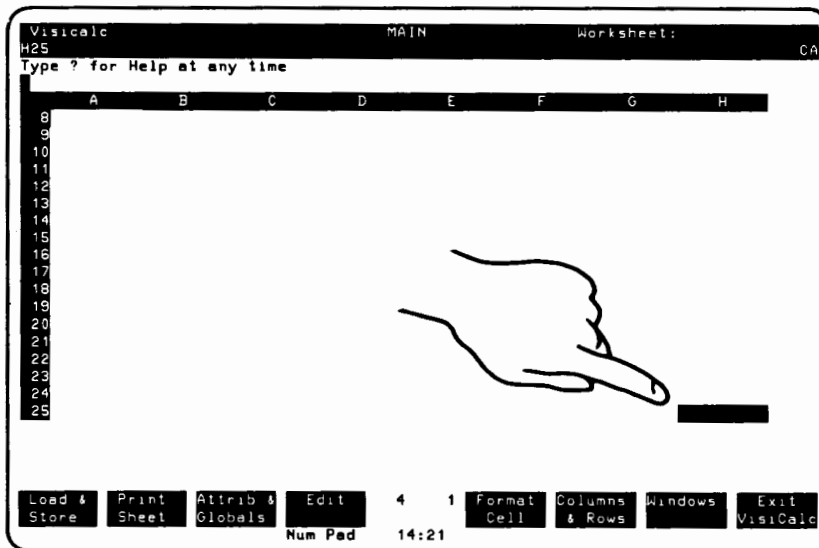
You do this:

1. Touch cell H25 briefly, then release.

In case of difficulty:

1. If you touched another cell, do this step again.

If you touched a function key by accident, touch , , OR , then start over.



You do this:

2. Type **▶**.

Hold your finger on the key until column K appears in the column heading on the right side of the display.

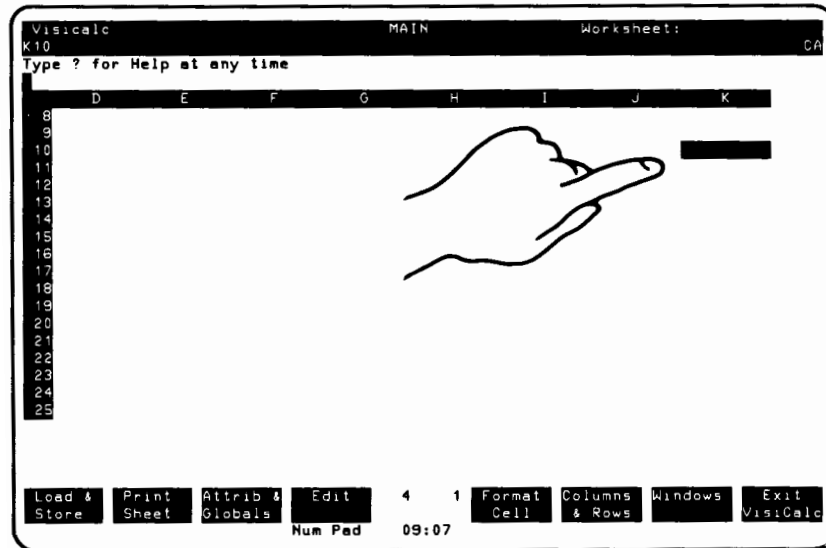
In case of difficulty:

2. If you held the key down too long, that's OK. Go on to the next step.

You see the column headings change as the window is scrolled to the right. When the cell-cursor is located on the leftmost column in the window, you can type **◀** to scroll the window to the left.

3. Touch cell K10 briefly, then release.

3. If you touched another cell by accident, try again.



You cannot scroll the window past the limits of the worksheet (column IT or row 254). If you try to move the cell-cursor beyond the worksheet limits, VisiCalc beeps.

Practice moving the cell-cursor inside and outside the window until you feel confident about how to move it.

Moving Outside the Window More Quickly

You can see that moving the cell-cursor can be time-consuming when you need to move to distant parts of the worksheet. As you might have thought, there is a quicker way to move the cell-cursor outside the window.

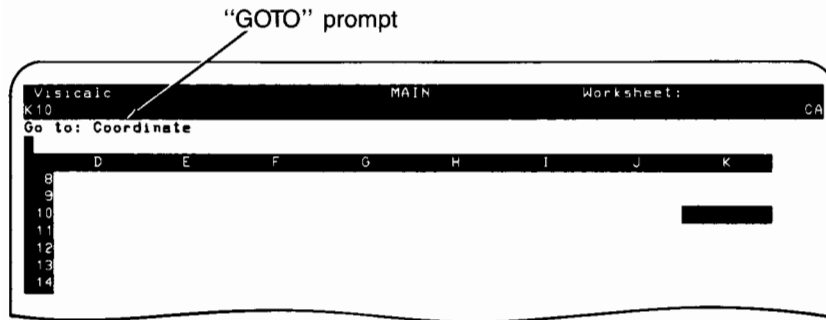
Exercise 4 Move the cell-cursor to cell C50.

You do this:

1. Type >.

In case of difficulty:

1. If you mistyped >, touch **Cancel** and do this step again.




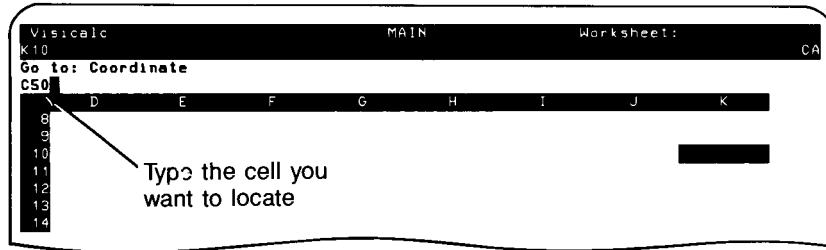
Notice the message, `Go to: Coordinate` displayed on the prompt line.

You do this:

2. Type the cell coordinates, **C50**.

In case of difficulty:

2. If you typed **C50** incorrectly, type  to erase one character at a time. Then type the correct cell name.

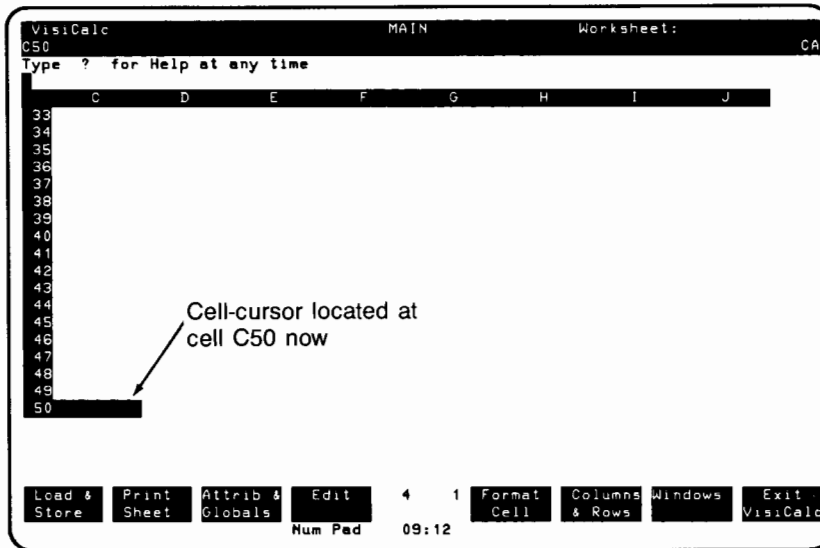


You do this:

- 3. Type **Return**.
You see the window readjusted in one operation. The cell-cursor jumps directly to cell C50.

In case of difficulty:

- 3. If you typed the wrong cell name, one of two things happens.
If the cell name is valid the cell-cursor is moved to that cell. Use the procedures you have learned so far to locate C50. If you need review, look at Exercises 1-3.
If the cell is outside the range of valid cells (A1 to IT254), you hear a beep. You then type the correct cell name, and **Return**.



Writing on the Worksheet

As you have learned, moving around on the worksheet is a common and important aspect of using VisiCalc. You move the cell-cursor to the cell you want to write on, then type characters into it. You type cell characters on the input line. When you finish typing, the entire entry is filed into the worksheet cell at the cell-cursor position and displayed.

Typing a Label


One kind of information that you can write into cells is a label. A label might be a title, a name or other descriptive information. You can use letters, numbers and special symbols in labels.

Exercise 5 Type the label, Deposits, into cell K10.

You do this:

1. Move the cell-cursor to cell K10.
2. Type **Deposits**.

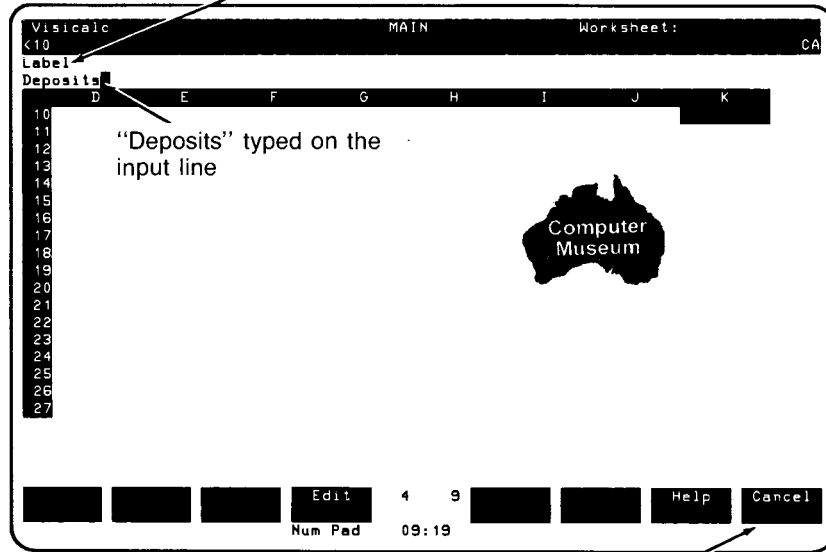
In case of difficulty:

1. Review the procedures you learned in Exercises 1–4 for moving the cell-cursor inside and outside the window.
2. If you make a mistake, use the  key to erase characters one at a time. Then type the label correctly.

As soon as you type D, you see Label displayed on the prompt line. This means that VisiCalc knows you are typing a label. The characters that you type appear on the input line.

Notice the function keys also. You cancel cell input by touching **Cancel**. You will learn about **Edit** and **Help** later.

You are typing a Label

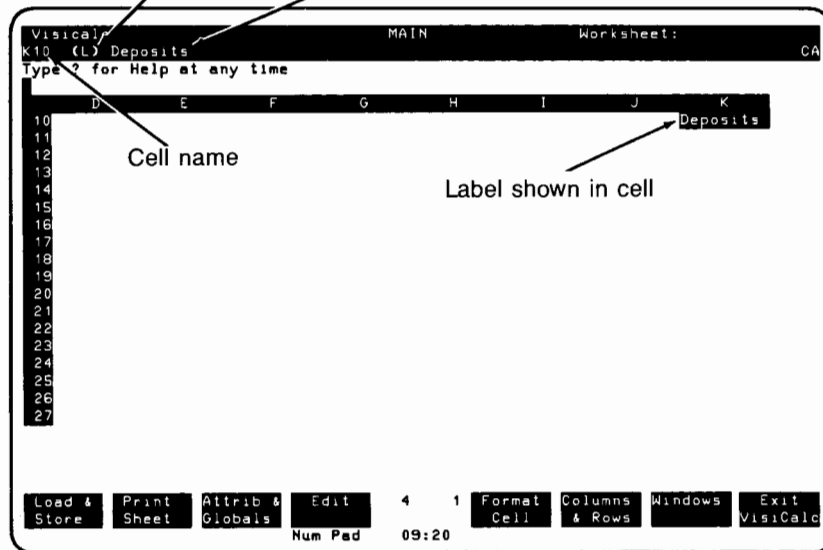


You cancel cell input by touching

3. Type `Return`.

As soon as you type `Return`, **Deposits** appears on the worksheet in cell K10, and also on the cell display line.

Cell display line shows:
Cell data type (label) Cell label



You need to remember only one rule when you type labels. If the first character of the label is not alphabetic, you must type a quotation mark first.

Exercise 6 Type the label, 1983 Tax, into cell K10.

You do this:

1. Ensure that the cell-cursor is located at cell K10.
2. Type ".

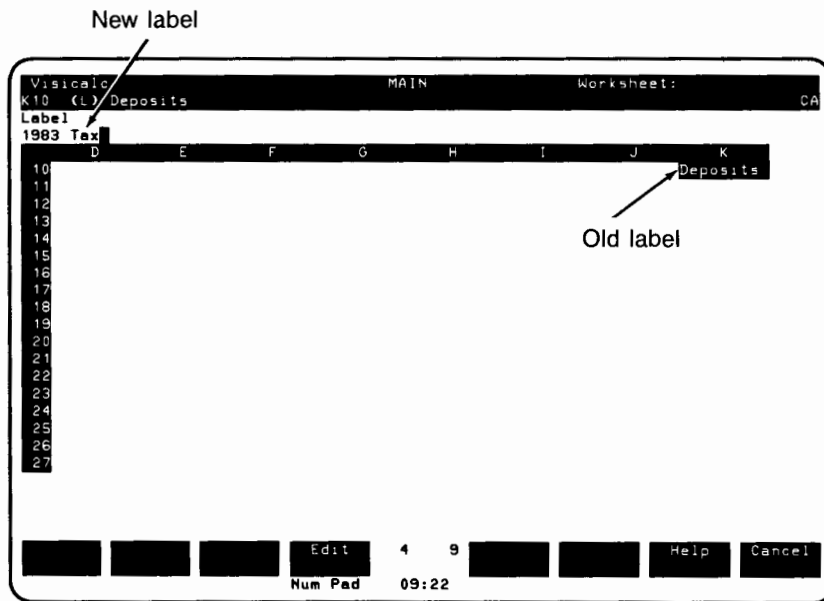
In case of difficulty:

1. If you need review on moving the cell-cursor, look again at Exercises 1-4.
2. If you made a mistake, touch **Cancel** and start this step again.

You see Label displayed on the prompt line, but you do not see ". The " tells VisiCalc that you are going to type a label even though the first character of the label is not a letter.

3. Type **1983 Tax**.

3. To correct typing errors, type **Back Space** to back up one character at a time. Then type the correct entry.




4. Type .

You see that 1983 Tax is displayed in cell K10 and that it is also displayed on the cell display line. One note about labels... If you type more than nine characters, the excess characters do not show in the worksheet cell. This happens because the default display size of each cell on the worksheet is nine characters. This is the column width. VisiCalc lets you change the default column width to any number of characters you need. Regardless of the column width, VisiCalc remembers the entire label, and you can view it, in full, on the cell display line.




Correcting Typing Errors


If you haven't made typing errors so far in this lesson, you must be a very accurate typist! Probably, when you become proficient in using VisiCalc, you'll be typing more quickly and will need to make corrections quickly. You will want to change one or two characters in a label and will not want to retype characters that do not need correcting.



Exercise 7 Type the label, Selesq. Then, before typing , correct the label to Sales.

You do this:

1. Move the cell-cursor to cell K10 (if it is not already there).
2. Type Selesq.
3. Touch .

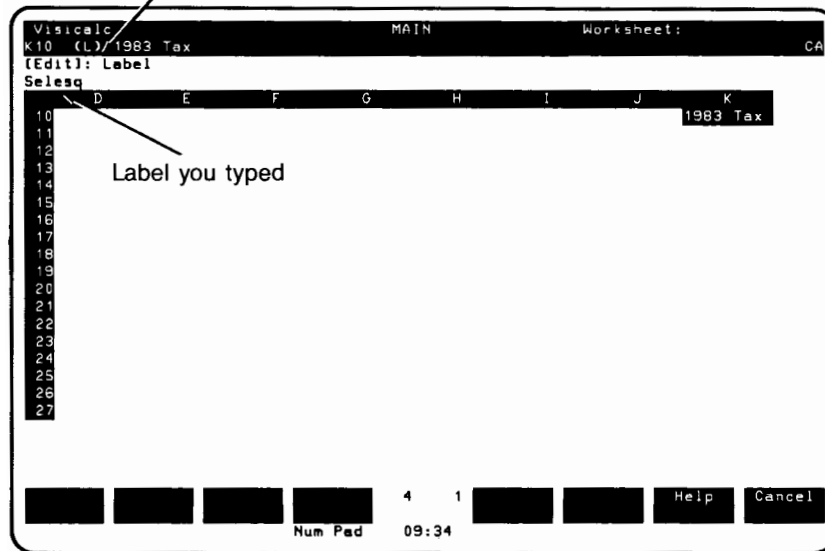
In case of difficulty:

1. Review Exercises 1–4 if you have trouble moving the cell-cursor.
2. If you make a mistake here, don't worry, you'll learn how to correct it next.
3. If you touched  start again at step 2.

If you touched  you see a Help display. Touch  and restart this step.

You see [Edit]:Label appear on the prompt line. This means that you can now make changes to the label without retyping good data. The input-cursor, or blinking character marker, appears on the letter S on the input line. You are going to move the input-cursor to the character position you want to change.

You can make corrections to what you typed



You do this:

4. Type .

The input-cursor is now located at the first "e" in Selesq.

In case of difficulty:

4. If you typed another key by mistake, leave it. After doing the steps in this exercise, you can correct your mistakes.

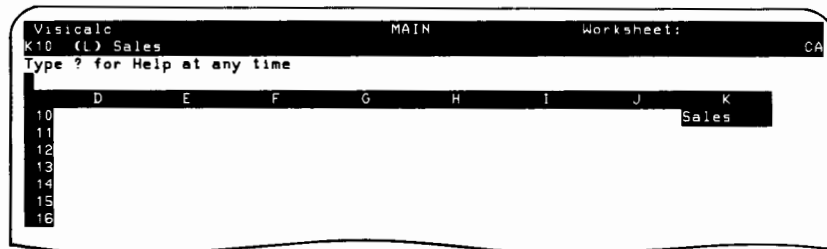
If you want to start this exercise over, touch .

You do this:

5. Type **a**.
The label should now be **Salesq**.
6. Type **▶** three times.
You see the input-cursor located at the letter **q**.
7. Type **⌫**.
You see that **q** has been erased from the input line.
8. Type **↵**.
The corrected label, **Sales** appears in cell K10 and on the cell display line.

In case of difficulty:

5. Type **◀** or **▶** and try again.
6. If you typed some other key by mistake, that's OK. Now type **◀** or **▶** to locate your mistakes and correct them. If you want to start the exercise over again, touch **Cancel**.
7. Continue to type **◀** or **▶** to locate your mistakes. Then type corrections and/or **⌫**.



The exercise you just completed showed you how to make corrections immediately while you are typing a label. Often you need to make changes after labels and other cell data has been typed.

Exercise 8 Change the label in cell K10 to Net Sales.

You do this:

In case of difficulty:

1. Ensure that the cell-cursor is located at cell K10.
2. Touch **Edit**.

1. Review Exercises 1–4.
2. If you touched some other function key, touch **VisiCalc Main** then try again.

By selecting this function key, you are asking to correct the label in cell K10. You see **[Edit]:Label** displayed on the prompt line. This exercise seems identical to the last one. However, now, you are correcting a label that has already been entered into the worksheet.

3. Type **Insert Char**.

3. Use **◀** **▶** and **Delete Char** to correct your mistakes. If you want to start this exercise over, touch **Cancel**.

This tells VisiCalc that you want to start inserting characters at the location of the input-cursor. Typing **Insert Char** again would turn the insert function off.

You do this:

- 4. Type **Net** (and one blank).

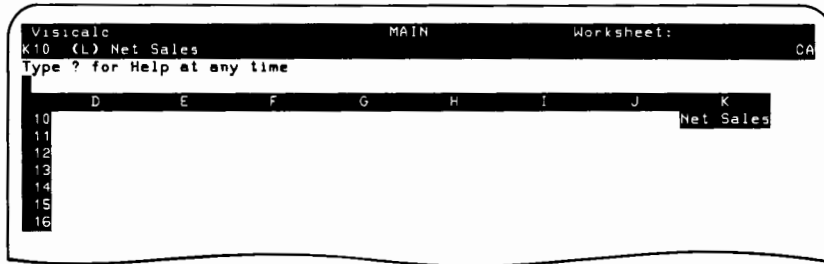
You see these characters being inserted at the beginning of the label.

- 5. Type .

You see the new label, **Net Sales**, appear in the cell, replacing the old label, **Sales**.

In case of difficulty:

- 4. Use , , and to correct your mistakes. If you want to start this exercise over, touch .



Typing a Value

You can also write values into cells in addition to labels. Values are numbers like check amounts and interest rates. You type them the same way you write them on paper, with decimal points included. When a number is negative, you type the negative sign first.

Exercise 9 Type the value -12.461 into cell K10.

You do this:

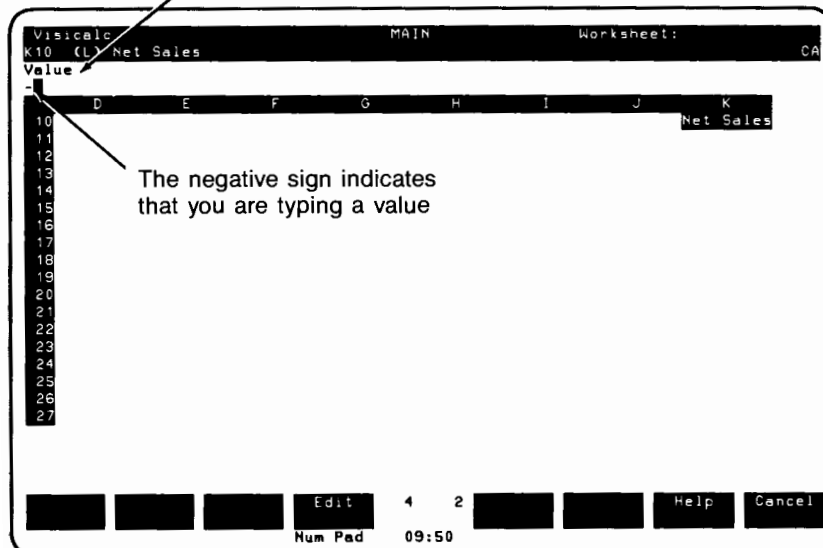
1. Make sure that the cell-cursor is located at cell K10.
2. Type -.

You notice that **Value** appears on the prompt line. Since the first character was not a letter VisiCalc assumes you are typing a value.

In case of difficulty:

1. Review Exercises 1–4.
2. Touch **Cancel** to restart this step.

You are typing a value



You do this:

3. Type **12.461** .

You see **-12.461** appear in cell K10.

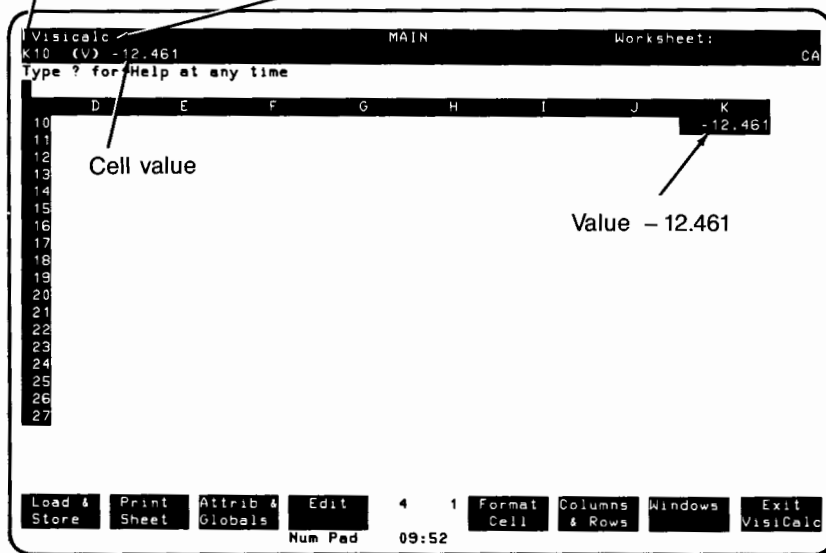
In case of difficulty:

3. If you made a mistake, correct the value by touching . Move the input-cursor to the mistakes by typing or . Then type corrections. Remember that you can use and also.

Cell display line shows:

Cell name

Cell data type (value)



How to End a VisiCalc Session

You have accomplished a lot in this lesson. You will now learn how to end an VisiCalc session. This takes you back to P.A.M. so that you can begin other applications.

Exercise 10 End this VisiCalc session.

You do this:

1. Touch **Exit VisiCalc**.

You see **Quit: Type Y to confirm, Backsp to cancel**. This is a "safety" measure that lets you cancel the function key in case you touched it by accident.

2. Type **Y**.

You see the P.A.M. display appear.

In case of difficulty:

1. If you touched another function key by mistake, touch **VisiCalc Main** or **Done**, and try again.

2. You hear a beep if you typed some other character. If you typed **Back Space**, start over at step 1.

You have ended VisiCalc. You can start other applications on your personal computer, or you can continue on to Lesson 2.

Check Yourself

- | | |
|---|--|
| 1. function keys | A. type > and the cell name |
| 2. labels and values | B. sliding the window around on the worksheet |
| 3. scrolling | C. shows worksheet cell to write on |
| 4. cell-cursor | D. cell contents |
| 5. <code>Edit</code> | E. coordinates of a column and row location |
| 6. window | F. one way to move the cell-cursor |
| 7. touching a cell | G. precedes a label which does not begin with a letter |
| 8. " | H. lets you perform many worksheet operations. |
| 9. Move the cell-cursor quickly to a cell not in the window | I. viewing area of the worksheet |
| 10. cell name | J. lets you correct cell contents at the cell-cursor location. |

1. H 2. D 3. B 4. C 5. J 6. I 7. F 8. G 9. A 10. E

Lesson 2

Introduction

In this lesson, you are going to build on what you learned in Lesson 1. The main topics covered in this lesson are:

- Loading a worksheet
- Formulas
- Functions
- Recalculating a worksheet
- Saving a worksheet



Loading a Worksheet

The last thing you did in Lesson 1 was to end the VisiCalc session. Before you can go on with this lesson, you need to begin VisiCalc as you did at the beginning of Lesson 1. See if you can remember how to start VisiCalc from P.A.M. If you need help, turn back now and follow the procedure, "Starting the VisiCalc program".

You are going to use a prepared worksheet on your disc in this lesson and the next. It is identical to one that you might create later on when you are proficient in VisiCalc. Using it lets you learn VisiCalc concepts much more quickly.

The sample worksheet you will use for this lesson is named BUDGET. It is included on the VisiCalc Master Disc. When you installed VisiCalc onto a working copy, the sample worksheet was also installed. So all you have to do is start VisiCalc and then follow the rest of the lesson .

Exercise 1 Load the sample worksheet, BUDGET, from disc.

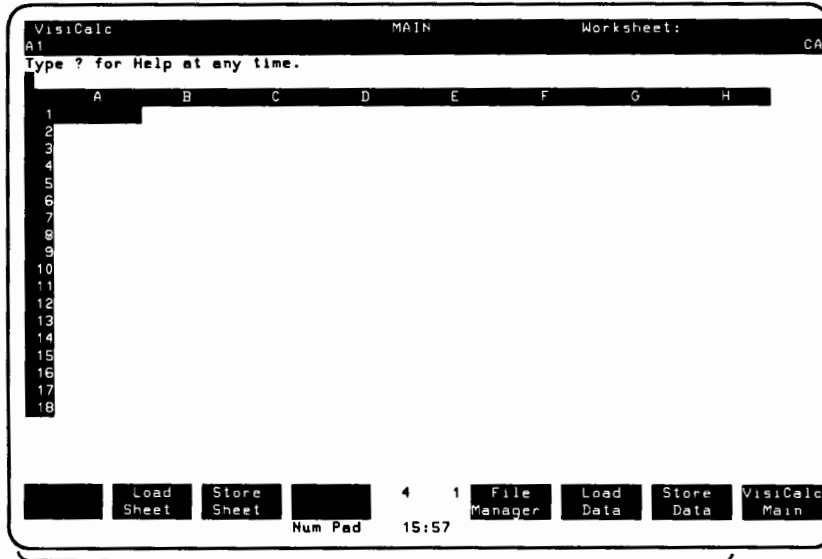
You do this:

1. Touch **Cancel**.
You see the main level of function keys.
2. Touch **Load & Store** briefly, then release.

You see this display:

In case of difficulty:

1. If you touched **Help** by accident, touch **Done** and start again.
2. If you touched another function key by mistake, touch **VisiCalc Main** or **Done**, then try again.



Options of **Load & Store**

Notice that the function key names change when you touch this key. The new function key labels show you the options of **Load & Store**.

You do this:

3. Touch **Load Sheet**.
Storage:Sheet
File:File to Load
appears on the prompt line. You need to tell VisiCalc the name of your worksheet file, and the disc drive where it is located.

4. Type **BUDGET** **Return**.
You need to type **Back Space** and the disc drive designation, if **BUDGET** is not on your VisiCalc disc.
Reading (disc:\)
BUDGET.VC appears on the input line. This tells you that the worksheet is being loaded from disc.

In case of difficulty:

3. If you touched another function key, touch **Cancel** and start over at step 1.
4. If you see **Bad File: Type Y to reinput, Backsp to cancel**, you mistyped **BUDGET** or it is not on the disc in the drive that you typed. Insert the correct disc if necessary, then type **Y**. Now start at this step again.

After a momentary delay, you see the sample worksheet displayed. "Coinwatcher's Household Budget" appears in cells A1, B1, C1 and D1.

	-----January-----		-----February-----		-----March-----	
	Budgeted	Actual	Budgeted	Actual	Budgeted	Actual
5 Cash In:						
6 Salary	2315.00		2315.00		2315.00	
7 Dividend/Interest	75.00		75.00		75.00	
8 Other	35.00		35.00		35.00	
10 Total Cash In	2425.00	0.00	2425.00	0.00	2425.00	0.00
12 Cash Out:						
13 Mortgage			475.00		475.00	
14 Education	4500.00					
15 Car Ins.	45.00					
16 Car Maint	17.00		17.00		17.00	
17 Utilities	50.00		50.00		50.00	
18 Telephone	25.00		25.00		25.00	

At the bottom of the window, there are several buttons: Load Sheet, Store Sheet, File Manager, Load Data, Store Data, and VisiCalc Main. The status bar shows 'Num Pad 15:35'.

You do this:

In case of difficulty:

5. Touch **VisiCalc Main**.

5. If you touched another function key, touch **Cancel**, then do this step again.

You are ready, now, to look at some of the parts of this sample worksheet.

Formulas

Mr. Coinwatcher is having trouble making ends meet. He has heard that VisiCalc is a superb way to keep track of his household income and expenses. He's hoping that it will keep him from "coming up short" each month! He decides that he wants to show his projected bills and financial obligations (*Budgeted*) by month along with what he actually spends (*Actual*).

Take time now and look carefully at the portion of the worksheet you see on the display. You cannot see all of it in the window. Use the methods for "Moving around on the worksheet" covered in Lesson 1 to look at portions outside the window. The worksheet extends across to column Z and down to row 38.

You notice that there are many columns of numbers on this worksheet, and that it looks rather complicated. Actually, it's no more complicated than working up your own budget on a piece of paper. What you see is a finished worksheet, the result of a good deal of thought by Mr. Coinwatcher about what he wants it to include.

Mr. Coinwatcher has heard that he can tell VisiCalc how to calculate numbers on his worksheet. He is excited about this since he's rather forgetful. He only needs to type his "formulas" into cells once and VisiCalc evaluates these formulas automatically whenever any numbers change. Let's see how Mr. Coinwatcher uses formulas.

Exercise 2 Look at the formula in cell E6.

You do this:

1. Move the cell-cursor to cell E6.

Look at the cell display line.

In case of difficulty:

1. Review Exercises 1-4 in Lesson 1.

Cell name Cell E6 contains a value Cell formula Cell value

The screenshot shows the VisiCalc interface with a worksheet titled 'Coinwatcher's Household Budget'. The spreadsheet has columns for months (January, February, March) and rows for budgeted and actual values. Cell E6 is highlighted, and its formula bar shows '+C6'. Annotations with arrows point to the cell name 'E6 (V)', the formula '+C6', and the value '2315.00'.

	January	February	March
	Budgeted	Actual	Budgeted
Cash In:			
Salary	2315.00	2315.00	2315.00
Dividend/Interest	75.00	75.00	75.00
Other	35.00	35.00	35.00
Total Cash In	2425.00	0.00	2425.00
Cash Out:			
Mortgage	475.00	475.00	475.00
Education	4500.00		
Car Ins.	45.00		
Car Maint	17.00	17.00	17.00
Utilities	50.00	50.00	50.00
Telephone	25.00	25.00	25.00

Load & Store Print Sheet Attrib & Globals Edit Num Pad 4 1 Format Cell Columns & Rows Windows Exit VisiCalc 14:21

The first thing you see on the line is the cell name, E6. Then you see "(V)" which tells you that cell E6 contains a value. Following that is "+C6". This is a very simple formula. It tells VisiCalc to set the value of cell E6 to the value currently in cell C6. Mr. Coinwatcher is certain that he will not get a raise in the month of February!

But Mr. Coinwatcher is pleasantly surprised. His boss is very happy about some new business that Mr. Coinwatcher has generated. So, for the month of January, Mr. Coinwatcher's salary was raised by 20%. Being very anxious to see the effects on his worksheet, Mr. Coinwatcher wants you to enter his new salary right away.

Exercise 3 Type the formula, $+C6+(C6*.2)$, into cell D6. This formula says to add 20% to the salary figure in cell C6. The result is stored in cell D6.

You do this:

1. Move the cell-cursor to cell D6.
2. Type the formula $+C6+(C6*.2)$.
As soon as the + is typed, you see **Value:** displayed on the prompt line.

3. Type .

Watch cell D6 when you type . The formula is calculated and the result appears in cell D6. The original formula is on the cell display line.

In case of difficulty:

1. Review Lesson 1, Exercises 1-4.
2. Touch when you make typing errors. Use and to locate the errors, then type replacement characters, or followed by characters you want to add.

D6 cell formula

Cell value calculated from formula.

The screenshot shows a VisiCalc spreadsheet window titled 'MAIN' with 'Worksheet: Budget'. The formula bar at the top displays 'D6 (V) =C6+(C6*.2)'. The spreadsheet data is as follows:

	A	B	C	D	E	F	G	H
1	Coinwatcher's Household Budget							
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								

Lesson 2

The value calculated from a formula is a value that you might have calculated manually and entered yourself. But since you used a formula, you don't have to calculate the result each time the salary changes.

Arithmetic Operators

You see two arithmetic operators used in the formula in cell D6. The + means addition, and the * means multiplication. You can also use these operators in your formulas:

-(subtraction), /(division), ^(exponentiation)

Let's look at the formula in the last exercise again. You might have thought that you could type the formula this way, $+C6+C6*.2$. If you type this, you see the result "926.00" displayed in the cell. The result is different from the exercise because this formula omitted the parentheses. Normally, formulas are evaluated from left to right. When you enclose arithmetic expressions in parentheses, you are asking VisiCalc to compute the result of those expressions as a unit, then use that result for the rest of the formula calculations. Usually, you enclose expressions in parentheses just to make the order more obvious to someone working with the worksheets, even though it won't affect the results.

Functions

Mr. Coinwatcher realizes that in order for his worksheet to be easier to use, he needs some shortcuts and additional capability in his formulas. For instance, he wants VisiCalc to total the items he has under "Cash In" and "Cash Out", without his having to type each individual cell in the formulas. After a little investigation, he learns that there is a special VisiCalc function that he can use to do this. This function totals the contents of a range of cells in a row or column.

Exercise 4 Look at the function in cell C28.

You do this:

1. Move the cell-cursor to cell C28.

Look at the cell display line and also at cell C28 on the worksheet.

In case of difficulty:

1. Review Lesson 1, Exercises 1-4.

Function

	A	B	C	D	E	F	G	H
11								
12	Cash Out:							
13	Mortgage		475.00		475.00		475.00	
14	Education		4500.00					
15	Car Ins.		45.00					
16	Car Maint		17.00		17.00		17.00	
17	Utilities		50.00		50.00		50.00	
18	Telephone		25.00		25.00		25.00	
19	Life Ins.		23.50					
20	Clothing		400.00		400.00		400.00	
21	Food		600.00		600.00		600.00	
22	Medical		43.00		43.00		43.00	
23	Club fees		50.00					
24	Newspaper/magazine		10.00		10.00		10.00	
25	Charities		15.00		15.00		15.00	
26	Gifts				10.00		10.00	
27								
28	Total Cash Out		6253.50	0.00	1645.00	0.00	1645.00	0.00

Calculated cell value
of function

You see the function, `@SUM(C13...C26)`. This function adds all cells in column C from row 13 to row 26. Now look at cell C28 on the worksheet. You see the evaluated result displayed, 6253.50.

As you probably guessed, functions start with an "at" sign (@). Cell C28 contains a formula made up of one function. Formulas can consist of arithmetic expressions as well as functions.

Recalculating a Worksheet

You may have noticed that when you typed the formula in Exercise 3, there was a momentary delay. The worksheet appeared to be redisplayed. What was actually happening was that the formulas for all cells on the worksheet were being reevaluated. While the delay may not have seemed long, it does take some time to perform the calculations. This is especially noticeable when you are working with large worksheets. You can suppress this automatic recalculation. This is useful when you are building a new worksheet, or want to type all of your values at once, then do the calculations.

You can tell VisiCalc to recalculate only when you want to. This is "manual" recalculation, because you "manually" ask for recalculation by typing a !.

Exercise 5 Change the recalculation frequency from automatic to manual.

You do this:

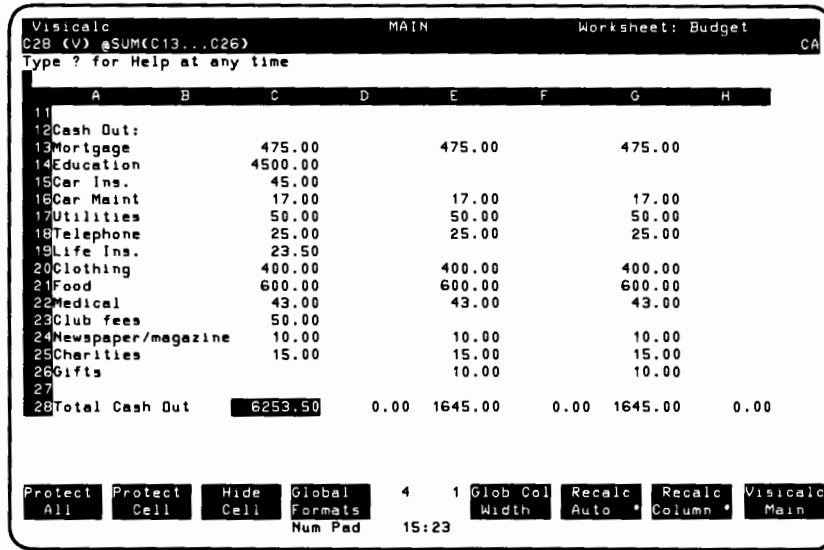
1. Touch **Attrib & Globals** briefly, then release.

You see these options of

Attrib & Globals:

In case of difficulty:

1. If you touched another function key by mistake, or you do not see **Attrib & Globals** touch **VisiCalc Main**, or **Done** and restart this step.



Options of **Attrib & Globals**

You do this:

2. Touch **Recalc Auto** briefly, then release.

You see the asterisk disappear in the function key label. This indicates that the recalculation frequency is changed from the standard (automatic) to manual.

3. Touch **VisiCalc Main** briefly, then release.

In case of difficulty:

2. If you touched another function key, but still see **Recalc Auto**, touch it again (the one you touched by accident), then do this step again. Touching the function key again resets the toggle setting to its original.

If you do not see **Recalc Auto**, touch **VisiCalc Main** or **Done**. You return to the Main function key display or to the **Attrib & Globals** options. Now begin this exercise (or step) again.

3. If you touched another function key, but still see **Recalc Auto**, touch the same function key again (the one you touched by accident), then do this step again. Touching the function key again resets the toggle to its original setting.

If you do not see **Recalc Auto**, touch **VisiCalc Main** or **Done** to end this exercise.

From now on, recalculation of the worksheet is performed only on your request. You can request it now for practice. Type an exclamation point (!). After a momentary delay the worksheet is redisplayed. You can request recalculation any time. When you are ready to change the recalculation to automatic again, do this exercise again, resetting the **Recalc Auto** toggle to its original setting (with *). From then on, all formulas are calculated for you without your having to type !.

If you forget whether "auto" or "manual" is in effect, look at the right corner of the cell display line. You see an "A" if recalculation is automatic and "M" if recalculation is manual.

Automatic (A) recalculation is in effect.

VisiCalc MAIN Worksheet: Budget
 C28 (V) @SUM(C13...C26)
 Type ? for Help at any time.

	A	B	C	D	E	F	G	H
12	Cash Out:							
13	Mortgage		475.00		475.00		475.00	
14	Education		4500.00					
15	Car Ins.		45.00					
16	Car Maint		17.00		17.00		17.00	
17	Utilities		50.00		50.00		50.00	
18	Telephone		25.00		25.00		25.00	
19	Life Ins.		23.50					
20	Clothing		400.00		400.00		400.00	
21	Food		600.00		600.00		600.00	
22	Medical		43.00		43.00		43.00	
23	Club fees		50.00					
24	Newspaper/magazine		10.00		10.00		10.00	
25	Charities		15.00		15.00		15.00	
26	Gifts				10.00		10.00	
27								
28	Total Cash Out		6253.50	0.00	1645.00	0.00	1645.00	0.00

Load & Store | Print Sheet | Attrib & Globals | Edit | 4 | 1 | Format Cell | Columns & Rows | Windows | Exit VisiCalc
 Num Pad 15:27

Saving a Worksheet

Although you've made only one minor change to the worksheet, BUDGET, let's save this worksheet and use a new name. When you do this, you will have the original version of BUDGET on disc and also the one with your change.

Exercise 6 Save the changed sample worksheet on disc. Name it NBUDGET.

You do this:

1. Touch **Load & Store**.

You see the function keys change and the options for **Load & Store** appear.

2. Touch **Store Sheet**.


Storage:Sheet
File:File for Saving
appears on the prompt line, and the name of the current worksheet (BUDGET) on the input line.


Insert a formatted disc in the same disc drive you used when you loaded BUDGET. Make sure that it is not write-protected.

In case of difficulty:

1. If you touched another function key by accident, or you do not see **Load & Store**, touch **VisiCalc Main**, then do this step again.
2. If you touched another function key, touch **Cancel**, then start at the first step.


You do this:

3. Type  6 times, to erase BUDGET, then type NBUDGET.


4. Type .

Writing (disc:\)
NBUDGET.VC appears on the input line. This tells you that the worksheet is in the process of being saved on disc.

There is a momentary delay while the worksheet is being saved. Soon you see the Help Prompt which indicates that the save is completed.

Now that you have completed Lesson 2, you have a really good idea of how VisiCalc works. You can begin building your own worksheets, or continue on to Lesson 3. If you want to come back to VisiCalc later, end this session by touching .

In case of difficulty:

3. If you made typing errors, type  to erase one character at a time. Then type the correct characters.

Check Yourself

- | | |
|-------------------------------|---|
| 1. VisiCalc Main and Done | A. arithmetic operators used in formulas |
| 2. a formula | B. changes the recalculation frequency |
| 3. ! | C. where you store worksheets |
| 4. Main function keys | D. performs recalculation of the worksheet |
| 5. + - / * ^ | E. precedes a cell name at the beginning of a formula |
| 6. function keys are used for | F. ends (or cancels) a function key |
| 7. disc | G. sophisticated calculations you use in formulas |
| 8. Attrib & Globals | H. conveniently performing many worksheet operations |
| 9. + | I. tells cell calculations |
| 10. functions | J. the top level of function keys in VisiCalc |

1. F 2. I 3. D 4. J 5. A 6. H 7. C 8. B 9. E 10. G

Lesson 3

Introduction

This lesson covers more VisiCalc features for you to use. When you finish this lesson, you will understand the most important concepts in using VisiCalc and some of the most common operations you use. The topics covered are:

- Clearing a worksheet
- Formatting numbers for display
- Copying cell elements to other cells
- Using two windows at once
- Printing a worksheet
- Getting Help

Clearing a Worksheet

If you are not continuing from Lesson 2, follow the procedures under "Starting the VisiCalc Program" outlined in Lesson 1.

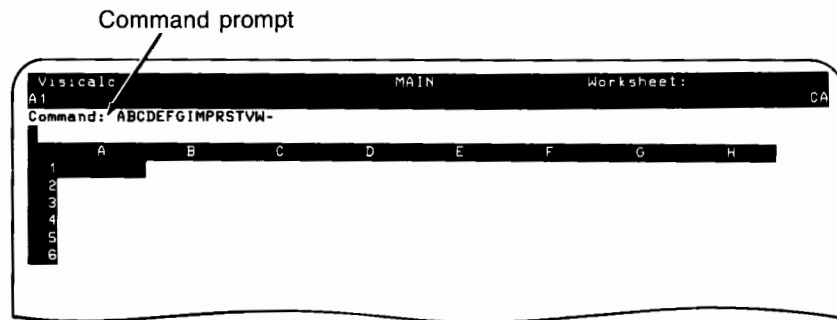
When you start VisiCalc from P.A.M., your personal computer's memory is cleared so that you can start with a "clean slate", so to speak.

Even though this is true, you should get into the habit of performing this clearing process manually before you begin using worksheets. This is important because worksheets which you load from disc, overwrite only those cells which are used on the worksheet. Cells which are not used, retain their values, labels and formulas, unaltered. You also need to clear when you have been working on one worksheet, and want to create a new one.

Before you learn how to clear the worksheet in memory, you need to learn about commands...

Using VisiCalc Commands

Commands let you perform many worksheet tasks. They provide an alternate way to perform the same worksheet operations that function keys perform. But instead of touching the display to perform them, you type them on the keyboard. You can use them anytime you're not typing cell input. You start a command by typing a slash (/). As soon as you type /, you see the Command Prompt appear on the prompt line.



The Command Prompt tells you the commands that are available. You type the letter abbreviation of the command you need. Many commands have options similar to the function key options. Command options are displayed on the prompt line. You type the letter abbreviations for the options also. Sometimes you need to type several options to complete a command.

Exercise 1 Erase any worksheet data that is in your HP 150's memory.

You do this:

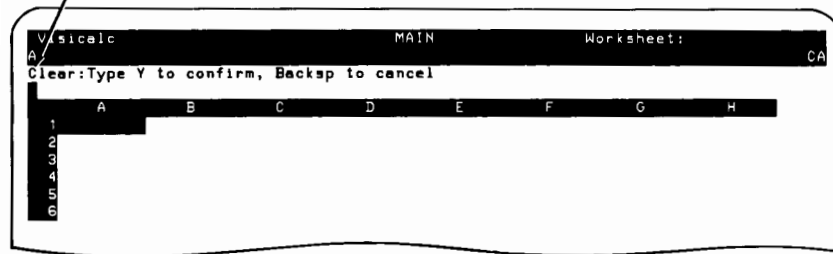
1. Type /. You see the Command prompt.
2. Type C.

In case of difficulty:

1. If you typed some other character, touch **Cancel** or **Done**. Then try again.
2. You hear a beep if you typed an invalid command abbreviation. Try this step again.

If you typed some other command abbreviation, touch **Cancel** and start step 1 again.

You see this on the prompt line. It gives you a chance to cancel the Clear command if you typed it by accident.



You do this:

3. Type Y.

Now you see the Help prompt again.

In case of difficulty:

3. Typing some other character causes a beep. Type Y again.

If you typed by accident, start again at step 1.

In this exercise you cleared your computer's memory. When you do this, you also reset worksheet options to their original settings. One of these options you have used already. That is the recalculation frequency. The CLEAR command sets VisiCalc to recalculate the worksheet automatically.

Getting Back to Mr. Coinwatcher

You are going to work with Mr. Coinwatcher's original budget worksheet again. You need to repeat the load procedure you used in Lesson 2. Here is a summary of that procedure. If you have any trouble loading BUDGET, go back to Exercise 1 in that Lesson for details.

1. Touch and , in that order.
2. Type BUDGET .
3. Touch .

Formatting Numbers for Display

In the last lesson, you looked at some of Mr. Coinwatcher's budget figures. You saw his formulas and the results that appeared in the display. Since Mr. Coinwatcher's budget deals with dollar figures, naturally he expects to see the numbers shown with two decimal places.

Actually, Mr. Coinwatcher had to tell VisiCalc to show the numbers that way. He used the **Attrib & Globals** function key to specify that all cells on the worksheet be displayed with two decimal places.

After some thought, Mr. Coinwatcher changes his mind and decides he really only wants to see whole numbers in his "Total Cash Out" row. He wants to get his monetary situation under control, but he's not really a penny-pincher! Let's find out how Mr. Coinwatcher sets a cell's "descriptor" to display numbers the way he wants to see them.

Exercise 2 Specify that the number in cell C28 be displayed with no decimal places.

You do this:

In case of difficulty:

1. Move the cell-cursor to cell C28.

1. Review Exercises 1-4, Lesson 1.

The screenshot shows a VisiCalc spreadsheet window titled 'MAIN' with the worksheet named 'Budget'. The active cell is C28, containing the formula @SUM(C13...C26). The spreadsheet data is as follows:

	A	B	C	D	E	F	G	H
11								
12	Cash Out:							
13	Mortgage		475.00		475.00		475.00	
14	Education		4500.00					
15	Car Ins.		45.00					
16	Car Maint		17.00		17.00		17.00	
17	Utilities		50.00		50.00		50.00	
18	Telephone		25.00		25.00		25.00	
19	Life Ins.		23.50					
20	Clothing		400.00		400.00		400.00	
21	Food		600.00		600.00		600.00	
22	Medical		43.00		43.00		43.00	
23	Club fees		50.00					
24	Newspaper/magazine		10.00		10.00		10.00	
25	Charities		15.00		15.00		15.00	
26	Gifts				10.00		10.00	
27								
28	Total Cash Out		6253.50	0.00	1645.00	0.00	1645.00	0.00

The status bar at the bottom shows: Load & Store, Print Sheet, Attrib & Globals, Edit Num Pad, 4 1, Format Cell, Columns & Rows, Windows, Exit VisiCalc, and the time 16:43.

Lesson 3



Since Mr. Coinwatcher specified that all cells show two decimal places in the window, you see 6253.50 in cell C28 on the worksheet.

You do this:

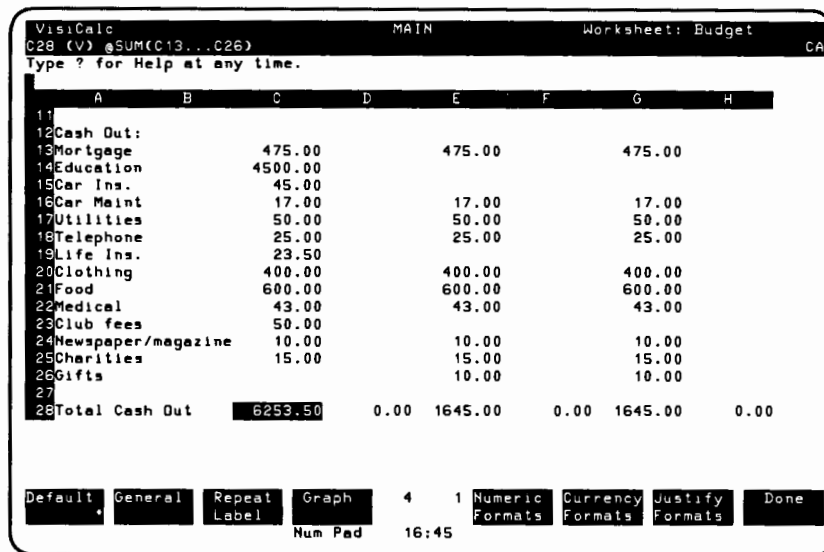
In case of difficulty:

2. Touch **Format Cell**.

This Main function key has several options, which, in turn have options. You could think of a Main function key as a fork in the road that lets you choose alternate paths. These paths are options, which likewise have their own forks in the road! When you have completed the selection of paths, the Main function key is complete and you start again at the main road.

2. If you touched another function key, try again at this step after touching

VisiCalc Main.



Options of **Format Cell**.

You do this:

In case of difficulty:

3. Touch **Numeric Formats**.

You see the **Numeric Formats** options:

3. If you touched another function key, either try this step again after touching **Done**, or start at step 2 again.

VisiCalc MAIN Worksheet: Budget CA
 C28 (V) @SUM(C13...C26)
 Type ? for Help at any time.

	A	B	C	D	E	F	G	H
11								
12	Cash Out:							
13	Mortgage		475.00		475.00		475.00	
14	Education		4500.00					
15	Car Ins.		45.00					
16	Car Maint		17.00		17.00		17.00	
17	Utilities		50.00		50.00		50.00	
18	Telephone		25.00		25.00		25.00	
19	Life Ins.		23.50					
20	Clothing		400.00		400.00		400.00	
21	Food		600.00		600.00		600.00	
22	Medical		43.00		43.00		43.00	
23	Club fees		50.00					
24	Newspaper/magazine		10.00		10.00		10.00	
25	Charities		15.00		15.00		15.00	
26	Gifts		10.00		10.00		10.00	
27								
28	Total Cash Out		6253.50	0.00	1645.00	0.00	1645.00	0.00

Percent % Seprt , Paren () Acctg GR/DB 4 1 Scientific Integer Fixed Decimal Done

Num Pad 16:46

Options of **Numeric Formats**

4. Touch **Integer**.

Touching this option sets the format to integer. Notice the number shown in the cell. You see 6254 instead of 6253.50. Look at the cell display line. You see /F NI after C28. This display tells you the formats currently in effect for this particular cell (Numeric, Integer).

4. If you touched **Fixed Decimal**, touch **Cancel**, then start step 2 again.

Touching any other function key resets its setting. Reset the toggle setting to its original by touching it again. Then restart at this step.

You do this:

5. Touch **Done** twice.

In case of difficulty:

5. If you touched another function key by accident, touch the function key again to reset its toggle setting. Then do this step again.

There are many ways you can format your numbers for display in the cell. You can show numbers with dollar signs and in accounting notation.

Try using **Format Cell** to see the effects of various formats.

Copying Cell Elements to Other Cells

As you learned in the previous exercise, Mr. Coinwatcher wants integer formatting for all cells in row 28. You have learned how to change the format in one cell. You probably think you'll be working for some time to change the formats for the entire row. But, instead of changing formats cell by cell, you can copy one cell's format to other cells.

Since you have changed the format in cell C28 already, you can simply copy that format to the rest of the cells in row 28.

Exercise 3 Make all the cells in row 28 display whole numbers.

You do this:

1. Make sure that the cell-cursor is located at cell C28.
2. Touch **Columns & Rows**.

In case of difficulty:

1. Review Exercises 1–4, Lesson 1.
2. Touch **VisiCalc Main** to cancel mistakes and start over.

You do this:

3. Touch **Replicate**.

You see these options of **Replicate** on the prompt line:

Options of **Replicate**

In case of difficulty:

3. If you touched another function key by accident, touch **Cancel** and do this step again.

Visicalc MAIN Worksheet: Budget
C28 /F NI (V) @SUM(C13...C26) CA
Replicate:source range or (for options
C28

	A	B	C	D	E	F	G	H
11								
12	Cash Out:							
13	Mortgage		475.00		475.00		475.00	
14	Education		4500.00					
15	Car Ins.		45.00					
16	Car Maint		17.00		17.00		17.00	
17	Utilities		50.00		50.00		50.00	
18	Telephone		25.00		25.00		25.00	
19	Life Ins.		23.50					
20	Clothing		400.00		400.00		400.00	
21	Food		600.00		600.00		600.00	
22	Medical		43.00		43.00		43.00	
23	Club fees		50.00					
24	Newspaper/magazine		10.00		10.00		10.00	
25	Charities		15.00		15.00		15.00	
26	Gifts				10.00		10.00	
27								
28	Total Cash Out		6254	0.00	1645.00	0.00	1645.00	0.00

4 5 Help Cancel
Num Pad 16:56

Lesson 3

You do this:

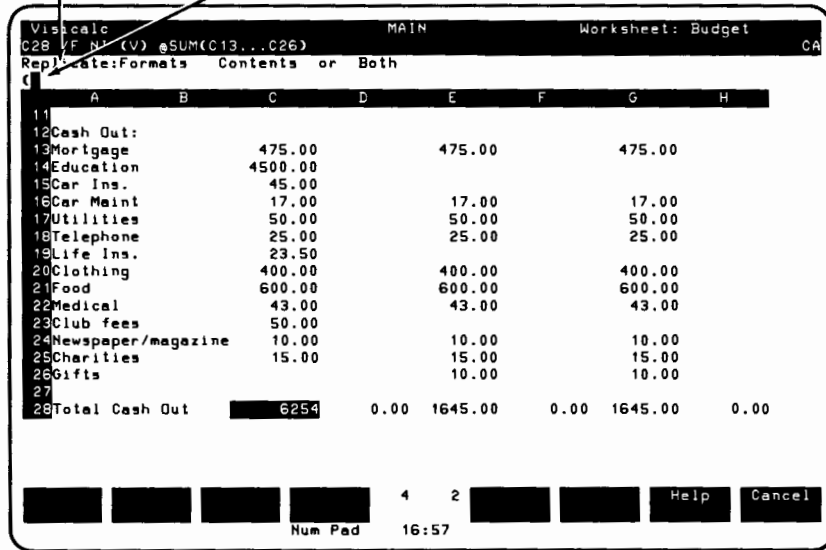
In case of difficulty:

4. Type **C**.

You want to copy only the formats to the other cells. **C** for options lets you do this.

4. If you typed the wrong key, touch **Cancel**. Then start at step 2.

"Options" prompt You asked for options



5. Type **F**.

You type the cells you want to copy next.

Since you moved the cell-cursor to cell C28, that cell is automatically used as the cell you want to copy.

5. Touch **Cancel** and start again at step 2.

Cell C28 is used unless you type another cell name

You type the cells you want to copy

	A	B	C	D	E	F	G	H
11								
12	Cash Out:							
13	Mortgage		475.00		475.00		475.00	
14	Education		4500.00					
15	Car Ins.		45.00					
16	Car Maint		17.00		17.00		17.00	
17	Utilities		50.00		50.00		50.00	
18	Telephone		25.00		25.00		25.00	
19	Life Ins.		23.50					
20	Clothing		400.00		400.00		400.00	
21	Food		600.00		600.00		600.00	
22	Medical		43.00		43.00		43.00	
23	Club fees		50.00					
24	Newspaper/magazine		10.00		10.00		10.00	
25	Charities		15.00		15.00		15.00	
26	Gifts				10.00		10.00	
27								
28	Total Cash Out		6254	0.00	1645.00	0.00	1645.00	0.00

You do this:

6. Type .

You see this on the prompt line:

In case of difficulty:

6. If you typed another key accidentally, type to erase characters up to "C28", then type .

You type the destination cells

	A	B	C	D	E	F	G	H
11								
12	Cash Out:							
13	Mortgage		475.00		475.00		475.00	
14	Education		4500.00					
15	Car Ins.		45.00					
16	Car Maint		17.00		17.00		17.00	
17	Utilities		50.00		50.00		50.00	
18	Telephone		25.00		25.00		25.00	
19	Life Ins.		23.50					
20	Clothing		400.00		400.00		400.00	
21	Food		600.00		600.00		600.00	
22	Medical		43.00		43.00		43.00	
23	Club fees		50.00					
24	Newspaper/magazine		10.00		10.00		10.00	
25	Charities		15.00		15.00		15.00	
26	Gifts				10.00		10.00	
27								
28	Total Cash Out		6254	0.00	1645.00	0.00	1645.00	0.00

You do this:

7. Type D28Z28.
8. Type .
You see the display for all cells in the row change to integer format.

In case of difficulty:

7. Use to erase typing errors, one character at a time.
8. If you typed the cell names incorrectly, one of two things happens:
You hear a beep if invalid. The invalid cell is erased. You then type the correct cell name.

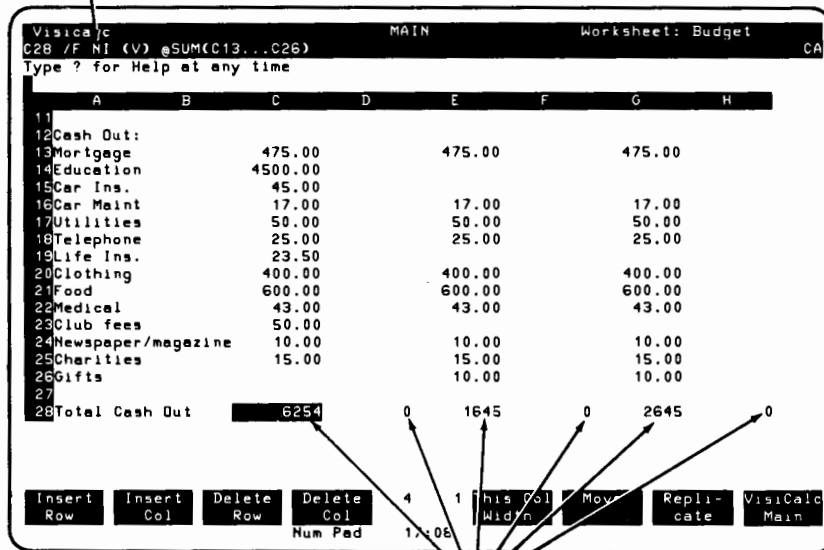
If you typed a valid cell range, but not D28...Z28, the cells are copied as if they were correct. Since you are using this worksheet for practice,

You do this:

In case of difficulty:

don't worry about it. In actual practice, you would correct the formats for the cells you copied to inadvertently.

The display format of cell C28 is integer



You copied the "integer" format across row 28. Now all cell values display as integers.

Lesson 3

9. Touch **VisiCalc Main**.

9. If you touched another function key by mistake touch **Cancel** and/or **VisiCalc Main** then continue on with this lesson.

You copied one cell's format along a row. You can copy a cell's format along a column, also. In addition, you can copy cell contents (labels, values and formulas) together with formatting specifications, or you can copy cell contents only.

You saw that formulas often contain cell references, that is, cell names where numbers are stored. When you copy formulas containing cell names, you can have the names adjusted to be relative to their new "homes" (new cell locations).

Exercise 4 Copy the formula in cell C10 to all cells in row 10. Adjust cell references for the new locations.

You do this:

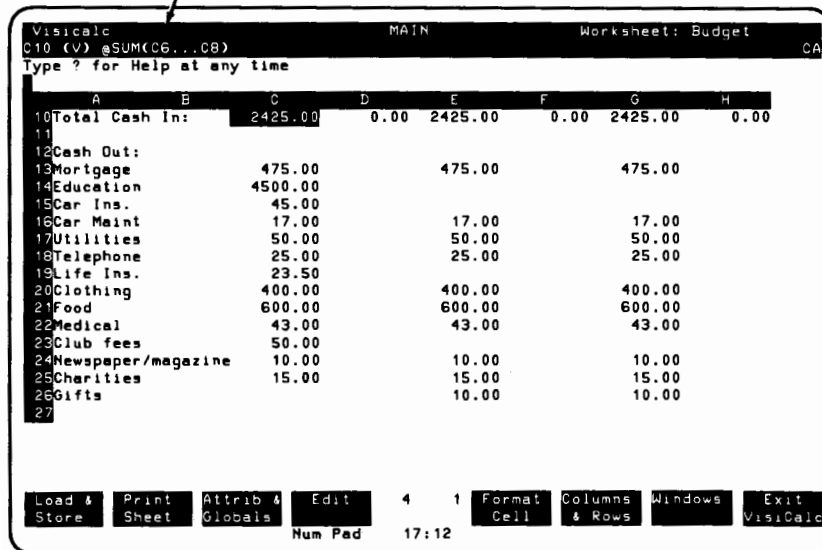
In case of difficulty:

1. Move the cell-cursor to cell C10.

1. Review Exercises 1-4 in Lesson 1.

Look at the formula on the cell display line. It totals cells in column C.

Formula (function) you want to copy.



You do this:

2. Touch **Columns & Rows**.

3. Touch **Replicate**.

You see the options of **Replicate** on the promptline. They let you choose which cell elements to copy.

4. Type **c**.

You now choose the cell elements you want to copy. **Contents** means labels, values and formulas.

In case of difficulty:

2. Touch **VisiCalc Main** to start this step over.

3. If you touched another function key by accident, touch **Cancel** and start over at step 2.

4. If you typed some other key, start over at step 2 after touching **Cancel**.

You do this:

In case of difficulty:

5. Type c.

You see this on the prompt line:

Do you want to adjust cell references when the formula is copied?

5. Start over at step 2 by touching **Cancel**.

	A	B	C	D	E	F	G	H
10	Total Cash In:		2425.00	0.00	2425.00	0.00	2425.00	0.00
11								
12	Cash Out:							
13	Mortgage		475.00		475.00		475.00	
14	Education		450.00					
15	Car Ins.		45.00					
16	Car Maint		17.00		17.00		17.00	
17	Utilities		50.00		50.00		50.00	
18	Telephone		25.00		25.00		25.00	
19	Life Ins.		23.50					
20	Clothing		400.00		400.00		400.00	
21	Food		600.00		600.00		600.00	
22	Medical		43.00		43.00		43.00	
23	Club fees		50.00					
24	Newspaper/magazine		10.00		10.00		10.00	
25	Charities		15.00		15.00		15.00	
26	Gifts				10.00		10.00	
27								

When you copy a formula containing a cell reference, you can copy it exactly as it is written. You can also copy formulas so that cell references are changed to reflect their new "homes". This is a confusing concept, until you see an example. When you finish this exercise, you will see how cell references are changed. The next step specifies that cell references be altered (**Relative**) to reflect their new "homes".

You do this:

6. Type R.
7. Type `Return`.
Cell C10 is the cell to be copied.
8. Type D10Z10.
9. Type `Return`.
Now you've finished copying the formula!
10. Touch `VisiCalc Main`.

In case of difficulty:

6. Start over at step 2 after touching `Cancel`.
8. Type `Back Space` to correct typing errors.
10. If you touched another function key by mistake, touch `Cancel` and/or `VisiCalc Main` and continue on.

Move the cell-cursor to cell D10 and look at the formula on the cell display line. The cell names were changed to cells in column D from column C. Move the cell-cursor to cell E10. You see the cell names changed again to column E. This is a very valuable facility when you build worksheets. You often want to rearrange your worksheets without having to retype formulas that are moved.

Using Two Windows at Once

When Mr. Coinwatcher types the month's actual income and expenses into cells in rows 6 to 26, he wants to continually monitor the totals at the bottom of the worksheet. Since the window is not large enough to show the entire worksheet at once, he divides his display into two windows that can be scrolled independently. This allows him to "fit" widely separated sections on the display at one time.

Exercise 5 Divide the window into two separately controllable windows.

You do this:

1. Scroll the window so that cell A1 is in the upper left corner of the window.
2. Move the cell-cursor to cell A12.
3. Touch **Windows**.
You see these options appear:

In case of difficulty:

1. Review Lesson 1, Exercises 1-4.
2. Review Lesson 1, Exercises 1-4.
3. Touch **VisiCalc Main**, then start this step again.

Cell-cursor located where split is to occur

	-----January-----		-----February-----		-----March-----	
	Budgeted	Actual	Budgeted	Actual	Budgeted	Actual
5 Cash In:						
6 Salary	2315.00		2315.00		2315.00	
7 Dividend/Interest	75.00		75.00		75.00	
8 Other	35.00		35.00		35.00	
9						
10 Total Cash In	2425.00	0.00	2425.00	0.00	2425.00	0.00
11						
12 Cash Out:						
13 Mortgage	475.00		475.00		475.00	
14 Education	4500.00					
15 Car Ins.	45.00					
16 Car Maint	17.00		17.00		17.00	
17 Utilities	50.00		50.00		50.00	
18 Telephone	25.00		25.00		25.00	

Options of **Windows**

You do this:

4. Touch **Horiz Window**.

When you touch this function key, the display is blanked momentarily and redisplayed with the worksheet divided into two parts. The split occurs after row 11 (before the row where the cell-cursor was located).

In case of difficulty:

4. If you touched **Vertical Window** by accident, the window is divided vertically. That's OK. Now, touch **One Window** and do this step again.

If you touched any of the other function keys, don't worry about it, just restart this step.

VisiCalc MAIN Worksheet: Budget CA
A11
Type ? for Help at any time

	A	B	C	D	E	F	G	H
1	Coinwatcher's Household Budget							
2								
3								
4								
5	Cash In:							
6	Salary		2315.00		2315.00		2315.00	
7	Dividend/Interest		75.00		75.00		75.00	
8	Other		35.00		35.00		35.00	
9								
10	Total Cash In		2425.00	0.00	2425.00	0.00	2425.00	0.00
11								
12	Cash Out:							
13	Mortgage		475.00		475.00		475.00	
14	Education		4500.00					
15	Car Ins.		45.00					
16	Car Maint		17.00		17.00		17.00	
17	Utilities		50.00		50.00		50.00	

Horiz Window Vertical Window One Window Synch Window Num Pad 4 1 Horiz Title Vertical Title No Titles VisiCalc Main
17:19

Lesson 3

Now you can move the cell-cursor and scroll each window the same way you did when you had only one window. You can also type cell elements in either window.

When you want to move the cell-cursor to another window, touch the cell you want to locate. If the cell is not visible, you can touch any cell in that window, then scroll the window in the usual way. Or you can type a semi-colon (;). When you type ;, you move the cell-cursor to the last-used cell in the next window.

Practice moving the cell-cursor back and forth between windows, and scrolling the windows.

When you feel confident about using two windows, set the display to one screen again by touching **One Window**. Your display now looks like this:

VisiCalc MAIN Worksheet: Budget CA
 A11 Type ? for Help at any time.

	----January----		----February----		----March----	
	Budgeted	Actual	Budgeted	Actual	Budgeted	Actual
1 Coinwatcher's Household Budget						
2						
3						
4						
5 Cash In:						
6 Salary	2315.00		2315.00		2315.00	
7 Dividend/Interest	75.00		75.00		75.00	
8 Other	35.00		35.00		35.00	
9						
10 Total Cash In	2425.00	0.00	2425.00	0.00	2425.00	0.00
11						
12 Cash Out:						
13 Mortgage	475.00		475.00		475.00	
14 Education	4500.00					
15 Car Ins.	45.00					
16 Car Maint	17.00		17.00		17.00	
17 Utilities	50.00		50.00		50.00	
18 Telephone	25.00		25.00		25.00	

Horiz Window Vertical Window One Window Synchron Window 4 1 Horiz Title Vertical Title No Titles VisiCalc Main
 Num Pad 17:24

When you're finished working with windows, touch **VisiCalc Main**.

Printing a Worksheet

When Mr. Coinwatcher finishes typing actual income and expense figures each month, he likes to print his worksheet. He can print his budget formulas separately from the figures on the worksheet.

Exercise 6 Print Mr. Coinwatcher's worksheet as you see it in the window. Before you do this, change the right margin settings for the listing, and specify that printing pause after each page.

You do this:

1. Touch **Print Sheet**.

You see these options:

In case of difficulty:

1. Touch **VisiCalc Main**, then try again!

	January	February	March
	Budgeted	Actual	Budgeted
Cash In:			
Salary	2315.00	2315.00	2315.00
Dividend/Interest	75.00	75.00	75.00
Other	35.00	35.00	35.00
Total Cash In	2425.00	0.00	2425.00
Cash Out:			
Mortgage	475.00	475.00	475.00
Education	4500.00		
Car Ins.	45.00		
Car Maint	17.00	17.00	17.00
Utilities	50.00	50.00	50.00
Telephone	25.00	25.00	25.00

Options of **Print Sheet**

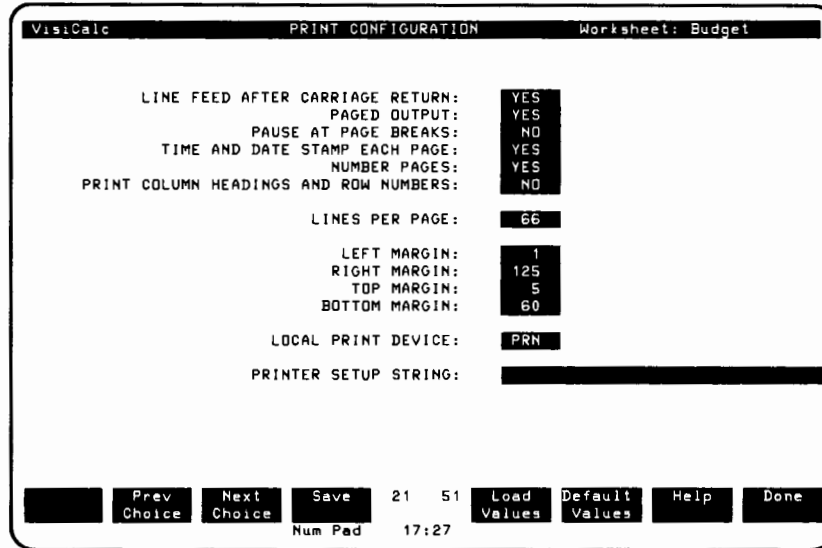
You do this:

In case of difficulty:

2. Touch **Printer Config.**

This option shows you the ways you can alter the printing format. Look at the Printer Configuration display.

2. Touch **Cancel**, then start at step 1 again.



3. Type **↓** until the highlighted cursor is located to PAUSE AT PAGE BREAKS.

3. If you type this key too many times, type **↑** to adjust your position.

4. Touch **Next Choice** and release it, until you see "YES" appear for the entry.

4. If you overshoot YES, keep touching **Next Choice** until you see YES again.

You do this:

5. Type **▼** until the highlighted cursor is located to RIGHT MARGIN.

You are going to reset the right margin number.

6. Touch and release **Prev Choice** until 72 appears as the value of RIGHT MARGIN.

You are setting the right margin to position 72.

7. Touch **Save**.

8. Touch **Done**.

Your changes are stored on disc and become your own standard printer configuration.

You can modify this printer configuration anytime to meet your own special printing requirements.

Before you do the next step, ensure that your printer is turned on and that the paper is loaded properly. Refer to the *HP 150 Personal Computer Owner's Manual* for details on printer operation.

In case of difficulty:

5. Adjust your position by typing **▲**.

6. Adjust the number by touching **Next Choice**.

7. If you touched **Default Values** or **Load Values** restart at step 3.

8. If you touched **Help** by accident, touch **Done** and restart this step. Otherwise, redo this exercise from step 3.

You do this:

9. Touch **Print to Printer**.

You see **Print:Lower right** on the prompt line.

10. Type **Z38**.

This is the right corner cell in the rectangular block of cells that you want to print.

11. Type **Return**.

The worksheet labels and values are printed. As each page is printed, you see **Type RETURN to continue**. This gives you time to insert single sheets into your printer if your printer has that capability and you need to use it.

You can stop printing anytime by touching **Cancel**.

12. Touch **VisiCalc Main**.

In case of difficulty:

9. Touch **Cancel**, then start this exercise over.

10. Type **Back Space** to correct typing errors.

12. If you touched another function key by mistake, touch **Cancel**, then do this step again.

Getting Help

Now that you have a good understanding of how VisiCalc works, you can begin to build your own worksheets. From time to time, you may want easy access to reference material on the operation of VisiCalc. You can use the Help facility to do this. The Help feature is built into VisiCalc and you can use it anytime. It gives information at the level at which you ask for it.

Exercise 7 Ask for Help in performing print operations in VisiCalc.

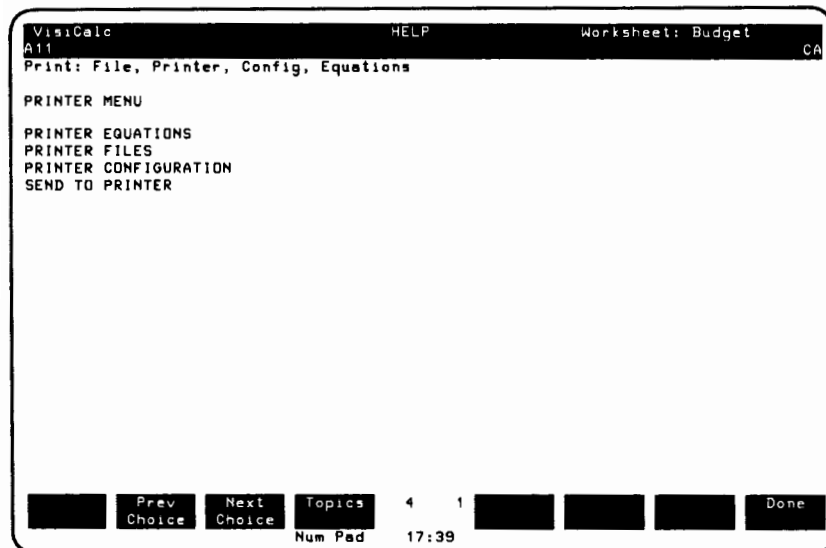
You do this:

1. Touch **Print Sheet**.
2. Type ?.

You see this:

In case of difficulty:

1. Touch **VisiCalc Main**, then restart this step.
2. Cancel whatever you started by touching **VisiCalc Main** OR **Cancel**. Then restart this exercise.



This display gives you a topics display of the operations available for printing worksheets. You locate a topic you want more information on, then select it. You then see reference material on that topic.

You do this:

3. Touch **PRINTER CONFIGURATION** on the display and then release.

You see a display which tells you about printer setup strings and the printer configuration. To browse through the text, you...

4. Type **Next** to turn the display page. You can type **Prev** to go back to the previous display page.

5. Touch **Done**.

In case of difficulty:

3. Touch **Done** and start again at step 1.

Check Yourself

- | | |
|--------------------------------|--|
| 1. <code>Print Sheet</code> | A. saves you time in building a worksheet |
| 2. the cell display line | B. lists cell formulas or cell contents |
| 3. <code>Replicate</code> | C. nine characters |
| 4. standard column width | D. resets and blanks the worksheet in memory |
| 5. ? | E. what you type for instant reference material |
| 6. <code>/C</code> | F. changes the cell display characteristics |
| 7. Command prompt | G. specifies how numbers are displayed |
| 8. one of the cell descriptors | H. shows label or value regardless of column width |
| 9. <code>Format Cell</code> | I. copies cells to other cells |
| 10. <code>Replicate</code> | J. lists available commands |

1. B 2. H 3. A 4. C 5. E 6. D 7. J 8. G 9. F 10. I

Congratulations on your graduation from GETTING STARTED!

Study the USING VISICALC section for more details on what you have learned. That section also covers some material which you did not learn in the lessons.

Lesson 4

Questions and Answers

Since the GETTING STARTED lessons give you a quick review of the major concepts and operations of VisiCalc, some topics are not covered. This section poses some questions which may help to give you a more comprehensive idea of the features available in VisiCalc. In addition, the questions and answers may clarify some points that you may be confused about after going through the GETTING STARTED lessons.

When appropriate, the questions indicate where you can look in the reference portion of this manual to get more information.

- Q:** Can I change the number of characters displayed for cells on the worksheet?

A: Yes. You have to change the column width. You can do this for all columns by using **Attrib & Globals**. You can also change the width of individual columns by using **Columns & Rows**.
- Q:** How do I use worksheet figures in other HP applications?
Can I use Simplegraph to graph VisiCalc figures?

A: Appendix B gives you details on how you use VisiCalc data in other HP applications.
- Q:** Can I move, delete or insert columns and rows which I have already typed on the worksheet?

A: Yes. You use **Columns & Rows** to perform row and column operations.

4. **Q:** I know how to clear the entire worksheet in memory. How do I clear one or two cells?
- A:** The BLANK command blanks individual cells or a series of cells in the same row or column. It does not clear cell descriptors (formats and attributes), however. You can touch **Format Cell** or **Attrib & Globals** to set the formats and attributes back to their standard settings. You can also use **Replicate** to copy an unused cell (with no formats specified) to the cells you want to blank.
5. **Q:** I have some worksheet cells containing formulas that I want to protect from accidental overwrite. That is, I want to make sure that labels, values and formulas don't get written into those cells. Is there some way I can protect cells?
- A:** You set the "Protect" descriptor for the cells that you want to protect. If most of the cells on your worksheet contain formulas, you should use **Protect All** to set protection for all cells on the worksheet. Then you use **Protect Cell** to "unprotect" those cells you want to write labels or values into. When you use **Protect All**, the **Tab** key is enabled. This means that when you use it to move the cell-cursor, protected cells are skipped.
- Protection prevents you from typing cell input directly. It does not prevent overwrite when performing other worksheet operations. It also does not prevent the cell from being deleted or blanked.
6. **Q:** Can I set cell descriptors for the entire worksheet as well as for individual cells?
- A:** Yes. Use **Attrib & Globals** to do this.
7. **Q:** I need to keep a record of my worksheet formulas. Can I print formulas instead of cell labels and values?
- A:** Yes. You use **Print Formulas** when you print the worksheet.
8. **Q:** I am going to build and use many worksheets. Can I view the disc directories from time to time using VisiCalc? Or do I need to do this before I begin VisiCalc?
- A:** You can use the directory lookup facilities of File Manager anytime in VisiCalc. The **File Manager** function key is provided for this purpose.

9. **Q:** Why use Commands, since function keys are easier to use?

A: Often you will find that function keys are easier to use than commands. When you are accustomed to typing commands with other spreadsheet programs, however, it may be easier for you to continue as you are accustomed. Some function keys, such as **Format Cell**, require that you choose several levels of options. This process may be quicker by typing the **FORMAT** command, when you remember exactly how to type it.

You should know that some command features are not available using function keys. These are the **BLANK**, **CLEAR**, **VERSION** commands. In addition, some options of the **TITLE**, **ATTRIBUTE**, and **GLOBAL** commands are not available.

10. **Q:** I don't understand how the worksheet is calculated.

A: The standard way the worksheet is calculated is that each cell's formula is evaluated in sequential order. The order proceeds down column A, then down column B, and so on. This means that the result of one cell can be used in cells following it in the same column or in columns which follow it.

Sometimes it may be convenient to change this order. You can specify, by the **Recalc Column** option of **Attrib & Globals**, that you want to calculate the worksheet by rows instead.

The key thing to remember is that the worksheet is calculated in a specific order and that you need to be aware of this when you build your worksheets. You need to place your worksheet data such that results are computed prior to being used elsewhere. Study the **SAMPLE WORKHSHEETS** Appendix on formatting your worksheet, setting up your formulas, and the manual recalculation feature (!). It gives examples of ways to use the worksheet recalculation characteristics to accomplish specific tasks.

Chapter 1

VISICALC PROCEDURES



Introduction

This chapter provides a reference to topics not covered in the GETTING STARTED lessons and a checklist of worksheet procedures. Topics are covered in detail when they are not explained elsewhere in this manual. In cases where they are covered elsewhere, a reference is made to the appropriate section, so that you know where to look for more information.

The following steps are intended to give you a start in using VisiCalc. They give you general guidelines on the sequence of procedures you usually use. Once you become familiar with VisiCalc these procedures will be second nature to you and you'll need to look up reference information about specific topics.

You should refer to the appropriate sections on the following pages for more detail on the procedures listed here.

You follow this procedure sequence when you work with VisiCalc:

1. Load the Worksheet You Want to Work With, or Create a New Worksheet by Clearing Memory.
2. Locate the Cell You Want to Work With and Type a Cell Label, Value or Formula...

OR

Locate the Cell You Want to Work With (optional), and Use a *Command* or *Main function key* to perform one (or more) of these tasks:

Blank Individual Cells.
Change the Column Width.
Change the Recalculation Frequency.
Change the Recalculation Order.
Copy Cell Elements to Other Cells.
Delete, Insert and Move Rows and Columns of Cells.
Display VisiCalc Version Information.
Divide the Window into Multiple Windows.
Get Help.
Keep Columns and Rows From Scrolling Out of the Window.
Make Corrections to Cell Contents and Formulas.
Recalculate the Worksheet.
Specify How Cells are Displayed and Set Cell Protection.

NOTE

You repeat step 2 until you're finished with the worksheet. Then go on to step 3.

3. Save the Worksheet (optional).
4. Print the Worksheet (optional).
5. End the VisiCalc Session, or start at Step 1 again.

Load the Worksheet You Want to Work With

You can load worksheets from disc by typing the STORAGE command or by touching the **Load & Store** Main function key.

The **File Manager** function key lets you perform file operations at any time. This is useful when you need to do directory lookups.

Start a New Worksheet by Clearing Memory

The CLEAR command erases the worksheet in memory and resets worksheet options to their standard settings.

Locate the Cell You Want to Work With

Many worksheet procedures require that you move to cells on the worksheet. You do this by moving the highlighted block you see in the window. This highlighted block is the cell-cursor. The cell-cursor location is also shown by the cell coordinates which you see on the cell display line, one of the control lines at the top of your display (the control lines are used by VisiCalc to guide you through worksheet operations).

The screenshot shows the VisiCalc interface with a spreadsheet titled 'MAIN'. The spreadsheet contains a check register for March 1983. The cell-cursor is positioned at cell G9, which contains the value '500.00'. Labels with arrows point to the 'Cell display line' (row 1), 'Cell-cursor coordinates' (G9), and 'Control lines' (the top border of the spreadsheet area). A label 'Cell-cursor position' points to the highlighted cell G9.

Chk #	Date	Description	Check \$	Deposit \$	Balance
		Prior Balance			500.00
101	2/1	Bakery Supply	56.00		444.00
102	2/1	CE Electricity	150.00		294.00
103	2/1	FC Utilities	70.20		223.80
104	2/3	Fat City Stationer	48.65	1200.00	1375.15
105	2/4	Bakery Supply	230.50		1144.65
106	2/5	Ace Mortgage	680.00		464.65
107	2/6	Forbes Creamery	94.30		370.35
108	2/8	Cash	50.00		320.35
109	2/10	N.Y. Tel Co.	87.40		232.95

At the bottom of the window, there is a menu bar with options: Load & Store, Print Sheet, Attrib & Globals, Edit, 4 1, Format Cell, Columns & Rows, Windows, and Exit VisiCalc. The status bar shows 'Num Pad 16:45'.

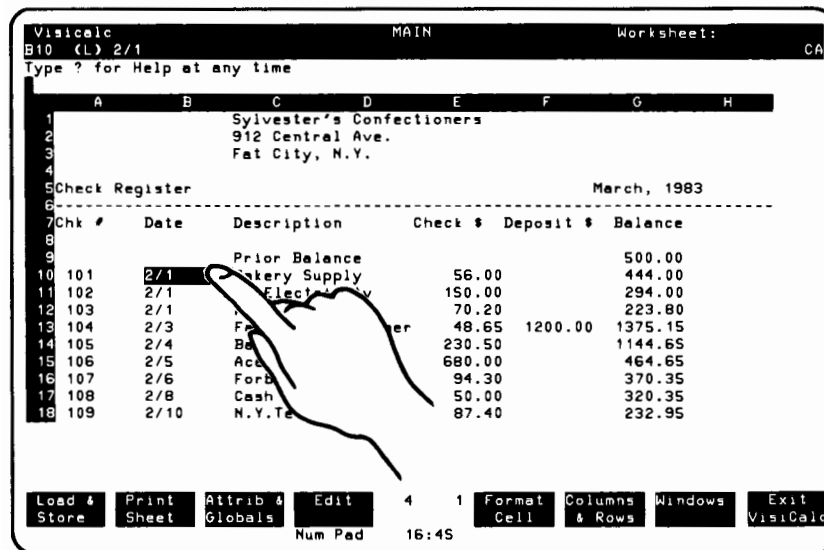
There are two ways you can move the cell-cursor to cells on the worksheet. You can skip over cells and go directly to the cell you want to locate (locating a cell directly), or you can move from one cell to the next (moving from cell to cell).

Locating a Cell Directly.

You can use the methods below to move the cell-cursor directly to cells you want to work with:

1. If the cell you want to locate is visible, touch it.

This figure shows you how to move the cell-cursor to cell B10.



2. Some of the keys on the keyboard let you move to certain cells directly also.

Typing this:



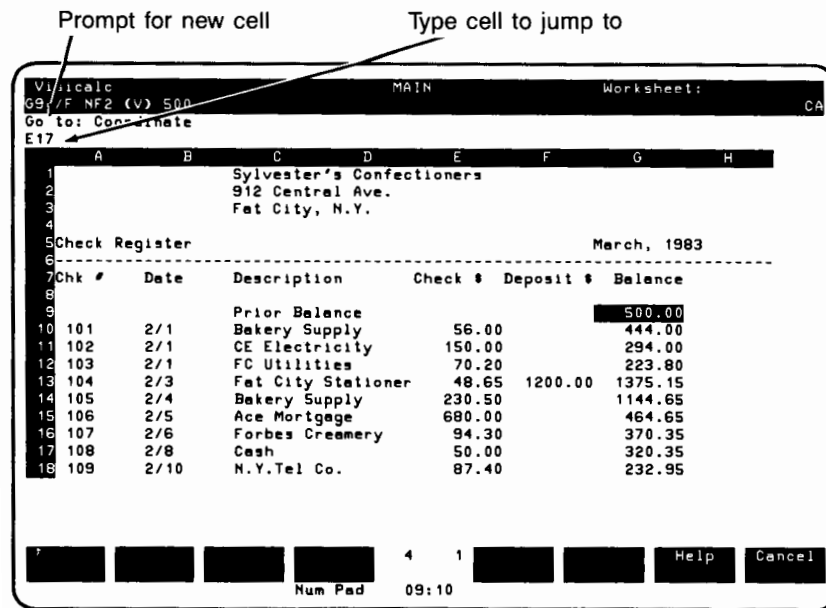
(cell coordinates)



moves the cell-cursor to:

the cell specified by the cell coordinates

The figure below shows how to jump from cell G9 to cell E17.



Typing this:



moves the cell-cursor to:

cell A1

the lower right cell in the window

NOTE

When you move to cells outside the window, you notice that the window slides automatically to a different area of the worksheet.

Moving from Cell to Cell

If you want to move the cell-cursor up, down or sideways one cell only, you can use one of the following methods:

1. Touch the cell.
2. Type one of the keys below. To move the cell-cursor more quickly, hold these keys down. The cell-cursor moves continuously until the key is released.



Move right



Move left



Move up



Move down



Move to the next (previous) unprotected cell in the recalculation order. Cell protection and the recalculation order are specified by the `Attrib & Globals` function key.



NOTE

When you move the cell-cursor beyond the row or column extents on the display, you see the window slide in the direction indicated by the key you typed. This automatically repositions the window for you.

These keys are also used to end the typing of cell contents and formulas. When you use them in this way, you move the cell-cursor automatically in the direction indicated by the key used (see the Guidelines for Typing Cell Contents and Formulas section).

Locating Cells When You Use More Than One Window

Using more than one window (Multiple Windows) is very useful for viewing different parts of the worksheet simultaneously. You can divide your worksheet display into several horizontal or vertical sections. This is particularly helpful when you want to make changes in one part of the worksheet and you want to examine the effects in another part.

The **Windows** function key (FUNCTION KEYS Chapter) lets you use this feature. Moving the cell-cursor around inside each window is the same as when you are using only one window.

When you want to jump to another window, you can do either of these:

1. If the cell you want to jump to is visible, touch it.
2. If the cell is not visible, touch any cell in the window to which you want to move, then move the cell-cursor as you normally do within the window.
3. You can also type a semi-colon (;). This moves the cell-cursor to the last-used cell in the next horizontal or vertical window. You then move the cell-cursor as you normally do within the window.

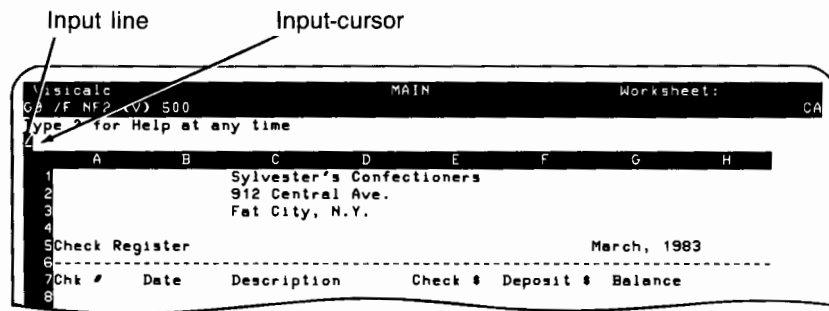
Type a Cell Label, Value or Formula

The data that you write into cells is divided into two groups which are discussed in detail in the following sections:

- cell contents (labels and values)
- cell formulas

Cell contents consist of alphanumeric data (labels), and numbers (values). The contents of cells are visible at all times on the worksheet. In addition, the cell display line shows you the label or value of the cell at the cell-cursor location. You see as many characters of a label or value as can be displayed on the line (up to 69 characters). Values are shown only when you type them directly; they are not shown on this line when they are derived from formulas.

When you type cell contents and formulas, you type them on the input line. The blinking cursor, the input-cursor, shows you the next position you can type data into.



Labels

Labels consist of a series of alphanumeric characters (mixture of numbers, special characters and letters). Labels are usually descriptive names, such as column, row or cell headings or separators. They are not used in calculations.

To enter a label, simply type the characters as you want to see them. All keyboard characters are permissible, but there is one point to keep in mind. If the first character in your label is not alphabetic (upper or lower case), you must precede the first character with a quotation mark ("). The following are examples of labels as you would type them:

Expenses, "1982 Total, Account 381

These figures show the label "Cash" being entered into cell C28, and the appearance of the computer screen after the label is typed.

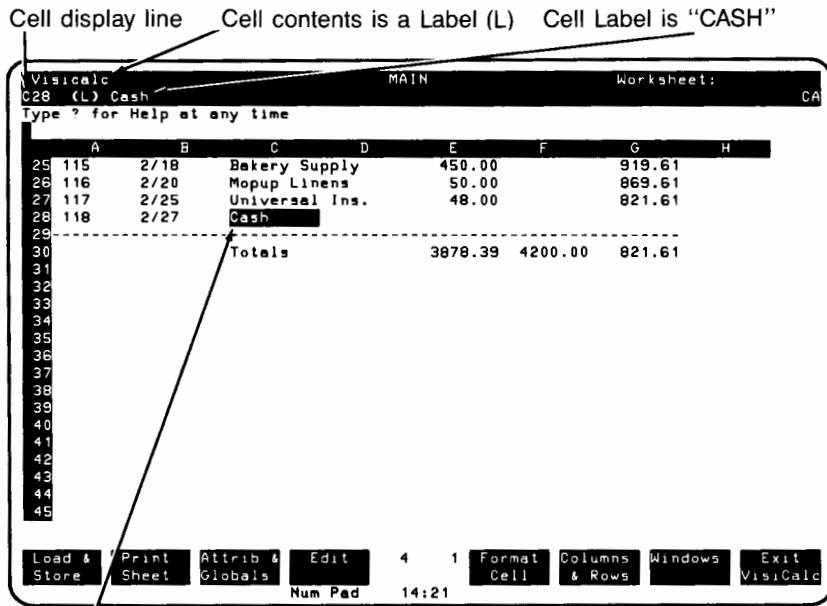
"CASH" is a label (Prompt line) "CASH" typed on input line

	A	B	C	D	E	F	G	H
25	115	2/18	Bakery Supply		450.00		919.61	
26	116	2/20	Mopup Linens		50.00		869.61	
27	117	2/25	Universal Ins.		48.00		821.61	
28	118	2/27						
29								
30			Totals		3878.39	4200.00	821.61	
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								

Cell-cursor shows cell where "CASH" is to be placed

Load & Store Print Sheet Attrib & Globals Edit 4 1 Format Cell Columns & Rows Windows Exit VisiCalc

Num Pad 14:21



"CASH" placed in cell

If the total length of the label exceeds the column width (see the "Change the Column Width" procedure), the excess characters are not displayed in the worksheet cell.

Sometimes labels are referred to as "Titles". Titles are rows and columns which are not scrolled off of the worksheet. The **Windows** function key lets you specify which rows and/or columns you want for titles. Using titles makes it easier to use the worksheet because you can continuously view the heading data while the window is scrolled.

Values

Values are numbers. You enter values into cells in one of two ways: by typing the actual number, or by typing a formula. When you type a cell formula, VisiCalc evaluates the formula arriving at the value for the cell (formulas are explained in the next section).

When you enter values directly, they are known quantities, such as check or expense amounts, which are frequently used in calculations elsewhere on the worksheet. You type values as decimal or exponential numbers. The following characters are permissible when typing values:

0-9, +, -, ., E (exponential numbers)

The following examples show values as you might type them:

369.2, -1011.5, 6E5

Sometimes a value is too large or has too many decimal places to display entirely in the cell (see the "Change the Column Width" procedure). When this is the case, VisiCalc displays the number in exponential notation. This display procedure is called the General Display Format and is described more fully by the **Format Cell** function key (FUNCTION KEYS Chapter). For example, the value 1454958523984 looks like this (in a cell of standard column width) in exponential form:

1.455E12

If the value cannot be expressed in exponential form, a series of "greater than" signs (>) are displayed in the cell.

This figure shows the value 100 being typed into cell E28 and the appearance of the computer screen after the value is typed.

"100" typed on input line "100" is a value (Prompt line)

	A	B	C	D	E	F	G	H
25	115	2/18	Bakery Supply		450.00		919.61	
26	116	2/20	Mopup Linens		50.00		869.61	
27	117	2/25	Universal Ins.		48.00		821.61	
28	118	2/27	Cash		48.00		821.61	
29	Totals				3878.39	4200.00	821.61	

Cell-cursor shows where "100" is to be placed

Cell display line Cell contents is a value (V) Cell value is "100"

	A	B	C	D	E	F	G	H
25	115	2/18	Bakery Supply		450.00		919.61	
26	116	2/20	Mopup Linens		50.00		869.61	
27	117	2/25	Universal Ins.		48.00		821.61	
28	118	2/27	Cash		100.00		821.61	
29	Totals				3978.39	4200.00	821.61	

"100" placed in cell

Cell Formulas

A formula is a set of arithmetic operations performed in order to arrive at a value for a cell.

The real power of VisiCalc is in the use of formulas. Frequently you need to perform calculations on numbers in one or more cells, in order to arrive at a numeric value for another cell. Since all cells can have formulas, this means that a whole progression of calculations can be performed, so that a number in one cell is used in a formula in another cell, and so on. You can type a formula that contains up to 125 characters, and consists of one or more of the following components:

1. decimal numbers (3, -16, 1.215)
2. exponential numbers (.5E9, 1.24E12)
3. cell references
single cells (B12, H6)
cell ranges (B12...B15, A2...C2)
4. parentheses ()
5. arithmetic operators
+ (plus), - (minus), * (times), / (divided by), = (equals), > (greater than), < (less than), ^ (exponent)
6. functions (SUM, NPV)

A function is a predefined or "built-in" set of mathematical operations which perform useful business and scientific calculations. A formula can consist entirely of functions or be a mix of the components outlined above. Using functions saves you time and worksheet space. Functions are described fully in the FUNCTIONS Chapter.

Some of the functions available are:

- SUM – calculate the total of cells in a column or row
- NPV – calculate net present value
- INT – convert number to integer

Examples of formulas you might type are:

5/C3

divide 5 by the value in cell C3.

+H1-(G9*G8)

subtract from the value in cell H1 the product of the values in cells G9 and G8.

Compute the total of values in cells A3, A4, A5 and A6.

Note that when a cell reference begins a formula, you must precede it by a plus (+) sign. If you do not precede it with a +, VisiCalc assumes that you are typing a label.

One aspect about formulas might be a bit confusing. You type a formula at the same point that you usually type a label or value. As soon as the formula is entered, it is evaluated so that the result for that particular cell is immediately available. The result now becomes the value for that cell. The formula is displayed on the cell display line and the result is displayed in the worksheet cell.

The formula, +G9+F10-E10, looks like this after being typed into cell G10.

Cell display line Cell formula

VisiCalc MAIN Worksheet: CA
G10 / F NF2 (V) +G9+F10-E10
Type ? for Help at any time

1	A	B	C	D	E	F	G	H
2			Sylvester's Confectioners					
3			912 Central Ave.					
4			Fat City, N.Y.					
5			Check Register				March, 1983	
6								
7	Chk #	Date	Description	Check \$	Deposit \$	Balance		
8								
9			Prior Balance			500.00		
10	101	2/1	Bakery Supply	56.00		444.00		
11	102	2/1	CE Electricity	150.00		294.00		
12	103	2/1	FC Utilities	70.20		223.80		
13	104	2/3	Fat City Stationer	48.65	1200.00	1375.15		
14	105	2/4	Bakery Supply	230.50		1144.65		
15	106	2/5	Ace Mortgage	680.00		464.65		
16	107	2/6	Forbes Creamery	94.30		370.35		
17	108	2/8	Cash	50.00		320.35		
18	109	2/10	N.Y.Tel Co.	87.40		232.95		

Load & Store Print Sheet Attrib & Globals Edit 4 1 Format Cell Columns & Rows Windows Exit VisiCalc
Num Pad 16:45

Calculated value of the formula

Situations may arise which make it impossible to successfully display the value of a formula (e.g. when the content of cells referenced aren't numbers). You are notified that such errors exist by the word "ERROR" which is displayed in the affected cells.

Range and Precision

Range has to do with the maximum and minimum absolute value of numbers processed by VisiCalc. The largest number that can be calculated accurately is $+(-) 1.67$ to the power 308. The smallest number that can be calculated is $+(-) 4.19$ to the power -307. The precision of VisiCalc is 13 significant digits.

Rounding Considerations

Since VisiCalc calculates with a great degree of precision, it's numbers may vary from the figures you might get when you perform the same calculations using a calculator or some other computing machine. You may have problems when you need to reconcile VisiCalc figures to your own.

To resolve this problem, you may need to truncate decimal places (chop them off) in formula results. Another alternative is to round formula results to the number of decimal places you want to use. You use the @INT function to truncate or round numbers. The expression below is a general formula that you can use to round a cell value to two decimal places.

`@INT(((cell name)*100+.5))/100`

You can change 100 to 1000, for example, and round the result to three decimal places.

Let's take a look results of a normal VisiCalc calculation, then at the results of the same calculation with truncation and rounding:

Assumptions: the value of cell A1 = 59.67 and
the value of cell B1 = 14.65

Normal calculation

Formula: $+A1*B1$

Result: 874.1655

Calculation with truncation

Formula: @INT(A1*B1)

Result: 874

Calculation, rounding to two decimal places

Formula: @INT(((A1*B1)*100+.5))/100

Result: 874.17

Since the result of a formula that rounds is less exact, formulas elsewhere on the worksheet which use the result will likewise be less exact.

You can use the **Format Cell** function key to specify the number of decimal places to display in the worksheet cell. This appears to do the same thing as rounding using the @INT function. However, you must remember that rounding using this function key is only for display purposes, it does not affect the number actually used in calculations.

The Order of Formula Evaluation

Calculations are performed in the order that the arithmetic operators are encountered from left to right. No operator takes precedence over another. Portions of a formula in parentheses are calculated first. If there are parentheses within parentheses, the innermost expression is resolved first. To avoid confusion, you may want to enclose portions of a formula in parentheses even though it would have no effect on the calculations. These examples show how parentheses can affect formula evaluation: $5 + 6/2*4$ evaluates to 22, but $5 + ((6/2)*4)$ evaluates to 17.

Forward References

This section discusses two situations that may arise when you use formulas. You need to be aware of these because VisiCalc does not notify you of their existence, but they affect your results.

An important aspect of using VisiCalc is arranging your data properly on the worksheet. Formulas containing cell references need to be located below or to the right of the cells referenced. The reason for this is that the results of referenced cells should be obtained before those results are used later in formulas. As you can see, the order of recalculation plays a key role here, since it determines the order that cell formulas are evaluated. If the referenced cells are located after the formula (after, in the recalculation order), the old values for those cells are used. This happens because the new values have not yet been calculated.

This problem, called forward referencing, is often difficult to diagnose and might cause you to suspect that VisiCalc has made an error. If you suspect the worksheet contains a forward reference, type !. This forces another recalculation. It may be necessary to type ! several times to obtain the correct result. The permanent solution to this situation is to reorganize the worksheet data, eliminating the forward references. Refer to the SAMPLE WORKSHEETS Appendix for ways to organize your worksheet to avoid forward referencing.

When worksheets are loaded from disc using the **Load & Store** function key, cells which contain forward references display ERROR. This is helpful in locating forward references. You can restructure the worksheet at this point, or you can type ! until all ERROR's have been eliminated.

Circular References

A circular reference is a formula that cites itself, such as $1 + A1$ in cell A1. Each time the worksheet is recalculated, the result of this formula increases by 1. This can be useful when you need to use the result as a counter. However, if not used in this way, circular references produce meaningless results and can be overlooked since you do not see ERROR displayed in the cell.

Features You Can Use When Typing Formulas

Touching for Cell References. This feature saves time when you are typing cell references in formulas. You can use this facility when the cells you want to use are visible in the current window. You type the formula as usual. At the point that you would type the cell reference, you touch the cell location, or move the cell-cursor to the cell you want to use. You can see the cell coordinates on the cell display line changing to reflect the cell-cursor position. When you have located the cell, finish typing the formula as usual.

Replace a Formula with Its Value. This facility saves you time by using VisiCalc as a calculator. You use it for calculating cell values which are not going to change. To use this feature, you type an exclamation point (!) at the end of a formula. The value of the formula is calculated and the calculated value replaces the formula on the input line. The original formula you typed is no longer remembered.

Replace a Cell Reference with Its Value. This is another calculator feature designed to save you time. It is useful when the value of the cell you want to use does not change. You use this feature by typing the formula as usual. After you type the cell reference in the formula, type a cross hatch (#).

The value of the cell you typed replaces the cell reference and # on the input line. Continue typing the rest of the formula as usual.

The original cell reference is not remembered when you use this feature.

Example: Replace the reference to cell D8 with its cell value, in the formula, $.5 * D8$. The value in cell D8 is 15.

1. Type $.5 * D8\#$

You see the value 15 replace D8# on the input line.

2. Type .

When you type , you see 7.5 displayed in the cell and the formula $.5 * 15$ displayed on the cell display line.

Guidelines for Typing Cell Contents and Formulas

Here are some general procedures that you need to know when you type cell contents and formulas:

Typing Contents and Formulas Normally

1. Type cell contents or formula
2. Do one of the following to accept the cell data you typed and to specify where the cell-cursor is to be moved next:
 - a. Touch a cell (visible window only).
 - b. Type one of these keys:

<input type="text" value="Return"/>	do not move the cell-cursor
<input type="text" value="▲"/>	move up one cell
<input type="text" value="▼"/>	move down one cell
<input type="text" value="▶"/>	move to the right one cell
<input type="text" value="◀"/>	move to the left one cell
<input type="text" value="▼"/>	move to cell A1
<input type="text" value="Shift ▼"/>	move to the lower right cell in the window

Correcting Mistakes

Most mistakes during data entry are indicated by a beep from VisiCalc. This is done as soon as errors can be detected to avoid wasting time for keyboard reentry.

Correcting mistakes immediately (while typing) —

Touch **Edit**,
or type **CTRL E**

Make corrections only. You make corrections at the time you realize you've made a mistake. You can make corrections without retyping good data. See the **Edit** section in the FUNCTION KEYS Chapter for details on how to move to the characters you want to correct, and to make the necessary changes.

Type **Back Space**

Erase the last character typed.

This key lets you back up to the character(s) you want to correct. You then retype all of the characters from that position to the end of the entry.

Canceling Cell Input

You can cancel cell input anytime by touching **Cancel** or by typing **DEL ESC**. Typing **Back Space** cancels cell input if the input-cursor is located at the first position of the input line and the line is blank.

Use a Command or Main Function Key

The Commands and Main function keys let you initiate worksheet operations having to do with saving and loading worksheets, manipulating rows and columns of cells, formatting cell data for display and so on. Actually they function almost interchangeably. That is, you can use either a command or a function key to do the same things. There are exceptions, however. You should refer to the COMMANDS and FUNCTION KEYS Chapters for specific details.

Blank Individual Cells

You use the BLANK command (/B) to erase cell elements from one or more cells.

Change the Column Width

The standard display space for each cell on the worksheet is nine (9) characters. This is the "column width". You can alter the standard column width of individual columns or the entire worksheet with the **Attrib & Globals** and **Columns & Rows** function keys (refer to the FUNCTION KEYS Chapter). In any case, there are limitations to the display space on the worksheet and occasionally cell contents cannot be displayed fully. This applies only to displaying on the worksheet. VisiCalc remembers the entire contents and calculations are done using the entire entry. The Labels and Values sections contain details on how they appear on the worksheet.

Change the Recalculation Frequency.

Each time you type a value or formula into a cell, the entire worksheet is recalculated. This means that every formula in every cell is reevaluated. This recalculation is "automatic" in VisiCalc and is the standard mode of operation. You can change this mode, however. This is quite useful when worksheets are large or formulas are complex. You can specify that recalculation take place only when you ask for it ("manual").

You specify manual recalculation by using the **Attrib & Globals** function key (FUNCTION KEYS Chapter). When manual recalculation is in effect, only the cell formula you just typed is evaluated. To request recalculation of the entire worksheet, when manual recalculation is in effect, type an exclamation point (!). Actually, you can "force" recalculation anytime whether or not manual recalculation is used, by typing !.

The cell display line shows the recalculation frequency that is in effect. It shows A when recalculation is automatic, and M when recalculation is manual.

Cell display line Frequency of Recalculation

Visicalc		MAIN	Worksheet: CA					
99 / F NF2 (V) 500								
Type ? for Help at any time								
A	B	C	D	E	F	G	H	
1		Sylvester's Confectioners						
2		912 Central Ave.						
3		Fat City, N.Y.						
4								
5	Check Register					March, 1983		
6	-----							
7	Chk #	Date	Description	Check \$	Deposit \$	Balance		
8								

Change the Recalculation Order

The order of recalculation proceeds from column A to column IT. That is, down column A, then column B and so forth until the last cell in the last column is reached. You can use the **Attrib & Globals** function key to change the order of recalculation to row-by-row.

The cell display line shows the recalculation order that is in effect. You see C when recalculation by column is in effect, and R when recalculation by row is in effect.

Cell display line

Order of recalculation

The screenshot shows a Visicalc window with a spreadsheet. The title bar reads 'Visicalc MAIN Worksheet: CA'. The spreadsheet has columns A through H and rows 1 through 8. The content is as follows:

	A	B	C	D	E	F	G	H
1			Sylvester's Confectioners					
2			912 Central Ave.					
3			Fat City, N.Y.					
4								
5		Check Register					March, 1983	
6								
7	Chk #	Date	Description	Check \$	Deposit \$	Balance		
8			Prior Balance			500.00		

Copy Cell Elements to Other Cells.

The REPLICATE command and the **Replicate** option of **Columns & Rows** lets you copy only the cell elements you need to copy.

Delete, Insert and Move Rows and Columns of Cells.

The **Columns & Rows** function key lets you perform column and row deletes, adds and moves. Equivalent commands are DELETE, INSERT and MOVE.

Display VisiCalc Version Information.

The VERSION command lets you see the VisiCalc version information.

Divide the Window into Multiple Windows.

When you want to "split" the window into multiple sections, you can use the **Windows** Main function key, or the WINDOW command.

Get Help.

Refer to the Help section for complete details on the use of the Help feature.

Keep Columns and Rows From Scrolling Out of the Window.

You can specify "titled" rows and/or columns which remain in the window at all times, by the TITLE command. The **Windows** Main function key also lets you do this.

Make Corrections to Cell Contents and Formulas.

Both the **Edit** Main function key and the EDIT command let you make changes to cell data that you have already typed. Refer to these sections for details on how make changes.

Recalculate the Worksheet.

You can type an exclamation point (!) anytime you're not typing cell data. When you do this, the entire worksheet is recalculated. You usually use this feature when manual recalculation is in effect.

Specify How Cells are Displayed and Set Cell Protection.

You can alter the way VisiCalc normally displays the values and labels in the window. This is very useful because it lets you "tailor" the standard displaying characteristics to meet your own requirements. You set cell descriptors which "describe" the display and other processing requirements for cells on the worksheet.

You can set descriptors for all cells or for single cells. You can set descriptors for all cells, then override those descriptors on an individual cell basis. Review the `Attrib & Globals` and `Format Cell` function keys in the FUNCTION KEYS Chapter for details. The command equivalents are ATTRIBUTE, FORMAT and GLOBAL.

The descriptors are used for the following purposes:

Alignment of Cell Contents

You can alter the display of labels and values on the worksheet. You can specify where they are positioned in the display cell. Labels and values can be left-justified, right-justified or centered. You can specify alignment for all cells on the worksheet also.

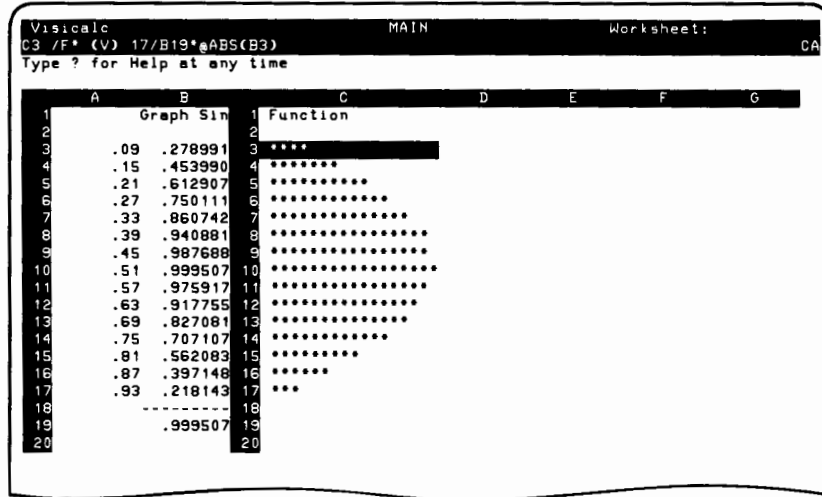
Format Numbers for Display

These descriptors let you use special display formats for cell values. You can specify the viewing format of numbers on the worksheet in the way that is most meaningful to you. You can specify that numbers be displayed with a specific number of decimal places or as whole numbers. They can also be shown in scientific format. In addition, you can display numbers with percent signs, currency and accounting symbols. These formats can be specified for all cells also.

Display Numbers in Bar Graph Format

You can produce bar graphs from cell values by using this descriptor. The appropriate number of asterisks are substituted for the value of a cell.

This figure shows how a column of figures appears in bar graph format (column C). The values graphed are contained in the corresponding cells in column B. The figure in cell B3, for example, is derived from the formula: @SIN(@PI*A3). The complicated-looking formula in cell C3 simply scales these values to fit properly when displayed in column C.



Hiding Cell Contents

When you use this descriptor, you can prevent sensitive data from displaying on the worksheet.

Preventing Overwrite of Cell Contents

When you enable this descriptor for a cell, you cannot type cell contents and formulas into a cell. This is very useful in preventing you from typing data into a cell by accident, thereby destroying a formula, for example.

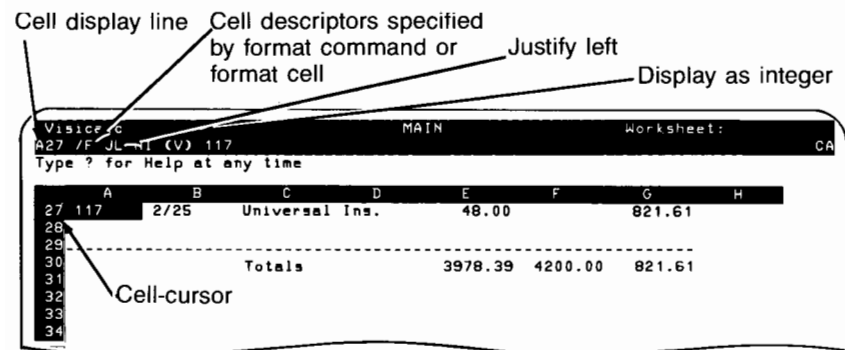
Repeat a Label in a Cell

A label you enter is duplicated until the entire cell is filled. You use this descriptor to save time when entering the same labels into several cells on the worksheet.

Where Cell Descriptors are Displayed

The cell display line shows you all of the descriptors that are active for a cell. The cell display line in this figure shows how the following descriptors would appear when active.

- alignment of values — left-justified (JL)
- numeric display — convert values to integers (NI)



Save the Worksheet

You can use the STORAGE command to save your worksheet. You can also use the **Load & Store** Main function key to do the same thing.

The **File Manager** function key lets you perform file operations at any time. This is useful when you need to do directory lookups.

Print the Worksheet

Use the PRINT command or the **Print Sheet** Main function key to print all or a portion of a worksheet.

End the VisiCalc Session

Type the Q option of the STORAGE command, or touch **Exit VisiCalc** to return to P.A.M.

Chapter 2

HELP AND WORKSHEET SIZE CONSIDERATIONS



Help

The Help feature quickly gives you access to reference details on the operation of VisiCalc. This is done interactively while you are using the worksheet. It saves time and effort in looking up specific information. Help information available to you consists of the most widely needed and used topics. Help can be utilized anytime and provides information in the current context in which it is requested. For questions not covered by Help, refer to the appropriate sections in this manual.

How to Request Help

You can request help:

1. anytime — by typing a question mark (?).

If you were typing or editing cell labels, you see `Type another ? to get help` displayed on the prompt line. Respond to this by typing another ?.


2. when you see `Help` — by touching `Help`.

Help Displays

The Help screen you see depends on what you were doing when you asked for Help. There are three kinds of Help displays:

- Main level Information Display
- Topics Display
- Topics Detail Display

Main Level Information Display

You see this display when you typed ? at the Help Prompt. It tells you the operations you can perform at that point. When you're finished with this display, touch **Topics** to see the Help Topics Display, or **Done** (or type ) to end Help.

Topics Display

Some of the worksheet operations you perform require a lot of reference material to explain adequately. The first display you see is a topics list. You locate the topics item you need, then select it. When you select a topics item, you see a Topics Detail Display which gives you detailed information about the item you selected. The following paragraphs tell you how to locate and select a topics item.

One of the Topics Displays is Help Topics. It gives you a full list of the subjects you can get help information on. You can look at the Help Topics Display at any time by touching **Topics**.

When you're finished with a Topics Display, touch **Done**, or type



Locating a Topics Item. Some topics lists have more than one “page” of display. Use these procedures to locate the topics item you need:

Same page — (do one of the following)

1. Touch the topics item.
(This selects the topics item also.)
2. Type or touch **Next Choice** to locate the next topics item. This “turns” the page if you are at the last item on the display.
3. Type or touch **Prev Choice** to locate the previous topics item. This turns to the previous page if you are located at the first topics item.

Different page — (type one of these)

1. locates the first item on the next page.
2. locates the last item on the previous page.
3. locates the first item on page one.
4. locate the last item on the last page.

Selecting a Topics Item. After locating the topics item you need, you select it by either:

1. Touching (then releasing) the topics item.
2. Typing .

Topics Detail Display

You see a Topics Detail Display when you select a topics item (see Topics Display). You also see a Topics Detail Display if you were performing a command or an option of one of the Main function keys when you asked for Help. The Topics Detail Display gives detailed information about that particular command or function key operation. If you were typing labels, values, or formulas, you see displays which tell you about those operations.

When you are finished with the detail display, you can look at the Help Topics Display by touching **Topics**, or you can end Help by touching **Done**, or typing **DEL** **ESC**.

Turning Topics Detail Display Pages. Some Topics Detail Display information requires more than one page for display. You can type any of the following keys on the keyboard to turn the display pages:

1. **Next** turns to the next page.
2. **Prev** turns to the previous page.
3. **| ▼** turns to the first page.
4. **Shift | ▼** turns to the last page.

Worksheet Size Considerations

You can create large worksheets with VisiCalc. You can use up to 254 columns (column A to column IT), and 254 rows (row 1 to row 254). In practice, however, there are factors which can reduce this capacity for any particular worksheet you are working on. These factors are explained fully below and are summarized as:

- your HP 150 memory size
- complexity and size of cell data
- number of columns and rows used

VisiCalc is designed to make the best use of memory considering the variables outlined above. Memory requirements are adjusted automatically as the size of the worksheet varies.

In most instances you need not be concerned with worksheet size considerations. However, when working with very large worksheets, you should be aware of these factors. Doing so enables you to create larger and more efficient worksheets.

HP 150 Memory Size

The standard memory size for the HP 150 is 256K. Memory is shared by the VisiCalc program, the operating system, P.A.M. and the worksheet you are working with. VisiCalc uses additional memory to advantage. Additional memory allows you to create more complex and larger worksheets.

Complexity and Size of Cell Data

Each cell that you use requires memory space for the label, value or formula. Internal VisiCalc control information is set aside also for each cell regardless of whether the cell has data entered into it. Even though the number of columns and rows you can use goes up to 254, these limits could not be reached if all cells in the 254×254 worksheet were used.

Number of Columns and Rows Used

When you start using a worksheet, you usually begin working with cell A1. You then proceed across the row as far as necessary, then down rows until your worksheet is complete. The more columns and rows you use, the more memory is needed to process the worksheet. The worksheet actually grows to be the size you need as you use it. Therefore, to conserve space when you are building large worksheets, you should avoid leaving many blank rows and columns interspersed in the worksheet.

Chapter 3

COMMANDS



Introduction

Commands let you perform worksheet operations having to do with building the worksheets, and with facilitating your regular use of the worksheet. Commands and function keys perform almost identical functions, but you start commands by typing them on the keyboard.

This chapter gives details on the usage of the commands. It is organized into the following sections:

- **Command Structure Chart**

Commands are shown in a tree-structure foldout. The Command Prompt is the top level, and each command is subdivided into its own levels of options. The foldout gives you a overview of the commands and their options.

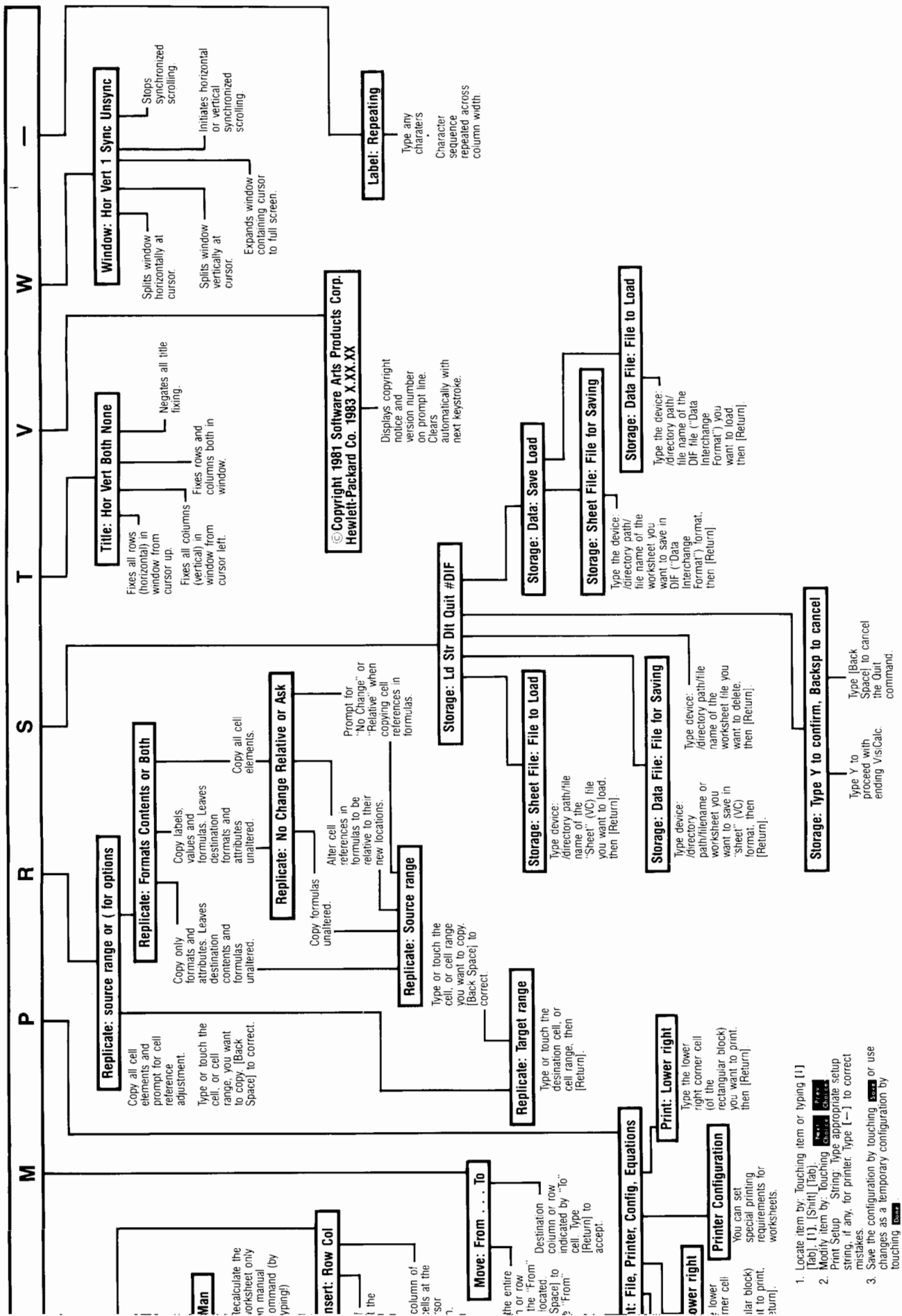
- **How to Use Commands**

This section tells you how to request commands and command options, and how to end and cancel commands.

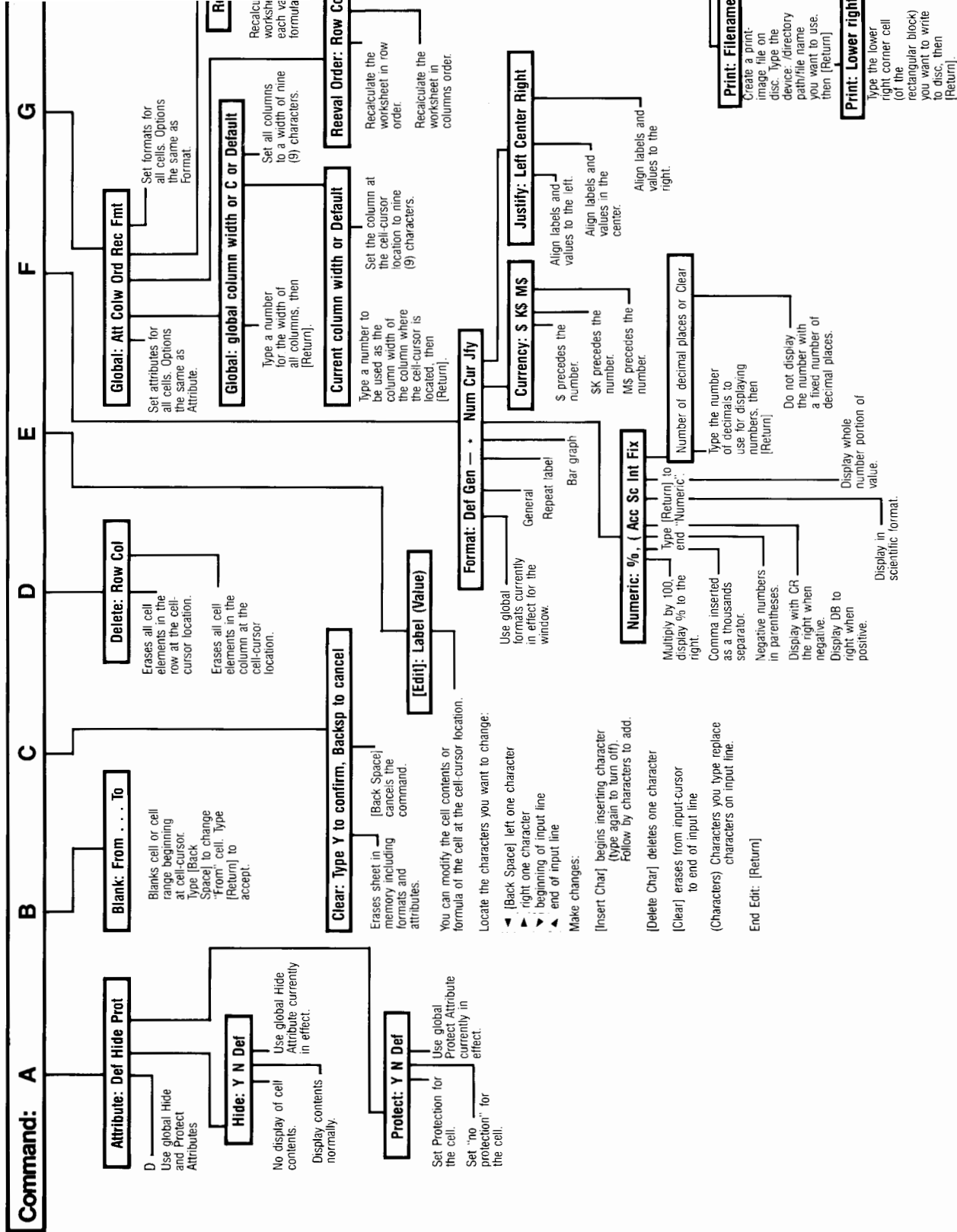
- **Command Reference**

Commands are listed alphabetically. The options of each command are explained in terms of the tasks which they perform. Additionally, each option lists the equivalent Main function key and options which you can use to perform the same operation. You can cross-reference these with the Main function keys in the FUNCTION KEYS chapter.

and Structure Chart



1. Locate item by: Touching item or typing [L] [Tab], [I], [Shift], [Tab].
2. Modify item by: Touching [OK] [Print Setup] String. Type appropriate setup string, if any, for printer. Type [—] to correct mistakes. Save the configuration by touching [ESC] or use changes as a temporary configuration by touching [ESC].
3. Save the configuration by touching [ESC] or use changes as a temporary configuration by touching [ESC].



How to Use Commands

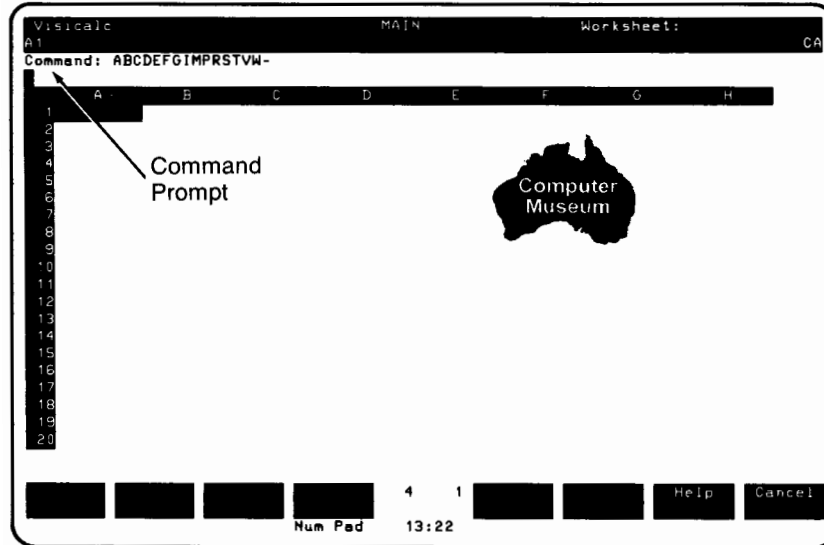
The following procedures summarize how you use commands.

Typing a Command

You can type a command anytime except when you are typing cell data.

1. Type a slash (/).

When you type a /, the Command Prompt is displayed. This prompt shows character abbreviations for the commands that are available.



2. Type the character abbreviation for the command.

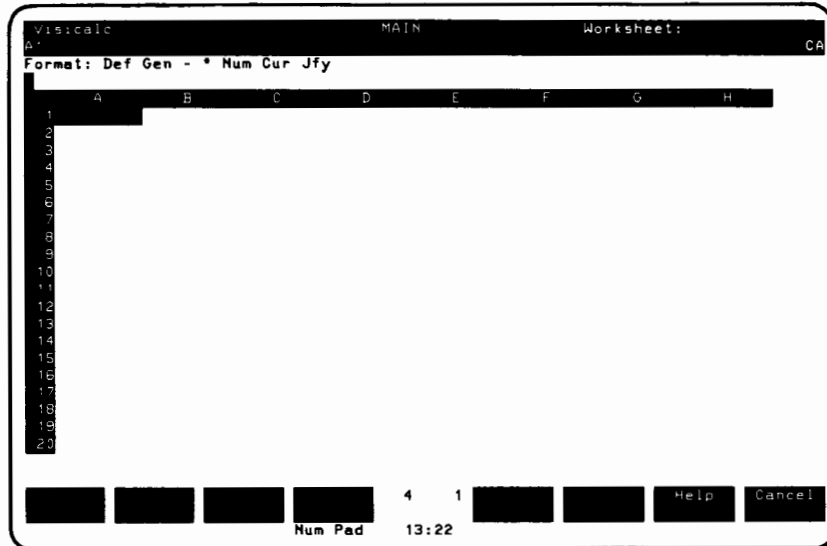
Depending on the command you typed, you may be prompted for additional information. You see the prompts on the prompt line, and their meanings are usually evident. You should refer to the appropriate command in this chapter for its specific meaning.

The prompts fall into two categories. The first is command options, and the second is information that you either type or cells that you touch in the window.

a. Command Options


Some commands have one or more levels of options. The **FORMAT** command, for example, has several options, which in turn, have other options. You type the first character of the option you want to use, and repeat this procedure until the command is complete.

The prompt line in this display shows you the (first level of) options of the **FORMAT** command:




In some cases, you can select several options on the same level. You remain at that option level so that you can specify all of the settings you need. When you're finished, you end the command by typing .





b. Command Information

Some commands ask you to type information, or indicate cell names. You type information like file names, but you can touch the display for most of the cell names you must enter. Type  to erase mistakes.

Ending a Command

Most commands automatically end themselves when they are completed. Others return to the previous option level so that you can type other options at the same time. When you want to end a command, type  until you see the Help Prompt.

Canceling a Command

If, after typing a command, you need to cancel it, touch , or type . Some commands give you a chance to cancel them by typing a . You can type  to cancel any command as long as the input-cursor is at the beginning of the input line.

Command Reference

The Command Reference begins on the following page and continues to the end of the chapter. It consists of all of the commands listed alphabetically.

ATTRIBUTE /A

This command prevents individual cells from being displayed and prevents direct overwrite of individual cell contents and formulas. The cell affected is the one at the cell-cursor location.



The Hide attribute prevents the display of labels and values in the worksheet cell.

The Protect attribute prevents you from writing labels, values and formulas into a cell. It beeps when you try to do this. It does not prevent overwrite for cells which are the target cells of the REPLICATE and STORAGE commands. Additionally, it does not prevent cells from being deleted or blanked by the DELETE and BLANK commands, respectively.

Attribute: Def Hide Prot

Using Options:

Command Options	Description
-----------------	-------------

D	Use the global Hide and Protect attribute descriptors currently in effect. If no GLOBAL command has been used, set the attributes to no Hide, and no Protect. Equivalent Main function key and options: none
H	Set the Hide attribute descriptor.
Y	Prohibit display of cell contents. Equivalent Main function key and options: 
N	Allow the display of cell contents. Equivalent Main function key and options: 


Command Options	Description
D	Use the global Hide attribute currently in effect. If none was specified, set the attribute to no Hide. Equivalent Main function key and options: None
P	Set the Protect attribute descriptor.
Y	Set protection for the cell. Equivalent Main function key and options: <div style="border: 1px solid black; padding: 2px; display: inline-block;"> Attr:b & Protect Globals Cell * </div>
N	Set no protection for the cell. Equivalent Main function key and options: <div style="border: 1px solid black; padding: 2px; display: inline-block;"> Attr:b & Protect Globals Cell </div>
D	Use the global Protect attribute currently in effect. If none was specified, set the attribute to no Protect. Equivalent Main function key and options: none

Special Considerations:

The GLOBAL command lets you set the Hide and Protect attributes for all cells on the worksheet. This is useful when the attributes apply to most of the cells. You can override global attributes for individual cells by using the ATTRIBUTE command.

BLANK /B

The BLANK command irretrievably erases cell contents and formulas. You can blank single cells or a range of cells in a column or row. The cell descriptors (formats and attributes) are unaffected by this command, and remain unchanged.

The cell(s) erased begin with the cell at the cell-cursor location. You can change this cell by typing  then typing the cell you want to use.

Blank: From...To


Using Options:

Command Options	Description
-----------------	-------------




Blank the single cell at the cell-cursor location.
Equivalent Main function key and options: none



(cell in column)

Blank all, or a portion of a column.
Type or move the cell-cursor to the last cell in the column to be blanked, then type .
Equivalent Main function key and options: none

(cell in row)

Blank all, or a portion or a row.
Type or move the cell-cursor to the last cell in the row to be blanked, then type .
Equivalent Main function key and options: none


Special Considerations:

Typing the  key is an alternate way to start this command. You type  instead of typing /B.

Examples:

1. Blank the cell where the cell-cursor is located (A1).

```
/B      From...To  
        A1...A1
```

(Since the cell-cursor is already located at cell A1, you type ).

2. Blank all cells in column C from row 5 to 11. The cell-cursor is located at cell A1.

```
/B      From...To  
        C5...C11
```

(Type  to erase A1, then type C5C11).

CLEAR /C

The CLEAR command resets the worksheet to its initial, unused state. The unused state is defined as:


- Cell contents are blanks.
- Cell formulas are deleted.
- Cell descriptors are turned off with the exception that cells are set to the General Format (refer to the FORMAT command, "G" option).
- The recalculation frequency is set to automatic, and the recalculation order is set to column.
- The cell-cursor is positioned to cell A1.
- One window, no titles.

You should be careful when you use this command. Make sure that the worksheet that you have been working on, if any, has been saved. You usually use this command after saving your worksheet but before beginning work on another one.



This command erases the worksheet in your computer's memory. It does not affect worksheets saved on your discs.

Clear: Type Y to confirm, Backsp to cancel

Using Options:

Command Options	Description
Y	Clear the entire worksheet in memory.
	Cancel this command.
	Equivalent Main function key and options: none

Special Considerations:

Typing  is an alternate way to start the CLEAR command. That is, you can type  instead of /C.

The CLEAR command does not affect the Printer Configuration settings.

This command removes all cell elements in a row or column. You move the cell-cursor to the column or row you want to delete before typing this command.

When a row or column is deleted the other rows or columns (below or to the right) are shifted to take up the space. Cell references in formulas in those columns or rows are adjusted automatically for the shift. However, you have to correct those formulas that reference cells in the original column or row that was deleted. Those formulas show @ERROR in the place of the cells that were deleted.

For example, suppose that cell H8 contains the formula $+A8+C8$, and that column A is deleted with the DELETE command. The formula in cell G8 now shows, @ERROR+B8. The formula was adjusted for the shifted column (+C8) but not for the deleted column (+A8).



When you type this command, you see **Type Y to confirm, Backsp to Cancel**. This lets you cancel the command if you typed it accidentally.

Delete: Row Col

Using Options:

Command Options

Description

R	<p>Delete the row where the cell-cursor is located.</p> <p>Equivalent Main function key and options:</p> 
C	<p>Delete the column where the cell-cursor is located.</p> <p>Equivalent Main function key and options:</p> 

EDIT /E

The EDIT command lets you change or modify the contents and formulas of individual cells on the worksheet. This means that you can make changes or corrections to existing data without retyping the entire entry.

You move the cell-cursor to the cell you want to modify before you type this command.

[Edit]: Label(Value)

Using Options:

Command Options	Description
-----------------	-------------

Modify the contents or formula of the cell at the cell-cursor location.

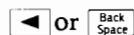
Equivalent Main function key and options:

Ed:t

Special Considerations:

When you request this command, cell contents and formulas are displayed on the input line. The input-cursor is moved to the first character on the line. Repeat steps 1 and 2 below to locate and make changes. When you're finished do step 3 to end EDIT.

1. Move the input-cursor to the characters you want to change:

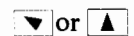


Move to the left one character



Move to the right one character

Note: Hold the above keys down to repeat the movement.




Move to the beginning of the line




Move to the end of the line

Sometimes the cell contains too many characters to be displayed on the input line. Use these keys to scroll the input line as needed. VisiCalc beeps when no further movement is possible.

2. Make the changes:

- a. Insert character(s) by typing
- 
- .

Now type the characters you want to insert. They are inserted before the input-cursor. When you're finished adding characters, and want to make other changes, type  to turn the insert function off.

- b. Type replacement characters.


- c. Delete character(s) by typing one of these keys:



Delete the character at the input-cursor position by shifting the remaining characters one position to the left.





Erase all characters from the input-cursor position to the end of the input line.

3. End EDIT by typing
- 
- .

The characters displayed on the input line replace the old cell contents or formula.

NOTE

If changes which you type result in invalid syntax for a formula, label or value, VisiCalc beeps, and the input-cursor is moved to the location of the error. You are still in the "edit mode" and you make corrections using the same procedures described above.

You can exit from Edit Mode at any time by pressing  .

FORMAT /F

This command lets you specify some of the display, or viewing characteristics of individual cells on the worksheet. Specifically, it controls the positioning and formatting of cell data in the window.

Cell contents are normally displayed according to the specifications of the General Format descriptor (option "G"). By choosing alternate options for the FORMAT command, you can change this standard display format on an individual cell basis.

Format: Def Gen - * Num Cur Jfy

Using Options:

Command Options	Description
-----------------	-------------

D

Use the global format descriptors currently in effect.

If no GLOBAL command has been used, turn off all of the cell descriptors but put the General Format descriptor (Gen) into effect.

Equivalent Main function key and options:



Format Cell [Default] *

G



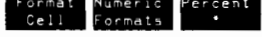
Set the General Format descriptor. This is the standard display format and it is in effect unless you specify otherwise.

Labels are left-justified. Numbers are right-justified and not aligned by decimal. Numbers are displayed exponentially when they are too large to display in the cell. As many significant digits as possible are shown. The leftmost position is blank except when the number is negative, in which case a negative sign is displayed.

Equivalent Main function key and options:



Format Cell [General] *

Command Options	Description
-	<p>Repeat the label typed into the cell until it is filled.</p> <p>The number of characters depends on the column width of the cell.</p> <p>Example: "Top" is shown as "TopTopTop" when the column width is nine (9). Equivalent Main function key and options:</p> <p></p>
*	<p>Use bar graph format.</p> <p>The integer portions of positive numbers are converted to an equivalent number of asterisks and displayed left-justified. The left most position is blank.</p> <p>Example: 6 is displayed as "*****".</p> <p>Equivalent Main function key and options:</p> <p></p>
N	<p>Display numbers using one or more of the following options.</p> <p>These options act as toggles. This means that you can change the setting of these descriptors simply by selecting them. The position to the left of the number is blank except when the number is negative. In that case, a negative sign is displayed.</p>
%	<p>Multiply the number by 100, display "%" to the right.</p> <p>Example: .25 would be displayed as 25%.</p> <p>Equivalent Main function key and options:</p> <p></p>

FORMAT /F

Command Options	Description
-----------------	-------------

,

A comma is inserted as a thousands separator.
Example: 5299 becomes 5,299.

Equivalent Main function key and options:

Format Numeric Seprt
Cell Formats , *

(

Negative numbers are enclosed in parentheses.
Positive numbers are shown without parentheses and followed by a blank.

Example: -32 would be viewed as (32).

Equivalent Main function key and options:

Format Numeric Paren
Cell Formats () *

A

Numbers are displayed in accounting notation.
Negative numbers are displayed with "CR"
appended, positive numbers with "DB"
appended.

Example: -368 is shown as 368CR.

Equivalent Main function key and options:

Format Numeric Acctg
Cell Formats CR/DB *

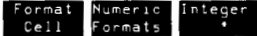

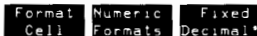

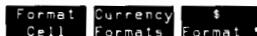
S

Numbers are displayed in scientific notation.

Example: 1035 would be viewed as 1.035E3.

Equivalent Main function key and options:

Format Numeric Scien-
Cell Formats tific *

Command Options	Description
I	<p>Numbers are rounded to the nearest whole number.</p> <p>Example: 3.217 becomes 3, and 3.5 becomes 4.</p> <p>Equivalent Main function key and options:</p>
	
F(#)	<p>You type the number of decimal places to be used (#), then . Numbers are rounded using the most significant digit to be truncated.</p> <p>Example: 3.62 is shown as 3.620 when you specify three decimal places.</p> <p>Equivalent Main function key and options:</p>
	
FC	<p>Do not display numbers with a specified number of decimal places (clear this option).</p> <p>Equivalent Main Function key and options:</p>
	
C	<p>Display numbers with currency symbols. The currency symbols are preceded by one space.</p>
\$	<p>“\$” precedes the number in the cell.</p> <p>Example: 45 is shown as \$ 45.00.</p> <p>Equivalent Main function key and options:</p>
	

FORMAT /F

Command Options	Description
K	<p>“K\$” precedes the number in the cell. The number is assumed to be a thousands number.</p> <p>Example: 721 is shown as K\$ 721.00.</p> <p>Equivalent Main function key and options:</p> <pre>Format Currency K\$ Cell Formats Format *</pre>
M	<p>“M\$” precedes the number in the cell. The number is assumed to be a millions number.</p> <p>Example: 844 is shown as M\$ 844.00.</p> <p>Equivalent Main function key and options:</p> <pre>Format Currency M\$ Cell Formats Format *</pre>
J	<p>Position cell contents in the display cell as follows:</p>
L	<p>Align labels and values to the left.</p> <p>Equivalent Main function key and options:</p> <pre>Format Justify Left Cell Formats Justify*</pre>
C	<p>Align labels and values in the center.</p> <p>Equivalent Main function key and options.</p> <pre>Format Justify Center Cell Formats Justify*</pre>
R	<p>Align labels and values to the right.</p> <p>Equivalent Main function key and options:</p> <pre>Format Justify Right Cell Formats Justify*</pre>

Special Considerations:

You can use the GLOBAL command to specify cell descriptors for the entire worksheet. This is useful if your requirements vary from the standard descriptors, and they apply to most cells on the worksheet. You still have the capability to override these "global" descriptors by using the FORMAT command for those cells which are exceptions.

Overflow Representation

It is possible that cell values cannot be displayed adequately in the worksheet cell. This can happen if the value is too large for the column width, or the formatting specified for the cell results in the value "overflowing" the boundaries of the display cell.

A series of "greater than" signs (>) displayed in a cell indicates cell overflow. To correct cell overflow, reduce the size of the value if possible. This may be done by changing the formatting specifications. In addition, you can increase the column width. See the "General Format" descriptor for more details on the display of cell values.



GLOBAL /G

This command lets you specify cell formatting and processing specifications which apply to all cells on the worksheet.

Global: Att Colw Ord Rec Fmt

Using Options:

Command Options	Description
-----------------	-------------

A

Set the attribute descriptors for all cells.

You can suppress the display of cell contents and protect cells from direct overwrite. The options used here are the same as those explained for the ATTRIBUTE command.

Use the ATTRIBUTE command (for individual cells) to override the attributes specified by the GLOBAL command.

Equivalent Main function key and options:

Attrib &
Globals

C

Set the column width for one or all columns.

(#)

Set the column width for all columns by typing a number (#) from 3 to 125, then .

Equivalent Main function key and options:




Attrib & Glob Col
Globals Width

C(#)



Set the width of the column at the cell-cursor location to the number of characters that you type (#). You can type a number from 3 to 125, then .

Equivalent Main function key and option:

Columns This Col
& Rows Width

Command Options	Description
CD	Set the width of the column at the cell-cursor location to nine (9) characters. Equivalent Main function key and options: none
D	Set all columns to a width of nine (9) characters. This is the standard column width and is in effect unless you specify otherwise. Equivalent Main function key and options: none
O	Set the recalculation order of the worksheet.
R	Set the recalculation order to row. Equivalent Main function key and options:
	
C	Set the recalculation order to column. This is the standard order and is in effect unless you specify otherwise. Equivalent Main function key and options:
	
R	Set the recalculation frequency of the worksheet.
A	Set the recalculation frequency to automatic. This frequency is standard and is in effect unless you specify otherwise. Automatic recalculation means that the worksheet is recalculated each time you type a cell value or formula. The cell display line shows "A" when this option is in effect. Equivalent Main function key and options:
	


GLOBAL /G

Command Options	Description
M	<p>The worksheet is recalculated only when you request it. You can type an exclamation point (!) at any time to recalculate. The cell display line shows "M" when "manual" is in effect.</p> <p>Equivalent Main function key and options:</p> 
F	<p>Enter the Format specifications that you want to be applied to all cells. The options available are the same options used by the FORMAT command.</p> <p>Requesting the FORMAT command directly lets you specify formats for individual cells. Use the FORMAT command to override global Format specifications.</p> <p>Equivalent Main function key and options:</p> 

Special Considerations:

When you use this command with Multiple Windows in effect, the attributes, column widths of all columns and formats specified by the GLOBAL command apply only to the current window. The order and frequency of recalculation, and individual column widths options apply to the entire worksheet.

Tabbing

When you use the GLOBAL command to set cell protection, the  key is activated. This means that when you type it, the cell-cursor skips to the next unprotected cell in the recalculation order (refer to the GLOBAL command, "O" option).

Since global cell protection applies to all cells, you need to "unprotect" the cells you want to type data into. You do this for each of these cells by using the ATTRIBUTE command.

Examples:

1. Set the column width for all columns to 12 characters.

```
/GC 12 
```

2. Set display format for all cells to show values as integers.

```
/GFN1
```

INSERT / I

The INSERT command lets you create space for a column or row of blank cells.

When you insert columns or rows, the column and row names (A to IT, and 1 to 254) do not change, but the data in the column or row changes. The column or row where the cell-cursor is located is shifted (along with the remainder of the worksheet). Then a blank column or row of cells is added.

Formulas, referencing cells in the columns or rows that are shifted, are altered to reflect the new cell locations.

Insert: Row Col

Using Options:

Command Options	Description
-----------------	-------------

R

Add a row of blank cells where the cell-cursor is located.

Equivalent Main function key and options:

Columns & Rows Insert Row

C

Add a column of blank cells where the cell-cursor is located.

Equivalent Main function key and options:

Columns & Rows Insert Col

Special Considerations:

You cannot insert rows or columns when this would shift existing rows or columns past the limits of the worksheet (column IT and row 254).

Example:

1. Insert a row at the current cell-cursor position and adjust cell references to cells in the shifted rows.

/ IR




You move single columns or rows to other locations on the worksheet using this command.

MOVE physically repositions the columns and rows on the worksheet. It opens up a new row or column at the "To" location and closes up the space in the "From" location. All cell elements are moved.

Formulas referencing the cells that are moved are adjusted automatically for the new locations.

Move: From...To

Using Options:

Command Options	Description
From...	<p>Type a cell in the column or row you want to move. The cell at the cell-cursor location is used, but you can erase it (by typing ) and type another cell.</p> <p>You can use any cell in the column or row, since the entire column or row is moved.</p>
To	<p>To move a column...</p> <p>Touch or type a cell in the column to the right of the column to which you want to move (the column is moved in front of the "To" column).</p> <p>To move a row...</p> <p>Touch or type a cell in the row just below the row to which you want to move (the row is moved above the "To" row).</p> <p>Equivalent Main function key and options:</p>  

MOVE /M

Example:

1. Move column D immediately before column H. Adjust all cell references when column D is moved to show its new location.

```
/M      From...To  
        D6...H6
```

The new location of column D is now column G. All cell references to column D are changed to column G.

This command prints part, or a portion, of a worksheet. You can also save the print image on a disc file for later printing.

You follow these procedures when you want to print a worksheet:

1. Change the Printer Configuration (optional)

The Printer Configuration determines many printing characteristics. It's settings are in effect whenever you perform any printing operations (step 2). You should look at the settings currently in effect to see if they are the ones you need, then make changes as necessary (refer to "Change the Printer Configuration" option).

2. Do one of the following (refer to the corresponding sections under "Special Considerations" for more information):

- a. Create a print-image file on disc
- b. Print labels and values
- c. Print cell descriptors and formulas

Print: File, Printer, Config, Equations

Using Options:

Command Options

Description

F

Create a file in print format on disc.

(device:\directory path\file name)

(lower right corner cell)

You type the disc location (if necessary) and the file name you want to use when the file is written on disc. You also type the last (lower right corner) cell that you want to print. Refer to the notes under "Special Considerations" on how to specify this information.




Equivalent Main function key and options:

Print Sheet	Print to File
-------------	---------------

PRINT /P

Command Options

Description

P	<p>Print worksheet labels and values in the same format that you view them in the window.</p> <p>(lower right corner cell)</p> <p>You type the last (lower right corner) cell that you want to print. Refer to the notes under "Special Considerations" on how to specify this information.</p> <p>Equivalent Main function key and options:</p> 
C	<p>Change the Printer Configuration that is currently in effect. You can look at and modify the Printer Configuration and save it for later use, if necessary.</p> <p>Equivalent Main function key and options:</p> 
E	<p>Print worksheet cell descriptors and formulas.</p> <p>(lower right corner cell)</p> <p>You type the last (lower right corner) cell that you want to print. Refer to the notes under "Special Considerations" on how to specify this information.</p> <p>Equivalent Main function key and options:</p> 

Special Considerations:**F — Creating a Print-image File on Disc**

This option saves labels and values in a standard text file format. It contains all the necessary information required for printing the worksheet, including carriage returns and line feeds. You can print the file at a later time using MS-DOS (PRINT command).

Since it is a standard text file, you can use WordStar to manipulate the text for a different printing format, or to include VisiCalc figures into other text files.

When you start this option, the current cell-cursor location is used as the first cell to save on disc. You should move the cell-cursor to that cell before starting PRINT.

When you see `Print:Lower right` on the prompt line, you specify the lower right corner cell in the rectangular block of cells that you want to print. You do this by typing that cell name, touching that cell, or by typing the arrow keys on the keyboard to locate that cell.

You can touch **Cancel** or type **DEL/ESC**, at any time, to cancel this print option.

Titles and Multiple Windowing currently being used have no effect on print files.

The worksheet name that you type must conform to the standard file naming conventions (refer to the *HP 150 Personal Computer Owner's Manual*). VisiCalc adds ".PRN" to the file name. This identifies it as a print file on your discs. If you need to, you can change this standard naming convention and/or the disc drive and directory path as you normally do.

When you are typing the device:\directory path\file name, you can correct typing errors by touching **Edit**. You make corrections the same way you do when you're typing cell input. You need to be sure that what you type is correct. You can use the following procedure to review your files on disc before requesting this option.

PRINT /P

Looking at Your Files on Disc

If you need to review the files on your disc, before creating a print file, touch **File Manager**. You temporarily leave VisiCalc and enter File Manager. You can perform any of the usual File Manager operations. When you are finished, touch **Back to VisiCalc**. You return to VisiCalc again to resume printing operations.

Examples:

1. Store the worksheet currently being used in print-image format on disc. Name it EOQ. Store cells down to cell N10.

```
/PFEOQ  N10 
```

2. Store a print file on Disc Drive C called CASHDB.M01. Store all cells down to cell P25.

```
/PFC:CASHDB.M01  P25 
```

P — Print Labels and Values

The following figure shows what this listing looks like.

Coinwatcher's Household Budget						
	-----January-----		-----February-----		-----March-----	
	Budgeted	Actual	Budgeted	Actual	Budgeted	Actual
Cash In:						
Salary	2315.00		2315.00		2315.00	
Dividend/Interest	75.00		75.00		75.00	
Other	35.00		35.00		35.00	
Total Cash In	2425.00	0.00	2425.00	0.00	2425.00	0.00
Cash Out:						
Mortgage	475.00		475.00		475.00	
Education	450.00					
Car Ins.	45.00					
Car Maint	17.00		17.00		17.00	
Utilities	50.00		50.00		50.00	
Telephone	25.00		25.00		25.00	

PRINT /P

When you start this command, the current cell-cursor location is used as the first cell to print. You should move the cell-cursor to that cell before starting this command.

When you see `Print:Lower right` on the prompt line, you specify the lower right corner cell in the rectangular block of cells that you want to print. You do this by typing that cell name, touching that cell, or by typing the arrow keys to locate that cell.

If the rectangle you want to print does not fit into the printer left and right margins, the rectangle is broken into blocks of column sections. You need to piece them together manually if you need one integrated listing. If the cell width is greater than the printer width, the excess characters are dropped and a "+" is printed to indicate that truncation occurred.

You can touch **Cancel** or type `DEL ESC`, any time, to cancel printing.

Titles and Multiple Windowing currently in use, have no effect on the listing.

Example:

1. Print labels and values of the worksheet being used down to cell G13.

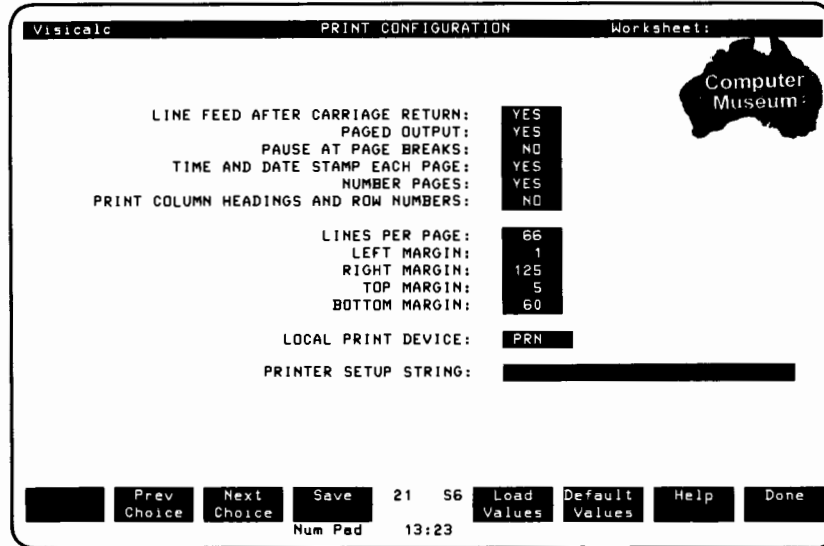
/PPG13 `Return`

C — Change the Printer Configuration

When you choose this option, you see the Printer Configuration currently in effect. It controls many of the printing characteristics. You can use one of the following configurations when you print worksheets:

1. VisiCalc Standard Printer Configuration —

This is the configuration you see when you begin using VisiCalc. It is also the configuration you see when you touch **Default Values**.



2. Your Own Standard Printer Configuration —

You create this configuration by “Modifying the Printer Configuration”, then saving it on disc using **Save**. Once you create your own standard configuration, and save it, it is the configuration that is used when you start subsequent VisiCalc sessions.

To reset the printer configuration to your own, touch **Load Values**.

PRINT /P

3. Temporary Printer Configuration —

You can temporarily alter whatever printer configuration is in effect. You follow the instructions for “Modifying the Printer Configuration”. Then print the worksheet as usual. This temporary configuration remains in effect until changed or until you end the VisiCalc session.

Modifying the Printer Configuration

When you choose the option, “Change the Printer Configuration”, you see the Printer Configuration currently in effect. Follow these steps to change the configuration for specific printing requirements:

1. Reset the Printer Configuration to the VisiCalc standard or to your own standard Printer Configuration.

This step is optional. Use it if some other configuration is in effect, and you want to start with one of the standard configurations.

Touch **Default Values** to start with the VisiCalc Standard Printer Configuration. Touch **Load Values** to start with Your Own Standard Printer Configuration.

2. Locate the item(s) you want to change by either:

- a. Touching the item on the display
- b. Typing **▼** or **Tab** to move to the next item.
- c. Typing **▲** or **Shift Tab** to move to the previous item.

3. Modify the item(s) using one of these methods:

- a. items with “YES” or “NO” settings

Touch **Next Choice** or **Prev Choice** to change the setting from YES to NO or vice-versa.

- b. items with number settings

Touch **Next Choice** or **Prev Choice** to increase or decrease the number to the next/previous number. You have to keep retouching the key for each increase or decrease.

- c. PRINTER SETUP STRING

You type a series of characters for this entry. The cursor remains at the first unused character position in the string. To correct typing errors, type **⌫** to erase one character at a time, then retype the rest of the entry.

4. End Printer Configuration changes.

- a. Accept these changes as a temporary configuration by touching **Done**.
- b. Accept these changes as your own standard printer configuration by touching **Save**.

PRINT /P

Printer Configuration Items

Here is a detailed description of the items on the Printer Configuration display:

LINE FEED AFTER CARRIAGE RETURN:

The "YES" setting specifies that a line feed character follows a carriage return at the end of each line of print. Set this item to "NO" if you do not want this character to terminate a line of print. The carriage return character returns the print head mechanism to the left margin and the line feed causes single line spacing. This item is included because some printers perform an automatic line feed and don't need this character. You need to check your printer manual to determine what the setting should be for this item.

PAGED OUTPUT:

The "YES" setting lets you use the next three items. They have to do with page facilities such as numbering, time and date stamping and pausing at page breaks. A "NO" setting means that you not want to take advantage of these facilities.

PAUSE AT PAGE BREAKS:

Printing stops automatically after each page is printed when this setting is "YES". This lets you insert paper into your printer, for example, if your printer has that feature. When this option is in effect, and as each page is printed, you see **Type RETURN to continue** on the prompt line. The "NO" setting causes continuous printing until the worksheet is finished.

TIME AND DATE STAMP EACH PAGE:

When the setting is "YES", the time and date is printed on the top print line. It precedes the page number (if that item was specified) at the right margin. No time and date is printed if this item is set to "NO".

NUMBER PAGES:

Page numbers are printed at the right margin on the top line when this item is "YES". If it is "NO", no page numbers are printed.

PRINT COLUMN HEADINGS AND ROW NUMBERS:

"YES" means that worksheet column and row headings are printed. This setting is used only when you "Print labels and values".

LINES PER PAGE:

This is the maximum number of lines per page.

LEFT MARGIN:

This is the beginning print position to be used.

RIGHT MARGIN:

This is the last print position to be used on each line.

TOP MARGIN:

This is the beginning print line on each page.

BOTTOM MARGIN:

This is the last print line to be used on each page.

LOCAL PRINT DEVICE:

The printers you can use are those you specified to the File Manager (refer to the *HP 150 Personal Computer Owner's Manual*). You can use up to three printers with your HP 150 (PRN, PRN1, AUX).

PRINTER SETUP STRING:

This item lets you print worksheet titles and send control characters to the printer before your worksheet is printed by VisiCalc. It lets you make use of the more advanced printing capabilities you may have on your printer.

When a value for the setup string is specified, it is in effect for all options of the PRINT command.

You need to check your own printer manual to determine which control characters you can use. VisiCalc doesn't know if the setup string is valid for the specified printer(s). If there are unrecognizable control characters in the setup string, the results are unpredictable. You may need to restart VisiCalc, in extreme cases.

You type characters for this entry in the same sequence that you want them sent to the printer. You can type up to 125 characters. You type the keyboard equivalents of the ASCII or hexadecimal characters you need. You can use any control character in the ASCII range 000-127. If you need to use **Tab** in the setup string, type **CTRL** I.

PRINT /P

This display of the Printer Setup String shows how to print in condensed format (15 characters/inch) on the HP 2602A printer.

Visicalc		PRINT CONFIGURATION		Worksheet:			
LINE FEED AFTER CARRIAGE RETURN:	YES						
PAGED OUTPUT:	YES						
PAUSE AT PAGE BREAKS:	NO						
TIME AND DATE STAMP EACH PAGE:	YES						
NUMBER PAGES:	YES						
PRINT COLUMN HEADINGS AND ROW NUMBERS:	NO						
LINES PER PAGE:	66						
LEFT MARGIN:	1						
RIGHT MARGIN:	125						
TOP MARGIN:	5						
BOTTOM MARGIN:	60						
LOCAL PRINT DEVICE:	PRN						
PRINTER SETUP STRING:	t&K2S						
Prev Choice	Next Choice	Save	21 56	Load Values	Default Values	Help	Done
Num Pad		13:23					

E — Print Cell Descriptors and Formulas

This figure shows what a listing of cell descriptors and formulas looks like.

Cell label,
value, or
formula

Cell

Cell descriptors—
formats, attributes

A1	B1	C1	D1	E1	F1	G1	H1
Gaswatch	100	1000000	get				
A2	B2	C2	D2	E2	F2	G2	H2
A3	B3	C3	D3	E3	F3	G3	H3
		January	ary	February	ary		
A4	B4	C4	D4	E4	F4	G4	H4
		Budgeted	Actual	Budgeted	Actual		
A5	B5	C5	D5	E5	F5	G5	H5
Cash in							
A6	B6	C6	D6	E6	F6	G6	H6
Salary		25%					
A7	B7	C7	D7	E7	F7	G7	H7
Dividend	Interest	7%					
A8	B8	C8	D8	E8	F8	G8	H8
Other		3%					
A9	B9	C9	D9	E9	F9	G9	H9

PRINT /P

When you start this command, the current cell-cursor location is used as the first cell to print. You should move the cell-cursor to that cell before starting this command.

When you see `Print:Equations Lower right` on the prompt line you specify the lower right corner cell in the rectangular block of cells that you want to print. You do this by typing that cell name, touching that cell, or by typing the arrow keys to locate that cell.


You can touch **Cancel** or type , any time, to cancel printing.

Individual cell descriptors are listed, but global descriptors (formats and attributes) are not listed.

Titles and Multiple Windowing currently being used have no effect on the listing.

Example:

1. Print all worksheet formulas and descriptors (the last cell is H40).

```
/PEH40 
```

The REPLICATE command lets you copy one or more cells to other parts of the worksheet. You can copy cell descriptors, formulas and contents independently.

This means that once you have specified formats, contents and formulas for one cell, you can copy those elements anywhere on the worksheet.


When you copy cell formulas to other cell locations, you can specify that cell references in those formulas be copied unchanged. This is the **No Change** option. More often, you find it useful to alter those cell references to correspond to the new cell locations of the formulas. This is the **Relative** option.

For example, you may want to copy the formula +C3*H2 in cell H3 to cell H4. Additionally, you might want the cell references to look like this after being copied: +C4*H3.

Since you copy only the cell elements you need to copy, the remaining elements in the destination cells are unaffected. For example, if you copy cell contents and formulas, the cell descriptors in the "target" cells remain unchanged.

Replicate: source range or (for options

Using Options:

Command Options	Description
(source range)	Copy all cell elements and prompt for cell reference adjustment. Enter the cell(s) you want to copy. Equivalent Main function key and options: 
(You select which cell elements you want to copy. You can copy formats and attributes, cell contents and formulas, or both.

REPLICATE /R

Command Options	Description
F	<p>Copy cell descriptors only. All descriptors specified by the FORMAT, and ATTRIBUTE commands are copied.</p> <p>Equivalent Main function key and options:</p> <pre>Columns Repl- CF & Rows cate</pre>
CN	<p>Copy cell contents and formulas; do not adjust cell references.</p> <p>Equivalent Main function key and options:</p> <pre>Columns Repl- CN & Rows cate</pre>
CR	<p>Copy cell contents and formulas; adjust cell references.</p> <p>Equivalent Main function key and options:</p> <pre>Columns Repl- CR & Rows cate</pre>
CA	<p>Copy cell contents and formulas; prompt for cell reference adjustment.</p> <p>As each cell reference is encountered in formulas, you are asked whether to adjust them (Relative) or to leave them unchanged (No change).</p> <p>Equivalent Main function key and options:</p> <pre>Columns Repl- CA & Rows cate</pre>
BN	<p>Copy all cell elements; do not adjust cell references.</p> <p>Equivalent Main function key and options:</p> <pre>Columns Repl- BN & Rows cate</pre>

Command Options	Description
BR	<p>Copy all cell elements; adjust cell references.</p> <p>Equivalent Main function key and options:</p> <p>Columns & Rows Repl-icate ⌘BR</p>
BA	<p>Copy all cell elements; prompt for cell reference adjustment.</p> <p>As each cell reference is encountered in formulas, you are asked whether to adjust them (Relative) or to leave them unchanged (No change).</p> <p>Equivalent Main function key and options:</p> <p>Columns & Rows Repl-icate ⌘BA</p>

Special Considerations:

Each of the options of this command asks you to enter the “Source” and “Target” cells. Source cells are the cells that you want to copy. Target cells are the destination cells.

The cell at the cell-cursor location is used as the beginning source cell. You can erase this cell by typing **⌘BackSpace**, then typing the cell you need to use. If you want to copy more than one cell you specify a second Source cell.

When you use this command, specify the first source cell you want to use, then follow these procedures.

1. To copy one cell:
 - a. Type **⌘Return**.
 - b. Touch the target cell then release; or type the target cell name, then type **⌘Return**.

REPLICATE /R

2. To copy more than one cell in a column or row:
 - a. Touch the last source cell then release; or type the last cell source name, then .
 - b. Touch the first target cell then release; or type the first target cell name.
 - c. Touch the last target cell then release; or type the last target cell name, then type .

NOTE

You can copy only one column or row at one time.

The Protect attribute is not functional for target cells. This means that when you use this command to copy cell contents and formulas, they are copied regardless of the setting of the target cell's Protect attribute.

Examples:

1. Copy the cell at the cell-cursor position (C5) to cells G4, G5 and G6. Copy formulas, and contents but do not adjust cell references.

```
/RCCN      Source range  
           C5...C5  
           Target range  
           G4...G6 
```

2. Copy all cells from A7 to A15 to the corresponding cells in column C. Copy all cell data and prompt for cell reference adjustment.

```
/R          Source range  
           A7...A15  
           Target range  
           C7 
```

3. Copy cells A1 to A15 to columns B through H. Copy all cell elements and adjust cell references automatically.

```
/RCBR      Source range  
           A1...A15  
           Target range  
           B1...H1
```

This command saves, loads, and deletes worksheets on disc. It also lets you end VisiCalc.

You can save and load worksheets using two different file formats on disc. These are VisiCalc (VC) format and DIF format. For details on these files refer to the appropriate option section under Special Considerations.

When worksheets are loaded, ERROR is displayed in all cells containing formulas with forward references. To eliminate ERROR from displaying, you can correct the forward references (see "Forward References" in the "Formulas" section). You can also type ! to recalculate the worksheet. You need to continue typing ! until all ERROR cells display a calculated value.








When you load a new worksheet and do not clear the old worksheet in memory, old cell contents and formulas remain when these cells are unused on the new worksheet. You can use this to your advantage when you want to include figures from one worksheet into another.

Storage: Ld Str Dlt Quit #DIF

Using Options:

Command Options	Description
L	<p>Load a VisiCalc (VC) formatted worksheet from disc.</p> <p>(device:\directory path\file name) <input type="text"/> <small>Return</small></p> <p>When you see Sheet File:File to Load on the prompt line, you type the disc location (if necessary) and file name of the worksheet you want to load.</p> <p>Equivalent Main function key and options:</p> <div style="display: flex; gap: 10px;"> <div style="border: 1px solid black; padding: 2px;">Load & Store</div> <div style="border: 1px solid black; padding: 2px;">Load Sheet</div> </div>

STORAGE /5

Command Options	Description
S	<p>Save the worksheet in VisiCalc (VC) format on disc.</p> <p>(device:\directory path\file name) </p> <p>When you see Sheet File:File for Saving on the prompt line, you type the disc location (if necessary) and the file name you want to give the worksheet when it is saved on disc.</p> <p>Equivalent Main function key and options:</p> <p> </p>
D	<p>Delete a worksheet saved on disc.</p> <p>(device:\directory path\file name) </p> <p>You see Type Y to confirm, Backsp to cancel</p>
Y 	<p>Final request to delete the worksheet on disc.</p> <p>Cancel this command.</p> <p>Equivalent Main function key and options: none</p>
Q	<p>End this session of VisiCalc and return to P.A.M.</p> <p>To let you cancel this command if you typed it by accident, you see Type Y to confirm, Backsp to cancel.</p>
Y 	<p>Final request to end VisiCalc.</p> <p>Cancel this command.</p> <p>Equivalent Main function key and options:</p> <p></p>

Command Options	Description
•	Perform input and output operations on DIF formatted worksheets on disc.
S	<p>Save all or a portion of a worksheet in DIF format on disc. The cell at the cell-cursor location is the first cell that is saved.</p> <p>You see Data File: File for Saving on the prompt line. Type the disc location (if necessary) and the file name you want to give the DIF file when it is saved, then <input type="text" value="Return"/>.</p> <p>Now you see Lower Right on the prompt line. You type the last cell that you want to store on the DIF file, then <input type="text" value="Return"/>.</p> <p>You see Row Col or RETURN on the prompt line. Type R to store the worksheet figures by row, C to store worksheet figures by columns. Typing <input type="text" value="Return"/> automatically stores the worksheet figures by row.</p> <p>Equivalent Main function key and options:</p> <div style="display: flex; gap: 5px;"> <div style="border: 1px solid black; padding: 2px;">Load & Store</div> <div style="border: 1px solid black; padding: 2px;">Store Data</div> </div>
L	<p>Load a DIF formatted worksheet from disc. Begin loading the file into the cell at the cell-cursor location.</p> <p>You see Data File: File to Load on the prompt line. You type the disc location (if necessary) and the file name of the DIF worksheet you want to load.</p> <p>Now you see Row Col or RETURN. You type an R to load the figures by row. Type C to load the figures by columns. Typing <input type="text" value="Return"/> loads the figures by row.</p>

STORAGE /S

Equivalent Main function key and options:



Special Considerations:

L, S — Saving and Loading Visicalc (VC) Worksheets

This is the worksheet format you usually use in VisiCalc. It is often referred to a “Sheet” file. All worksheet information is stored in VC files including cell formats, formulas or values, and labels. In addition, global specifications are stored. When you load a VC file, everything appears exactly the way it appeared when you saved the file. One note here...when a cell contains a formula, only the formula is loaded, not the calculated result as it was when the worksheet was saved. This means that you cannot use VisiCalc to carry over calculated figures from session to session.

You can load and process VC worksheets created on an HP 120 and HP 125. You can also go the other way and process VC files on these computers. You need to be aware that VisiCalc has several features that are not available on the HP 120 and HP 125. If you think you are going to need to process VC worksheets on these computers, make sure that you don't use any unique HP 150 VisiCalc features. Refer to the “Differences Between HP 120/125 Visicalc and HP 150 VisiCalc” section for a comparison of the features of these two spreadsheet programs.

When you save VC worksheets, you type a file name. Your file name should conform to the standard file naming conventions described in the *HP 150 Personal Computer Owner's Manual*. When VisiCalc stores the file, it adds “.VC” to the end of your file name. This is helpful in identifying your VC worksheet files on disc. You can change this file name extension if you want to. Just include it when you type the file name.

Example:

1. Save a worksheet in VisiCalc (VC) format on disc with the name, SBUDGT.

/SSSBUDGT

— Saving and Loading DIF Worksheets

This worksheet format is the format you use when exchanging worksheet figures with other applications. DIF files contain only cell values. Refer to the USING VISICALC WITH OTHER APPLICATIONS Appendix for additional information about DIF files.

When you save DIF worksheets, you give them file names. Use the standard file naming conventions described in the *HP 150 Personal Computer Owner's Manual*. When VisiCalc stores the file, it adds ".DIF" to the end of your file name. This standard file name extension helps you identify your DIF files on your discs. You can change this file name extension if you want to. Just include it when you type the file name.

Example:

1. Load a DIF formatted worksheet called "EOQ" into memory by rows. Begin at the position of the cell-cursor.

/S#LEOQ

STORAGE /S

Looking at Your Files on Disc

When you need to look at your directories on disc, you use the **File Manager** function key. This key appears on your display when you start the STORAGE command. When you touch this key, you temporarily leave VisiCalc and enter File Manager. You can perform any operations that you would normally perform using File Manager. The disc drive and directory that are used are the same ones you last used in VisiCalc. You can change these, if necessary. The CHDIR command of File Manager lets you permanently change the default disc drive and directory.

How to Specify the File for Saving and the File to Load

When saving or loading files, VisiCalc uses the disc drive and directory that was last used when you saved or loaded a worksheet, or that was set by the CHDIR command of File Manager. You need to explicitly specify the disc drive and directory if they are different. You follow the standard procedures for specifying discs and directories (refer to the *HP 150 Personal Computer Owner's Manual*).

For example, suppose that you wanted to load a VC formatted worksheet called "SALESF" which is on the disc in drive C. You would type this sequence of characters if disc C was not the last-used disc:

```
/SLC:\SALESF 
```

When you are typing the disc drive, directory and file name, you can correct typing errors by touching **Edit**. You use the same procedures for making corrections that you use for the EDIT command. You can also enter this "edit" mode by typing E.

The TITLE command lets you specify the rows and/or columns that are to remain in the window when you scroll it. "Titled" rows and columns remain in view at all times.

Normally you hear a beep when you try to move the cell-cursor to titled rows and columns. However, you can touch cells in titled rows or use the "Goto" facility to move the cell-cursor to those rows and columns. When you have located a cell in this manner, you can then edit cell data (using the EDIT command) as you normally do.

When you're using Multiple Windows, you can specify titles for each window.

```
Title: Hor Vert Both None
```

Using Options:

**Command
Options**

Description

H	<p>Make the row, where the cell-cursor is located, and all rows above it, stationary in the window.</p> <p>Equivalent Main function key and options:</p> <pre>Windows Horiz Title</pre>
V	<p>Make the column, where the cell-cursor is located, and all columns to the left of it, stationary in the window.</p> <p>Equivalent Main function key and options:</p> <pre>Windows Vertical Title</pre>
B	<p>Make the columns and rows, above and to the left of (and including) the cell-cursor location, stationary in the window.</p> <p>Equivalent Main function key and options: none</p>

TITLE /T

**Command
Options**

Description

N

Eliminate titles. No rows or columns are to remain stationary in the window.

Equivalent Main function key and options:

A screenshot of a terminal window with a black background and white text. The text reads "Windows No Titles" in two lines, with "Windows" on the first line and "No Titles" on the second line.

Examples:

1. Make the row where the cell-cursor is located stationary in the window.

/TH

2. Eliminate titling in the current window.

/TN

VERSION /V

This command displays the VisiCalc version number on the prompt line.

Use the version number when corresponding with Hewlett-Packard regarding this product.

(c) Copyright 1979 Software Arts Products Corp. Hewlett-Packard Co. 1983 X.XX.XX

Using Options:

Command	Description
---------	-------------

Options	Description
---------	-------------

You see the Version information on the prompt line. Type any key to end this command.

Equivalent Main function key and options: none

WINDOW /W




The WINDOW command lets you divide your worksheet into sections which can be viewed simultaneously.



Once you split your window into more than one section, you can operate on each section the same way you normally do in one window. You can move the cell-cursor to any window, scroll that window, and type input as you usually do.

You move the cell-cursor to another window by touching the cell in that window that you want to locate. If the cell is not visible, touch any cell in that window, then scroll the window as you usually do. You can also type a semi-colon (;) to move to the last-accessed cell in the next window. You have to continue to type ; to access all windows.

```
Window: Hor Vert 1 Sync Unsync
```

Using Options:

Command Options	Description
H	Create a horizontal window where the cell-cursor is located. Equivalent Main function key and options: 
V	Create a vertical window where the cell-cursor is located. Equivalent Main function key and options: 
1	Eliminate multiple windows. Equivalent Main function key and options: 

Command Options	Description
S	<p>Make all windows scroll in unison. This means that when you scroll one window, all windows are scrolled in the same direction. The</p> <p>Equivalent Main function key and options:</p> 
U	<p>Make the windows scroll independently. This means that when you scroll one window, it has no effect on the other windows. This is the standard and is in effect unless you specify otherwise.</p> <p>Equivalent Main function key and options:</p> 

Special Considerations:

Global specifications for the width of all columns, attributes, and formats apply only to the window where the cell-cursor resides. Global specifications for the width of individual columns, and the order and frequency of recalculation apply to the entire worksheet and are not influenced by Multiple Windows.

Titles (TITLE command) can be specified separately for each window.

You cannot use a combination of horizontal and vertical windows. That is, all windows are horizontal or vertical at any one time.

Examples:

1. Create horizontal window at cell-cursor position.

/WH

REPEATING LABEL / -

This command repeats a label in a cell until it is filled.

The column width determines the number of characters you see displayed for labels. Since the standard column width is nine characters, nine characters of a label displays on the worksheet. This does not affect the characters that are remembered, only those that are displayed in the window.

This command performs the same function as the “-” option of the FORMAT command.

Label: Repeating

Using Options:

Command Options	Description
-----------------	-------------

Repeat the character(s) in the cell where the cell-cursor is located.

You type the character(s) that you want repeated in the cell then .

Equivalent Main function key and options: none

Special Considerations:

When you change the column width with the GLOBAL command, the cell display changes automatically to reflect the new width.

Example:

1. Fill cell D8 with the asterisk character (*). The cell-cursor is located at cell D8.

/ - *

Chapter 4

FUNCTION KEYS



Introduction

This chapter gives details on all of the function keys you can use with VisiCalc. This chapter is organized into the following sections:

- **Function Key Structure Chart**

The Main function keys are broken down into their component function key options. This chart gives you a summary overview of the function keys and the operations they perform.

- **How to use Function Keys**

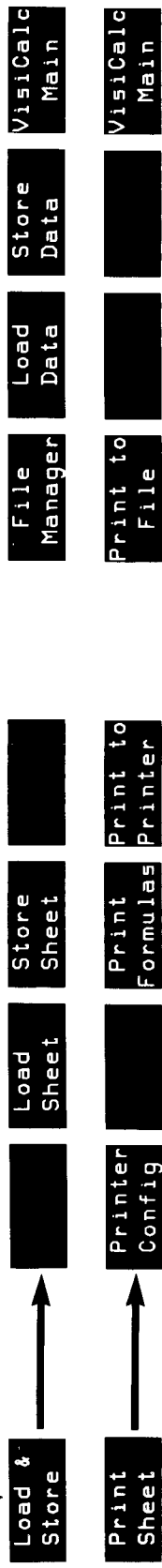
This section gives you instructions on the mechanics of how to use the function keys. It explains how to select and cancel function keys.

- **Function Key Reference**

The Main function keys are listed in the same order as you view them on the display. Within each Main function key, each option is explained in detail, in the same order as you view them. Each function key option gives you a cross-reference to the equivalent command and option in the COMMANDS Chapter.

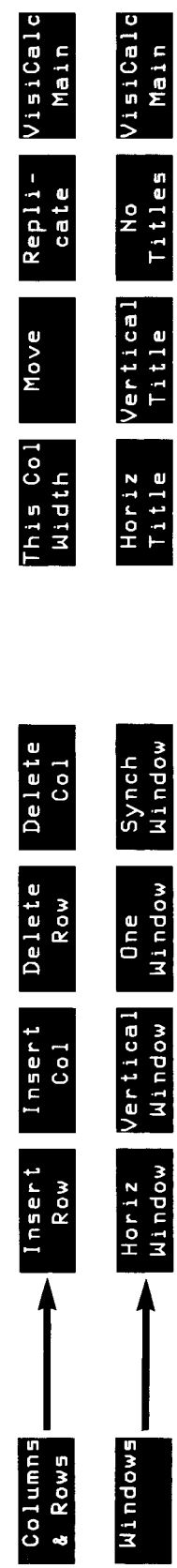
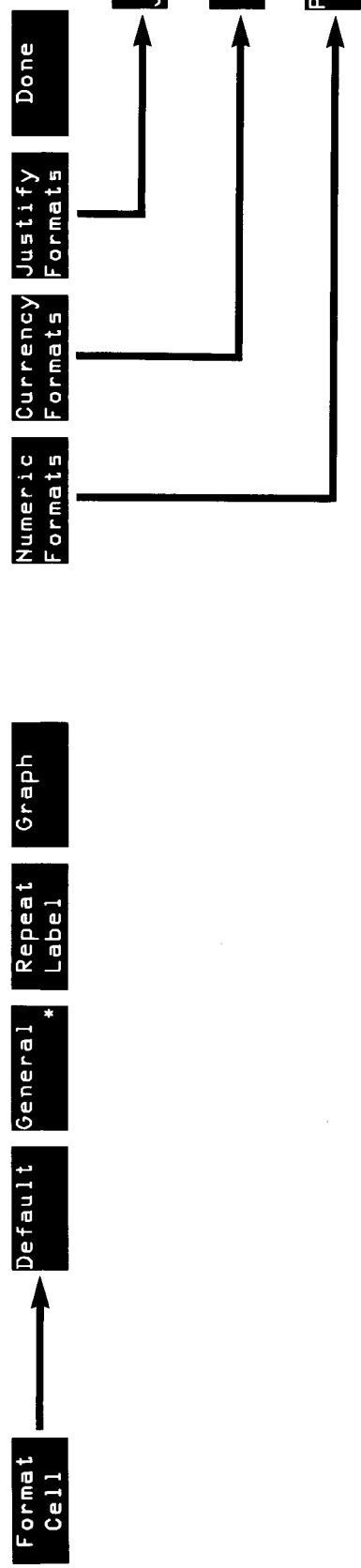
Load & Store

Main function key options



Default

Edit



Exit VisiCalc

Main function keys

Print Sheet Attrib & Globals Edit

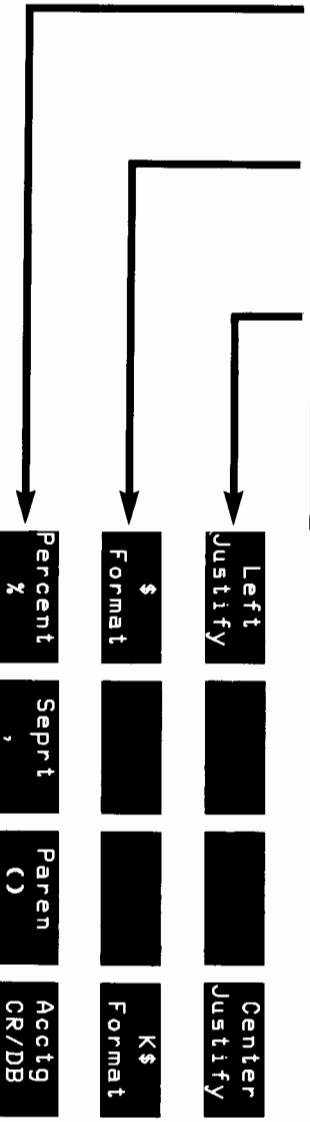
Format Cell Columns & Rows Windows Exit VisiCalc

Prev Choice Next Choice Save

Load Values Default Values Help Done

General * Repeat Label Graph

Numeric Formats Currency Formats Justify Formats Done



Center Justify K\$ Format

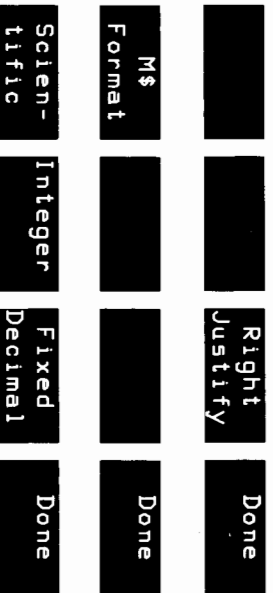
Right Justify Done M\$ Format Done

Seprt , Paren () Acctg CR/DB

Scientific Integer Fixed Decimal Done

Function Key

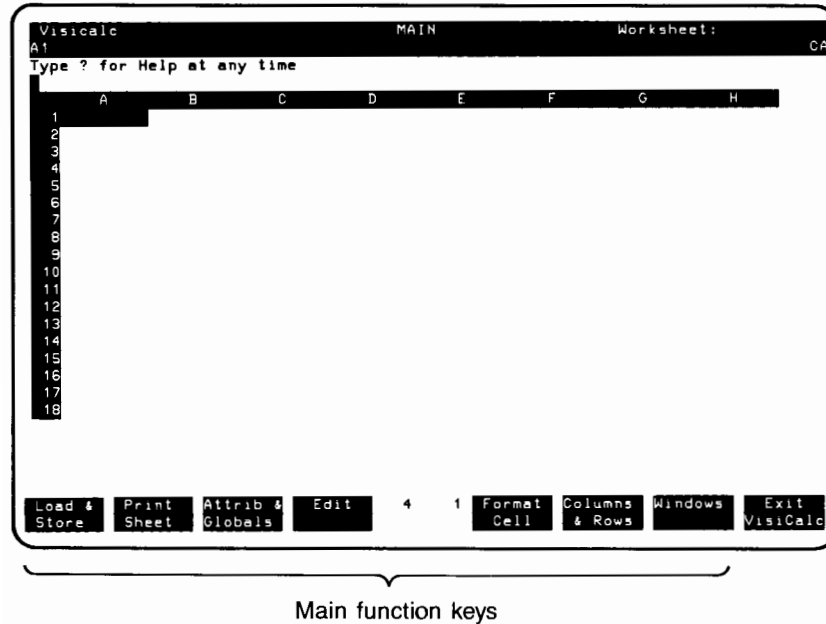
Structure Chart



How to Use Function Keys

Function keys are a convenient way to perform most of the worksheet operations that commands perform. They are handy because all you do is touch the function key label or type the corresponding key on the keyboard (f1 to f8). Additionally, you can use function keys while you are typing cell input. Essentially, you can use any function key you see on the display whenever you need to use it.

The focus of this chapter is the use of the Main function keys. They are the primary set of function keys in VisiCalc. They are the starting points for performing many worksheet operations.



How to Select a Main Function Key and Its Options

Follow these procedures when you need to select a Main function key with its options:

1. Touch one of the Main function keys briefly, then release (or type the corresponding function key on the keyboard).

Except for the **Edit** function key, you see a new set of function keys replace the Main function keys. These are the options of the Main function key.

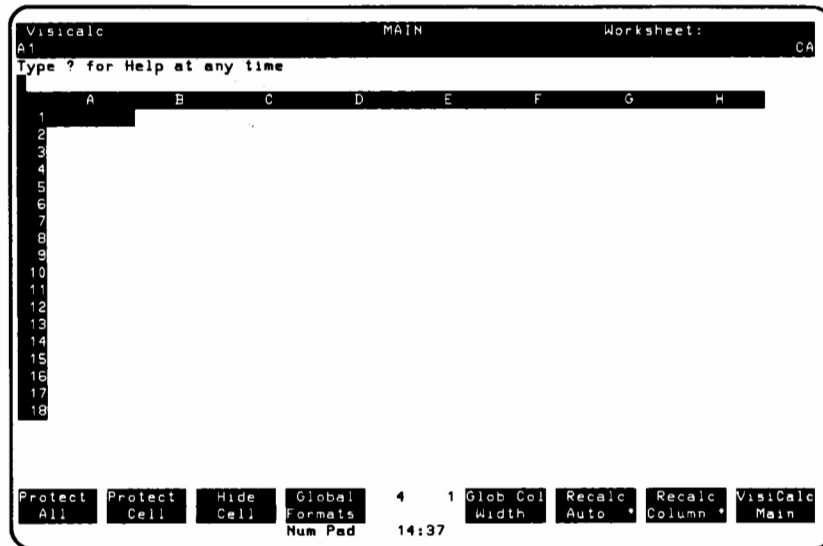
2. Touch one of the Main function key options briefly, then release.

When you do this, you see either of the following:

a. A set of subordinate function key options

You select the option you need. Some of function keys you see may be toggles. This means that when you touch it, you change its setting. You can see which function keys act as toggles by the asterisk (*) that appears (or disappears) in the label when you touch it. The * indicates that the function key label is active, or in effect.

For example, this display shows the function key label, **Recalc Auto***. Since it contains an *, automatic recalculation is in effect for the worksheet.



In this Chapter only the active setting (*) of each function key toggle is explained, except in cases where clarification of the inactive setting is necessary.

When you have finished selecting the function key options, you see the Main function keys again or you remain at a subordinate level of function keys. When you remain at a subordinate level, you can continue to select other options or end the Main function key as you need.

b. A prompt on the prompt line

You see a prompt when the function key task requires that you type some information, or that you touch a cell on the display. When you have supplied all of the information to complete a particular task, you see the Main function keys again.

How To End a Main Function Key

You need to end a Main function key when you have completed a particular option and remain at a subordinate function key level. You can touch either **Done**, or **VisiCalc Main** to return to the Main function keys again.

To Cancel a Main Function Key

If you start a Main function key, then decide that you don't want to perform it, you can do one of the following:

- Touch **Done**.
- Touch **Cancel**.
- Touch **VisiCalc Main**.



Function Key Reference

The Function Key Reference begins on the following page and continues to the end of the chapter. It consists of all of the function keys listed in the order that they occur on the display.

Load & Store

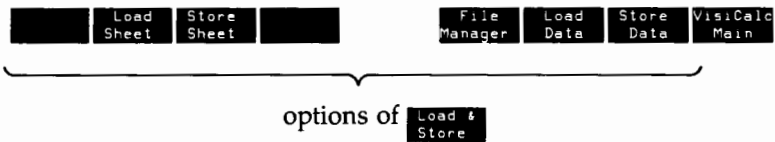
This function key lets you save and retrieve worksheets on/from disc. It also lets you access File Manager to perform directory searches, and other file operations.

You can save and load worksheets using two different file formats on disc. These are VisiCalc (VC) format and DIF format. The particular options in the following pages give you detailed information on these file formats.

When worksheets are loaded, ERROR is displayed in all cells containing formulas with forward references. To eliminate ERROR from displaying, you can correct the forward references (see the Forward References section). You can also type ! to recalculate the worksheet. You need to continue typing ! until all ERROR cells display a calculated value.

When you load a new worksheet and do not clear the old worksheet in memory, old cell contents and formulas remain when these cells are unused on the new worksheet.

You can use this to your advantage when you want to include figures from one worksheet into another. You load one worksheet after the other. The first one contains the figures to include and the second one leaves unused cells where the first worksheet figures belong.



This is the worksheet format you usually use in VisiCalc. It is often referred to as a "Sheet" file. All worksheet information is stored in VC files including cell formats, formulas or values, and labels. In addition, global specifications are stored. When you load a VC file, everything appears exactly the way it appeared when you saved the file. One note here...when a cell contains a formula, only the formula is loaded, not the calculated result as it was when the worksheet was saved. This means that you cannot use VisiCalc to carry over calculated figures from session to session.

You can load and process VC worksheets created on an HP 120 and HP 125.

Main Function
Key Options

Description



Load a Visicalc (VC) formatted worksheet from disc.

`(device:\directory path\file name) Return`

When you see `Sheet File:File to Load` on the prompt line, you type the disc location (if necessary) and file name of the worksheet you want to load.

Equivalent Command: `/SL`

Specifying the File to Load. When loading files, VisiCalc uses the disc drive and directory that were last used when you saved or loaded a file, or when changed in File Manager. You need to explicitly specify the disc drive and directory if they are different. You follow the standard procedures for specifying discs and directories (refer to the *HP 150 Personal Computer Owner's Guide*).

For example, suppose that you wanted to load a VC formatted worksheet called "SALESF" which is on the disc in drive C. You would enter the following if disc C was not the last-used disc:

  `C:SALESF Return`

Load & Store Load Sheet

When you are typing the disc drive, directory and file name, you can correct typing errors by touching **Edit**. Refer to the Main function key, **Edit**, for instructions on how to make corrections. You can also enter this "edit" mode by typing **CTRL** **E**.

Example:

Load a VC formatted file called CAPPLN.

Load & Store Load Sheet CAPPLN Return

This is the worksheet format you usually use in VisiCalc. It is often referred to as a "Sheet" file. All worksheet information is stored in VC files including cell formats, formulas or values, and labels. In addition, global specifications are stored.

Worksheets which you save can be processed properly by HP 120/125 VisiCalc, provided that you don't use any unique HP 150 VisiCalc features. Refer to the Differences Between HP 120/125 Visicalc and HP 150 VisiCalc section for a comparison of the features of these two spreadsheet programs.

When you save VC worksheets, you type a file name. Your file name should conform to the standard file naming conventions described in the *HP 150 Personal Computer Owner's Guide*. When VisiCalc stores the file, it adds ".VC" to the end of your file name. This is helpful in identifying your VC worksheet files on disc. You can change this file name extension if you want to. Just include it when you type the file name.

Main Function

Key Options Description

Store Sheet

Save the worksheet in Visicalc (VC) format on disc.

(device:\directory path\file name)

When you see **Sheet File:File for Saving** on the prompt line, you type the disc location (if necessary) and the file name you want to give the worksheet when it is saved on disc.

Equivalent Command: /SS

Specifying the File for Saving. When you save a VC worksheet, VisiCalc uses the disc drive and directory that were last used when you saved or loaded a worksheet, or that was specified the CHDIR command of File Manager. You need to explicitly specify the disc drive and directory if they are different. You follow the standard procedures for specifying discs and directories (refer to the *HP 150 Personal Computer Owner's Guide*).

Load & Store
Store Sheet

For example, suppose that you wanted to save a VC formatted worksheet on disc drive C, and name it "SALESF". You would enter the following if disc C was not the last-used disc:

Load & Store Store Sheet C:SALESF Return

When you are typing the disc drive, directory and file name, you can correct typing errors by touching **Edit**. Refer to the Main function key, **Edit**, for instructions on how to make corrections. You can also enter this "edit" mode by typing **CTRL** **E**.

Example:

Save a worksheet in Visicalc (VC) format on disc with the name, SBUDGT.

Load & Store Store Sheet SBUDGT Return

This function key appears on your display when you save or load worksheets, and when you create print-image files on disc (via the PRINT command or **Print Sheet**).

When you enter File Manager, disc operations that you perform use the disc drive and directory you were using in VisiCalc, unless you specify otherwise. When you return to VisiCalc, you continue to use the same device and directory you were using when you touched File Manager. The only way you can permanently change the device and directory in File Manager is to perform the CHDIR command.

Main Function
Key Options

Description

File Manager

You enter File Manager to perform file functions, such as directory searches.

You can perform any of the operations you normally use in File Manager. When you finish, touch **Back to VisiCalc** to return to VisiCalc.

Equivalent Command: none

Example:

Enter File Manager to do a directory lookup of worksheet files.

Load & Store File Manager

This worksheet format is the format you use when exchanging worksheet figures with other applications. DIF files contain only cell values. Refer to the USING VISICALC WITH OTHER APPLICATIONS Appendix for additional information about DIF files.

DIF files have ".DIF" appended to the end of their names. However, you do not type this extension when you use this function key.

Main Function

Key Options Description

Load Data

Load a DIF formatted worksheet.

You see **Data File: File to Load** on the prompt line. You type the disc location (if necessary) and the file name of the DIF worksheet you want to load.

Now you see **Row Col or Return**. You type an **R** to load the figures by row. Type **C** to load the figures by column. Typing loads the figures by rows.

Equivalent Command: **/S#L**

Loading the DIF Files. When loading files, VisiCalc uses the disc drive and directory that were last used when you saved or loaded a worksheet, or were set by the CHDIR command of File Manager. You need to explicitly specify the disc drive and directory if they are different. You follow the standard procedures for specifying discs and directories (refer to the *HP 150 Personal Computer Owner's Guide*).

For example, suppose that you wanted to load a DIF formatted worksheet called "SALESF" which is on the disc in drive C. You would do the following if disc C was not the last-used disc:

Load & Store Load Data C : SALESF

When you are typing the disc drive, directory and file name, you can correct typing errors by touching **Edit**. Refer to the Main function key, **Edit**, for instructions on how to make corrections. You can also enter this "edit" mode by typing **CTRL** **E**.

Example:

Load a DIF formatted file called EXPENS into memory by row.

Load & Store **Load Data** EXPENS **Return** **Return**

This worksheet format is the format you use when exchanging worksheet figures with other applications. DIF files contain only cell values. Refer to the USING VisiCalc WITH OTHER APPLICATIONS Appendix for additional information about DIF files.

When you save DIF worksheets, you give them file names. Use the standard file naming conventions described in the *HP 150 Personal Computer Owners's Guide*. When VisiCalc stores the file, it adds ".DIF" to the end of your file name. This standard file name extension helps you identify your DIF files on your discs. You can change this file name extension if you want to. Just include it when you type the file name.

Main Function

Key Options

Description

Store
Data

Save a DIF formatted worksheet on disc.

You see **Data File: File for Saving** on the prompt line. Type the disc location (if necessary) and the file name you want to give to the DIF file when it is saved, then .

Now you see **Lower Right** on the prompt line. You type the last cell that you want to store on the DIF file, then .

You see **Row Col or RETURN** on the prompt line. Type **R** to store worksheet figures by row, **C** to store worksheet figures by column. Typing automatically stores the worksheet figures by row.

Equivalent Command: `/S#S`

Saving a DIF File. When saving files, VisiCalc uses the disc drive and directory that were last used when you saved or loaded a file, or were set by the CHDIR command of File Manager. You need to explicitly specify the disc drive and directory if they are different. You follow the standard procedures for specifying discs and directories (refer to the *HP 150 Personal Computer Owner's Guide*).

For example, suppose that you wanted to save a DIF formatted worksheet called "SALESF" which is on the disc in drive C. You would do the following if disc C was not the last-used disc:

Load & Store Store Data C : SALESF Return

When you are typing the disc drive, directory and file name, you can correct typing errors by touching **Edit**. Refer to the Main function key, **Edit**, for instructions on how to make corrections. You can also enter this "edit" mode by typing CTRL E.

Example:

Save a DIF formatted worksheet called MORTG. Save it by column with cell D15 being the last cell to be saved.

Load & Store Store Data MORTG Return D15 Return C

Print
Sheet

This function key lets you print part, or a portion, of a worksheet. You can also save the print image on a disc file for later printing.

You follow these procedures when you want to print a worksheet:

1. Perform **Printer Config** to set your printing requirements (optional).

The Printer Configuration settings are in effect whenever you perform any printing operations (step 2). You should look at the settings currently in effect to see if they are the ones you need, then make changes as necessary.

2. Do one of the following and refer to the subsequent sections for more information:
 - a. Print cell descriptors and formulas by touching **Print Formulas**.
 - b. Print labels and values by touching **Print to Printer**.
 - c. Create a print-image file on disc by touching **Print to File**.

Printer Config Print Formulas Print to Printer Print to File VisiCalc Main

Options of **Print Sheet**

When you choose this function key, you see the Printer Configuration currently in effect. You can look at it and make any necessary changes before you print your worksheet. You can save your own special printing requirements for later use, if necessary.

Main Function

Key Options Description

Printer Config

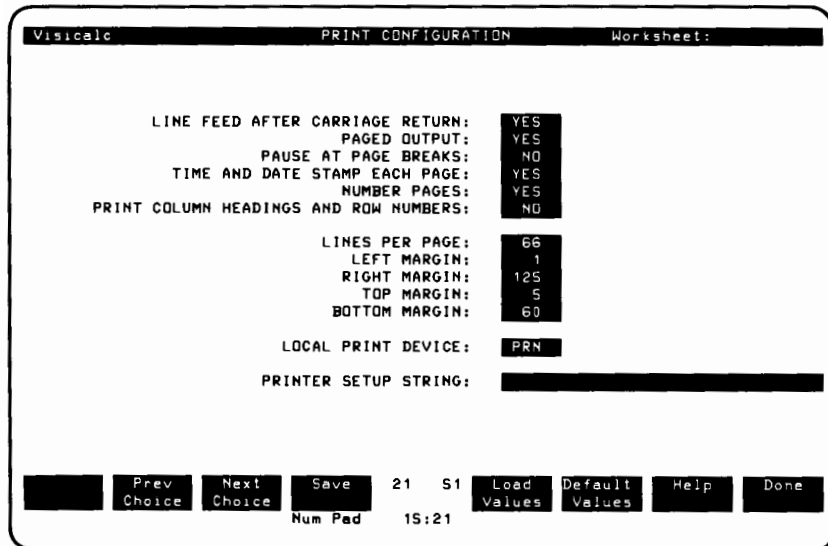
Look at and/or change the Printer Configuration.

Equivalent Command: /PC

You can use one of the following configurations when you print worksheets:

1. VisiCalc Standard Printer Configuration —

This is the configuration you see when you begin using VisiCalc. It is also the configuration you see when you touch **Default Values**.



2. Your Own Standard Printer Configuration —

You create this configuration by “Modifying the Printer Configuration”, then saving it on disc using **Save**. Once you create your own standard configuration, and save it, it is the configuration that is used when you start subsequent VisiCalc sessions.

To reset the printer configuration to your own, touch **Load Values**.

3. Temporary Printer Configuration —

You can temporarily alter whatever printer configuration is in effect. You follow the instructions for “Modifying the Printer Configuration”. Then print the worksheet as usual. This temporary configuration remains in effect until changed or until you end the VisiCalc session.

Modifying the Printer Configuration.

When you touch **Printer Config**, you see the Printer Configuration currently in effect. Follow these steps to change the configuration for specific printing requirements:

1. Reset the Printer Configuration to the VisiCalc standard or to your own standard Printer Configuration.

This step is optional. Use it if some other configuration is in effect, and you want to start with one of the standard configurations.

Touch **Default Values** to start with the VisiCalc Standard Printer Configuration. Touch **Load Values** to start with Your Own Standard Printer Configuration.

2. Locate the item(s) you want to change by either:

- a. Touching the item on the display
- b. Typing **▼** or **Tab** to move to the next item.
- c. Typing **▲** or **Shift Tab** to move to the previous item.

3. Modify the item(s) using one of these methods:


- a. Items with “YES” or “NO” settings

Touch **Next Choice** or **Prev Choice** to change the setting from YES to NO or vice-versa.

b. Items with number settings

Touch **Next Choice** or **Prev Choice** to increase or decrease the number to the next/previous number. You have to keep retouching the key for each increase or decrease.

c. PRINTER SETUP STRING

You type a series of characters for this entry. The cursor remains at the first unused character position in the string. To correct typing errors, type  to erase one character at a time, then retype the rest of the entry.

4. End Printer Configuration changes.

a. Accept these changes as a Temporary Printer Configuration by touching **Done**.

b. Accept these changes as Your Own Standard Printer Configuration by touching **Save**.

Printer Configuration Items. Here is a detailed description of the items on the Printer Configuration display:

LINE FEED AFTER CARRIAGE RETURN:

The "YES" setting specifies that a line feed character follows a carriage return at the end of each line of print. Set this item to "NO" if you do not want this character to terminate a line of print. The carriage return character returns the print head mechanism to the left margin and the line feed causes single line spacing. This item is included because some printers perform an automatic line feed and don't need this character. You need to check your printer manual to determine what the setting should be for this item.

PAGED OUTPUT:

The "YES" setting lets you use the next three items. They have to do with page facilities such as numbering, time and date stamping and pausing at page breaks. A "NO" setting means that you do not want to take advantage of these facilities.

PAUSE AT PAGE BREAKS:

Printing stops automatically after each page is printed when this setting is "YES". This lets you insert paper into your printer, for example, if your printer has that feature. When this option is in effect, and as each page is printed, you see "Type RETURN to continue" on the prompt line. The "NO" setting causes continuous printing until the worksheet is finished.

TIME AND DATE STAMP EACH PAGE:

When the setting is "YES", the time and date is printed on the top print line. It precedes the page number (if that item was specified) at the right margin. No time and date is printed if this item is set to "NO".

NUMBER PAGES:

Page numbers are printed at the right margin on the top line when this item is "YES". If it is "NO", no page numbers are printed.

PRINT COLUMN HEADINGS AND ROW NUMBERS:

"YES" means that worksheet column and row headings are printed. This setting is used only when you touch **Print to Printer**.

LINES PER PAGE:

This is the maximum number of lines per page.

LEFT MARGIN:

This is the beginning print position to be used.

RIGHT MARGIN:

This is the last print position to be used on each line.

TOP MARGIN:

This is the beginning print line on each page.

BOTTOM MARGIN:

This is the last print line to be used on each page.

LOCAL PRINT DEVICE:

The printers you can use are those you specified to the File Manager (refer to the *HP 150 Personal Computer Owner's Guide*). You can use up to three printers with your HP 150 (PRN, PRN1, AUX).

PRINTER SETUP STRING:

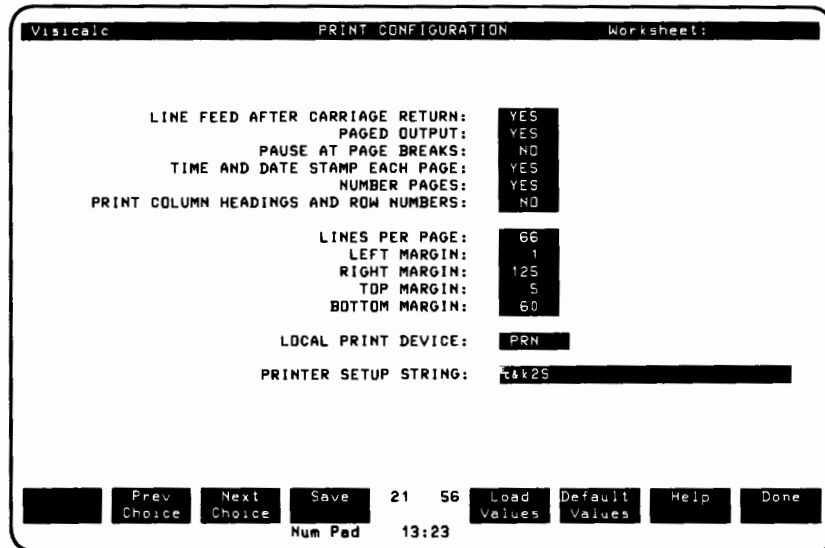
This item lets you print worksheet titles and send control characters to the printer before your worksheet is printed by VisiCalc. It lets you make use of the more advanced printing capabilities you may have on your printer.

When a value for the setup string is specified, it is in effect for all options **Print Sheet**.

You need to check your own printer manual to determine which control characters you can use. VisiCalc doesn't know if the setup string is valid for your printer(s). If there are unrecognizable control characters in the setup string, the results are unpredictable. You may need to restart VisiCalc, in extreme cases.

You type characters for this entry in the same sequence that you want them sent to the printer. You can type up to 125 characters. You type the keyboard equivalents of the ASCII or hexadecimal characters you need. You can use any control character in the ASCII range 000-127. If you need to use **Tab** in the setup string, type **CTRL I**.

This display of the Printer Setup String shows how to print in condensed format (15 characters/inch) on the HP 2602A printer.



This function key prints all cell elements in the cells that you specify. This figure shows what the listing looks like.

Cell label, value, or formula Cell Cell descriptors—formats, attributes

A1	B1	C1	D1	E1	F1	F1
Cashwatch	er's House	Child Bud	get			
A2	B2	C2	D2	E2	F2	F2
A3	B3	C3	D3	E3	F3	F3
		January	ary	February	ary	
A4	B4	C4	D4	E4	F4	F4
		Budgeted	Actual	Budgeted	Actual	
A5	B5	C5	D5	E5	F5	F5
Cash in:						
A6	B6	C6	D6	E6	F6	F6
Salary		2515		416		
A7	B7	C7	D7	E7	F7	F7
Dividend/	Interest	%				
A8	B8	C8	D8	E8	F8	F8
Other		As	18			
A9	B9					

When you touch this function key, the current cell-cursor location is used as the first cell to print. You should move the cell-cursor to that cell before touching this function key.

When you see `Print:Lower right` on the prompt line, you specify the lower right corner cell in the rectangular block of cells that you want to print. You do this by typing that cell name, touching that cell, or by typing the arrow keys to locate that cell.

You can touch `Cancel` or type `DEL ESC`, any time, to cancel printing.

Individual cell descriptors are listed, but global descriptors (formats and attributes) are not listed.

Titles and Multiple Windowing currently being used have no effect on the listing.

Main Function
Key Options

Description

Print Formulas

Print worksheet cell descriptors and formulas.

(lower right corner cell)

You specify the last (lower right corner) cell that you want to print. See the notes below on how you can do this.

Equivalent Command: /PE

Examples:

Print all worksheet formulas and descriptors (the last cell is H40).

Print Sheet Print Formulas H40 Return

This function key prints labels and values for the cells that you specify. The following figure shows what this listing looks like.

	-----January-----		-----February-----		-----March-----	
	Budgeted	Actual	Budgeted	Actual	Budgeted	Actual
Cash In:						
Salary	2315.00		2315.00		2315.00	
Dividend/Interest	75.00		75.00		75.00	
Other	35.00		35.00		35.00	
Total Cash In	2425.00	0.00	2425.00	0.00	2425.00	0.00
Cash Out:						
Mortgage	425.00		425.00		425.00	
Education	4500.00					
Car Ins.	45.00		47.00		47.00	
Car Maint.	17.00		50.00		50.00	
Utilities	50.00		25.00		25.00	
Telephone	25.00					

When you touch this function key the current cell-cursor location is used as the first cell to print. Therefore, you should move the cell-cursor to that cell before touching this function key.

When you see **Print:Lower right** on the prompt line, you specify the lower right corner cell in the rectangular block of cells that you wish to print. You do this by typing the cell name, or by moving the cell-cursor to the cell (by touching, cursor control keys, etc.).

If the rectangle you want to print does not fit into the printer left and right margins, the rectangle is broken into blocks of column sections. You need to piece them together manually if you need one integrated listing. If the cell width is greater than the printer width, the excess characters are dropped and a "+" is printed to indicate that truncation occurred.

You can touch **Cancel** or type **DEL/ESC**, any time, to cancel printing.

Titles and Multiple Windowing currently in use, have no effect on the listing.

Main Function
Key Options

Description

Print to Printer

Print worksheet labels and values in the same format that you view them in the window.

(lower right corner cell)

You specify the last (lower right corner) cell that you want to print. See the notes below on how you can do this.

Equivalent Command: /PP

Example:

Print labels and values of the worksheet being used down to cell G13.

Print Sheet

Print to Printer

G13

Return





This function key saves labels and values in a standard text file format. It contains all the necessary information required for printing the worksheet, including carriage returns and line feeds. You can print the file at a later time using MS-DOS (PRINT command).

Since it is a standard text file, you can use WordStar to manipulate the text for a different printing format, or to include VisiCalc figures into other text files.

When you touch this function key, the current cell-cursor location is used as the first cell to save on disc. You should move the cell-cursor to that cell before touching this function key.

When you see `Print:Lower right` on the prompt line, you specify the lower right corner cell in the rectangular block of cells that you want to print. You do this by typing that cell name, touching that cell, or by typing the arrow keys on the keyboard to locate that cell.

You can touch **Cancel** or type **DEL ESC**, at any time, to cancel this function key.

Titles and Multiple Windowing currently being used have no effect on print files.

The worksheet name that you type must conform to the standard file naming conventions (refer to the *HP 150 Personal Computer Owner's Guide*). VisiCalc adds ".PRN" to the file name. This identifies it as a print file on your discs. If you need to, you can change this standard naming convention and/or the disc drive and directory path as you normally do.

When you are typing the device:\directory path\file name, you can correct typing errors by touching **Edit**. You make corrections the same way you do when you're typing cell input. Refer to the **Edit** Main functions key for details on making corrections.

Main Function
Key Options

Description

Print to File

Create a file in print format on disc.

(device:\directory path\file name)

(lower right corner cell)

You type the disc location (if necessary) and the file name you want to use when the file is written on disc.

Then you specify the last (lower right corner) cell that you want to print.

Equivalent Command: /PF

Looking at Your Files on Disc. If you need to review the files on your disc, before creating a print file, touch **File Manager**. You temporarily leave VisiCalc and enter File Manager. You can perform any of the usual File Manager operations. When you are finished, touch **Back to VisiCalc**. You return to VisiCalc again to resume printing operations.

Example:

1. Store the worksheet currently being used in print-image format on disc. Name it EQQ. Store cells down to cell N10.

Print Sheet Print to File EQQ Return N10 Return

2. Store a print file on Disc Drive C called CASHDB.M01. Store all cells down to cell P25.

Print Sheet Print to File C:CASHDB.M01 Return P25 Return

Attrib 4
Globals

This Main function key lets you specify display characteristics of cells in the window as well as protection of cells from direct cell input. You can also specify the recalculation sequence and frequency of the worksheet.

Protect All Protect Cell Hide Cell Global Formats Glob Col Width Recalc Auto * Recalc Column * VisiCalc Main

Options of **Attrib 4
Globals**

This function key lets you set/reset the protect attribute for all cells on the worksheet. This means that you cannot type labels, values or formulas for any cells. For this facility to be useful, you need to “unprotect” only those cells you want to type data into. You do this by using the **Protect Cell** function key to deactivate protection for those cells.

When this function key is active (*), the **Tab** key is enabled. When you type it to move the cell-cursor, it skips protected cells.

Protection is ineffective for worksheet operations other than cell input. For example, target cells of **Replicate** are overwritten regardless of the target cells’ protection.

Main Function
Key Options

Description

Protect All *

Set protection for all cells on the worksheet. This prevents you from typing cell contents and formulas into all cells.

Equivalent Command: **/GAPY**

Protect All

Disenable protection for all cells.

Equivalent Command: **/GAPN**

This function key option lets you set/reset protection for individual cells on the worksheet. It lets you override the global protection that is in effect.

When a cell is protected, you cannot type labels, values or formulas into the cell. However cell protection does not affect other worksheet operations. For example, target cells of `Replicate` are overwritten regardless of the target cells' protection.

Main Function

Key Options

Description

`Protect
Cell *`

Set the Protect attribute for the cell at the cell-cursor location.

Equivalent Command: `/APY`

`Protect
Cell`

Disable the protect attribute for the cell-cursor location.

Equivalent Command: `/APN`

This function key option lets you set/reset the Hide Attribute for individual cells. The Hide Attribute lets you suppress the display of values and labels for individual cells in the window.

**Main Function
Key Options****Description**A small black square icon with the text "Hide Cell" in white, followed by a small white triangle pointing to the right.

Prevent the display of cell labels and values in the window.

Equivalent Command: /AHY

A small black square icon with the text "Hide Cell" in white, followed by a small white triangle pointing to the right.

Display cell labels and values in the window.

Equivalent Command: /AHN

This function key lets you specify display formats that you want applied to all cells in the window (where the cell-cursor is located). When you use Multiple Windows, you can use this function key to specify different formats for each window.

Main Function

Key Options

Description

Global Formats

Set/reset display formats to be used for all cells in the window. The formats you can specify are the same that are available when you touch `Format Cell`.

You can use `Format Cell` to specify formats for individual cells. Using `Format Cell` directly, lets you override `Global Formats`.

Equivalent Commands: `/GF`

This function key lets you set all columns to the width you specify.

This column width applies only to the window where the cell-cursor is when you touch this function key. This means that when you are using Multiple Windows, you can use this function key to specify different columns widths for each window.

Main Function
Key Options

Description

Global Width

Set the column width for all columns in the window.

(#) Type a number (#) from 3 to 125, then Return.

Equivalent Command: /GC

This function key lets you specify that recalculation of the worksheet is to occur after each value or formula is typed (automatic) or only when you request it (manual).

Main Function

Key Options Description

Recalc
Auto *

Set the recalculation frequency to automatic. This frequency is standard and is in effect unless you specify otherwise. Automatic recalculation means that the worksheet is recalculated each time you type a cell value or formula. The cell display line shows "A" when this option is in effect.

Equivalent Command: /GRA

Recalc
Auto

The worksheet is recalculated only when you request it. You can type an exclamation point (!) at any time to recalculate. The cell display line shows "M" when "manual" is in effect.

Equivalent Command: /GRM

This function key lets you set/reset the order of recalculation of the worksheet. You can specify that formulas be evaluated by columns or by rows. The recalculation order applies to the entire worksheet, regardless of whether or not you're using more than one window.

Main Function

Key Options	Description
Recalc Column	<p>Set the recalculation order to column. This is the standard order and is in effect unless you specify otherwise.</p> <p>Equivalent Command: /GDC</p>
Recalc Row	<p>Set the recalculation order to row.</p> <p>Equivalent Command: /GDR</p>

Edit

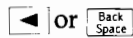
This function key lets you change or modify the contents and formulas of individual cells on the worksheet. This means that you can make changes or corrections to existing data without retyping the entire entry.

Before you use this function key, you move the cell-cursor to the cell you want to modify.

When you touch this function key, you see [Edit]:Label (Value) on the prompt line and the cell contents or formula displayed on the input line. The input-cursor is moved to the first character on the input line.

Follow these steps to make necessary changes to the cell data on the input line. You repeat steps 1 and 2 below to locate and make changes. When you're finished do step 3 to end **Edit**.

1. Move the input-cursor to the characters you want to change:



or

Back Space

Move to the left one character



Move to the right one character

NOTE

Hold the above keys down to repeat the movement.



Move to the beginning of the line




Move to the end of the line

Sometimes the cell contains too many characters to be displayed on the input line. Use these keys to scroll the input line as needed. VisiCalc beeps when no further movement is possible.

2. Make the changes:

a. Insert character(s) by typing .

Now type the characters you want to insert. They are inserted before the input-cursor. When you're finished adding characters, and want to make other changes, type  to turn the insert function off.

b. Type replacement characters.

c. Delete character(s) by typing one of these keys:



Delete the character at the input-cursor position by shifting the remaining characters one position to the left.



Erase all characters from the input-cursor position to the end of the input line.

3. End **Edit** by typing .

The characters displayed on the input line replace the old cell contents or formula.

NOTE

If changes which you type result in invalid syntax for a formula, label or value, VisiCalc beeps, and the input-cursor is moved to the location of the error. You are still in the "edit mode" and you make corrections using the same procedures described above.

Format Cell

This Main function key lets you specify some of the display, or viewing characteristics of individual cells on the worksheet. Specifically, it controls the positioning and formatting of cell data in the window.

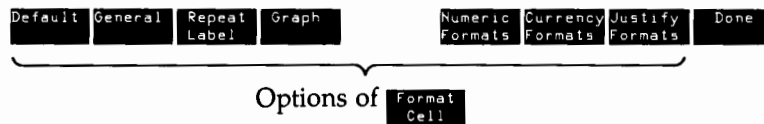
Cell contents are normally displayed according to the specifications of **General**. By choosing alternate options for **Format Cell**, you can change this standard display format on an individual cell basis.

You can use **Attrib & Globals** to specify cell descriptors for the entire worksheet. This is useful if your requirements vary from the standard descriptors, and they apply to most cells on the worksheet. You still have the capability to override these “global” descriptors by using **Format Cell** for those cells which are exceptions.

Overflow Representation

It is possible that cell values cannot be displayed adequately in the worksheet cell. This can happen if the value is too large for the column width, or the formatting specified for the cell results in the value “overflowing” the boundaries of the display cell.

A series of “greater than” signs (>) displayed in a cell indicates cell overflow. To correct cell overflow, reduce the size of the value if possible. This may be done by changing the formatting specifications. In addition, you can increase the column width. See **General** for more details on the display of cell values.



Main Function
Key Options**Description****Default**

Use the global format descriptors currently in effect.

If no global formats are in effect, turn off all of the cell descriptors but put the General Format descriptor into effect (see **General**).

Equivalent Command: /FD

Main Function
Key Options

Description

General

Set the General Format descriptor. This is the standard display format and it is in effect unless you specify otherwise.

Labels are left-justified. Numbers are right-justified and not aligned by decimal. Numbers are displayed exponentially when they are too large to display in the cell. As many significant digits as possible are shown. The leftmost position is blank except when the number is negative, in which case a negative sign is displayed.

Equivalent Command: `/FG`

Main Function
Key Options

Description

Repeat Label *

Repeat the label typed into the cell until it is filled.

The number of characters depends on the column width of the cell.

Example: "Top" is shown as "TopTopTop" when the column width is nine (9).

Equivalent Command: /F -



Main Function
Key Options

Description

Graph

Use bar graph format.

Positive numbers are converted to an equivalent number of asterisks and displayed left-justified. The leftmost position is blank.

Example: 6 is displayed as " *****".

Equivalent Command: /F*

This function key lets you specify how numbers are shown. The position to the left of the number is blank except when the number is negative. In that case, a negative sign is displayed.

Main Function Key Options

Description

Numeric Percent
Formats % z *

Multiply the number by 100, display “%” to the right.

Example: .25 would be displayed as 25%.

Equivalent Command: /FN%

Numeric Seprt
Format , *

A comma is inserted as a thousands separator.

Example: 5299 becomes 5,299.

Equivalent Command: /FN,

Numeric Paren
Formats () *

Negative numbers are enclosed in parentheses. Positive numbers are shown without parentheses and followed by a blank.

Example: -32 would be viewed as (32).

Equivalent Command: /FN(

Numeric Acctg
Formats CR/DB *

Numbers are displayed in accounting notation. Negative numbers are displayed with “CR” appended, positive numbers with “DB” appended.

Example: -368 is shown as 368CR.

Equivalent Command: /FNA

Numeric Scient-
Formats ific *

Numbers are displayed in scientific notation.

Example: 1035 would be viewed as 1.035E3.

Equivalent Command: /FNS

Main Function
Key Options

Description

Numeric
Formats Integer

Numbers are rounded to the nearest whole number.

Example: 3.217 becomes 3, and 3.5 becomes 4.

Equivalent Command: /FNI

Numeric
Formats Fixed
Decimal

(#)

You type the number of decimal places to be used (#), then . Numbers are rounded using the most significant digit to be truncated.

Example: 3.62 is shown as 3.620 with 3 when you specify three decimal places.

Equivalent Command: /FNF

This function key lets you show numbers as currency amounts. One space precedes the currency symbols in the cell.

Main Function

Key Options Description

Currency Formats \$ Format *

“\$” precedes the number in the cell.

Example: 45 is shown as \$ 45.00.

Equivalent Command: /FC\$

Currency Formats K\$ Format *

“K\$” precedes the number in the cell. The number is assumed to be a thousands number.

Example: 721 is shown as K\$ 721.00.

Equivalent Command: /FCK

Currency Formats M\$ Format *

“M\$” precedes the number in the cell. The number is assumed to be a millions number.

Example: 844 is shown as M\$ 844.00.

Equivalent Command: /FCM

Format Cell Justify Formats

Main Function
Key Options

Description

Justify Left
Formats Justify*

Align labels and values to the left.

Equivalent Command: /FJL

Justify Center
Formats Justify*

Align labels and values in the center.

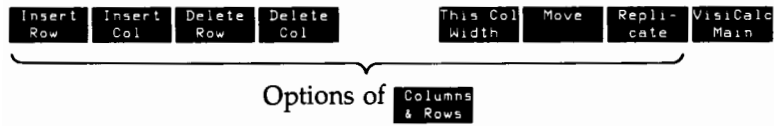
Equivalent Command: /FJC

Justify Right
Formats Justify*

Align labels and values to the right.

Equivalent Command: /FJR

This Main function key lets you insert, delete and move columns and rows on the worksheet. In addition, you can copy one or more cells to other worksheet locations and specify widths for individual columns.



Columns & Rows Insert Row

This function key creates space for a row of blank cells.

When you insert rows, the row names (1 to 254) do not change, but the data in the row changes. The row where the cell-cursor is located is shifted downward (along with all of the other rows below the cell-cursor). Then a blank row of cells is added.

Formulas, referencing cells in the rows that are shifted, are altered to reflect the new row locations.

You cannot insert rows when this would shift existing rows past the limits of the worksheet (row 254).

Main Function

Key Options

Description

Insert Row

Add a row of blank cells where the cell-cursor is located.

Equivalent Command: /IR

Example:

Insert a row at the current cell-cursor position and adjust cell references to cells in the shifted rows.

Columns & Rows Insert Row

This function key lets you create space for a column of blank cells.

When you insert a column, the column names (A to IT) do not change, but the data in the column changes. The column where the cell-cursor is located is shifted to the right (along with all the other columns to the right of the cell-cursor). Then a blank column of cells is added.

Formulas, referencing cells in the columns that are shifted, are altered to reflect the new columns locations.

You cannot insert columns when this would shift existing columns past the limits of the worksheet (column IT).

Main Function

Key Options

Description



Add a column of blank cells where the cell-cursor is located.

Equivalent Command: /IC

Example:

Insert a column of cells at the current cell-cursor position and adjust cell references to cells in the shifted columns.



Columns & Rows Delete Row

This function key removes all cell elements in the row. The other rows below the deleted row are shifted upwards to take up the space. Cell references in formulas in those shifted rows are adjusted automatically. However, you have to correct those formulas that reference cells in the original row that was deleted. Those formulas show @ERROR in the place of the cells in the row that was deleted.

For example, suppose that cell H8 contains the formula $+A7+C8$, and that row 7 is deleted. The formula is now located in cell H7 and it now shows, @ERROR+C7. The formula was adjusted for the shifted row (+C8) but not for the deleted row (+A7).

Main Function

Key Options

Description

Delete Row

Delete the row where the cell-cursor is located.

You see Type Y to confirm, Backsp to Cancel. This lets you cancel this function key if you touched it by accident.

Equivalent Command: /DR

Example:

Delete the row where the cell-cursor is located.

Columns & Rows Delete Row Y

This function key removes all cell elements in the column. The other columns to the right of the deleted column are shifted to the left to take up the space. Cell references in formulas in those shifted columns are adjusted automatically. However, you have to correct those formulas that reference cells in the original column that was deleted. Those formulas show @ERROR in the place of the cells in the column that was deleted.

For example, suppose that cell H8 contains the formula $+A8+C8$, and that column A is deleted. The formula is now located in cell G8 and it now shows, @ERROR+B8. The formula was adjusted for the shifted column (+C8) but not for the deleted column (+A8).

You cannot insert a column when this would shift existing columns past the limits of the worksheet (column IT).

Main Function

Key Options

Description

Delete Col

Delete the column where the cell-cursor is located.

You see Type Y to confirm, Backsp to Cancel. This lets you cancel this function key if you touched it by accident.

Equivalent Command: /DC

Example:

Insert a column at the current cell-cursor position and adjust cell references to cells in the shifted columns.

Columns & Rows Delete Col Y

Columns This Col
& Rows Width

When you use this function key, the column width that you specify is used for that particular column in the window where the cell-cursor is located, and in all other windows that you might be using.

Main Function

Key Options

Description

This Col
Width

Set the width of the column at the cell-cursor location to the number of characters that you type (#). You can type a number from 3 to 125.
Equivalent Command: /GCC

You move single columns or rows to other locations on the worksheet using this command.


This function key physically repositions the columns and rows on the worksheet. It opens up a new row or column at the “To” location and closes up the space in the “From” location. All cell elements are moved.

Formulas referencing cells in the columns and rows that are moved are adjusted automatically for the new locations.

Main Function

Key Options

Description

Key Options	Description
Move	Move a column or row of cells to another column or row on the worksheet.
From...	<p>Type a cell in the column or row you want to move. The cell at the cell-cursor location is used, but you can erase it (by typing ) and type another cell.</p> <p>You can use any cell in the column or row, since the entire column or row is moved.</p>
To	<p>To move a column...</p> <p>Touch or type a cell in the column to the right of the column to which you want to move (the column is moved in front of the “To” column).</p> <p>To move a row...</p> <p>Touch or type a cell in the row just below the row to which you want to move (the row is moved above the “To” row).</p> <p>Equivalent Command: /M</p>

Columns & Rows Move

Example:

Move column D immediately before column H. Adjust all cell references when column D is moved to show its new location.

Columns & Rows Move

From...To
D6...H6

The new location of column D is now column G. All cell references to column D are changed to column G.

This function key lets you copy one or more cells to other parts of the worksheet. You can copy cell descriptors, formulas and contents independently. This means that once you have specified formats, contents and formulas for one cell, you can copy those elements anywhere on the worksheet.

When you copy cell formulas to other cell locations, you can specify that cell references in those formulas be copied unchanged. This is the "No Change" option. More often, you find it useful to alter those cell references to correspond to the new cell locations of the formulas. This is the "Relative" option.

For example, you may want to copy the formula $+C3*H2$ in cell H3 to cell H4. Additionally, you might want the cell references to look like this after being copied: $+C4*H3$.

Since you copy only the cell elements you need to copy, the remaining elements in the destination cells are unaffected. For example, if you copy cell contents and formulas, the cell descriptors in the "target" cells remain unchanged.

Source and Target Cells

When you use this function key, you enter the "Source" and "Target" cells. Source cells are the cells that you want to copy. Target cells are the destination cells.

The cell at the cell-cursor location is used as the beginning source cell. You can erase this cell by typing Back
Space, then typing the cell you need to use. If you want to copy more than one cell you specify a second source cell.

When you have specified the first source cell you want to use, follow these procedures:

1. To copy one cell:
 - a. Type Return.
 - b. Touch the target cell then release; or type the target cell name, then type Return.

2. To copy more than one cell in a column or row:
 - a. Touch the last source cell then release; or type the last source cell name, then .
 - b. Touch the first target cell then release; or type the first target cell name.
 - c. Touch the last target cell then release; or type the last target cell name, then type .

NOTE

You cannot copy more than one column or row at one time.

The Protect attribute (see **Attrib & Globals**) is not functional for target cells. This means that when you use this command to copy cell contents and formulas, they are copied regardless of the setting of the target cell's Protect attribute.

Main Function

Key Options	Description
<div style="background-color: black; color: white; padding: 2px; display: inline-block; margin-bottom: 5px;">Repl- cate</div> (source range)	Copy all cell elements and prompt for cell reference adjustment. Type the cell(s) you want to copy. Equivalent Command: /R (source range) C You select which cell elements you want to copy. You can copy formats and attributes, cell contents and formulas, or both. F Copy cell descriptors only. All format and attribute specifications are copied. Equivalent Command: /RCF CN Copy cell contents and formulas; do not adjust cell references. Equivalent Command: /RCCN

Main Function Key Options	Description
CR	Copy cell contents and formulas; adjust cell references. Equivalent Command: /R☐CR
CA	Copy cell contents and formulas; prompt for cell reference adjustment. As each cell reference is encountered in formulas, you are asked whether to adjust them (Relative) or to leave them unchanged (No change). Equivalent Command: /R☐CA
BN	Copy all cell elements; do not adjust cell references. Equivalent Command: /R☐BN
BR	Copy all cell elements; adjust cell references. Equivalent Command: /R☐BR
BA	Copy all cell elements; prompt for cell reference adjustment. As each cell reference is encountered in formulas, you are asked whether to adjust them (Relative) or to leave them unchanged (No change). Equivalent Command: /R☐BA

Examples:

1. Copy the cell at the cell-cursor position (C5) to cells G4, G5 and G6. Copy formulas, and contents but do not adjust cell references.

Columns & Rows Repl- cate (CN) Source range
C5...C5
Target range
G4...G6

2. Copy all cells from A7 to A15 to the corresponding cells in column C. Copy all cell elements and prompt for cell reference adjustment.

Columns & Rows Repl- cate Source range
A7...A15
Target range
C7

3. Copy cells A1 to A15 to columns B through H. Copy all cell elements and adjust cell references automatically.

Columns & Rows Repl- cate (BR) Source range
A1...A15
Target range
B1...H1

This function key lets you divide the worksheet into sections that can be viewed simultaneously. You can also specify that certain rows and/or columns remain in the window when it is scrolled.

When you split your window using this function key, you can operate on each section the same way you normally do in one window. You can move the cell-cursor to any window, scroll that window, and type cell data.

You move the cell-cursor to another window by touching the cell in that window that you want to locate. If the cell is not visible, touch any cell in that window, then scroll the window as you usually do. You can also type a semi-colon (;) to move to the last-accessed cell in the next window. You have to continue to type ; to access all windows.

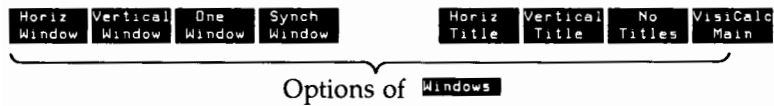
You cannot use both horizontal and vertical windows at one time. That is, the display is divided into either all horizontal or all vertical sections.

The global column width, attributes and formats apply only to the window where the cell-cursor resides. Individual column widths, and the recalculation order and frequency applies to the entire worksheet and is unaffected by the use of Multiple Windows.

Titles

When you specify that rows and/or columns be "titles", these rows and/or columns are never scrolled out of the window. In addition, when you try to move the cell-cursor to titled rows and/or columns using the arrow keys, you hear a beep. When you need to modify cells in titled rows and/or columns, you can touch the cell or use the "goto" facility to move the cell-cursor to the cell. You can type and modify cell data as normal.

Titles are set for the window containing the cell-cursor. You can set up different rows and/or columns as titles, in each of the windows you're using, if necessary.



Main Function
Key Options

Description

Horiz
Window

To set a horizontal window, position the cell-cursor in the row where you wish the window to begin, then press this function key.

Equivalent Command: /WH

Main Function
Key Options

Description

Vertical
Window

To set a vertical window, position the cell-cursor in the column where you wish the window to begin, then press this function key.

Equivalent Command: /WV

Main Function
Key Options

Description

One Window

To return the worksheet to one window, press this function key. The new single window will retain the formats that existed in the window where the cell-cursor was positioned when you pressed this key.

Equivalent Command: /W1

Main Function
Key Options

Description

Synch
Window*

To specify synchronous scrolling, press this function key. An asterisk will appear in the function key label to indicate that synchronous scrolling is active. To set scrolling to be unsynchronous, simply press this function key again, removing the asterisk from the label.

Equivalent Command: `/WS` and `/WU`

Main Function
Key Options

Description

Horiz
Title

To set a horizontal title, position the cell cursor in the row below the area you wish to fix as a title, then press this function key.

Equivalent Command: /TH

Main Function
Key Options

Description

Vertical
Title

To set a vertical title, position the cursor to the right of the area you wish to fix, then press this function key.

Equivalent Command: /TV

Main Function
Key Options

Description

No
Titles

To remove all titles currently fixed, press this function key.

Equivalent Command: /TN

Exit
VisiCalc

This Main function key lets you end the VisiCalc program and return to the P.A.M. display.

You should ensure that you save any worksheets you've been working on before you use this function key, since worksheets in memory will be lost.

You see the message, **Type Y to confirm, Backsp to cancel**, when you touch this function key. This gives you a chance to cancel this function key if you touched it by accident.

Chapter 5

FUNCTIONS



Functions are powerful scientific and financial tools that perform complex calculations. You use functions in formulas. Formulas can consist entirely of one or more functions.

To use a function:

- Type an "at" symbol (@).
- Type the function name (SUM, for example).
- Type function arguments (arg), if any.

Some functions use arguments, or additional information, in completing their tasks. Arguments consist of cell references, formulas or values, and are enclosed in parentheses. When functions use multiple arguments, you separate them by commas.

Functions are categorized on the following pages by how they are used. Each category explains the use of argument lists.

Scientific Functions

Arguments for the scientific functions can be cell references or formulas. Cells referenced must contain values.

Function	Description
@ABS(arg)	Compute the absolute value of the argument.
@EXP(arg)	Compute e (2.71828...) to the power specified by the argument.
@INT(arg)	Return the integer portion of the argument (truncate any decimal positions). Refer to the "Precision" section for more detail on the use of this function.
@LN(arg)	Return the natural log (base e) of the argument.
@LOG10(arg)	Return the logarithm (base 10) of the argument.
@SQRT(arg)	Return the square root of the argument.
@SIN(arg)*	Return the sine of the argument.
@COS(arg)*	Return the cosine of the argument.
@TAN(arg)*	Return the tangent of the argument.
@ASIN(arg)*	Return the arc sine of the argument.
@ACOS(arg)*	Return the arc cosine of the argument.
@ATAN(arg)*	Return the arc tangent of the argument.
@PI	Return the value for PI (3.1415926535...).

* all angles are specified in radians (2 pi radians = 360 degrees)

Examples:

1. Round the value in cell H8 to two decimal places:
@INT((H8*100+.5))/100
2. Return the absolute value of cell C10:
@ABS(C10)
3. Compute the square root of 625:
@SQRT(625)

Business and General Purpose Functions

You can use several arguments with these functions. They can be cell references or formulas. The cells referenced must evaluate to values.

Function	Description
@AVERAGE(arg1,...argn)	Compute the arithmetic mean of the arguments in the list. The computed result is equivalent to using @SUM divided by @COUNT for the list of arguments.
@COUNT(arg1,...argn)	Return the number of non-blank arguments in the list.
@MAX(arg1,...argn)	Return the largest argument in the list.
@MIN(arg1,...argn)	Return the smallest argument in the list.
@SUM(arg1,...argn)	Return the sum of the arguments in the list.
@NA	Display "NA" (Not Available) in the cell where it is entered, and in all cells containing cell references to it.
@ERROR	Display "ERROR" in the cell where it is used, and in all cells containing cell references to it.
@NPV(discount rate, cell range)	Compute Net Present Value

NOTE

The @NPV function calculates the net present value of future cash flows. It takes two arguments: the discount rate, or cost of money, used to discount the future cash flows; and a range of cells that includes the initial investment and the cash flows themselves.

The first cell in the cell range contains the initial investment. It is negative since the investment represents a payout. The successive cells contain the cash flows beginning with period one and progressing to the final period. The cash flow figures are negative when the net cash flow is negative.

When the computed Net Present Value is negative, the investment is not recovered. If it is greater than the zero, the cost is recovered.

You can use a cell range that proceeds backwards. That is, successive cells in the range occur in the previous row or column. For instance, you can use @NPV this way: @NPV(.05,D6...D1). Cell D6 contains the initial investment, cell D5 contains the first cash flow, and so forth.

When you are working with worksheets created using HP120/HP125 VisiCalc, you need to add a cell at the beginning of the cell range. This contains the initial investment, which you set to zero. You do this because HP120/HP125 VisiCalc does not use the initial investment figure for its computations.

Examples:

1. Compute the total value of row 13 from cell C13 to cell H13:
@SUM(C13...H13)
2. Cause "NA" to display in all cells referencing cell D6:
(cell D6)--> @NA
3. Compute the total value of cells, B1, S2, and A4 multiplied by .23:
@SUM(B1,S2,A4*.23)
4. Compute the net present value of a shopping center complex with annual cash flows in cells B2 to E2. The desired annual yield is 9%.

Visicalc MAIN Worksheet: CA
D6 (V) @NPV(.09,A3...E3)
Type ? for Help at any time

	A	B	C	D	E	F	G	H
1	Initial	Cash Flows						
2	Investmt	Year 1	Year 2	Year 3	Year 4			
3	-260000	-1,000	15,000	23,000	310,000			
4								
5		Net Present Value						
6					-10920.2			
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								

Load & Store Print Sheet Attrib & Globals Edit 4 1 Format Cell Columns & Rows Windows Exit VisiCalc
16:45

NOTE

Since the computed net present value is negative, this investment does not meet the desired profit objective of 9%.

Logic Functions

A logic function performs operations using arguments that have true or false settings, rather than mathematical values. These true and false settings are called logical values.

Arguments in Logic Functions

When arguments are used in logic functions, they can consist of:

- cell references
- logical expressions

Arguments must evaluate to logical values (true or false). When arguments do not evaluate to logical values, ERROR is displayed in the cell.

Logical Expressions

These are arithmetic-like expressions which evaluate to true and false settings. For example, the expression $1 > 4$ (one is greater than four) evaluates to the logical value FALSE. The expression $5 = 5$ (5 is equal to five) evaluates to the logical value TRUE.

In the examples above, the $>$ and $=$ are used as operators in a logic expression. The following operators can be used in logical expressions:

Operator	Meaning
$<$	Less than
$>$	Greater than
$=$	Equals
$< =$	Less than or equal to
$> =$	Greater than or equal to
$< >$	Not equal to

Function	Description
@NOT (arg)	<p>Return the opposite logical value of the argument.</p> <p>Return NA if the argument evaluates to "NA".</p> <p>Return ERROR if the argument evaluates to "ERROR".</p>
@AND (arg1....argn)	<p>Return TRUE if all the arguments are true.</p> <p>Return FALSE if any of the arguments are false.</p> <p>Return ERROR if any of the arguments are not logical values (labels and empty cells are ignored).</p> <p>Return NA if any of the arguments evaluates to "NA".</p>
@OR (arg1,....argn)	<p>Return TRUE if any of the arguments are true. Return FALSE if all of the arguments are false.</p> <p>Return NA if any of the arguments evaluates to "NA".</p>
@IF (arg,result1,result2)	<p>Return result1 if the logical value of the argument is TRUE. Return result2 if the logical value of argument is FALSE.</p> <p>You can use formulas and cell references for result1 and result2.</p>
@TRUE	Return TRUE.
@FALSE	Return FALSE.
@ISNA (arg)	Return TRUE if the argument evaluates to "NA", otherwise return FALSE.
@ISERROR (arg)	Return TRUE if the argument evaluates to "ERROR", otherwise return FALSE.

Examples:

1. Set cell D8 to 2 if cell D5 is TRUE, otherwise set cell D8 to 3:
(cell D8)--> @IF(D5,2,3)
2. Set cell C17 to 100 if cell C16 is greater than C14, otherwise set cell C17 to 50:
(cell C17)--> @IF(C16>C14,100,50)
3. Display "FALSE" in cell E5 if the value in cell A10 is false; otherwise, set cell E5 to 1000:
(cell E5)--> @IF(A10,1000,@FALSE)

Select Alternative Values Functions

These functions allow you to select a value from a list of alternatives. The arguments used are explained with each function.

Function	Description
@CHOOSE (arg, result1,...resultn)	<p>Return the result which corresponds to the numerical value of the argument.</p> <p>For example, if an argument equals 1, return result1, and so on.</p> <p>Return NA if the argument equals zero, or is greater than the number of results in the list.</p>
@LOOKUP (arg, cell range)	<p>Find the argument in the cell range, then return an associated data value.</p>

NOTE

The @LOOKUP function is useful for many financial calculations. Tax calculations, for example, require looking up gross pay in a range table and using an associated tax rate. The argument being looked up is compared to successive values in the cell range until a value greater than or equal to it is found. The associated data value is returned.

The cell range can be either a row or a column; the associated data values must be in the column to the right of the cell range searched or the row below the cell range.

If the argument is greater than the last cell value, the associated value of the last cell is returned. If the argument is less than the first cell value, NA is returned.

Examples:

1. Set cell A5 equal to 17 if cell A4 equals 1,
5 if cell A4 equals 2, and
33 if cell A4 equals 3.
`@CHOOSE(A4,17,5,33)`
2. Compute federal withholding tax for employee Stan Cook.
Lookup his taxable wage in the range table starting in cell B26.
When the wage range is found, return the corresponding federal
tax.

Appendix A

MESSAGES



This appendix describes messages you may encounter when using VisiCalc. They are divided into two categories: system messages, which are displayed by system programs such as File Manager, and VisiCalc messages which are unique to VisiCalc and occur during normal worksheet operations.

System Messages

Some of the more common system messages you may see are listed here. They may occur when you first begin to use VisiCalc. They may also occur when you perform disc/prINTER operations. You should refer to the *HP 150 Personal Computer Owner's Manual* for all "Remedy" procedures outlined below.

<i>Message:</i>	"Application" was not found on disc drive X.
<i>Possible cause:</i>	P.A.M. tried to run an application that is no longer in the drive.
<i>Remedy:</i>	Be sure the drive is turned on. Be sure the disc is inserted correctly. Press Reread Discs to see the applications that are on the discs.

Message: Not enough memory to boot. Press RETURN to clear

Possible cause: You do not have the minimum memory configuration (256K) or you have a hardware problem

Remedy: Contact your HP150 support person.

Message: Unable to open language file

Possible cause: Program files are missing on your VisiCalc disc.

Remedy: Copy your VisiCalc master disc again using the procedures in the *HP 150 Personal Computer Owner's Manual*.

Message: Language file too small

Possible cause: Program files are missing on your VisiCalc disc.

Remedy: Copy your VisiCalc master disc again using the procedures in the *HP 150 Personal Computer Owner's Manual*.

Message: Load Op Sys failed, Op Sys disc not found.

Possible cause: The HP 150 can't find the operating system disc.

Remedy: Press to remove the message from the screen. Be sure the disc drive is turned on, and a copy of the operating system is in the A: drive (or in the drive you load the operating system from if you changed from A:).

Message: Non-DOS disc error reading/writing drive X.

Possible cause: The disc in drive X has not been properly formatted to run on an HP 150.

Remedy: Type A to abort the read or write, and reformat the disc (if you don't mind losing all of the data on it).

<i>Message:</i>	NOT READY ERROR READING DRIVE X
<i>Possible cause:</i>	You tried to read from a disc that isn't ready.
<i>Remedy:</i>	Make sure drive X is turned on. Make sure a disc is in the drive. Make sure the door is shut. Type R (Retry) and press Return or press A (terminate program) and press Return.
<i>Message:</i>	NOT READY ERROR WRITING DRIVE X
<i>Possible cause:</i>	You tried to write to a disc that isn't ready.
<i>Remedy:</i>	Make sure drive X is turned on. Make sure a disc is in the drive. Make sure the door is shut. Type R (Retry) and press Return or press A (terminate program) and press Return.
<i>Message:</i>	Not enough memory to run Application.
<i>Possible cause:</i>	P.A.M. tried to run the application you indicated, but could not because there is not enough memory available to do so.
<i>Remedy:</i>	If the program lacks 40K or less memory, try running it from the MS-DOS prompt. If you called P.A.M. from the MS-DOS prompt (not recommended), touch Exit P.A.M. . Another remedy is to buy more memory.
<i>Message:</i>	Destination disc in drive X is write protected.
<i>Possible cause:</i>	You have write protected the destination disc by sliding the small tab in the slot to the down position with a 3 1/2" disc, or placing a write-protect sticker on a 5 1/4" disc.
<i>Remedy:</i>	Move the small tab to the up position if you are using a 3 1/2" disc. Remove the write-protect tab from a 5 1/4" disc. Press Continue , then Start Copy or Start Backup .

<i>Message:</i>	Disc error writing drive X
<i>Possible cause:</i>	Your disc may be worn or damaged.
<i>Remedy:</i>	Press <input type="button" value="Return"/> to clear the message from the screen. Try again. If the next read works, duplicate this disc right away (use COPY/BACKUP's COPY). If it doesn't work, try using the MS-DOS RECOVER command.
<i>Message:</i>	Disc is not formatted.
<i>Possible cause:</i>	Using File Manager, you tried to use a disc that was not formatted.
<i>Remedy:</i>	Format the disc, according to the directions in the chapter on discs.
<i>Message:</i>	ERROR 1- NO XXXX.MSG
<i>Possible cause:</i>	A vital part of your software cannot be found.
<i>Remedy:</i>	Call your support person.
<i>Message:</i>	Load Op Sys failed, not enough memory.
<i>Possible cause:</i>	The amount of memory (inside the HP 150) is not enough to load the operating system.
<i>Remedy:</i>	Call your hardware support person.

VisiCalc Messages

VisiCalc beeps when most error situations arise. This beeping occurs as soon as an error is detected. This saves you time and effort in making corrections. These errors are usually evident and need no explanation. You should refer to the appropriate sections of FOR YOUR REFERENCE for usage rules.

Other situations require messages to be displayed so that you can proceed or cancel a worksheet operation as necessary. Some messages simply inform you of what is happening to avoid confusion.

When you use the **File Manager** function key, and error situations arise, refer to the *HP 150 Personal Computer Owner's Manual*.

- Message:* **Bad File: Type Y to reinput, Backsp to cancel**
- Possible cause:* The file you want to load does not exist on disc.
- Remedy:* Type Y to type another name. Type **Back Space** or touch **Cancel** to cancel the load request.
-
- Message:* **File exists. Y to replace, Backsp to cancel**
- Possible cause:* The file you want to save already exists on disc.
- Remedy:* Type Y to proceed, and overwrite the existing worksheet file on disc. Type **Back Space** or touch **Cancel** to cancel the save request.
-
- Message:* **Writing (file name).VC
Writing (file name).DIF**
- Possible cause:* VisiCalc is saving your worksheet on disc (in either VisiCalc(VC) or DIF format). You see this message until the save operation is complete.
- Remedy:* None. This is an informative message only.

<i>Message:</i>	Reading (file name).VC Reading (file name).DIF
<i>Possible cause:</i>	VisiCalc is loading your worksheet from disc (in either VisiCalc(VC) or DIF format). You see this message until the worksheet is displayed.
<i>Remedy:</i>	None, this is an informative message only.
<i>Message:</i>	Type Y to confirm, Backsp to cancel
<i>Possible cause:</i>	You see this message when you start to clear the worksheet, delete columns or rows or when you ask to end the VisiCalc session.
<i>Remedy:</i>	This is your last opportunity to cancel the operation in case you asked for it by mistake. For instance, you can cancel the CLEAR command by typing <input type="text" value="Backspace"/> when you forgot to save a worksheet you've been working on.
<i>Message:</i>	Printer not ready
<i>Possible cause:</i>	You see this message when you request a printing operation and your printer has not been turned on, or is not operational for some reason, such as when not connected properly. Actually, you can see this message at any time when the printer becomes inoperable.
<i>Remedy:</i>	Make your printer operational. As soon as it is operational printing begins or resumes. If you need to cancel the printing operation, touch <input type="button" value="Cancel"/> .

Appendix B

USING VISICALC WITH OTHER APPLICATIONS



It is often very useful for other HP 150 applications to use your worksheet data. For example, you have created a Sales Analysis worksheet and need to draw a pie chart using some of the sales figures. This Appendix tells you how to send worksheet data to Series 100/Graphics, and tells you how you store worksheet data so that other applications can use its figures.

Worksheet data is passed among applications in a format called DIF format. You really do not need to know many details about this format unless you want to write your own programs to process this kind of file. The last section in this appendix gives you details about the structure of the file. It also includes two sample programs, to give you a better idea of how to write your own programs.

The important thing to remember about DIF files is that they contain cell values only. No labels, formats, attributes or formulas are stored.

Sending Worksheet Figures to Series 100/Graphics

The following procedures show you how to produce a pie chart for column B in this worksheet:

Column to transfer

	A	B	C	D	E	F	G	H
1	Caldwell Tools							
2								
3	Sales Analysis							
4	-----							
5								
6	Product	Units Sold	*****Sales*****	**Gross Profit**	***Net Profit***			
7			\$ % of Tot	\$ % of Tot	\$ % of Tot	\$ % of Tot		
8								
9	Arc Saw	750	16,463 15.32	7,463 12.46	6	.04		
10	Drills	1,000	19,500 18.15	11,000 18.37	1,058	6.09		
11	Grinder	725	27,913 25.98	19,575 32.69	12,367	71.13		
12	Jig Saw	600	9,750 9.08	3,450 5.76	-2,515	-14.46		
13	Router	400	12,800 11.92	7,000 11.69	3,023	17.39		
14	Sander	800	21,000 19.55	11,400 19.04	3,447	19.82		
15								
16	Total	4,275	107,425 100.00	59,888 100.00	17,388	100.00		
17								
18								
19								
20								

In VisiCalc:

1. Touch **Load & Store**, then **Store Data**;

or

type /S#S.
2. Move the cell-cursor to cell B9.
3. Type the disc location and file name you want to use for the DIF file, then type .
4. You see **Lower Right** on the prompt line. Type **B14**, then .
5. You see **Row Col** or **Return** on the prompt line. Type **c**.
6. End the VisiCalc session by touching **Exit VisiCalc** or by typing **/SQY**.

In Graphics:

Follow the procedures in the Series 100/Graphics Manual to get and modify a pie chart. You type the disc location and file name where the VisiCalc DIF file is stored. You also type any labels you need to use into the "Legend" and "Labels" fields. Finally, you graph the pie chart.

DIF Files and Programming Considerations

The DIF format is a standard file format that allows unrelated programs to share data. A file saved in the DIF format is a text file that can be read by other DIF-supporting programs. Thus, a file created by VisiCalc can be saved and read by other programs that support DIF, and files created by these other programs can be loaded by the VisiCalc program. These programs can be written (in BASIC, for example) so that VisiCalc can be integrated into a broader set of personal computing tools.

Another useful feature of the DIF format is that it allows for the transfer of data from one VisiCalc sheet to another, enabling users to consolidate data for purposes such as corporate or annual calculations.

Additional information about DIF is available through the DIF Clearinghouse. The DIF Clearinghouse is set up to:

- Coordinate and distribute information about DIF format.
- Maintain and distribute DIF Technical Specification.

Information about the DIF Clearinghouse can be obtained by writing to:

DIF Clearinghouse
P.O. Box 527
Cambridge, MA 02139

The DIF Format

The DIF format stores the worksheet in a form accessible to programs other than VisiCalc. To accommodate a wide range of languages in which such a program might be written, several simplifying techniques have been used:

1. Information about the *size* of the file is provided at the beginning.
2. Records are kept as short as possible.
3. The data type (string or number) of each value is explicitly defined.
4. Strings are stored one per line.
5. Strings that contain special characters are enclosed in quotation marks.
6. The file ends with an explicit End-Of-Data record.

Figure B-1 shows a sample worksheet used to describe the format and the programs that work with the DIF format.

Year	1980	1981	1982
Sales	100	110	121
Cost	80	88	97
Profit	20	22	24

Figure B-1. Sample Worksheet

The format stores the worksheet in a series of slices; the worksheet can be sliced either horizontally (by rows) or vertically (by columns). Each of these slices is called a *tuple*; each slice along the other axis is called a *vector*. In Figure B-1, for example, if the worksheet is saved by rows, the first vector is "Year 1980 1981 1982" and the first tuple contains "Year", "-" (one hyphen), "Sales", "Cost", and "Profit"; the entire worksheet is stored in four tuples of five values each.

If the worksheet in Figure B-1 is stored by columns, the first vector is YEAR "- Sales Cost Profit" and the first tuple contains "Year", 1980, 1981, and 1982; the entire worksheet is stored in five tuples of four values each.

A DIF file consists of a series of *header* records that describe the file, followed by one set of *data* records for each tuple, and ends with a pair *End-of-Data* records.

Header

The header consists of four sets of three records that give information about the entire file:

```
TABLE
0, 1
'''
VECTORS
0, V V      is the number of vectors in the file.
'''
TUPLES
0, T T      is the number of tuples in the file.
'''
DATA
0, 0
''
```

Data Records

The data records consist of a pair of header records that identify the beginning of a tuple, and a pair of records for each value in the tuple:

- 1,0	
BOT	Beginning of Tuple records.
T1,N1	
string1	First value of tuple.
T2,N2	
string2	Second value of tuple.
T3,N3	
string3	Third value of tuple.
.	
.	
.	
Tn,Nn	
stringn	Last (nth) value of tuple.

End-Of-Data Records

The End-Of-Data records mark the end of the file:

```
- 1,0  
BOT
```

Sample Programs

Here are two sample programs. The first program creates a DIF file. The second program can read a DIF file and list its contents. They should be helpful in understanding how to manipulate DIF files. They are written as main programs with subroutines, so you can pick up code from them to be used in other programs. Both programs are written in a general BASIC such that changes for variations of this language should be minimized.

Creating a DIF File

```
100 REM This program creates a DIF file.
110 REM It prompts for the file name, number of vectors and
120 REM tuples, and then for the values themselves. Data
130 REM may be either numeric (type 0) or string (type 1).
140 REM
1000 PRINT "FILE NAME": REM - Get name of file
1010 INPUT F$
1020 OPEN "D",#1, F$ :REM - Open for write
1030 PRINT "NUMBER OF VECTORS"
1040 INPUT NV
1050 PRINT "NUMBER OF TUPLES"
1060 INPUT NT
1070 GOSUB 3000; :REM - Write out DIF header
1080 FOR I=1 TO NT
1090 T=-1:V=0: S$="BOT" :REM - Output beginning of tuple
1100 GOSUB 4000
1110 FOR J=1 TO NV :REM - Get each Data Value
1120 PRINT "DATA TYPE FOR VECTOR #";J;", TUPLE #";I
1130 PRINT T
1140 V=0:S$="V" :REM - Output the Data Value
1150 PRINT "DATA VALUE FOR VECTOR #";J;", TUPLE #";I
1160 PRINT "INPUT DATA TYPE: S FOR STRING,N FOR NUMERIC"
1170 INPUT Q$
1180 T=0:IF Q$="S" THEN T=1
1190 IF T=0 THEN INPUT V
1200 IF T=1 THEN INPUT S$
1210 GOSUB 4000
1220 NEXT J
1230 NEXT I
1240 T=-1:V=0: S$="EOD"
1250 GOSUB 4000
1260 CLOSE 1
1270 PRINT "FINISHED CREATING DIF FILE";F$
1280 STOP
3000 REM - Routine to write out DIF header
3010 PRINT#1,"TABLE":PRINT#1,"0,1":GOSUB 3500
3020 PRINT#1,"TUPLES":PRINT#1,"0,";NT:GOSUB 3500
3030 PRINT#1,"VECTORS":PRINT#1,"0,";NV:GOSUB 3500
3040 PRINT#1,"DATA":PRINT#1,"0,0":GOSUB 3500
3050 RETURN
3500 REM - Routine to write "" (null string)
3510 PRINT#1,CHR$(34);CHR$(34)
3520 RETURN
4000 REM - Routine to write out Data Value
4010 PRINT#1,T;"",";V
4020 PRINT#1,S$
4030 RETURN
4040 END
```

Note that if the string values being saved have spaces or special characters, the code at line 4020 should be changed to check for those cases, and add leading and trailing quotes. See the discussion about Quoted Strings in BASIC.

Listing a DIF File

```
100 REM - This programs reads a DIF file
110 REM - and lists its contents. The program prompts for
120 REM - the name of the file to be listed.
500 DIM T(100)
510 DIM V(100)
520 DIM V$(100)
1000 GOSUB 5000 :REM - Call initialization code
1010 GOSUB 6000 :REM - Read header
1020 FOR I=1 TO NT :REM - Read all of the tuples
1030 PRINT "VALUES FOR TUPLE #";I
1040 GOSUB 7000
1050 FOR J=1 TO NV
1060 IF T(J)=0 THEN PRINT V(J)
1070 IF T(J)=1 THEN PRINT V$(J)
1080 NEXT J
1090 NEXT I
1100 CLOSE 2
1110 PRINT "FINISHED LISTING FILE "+CHR$(34)+F#+CHR$(34)
1120 STOP
5000 REM - Initialization code
5010 PRINT "FILE NAME";
5020 INPUT F$
5030 OPEN "I",#2,F$
5040 NV=0
5050 NT=0
5060 RETURN
6000 REM - Read header, and set NV and NT
6010 INPUT#2,T$
6020 INPUT #2,S,M
6030 INPUT#2,S$
6040 IF T$="VECTORS" THEN 6500
6050 IF T$="TUPLES" THEN 6600
6060 IF T$="DATA" THEN RETURN
6070 GOTO 6010
6500 NV=N
6510 PRINT "THE FILE HAS ";NV;" VECTORS"
6520 IF NV<=100 THEN 6010
6530 CLOSE 2
6540 STOP
6600 NT=N
6610 PRINT "THE FILE HAS ";NT; " TUPLES."
6620 GOTO 6010
7010 GOSUB 8000
7020 IF T1<>-1 THEN 9000
7030 IF S$<>"BOT" THEN 9000
7040 FOR K=1 TO NV
7050 GOSUB 8000
7060 IF T1=-1 THEN 9000
7070 V(K)=V1
7080 V$(K)=S$
7090 T(K)=T1
7100 NEXT K
7110 RETURN
8000 REM - Get next Data Value
8010 INPUT#2,T1,V1
8020 INPUT#2,S$
8030 RETURN
9000 PRINT "ERROR IN FILE FORMAT."
9010 CLOSE 2
9020 STOP
9030 END
```

Please note that while the above program can read many DIF files correctly, it depends upon the TUPLES and VECTORS header items to determine the organization of the file. A more general program could be written that, in the absence of these header items, deduced their values from the placement of BOT and EOD Special Data Values. While most programs that deal with DIF should be able to produce TUPLES and VECTORS header items (VisiCalc for example, does), some may not (such as a program that records data incrementally, and doesn't know how many data points it will encounter until it is finished).

Quoted Strings in BASIC

Writing the quoted strings is not always convenient in BASIC. In some implementations, quotes may be included in a string by tripling them. For example:

```
PRINT#1, "TABLE"  
PRINT#1,0,1  
PRINT#1,"""Stock Prices for ABC Computer Co."""
```

In other implementations the CHR\$ function must be used:

```
PRINT#1,"TABLE"  
PRINT#1,0,1  
PRINT#1,CHR$(34);"Stock Prices for ABC Computer Co.";CHR$(34)
```

Character Sets

The character set is assumed to be that of the host machine. Thus, if one is transferring a file from a machine using ASCII to one using EBCDIC, the appropriate conversions must be made. In addition, some machines may require that the quote be changed to an apostrophe. These changes should be transparent to most users. In order to assure compatibility, strings should not contain nonprinting characters, other than the end of line sequence (RETURN, CR/LF, NEWLINE or whatever).

The ASCII character set defines 95 printable characters. The user should be aware that some systems do not make it easy to use the full set. In particular, keywords (including topic names and number types) must be in upper case. Some systems only support a limited set of characters, often 64 printable characters or less. When transporting a file to such a system the upper and lower case characters would be mapped into common characters. If these transformations affect the integrity of the data, it should be specified in the documentation associated with the data.

Appendix C

SAMPLE WORKSHEETS



This section shows you ways you can apply your knowledge of the “mechanics” of VisiCalc. It suggests applications that might be useful at home or in your business work. It also shows you how to use some of the features of VisiCalc in advanced ways.

The worksheets in this section represent a wide range of uses. Each worksheet is explained in detail. You learn how to create and modify them for your own use. The foldout sheets give you the formulas you need and sample results.

You can use these sample worksheets as guidelines in creating your own worksheets. Also, from time to time, you can use them for techniques on the use of some of VisiCalc’s features.

The following assumptions are made in this section:

- You have a good understanding of VisiCalc commands and function keys.
- You are making as many backup copies of the worksheets as you need. The sample worksheet instructions give you instructions for saving your worksheets. However, these copies may not be sufficient for your own uses.
- You are printing your worksheets when necessary. You should use the time and date stamp facility when you print your worksheets.

The instructions for all sample worksheets involve building and saving them. This is so you can gain first-hand experience in understanding some of the advanced VisiCalc features that are used.

For your convenience, we have included all of the VisiCalc sample worksheets described in this appendix on the VisiCalc Master Disc. The table below shows the file name associated with each sample worksheet.

Sample Worksheet	File Name
Mortgage Payment Calculator	MORTPAY
Stock Portfolio	STOCKPF
Sales Analysis	SALESAN
Statement of Income	INCSTATE
Check Balance and Expense Distributor	CHECKBAL
Household Budget	BUDGET
Inventory Control	INVENTC
Production Planning	PRODPLAN

Mortgage Payment Calculator

This worksheet computes a loan amortization table. You type the principal, the interest rate and the number of years of the loan. The interest and principal amounts are computed by month.

This worksheet uses a technique that computes the amortization table for any number of years, with a minimum amount of typing. A period of twelve months is displayed with the next twelve months displayed each time you type ! to recalculate. This process is repeated until the total number of months is displayed. You can restart the table any time by typing a 1 (for the first period) into one of the cells.

Steps to Build the Worksheet

Use the formulas shown on the Formulas foldout and follow this sequence:

1. Set the recalculation frequency to manual and the recalculation order to row.
2. Type the labels in rows 2-14.
3. Set currency and integer formatting for cell C4. Set percent formatting for cell C6. Set integer formatting for cells C7 and C8. Type the formula for cell C10, and set currency formatting.
4. Type the formula for cell C16, and set left-justification. Type the formula for cell D16.
5. ****Precaution**** Save the worksheet using a name which indicates the purpose of the worksheet, such as MORTPAY.
6. Type the formula for cell E16. Copy cell E16 down the column ending with cell E27. Ask for cell reference adjustment prompts. Use the relative option, except for cell C6.

7. Type the formula for cell F16. Copy cell F16 down the column ending with cell F27. Ask for cell reference adjustment prompts. Use the relative option except for cell C10.
8. Type the formula for cell C17, and left-justification. Copy cell C17 down the column ending with cell C27. Use the relative option when you copy the cell.
9. Type the formula for cell D17. Copy cell D17 down the column ending with cell D27. Use the relative option when copying.
10. Set global numeric formatting to two decimal places.
11. Set the width of column D to 10.
12. Save the worksheet using the same name you used in step 5.

Functions Used

IF

Special Techniques Used

Using recalculation to cycle through computation tables

Using the Worksheet

When you want to use the worksheet to amortize a loan, you type values into the shaded cells as shown on the Sample foldout.

Type 1 into cell C8 to start month one, then type !. Before going on to month two, blank cell C8. From then on, you see the next twelve month set each time you type !. When you have finished the last set of months, type 1 into cell C8 to begin with month one again (the worksheet does not automatically start over).

MORTGAGE PAYMENT CALCULATOR
SAMPLE

	A	B	C	D	E	F	G	H
1								
2				Mortgage Payment Calculator				
3								
4	Loan Amount		\$ 100000					
5	Annual Interest							
6	Rate		18%					
7	Term (yrs)		20					
8	Start 1st period=1		1					
9	others=blank							
10	Monthly Payment		\$1543.31					
11								
12			Month	Begin.	Interest	Principal		
13				Principal	Paid	Paid		
14				Balance				
15								
16			1	100000.00	1500.00	43.31		
17			2	99956.69	1499.35	43.96		
18			3	99912.73	1498.69	44.62		
19			4	99868.11	1498.02	45.29		
20			5	99822.82	1497.34	45.97		
21			6	99776.85	1496.65	46.66		
22			7	99730.19	1495.95	47.36		
23			8	99682.83	1495.24	48.07		
24			9	99634.76	1494.52	48.79		
25			10	99585.97	1493.79	49.52		
26			11	99536.45	1493.05	50.26		
27			12	99486.18	1492.29	51.02		
28								
29								

MORTGAGE PAYMENT CALCULATOR
FORMULAS

	A	B	C	D	E	F	G	H
3								
4								
5	Loan Amount	\$	100000					
6	Annual Interest Rate	18%						
7	Term (yrs)	20						
8	Start 1st period=1	1						
9	others=blank							
10	Monthly Payment	$(C6/12)/((1-((1+(C6/12))^{-(C7*12)})))*C4$						
11								
12	Month		Begin. Principal Balance		Interest Paid		Principal Paid	
13								
14								
15								
16								
17				$0.1*((C8-1,1,C16+12)$	$0.1*((C16-1,C4,D27-F27)$	$(D16*66)/12$	$+C10-E16$	
18				$+C16+1$	$+D17-F17$	$(D17*66)/12$	$+C10-E17$	
19				$+C18+1$	$+D18-F18$	$(D18*66)/12$	$+C10-E18$	
20				$+C19+1$	$+D19-F19$	$(D19*66)/12$	$+C10-E19$	
21				$+C20+1$	$+D20-F20$	$(D20*66)/12$	$+C10-E20$	
22				$+C21+1$	$+D21-F21$	$(D21*66)/12$	$+C10-E21$	
23				$+C22+1$	$+D22-F22$	$(D22*66)/12$	$+C10-E22$	
24				$+C23+1$	$+D23-F23$	$(D23*66)/12$	$+C10-E23$	
25				$+C24+1$	$+D24-F24$	$(D24*66)/12$	$+C10-E24$	
26				$+C25+1$	$+D25-F25$	$(D25*66)/12$	$+C10-E25$	
27				$+C26+1$	$+D26-F26$	$(D26*66)/12$	$+C10-E26$	
28								
29								

Stock Portfolio

You can keep track of your stock holdings using this worksheet. It computes total market value, gain(or loss), and quarterly dividends for each stock. It also gives you totals for all stocks.

This model lets you track dividend reinvestments also. The *Shares Reinvstd* is used for this purpose.

Look at the Sample foldout. The first stock (Hewlett-Packard) shows how a stock would look when the shares are purchased as usual. The second stock (American Telephone and Telegraph) shows how a stock appears when the dividends are reinvested in additional stock shares. All numbers used on the Sample foldout are illustrative only.

Steps to Build the Worksheet

Look at the stocks on the Sample foldout. A stock portfolio is useful only when you use your own stocks. Make a list of the stock you want to include on your worksheet, along with the detailed transactions. Use the model as a guide to determine where detailed stock information goes. When you have finalized your list, use the Formulas and Sample foldouts and follow these steps.

1. Set the recalculation frequency to manual.
2. Type the labels in rows 1 to 4.
3. Type the labels in row 7. Use your first stock name instead of "HewlPk". Don't worry about typing the numbers right now, but set their formats to left-justification.
4. Copy row 7 to each row where one of your new stocks begins.
5. Set the following formats: cell C9 to four decimal places; and cell E9 to three decimal places.
6. Type the formulas in row 9. Copy this row to each transaction row of each stock on your list. Copy all cell elements. Ask for a prompt on cell reference adjustment. Make all cell references relative except references to the heading line of each stock.
7. ****Precaution**** Save the worksheet using a name which indicates the purpose of the worksheet, such as STKPORT.
8. Type the same labels and formulas shown for row 14 to the end of the first stock on your list. Copy this total row to the end of each stock on your list. Make cell references relative.
9. Type the label and formulas shown for row 27 to the end of your worksheet. Alter the formulas to add the total lines of the stocks on your list.
10. Set global numeric formatting to two decimal places.
11. Now go through your worksheet typing your own values for these columns: *Shares*, *Shares Reinvstd*, *Date Purchsed*, and *\$ Paid*. Also, type the stock names into the appropriate cells in column A.

NOTE

You can use either the *Shares Reinvstd* or the *Shares* column for each stock transaction, but not both at the same time.

12. Save the worksheet using the same name you used in step 7.

Functions Used

•SUM



Using the Worksheet

When you want to compute your stock portfolio using new closing stock figures, you simply type the values for the shaded areas shown on the Sample foldout. You do this for each stock on your worksheet. Refer to the paragraphs below for more details on what you type into these fields. When you have typed all of your figures, then type ! to recalculate the worksheet. You can save this new worksheet version if you want to.

When you need to add stock to the list, or delete stock that is sold, you insert or delete the affected rows. Make sure that you change the individual stock and grand total formulas, if necessary, to reflect those changes. Then save the new version of the worksheet.

Close

Type the closing value of the stock for the day.

Div.

Type the dividend value per share of the stock for the quarter.

\$ Paid

Type the amount you paid per share for the stock.

Tot Mkt \$

This is the computed current market value for the stock transaction line. It is computed by multiplying the total number of shares (columns B and C) by the *Close* figure on the stock heading line.

Gain(Loss)

This figure is the difference between the *Tot Mkt \$* and what you paid for the stock (total shares times *\$ Paid*).

Qtrly Dividnds

This figure is computed using *Div.* and the total number of shares of stock owned.

STOCK PORTFOLIO
SAMPLE

	A	B	C	D	E	F	G	H
	Stock Portfolio							
	Shares	Shares	Date	\$	Tot Mkt	Gain	Grtry	
		Reinvstd	Purchased	Paid	\$	(Loss)	Dividnds	
7	HewlPk		Close--> 82		Div.--> .3		Yld X--> .4	
8		20		05/81	61.200	1640.00	416.00	
9		25		01/82	59.250	2050.00	568.75	
10		25		06/82	65.000	2050.00	425.00	
11		50		09/82	67.000	4100.00	750.00	
12								
13								
14	Total:	120				9840.00	2159.75	36.00
15								
16	BATT		Close--> 68.75		Div.--> 5.4		Yld X--> 7.9	
17		100		03/81	60.125	6875.00	862.50	
18			8.1300	04/82	62.500	558.94	50.81	
19			7.2500	07/82	59.800	498.44	64.89	
20			7.8150	10/82	65.400	537.28	26.18	
21			8.2000	01/83	68.125	563.75	5.13	
22			7.5000	04/83	67.250	515.63	11.25	
23								
24								
25	Total:	100	38.895			9549.03	1020.76	750.03
26								
27	Total All					19389.03	3180.51	786.03
28								
29								
30								

STOCK PORTFOLIO
FORMULAS

A	B	C	D	E	F	G	H
	Stock Portfolio						
	Shares	Shares Purchased	Date Purchased	\$ Paid	Tot Mkt \$	Gain (Loss)	Grtrly Dividnds
7	HewlPk	Close--> 82	Div.--> .3	Yld %--> (F7/D7)*100			
8		05/81	(B9+C9)*D7	+F9-((B9+C9)*E9)			
9	20	01/82	(B10+C10)*D7	+F10-((B10+C10)*E10)			
10	25	06/82	(B11+C11)*D7	+F11-((B11+C11)*E11)			
11	25	09/82	(B12+C12)*D7	+F12-((B12+C12)*E12)			
12	50						
13							
14	Total: @SUM(B9...B12)	@SUM(F9...F12)	@SUM(G9...G12)	@SUM(B14...C14)*F7			
15	16ATT	Close--> 68.75	Div.--> 5.4	Yld %--> (F16/D16)*100			
16		03/81	(B18+C18)*D16	+F18-((B18+C18)*E18)			
17	100	04/82	(B19+C19)*D16	+F19-((B19+C19)*E19)			
18		07/82	(B20+C20)*D16	+F20-((B20+C20)*E20)			
19	8.1300	07/82	(B21+C21)*D16	+F21-((B21+C21)*E21)			
20	7.2500	10/82	(B22+C22)*D16	+F22-((B22+C22)*E22)			
21	7.8150	01/83	(B23+C23)*D16	+F23-((B23+C23)*E23)			
22	8.2000						
23	7.5000						
24							
25	Total: @SUM(B18...B23)	@SUM(F18...F23)	@SUM(G18...G23)	@SUM(B25...C25)*F16			
26	27Total All	+F14+F25	+G14+G25	+H14+H25			
28							
29							
30							

Sales Analysis

This model lets you analyze units and dollar sales of a product. You enter a product table which gives cost and price information for each product you want to analyze. You also enter a fixed expense figure. The total, gross and net sales figures are computed for each product. Also, their corresponding percentage of total figures are computed to let you see how each product fits in each category.

You can explore "what if" situations using this worksheet. You can change individual product prices and units sold figures to see the effect on the dollar and percentage figures.

Steps to Build the Worksheet

Look at the Sample foldout. Decide which products you want to include on your worksheet. Then determine where to place the rows. This same order will be used in the top and bottom portions of the worksheet. Jot down the prices, costs, units sold figures for each product. Also jot down the fixed expense figure you want to use. Then, using the Formulas foldout, follow these steps:

1. Set the recalculation frequency to manual.
2. Type the labels in rows 1 to 6. Use your own company name in row 1.
3. Type the labels in cells C7 and D7. Set the format of cell C7 to center the label. Now copy cells C7...D7 to cells E7...F7 and G7...H7.
4. Set comma and integer formatting for cell B9. Copy this format down column B ending with the total line. Also copy B9's format down columns C, E and G, ending with the total line in each column.
5. Type the formula for cell C9. Now copy this formula down column C through the total line. Copy cell contents only and use cell reference adjustment.
6. Repeat step 5 for each column from D to H.
7. Type the formula on the total line in column B. Copy that cell's formula only across the row from column C to column H.
8. Now go back to the beginning of *Product* column and type the product names and "Total".

9. ****Precaution**** Save the worksheet with a name that indicates the purpose of the worksheet, such as SALESAN.
10. Type the "Product Table" and "Fixed Expenses" labels on the bottom portion of the worksheet.
11. Type your own product names with their corresponding price and cost figures. Also type your fixed expense figure.
12. Set global numeric formatting to two decimal places.
13. Save your completed worksheet using the same name you used in in step 9.

Functions Used

@SUM

Special Techniques Used

Computations based on a table of values

Using the Worksheet

When you only want to analyze sales based on new units sold figures, you type the units sold figures into the shaded cells shown on the Sample foldout. You may also need to adjust the *Product Table* and *Fixed Expenses* figures if they change. When you have typed all of these figures, type ! to recalculate. Save your worksheet if you want to save the current figures.

When you need to add new products to the worksheet, you add new rows to the Product Table, on the bottom half of the worksheet, as well as to the *Product* column. You also need to copy formulas and formats to the rows you add.

To delete products, you delete the appropriate rows in *Product Table* and the corresponding rows in the *Product* column. Remember to save your worksheet when you add or delete products.

SALES ANALYSIS
SAMPLE

Caldwell Tools							
Sales Analysis							
Product	Units Sold	****Sales****		**Gross Profit**		***Net Profit***	
		\$	% of Tot	\$	% of Tot	\$	% of Tot
Circ Saw	750	16,463	15.32	7,463	12.46	6	.04
Drills	1,000	19,500	18.15	11,000	18.37	1,058	6.09
Grinder	725	27,913	25.98	19,575	32.69	12,367	71.13
Jig Saw	600	9,750	9.08	3,450	5.76	-2,515	-14.46
Router	400	12,800	11.92	7,000	11.69	3,023	17.39
Sander	800	21,000	19.55	11,400	19.04	3,447	19.82
Total	4,275	107,425	100.00	59,888	100.00	17,388	100.00

Product Table				Fixed Expenses
Product	Price	Cost		
Circ Saw	21.95	12.00		42500.00
Drills	19.50	8.50		
Grinder	38.50	11.50		
Jig Saw	16.25	10.50		
Router	32.00	14.50		
Sander	26.25	12.00		

SALES ANALYSIS
FORMULAS

Caldwel1 Tools

Product	Units	Std	***Sales*** \$ % of Tot	**Gross Profit** \$ % of Tot	**Net Profit** \$ % of Tot
9Circ Saw	750	+B9*B25	100*C9/C16	+B9*(B25-C25)	100*E9/E16
10Drills	1,000	+B10*B26	100*C10/C16	+B10*(B26-C26)	100*E10/E16
11Grinder	1,725	+B11*B27	100*C11/C16	+B11*(B27-C27)	100*E11/E16
12Big Saw	600	+B12*B28	100*C12/C16	+B12*(B28-C28)	100*E12/E16
13Router	400	+B13*B29	100*C13/C16	+B13*(B29-C29)	100*E13/E16
14Sender	800	+B14*B30	100*C14/C16	+B14*(B30-C30)	100*E14/E16
15					+E9-(B9/B16+E25)
16Total			①SUM(B9...B14)	①SUM(C9...C14)	①SUM(E9...E14)
17					①SUM(F9...F14)
18					①SUM(G9...G14)
19					①SUM(H9...H14)
20					
21					
22					
23Product					
24					
25Circ Saw	21.95		12.00		
26Drills	19.50		8.50		
27Grinder	38.50		11.50		
28Big Saw	16.25		10.50		
29Router	32.00		14.50		
30Sender	26.25		12.00		
31					
32					

Product Table
Price Cost

Fixed Expenses
42500.00

Statement of Income

This model gives you a typical format of an income statement. It keeps twelve months of income statement figures which is useful for comparing results over several periods. You might want to add calculations to the worksheet to give you period increase/decrease percentages, or to do trend analysis.

You can use your worksheet to explore the effects of different levels of sales and expense figures. Looking at these "what if" results can suggest ways to improve your actual net income.



Steps to Build the Worksheet

Gather your own figures for the income statement. You can begin in any month, by using that month's figures only. If you have time, you might want to type the figures for past months. Then follow these steps:

1. Set recalculation frequency to manual.
2. Type the labels for rows 1 to 3, using your own company name and the current year.
3. Set right justify formatting for cell C5. Copy that cell's format across the row ending with cell O5.
4. Type the month names for row 5.
5. Use the Repeat Label facility to set cell C6 to -. Copy cell C6 across the row ending with cell O6. Copy cell contents as well as formats.
6. Type the labels in columns A and B.
7. ****Precaution**** Save the worksheet using a name which indicates the purpose and period of the worksheet, such as IN82.
8. Type the formulas in column C.
9. Now copy column C to each of the months columns individually. Use the relative option when you copy.
10. Type the formula in cell O7. Copy cell O7 down the column to the last cell (O23).
11. Set global comma and integer formatting.

12. Save the worksheet again using the name you used in step 7.
This is the worksheet you will use until the end of the year.

Now save the worksheet again on a separate disc, using the name **INUNUSED**. You start with this unused copy at the beginning of the next year. Doing this means that you won't have to blank the previous year's figures at the start of a new year.

Functions Used

• **SUM**

Special Techniques Used

Starting the beginning of the period when worksheets are used for fixed time periods.

Using the Worksheet

Normally, you'll be typing the figures on a monthly basis. This means that you type a column of figures at a time. Use January's shaded cells of the Sample foldout as a guide, and type those cell values. When you're finished, type ! to recalculate.

To begin a new year, load the unused copy of the worksheet (**INUNUSED**). Make your entries for January as you usually do. When you're finished for the month, save the worksheet under a name that indicates the year, such as **IN84**. You continue to use this worksheet for the current year. When the next year rolls around, you use this same procedure for the following year.

STATEMENT OF INCOME
SAMPLE

















	ABC Shoes Statement of Income For the Year ended Dec. 1982												
	January	February	March	April	May	June	July	August	September	October	November	December	Total YR
6	50,080	52,507	55,125	57,881	60,775	63,814	67,004	70,355	73,872	77,566	81,444	85,517	795,940
9	1,004	651	324	430	750	700	615	1,243	1,017	854	295	403	8,286
10	49,076	51,856	54,801	57,451	60,025	63,114	66,389	69,112	72,855	76,712	81,149	85,114	787,654
12	26,253	26,003	27,562	28,951	30,387	31,912	32,858	33,504	36,936	38,782	40,722	42,748	396,618
14	22,823	25,853	27,239	28,500	29,638	31,202	33,531	35,608	35,919	37,930	40,427	42,366	391,036
16	12,256	10,502	11,029	11,528	11,150	12,496	13,402	14,122	14,749	14,991	15,627	16,124	157,976
17	959	902	965	896	932	941	927	957	914	930	964	953	11,540
18	742	1,819	156	558	432	613	971	886	1,258	3,006	3,259	1,619	15,949
20	8,866	12,630	15,089	15,518	17,124	17,152	18,231	19,643	18,998	19,003	20,577	23,640	206,471
21	2,301	2,457	2,492	2,511	2,643	2,712	2,756	2,841	2,817	2,824	2,896	2,937	32,187
22	6,565	10,173	12,597	13,007	14,481	14,440	15,475	16,802	16,181	16,179	17,681	20,703	174,284
23	Net Income												

	October	November	December	Total YR
	77,566	81,444	85,517	⑥SUM(C7...N7)
+L7-L9	854	295	403	⑥SUM(C9...N9)
+L7-L9		+M7-M9	+N7-N9	⑥SUM(C11...N11)
	38,782	40,722	42,748	⑥SUM(C13...N13)
+L11-L13		+M11-M13	+N11-N13	⑥SUM(C15...N15)
	14,991	15,627	16,124	⑥SUM(C17...N17)
	930	964	953	⑥SUM(C18...N18)
	3,006	3,259	1,649	⑥SUM(C19...N19)
L17-L18-L19	+M15-M17	+M18-M19	+N15-N17	+N18-N19
	2,824	2,896	2,937	⑥SUM(C21...N21)
+L21-L23	+M21-M23		+N21-N23	⑥SUM(C23...N23)
				⑥SUM(C25...N25)

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