

**SuperCalc<sup>TM</sup>**  
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**SuperCalc**

by  **SORCIM**

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# **SuperCalc™**

## **User's Guide & Reference Manual**

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SORCIM  
P.O. Box 32505  
San Jose, California 95152

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# PART I: INTRODUCTION

## What is SuperCalc?

The SuperCalc™ program is designed for CP/M®-based microcomputers. The program is structured to be used as a tool for solving everyday financial or business problems for all types of businesses. The program is intended to help organize practical problems because the designers of the SuperCalc program realize the importance of seeing the problem stated clearly before you can find realistic solutions. For this purpose, the architects of the SuperCalc program paid special attention to the clarity, simplicity and "common sense" approach of the messages on the screen and instructions in this guide.

In other words, the SuperCalc program is designed to act as a simple means to tap the power of the computer and to make it do the time-consuming things you used to do with paper, pencils and a calculator. Words and numbers are displayed in a worksheet format. The status information and prompt messages on the screen assist you in setting up your worksheet by step-by-step keystrokes. The screen on your computer terminal acts as a window representing a part of the worksheet. You can manipulate the content of the entire worksheet by pressing a few characters on the keyboard. The SuperCalc program lets you specify which data are to be displayed where and in what format (e.g., integers, dollars and cents,

scientific notations, etc.). To guide you, various "help" messages are available at all times while you are working on the program. Just use the Answer Key™ feature when you need additional information on the operation of the program.

The SuperCalc program is an indispensable tool for exploring possibilities and comparing alternatives in everyday decision-making processes. Data can be changed easily and numbers recalculated quickly. The program efficiently and accurately displays information, thus aiding you in developing complete and consistent reports. Once worksheets are generated, they can be stored on disks to access, edit and print later.

The SuperCalc program runs on microcomputers that use the CP/M disk operating system, available on a wide variety of terminals. The installation procedure for operating the system, along with a list of terminals the program currently supports may be included with this guide. If your system requires an installation procedure, an installation booklet is enclosed describing the steps you must take to customize the SuperCalc program to your particular terminal. If you are just becoming familiar with your operating system, be certain to read this booklet prior to using the SuperCalc program.

## Getting the Most Out Of This Guide

Like the SuperCalc program itself, this guide is intended to be a useful tool for people of different backgrounds, interests and knowledge. Whatever your previous experience with computers, this guide will help you use the program effectively and effortlessly.

**Part Two, "Getting Acquainted,"** is primarily a tutorial or series of lessons that lets you familiarize yourself with the SuperCalc program at a comfortable pace. These lessons will guide you through the basic commands of the SuperCalc program. The tutorial includes short hands-on examples for you to do on your computer system. The final three chapters of this section use realistic managerial, accounting and scientific applications to pull together what you have learned.

The tutorial section contains material suitable for people with very different levels of experience, so we recommend that you read the first short chapter, **Learning Tips**, before starting the lessons. The chapter, **An Introduction to Concepts**, provides an overview of the SuperCalc program that can help you understand how the various parts relate to each other. The "pre-lesson" called **Getting Started** will probably be most useful to you if you are new to computers.

**Part Three, "SuperCalc Reference,"** includes both a brief summary reference (which is the first place to look if you need to check on something) and a detailed reference chapter that expands on some of the basics covered in the summary. The SuperCalc program is a simple, straight-forward and efficient program to use. The general and detailed reference sections are for the novice as well as the expert who needs to check the characteristics of a particular command or sequence of commands.

Words that may be unfamiliar to you or that have some special meaning in relation to the SuperCalc program are explained when they are first used. If you come across the word again later and are not sure you understand it, check the glossary.

The guide has five appendices. The first two, **Standard or Default Settings and Commands Involving Formula Adjustment**, list that information in one convenient place. The third and fourth appendices, **Memory Use-Hints and Concepts and Suggestions**, will probably be most useful to you after you have more experience using SuperCalc. The fifth appendix discusses the proper care of the floppy disks.

## **PART II: GETTING ACQUAINTED**



## Learning Tips

### *Section Overview*

This tutorial section will help you quickly teach yourself to use the SuperCalc program. The section has four chapters in addition to this one. The next chapter, *An Introduction to Concepts*, is optional, but we strongly recommend that you read it. It introduces some key SuperCalc terms and gives you an overview that can make learning the parts easier. Chapter 5, *Getting Started*, is a kind of pre-lesson. It is divided into two parts—one for those who are familiar with operating their computer systems and another with additional information for less experienced users.

The nine lessons in Chapter 6, with examples in Chapter 7, are the core of this section. The lessons have been carefully designed as a kind of “dialogue”—a friendly, three-way meeting between you, your guide, and your SuperCalc program. Remember that these lessons make most sense in a hands-on situation. If you try simply to read through the lessons, your understanding of the SuperCalc program will remain fuzzy and incomplete. It would be like taking a trip through Europe by a reading a map.

### *Learning the SuperCalc Program*

The best way to learn to use the SuperCalc program is to review Chapter 4 and the relevant material in Chapter 5. Then sit down at your computer terminal with this guide; follow the *Getting Started* instructions for bringing up the SuperCalc program, and begin the lessons. You will learn by doing.

We show you how to do something. You try it and see what happens. If necessary, we give some further explanation and perhaps another “mini-example” to

try. The SuperCalc program makes it easy to recover from a wrong move. You can't hurt the program, and making a mistake will never jeopardize your work.

### *Set Your Own Pace*

Lessons are designed to let you learn at your own pace. Most contain optional mini-examples and extra information that let you develop confidence and deepen your understanding. If you are experienced with computers, you may find that you can skip these. If computers are new to you, we suggest that you do them all. The experience will be valuable when you develop your own “real-world” worksheets.

### *Self-Contained Building Blocks*

Lessons are self-contained. At the end of each one, you choose whether to go right on to the next lesson or to stop for a while. They are reasonably short, and you should feel free to start up the SuperCalc program and learn a little more whenever it is convenient.

The lessons build on one another, combining what you have learned with new material in an easy, step-by-step way. In the first lessons, you get some basic tools. You learn how to move about on your worksheet and how to enter or change various kinds of information. Very soon you will be developing material to be saved and used again in later lessons. (For your protection, *always* save material when the guide asks you to do so—even if you plan to go immediately to the next lesson. It's good insurance against unexpected power failures or other interruptions.)



### Learning Tips

The lessons in Chapter 7 unify what you have learned and show you some of the powerful SuperCalc functions at work in realistic applications. They use examples supplied on your SuperCalc disk.

### Memory Joggers

Terms, concepts, and operations are explained when

they are first introduced. Later, if you are not sure how to do something or what a word means, check the Reference Section or the Glossary, or ask the SuperCalc program itself. Try the SuperCalc "help" function, discussed in Chapter 4. It will display information relevant to your current options any time you press the ? key.

## NOTES

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## Introduction to Concepts

The optional chapter, **An Introduction To Concepts** describes some basic SuperCalc terms and tools so that they will be familiar when you meet them in the lessons. The lessons are self-contained—if you want to plunge right in and start them now, go ahead. But we encourage you to review this chapter first, because it provides the kind of conceptual framework that many people find helpful in learning.

### *The Worksheet*

The SuperCalc program allows you to use your computer's memory as a large worksheet organized in a grid. Worksheet columns are designated by letters (A, B...Z, AA...AZ, BA....BK); rows are designated by numbers (1 to 254). The coordinates—for example, A12, AB5—identify specific locations called “cells”. The cell at the upper left of the worksheet is A1. The cell diagonally opposite it at the lower right is BK254.

### *The Active Cell and the Worksheet Cursor*

You enter data into cells. Only one cell is “current” or “active” at any moment. This *Active Cell* is the one immediately available for use. When you enter data, it goes into the Active Cell. The row and column that contain the Active Cell are called the current row and current column.

The Active Cell is always indicated on your screen by the “worksheet cursor.” Most terminals use underlining for this, but your terminal may use something

else. For example, some terminals use < and > or reverse video. (With reverse video, screens that normally display light characters on a dark background will show the Active Cell as a light bar; characters in the cell will be dark.)

When you enter data, the SuperCalc program automatically moves the worksheet cursor to an adjacent cell. This becomes the new Active Cell. You can easily specify a different location for the Active Cell if you wish. You will learn how in Lesson 1.

### *The Display Window, Scrolling, Split Window*

The worksheet is far too large to be seen on your screen all at once. So your screen acts as a “*display window*” through which you see part of the worksheet and manipulate its contents. The SuperCalc program moves the window over the worksheet as necessary to keep the Active Cell in view. This movement is called “*scrolling*.” The window may scroll up or down, left or right. You can “lock” some columns or rows in place so that they will remain in view even when the window scrolls. Because this feature is especially useful for titles, it is called *title lock*. You can split the display window into two windows, either horizontally or vertically, in order to bring separate parts of the worksheet into view at the same time.

### *Status, Prompt, Entry Information*

At the bottom of your terminal screen, beneath the data display area of your worksheet are three lines.



## Introduction to Concepts

They display status, prompt, and entry information. As you progress through the lessons, you will learn more about these lines and their contents. For now, a few simple concepts will suffice. The SuperCalc program uses both the status and prompt lines to give you information. In general, the first of the three lines gives you a "status" report with information about such things as the Active Cell and its contents. The second line "prompts" you, asking what you want done next, as well as listing your immediate options. The bottom line on the screen is the entry line. This is where you tell the SuperCalc program what to do by entering commands or data.

### Help Available

If you are ever confused, puzzled, or unsure about what to do next, just press the "?" key to ask for help. You can do this at any point—even in the midst of entering some command. The display on the screen will immediately change to show additional information about your choices. You can bring back the regular worksheet display by pressing any other key.

### Interpretive Prompting

*Interpretive prompting* means that you only need to give the first character of a command on the entry line, and the SuperCalc program will immediately fill in the rest of the word. The program will also use the prompt line to indicate what you should do next. The "/" symbol precedes most commands. If you press "/", the character appears on the entry line and the prompt line will change to show you a list of possible single-letter commands. Suppose you then press B. You have put /B on the entry line. The SuperCalc program fills out the rest of the command. /B becomes /Blank. In this example, the prompt line will change again to ask you to specify what should be "blanked."

### Modifying Your Commands and Data

The SuperCalc program makes it easy for you to *edit* information on the entry line. If you make a mistake

while entering a command or data, you can quickly rectify your mistake by adding or deleting characters without affecting the correct portion of your entry. You will learn to use the same editing techniques to modify the contents of a cell.

### Protecting Your Work

The SuperCalc program provides several "insurance policies" to safeguard against accidentally destroying work that should be preserved. You can *protect* individual cells or groups of cells in the worksheet so that their contents and *format* will not be changed unless you specifically *unprotect* them. Similarly, the SuperCalc program will check with you before executing commands that have major consequences for your work; for example, clearing the entire worksheet or exiting from the SuperCalc program before saving your new or modified worksheet.

### Cells—Their Format, Contents, and Value

When you first start the SuperCalc program, cells are only potential locations on your worksheet and take no space in your computer's memory. You bring a cell into existence by "using" it in some way, by putting something into it or by *formatting* it, that is, preparing it to express an entry in a particular manner: as an equation, text, or numeric value.

### Cell Format

When you *format* a cell, you tell the SuperCalc program how you want the content to look on your screen. This display format may differ from the way the cell contents looked when you entered them. For example, you might want a numeric value to display in ordinary notation (1776), with or without a decimal; or in scientific notation ( $1.776 \times 10^3$ ). You could enter your data in whichever format was convenient, and the SuperCalc program would convert the data into the display format that you had specified. Similarly, you could change any of a cell's format attributes without affecting the actual contents. You can specify formats for individual cells or groups of cells, for rows, for columns, or for the entire worksheet.



### Cell Contents

A cell can hold text, a number, or a formula. *Text* is useful for things like column headings, descriptions, or notes. (Example: January, Discount Sales.) It can be up to 116 characters long. *Numbers* can have up to 16 digits of precision in either ordinary or scientific (exponential) notation. Using scientific notation, you can raise these 16 digits by a power of ten, up to  $10^{63}$ , either positive or negative. *Formulas* allow calculations based on values stored in other cells. (Examples:  $A5+10$ ,  $SUM(B1:B9)$ ,  $E7/9-BK2$ .) The SuperCalc program has many special functions for use in formulas. You can use formulas to compare values in cells or groups of cells and then perform one calculation or another, depending on the result of the comparison.

If you put a formula into a cell, the SuperCalc program also puts into the cell the value that results from calculating that formula. You can display either the original formula or its current value. When a cell's value changes, the program will recalculate formulas referring to that cell.

### Cell Value

Many SuperCalc operations use the numeric value of cells—for example, adding an entire column. The

value of a cell containing a number is the value of that number. The value of a cell with a formula is the value obtained by calculating the formula. Cells that have text or that are empty or blank are considered to have a value of zero.

### Display Width

The display width formatting attribute defines the width of the column you see displayed and is independent of the "width" of the data in the cell. For example, you might have a 12-digit number in a cell. The program will show you what it can of the number. With a display width of 12 or more, you could see the entire number. With a display width of 9, you could see 9 digits, and so forth. Whatever the display width, the SuperCalc program will consider all 12 digits in calculations. You can set display widths from 0-127 characters. Different columns can have different widths. When SuperCalc starts up, columns are set at a standard or *default* width of nine characters. The status line shows you the display width of the column containing the active cell.

This has been a very brief overview of *some* of the essential features of the SuperCalc program. The lessons in the following chapters will let you expand this basic knowledge by exploring these and other SuperCalc features in detail, step by step.



# Getting Started

### *Starting SuperCalc*

This chapter discusses the installation of the SuperCalc program on the IBM Personal Computer, and some basic instruction on the use of the IBM PC and the DOS operating system. Whether you are a new or experienced user you will find this useful.

**CR** in the instructions below, refers to the return key on your terminal's keyboard.

### *Installation*

The first thing you need to do is read your IBM DOS manual to get a detailed explanation of the operation of your IBM PC and the DOS operating system. Here we will be outlining some DOS functions pertinent to the installation and operation of the SuperCalc program, but not all.

The second thing you should do before operating the SuperCalc program is make a backup copy. You will then have a SuperCalc work disk and preserve the Master disk. This operation we call the installation procedure.

Installing the SuperCalc program involves three steps:

1. Turning on your computer and loading DOS.
2. Initializing a work disk.
3. Copying SuperCalc files to your work disk.

When these three steps are completed you will have a DOS "boot" disk (a disk from which DOS can be loaded) with a working copy of SuperCalc. You can then go on to Lesson 1 in Chapter 6 and start learning about the SuperCalc program.

### 1. Turning On Your Computer and Loading DOS

- a. Make sure your computer system is properly configured. Consult your DOS manual for proper instruction or see your dealer.
- b. Place your DOS diskette in the left drive (drive A:), with the label toward you and facing up, and close the little door.
- c. Turn on your monitor and printer.
- d. Now turn on your computer. For the first few seconds your IBM PC will perform a Self-test. Then Drive A: will start clicking as DOS is read into memory. When this is complete, you are asked for the current date. Input the date as outlined in your DOS manual. If the date is input correctly, the IBM DOS Copyright notice is displayed and you will get a prompt that looks like this: **A >**.

### 2. Initializing a Work Disk

- a. After you have completed the above procedures and have an **A >** prompt, insert a blank 5¼" diskette in the right drive (B:), with the label toward you and facing up, and close the little door.
- b. Type **format b:/s** and press **CR**. This will format and copy the system information to your disk in drive B:.
- c. You are then asked to insert your diskette in drive B:. Since you have already done this, press any key to continue. Your disk is then formatted and needed DOS system programs are transferred.
- d. You should also copy the **MODE.COM** program to your new diskette so type **COPY MODE.COM B:.** The **MODE** program is then copied to your new diskette.
- e. Take your original DOS disk out of Drive A: and put it away. Take your new disk out of Drive B:. Place your new disk in Drive A: and press the



Control key (**CTRL**) and the **ALT** key together and then press the Delete key (**DEL**). This allows you to do a "warm" boot and check the operation of your new disk. (This means booting while the system is already turned on. Booting when the power is initially turned on is called a "cold" boot.) If the system asks for the date and then displays the initial copyright notice as discussed in section 1D of this chapter, then your disk is OK. If not, consult your DOS manual for error explanations and cures.

### 3. Copying SuperCalc Files to Your Work Disk

- a. With your new disk in drive A: (the left drive), insert your SuperCalc master disk in drive B: (the right drive).
- b. If you type **DIR B:** you can see a directory of the files you have on your SuperCalc master disk. They are:

SC.COM	
SC.OVL	SuperCalc program files
SC.HLP	
BALANCE.CAL	
BARRIER.CAL	Sample SuperCalc
BRKEVN.CAL	worksheets
COLOR.COM	
MONO.COM	Used only with dual
	monitor systems
AUTOEXEC.BAT	
AUTOBW.BAT	Batch files
AUTO40.BAT	
AUTOBW40.BAT	

- c. First, copy the SuperCalc files. Type **COPY B:SC.\* A:** then return (**CR**). Your three SuperCalc program files are then copied from drive B: to drive A:.
- d. Next, you want to copy the three .CAL files to your new disk. Type **COPY B:\*.CAL A: CR**. Your sample worksheets are then copied to your work disk.
- e. The four .BAT files on the SuperCalc master are "batch" files that contain commands executable by DOS. When DOS is booted it searches for a file called AUTOEXEC.BAT. If it cannot find this file you are asked for the date and when this is adequately entered the copyright notice and prompt are displayed. If the AUTOEXEC file is present DOS bypasses the date and copyright and reads the contents of the file. Each command line found is then executed. The four .BAT files on the

SuperCalc disk contain commands for running the SuperCalc program under specific conditions. The file that you copy onto your work disk depends on your hardware configuration. You have four choices:

1. If you have
  - a Monochrome (green and white) monitor,
  - or
  - a Color/Graphic Adapter and an 80 column color monitor,
 type **COPY B:AUTOEXEC.BAT A: CR**.
2. If you have a Color/Graphic Adapter and a *black and white* monitor, type **COPY B:AUTOBW.BAT A:AUTOEXEC.BAT CR**.
3. If you have a Color/Graphic Adapter and a 40 column color monitor, type **COPY B:AUTO40.BAT A:AUTOEXEC.BAT CR**.
4. If you have a Color/Graphic Adapter and a 40 column black and white monitor, type **COPY B:AUTO40BW.BAT A:AUTOEXEC.BAT CR**.
- f. Take your SuperCalc disk out of drive B: and store it in a safe place. For safety you should also take your work disk out of drive A: and write protect it. If you hold the disk in front of you with the label up and facing you, you should see a notch on the right edge. Put one of the write protect tabs on this notch. This will protect your disk from being accidentally over-written. If you try to write to this disk you will get a write protect error.

You can now use your SuperCalc work disk. Let's start from the beginning with the power off. Put your SuperCalc work disk in drive A: (the right drive). Turn on your monitor and printer. Now turn on your computer. It will do a Self-test and then the drives will click as DOS is read and loaded into memory. DOS then searches for the AUTOEXEC.BAT file and executes it. SuperCalc is then loaded and run. Normally this is accomplished by typing **SC** at the DOS prompt. You can now continue on to the lessons.

Note: The two remaining files on your SuperCalc master disk are COLOR.COM and MONO.COM. You will only need these if you have *two* monitors, a monochrome (green and white) monitor and a color monitor with a Color/Graphics Adapter, hooked up to your system. If you don't have this configuration you will never need to use these programs.





When you boot your system and enter DOS you will notice that only the monochrome monitor is operational. If you wish to use the color monitor for the operation of the SuperCalc program you must first type **COLOR** and a **CR**. You will notice that your DOS prompt is now being displayed on the color monitor. Now type **SC** and a **CR** to enter the SuperCalc program.

When you exit SuperCalc and return to the system, type **MONO** and a **CR** to return control to the monochrome monitor.



## THE LESSONS, 1 to 9

The following twelve lessons are provided to teach you the basic skills needed to use the SuperCalc program. Each lesson walks you through key features of SuperCalc building your knowledge of the program. The individual lessons are designed to augment the reference section.

Sit down at your terminal, place your disk in the system and let's learn about this powerful tool: SuperCalc.

### LESSON 1: Moving the Active Cell Around the Worksheet

Imagine that you are examining a map through a magnifying glass. When you use the SuperCalc program, think of the video screen or "display window" as your magnifying glass; through it, you can view any area of your map or SuperCalc worksheet. In this lesson you will learn how to move your magnifying glass across the surface of the worksheet. You will make the display window move or "scroll" to show you different parts of your worksheet.

In the same way that you use latitude and longitude measurements to designate a unique location on a map, you will learn to locate and enter data on the SuperCalc worksheet in positions specified with reference to alphabetically designated columns and numerically designated rows. A unique letter and number combination names every location on your

worksheet. In this lesson, you will also learn how to point to, or specify, a unique address on the display area of your worksheet by using a pointer or cursor.

This lesson assumes that you know how to load the SuperCalc program from your diskette. If you do not, you should read **Getting Started**.

Bring up the SuperCalc program if you have not done so already as part of your work in **Getting Started**. (Remember that the drive it is on must be the system drive.)

With the SuperCalc program now running you should see its title page on your screen, including the SORCIM copyright and address.

SuperCalc™  
Version 1.00  
Terminal: Myterminal xx  
CPU: 8080  
S/N-000101 ,Sys 2.x

Copyright 1981  
SORCIM CORP.  
Santa Clara, CA

Enter "?" for HELP or "return" to start.

At the bottom of the screen is a line that reads:  
Enter "?" for HELP or "return" to start.



## Lesson 1

Press the **return** key. From now on we'll call it "CR" for carriage return.

Note: Alternatively, or if your keyboard is not equipped with the arrow keys, you can

	A	B	C	D	E	F	G	H
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
> A1								
Width: 9	Memory:33	Last Cell:A1	? for HELP					
1>								

Let's examine the screen. You will note that columns A through H, and rows 1 through 20 are represented. You will see that the coordinate A1 is highlighted. On most terminals, you will see a bright underscore at that position. (Some terminals may have "reverse video," which means you will see a bright bar there. Or perhaps your terminal uses < > as an indicator.) This is the "worksheet cursor" and designates the Active Cell. The active cell is the location or destination of any data that we enter.

Any coordinate—for instance, A1, B3, B6, or G19—is called a "cell" because it represents a unique position on our "worksheet". The worksheet cursor can be positioned to any cell on the screen. This is accomplished by pressing any of the arrow keys at the right side of your keyboard.

use the **d**, **s**, **e**, **x** keys along with the **Control** key (CNTRL) to move right (**d**), left (**s**), up (**e**), or down (**x**). When one of these keys is pressed simultaneously with the control key, it will function like its corresponding arrow key. For convenience, we will refer only to arrow keys in the manual.

Let's press the **right arrow**. The worksheet cursor should have moved one cell to the right, to B1. Again press the same key, to move to C1. Try the down direction. Experiment, using these four keys to move the Active Cell indicator around to different locations on the worksheet display.

## Scrolling

What happens if you try to go above Row 1 or to the left of Column A? Nothing. You have reached the worksheet margin in these directions. But what about moving to the right or down? Try it, if you haven't already. You will quickly discover that when you move as if to go off the screen to the right or downwards, the columns or rows appear to renumber themselves. Actually those cells that were "off-screen", beyond the range of your display window, are brought into view, a column or row at a time.

Move one column to the right beyond the edge of the screen. You see that the columns change from A through H, to B through I. At any given moment you will be looking at only a portion of the potentially usable worksheet. This is what we mean by the "display window". As we move this window either horizontally or vertically, we are "scrolling" the display.

Try moving off the screen to the right, but this time

continue to hold the key down instead of just striking it once. If your keyboard is so equipped, you will see the screen continue to scroll until you stop pressing the key.

If your keys do not "repeat" when you hold them down, your terminal may have a special "Repeat key" instead. Use it together with the arrow key for the same result.

Continue to "scroll" the screen until you come to column Z. Note that the remaining columns are represented by two letters, AA, AB, and so on.

## The Status, Prompt, and Entry Line

### The Status Line

Notice the three lines at the bottom of your screen. The top line is the Active Cell and worksheet cursor "status" line. The SuperCalc program uses this line

	W	X	Y	Z	AA	AB	AC	AD
1								40
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
A1								
Width: 9	Memory:33	Last Cell:AD1	? for HELP					
1>								

## Lesson 1

to report to you the status of each of these functions.

The first character, an arrow (  $\uparrow$ ,  $\downarrow$ ,  $\leftarrow$ ,  $\rightarrow$  ), indicates the direction in which the worksheet cursor will move when you use the (CR). To change the direction of the cursor movement, press an arrow key that points in another direction from which the cursor is presently moving.

The next entry on the status line is the "address" of the current Active Cell. The status line allows you to read from your worksheet the location of the Active Cell more conveniently than you could by visually triangulating the cursor position with respect to the worksheet borders.

If the current Active Cell is empty, there will be nothing else displayed on the "status" line; however, if the Active Cell contains text, numbers, or formulas, the contents of the cell will appear as you originally entered it. It will be displayed like this:

Form= (contents of cell as per original entry).

Now move the worksheet cursor around, and watch the status line as the Active Cell and direction indicators change.

The second line is the "prompt" and secondary status line. This line will display the current cell width, available memory, and indicate that last cell used for your current application. When you are in command-entry mode the message displayed here will change depending on what command you are currently using. The prompt message lists your options at any given moment.

The bottom line is the "entry" line. It displays a 1  $\rightarrow$  at the left margin. This line allows us to communicate with the SuperCalc program. It displays the information we type in at the keyboard—data, commands, or responses to prompt messages. The entry line is your scratch pad. It allows you to check and edit the data or text you wish to enter before you commit it to the worksheet. As we input characters, the entry line cursor will move to indicate where the next character will appear. At the left-hand margin, the number 1 will change to 2, 3, etc. as the cursor moves.

## The GoTo Command

It is natural to wonder if there isn't some way to

move the worksheet cursor quickly to a desired position without using a stepwise combination of arrow keys. There is. Typing "=" initiates the *go to* command.

What if you mistyped "="? What can you do about it? You can use the left arrow key to backspace and then try again. We'll explain this feature more fully later on, but for now you know how to correct a mistake.

The prompt line now reads "Enter cell to jump to." This is typical of the helpful conversational efforts you can expect from the prompt line. Now type M31 or m31. Either will work. (The SuperCalc program accepts either lower case or upper case letters for any entries, but you cannot use a lower case letter "l" for the numeral one, "1.") But for any action to occur, you must press the return key, CR. It's a good habit to check your work first, by reading the entry line.

Now press CR, if you haven't done so already. If you did everything right, we have very quickly moved to the part of the worksheet where M31 is located. Cell M31 now appears at the top leftmost corner of your display window. See if you can use the "=" to find out how large the worksheet is. When you are finished, *go to* A1 again.

Here is an additional feature of the *go to* command. Move the Active Cell to anywhere near the middle of the screen, say to E8. Enter =, but specify no cell, just press CR. Notice how the Active Cell remains E8, yet the display window is repositioned so that the Active Cell appears at the top left corner.

We have now used the arrow keys and the "=" key. Remember that for most situations, any entry must be followed by pressing the CR key. The SuperCalc program will then accept and display our entry.

Press the CR key a few times, and notice that the position of the Active Cell advances to the next cell. The direction taken—left, right, up, or down—depends on which arrow key was last used.

Press the down arrow, and then CR a few times. Now the left arrow, and CR several times. The arrow keys set the direction, and then the CR advances the worksheet cursor cell by cell. (Remember you can always check the status line to find the current direction.)



## The Quit Command

What about some of the other operations? Let's try "/". Press the / key. You see that the prompt line changes. It now says, "B,C,D,E,F,G,I,L,M,N,O,P,Q,R,S,T,U,W,Z, or ?."

The prompt line is telling you that these letters represent the only meaningful actions you can take now that you have entered the "/".

Each letter designates an option of the "/" commands. Whenever you wish to examine this command option list in its expanded form, press "?" and the list will be displayed on your screen. To return to your worksheet display, press CR. We will explore many of these commands soon, but for now you should know about one in particular.

Press the Q key. What happened? First the /Q was automatically interpreted by the SuperCalc program so that your /Q appears on the entry line as /Quit. Second, the prompt line changed. It now reads, "EXIT

SuperCalc ? Y(es) or N(o)".

If you want to stop here and continue the lesson later, press the Y key; otherwise, press N.

What you have you learned in this lesson?

In this lesson you have seen the display window scroll and learned what "current direction" means. You have also learned how to:

- Identify the worksheet cursor and locate the Active Cell.
- Move the worksheet cursor anywhere on the worksheet.
- Move the cursor with the four arrow keys, the alternate diamond keys, and the CR.
- Use the = (or GoTo) command, either as a shortcut to a new location, or to reposition the worksheet with respect to the active cell.
- Read the Active Cell location, current direction, and column display width on the status line.



# NOTES

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## LESSON 2: Data Entry—Numbers, Text, and Simple Formulas

From Lesson 1 you have gained a general understanding of the control and display characteristics of the SuperCalc program. In this lesson, you will learn how to enter data. You will also learn the *zap* command (/Z) to clear the worksheet, using the “in-line editing” features, and using the *edit* command (/E).

If the SuperCalc program is not already loaded, load it now. (See *Getting Started* if you aren't sure how to do this.)

Now let's actually make some entries on our worksheet.

In this exercise, we will be entering numbers down the column, so we want to set the worksheet cursor to move “down”. Do so by pressing the **down arrow**. Now use the *go to* command to place the active cell marker at A1.

Enter the number 5 on the entry line. Do not press CR yet. You may cancel an operation any time by pressing the CNTRL key and the Z key simultaneously. If you start to do something but then change your mind, pressing CNTRL-Z will allow you to start over without harming your worksheet.

You have “5” on the entry line. Now press CR.

Pressing CR will enter whatever is currently shown on the entry line; that is, the characters you have

	A	B	C	D
1   <		5 >		
2				
3				
4				

typed will be sent to the active cell, and the entry line will be cleared. In our example, the data item “5” should now appear on the screen in cell A1.

Notice that the worksheet cursor moved to A2. Enter 6, but do not press CR yet. Did you notice that before you typed 6, there was a 1 at the left edge of the entry line? Now there is a 2. You will see this number increase each time you type a character on the entry line. The number you see is always one more than the number of characters you have typed. For now, this information helps you fit your data into the column width you have—remember the “9” on the status line. In a later lesson, you will learn how to change the column width, and this character count will be even more helpful.

Now press CR, and cell A2 will contain the value 6. Cell A3 has become the Active Cell.

Let's try another entry, 12 and CR.

The same thing should have happened. The worksheet cursor is progressing down the column, automatically anticipating the location of your next entry.

Now press the **right arrow**. Enter 56, press CR. What happened?

56 appears in B4, and the worksheet cursor has moved to cell C4. After each entry, the worksheet cursor will continue to move automatically to the next cell. The direction it will move has been set by whichever of the arrow keys was last used. For instance, suppose we wish to change the contents of cell B4. Press the **left arrow**. Enter 8 press CR.

This will replace the previous entry of “56”. But, in addition, the worksheet cursor continues now in a leftward direction to A4.





## Lesson 2

	A	B	C	D
1		5		
2		6		
3		12		
4   <		>	8	
5				

Try entering different letters and numbers as data, using the arrow keys to change direction. Take a few minutes.

Depending on how adventurous you were, you may have made some discoveries. Generally speaking, there are two kinds of entries—"text" and numbers. Your entry will be regarded as a number unless you type a single or double quotation mark as the first character, in which case it will be entered as repeating text or text respectively.

Headings, labels, and explanatory notes are all examples of text entries. In a mathematical sense, they are simply regarded as having a value of zero. If you forget to lead these with quotation marks the computer will respond with an error message. The quotation marks will not appear on your screen; they simply signal the computer that you are making a text entry. You do not have to close the quotation marks.

### The Zap Command

Let's try some examples, but first let's start with a fresh screen.

Remember we used the *quit* command to exit from the SuperCalc program altogether in Lesson 1. Now we'll use another command, *zap*.

Enter *l*, and note that the prompt line again displays for us all possible "/" commands.

Enter *Z*; the interpretive prompting now reads "Zap-ENTIRE-worksheet?" The effect of the *zap* command is to clear the entire worksheet and return everything to its original state, just as it was when you first loaded the SuperCalc program. Because the effect is so drastic, the program uses the prompt line to remind us that the entire worksheet will be emptied and to verify that we really want to do this. The prompt asks, "Y(es) to clear everything, else N(o)?"

We do want to clear everything, so enter *Y*, and the SuperCalc program will do just that. Whatever we had put on the worksheet is now gone, permanently.

### Characteristics of Textual and Numerical Entries

Now enter "Oranges" in cell B1 and 250 in B2. Remember to lead off Oranges with quotation marks(""). Notice that text is left-justified and numeric values are right-justified within the column.

	A	B	C	D
1		Oranges		
2		250		
3		<	>	
4				
5				

Now move the Active Cell back to B2 and watch the rightmost display of the status line. It will say "Form = 250". Move the Active Cell to B1; the same display will say "Text = Oranges".

>B3	Width: 9	Memory:33	Last Cell:A1	? for HELP
1 >				



How wide are the columns, how large a number can we enter? How much text? Remember we mentioned "display width" earlier when looking at the status line. Note again the "9" on the status line.

The 9 tells us that the column currently accessed (the column with the Active Cell) is set to display nine characters. Nine is the standard or *default* value that the SuperCalc program will use for the display width of all columns unless you specify otherwise. You will soon learn how to specify display widths. A cell may contain as many as 110 characters.

Move the worksheet cursor to B3, and type "Alberta peaches". This piece of text is certainly longer than nine characters, but the SuperCalc program allows display of your *text* to extend over neighboring cells if they are unused. Now go to A1 and try the same thing.

Your entry did not display in full because B1 is occupied. But the entire entry was accepted to cell A1 even if only a portion of it (the first nine characters) is displayed. (Notice that the status line indicates the contents of A1 as Text= "Alberta peaches").

Move to B4. Enter, without commas, 2500000000. The number is too large to display. The SuperCalc program converts it to scientific notation, a more compact format, and displays it as 2.5e9. 2.5e9 is the display form of the expression  $2.5 \times 10^9$ , or the conventional abbreviation of 2,500,000,000. The SuperCalc program provides many different display and format options. These will be described in more detail later.

	A	B	C	D
1	Alberta	pOranges		
2			250	
3		Alberta peaches		
4		2.5e9		
5				
6				

If exponential numbers are new to you, here is a quick look at what they are and how the SuperCalc program displays them. Exponential numbers are

displayed as "powers of 10." You will soon see what this means.

Go to Cell C1 and set column C for exponential display. We use the *format* command to do this. Enter /F, for the command, and C, for "column formatting." When the prompt asks you what column to format, you can just press the "," key, because you are at column C. Then enter E, for exponential, and press CR.

Press the **down arrow** to set the current direction as down. Now enter 1776. Cell C2 shows "1.776e3." What does this mean? e3 means "exponential 3" or "10 to the power of 3." 10 to the power of 3 is 1000; 1.776 times 1000 is 1776. That's all that 1.776e3 means.

Try entering 1000. Is 1e3 what you expected? What will 100 be? Try it. Now enter 2000, and then enter .002. Notice that 2000 is 2e3 and that .002 is 2e-3. e3 is thousands; e-3 is thousandths. What is -2000? Try it and see.

What happens if you enter a number in exponential notation? Let's try it. Enter 567e13. Are you surprised to see it display as 5.67e15? The SuperCalc program prefers to put the decimal point just after the first digit and will adjust the exponent value to do so.

Explore on your own—entering numbers as you ordinarily would, and entering them in exponential form. Try to guess beforehand what the display will be.

When you feel comfortable with exponential notation, let's give the SuperCalc program a little job to do.

Press the **down arrow**, (v), to reset the cursor direction; then, **go to**, (=), D1.

In cell D1, enter 93000000. That is 93 million, which is the number of miles between the earth and the sun. 9.3e7 is 9.3 times 10 million, which seems right. Now in cell D2, enter 5280\*D1. The value displayed, 4.910e11, is the number of feet in 93 million miles. What about inches? Enter 12\*D2 in cell D3. 5.892e12 is the number of inches in 93 million miles.

So 5.892e12 is the number of inches between the earth and the surface of the sun? Well, not really. It is the number of inches in 93 million miles, but 93 million is the number of miles between here and the sun expressed to the nearest million.



## Lesson 2

What 5.892e12 really tells us is that there are about 5.9 times 1,000,000,000,000 inches between here and the sun. Only the first two digits of 5.892 are significant, because only the 93 was significant in 93 million miles.

Why bring this up? Because that is the point of scientific notation. Scientific notation allows us to quickly grasp the essential points of a number and discard the unessential.

The first part of the number gives us the essentials (and probably some others that we can discard). The exponent value, the number after E, tells us whether we are talking about 10s, 100s, 1000s, or millions, billions, trillions. Or billionths and trillionths, for that matter.

In short, exponential or scientific numbers give us the essentials: the significant digits and the general magnitude of the value.

Three types of exponential expressions may occur:

- 1) 1.776e3;  $1.776 \times 1000$  or  $10^3$
- 2) 1.776e-3;  $1.776 \times 1/1000$  or  $10^{-3}$
- 3) -1.776e3;  $-1.776 \times 1000$  or  $10^3$  (a negative number.)

Move the Active Cell to B5. Type this incorrect spelling, **Pinapples**, but *do not* press CR. As you know, you could use a *left* arrow to backspace and re-type from the point of the error. The *right* arrow key just moves in the opposite direction.

Now use the left and right arrows, move back and forth across your text, but take care not to backspace beyond the leftmost character. Notice that nothing is changed, but the position of the cursor on the entry line. Now locate that cursor on the "a". Notice, too, that the number 4 appears at the left of your entry line. This indicates that the cursor is located at the fourth character position.

Press the **up arrow** key, and see what happens.

A space has been created for us just ahead of the "a" so that we may insert the correction without having to re-type good text. Enter **e**. Your entry line now says "Pineapple. What if you had needed to insert several characters, or to delete some?"

Press the **up arrow** key continuously and generate a large gap in the text. Press the **down-arrow** key once, and notice that the gap is reduced by one character. Hold the key down, and watch the blank spaces be

	A	B	C	D	E
1	Alberta	pOranges			
2		250			
3		Alberta	peaches		
4		2.5e9			
5					
6					
...					
...					
> A5					
Width: 9	Memory:33	Last Cell:B4			? for HELP
4> Pin	apples				

### *In-line Editing*

Right now, let's investigate the SuperCalc program's "in-line" editing feature. If you have used the exponential notation section of the lesson, "zap" your worksheet and reenter your original data.

deleted. Go ahead and enter "Pineapples, and then make up other examples. Practice with these keys until you are confident with this "in-line editing" feature. Try it with numeric entries, too.

Regardless of where the cursor is positioned on the entry line, all of the visible text or numeric values will



go into the Active Cell when you press CR.

You have discovered that the arrow keys have two different uses. They move the active cell around the worksheet *until* you type a character on the entry line. Then the SuperCalc program recognizes that you have begun to enter data, and the prompt changes to "Enter into cell (or CNTRL-Z to abort command)." The function of the arrow keys changes in data entry mode; they are used for editing.

### The Edit Command

We have seen how to edit data *before* we actually enter it into the Active Cell. How can we edit data that we have already sent to a cell? Of course, we could enter the data again in its entirety. The new entry would replace the old one. But there is a better way. We can use a new command, the *edit* command (/E).

Make B4 the Active Cell (use *go to* or move the worksheet cursor). Enter /E, for *edit*. You see the prompt line now says, "From? Enter cell." It is asking where to find the material to be edited.

Because in this case we want to edit the contents of the Active Cell, we don't have to give a cell address. Simply press CR, and the SuperCalc program will bring the Active Cell's contents to the entry line.

Make your changes, using the arrow keys. For instance, delete three of the zeros from 2500000000. When your change is complete, press CR, and your modified entry replaces the old one in B4. If you

haven't done this, try it now.

You may sometimes wish to edit the contents of a cell and enter them into *another* cell. For example, position the Active Cell to B5 (our destination cell). Enter /E. In response to the prompt, "From?", enter B4 (our source cell), and press CR. The contents of B4 will be copied to the entry line. After you have made your change, press CR and the edited version of B4 will be copied back to B5.

Note that no matter where it comes from, the "new" or "edited" data on the entry line is always entered into the *Active Cell*. In our first example, the original contents of B4, the Active Cell, were modified and replaced by our edited version. In the second example, the contents of B4 were *not* changed. The edited material went into B5, the Active Cell, and the source material remained unchanged in B4.

If you want to stop here, use the *quit* command. Or if you wish, continue on to lesson 3.

What have you learned in this lesson?

In this lesson you have learned how to:

- make number and text data entries
- cancel an operation by using Control-Z
- replace one data entry with another
- set the direction in which the worksheet cursor moves
- recognize and use exponential notation
- do *in-line* editing
- use /E, the *edit* command





## LESSON 3: Blanking, Protecting, Unprotecting, and Saving Your Work

In Lesson 2, we expanded our knowledge to include the fundamentals of data entry for the purposes of creating text or for entering numeric data to be used in actual calculations. In this lesson, you will gain more experience entering data. You will learn to blank, protect, unprotect, and save your data. You will also learn to use the /G command to make some general or "global" changes in your worksheet display and to use the /F command to make certain formatting changes.

If you are continuing directly on from lesson 2, do a /Z command so that we may start with an empty screen. Otherwise, load the SuperCalc program in accordance with the instructions in "Getting Started".

Use the **down arrow** to set the current direction. Use the *go to* command to go to A1. Enter "Apples. At A2, enter 5. Continue in this way with A3 through A9, entering values of 8, 3, 11, 4, 9, 6, and 12 respectively.

In lesson 2, we learned how to modify a cell's contents, to *edit*. But what if we want to "blank" a cell, to clear out its contents?

We can do that with a new command, the *blank* command. It can be used to blank out, or erase, data that you have already entered on any size portion of your worksheet. You can blank an individual entry or cell, partial or complete rows or columns, or entire blocks (rows *and* columns) of cells. We will try an example of each in this lesson.

Enter / and note the prompt line. Now enter B. The interpretive prompting fills this out, /B blank. And the prompt line changes to say, "Enter range." You must now specify the portion, or range, of the worksheet that you wish to blank.

Type A4 and press CR. The contents of A4 have been

"blanked", that is erased. Or you can enter /B, place the worksheet cursor on the cell you wish to blank, and with no cell reference, press CR. Try doing this with cell A5. When working regularly within the SuperCalc program, use whichever method is more convenient for you. Remember that since the cursor can only point to an individual cell, the cursor-CR method of the /B command will only affect an individual entry.

Enter /B again. Now in response to the prompt, "Enter range", specify A6 through A8 by typing A6:A8. Press CR. This is how we can specify a range of cells for either a row or a column. The range that you designate will always include the end points.

	A	B	C	D
1	Apples			
2		5		
3		8		
4				
5	<	>		
6				
7				
8				
9		12		
10				

### *The Protect Command*

Re-enter the numbers we just blanked out. Create a new column of numbers in column B. Label it "Oranges."



Now let's use */P* to protect a cell. Enter */P*. We use the protect command in the same way as the blank command. That is, enter a cell or a range. For example, enter **A5**. Press **CR**. Move the cursor to A5 and note that a "P" appears now next to the "Form" display on the status line. This indicator tells you that the Active Cell is "protected".

	A	B	C	D
1	Apples	Oranges		
2		5	1	
3		8	2	
4		3	3	
5  <		11 >	4	
6		4	5	
7		9	6	
8		6	7	
9		12	8	
10				

If your terminal provides half-intensity display, you will also see the protected cells at half intensity.

Let's continue by protecting a range of cells.

Type */P* and enter **A8:B8**. Press **CR**. This will protect that portion of row 8.

What is the significance of what we have done?

Remember we said that */B* could blank out an entire block of cells. Let's attempt to blank out that block of cells from row 2 through row 8 for both columns A and B. How do we specify this?

Enter */B*. Now enter **A2:B8**. (We define the range for a Block of cells as a diagonal, top leftmost cell followed by the lower rightmost cell in the block.)

Now press **CR**, and let's consider the results of our actions.

Row 1, with our titles, should remain because it lay outside the range of the block-definition we used with the Blank command. A5 and row 8 remain because they were protected. Row 9 remains, not because it was protected but because it, too, was beyond the range we blanked out.

Try to change the contents of A9. Now try the same thing with A5 or B8. Because these cells have been protected, they cannot be changed or blanked out. This feature can provide you with a large measure of safety when you are working around information that has taken you time to develop, and which you cannot afford to accidentally lose.

The unprotect command (*/U*) can be used to unprotect cells, partial rows, partial columns, or blocks of cells. We could use the command twice to unprotect cell A5 and row 8, but can we do it with just one */U* command?

Yes. Unprotect the "block", row 5 through 8 of columns A and B. What is the proper range specification? Did you say **A5:B8**? Correct.

### Formula and Numeric Display Options

Move the Active Cell to A2. Enter **3+5**. What happened? The value of the expression, 8, was placed in A2. If the worksheet cursor is not at A2, move it there and examine the status line. The rightmost display will read "Form=3+5", our original expression.

What has the SuperCalc program actually stored, "3+5" or the "8"?

However complicated the expression is, the SuperCalc program will calculate the result and display it. This allows us to use the entry line like a scratch pad. For instance, we may be adding two columns of numbers but only be interested in their total value.

Again at A3 enter **1+A2**. The SuperCalc program will recognize this as a formula referring to cell A2 and will quickly calculate and display the value based upon the value in A2. Further, if we change the contents of A2—for instance, to "5"—we should observe that the new value of A3 will be recalculated as well. Try it!

Now move the Active Cell to A3. The screen displays "6" there, the current value, while the status line displays "Form = 1+A2." Apparently, the SuperCalc program is keeping track of both. In A4, let's



enter `A3 *.65`. (The "\*" means multiply and is equivalent to the "X" sign in conventional notation. Division is represented by "/".)

Locate the active cell at A10. Enter `SUM(A2:A9)`.

SUM is a built-in function. The SuperCalc program provides many special built-in functions, including SQRT (square root), AVERAGE (mathematical mean), NPV (net present value), trigonometric functions, IF conditionals, and many more. (See for more detail on formulas and functions.) For SUM, we can specify a list of ranges (as we have done in this example) and cells, for example, "SUM (A8, B9, A2)."

Now change the value of any cell in column A and watch the sum be recalculated.

## The Global Command—Formatting Options

Earlier we determined that the SuperCalc program is keeping track of our formulas although it only displays their current values on the worksheet. How can we review all the original formulas more clearly? Enter `/G`.

Note that SuperCalc's interpretive prompting fills this out to read `/Global`. What could this conceivably mean? The prompt line now reads, "F(orm.), N(ext), B(order), T(ab), R(ow), C(ol.), M(an.), A(uto)?" We could think of the `/G` command as a way to make

	A	B	C	D
1	Apples	Oranges		
2	5			
3	1 + A2			
4	A3*.65			
5	11			
6				
7				
8	6	7		
9	5	8		
10	SUM(A2:A9)			
11	<	>		
12				

overall or "global" changes to the worksheet, rather than specific or local changes. It is as if we had a map of California before us and we could, at will, transform it into a topographical map, a population density map, a tourist attraction map, etc.

Our concern here is with formulas, so Enter `F` and see your formulas displayed.

To return to the other style of display (cell values), simply repeat the sequence `/G, F`. The SuperCalc program will alternate or flip-flop between the two display modes.

## Determining Column Width

Enter `9` in cell B10.

In formulas made, you will notice one problem. The SUM formula in A10 has two characters more than our column width, which is only 9. Let's widen the column to accommodate our entry.

Enter `/F` for *format*. The prompt line will respond with "Enter Level: G(lobal), C(olumn), R(ow), or E(ntry)." The "G" in this case is not the same as the `/G` command. Here it simply qualifies the `/F` command. But its meaning is similar; that is, "for all" or "every".

Now enter `G`. The prompt line now displays, "Define Formats: (I, G, E, \$, R, L, TR, TL, \*, D, column width)". As you can see, the `/F` command has many possible parameters; however, for now, let's enter a new column width by typing `12` and `CR`. Now move the cursor to column B and note the status line display, "12". Notice that we changed *all* columns to a width of 12 characters. We could have specified the new width for just a single column by `C` for column level.

Now that we are using commands with several levels of prompts, it may be useful to point out another use for the left arrow key—one that you may have discovered for yourself already. Backspacing with the left arrow will always take us back to the prior "step" in a command, to a less completely specified statement.

For instance, enter `/F, G, 12` again. Now backspace once with the left arrow (or `CNTRL-s`). Backspace again, and see that the prompt changes to its earlier



## Lesson 3

message, "Enter Level: G(lobal), . . ."

If we wished, we could then enter a level other than G(lobal), and continue on with the command sequence. Instead, let's backspace once more.

You will see the list of "/" command options on the prompt line. Backspace again. And now we have finally backed all the way to the original prompt.

Of course, no matter how far we have gone in specifying some command, range, or option, we can always use **CNTRL-z** to abort; that is, to cancel everything we have started to enter. Simultaneously pressing the **CNTRL** key and "z" will return us to the original prompt. You can use this technique, for example, if you start to enter data on the entry line and then notice that the Active Cell is not positioned where you want it.

Now return to the display mode that displays cell values rather than formulas. (**G, F**.)

### *The Save Command*

We will want to save the work we have done in this lesson so that we may use it later. We can do this with the **/S** command (**Save**). This command makes a copy of our entire worksheet and stores it on a diskette located on either drive A or drive B, depending on which we specify.

Enter **/S**. The prompt requests, "Enter File name." You can respond to this in one of several ways, depending on where you want to store your file. If you wish to save it on the disk on the system drive (the same disk that has the SuperCalc program), enter **WORK1** and **CR**. Or you can specify the drive to use by entering either **A:WORK1, CR** or **B:WORK1, CR**. Do not leave any blank spaces in your file name. The computer will not accept "TOM 1", but only "TOM1". (If you have more than two disk drives, you can

specify **C:WORK1** or **D:WORK1**, and so on.) If you are unsure what is meant by "system drive," review that material in "Getting Started".

After you have entered the file name, the prompt line inquires further, "A(ll) or V(alues)?"

Since we wish to save both our formulas and our values, enter **A**, for all. Your disk drive unit will whirl and click contentedly for a few moments.

We will use this file to "load" our work back into the system when we resume with lesson 4, so keep the disk handy. Now enter **/Q** and exit from the SuperCalc program, all our work "disappears." It is gone irretrievably *unless* you specifically save it with the *save* command before exiting.

What have you learned in this lesson?

In this lesson you have learned:

- How to blank the contents of a cell or group of cells by using the **/B** command.
- How to protect and unprotect cells, using the **/P** and **/U** commands, and what protection does for a cell.
- That in an arithmetic expression, "\*" means multiply and "/" divide.
- That you can enter numerical expressions and formulas, that the SuperCalc program will calculate and display the results, and that it will continue to recalculate as necessary.
- How to use the *global option* command, **/G**, to display formulas or their calculated values on the worksheet display.
- How to use the *format* command, **/F**, to change column display width.
- How to use the backspace (left arrow) key to return to an earlier step in a command sequence.
- How to create a file and *save* your work by using the **/S** command.



## LESSON 4: COPY AND REPLICATE

In Lesson 3, we began to see the power of the SuperCalc program—in particular, its ability to recalculate automatically all values that depend upon the values in other cells. In this lesson we will gain even more insight into its versatility. You will learn to use the *load* command (/L), *copy* command (/C), *replicate* command (/R), and the current—cell key (ESC). The /C, /R, and ESC commands are basically time saving commands.

### THE LOAD COMMAND

We are going to continue using the worksheet we began to develop in Lesson 3. Let's retrieve the file we created at the end of that lesson. We will use the *load* command, /L, to this. (If the file is not on the disk that has the SuperCalc program, be sure to insert the disk with the file into your other disk drive.)

Enter /L. How you respond to the prompt message "Enter File name" depends on where you stored the file. If it is on the same disk as the SuperCalc program, it is on the system drive. So you should enter WORK1 and press CR. (If the file is not on the system drive, you should designate the appropriate drive by entering A:WORK1 or B:WORK1, etc. before pressing CR.)

The disk drive will respond with some clicking, and the prompt line will change to read, "A(11) or P(art)?"

Enter A, for "all", and the material we saved from our last effort will be copied from the disk and appear on the screen.

### The Copy Command

Now that we have restored our work from the previous lesson, let's investigate another command,

*copy* (/C). The *copy* command is easy to use. You can copy a single cell, a partial row or partial column, or a block of cells.

In this first example, we will copy the data in column A into column C. Enter C. The prompt line responds with, "From? (Enter Range)."

In response, enter A1:A10, (CR). This time the prompt asks, "To? (Enter Range), then Return; or ",", for Options." We just want a "standard" copy this time—we will look at "options" later. So enter C1 and press CR.

Now use the *copy* command to copy the contents of cell A10 to B10.

Change the display to show formulas, and look at the contents of B10 and column C. The formulas have all been translated automatically relative to the column. All cell references have changed to reflect the new location of the formulas. If we had moved to a new row, as well as a new column, relative row designation would also have been adjusted.

	A	B	C
1	Apples	Oranges	Apples
2	5		5
3	1 + A2		1 + C2
4	A3*.65		C3*.65
5	11		11
6			
7			
8	6	7	6
9	5	8	5
10	SUM(A2:A9)	SUM(B2:B9)	SUM(C2:C9)
11			
12			



## Lesson 4

Generally, this automatic adjustment is exactly what we want. But there are other options open to us. For instance, we can specify that there be no adjustment, or we can tell the SuperCalc program to ask whether each occurrence of a cell reference should be adjusted or left alone. We will try this soon.

The *copy* command makes a one-to-one copy of its source material into a destination of the same type of size; cell to cell, row to row, or column to column. But suppose you want to repeat a series of values and formulas many times, perhaps to compare alternative cases.

### The Replicate Command

You can use another very powerful command, *replicate* (/R), to do that. It will make a "one-to-many" copy of a cell, a partial row, or a partial column and will distribute these copies over a destination range that is larger than the source range. Change the display to show formulas.

Let's *replicate* a single cell, A10.

Enter /R. For "From", enter A10, (CR). For "To?", enter the range. D10 through F10, by typing, D10:F10 and CR. And note how the command performs.

Try replicating the partial column A3 through A4 in-

to D3 through F3. These columns, D through F, now have data in rows 3, 4, and 10.

Fill up these columns by entering some data (whatever you want) in rows 2 and 5 through 9.

The *replicate* command has the same formula-adjustment options as the *copy* command. Let's try one of them now.

Enter into cell A12, the formula  $A2 + A2$ .

Now enter /Rreplicate, A12, B12:F12. After you enter "F12" enter an additional "," to get the options. They will be displayed on the prompt line: "N(o Adjustment), A(sk for Adjust.), V(alues)."

Enter A.

The prompt changes to say, "Source location A12. Adjust A2?" and the first A2 is highlighted on the entry line.

Respond with N, for no adjustment. Now the second reference to A2 is highlighted on the entry line. Let's respond with Y. You see that the first part of our formula remained unchanged while the second was adjusted, according to our responses. In this way, we can specify one component of a cell to be held constant, while other components are adjusted relative to their new location.

Replicate cell A1, to D1 through F1. Then use /E to *edit* the contents of C1 through F1 so they will be APPLES-1, APPLES-2, and so forth.

	A	B	C	D	E	F
1	Apples	Oranges	Apples			
2	5	1	8			
3	1 + A2	2	1 + C2	1 + D2	1 + E2	1 + F2
4	A3*.65	3	C3*.65	D3*.65	E3*.65	F3*.65
5	11	4	11			
6	4	5	4			
7	9	6	9			
8	6	7	6			
9	7	8	7			
10	SUM(A2:A9)	SUM(B2:B9)	SUM(C2:C9)	SUM(D2:D9)	SUM(E2:E9)	SUM(F2:F9)
11						



	B	C	D	E	F
1	Oranges	Apples-1	Apples-2	Apples-3	Apples-4
2	1	8	3	4	5
3	2	1 + C2	1 + D2	1 + E2	1 + F2
4	3	C3*.65	D3*.65	E3*.65	F3*.65
5	4	11	6	7	8
6	5	4	10	11	12
7	6	9	13	14	15
8	7	6	1	2	3
9	8	7	4	5	6
10	SUM(B2:B9)	SUM(C2:C9)	SUM(D2:D9)	SUM(E2:E9)	SUM(F2:F9)
11					
12	A2 + B2	A2 + C2	A2 + D2	A2 + E2	A2 + F2
13					

It's very important to save the work we have completed up to this point. We will use it again in Lesson 5. If you want to save it on the same disk as the SuperCalc program, enter */S*, then **WORK1, CR**; otherwise, specify the drive that has your destination disk. (If you want to jog your memory about the *save* command, try *help*, (?). Or you could look back at Lesson 3 or at the detailed reference.

To help protect your work, the SuperCalc program checks to see if you already have a file with the same name on your destination disk. If you do, the SuperCalc program asks you, "OK to overwrite?" If you no longer need the original version, then reply with "Y." Otherwise, rename the new file you want to save. (In this case, you can overwrite because you won't need the old "WORK1" file created in lesson 3. The worksheet developed in this lesson is the one we will use later.)

Try replicating a row, or rows, or a block. If a practical application of your own comes to mind, try to begin an example on the screen. If you want to save this first effort of your own, be sure to use a different name—for example, **TRIAL** or **MYTRY**. (Safety tip: It is a good idea to choose a name substantially different from **WORK1**, so that there is less chance of inadvertently overwriting the material you will need on this tutorial. "WORK2", for example, is so close that it might cause you some confusion.)

By now you have probably realized that the SuperCalc program offers you a great many command op-

tions. This makes it a tremendously powerful and versatile tool. We will not discuss all the options in this tutorial section. Instead, we encourage you to investigate them on your own. You should find it easy to make the best possible use of the SuperCalc program by combining what you learn here with information available in the reference section of this guide and through the *help* function, (?), built into the SuperCalc program itself.

### *The Current-Cell key: ESCAPE key.*

This is a good time to become acquainted with the "current-cell" key. It can be used to boost the efficiency of certain kinds of data manipulation, which use the *copy* and *replicate* commands. The ESC key serves as the current-cell key.

Whenever a cell or range is required by the SuperCalc program, the Active Cell coordinate will be placed on the entry line if we simply press the ESC key.

Let's set up an example and learn how to use this feature. Start with a fresh screen. After you have saved any work you want for later, use the *zap* command.

Enter 123 into A1. Use the *replicate* command to fill every cell on the visible screen with "123". Can you do this? Try it before looking ahead.



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Here is how your entries should have looked. First, enter, /Replicate, A1, B1:H1. Then, /Replicate, A1:H1,A2:A20. Or, /R, A1, A2:A20. Then, /R, B1:H1.

Now you should have "123" everywhere for the purposes of our example.

Enter /B, for *blank*. The SuperCalc program now wants you to specify a cell or a range to be blanked. Let's start with a single cell.

Press the ESC key. The address of the Active Cell will appear on the entry line. Use the arrow keys to move the worksheet cursor to another location—for example, C11. Notice the Active Cell address on the entry line change as we go.

Now press CR. Observe. Notice that the latest Active Cell was blanked, and that the Active Cell location has returned to its original place. Again, enter /Blank, and press ESC.

Use the arrow keys to make cell C16 be the Active Cell. The entry line now reads /Blank, C16.

We can use this to begin a range specification. Just enter ":". The line now reads /Blank, C16:C16. Now move the worksheet cursor to cell H16. Notice that the second address of our range is incremented as we go. Now press CR. The cells in the range C16 through H16 have been blanked.

In brief, this is what happens. Once you have set the ESC function, the arrow keys will move the worksheet cursor and set the cell location on the entry line. A colon ":" will generate a limiting location (end point) for a range specification. Pressing ESC or CR key will terminate the ESC function and allow the arrow keys to be used for editing. The ESC movement of the Active Cell is only temporary; when you terminate the ESC function, the Active Cell returns to its starting place.

Here is another sample. Enter /Blank. Press ESC. Move the worksheet cursor to D4, press ":" and move again to H14, press CR. We have blanked cells in the block from D4 to H14.

	A	B	C	D	E	F	G	H
1	123	123	123	123	123	123	123	123
2	123	123	123	123	123	123	123	123
3	123	123	123	123	123	123	123	123
4	123	123	123					
5	123	123	123					
6	123	123	123					
7	123	123	123					
8	123	123	123					
9	123	123	123					
10	123	123	123					
11	123	123						
12	123	123						
13	123	123						
14	123	123						
15	123	123	123	123	123	123	123	123
16	123	123						
17	123	123	123	123	123	123	123	123
18	123	123	123	123	123	123	123	123
19	123	123	123	123	123	123	123	123
20	123	123	123	123	123	123	123	123



By using the ESC key and placing the Active Cell at the appropriate points, we can let the SuperCalc program define our statements. At first, this may seem a little difficult, but with some practice, you will begin to find it increasingly useful. This feature allows us to modify our screen simply by pointing with the Active Cell to the boundary of the range of cells we wish to blank without our having to blank each cell individually.

Here are some examples you can try using *replicate* and ESC. Enter in E5, **aac**. Enter **/Replicate**. Press **ESC**, place the Active Cell at E5, then press **;** or **CR**. Now press **ESC** again for the "To?" portion of our entry. Move the Active Cell to E6, enter **:"**, and move the Active Cell to E13, then press **CR**.

One more example. **/Replicate**, **ESC**, move the Active Cell to E5, enter **:"**, move to E13, press **CR**. Press **ESC**, move to G7, enter **:"**, move to J7, press **CR**.

The ESC key allows us to identify cells either by their contents or their location on the worksheet, and to perform operations on them, without concerning ourselves with their cell address. The ESC function can be used any time you have information on the entry line. You can use it in commands or with data. For

example, you can use it to provide cell locations in formulas.

There is no need to save any of this work. At this point you may *quit* or continue on to Lesson 5.

What have you learned in this lesson?

- How to use the *load* command, (**/L**), to bring a worksheet in the SuperCalc program from a disk file.
- How to use the *copy* command, (**/C**).
- That the SuperCalc program will adjust formulas automatically when data is moved to new locations—or that the program will let you specify whether to leave part or all of a formula unchanged.
- How to use the *replicate* command, (**/R**), to make a "one-to-many" copy of a cell, a partial row, or a partial column and to distribute the copies over a range.
- That you can use the ESC key to bring the Active Cell location to the entry line and can then change the location by using the arrow keys to move the worksheet cursor. You have also learned the special use of **:"** with the ESC function.





## LESSON 5: Move, Insert, Delete

You have learned to use the *Go To* command, the ESC key, and many important "/" commands. You can *Save* and *Load* your worksheet. Now we will introduce some new commands and techniques that can greatly simplify the development of a complex display.

If you are continuing directly on from Lesson 4, use the *zap* command so that you will begin with an empty worksheet. Otherwise, start up the SuperCalc program.

We will continue to develop the worksheet that we saved in Lesson 4.

Use /L to *load* the file WORK1. (You can use ? for *help* or check back to Lesson 4 if you want a refresher on how to use *load*.)

Suppose Column B, labeled "Oranges", really belongs to the right of "Apples-4", at Column F. With what you know already, you could use *copy* to "move" it there and then use *blank* to erase Column

B. But there is a better way.

Enter /M for *move*, and read the prompt, "R(ow) or C(olumn)?"

Enter C, and the prompt changes to "Enter column letter."

We want to move Column B, so enter B, (CR). The new prompt, "To?", asks where we want the material to go. Enter F, for Column F, and CR.

But isn't Column F already occupied?

Press CR and note what happens.

Our column has been moved and the formulas adjusted. The "gap", which we might have expected Row C to leave behind, had been filled. The SuperCalc program moved our entries for former columns C through F one column to the left, in effect, vacating Column F and making it available to us. The program has neatly moved all the columns and adjusted all the formulas to reflect the new locations.

	A	B	C	D	E	F
1	Apples	Apples-1	Apples-2	Apples-3	Apples-4	Oranges
2	5	8	3	4	5	1
3	1 + A2	1 + B2	1 + C2	1 + D2	1 + E2	2
4	A3*.65	B3*.65	C3*.65	D3*.65	E3*.65	3
5	11	11	6	7	8	4
6	4	4	10	11	12	5
7	9	9	13	14	15	6
8	6	6	1	2	3	7
9	7	7	4	5	6	8
10	SUM(A2:A9)	SUM(B2:B9)	SUM(C2:C9)	SUM(D2:D9)	SUM(E2:E9)	SUM(F2:F9)
11						
12	A2 + A2	A2 + B2	A2 + C2	A2 + D2	A2 + E2	A2 + F2
13						





### The Insert and Delete Commands

Here are two other complementary commands that can create or delete intermediate columns and rows. They are **I** (*insert*) and **D** (*delete*).

Let's insert a new row between rows 9 and 10.

Enter **/I**, followed by **R** for row. Respond to the next prompt by entering **10**, and a "new" row appears.

Look at the formulas in row 11, and you will see they are unchanged. The SuperCalc program has no way of knowing if you want to include the new row in the SUM equations—you would have to change them yourself.

Nevertheless, the SuperCalc program does know something. Note first the range we have specified in

our SUM formulas.

Now let's insert another row at 7. **/Insert, Row 7.**

Look at the SUM formulas in row 12. They have been adjusted, extended automatically from A2:A9 to A2:A10, because the row we just inserted fell within the range we had described.

Now enter **/D** and **R** (for row). For row number, enter **14** and **CR**. Row 14 is deleted. If we delete row 7, will the SUM formulas be adjusted back to A2:A9? Try it and see.

Let's delete a column, and try an experiment as well. Let's find out what happens to a value that depends on one that we delete. Enter into cell E9 the equation, **F2**. E9 will contain whatever value F2 contains. Change the display to show cell value.

	A	B	C	D	E	F
1	Apples	Apples-1	Apples-2	Apples-3	Apples-4	Oranges
2	5	8	3	4	5	1
3	1 + A2	1 + B2	1 + C2	1 + D2	1 + E2	2
4	A3*.65	B3*.65	C3*.65	D3*.65	E3*.65	3
5	11	11	6	7	8	4
6	4	4	10	11	12	5
7						
8	9	9	13	14	15	6
9	6	6	1	2	3	7
10	7	7	4	5	6	8
11						
12	SUM(A2:A10)	SUM(B2:B10)	SUM(C2:C10)	SUM(D2:D10)	SUM(E2:E10)	SUM(F2:F10)
13						
14	A2 + A2	A2 + B2	A2 + C2	A2 + D2	A2 + E2	A2 + F2



Now enter /Delete, Column, F, CR. The column entitled Oranges has been deleted. E9 displays "ERROR". The SuperCalc program has no value to use in calculating the value of E9, and warns us of that with this message. Once a cell is in error, any reference to it will display a similar error message. As you see, the SUM value also indicates ERROR.

It produced an ERROR in the SUM formula.

The general rule is not to delete either of the boundaries specified in a range like the one in our example. Our example was "SUM(A2:A9). Deleting either A2 or A9 will cause an ERROR condition because the SuperCalc program cannot guess your exact intentions. These warnings help us avoid inadvertently

	A	B	C	D	E	F	G	H
1	Apples	Apples-1	Apples-2	Apples-3	Apples-4			
2		5	8	3	4	5		
3		6	9	4	5	6		
4		3.9	5.85	2.6	3.25	3.9		
5		11	11	6	7	8		
6		4	4	10	11	12		
7		9	9	13	14	15		
8		6	6	1	2	3		
9		7	7	4	5ERROR			
10								
11		51.9	59.85	43.6	51.25ERROR			
12								

If cell E9 should, in fact, have "F2" in it, we could simply enter that formula again, and everything would be set right. Now put a number or F2 into E9, whichever you wish. Notice that the error display in the SUM value also goes away. It is replaced by the recalculated value.

If we delete row 10, will this affect our range specification for the SUM formulas in row 10? No, because row 10 is beyond the range. Delete row 10.

What will happen if we delete row 9? Try it.

leaving references to non-existent cells after a *delete* command.

Use the *blank* command to blank out the block from A7 to E9. Now reenter **SUM(A2:A6)** in A7, and then use *replicate* to place it in cells B7 through E7.

Use the */I*, the *insert* command, to create a new column at A for labels.

Now enter **Variable A** in cell A2, **Formula 1** and **Formula 2** in A3 and A4, respectively. Enter **Variable B** and **Variable C** in A5 and A6, and **Total** in A7.

	A	B	C	D	E	F
1		Apples	Apples-1	Apples-2	Apples-3	Apples-4
2	Variable A	5	8	3	4	5
3	Formula 1	1 + B2	1 + C2	1 + D2	1 + E2	1 + F2
4	Formula 2	B3*.65	C3*.65	D3*.65	E3*.65	F3*.65
5	Variable B	11	11	6	7	8
6	Variable C	4	4	10	11	12
7	Total	SUM(B2:B6)	SUM(C2:C6)	SUM(D2:D6)	SUM(E2:E6)	SUM(F2:F6)
8						
9						



## Lesson 5

At this point, use */S* to save your work. This time, let's call it "LESSON5." It will be used later.

Now that you have saved your work, let's try something new. We should start with a fresh worksheet, so use the *zap* command.

As we have seen, doing insertions and deletions at the boundaries of specified ranges creates problems. But because you will often want to add or delete from lists—including, naturally, the beginning or end of the list—here is a useful suggestion.

At B1, enter **TITLE**. From B2 through B4, enter some numbers. At B5, enter "-----". At B6, enter **SUM(B1:B5)**. Notice that our range specification includes our title line and the ledger line (—). This is harmless, because in a mathematical sense, "text" is regarded as having a value of zero.

	A	B	C
1		Title	
2		3	
3		4	
4		5	
5		-----	
6		SUM(B1:B5)	
7			
8			
9			

Now you may *insert* or *delete* with impunity. Enter */Insert, Row, 5*, and add new number. Now *delete* row 2. *Delete* row 5. As you can see, you can add entries or remove entries without concerning yourself about the top and bottom of your column.

By the way, here is an easy way to put in lines of repeating characters like the "-----" you entered in cell B5. The SuperCalc program has a function to repeat text. Go back to cell B5 and enter `'-` and press **CR**.

As you see, the single quote (') causes the display of "-" to be repeated to fill the cell display, and in fact to continue displaying to the right until it meets a non-blank cell. Not bad for three keystrokes. Take a look

at the contents of cell B5. As you see, they are what you typed in.

Experiment with this one a bit. Find some open space and try:

`'123` and press **CR**.  
`'abcd` and press **CR**.  
`'*` and press **CR**.  
`'*` and press **CR**.

And so on. Try your name. . . .

Sometimes you may be working on a complex worksheet with many values which are functions of other values. Because your data may be incomplete, you may mistakenly view some totals or values as significant when in fact they are not yet complete.

Here is what you can do in such cases. Using the example we started above, now enter **NA** into cell B3, for instance. This tells the SuperCalc program that you intend to have a value here at some future time so the value of the cell should be considered as "Not Available" rather than zero. You will see that as soon as we enter **NA**, cell B6 is also flagged as **NA**.

	A	B	C
1		Title	
2			
3		N/A	
4		7	
5		-----	
6		N/A	
7			
8			
9			

**NA** and **ERROR** behave identically; the difference is the display: "NA" or "ERROR". By using **NA**, you inform yourself of the ramifications of any incompleteness or oversights.

You may either *quit* here or continue on to Lesson 6.

What have you learned in this lesson?

In this lesson you have learned:



- How to use the *move*, *insert*, *delete* commands. (/M, /I, /D).
- That those commands automatically adjust your formulas to fit the new worksheet.
- That if you delete cells which are referred to by formulas elsewhere, you get error messages. You learned how to fix that error.
- How to use "" to repeat the display of one or more characters.
- How to use **NA** to make sure that you do not forget to enter important information.





## LESSON 6: Format

By now you have learned many of the basics that you need in order to use the SuperCalc program. You may remember that when we introduced the *format* command, /F, in Lesson 3, we used it to change the display width of all the columns on the worksheet. But the prompt line indicated that there were a number of other options available to us with this command. In this lesson, we will examine these options more closely.

We will use the worksheet that we have been developing in previous lessons. It is the one you saved under the name "LESSON5" in the last lesson.

If you are continuing directly on from Lesson 5, use /Z now, so that you will have a fresh start. Otherwise, bring up the SuperCalc program.

Now load the file, LESSON5.

### Integer Format

Look at your worksheet. Is it displaying formulas? We will want to look at cell *values*, not formulas, in

this example. Use the *global options* command, /G, if you need to change the display.

Look at column B. If it does not contain a decimal fraction (for example, 6.4), enter one.

Enter /F, and note the prompt line: "G(lobal), C(olumn), R(ow) or E(ntry)." This means we can specify whether our format change will affect all cells, a column only, a row only, a cell, or a range of cells.

Let's enter C for column. The prompt line now asks what column we want to affect. Enter the column letter, in this case, B. Press CR.

Now the prompt gives us a great variety of choices, "Define Formats: (I, G, E, \$, RL, TR, TL, D, column width)." Enter I, for *integer* format. Press CR. Look at the entries on the display, and see what happened to the value in B4—and to any other decimal fractions you might have had on your worksheet.

Only the integer portion of the values is displayed. Integer format will round our values to the nearest whole number.

	A	B	C	D	E	F
1		Apples	Apples-1	Apples-2	Apples-3	Apples-4
2	Variable A	5	8	3	4	5
3	Formula1	6	9	4	5	6
4	Formula2	4	5.85	2.6	3.25	3.9
5	Variable B	11	11	6	7	8
6	Variable C	4	4	10	11	12
7	Total	30	37.85	25.6	30.25	34.9
8						
9						



## Lesson 6

Until now we have always used the SuperCalc program's standard or "default" display format to display numbers. That is the "G" or *general* format. We have seen that with general format, numbers too large to display in ordinary notation will be converted to scientific or exponential notation automatically. In *integer* format, numbers too large to display will appear as a series of >>>> s at the cell location. (In fact, whatever the format, >>>> s will be displayed whenever a number cannot be shown. The SuperCalc program will round off as necessary, even if it can only display one significant digit, the E, and the exponent.)

Enter 123456789 at cell B5.

Now reduce the display width to 8. Do you remember how? /F, G, 8.

Notice the >>>>>. Now change the column widths back to 12.

Again enter, /Format, Column, B, CR. This time specify G, for *general* format. Notice that the fractional portion of our data values has been restored.

## Exponential Notation

For scientific or exponential notation, enter /Format, Column, B, (CR), Exponent, (CR). This format displays numbers as a power of 10. For example, 1776 is 1.776E3, or  $1.776 \times 10^3$ ; 1,000,000 is 1.0E6, or  $1.0 \times 10^6$ .

Look at your worksheet. As you can see, the SuperCalc program converted all our data to this format. If the data does not look familiar to you, you may wish to experiment a bit. Enter some ordinary numbers in this column, and watch how the program displays them.

	A	B	C	D	E	F
1		Apples	Apples-1	Apples-2	Apples-3	Apples-4
2	Variable		5	8	3	4
3	Formula		6	9	4	5
4	Formula		4	5.85	2.6	3.25
5	Variable	>>>>>>		11	6	7
6	Variable		4	4	10	11
7	Total	>>>>>>		37.85	25.6	30.25
8						34.9
9						

	A	B	C	D	E	F
1		Apples	Apples-1	Apples-2	Apples-3	Apples-4
2	Variable A	5e0		8	3	4
3	Formula 1	6e0		9	4	5
4	Formula 2	3.9e0		5.85	2.6	3.25
5	Variable B	1.2345681e0		11	6	7
6	Variable C	4e0		4	10	11
7	Total	1.2345681e0		37.85	25.6	30.25
8						34.9



## \$ Format

The next format option may be more familiar to you. Enter **/Format, Global, \$, (CR)**. The dollars and cents format comes into view. Numbers will be rounded to the nearest cent. (Note that the SuperCalc program adds the ".00" to whole numbers, but does not insert a "\$").

We could specify a range of cells—that is, a partial row or a partial column—at this point. Or we could specify a single cell. Let's change the format of C6, the Active Cell. Of course, you could type "C6" on the entry line. Instead, press **,"** or **CR** and see what happens.

The SuperCalc program automatically added C6, the Active Cell, to the entry line. Now enter **E** for Expo-

	A	B	C	D	E	F
1		Apples	Apples-1	Apples-2	Apples-3	Apples-4
2	Variable A	5e0	8.00	3.00	4.00	5.00
3	Formula 1	6e0	9.00	4.00	5.00	6.00
4	Formula 2	3.9e0	5.85	2.60	3.25	3.90
5	Variable B	1.2345679e8	11.00	6.00	7.00	8.00
6	Variable C	4e0	4e0	10.00	11.00	12.00
7	Total	1.2345681e8	37.85	25.60	30.25	34.90
8						
9						

## Individual and Global Format Changes

Let's change the format for a single cell. Move the worksheet-cursor to C6, making that the Active Cell.

Enter **/Format, Entry**. Notice that the prompt line reads, "Enter range".

and press **CR**. Note the change on your worksheet.

Now, suppose we wished to convert all the display back to the "general" format. Could we make a "global" change? Let's try it. Enter **/Format, Global, General (CR)**.

Well, everything has changed, except those cells where we have been changing formats. Why? The

	A	B	C	D	E	F
1		Apples	Apples-1	Apples-2	Apples-3	Apples-4
2	Variable A	5e0	8.00	3.00	4.00	5.00
3	Formula 1	6e0	9.00	4.00	5.00	6.00
4	Formula 2	3.9e0	5.85	2.60	3.25	3.90
5	Variable B	1.2345679e8	11.00	6.00	7.00	8.00
6	Variable C	4e0	4.00	10.00	11.00	12.00
7	Total	1.2345681e8	37.85	25.60	30.25	34.90
8						
9						





SuperCalc program will change all the formats when "Global" is indicated—*except* those that you have specified by the Column, Row, or Entry options. It leaves these untouched, because you set them individually.

level. The next levels, in order, are row, column, and finally the global formats. In this case, the column defaulted to the existing global format because there was no intervening row format.

See if you can "default" the format on C6.

	A	B	C	D	E	F
1		Apples	Apples-1	Apples-2	Apples-3	Apples-4
2	Variable A	5e0	8	3	4	5
3	Formual 1	6e0	9	4	5	6
4	Formula 2	3.9e0	5.85	2.6	3.25	3.9
5	Variable B	1.2345679e8	11	6	7	8
6	Variable C	4e0	4e0	10	11	12
7	Total	1.2345681e8	37.85	25.6	30.25	34.9
8						
9						

What can we do so that "global" changes will include any column, row, or cell that was formatted individually? Column B, for example? If you said we must "undo" the individual format, you were right.

Position the Active cell to column B. Enter /Format, Column, (CR). Now enter D, for default, and press CR. Notice that column B has changed to *general* format.

When a *format* setting that refers to a column or row is defaulted, it changes back to whatever format operates on the next level. An entry level format, entered as a cell or a range of cells, is the "highest"

### Display Format: Right and Left Justification

Enter /Format, Row, 1, CR. You will see these options ("... R, L, TR, TL...") on the prompt line. They allow us to change the setting of right or left justification. The standard or "default" values are left-justified text and right-justified numbers. Let's shift the text on row 1 so that all text entries are right justified. Can you do it? Of course, you can. TR stands for "Text Right".

	A	B	C	D	E	F
1		Apples	Apples-1	Apples-2	Apples-3	Apples-4
2	Variable A	5e0	8.00	3.00	4.00	5.00
3	Formula 1	6e0	9.00	4.00	5.00	6.00
4	Formula 2	3.9e0	5.85	2.60	3.25	3.90
5	Variable B	1.2345679e8	11.00	6.00	7.00	8.00
6	Variable C	4e0	4e0	10.00	11.00	12.00
7	Total	1.2345681e0	37.85	25.60	30.25	34.90
8						
9						



Now that you have done that, let's try another one.

Enter `/Format, Global, L, CR`. All numbers will now be justified to the left.

Format entries may be entered in combination; for example, `/F, G, R, $`. Try this one, and you will see the numbers right-justified in dollars and cents format.

## Graphic Display

We have one more *format* option to try, "graphic" display. Place the Active Cell at C2. Enter `=`, `CR` to put C2 at the upper left of our screen. Enter `/Format, /Global`. Enter the `*` to specify graphic format. We will also need some display space, so enter `75` as our column width. Press `CR`. If your values in column C are less than 75, you will see them represented by bar graphs composed of asterisks. Values greater than 75 will fill the column and the screen width; you cannot tell if they are 75 or larger.

		C
2	*****	
3	*****	
4	*****	
5	*****	
6	*****	
7	*****	
8		

But it is possible to make the column display wider than the screen. The screen is 75 characters wide. You can specify a column width up to 126. Then you can scroll back and forth to see the whole line. You might like to try doing this with column C. Try putting values between 75 and 126 into the column and scrolling to see their display.

This was a very brief look at the *graphic format* option. In practice, you will want to make the graphic display fit within a column width of convenient size and still give a comparison of values. In Lesson 8, we will find out how to do this by "scaling" the values in order to fit them within the column.

There is no need to save our work from this lesson. But remember we will use the file `LESSON5` again, so do not overwrite it.

Now you may either *quit* or continue on to Lesson 7, as you wish.

What have you learned in this lesson?

In this lesson you have learned:

- That formats can be entered globally, by column, row or cell (including a range of cells).
- The Integer, General, Exponential, and \$ formats of display.
- How to change individual column widths.
- How to *default* formats.
- How to alter justification for text or numbers.
- How to transform numerical values into graphic display.





## LESSON 7: Title Lock and Window (Split Screen)

You now know enough about the SuperCalc program and its many commands to put it to practical use. You have used the different *format* options. This lesson adds two more commands to your store of tools.

One of them, *title lock*, is useful if you want to keep a portion of the worksheet locked in place while you scroll the rest of the screen. Although it is called "title lock" because locking titles can be especially useful, any part of the screen can be locked. The other, *window*, lets you "split" your screen and look at different parts of your worksheet at the same time. Let's try them now.

### Title Lock

First, of course, start the SuperCalc program, if it is not already running. Or, if you are continuing directly on from Lesson 6, *zap* the screen so that you will have a fresh worksheet.

Now *load* the file that we saved under the name LESSON5. What can *title lock* do for us? Place the Active Cell at A1. Enter /T. The prompt line asks, "H(orz), V(ert), B(oth), or C(lear)?". The SuperCalc program wants to know which titles you want locked in place.

Press V, for vertical titles.

Now scroll the screen so as to move off the screen to the right. You will see that the titles at the left of our screen are "locked" in place, while the rest of the screen scrolls as usual. The position of the Active Cell when you enter the T command determines how much of the screen will be locked in place.

Use the H option to lock the top row of titles in place.

Move the worksheet cursor down the screen, and watch the information scroll up while the row 1 titles stay in place. Now, go back to A1 by using the = command.

Now let's clear the locked row. Enter /T. Then enter C, for "Clear". We are telling the SuperCalc program that we do not want anything locked. Use the /I command to insert a new row 1 for an additional title. At

	A	B	C	D	E	F
1			Sample Worksheet			
2		Apples	Apples-1	Apples-2	Apples-3	Apples-4
3	Variable A	5	8	3	4	5
4	Formula 1	1 + B3	1 + C3	1 + D3	1 + E3	1 + F3
5	Formual 2	B4*.65	C4*.65	D4*.65	E4*.65	F4*.65
6	Variable B	11	11	6	7	8
7	Variable C	4	4	10	11	12
8	Total	SUM(B3:B7)	SUM(C3:C7)	SUM(D3:D7)	SUM(E3:E7)	SUM(F3:F7)
9						



## Lesson 7

C1, enter **Sample Worksheet**.

This time let's lock both the horizontal and vertical titles with one command. Position the Active Cell at A2. Enter /T. Enter B, for "Both". This locks column A and rows 1 and 2.

Move the worksheet cursor down and to the right to make the display scroll both up and to the left. Note that rows 1 and 2 and column A stay in place.

### Window—Split Screen

What if you want to view two widely separated areas of your worksheet at the same time? The *window* command will allow you to do this. We will use one of the sample programs on your SuperCalc program disk to demonstrate *window*. But we will need to have a new worksheet.

Use the *zap* command to clear everything.

Now let's load that sample program. Use /L and enter the file name, **BALANCE**. **BALANCE** is a complete sample SuperCalc worksheet. We will study it more closely later. For now, just scroll to column N, and notice that we have columns representing months and total column for the year.

Go back to A1, and scroll down to row 24 to see "Net Income". Go back to A2. Now move the Active Cell to column D. This will designate where we wish to "split" the screen.

Enter /W, for window. The prompt reads, "H(orz), V(ert), C(lear Split), S(ynch), or U(nsynch)". We are going to split the screen vertically into two separate display windows, so enter V.

Notice that now, starting at column D, there is a second set of row numbers. This is the left-hand border of our new display. You should realize that the worksheet itself has not been split. We have simply created two display windows through which to view it. Either window may now be scrolled independently.

	A	B	C		D	E	F
1		This is a Sample S		1			
2				2			
3		Jan	Feb	3	Mar	Apr	May
4	<b>ASSETS</b>			4			
5	Acct.s Receivable	1000.00	1050.00	5	1102.50	1157.63	1215.51
6	Cash	250.00	500.00	6	525.00	551.25	578.81
7	Unsold Goods	250.00	262.50	7	65.63	289.41	303.88
8				8			
9	Total Assets	1500.00	1812.50	9	1693.13	1998.28	2098.20
10	<b>LIABILITIES</b>			10			
11	Acct.s Payable	1000.00	916.67	11	833.33	750.00	666.67
12	Storage Costs	50.00	50.00	12	50.00	50.00	50.00
13	Labor	100.00	105.00	13	110.25	115.76	121.55
14	Materials	50.00	52.50	14	55.13	57.88	60.78
15				15			
16	Total Liabilities	1200.00	1124.17	16	1048.71	973.64	898.99
17				17			
18	<b>NIBT</b>	300.00	688.33	18	644.42	1024.64	1199.20
19	Dep. Allowance	100.00	100.00	19	100.00	100.00	100.00
20	Taxable Income	200.00	588.33	20	544.42	924.64	1099.20



Scroll the display and notice that the right-hand window remains still.

Now press the ";" key. This will transfer us to the "other" window. Regardless of which window we are working in at a given moment, the ";" key will serve to move us over to the other.

Instead of splitting our screen into a right and a left half, we could split it horizontally. In fact, we can do this without having to return to a single window display. First set the Active Cell at the point at which you wish to split the screen horizontally. For our example, move the Active Cell to row 15 and then enter /Window, H.

When you wish to remove the split screen, enter /W and then C for clear split.

The S option indicates to the SuperCalc program that we wish to scroll both windows in a "synchronized" fashion. That is, we want them to scroll simultaneously. Let's try it.

Split the screen vertically at D again, but now enter /W, S. Now scroll the displays together. To "unsynchronize" the displays so that only one window will scroll at a time, enter/W,U.

With split screen in effect, each window has its own "global" identity for both the *global options* and *format* commands. For instance, we could specify for-

	D	E	F	G	H	I	J	K
1								
2								
3	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
4								
5	1102.50	1157.63	1215.51	1276.28	1340.10	1407.10	1477.46	1551.33
6	525.00	551.25	578.81	607.75	638.14	670.05	703.55	738.73
7	65.63	289.41	303.88	319.07	335.02	351.78	369.36	387.83
8								
9	1693.13	1998.28	2098.20	2203.11	2313.26	2428.92	2550.37	2677.89
10								
11	833.33	750.00	66.67	583.33	500.00	416.67	333.33	250.00
12	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
13	110.25	115.76	121.55	127.63	134.01	140.71	147.75	155.13
14	55.13	57.88	60.78	63.81	67.00	70.36	73.87	77.57
	A		B	C	D	E	F	G
15								
16	Total Liabilities		1200.00	1124.17	1048.71	973.64	989.99	824.78
17								
18	NIBT		300.00	688.33	644.42	1024.64	1199.20	1378.33
19	Dep. Allowance		100.00	100.00	100.00	100.00	100.00	100.00

Press ";" to place us in the lower screen, and scroll down so we can see Net Income. Press ;. Move the cursor to B5 and change the value. Watch as recalculation takes place. Within moments you will see the Net Income change in the lower window.

mula display in one window and cell value display in the other. Similarly, we could use *format* to specify General format in one window and Integer in the other. We could even look at the same data, if we wished, in two different formats at once.

## Lesson 7

Enter /W,U. Scroll both displays to show January through April. Now change to display formulas for one side of the screen. Enter /W,S. Now you can scroll through the data in one window and compare it to the formulas as you go.

What have you learned in this lesson?

In this lesson you have learned:

- How to lock any number of rows or columns in place so that they will remain in place while the rest of the screen scrolls.

	A	B	C	D	E
1	This is a Sample SuperCalc Worksheet				
2					
3		Jan	Feb	Mar	Apr
4	<b>ASSETS</b>				
5	Acct.s Receivable	1000.00	1050.00	1102.50	1157.63
6	Cash	250.00	500.00	525.00	551.25
7	Unsold Goods	250.00	262.50	65.63	289.41
8					
9	Total Assets	1500.00	1812.50	1693.13	1998.28
10	<b>LIABILITIES</b>				
11	Acct.s Payable	100.00	916.67	833.33	750.00
12	Storage Costs	50.00	50.00	50.00	50.00
13	Labor	100.00	105.00	110.25	115.76
14	Materials	50.00	52.50	55.13	57.88
15					
16	Total Liabilities	1200.00	1124.17	1048.71	973.64
17					
18	<b>NIBT</b>	300.00	688.33	644.42	1024.64
19	Dep. Allowance	100.00	100.00	100.00	100.00
20	Taxable Income	200.00	588.33	544.42	924.64

The *window* and *title lock* affect the way our worksheet is displayed. The effect is temporary and may always be reversed. When you *save* your worksheet to a disk, the *title lock* and "split screen" information is included; When you load your work back to the screen, it will look exactly as it did before.

If you want to take a break now, use *quit* to exit from the SuperCalc program.

- How to split the screen, either horizontally or vertically, into two windows and how to move back and forth from one "window" to the other.
- How to "synchronize" the windows.
- That you can specify different *global* display options (cell values or formulas) and Global level *format* options for each window.



## LESSON 8: Graphic Format Option & Recalculation Options

In this lesson we will look more closely at some of the options available with two of the SuperCalc program's most powerful commands, *format* and *global options*. By now you have enough experience to appreciate what they can do for you. We will need to start with a fresh screen—so use *zap* if you are continuing directly from Lesson 7.

We touched briefly on graphic representation of data in Lesson 6 and promised that you would learn more about it. Now it's time to work a bit with it, so that you will feel confident to try it with your own data. Let's enter some numbers in column A, from row 2 to row 20; use numbers between 1 and 50.

	A
1	45
2	3
3	12
4	50
5	23
6	13
7	8
8	31
9	29
10	6
11	43
12	21
13	9
14	17
15	25
16	36
17	48
18	23
19	7
20	41

Now enter `/Format, Column, A, CR, *, 50, CR`.

We have done two things—we have changed to graphic display, and we have increased the width of column A to 50, in order to accommodate our largest number.

Suppose we wish to have the number itself display as well. Try this: Enter `/F, C, A, CR, Default, CR`. Enter `/G, D, F` to show formulas. Enter at B1, the "formula", A1. Enter `/Replicate, B1, B2:B20`.

	A	B
1	45	A1
2	3	A2
3	12	A3
4	50	A4
5	23	A5
6	13	A6
7	8	A7
8	31	A8
9	29	A9
10	6	A10
11	43	A11
12	21	A12
13	9	A13
14	17	A14
15	25	A15
16	36	A16
17	48	A17
18	23	A18
19	7	A19
20	41	A20

Enter `/F, C, B, CR, *, 50`. Enter `/G, F`.





Now we have a one-for-one graphical display. But what if the values we wish to display are as large as 600 or 1000? Let's put a "scaling" formula into column B, so our largest value will be equal to the column width. You may remember from Lesson 6 that we could make column B longer—up to 126 characters—but it would be difficult to view beyond the screen width, so we may as well leave it at 50 characters.

If we divide any value in column A by the maximum value within our sample from A1 to A20, the result will express its *size* (relative to the maximum). And since our maximum, whatever it is, will be represented by 50 characters (\*) of display, we can multiply the size by 50 to determine our "scaled" value.

Now we have an opportunity to use another built-in function: *Max*. The value of *Max* will be the largest value within the specified range or list. We will use *MAX* to scale our graphic displays so that they are relative to the maximum value. Our formula will look like this:  $A1*50/MAX(A1:A20)$ .

	A	B
1	45	$A1*50/MAX(A1:A20)$
2	3	$A2*50/MAX(A1:A20)$
3	12	$A3*50/MAX(A1:A20)$
4	50	$A4*50/MAX(A1:A20)$
5	23	$A5*50/MAX(A1:A20)$
6	13	$A6*50/MAX(A1:A20)$
7	8	$A7*50/MAX(A1:A20)$
8	31	$A8*50/MAX(A1:A20)$
9	29	$A9*50/MAX(A1:A20)$
10	6	$A10*50/MAX(A1:A20)$
11	43	$A11*50/MAX(A1:A20)$
12	21	$A12*50/MAX(A1:A20)$
13	9	$A13*50/MAX(A1:A20)$
14	17	$A14*50/MAX(A1:A20)$
15	25	$A15*50/MAX(A1:A20)$
16	36	$A16*50/MAX(A1:A20)$
17	48	$A17*50/MAX(A1:A20)$
18	23	$A18*50/MAX(A1:A20)$
19	7	$A19*50/MAX(A1:A20)$
20	41	$A20*50/MAX(A1:A20)$

Enter /G, F. Enter  $A1*50/MAX(A1:A20)$  at B1. Now we will use one of the *replicate* options. Enter /R, B1, B2:B20 and the , for options. Enter A, for "A(sk for Adjust)". Respond Y for "yes" for the first A1, then N for "no" for the other two values in the formula.

If you would like to see what your formulas look like, use /G, F. Your formulas should look like this.

Enter /G, F to return to the graphic display. Our graph looks the same but now change the value in any cell to, say, 75. Notice that all the other lines are "scaled", relative to 75. Enter 150.

You may wish to save this example for your own use later. Use *save* and call the file GRAPH or something easy to remember.

Now let's change our formula to scale from the minimum to the maximum value in A1 through A20. Go to B1 and use *edit*. We will insert new information into the formulas:

$$A1-MIN(A1:A20)*50/MAX(A2:A20)$$

Move the cursor to the left and put in (, then move right to the \* and insert 13 spaces. Then, replace the blanks with  $-MIN(A1:A20)$

*Replicate* it for A2 through A20, using the *ask* option. Be careful to adjust only the first cell reference in the formula.

Enter /G, F. Notice how the results of this formula differ from those of our first formula. Try different values to test and verify your work.

### Recalculation Options

If you enter a new value in column A, notice that the program takes considerable time to go through all the necessary recalculation of formulas. It may take even longer with a larger worksheet, because the Super-Calc program recalculates automatically every time we enter a new value.

We can suspend that automatic recalculation. Enter /G, M. Now try entering new numbers for the graph.

As you can see, the time required for their entry is greatly reduced.

This is fine, but what does "manual" recalculation



mean? Certainly, we don't do it ourselves with pencil and paper. How can we get the SuperCalc program to do it? By now you have used almost every option offered. You may have wondered from time to time just what the "!" is for.

Besides its usual exclamatory function in text, "!" has a very special meaning to the SuperCalc program: Pressing ! "forces" a recalculation.

Try pressing !.

Manual mode allows you to make periodic recalculations at your convenience. When you wish to re-establish automatic recalculation, enter /G, A for "automatic".

## Order of Recalculation

When the SuperCalc program recalculates, it does so in a certain order. You can change that order. Usually, the order of calculation will not affect the results of your recalculations, and you can ignore it. But there are times when it can make a difference. Let's explore this problem.

First, use *zap* to get a fresh worksheet.

Enter 4 into cell A1, 6 into A2, and SUM(A1:A2) in A3. Now enter A3 into B1.

Look at the values. Everything seems fine. A3 and B1 both display 10. Now change the value in A1 to 3.

Observe that B1 does not yet contain the 9, which is the new result in A3. Why?

The SuperCalc program recalculates row by row. First row 1, then row 2, then 3, and so forth. Obviously, A3 was still 10 when B1 referenced its value during recalculation.

Now enter /G. The prompt line now says, "F(orm), N(ext), B(order), T(ab), R(ow), C(ol), M(an), A(uto)?"

We have just determined that in our example recalculation should proceed column by column, so let's enter C. This will change the order of recalculation.

Enter 5 in A1. And now everything seems to work, because the SuperCalc program is proceeding down

columns as it recalculates. Both A3 and B1 display 11.

It is possible to create a situation where neither order of calculation can give us current values in all cells.

Here is an example. First, *zap* the worksheet.

Enter 5 in cell A1. In C1, enter A1. In A3, enter A1. Now go to B2 and enter C1 + A3. You can see a problem coming up, can't you?

Of course, at the moment all looks fine—C1 and A3 display 5, B2 displays 10. Now go to A1, and enter 4.

Cells C1 and A3 display 4, which is correct. But B2 has 9. When it was calculated, one of the cells was 4, the other was 5.

Change the order and try again. /G, C. Then enter 6 in A1. C1 and A3 show 6, but B2 shows 10. When it was calculated, one cell had 6 and the other had the leftover 4.

Press !. Now B2 has 12, the correct value. You have forced a second recalculation and have the correct value.

This example is unrealistic and improbable. Still you should be aware that it is possible to create situations involving out-of-order references, which give misleading values.

In a case like this one, we can press ! and cause a second recalculation, which gives us the correct values. (You see that you can use "!" in automatic mode as well as in manual mode. Generally, of course, you don't need to).

Cases of out-of-order references like this one are called "forward" references, because the reference is "forward" to a value not yet recalculated. They can occur in actual worksheets, perhaps because a worksheet is especially complex or because it has been amended or changed in ways very different from its original design.

A real-life example of forward reference might happen like this: You build a worksheet with a table of expenditures by category (columns) and locations (row). You SUM the rows and columns to get totals. Everything works fine. Later, you add a table comparing various category and location totals. Everything still works fine, because you know where the second table should be. Then, someone else adds new material to the worksheet, and moves one of



Lesson 8

your tables to a new location . . . . Now the comparison table shows incorrect values, but they might seem reasonable.

One way to check for such cases is to press ! and see if any value changes. If so, it is time to re-do the worksheet.

The "circular" reference is another case that you will certainly want to avoid. Here is an example:

First zap the worksheet. Now in cell A1, enter 1 + B1. It shows as 1, since there is nothing in B1. In cell B1, enter 1 + A1. Suddenly you have 3 and 4. Got the idea? Press ! a few times, and watch the values increase. They will never stop changing, because there is no logical place to stop calculating.

You might like to experiment by making up some forward or circular references and trying them out.

When you wish, you can quit—or you can zap these offending formulas into the oblivion they deserve,

and go on to the next lesson.

What have you learned in this lesson?

In this lesson, you have learned:

- How to make practical use of the \* *format* option for the graphic display of data by scaling values to fit the display width.
- The difference between the "manual" calculation option and automatic recalculation.
- That the ! key causes a recalculation to occur when you press it.
- What order of calculation means, and how to change it by using the *global options* command.
- What a forward reference is, and how to use ! to get the correct value for such a case.
- What a circular reference is, and that there is no correct value for such a case.

NOTES

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## LESSON 9: Output

We have worked with all but one of the SuperCalc commands and have come to appreciate the power and flexibility of the SuperCalc program and its electronic worksheets.

But so far we can't photocopy those worksheets, put them in a binder, or have them reformatted later into some special report layout. In this lesson, we will discuss the *output* command. It makes those things possible.

The *output* command will make a copy of our worksheet and send that copy to any of three places, depending on our specification. We can send the "output"—that is, the copy of all or part of our worksheet—to our computer system's printer which will print it out immediately. Or we can send it to the "console", our terminal, where it will temporarily replace the usual SuperCalc display. Or we can send the output to a disk drive; in this case, the output will be "saved" or "stored" as a special sort of disk file, *different* from the ones we have created in the past with the *save* command.

Let's try this new command now. First, be sure that you have a fresh worksheet. Start up the SuperCalc program, or use *zap*, if necessary.

Now *load* the file that we created in lesson 5. (You may have made some practice files of your own. This is the one we stored as LESSON5.)

Enter `/O`. Now the prompt line reads, "D(isplay) or C(ontents)"

Display means that the output will reproduce exactly what you see on the screen. Let's try that first.

Enter `D`.

You see that the prompt line requests the range of the material you wish to **Output**. Let's specify the range a little differently. Enter **ALL** for the range. This is the same as `A1:Last Col/Row`, which describes the entire worksheet. Press **CR**.

The prompt now says,

Enter Device: P(rinter),S(etup),C(onsole),or D(isk).

Enter **C**, and the report will be listed on your screen or Console. If your report is several pages the SuperCalc program displays them one at a time. Pressing **CR** will display or print the next page; **CTRL-Z** will return you to the SuperCalc worksheet. There may seem to be no reason to output your document to the console, but sometimes you may want to check your output before printing it.

Notice that you retain the borders on your display output. To exclude the borders from your output enter `/Global`, then **B** for **Border** before you enter **Output**. To bring them back, enter `/Global,Border` again.

Now let's try sending output to the printer, printing only part of the worksheet. We will use a range specification that is a little different than the one we used earlier. *Be sure your printer is turned on.* (If you don't have a printer hooked up to your system, just skip to the next example.)

Enter `/Output,Display,A1:D8,CR`. Then enter **P** to output to the Printer.



You're probably wondering how you can utilize some of your printer features, such as compressed type or bold print, or how to print on continuous forms. Or maybe you want to change the format of your printed page. Never fear, there is a way.

Enter **/Output,Display,All**. (Remember **ALL** is equivalent to **A1:Last Col Row**), then **S** for **Setup**. Your display changes to show you four options:

**L**(ength), **W**(idth), **S**(etup Codes), or **P**(rint)

and their default values. **Length** changes the number of lines the SuperCalc program outputs per page; **Width** is the number of characters per line output; and **Manual Setup** codes are a sequence of characters, probably control characters, that need to be sent to your printer to initiate special functions. For example, on some printers you can get compressed type, (which allows you to get more characters per inch) by sending a control sequence before printing. To do this you would enter, for example:

**/Output,Display,ALL,Setup,Setup,CTRL-O,CR,Width,233,Print.**

This command line sets the printer to print compressed type, increases the number of characters per line (if you want to print more than 132 characters), and prints. These parameters are in use until you change them or quit the SuperCalc program. When entering manual setup codes, enter the actual control sequences, *not the Hex values* for those sequences. *Make sure your printer is turned on and on line.*

Let's try something else. Enter **/Output,Contents**, and specify **A1:F7** for the range. Enter **P** for **Printer**. If you don't have a printer enter **C** for **Console**.

The content report gives us a list of the actual contents of the specified cells, and any special format for each cell. The contents will be quite different from what you see on the worksheet. The output will look the way the Active Cell contents do when displayed on the Status line.

The last option is **D** for **Disk**. In some ways it is like the value option of the **Save** command, but not really. When you choose this option your display is output to a disk file, but the resulting disk file is different from the normal SuperCalc file. The file is an exact copy of what would be output to a printer, in **Ascii**, or character, format, with a **.PRN** extension rather than **.CAL**. The disk file has the same parameters as created in **Setup**; and therefore can be printed later with whatever print utility you want to use and in the format that you want.

The **.PRN** files, or "print" files can be very useful. You can print or edit **.PRN** files using system programs. You can use a text editor or a word processing program to add information and notes, to reformat your reports, or to incorporate your reports within another document being edited by changing the extension and just loading the file in. These edited reports can then be printed.

What have you learned in this lesson?

You have learned:

- How to send "output" to a printer, the console, or a disk file.
- How to "setup" for special printers or report formats.
- The difference between display and content reports and how to specify them.
- The use of **.PRN** files in other programs and documents.
- How to turn off the border display.



## SuperCalc Examples

### *Overview of Lessons 10, 11, and 12*

The lessons in this chapter present three simplified but realistic sample SuperCalc worksheets. You will find the worksheets on your SuperCalc disk. They let you see how the things that you have learned in Chapter 6 as separate SuperCalc capabilities can be combined in useful ways.

By now you know enough about the SuperCalc program to be able to use it without step-by-step instructions. With these example lessons we will give you some general guidance and let you put what you have learned to work.

Experiment with the sample worksheets. Make changes and see their effects. You will find that some changes to values of formulas will have only minor effects on the rest of the worksheet, but others will have major consequences. It can be surprising to see how even a slight change in a percent figure in one formula can make a great difference to the final total.

This sort of experimentation is what helps make "intuition visible," as we suggested in the first chapter. You will find it useful in developing your own work.

These examples deal with different subjects. One is a balance sheet projection, one calculates the break-even point for a project, and one does engineering calculations to specify requirements for an "air curtain." (An air curtain can be used to separate two locations of different temperatures, such as separating a walk-in freezer from the rest of a room. Since you can walk right through the air curtain, you don't have to worry about anyone leaving the door open.)

Experiment with all the examples, even if the subject matter is outside your area of interest. The techniques used in the samples are general techniques, and you can transfer them easily to your own work. In fact, you may be able to use one or more of the sample worksheets as a model for your own.





## LESSON 10: A Projected Balance Sheet

This example is called BALANCE. It will look familiar because we used it in Lesson 7.

Make sure you Zap your worksheet. Load BALANCE now by entering /Load,BALANCE, A11.

Now let's get a closer look at it. What can you find out about it? How far does the information extend? Is there a title lock present? How is it formatted?

Move your cursor to the right until you find the last column of data. The last column is N. Now move the cursor down to the end of column N. The data ends at row 25. An easier way of determining the size of a worksheet is by looking at "Last Col/Row:" on the Status Line. This shows you the lower right hand corner of your worksheet.

Notice that while you were scrolling, the titles scrolled too. There is no title lock.

How about format? GoTo B3. The status line says: P Text = "Jan. What does this tell us? The "P" indicates that the cell is protected, and if you have a terminal so equipped you will have noticed that this cell, as well as the other labels in row 3 and column A, are half intensity. Also notice that there are no spaces between the double quotes and the "Jan", but the text is right justified. The format must be Text-Right (at least for row 3). Enter /Global,Formulas. Notice that the formulas are also right justified rather than left, as they normally are. This means that the whole worksheet is formatted TextRight. Formulas are displayed like text. Enter and the formulas will again be left justified.

Most of the figures shown are formulas. Notice that the figures for the months of February through December are either formulas that depend on prior months column consists of formulas only. This worksheet looks like a simple projection dependent on the month of January.

Try changing a few of the constant values.

You will notice that slightly modifying constant values, such as Storage Costs (row 13), or content relationships, such as Taxes (row 23), have a fairly predictable effect. But slightly changing the expected percentage of increase in sales (row 5) can have a more marked effect.

There are other places where a slight change in a value will have a significant effect because it causes a change in trend. For example, observe rows 5, 6, 7, 14, 15.

What is the effect of a decline in Accounts Receivable? Will it be an increase in labor costs? No, Labor is a constant.

As we said, this example is realistic, but simplified. This is a typical worksheet developed to get a quick impression of a possible project or the prospects for an existing project. You could adapt the example for similar projects of your own.

For many applications, it would be more realistic to assume seasonal changes than it is to assume constant changes (like the 5% sales growth). You might see what happens if you make sales and their associated values rise in summer and fall in winter.

In a more realistic forecast, other values might change at intervals. Storage costs might increase in the middle of the year. Taxes might rise when sales increased beyond a certain level.

You can use the SuperCalc conditional function IF to test a total value and increase the tax rate when the total exceeds a certain amount. One way to do this is to test the Taxable Income figure in row 21 for each column.

Try this experiment. Let's say that if the taxable





income is greater than \$1800, the tax rate rises from 30% to 32%. Insert a row at 23 by entering **/Insert,Row,23,CR**. At A23 enter the **"Tax Rate**. Now enter the following formula at B23:

**IF(B21<1800,.3,.32)**

Replicate the formula, without options, across the row from February through December by entering **/Replicate,B23,C23:N23 CR**.

The tax rate will be 30% when the taxable income is \$1800 or less and, 32% when the income is greater. In what month does the rate increase? To avoid having to do a lot of scrolling to find out, **GoTo A4** and enter **/Title,Both**. Now jump back to row 23. As you can see you have retained the column headings. Scroll until you find the change in tax rate in October.

Now change the taxes (row 24). Change B24 from **.3\*B21** to **B23\*B21** by moving your cursor to B24 and using **Edit (/Edit,CR)**. Now **Replicate** it from February through December. This new formula now reflects the change in tax rate.

This is what you have learned in this lesson:

- How to determine the characteristics of a worksheet.
- How to use the default option of the **Format** command.
- How to use the **IF** statement.
- The advantage of using **Title** locks.



## LESSON 11: Break-Even Analysis

The idea behind a break even analysis is a simple one. When you market a product, there are two kinds of costs. There are fixed costs, such as development and overhead; and there are variable costs associated with making the product, such as parts and labor. When you sell the product, you want to price it in such a way that you recover your fixed costs, your incremental, or variable costs, and make a profit. The break even point is the point where you switch from loss to profit.

If you haven't already done so, Zap the worksheet from Lesson 10.

This example is called BRKEVN. Load it and see what it looks like.

Enter /Load, BRKEVN, All.

The setup is simple. Let's step through an example. You will probably want to set recalculation to Manual mode until you have entered all of the variables. Otherwise there is more of a delay between each entry for recalculation. Enter /Global, Manual.

Set the retail price in B3 and the discount rate in B19. Enter any numbers you wish. In B18 set the quantity increment, such as 50, 100 or 1000, or whatever is suitable for the sale of the particular product. Then, enter your fixed and variable costs. At this point, calculate the results with ! and see the break even point. How did we do?

Now let's tinker a bit and see what happens. You may want to return to automatic recalculation at this point by entering /Global, Automatic.

Try changing some of the fixed costs, then some of the variable ones.

You will notice, for example, that increasing fixed

costs delays the point where you break even, but does not have a great effect on your eventual profits. Changing variable costs has a continuing effect.

Try changing Retail Price and Discount. You can see how the profits can mount up if you chose right,—or how miserable the prospects are if you chose wrong.

If you're making successive changes to a cell you might try entering /Global, then N for Next. This disables the use of return for moving the cursor in the current direction. Notice that the direction arrow at the very left of the status line is now gone. This way you can make successive changes to a single cell without moving the cursor back every time. If you wish to move the cursor simply press the arrow keys.

Now let's look at how the worksheet is built. Set formula display by entering /Global, Formula.

Take a look at column C, Units Sold. C2 starts with B18, which is quantity increment. C3 is C2 plus quantity increment, and so on down the column. The formula for each value consists of the value above plus the increment.

Is there an easy way of accomplishing this?

Yes. Enter the initial quantity in C2 and C2 plus the increment in C3. Then Replicate the formula in C3 down the column using the Ask for adjustment option. Enter /Replicate, C3, C4: C254, A. You will then be asked whether to adjust each of the cells referenced in the formula being replicated. For C2 answer Y, for B18 answer N.

Now look at column D, Profit and Loss. These formulas may look rather forbidding, but once we have figured them out, we will see that the calculation is straightforward.



Let's start with a look at D2. The formula is:

$$C2*B3*(.01*(100 - B19)) - (B9 + B16*C2)$$

Scrolling down that column, we see that the other formulas are similar. In D3, the formula has C3 in place of C2, but all other values are the same. This pattern continues. For each entry in column D, column C refers to the adjoining Units Sold value.

So the formula in D2 starts out with Units Sold times Retail Price (that is,  $C2*B3$ ).

The  $.01*(100 - B19)$  simply subtracts the discount rate (B19) from 100 and makes it a percentage. If B19 contains 40, then  $.01*(100 - B19)$  is equal to 60. In other words, this expression is the percentage of our retail price that we get to keep. It is our wholesale price.

What about  $-(B9 + B16*C2)$ ? B9 is the sum of our fixed costs. B16 is the total variable costs.  $B16*C2$  is the total variable costs (B16) times the units sold for this particular row.

So the formula in D2 turns out to be quite straightforward: it is the Units Sold  $\times$  Price - Cost.

Like the other examples in this chapter, this worksheet is realistic but simplified. You can use it "as is" in order to get a general idea of the effects of pricing policy on a product or to do short-term forecasting. But in actual marketing, costs and prices change.

There are two ways that you might adapt this worksheet to show the effect of changes in prices and costs.

One way is to put changes at intervals in the worksheet. For example, have the numbers in the worksheet represent the cost for a 6 month interval of production. Change your costs, prices, and even your incremental values for production (you are producing more efficiently).

A second way is to use conditional expressions as described in the prior lesson on the Projected Balance Sheet. You could test the number of units produced. Based on that test, you could specify adjustment factors for prices and costs. Then you multiply your price and cost information by the adjustment factors, and refer to the adjusted figures in your other formulas.

This is what you have learned in this lesson:

- How to use the Global recalculation options Manual and Automatic.
- How to use the Next option of the Global command.



## LESSON 12: Air-Barrier Engineering Worksheet

This example is called BARRIER. Although it is based on an actual engineering application, you do not have to know anything about engineering in order to understand this example. This example is used to demonstrate a key SuperCalc feature, the LOOKUP function, as well as other functions, which can be of great value to you in your work.

The Barrier example represents part of a larger worksheet for specifying air-conditioning equipment. It is not complete in itself. BARRIER lets you change five of the values used in determining installation requirements for equipment that generates an air barrier or "air curtain". An air barrier is a stream of moving air that separates two areas of differing temperatures. It basically performs the same function as a freezer door.

Zap the worksheet from Lesson 11. Load BARRIER from your SuperCalc disk. Take a look at it.

These are the 5 values that you can change:

- D5 Cold Storage Room Temp.
- D6 Entry Design Temp.
- D8 Door Height, Inside
- D9 Door Width, Inside
- D21 Plenum Velocity

When you change these values, these cell values change: D7, D10-D20, D23, and D24.

Try entering a number. As you can see, there is no recalculation. The worksheet is set for manual recalculation. Can you explain why?

The reason is that there is no point in calculating until all the values have been entered.

Here is one way this worksheet—or one similar to it but more complete—might be used. A salesperson could enter the customer's installation requirements in D5, D8, and D9, and put trial entries in D6 and D21 for different available equipment. By looking at the results in D23 and D24, the salesperson could immediately determine which equipment could do the job.

Moreover, the salesperson could vary some of the requirements and see how much of a margin is left in the specification. For example, if the Temperature Difference (dT) is increased by 5 degrees, could the equipment still handle the job?

The Output command could also be used to print out several variations of the worksheet to show the customer.

Make some changes and see their effects. Remember to press the "!" for recalculation.

Earlier we said that this worksheet demonstrates the LOOKUP function. How does the LOOKUP function work? Display the formulas by entering /Global,Formulas and notice the equation in D19:

"LOOKUP(D9,H5:H23)"

Using the value you have in D9, the LOOKUP function searches the list of sequential numbers in the range H5:H23 and finds the interval where D9 fits. For example: if  $D9 = 7$ , the LOOKUP function searches the list and finds that the value of D9 is less than 8 and greater than or equal to 7. For the result it takes the value of the cell immediately to the right of the number less than or equal to D9. Therefore the slot width would be 2.6. GoTo H5 and see how the table is set up.

Let's look at the LOOKUP function in another way and demonstrate another feature of the SuperCalc program: "nested" IF statements. "Nested" IF's are used when you have several conditions you want to check in order to perform certain operations. You can have as many nestings as will fit in the space of 116 characters. If there are more than 126 characters in your formula, or you are searching a sequential list, then use LOOKUP either as a substitute, or a part of, your formula. If you would like to try it, enter this into D15:

IF(AND(D9 >= 2,D9 < 3),1.5,IF(AND(D9 >= 3,D9 < 4),1.75,IF(AND(D9 >= 4,D9 < 5),2,IF(AND(D9 >= 5,D9 < 6),2.2,LOOKUP(D9,H9:H23))))))



You can use any function or formula in any part of the IF statement, including the other conditional statements.

This worksheet demonstrates other functions as well, such as trigonometric functions, the square root function, and the use of the carat (^), or two asterisks (\*\*), to raise numbers to an exponent. Set the width of column D to 35 by entering /Format,Column,D,35,Cr. You can see a SQRT in D12, trigonometric functions at D18 and D19 and the use of an exponent (^) at D23 and D24.

This is what you have learned in this lesson:

- How to use the LOOKUP function.
- How to create a "nested" IF.
- How to use other functions.



**PART III: SUPERCALC REFERENCE**

## Summary Reference

### Creating Command Files

Command files contain instructions used by the **eXecute** command. The character strings contained in the file represent *exactly* the characters that would be typed at your terminal while in the SuperCalc program.

This is how a command file is created:

Command files can be created using a text editor or word processor, or by using the SuperCalc program. Each line of the file contains *exactly* the keys you would press to execute a specific command within the SuperCalc program. Every operation available to you in the SuperCalc program is also available for use in an executable command file. This includes cursor movement (represented by ^, v, <, > for up, down, left, and right), and data entry. One exception to this is the **Edit** command which should only be used as the last command in your command file.

Now let's create a file of commands.

The first thing you might like to do in your command file is to **Zap** the worksheet. If we were to enter this command in the SuperCalc program the entry line would look like this:

```
24 > /Zap-ENTIRE-Workwheet?Y
```

The keys that were actually pressed to accomplish this were **/ZY**. So, on the first line of the command file you would have **/ZY**. Let's try another. If we were to format column A to be 20 characters wide the entry line would look like this:

```
21 > /Format,Column,A,20
```

The keys that were actually pressed were **/FCA,20**. So, on the second line of the command file you would have **/FCA,20**. Each line represents the exact keys pressed for a specific command. A completed command file looks like this:

```
/ZY
/FCA,20
/LB: BALANCE,A
/GF/GM/FGD,$
/IR23
= A23
"Tax Rate
/P
> IF(B21 <= 1800,,3,.32)
/RB23,C23:N23
= B24
B23*B21
/RB24,C24:N24
/GF!/ODALL,C
```

If you look at this file closely you will find that it contains the commands found in Lesson 10. You may also notice that on line 4 of our file we have combined three commands. This is because carriage returns are not required after **/GF** and **/GA** for execution. Using unnecessary carriage returns would advance the worksheet cursor spuriously, thus easily losing your place on the worksheet.

You can also create a command file in SuperCalc. Each command line is entered as text, then the file is saved. You should save your SuperCalc command file two ways: 1) by using the **Output** command and creating a **.PRN** file that can be read by the **eXecute** command, and (2) by using the **Save** command to save the file for editing later. If you have not created a **.CAL** file you cannot edit your command file using SuperCalc. **.PRN** files are not loadable by the SuperCalc program. (*Before you create a .PRN file remember to remove the borders. The eXecute command cannot read a .PRN file with borders.*)



## Command File Execution

**/X**(Execute) , File name  
CR for directory , **CR**

The **eXecute** command allows you to execute a text file of command strings created by a text editor. When you enter **/X** the prompt line changes to:

Enter filename (or <RETURN> for directory)

If you press **CR** you will be given the options for directory which are explained in **/Delete**. If you enter a filename the SuperCalc program reads each of the commands in the specified file and executes them a character at a time. If the file is not in the proper format or a command is in error, an error condition is displayed on the Status line and the **eXecute** command is aborted. You can also terminate the command by pressing **CTRL-Z**.

Note: The default extension for command files is **.XQT**. If your file has no extension you must have a period at the end of the file name.

Example:

**/X**(execute),**TEST1 CR**





## Summary Reference

This part of the guide provides reference information with different levels of detail. The next section includes basic information about commands and their use, data entry, the current-cell reference key, in-line editing, and formula adjustment. It also has a condensed reference to SuperCalc's "/" commands. You can use the chapter as a memory jogger, to quickly check general points.

Chapter 9, "Detailed Reference," provides more in-depth reference information. Topics include "Data Entry and Data Display," "Status, Prompt, and Entry Information," "Formulas and Functions," and "The / Commands."

### *When In Doubt, Ask!*

When you are using the SuperCalc program and you need information about your current entry options, press the "?" key. The display screen will change to show you a list of entries that you may make relative to your present position within SuperCalc. This help function is available at any time—in any mode. Press any key to return to the previous display.

### *Moving Around the Worksheet*

There are several ways to move the worksheet cursor to a new Active Cell. You can use the four arrow keys. (Similarly, you can use the alternate diamond keys. Hold down the *Control* key while you press the **s**, **d**, **e**, or **x** key to move left, right, up, or down.)

Or you can use the `=/address/` command—also called the *go to* command—to move directly to the designated cell. The SuperCalc program will ask for the cell address. When you enter it, the display on your screen will change. If the designated cell is already on the display, it will show as the Active Cell. If not, the window will move to show the new Active Cell at the upper left corner. There is a special case. If you enter only `=CR`, the window will be adjusted to show the current Active Cell at the upper left.

### *Current-Cell Reference Key (ESC)*

The current-cell key is the ESC (escape) key. When you press it, the SuperCalc program puts the location of the active cell onto the entry line for you to use in a command or expression. After you press the current-cell key, the arrow and alternate diamond keys control the worksheet cursor. If you move the worksheet cursor, the Active Cell address on the entry line changes dynamically to reflect the new location. When you press ESC again, the address stops changing, and the arrow and diamond keys can again be used for editing.

Pressing ":" after the Active Cell address is a special case. The SuperCalc program places another Active Cell address after the colon. The address before the ":" is fixed; the address after the ":" can still be dynamically changed.

The new Active Cell location is temporary. When you press CR to enter the command or expression, the worksheet cursor will return to the prior active cell location. If you are entering data into a cell, it will go into that prior location.



## Data Entry

The SuperCalc program accepts numbers, formulas, and text. Ordinary numbers can have 16 significant digits plus a decimal point. Scientific, or exponential, numbers can have 16 significant digits and a decimal point, all raised to a power of ten. The limit is the 63d power of 10. Text can have up to 110 characters. Formulas can have up to 110 characters and can include arithmetic expressions, relational expressions, functions, and references to cells. The next chapter, "Detailed Reference" will give you further detail on data entry.

## In-Line Editing

Once you begin to type a command or data on the entry line, the four arrows—and the alternate diamond keys—no longer move the worksheet cursor around the worksheet. Instead, you can use them to edit information on the entry line. You can always correct your commands or data while they are on the entry line. The /Edit command allows you to use the edit process, and enter the changed contents into the Active Cell after you have committed an entry to the worksheet.

Left and right arrows (or CNTRL s and d) move the data-entry cursor non-destructively across the entry so that the cursor can be positioned where the change is to be made.

Because a cell can contain 110 characters, which is longer than can be shown on the entry line, the SuperCalc program will scroll your entry during the edit process, allowing you to examine any portion of it.

Wherever the cursor is, a new character can be entered to replace the old one. The cursor then moves right one location.

Down arrow (CNTRL x) deletes a character each time it is pressed. The cursor stays in position.

The Up arrow (CNTRL e) inserts a new space at the cursor location each time it is pressed. The cursor stays in place, and spaces fill out to the right of it. The space(s) can then be filled with additional characters.

Remember, what you see on the entry line is what gets entered into the Active Cell. When you finish

making your changes and enter the data or execute the command, SuperCalc takes *everything* on the entry line, not just the material to the left of the cursor.

## Recalculation

The ! command forces recalculation. In manual calculation mode, the command is the only way to have the program recalculate values. In automatic mode, it provides an additional recalculation.

## Moving From Window to Window

The ";" command moves the worksheet cursor from one portion of a split window display to the other portion. See the /Window command.

## The "/" Commands

All other commands consist of / and a single letter. SuperCalc's interpretive prompting fills out the rest of the word, and the prompt line lists the options available. These commands are summarized on the following pages and described in detail in the next chapter.

## Formula Adjustment

Some commands cause formulas to be moved into new locations. It is usually desirable to have formulas adjusted for their new locations. For example, cell D4 has the formula "+B4\*C4". If the contents of cells B4, C4, and D4 are moved to T7, T8, and T9, the formula in T9 should read "+T7\*T8". The SuperCalc program ordinarily makes such adjustments automatically.

For some commands, options allow you to move formulas without adjustment, or to be queried so that you can choose for each cell reference of each formula whether or not it should be adjusted. Some commands also have an option to move values only; formulas are not transferred, only their values.



## Condensed Reference to the /Commands

### /Blank

Blank the contents and clear the formatting of a cell, partial column, partial row, or block.

### /Copy

Make a one-to-one copy of a cell, partial column, partial row, or block to a new location. Options give a choice of formula adjustment or copying values only.

### /Delete

Delete a column or a row; automatically adjust the rest of the worksheet.

### /Edit

Edit the contents of a specified cell and place them in the Active Cell.

### /Format

Specify formatting for a cell or group of cells, a column, a row, or the entire worksheet. Choices (one or more):

#### *Numeric display.*

Integer notation (value rounded to integers).

Ordinary notation, if it will fit, or scientific notation.

Scientific notation.

Dollar amount (rounded to nearest cent, ".00" appended to whole numbers).

Right or left justify, text or numerical values.

Graphic display, using \*s to represent the number.

*Text display.* Left or right justify.

*Column width.* Specify number of characters for one column or all columns.

### /Global

Set worksheet options:

Options

Display/Suppress borders

Display values of formulas or formulas

Recalculate automatically/on request

Tab over/through protected data

Set order of recalculation as columns across/rows down

Set or clear auto-advance in current direction.

### /Insert

Insert a new empty column or row; automatically adjust the rest of the worksheet.

### /Load

Load the worksheet contents and settings from a disk file. You may load all or part of the worksheet at a location you specify. Options give a choice of formula adjustment or of loading values only.

### /Move

Move a column or row to a new location; automatically adjust the rest of the worksheet.

### /Output

Write all or part of the worksheet to the printer, the terminal, or a disk test file. Options allow writing the displayed information or the contents of cells.

### /Protect

Protect the contents and formatting of a cell, partial column, partial row, or block from change.

### /Quit

Exit from SuperCalc to the system; optionally, save the worksheet.

### /Replicate

Make a one-to-many copy of a cell to a group of cells, a partial column to a group of partial columns, or a partial row to group of partial rows. Options give a choice of formula adjustment or of replicating values only.

### /Save

Save the worksheet contents and all settings on a disk file. Options give a choice of saving all contents or values only.

### /Title

Lock columns, rows, or both into their place on the display window. Other information will scroll; these will remain fixed.



Summary Reference

**/Unprotect**

Remove protection from the contents and formatting of a cell, partial column, partial row, or block.

**/Window**

Split the display window into two portions,

horizontally or vertically. Each portion can have separate format settings and options.

**/Zap**

Set entire worksheet to empty cells and clear all settings. (Overrides protected cells.) Equivalent to a fresh start.

**NOTES**

Lined area for notes, consisting of approximately 20 horizontal lines.



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