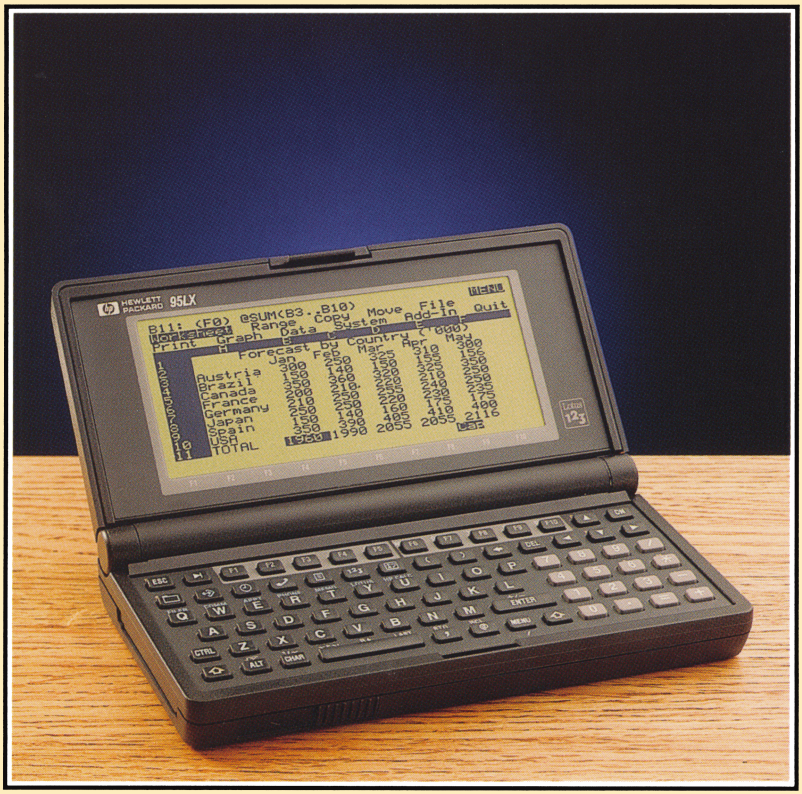
LOTUS *In Minutes*



on the

HP 95LX Palmtop PC

LOTUS *In Minutes*

on the **HP 95LX** Palmtop PC

by

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P.O. Box 2449
Corvallis, Oregon 97339-2449

Acknowledgments

Printed in the United States of America
ISBN 0-931011-34-5

First Printing – November, 1991

To Matt, Maggie, Chris, Mom and Dad, Sid, Carol, and Terry.

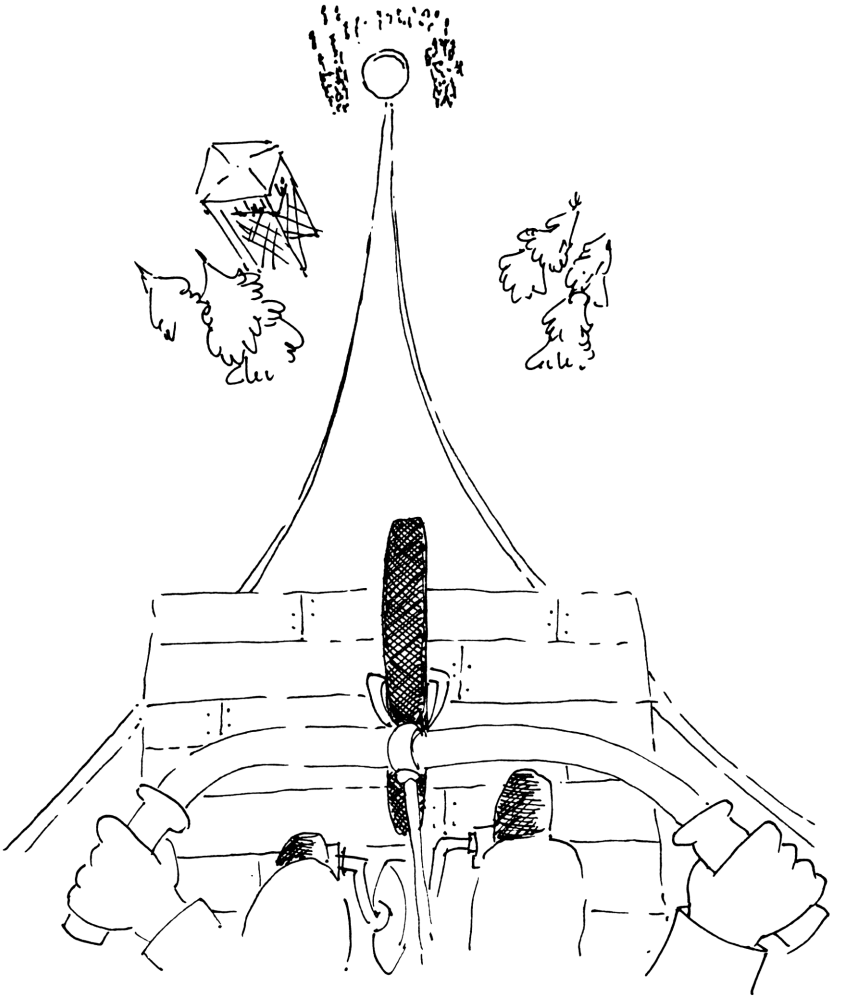
CONTENTS

What You Need For This Course

Lotus in Minutes is designed as a self-study course. Although the book will anticipate many of the questions and problems you may have, it's still not quite the same as having a "real, live person" there to resolve every difficulty. So it's important to make sure you have all the equipment you need before beginning.

To complete this course successfully, you will need:

- An HP 95LX palmtop computer.
- A printer (dot-matrix or laser).
- The 4-pin to 9-pin serial cable that comes with the Connectivity Pack (HP Part#82222A).



Overview

Before you plunge into this book, take a minute to get a clear idea of what you're going to read and how it will help you.

What This Book Is About

Many computer books are frustrating because they present material awkwardly, often arranging topics alphabetically for reference. Unfortunately, that's not the way you learn. That approach doesn't tell you what's important and when you need it.

Lotus In Minutes is different. Yes, it's designed to be used for reference later (notice the Quick Reference at the back of the book). But it also gives you a quick *tutorial* course on the essential commands and procedures you need to be a self-sufficient user of Lotus 1-2-3 on the HP 95LX:

1. You'll learn commands and techniques in order of their usefulness and importance.

2. You'll get "real-world" instruction—mistakes and all—so you can see how problems occur and how to correct them.

3. You won't be swamped with information. Each topic is presented on either one or two complete pages.

4. You'll focus on practical techniques useful in your everyday work.

Class Distinction. In a class, you have to go at the instructor's pace. With *Lotus In Minutes* you can go at your own pace, spending all the time you want on a topic until you're comfortable with it. And you can stop and take a break anytime and pick it up again later, too!*

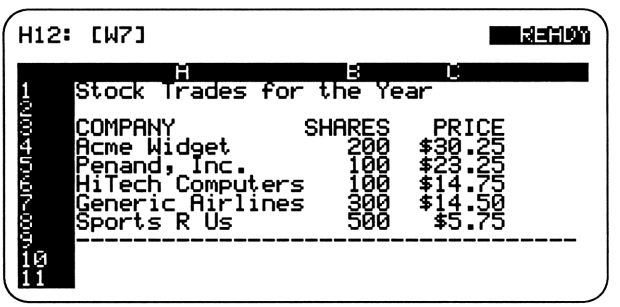
*The other difference between a class and *Lotus In Minutes* is that here, you have to supply your own coffee (which is probably better than the stuff they'd give you in class, anyway).

The Goal Of This Course

How do you create functional, accurate, and attractive worksheets to help you get your work done? How do you analyze, manage, and graph your data? These are the questions this book will answer. You'll see:

- How a worksheet takes shape.
- How problems occur and how to fix them.
- How to change your mind.
- How to improve the appearance of the worksheet.
- How to sort and locate data, and much more.

In just a couple of hours, you'll create a sample worksheet to track stock trades.* You'll create it, correct it, improve it, print it—exactly what you'll do when working on your own projects. So it's important to go through the lessons *in sequence* to get a feel for the process.



*Don't worry if you're not in the stock market—the techniques you'll learn in creating this worksheet apply to all Lotus 1-2-3 worksheets. And if you *are* in the stock market, you've got bigger things to worry about, anyway.

How This Course Is Taught

On most pages, you'll be introduced to a topic, then given an exercise to practice. For example (don't do this now; just notice the format):

Exercise: Change the width of the current column to 18.

Solution: *Select:* /Worksheet Column Set-Width
Type: 18 [ENTER]

The *Select* instruction tells you what sort of commands you'll need. To select each command, you get the command menu by pressing [/], then either move the pointer to the command and press [ENTER], or type its initial letter. If you make a mistake or want to cancel a selection, you can "get out" with the [ESC] (Escape) key.

In the above example, then, you would press the [/] (Slash) key (or the [MENU] key which acts like the [/] key in Lotus), then select the Worksheet, Column, and Set-Width commands, in sequence. Then the *Type* instruction tells you to type a specific word or number, pressing either the [ENTER] key (as shown above) or one of the arrow keys ([▼], [▲], [◄], or [►]) when you finish.

What You See Is What You (Should) Get. A screen image will usually follow the instructions, to show you what effect the correctly completed command will have on your worksheet.

1: Learning The Basics

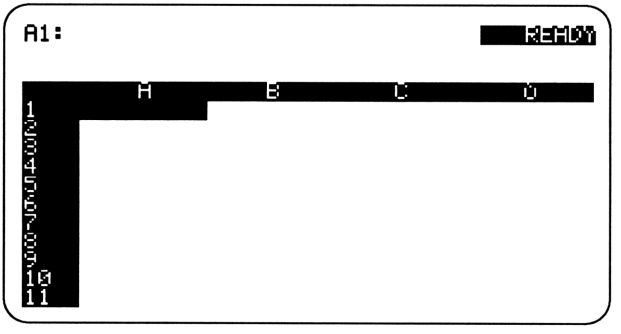
Here's where you learn how to start the 1-2-3 program, what it can do for you, and how to find help with its commands and features.

Starting The Program

Easy As 1,2,3. The sooner that cliché is out of the way, the better. Now then: You start the 1-2-3 program simply by pressing [123].

Exercise: Start the 1-2-3 application.

Solution: *Select:* [123].



So, what can you do with a blank worksheet? You can do a lot....

What 1-2-3 Can Do

Spreadsheets. 1-2-3's spreadsheet commands let you create attractive, powerful worksheets that do a wide variety of calculations. For example, you could find your average bowling score. Or, if the boss is watching, you could analyze company sales for the first two quarters:

Acme Manufacturing

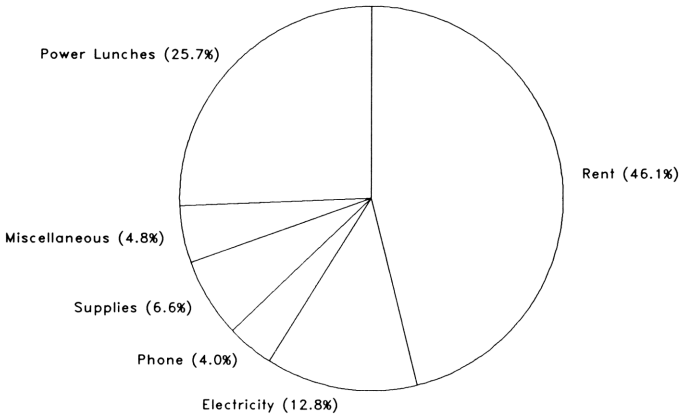
Plant	1st Quarter	2nd Quarter
New York	$375,055	$389,942
Atlanta	$483,007	$538,821
St. Louis	$392,146	$436,418
Chicago	$436,887	$373,390
TOTALS	$1,687,095	$1,738,571

Databases. A database in 1-2-3 is an arrangement of information in rows and columns, where each row is treated as an individual *record.* Using 1-2-3's database commands, you can do lots of very handy things with the records—like sorting and searching them. For example, you could maintain a database of your favorite records and tapes. Or, if the boss is still watching, you could create an office inventory:

Upstart Widget Company - Office Inventory

ITEM	MODEL	TYPE	PURCHASED	PRICE
Desk	Executive	F	14-Jan-90	$395.00
Chair	Snoozer	F	14-Jan-90	$477.95
Lamp	SuperGlare	F	16-Jan-90	$185.55
Computer	El Cheapo	E	18-Jan-90	$1,895.50
Waste can	Hi Capacity	F	22-Jan-90	$42.50
Printer	Screecher	E	03-Feb-90	$420.60

Graphs. 1-2-3's graph commands allow you to create pie, bar, and other graphs that turn your numbers into clear patterns and easy-to-understand "bottom lines." For example, you could plot your golf score as a function of temperature. Or, if you-know-who is *still watching* (doesn't this guy ever take a break?), you could examine operating expenses for the month of January:

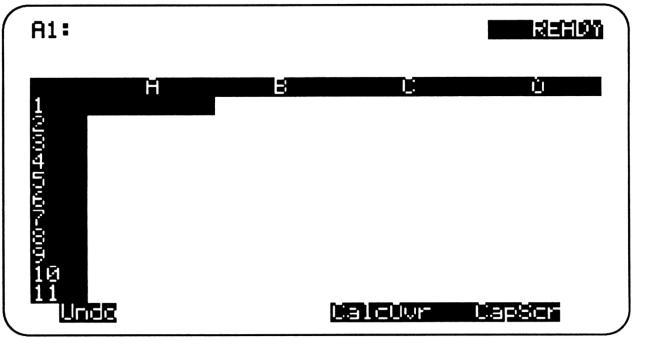


All For One.... The point here is that 1-2-3 is an *integrated* program: you can do all three kinds of data analysis (spreadsheet, database, and graph), *using the same data.* That is, you can analyze, sort, and graph from a single set of data on a worksheet—*simply by selecting the appropriate commands.*

To see how the program works, look now at where the action takes place—the worksheet.

The 1-2-3 Worksheet

The worksheet is where you enter your data. It is laid out in 8192 rows and 256 columns—more than adequate for most applications (even your golf scores). The first 26 columns are labelled A–Z; the next 26, AA–AZ; the next 26, BA–BZ; and so on, all the way to column to IV (column 256). Rows are simply numbered 1–8192.



Each intersection of a row and column forms a *cell*—a place where you can put data. The location of each cell is its *address*. For example, the address E5 identifies the cell at column E, row 5.

The highlighted bar is the *pointer*. Right now, the pointer is in cell A1 (also called the Home cell). The purpose of the pointer is to show where the information you type will be entered on the worksheet. You can move the pointer with the arrow keys (and with other keys you'll see in this lesson).

The Control Panel. At the top of the screen is the Control Panel. This three-line area gives you useful information, including the location of the pointer (called the current cell) and the contents of that cell. It also displays the command menu when you press / (or MENU).

Also, in the upper right, you'll see the mode indicator. It tells you what type of action you may perform. Right now, the mode is READY, telling you that the program is ready for you to enter data on the worksheet.

Other Indicators. At the bottom of the screen, 1-2-3 can display several other indicators, some of which are shown in the previous diagram:

- UNDO: Indicates that you can cancel your last operation by pressing ALT–F4 (Undo). You'll learn more about Undo in Chapter 4.

- CAP (turned on/off by pressing ⇧–CAPS): If it's on, any letters you type will be uppercase.

- SCR (turned on/off by pressing ⇧–SCRL): If it's on, the worksheet, rather than the pointer, will appear to move when you press an arrow key.

- CALC : Indicates that formulas in the worksheet need to be recalculated; press F9 (Calc) to recalculate.

- OVR (turned on/off by pressing ⇧–INS): If it's on, 1-2-3 will replace the character at the cursor with the new character you type (Overstrike mode). If it's off, 1-2-3 will insert the new character you type to the left of the cursor (Insert mode). Leave it off.

Moving The Pointer

Now that you're acquainted with the neighborhood, take a little tour. To move around the worksheet, you move the pointer. Here are some of the most common ways to move it:

- The arrow keys—▲, ▼, ◀, and ▶—move the pointer one cell.
- ↑-PG UP and ↑-PG DN move the pointer one screen (11 rows) up and down.
- CTRL-▶ and CTRL-◀ move it one screen right and left.
- ↑ HOME moves it to cell A1.
- F5 (GoTo) lets you move it to a particular cell address.

Relocation Assistance. Here are some exercises to give you practice moving the pointer.

Exercise: Move the pointer to cell A2.
Solution: *Press:* ▼

Exercise: Move the pointer to A13.
Solution: *Press:* ↑-PG DN

Exercise: Move the pointer to cell R129.
Solution: *Press:* F5 (Go To)
Type: r129 ENTER

Exercise: Move the pointer to cell A1.
Solution: *Press:* ↑-HOME

Getting Help

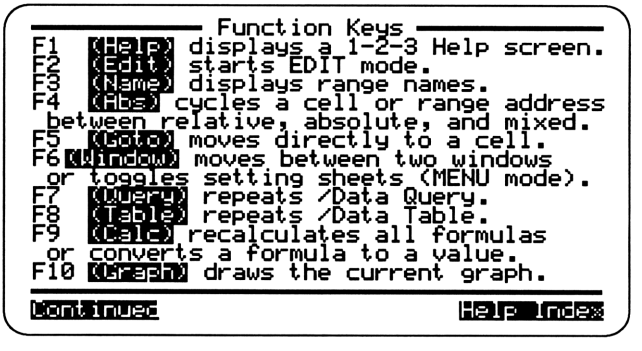
Although you're going to get plenty of "coaching" with the really essential commands in this book, you may want to try others on your own. When you're "flying solo," you can find help by pressing F1 (Help). The Help feature gives you quick reminders on many topics.

Exercise: Get help in using the function keys.

Solution: *Press:* F1 (Help)

Move: Cursor to **Function Keys** (use arrow keys)

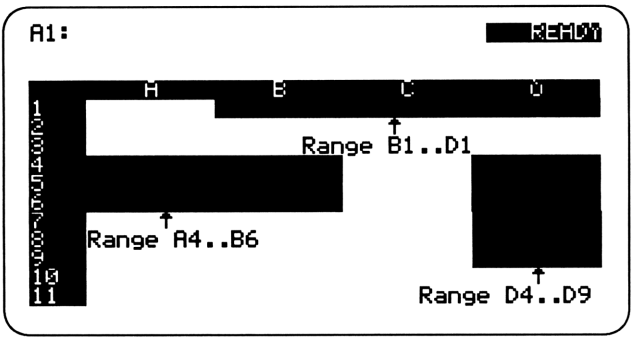
Press: ENTER



Each highlighted word or phrase is a link to further information. Use the arrow keys to select one of the highlighted topics and press ENTER. If, in the middle of an operation, you press F1 (Help), the program takes you directly to a help screen *on that particular operation.* If that's not what you wanted help with, just select **Help Index** and find the one you want. To exit the Help screen, press the ESC key.

Understanding Ranges

Home, Home On the Range.* In many 1-2-3 operations, you'll be asked to enter a *range* of cells, that is, a rectangular *group* or *block* of cells. For example, if you want to copy a set of numbers, you must tell the program which cells to copy—that is, where those numbers are located. Look at these examples of ranges:



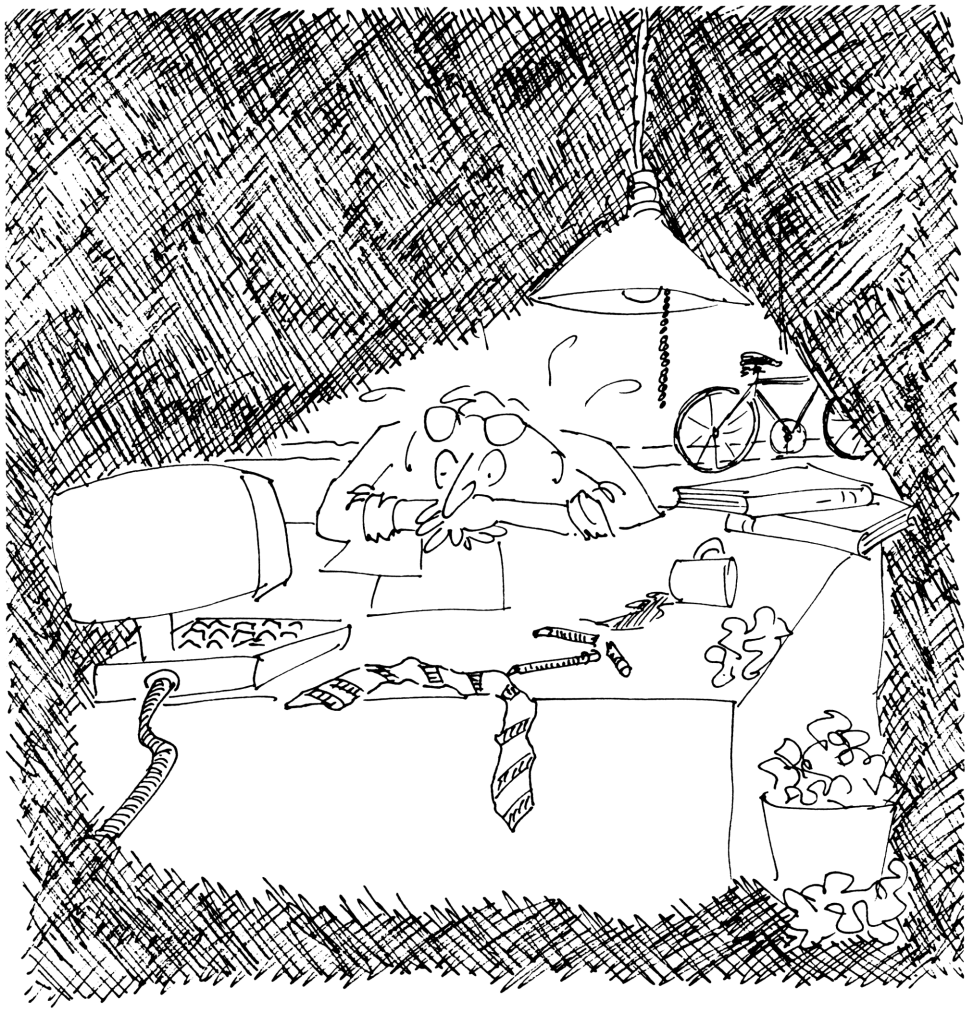
Get the idea? To specify a range, you can type the *first* and *last* cell addresses, separated by two periods. And the "direction" doesn't matter: D2..R2 is the same as R2..D2.

Stretching the Point. Another way to specify a range is to "stretch" the pointer with the arrow keys, so that it covers that range, then press ENTER. The advantage of this method is that you can easily see if you're making a mistake. You'll get a chance to use both of these methods in the upcoming exercises.

*Sorry—another required cliché.

Quick Review Of "Learning The Basics"

- The 123 key takes you directly to the 1-2-3 worksheet.
- 1-2-3 lets you perform spreadsheet analysis, databases operations, and graphing. Each of these three kinds of analysis can use the same data from a single worksheet.
- A cell address specifies a particular column and row intersection.
- The pointer shows where the data you type will be entered.
- To get help on 1-2-3 topics, press F1 (Help).
- You can specify a range by typing its first and last cells, separated by two periods, or by "stretching the pointer" with the arrow keys to cover the range.



2: Setting Up A Worksheet

Creating a worksheet is rarely a smooth process. You'll change your mind, make mistakes, etc. But here's where to begin—learning how to enter data and adjust the appearance of the worksheet.

What You Can Put Into A Cell

Into a worksheet cell you can enter *labels, numbers, formulas, and functions.*

A *label* is any item that contains letters or other non-numeric characters (such as & or !). So Expenses for 1990, Office, and T are labels. Even if an item begins with a numeral, it's still a label if it contains any non-numeric characters: 4X and 1200 Main Street are also labels.

A *number* represents a quantity. 12.3 is a number; 7C is not.

A *formula* is a math expression that you create to perform calculations.

A *function* is a built-in formula that 1-2-3 provides to handle calculations in finance, statistics, and other specialty areas.

Numbers, formulas, and functions are often referred to as *values,* so you can enter either a *label* or a *value* into a cell.

Don't Forget Your Keys. After you type a label or value, you enter it into the current cell by pressing either the ENTER key or an arrow key.

If you use ENTER, the pointer remains in the current cell; but if you use an arrow key, the pointer moves to the next cell. So if you're entering a row or column of data, using an arrow key will save you one keystroke for each entry.

Entering A Label

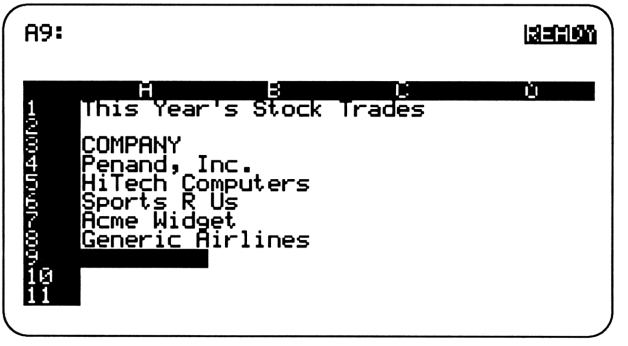
In this course, you'll create a worksheet that includes labels, numbers, formulas and functions. To begin, start with labels.

Exercise: Into cell A1, enter this label:

This Year's Stock Trades

Solution: *Move:* Pointer to A1
Type: This Year's Stock Trades ▼

Now continue, entering all the labels shown below (all in column A). Be sure to skip row 2. When you're finished, your worksheet should look like this:



Cell Inspection. Some labels appear to occupy two cells. But do they? Check the contents of cell B5 by moving the pointer there. Now look in the Control Panel.... B5 is *empty.* The long label you entered in A5 is *fully contained in that one cell.*

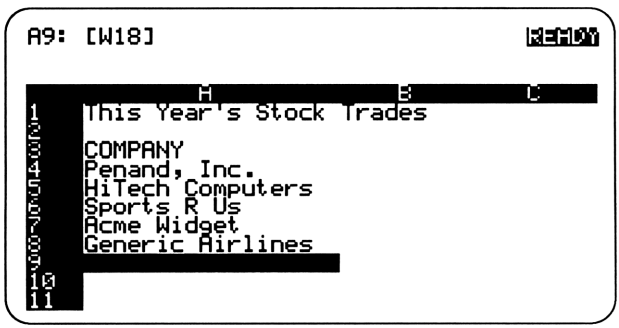
Changing Column Widths

As you just found out, the label in A5 occupies only one cell; it just doesn't *look* that way on the screen. And when you enter data into column B, the worksheet will get messy, as the entries in column B will block out parts of the labels in column A. So although the real contents of the cells aren't affected, your ability to read your worksheet is.

Going Wide. To fix this, you can simply *widen* column A so that all your labels have room. Columns start out being 9 characters wide, but you can change them to any width between 1 and 120 characters.

Exercise: Widen column A to 18 characters.*

Solution: *Move:* Pointer to column A
Select: /Worksheet Column Set-Width
Type: 18 [ENTER]



Note that the Control Panel now displays [W18], reminding you that you've changed the width of the current column to 18.

*Reminder: you press / or [MENU] to bring up the Command Menu. Then, to select a command, either move the pointer to it and press [ENTER], or type its initial letter.

Label Prefixes

Now, what's the difference between the *real* content of a cell and its *apparent* content (which can sometimes be quite different)?

Exercise: Determine the real content of cell A1.

Solution: *Move:* Pointer to A1

The (Pre)Fix is In. Looking at the Control Panel, you'll see that the real content of the cell is 'This Year's Stock Trades. *Notice the apostrophe* (you didn't type this). It's one of three label *prefixes* that tell 1-2-3 whether to place a label at the left, center, or right in the cell. The label prefixes are:

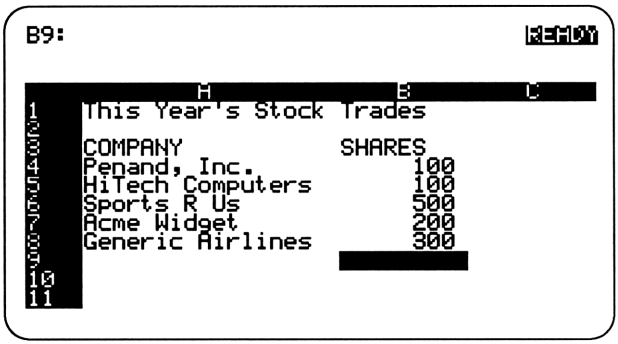
' = Left ^ = Center " = Right

Left alignment is the *default;* if you don't type a label prefix, 1-2-3 will add the apostrophe in front of your label. So if you want the label to appear centered or right-aligned, you must type ^ or " before the label.

Entering Numbers

Entering numbers is no different than entering labels: you just type the number and press ENTER or an arrow key.

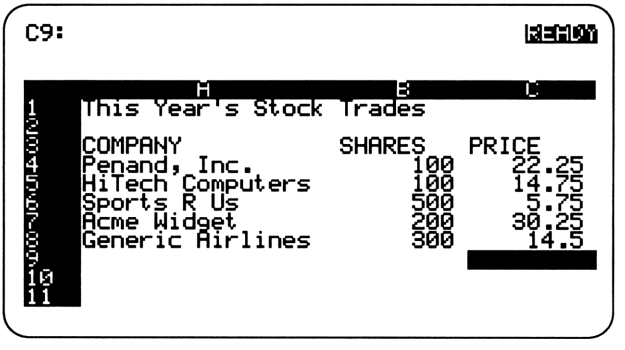
Exercise: Enter the label SHARES into cell B3. Then enter the number of shares for each stock in cell B4 through B8, as shown below:



Location, Location, Location. The main visual difference between a labels and a number is its location within the cell. Labels are positioned on the left—unless you change them to be centered or right-aligned. But numbers are always aligned on the *right* (yes, you could put a label prefix in front of a number to change its position, but it would then become a label and have no numerical value).

Changing Number Formats

Exercise: Enter the label PRICE into C3. Then enter the share price for each stock in C4 through C8, as shown below:



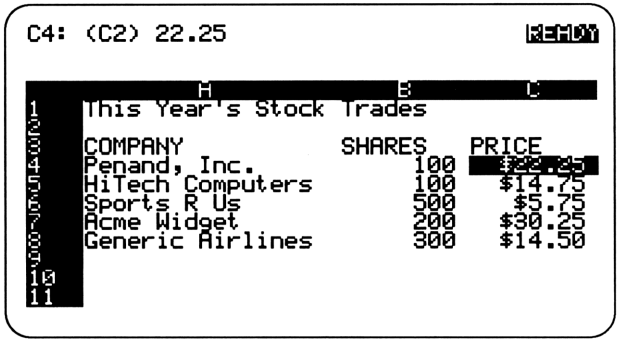
Unless you specify otherwise, 1-2-3 will display numbers in *General format:* numbers will appear as you type them, but without trailing zeroes. So 22.25 is displayed as 22.25, but 14.50 is just 14.5. Below are examples of some of the ways you can format the number 13.50:

General:	13.5
Fixed, three decimals:	13.500
Scientific, four decimals:	1.3500E01
Currency, two decimals:	$13.50
Percent:	1350%

Making Cents Of Your Data. Since these prices are dollar values, you will probably want to display them as such.

Exercise: Format the share prices to appear as dollars and cents. This time, specify the range by stretching the pointer.

Solution: *Move:* Pointer to C4
Select: /Range Format Currency
Type: 2 [ENTER]
Press: [▼][▼][▼][▼][ENTER] to specify range C4..C8



1-2-3 indicates the format of a cell in parentheses in the Control Panel. Here, (C2) means Currency format with 2 decimal places.

Driving Home the Point. The Point method you used above is usually the better way to specify a range. It minimizes mistakes by letting you see the range before going ahead with an operation. So remember that although the exercises in this book all tell you to type a range, you can always use the Point method instead.*

*The pointer must be "anchored" to the current cell before you can stretch it (otherwise it will move from cell to cell). If you ever find that it's not anchored, you can anchor it by typing a period ([.]).

Entering Dates And Times

Dates are an important part of many worksheets. On your worksheet, for example, you'll want to enter the buy and sell dates for each stock. But instead of applying the date format after you've entered the dates, you can format the range first. This way, when you enter the dates, they'll be displayed in a form that makes sense to you.

1-2-3 provides five formats for dates. Here's how each of them would display January 14, 1992:

1	(DD-MMM-YY)	14-Jan-92
2	(DD-MMM)	14-Jan
3	(MMM-YY)	Jan-92
4	(Long Intn'l)	01/14/92
5	(Short Intn'l)	01/92

Exercise: Use date option 2 (DD-MMM) to format the range that will contain the buy and sell dates.

Solution: *Select:* /, Range, Format, Date, 2
Type: d4..e8 [ENTER]

Since you haven't entered the dates yet, you don't see any change on the worksheet. But if you move the pointer to any cell in the range, the Control Panel will indeed show (D2) as the format.

Your First Date. To your eyes, a date may appear as 14-Jan-92, or 1/14/92. But to 1-2-3, that date is 33617. This *date number* is the number of days since "Day 1" (which is January 1, 1900).

To enter a date so 1-2-3 can understand it, you need to use the @DATE *function,* one of the program's special pre-written formulas. With most functions, first you type @, then the function name, and then (in parentheses) an *argument.* The argument here is the year, month, and day. So to enter January 14, 1992, you would type @DATE(92,1,14).

Exercise: Enter the label BUY into D3, and SELL into E3. Then enter the buy dates into cells D4 through D8, and the sell dates into E4 through E8, as shown on the left, below. (The dates will appear in the DD-MMM format you just specified, as shown on the right below.)

	D	E
1		
2		
3	BUY	SELL
4	@date(92,1,14)	@date (92,5,20)
5	@date(92,4,1)	@date (92,4,3)
6	@date(92,5,9)	@date (92,11,5)
7	@date(92,7,30)	@date (92,8,29)
8	@date(92,10,13)	@date (92,12,12)
9		
10		
11		

	D	E
1		
2		
3	BUY	SELL
4	14-Jan	20-May
5	01-Apr	03-Apr
6	09-May	05-Nov
7	30-Jul	29-Aug
8	13-Oct	12-Dec
9		
10		
11		

Changing Times. Similar to dates, times must be given in the form of *time numbers,* where 12:00:00 midnight is Time 0. So, to enter a time, you need to use the @TIME function, specifying the hour, minute, and second as the argument. For example, to enter 9:30 pm, you'd enter @TIME(21,30,00). As you can see, you must enter times based on a *24-hour clock.*

Aligning Labels

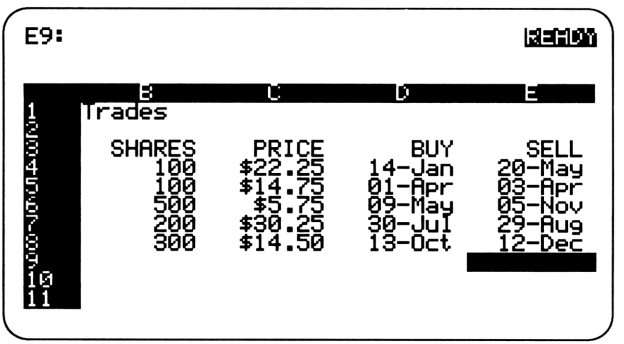
Before going ahead, take a moment to correct a problem that often occurs when setting up a worksheet. You can see the problem in columns **B** through **E** on your worksheet.

Since numbers are right-aligned and labels start out left-aligned, your headings don't always line up with the numbers below them. You could have typed the Right label prefix (") in front of those labels before you entered them. But you've already entered them, so now what?

To realign existing labels, use the /**R**ange **L**abel command.

Exercise: Realign the headings in columns **B** through **E** so that they appear on the right side of the cells.

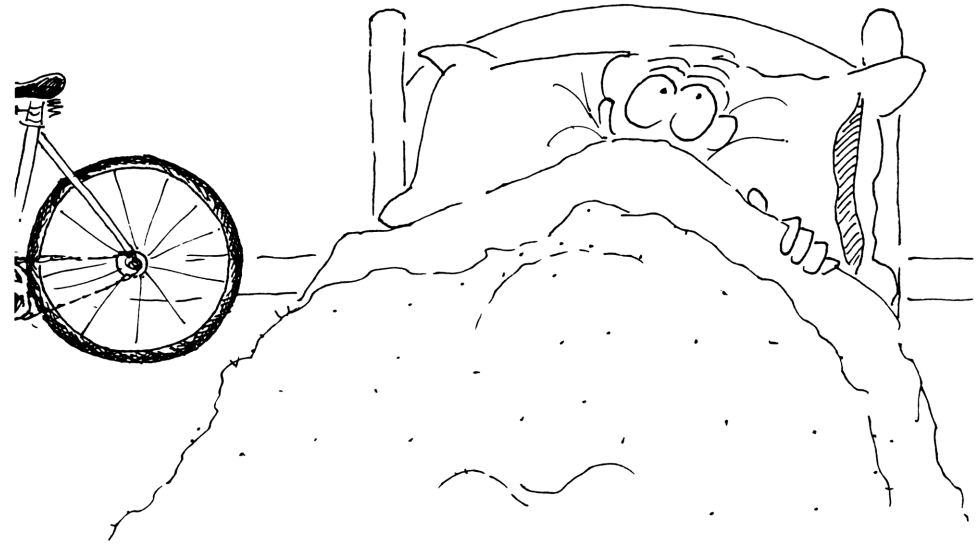
Solution: *Select:* /, Range, Label, Right
Type: **b3..e3** ENTER

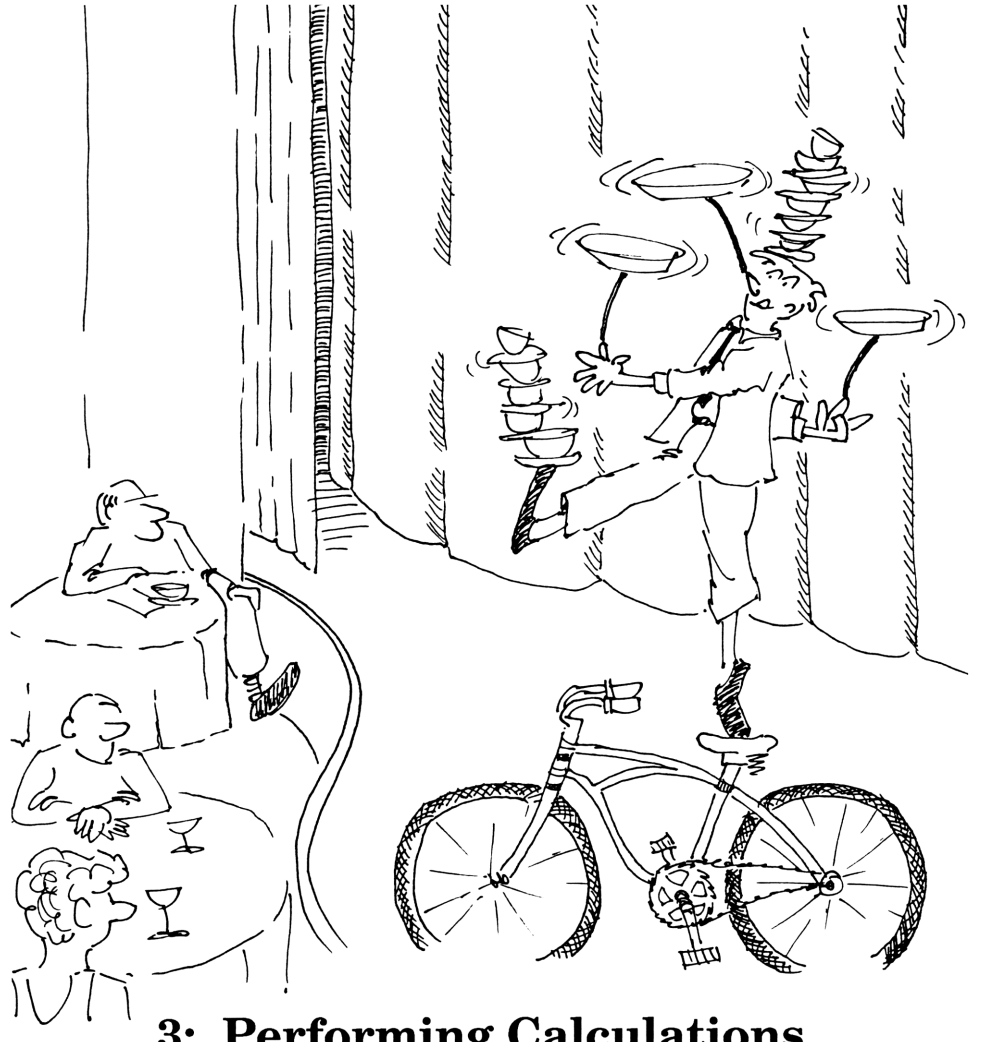


As you can see, /**Range** commands are useful for making changes to selected portions of the worksheet.

Quick Review Of "Setting Up A Worksheet"

- After typing data, you enter it with the ENTER key or an arrow key.
- When you enter a label, 1-2-3 adds the Left label prefix ('). If you want to align a label differently, type either the Right (") or Center (^) label prefix in front of the label.
- To realign labels after you've entered them, use /Range Label.
- To change the appearance of numbers, use /Range Format.
- To change a column's width, use /Worksheet Column Set-Width.
- To enter a date, use the @DATE function. For example, to enter May 9, 1992, type @DATE(92,5,9).
- To change the display format of dates, use /Range Format Date.





3: Performing Calculations

1-2-3 can be a very powerful calculator—and yet it's easy to use. In this lesson, you'll learn how to analyze your data with math formulas and built-in statistical functions.

Writing A Formula

1-2-3 lets you write custom formulas to perform math calculations on your data. The math operators you can use in formulas are: + (add); − (subtract); * (multiply); / (divide); and ^ (raise to a power, for example, 4^2 is 4^2, or 16).

You may also use *cell addresses* in your formulas. If a cell address is the first thing in your formula, it must be preceded with plus (+) or minus (−). Here are a few examples of correctly written formulas:

```
43*K14    +R1-3    -C20/1.1    12+M1/N1*.85
```

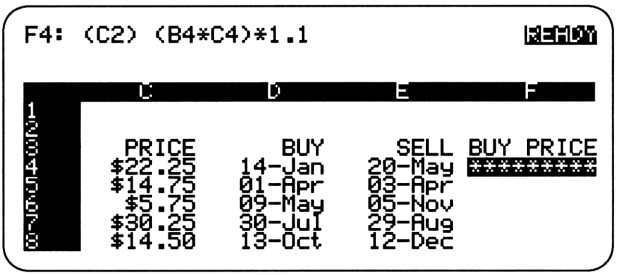
Made to Order. Unless you specify otherwise, 1-2-3 does operations in a preset order. It does exponentiation ("raising to a power") first, then multiplication and division, and then addition and subtraction.

But you can use sets of parentheses to *force* a certain order of operations. For example, if you were to enter `12+A1/B1`, the division would be done first, according to the above rules. But if you were to enter `(12+A1)/B1`, the addition would be done first—because your parentheses would force it that way.

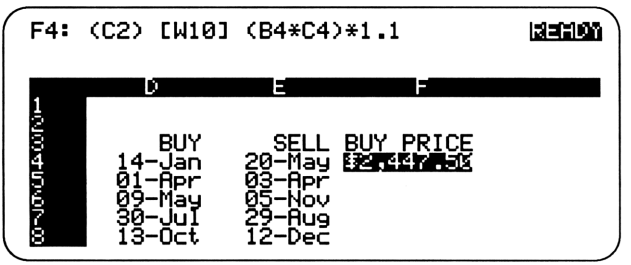
The Err Apparent. If you write a formula that is simply impossible to calculate, 1-2-3 will display the message, `ERR`, in that cell. This usually means either that you've tried to do a calculation with a cell containing a label, or that you've tried to divide by zero.

Exercise: Enter the label BUY PRICE in cell F3. Then below it, enter a formula to calculate the cost of the first stock trade (the number of shares times the price per share, plus 10% to cover the broker's commission). Then apply the currency format to the range F4..F8.

Solution: *Move:* Pointer to F4
Type: +(b4*c4)*1.10 ENTER
Select: /Range Format Currency
Type: 2 ENTER
Type: f4..f8 ENTER



Seeing Stars? Anytime a value won't fit into a cell, 1-2-3 displays asterisks (*) instead. To see the value again, widen the column. Here, use /Worksheet Column Set-Width, and set the width to 10.



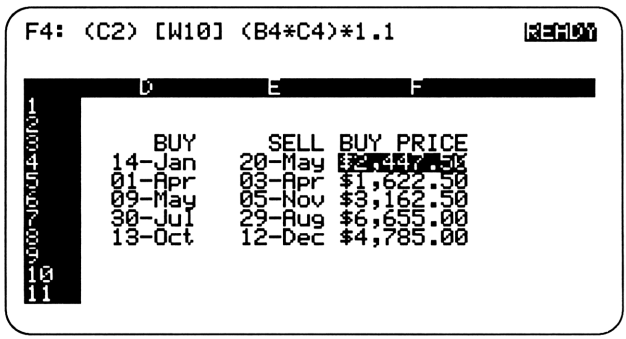
Copying A Formula

Of course, you now want a similar formula in F5, F6, F7, and F8—to calculate the other buy prices. You *could* type a new formula in each of these cells, but why waste time and effort? 1-2-3 lets you *copy* a formula to other cells.

To copy a formula, first select /Copy. 1-2-3 will prompt you to specify two ranges: First is the "From" range (the cell with the formula to be copied). Next is the "To" range (the cell(s) where you want the formula copied). To avoid confusion, read the on-screen prompts carefully.

Exercise: Copy the formula you wrote in F4 (the *From* range) to the range F5..F8 (the *To* range).

Solution: *Select:* /Copy
Type: f4 ENTER (the *From* range)
Type: f5..f8 ENTER (the *To* range)



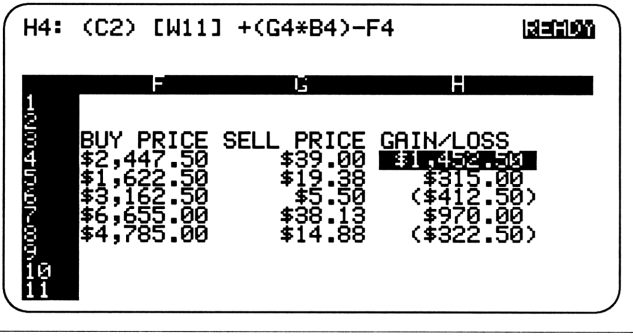
Now enter the sell prices for the trades. First, enter the label SELL PRICE in G3. Then, in cells G4 through G8, enter these sell prices: 39.00, 19.375, 5.50, 38.125, and 14.875.

Now try another calculation:

Exercise: Enter the label GAIN/LOSS in H3. Next, calculate the "net" of the first trade (subtract the buy price from the sell price). Then copy the formula to cells H5.. H8.

Solution: *Move:* Pointer to H4
Type: +(g4*b4)-f4 [ENTER]
Select: /Copy
Type: h4 [ENTER] (the *From* range)
Type: h5..h8 [ENTER] (the *To* range)

Now apply Currency format and 2 decimal places to cells G3..H8, using /, Range, Format, Currency. Then change the width of both of these columns to 11, using /Worksheet Column Set-Width.



Notice that in Currency format, negative numbers are in parentheses.

Writing A Statistical Function

You've already seen a *function* or two (pages 28-29): The @DATE and @TIME functions translate dates and times into numbers the program can use.

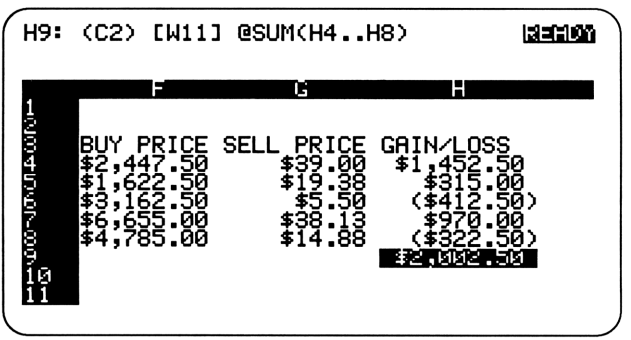
Having Sum Fun. Here's another function—one of 1-2-3's most useful statistical functions: @SUM sums numbers in a given range.

Exercise: Sum the gain/loss amounts to arrive at a grand total. Use the @SUM function.

Solution: *Move:* Pointer to H9
Type: @sum(h4..h8) ENTER

Then: Apply the Currency format to the range.

Solution: */Range Format Currency*
Type: 2 ENTER
Type: h9 ENTER



Saving The Worksheet

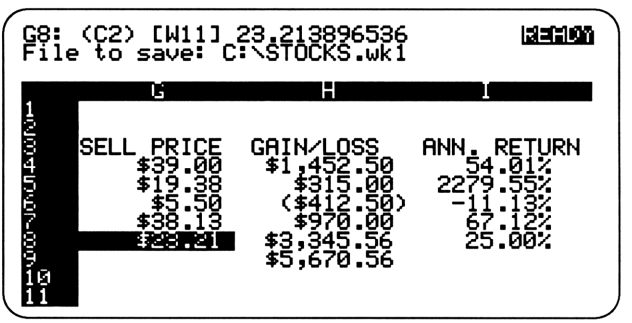
Now you're ready to save your worksheet.

Exercise: Save the current worksheet in a file called STOCKS.

Solution: *Select:* /File Save
Type: stocks ENTER

(1-2-3 adds the extension .wk1 to the file name to identify it as a worksheet file. You'll learn about file names in Lesson 7, "Managing Your Files.")

Updating A File. It's important to save a worksheet often while you're working on it (you never know when the power will go out). When you save a file that's already been named, 1-2-3 will show you the current file name, like this:



To replace the old with the new, press ENTER, then select Replace.

Quick Review Of "Performing Calculations"

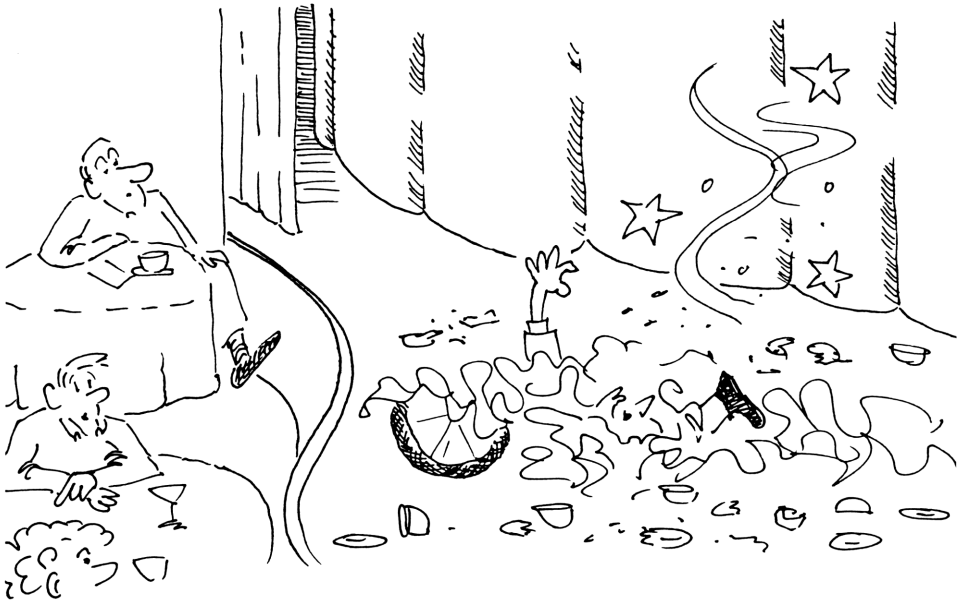
- In a formula, you can use sets of parentheses to determine the order of calculations. Otherwise, 1-2-3 does exponentiation ("raising to a power") first, then multiplication and division, and then addition and subtraction.

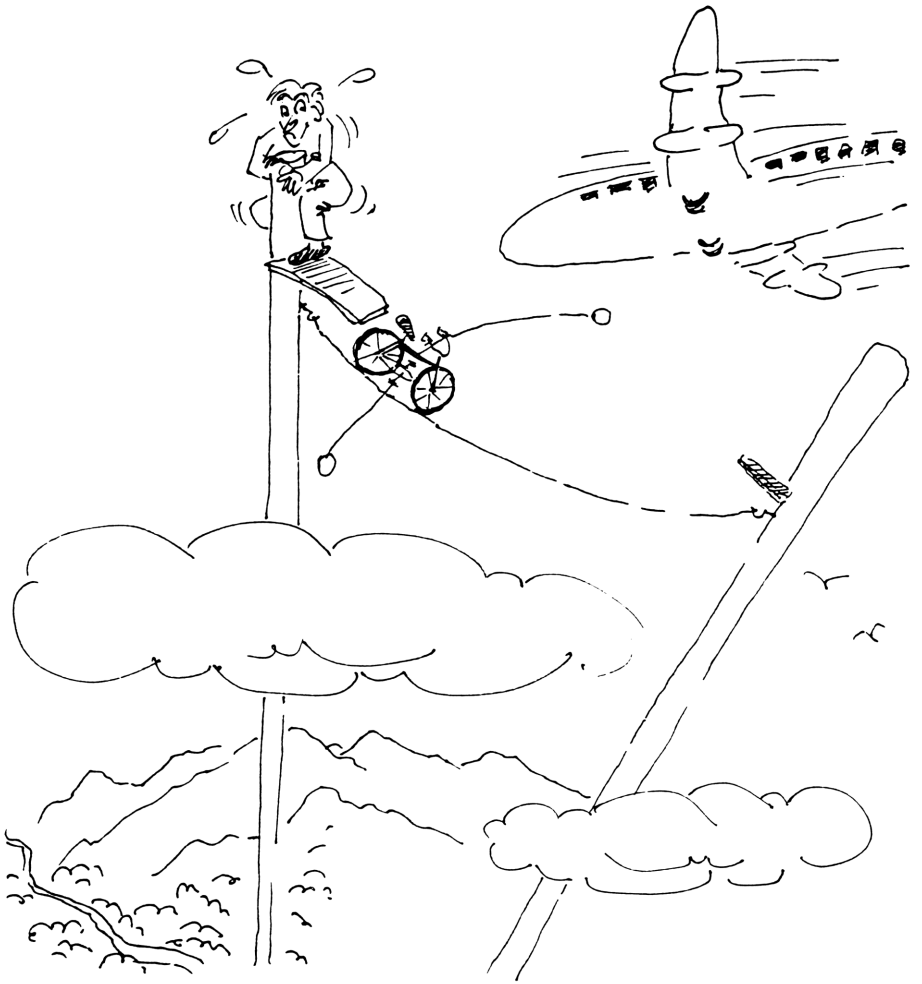
- If a cell address comes first in a formula, it must be preceded with either a plus (+) or a minus (−).

- To copy a formula, use /Copy and then specify the *From* range and the *To* range. When you copy a formula, cell addresses are adjusted to match the new column or row location.

- The @SUM function adds all the numbers in a given range.

- To save the current worksheet, select /File Save.





4: Changing Your Mind

How do you fix your worksheet when it's "not quite right"? What if it's not even close? This lesson will show you how to make both minor and major changes to your data.

Replacing One Entry With Another

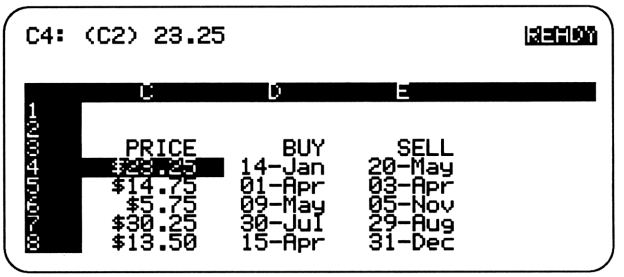
Sometimes when you're building a worksheet, you need to replace an item that you've already entered.

Come Write Over. The easy way to replace a short item is to position the pointer over it and simply type the new item, thus overwriting the previous item.

Exercise: Change the price of Penand, Inc. stock to $23.25.

Solution: *Move:* Pointer to C4

Type: 23.25 [ENTER]



Recalculation. Notice that all of the formulas that use cell C4 were *recalculated* to reflect the new value you entered in that cell. This automatic recalculation is a convenient feature of 1-2-3.*

*But in a large worksheet with lots of formulas, recalculation can take some time, so 1-2-3 lets you turn off the automatic recalculation: /Worksheet Global Recalculation Manual. Then, when you make a change that affects a formula, 1-2-3 will display the CALC indicator, telling you that when you're ready, you must recalculate your formulas *manually,* by pressing [F9] (Calc).

The EDIT Key

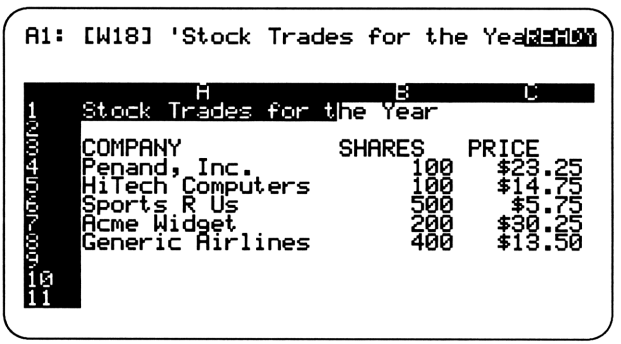
The other way to replace one item with another is to *edit* the contents of a cell. With this method, you change only the parts of an item that need changing—instead of overwriting the whole thing. So editing is most useful for correcting a long or complicated label or formula.

When you press F2 (Edit), the mode indicator changes from READY to EDIT, and 1-2-3 shows the item in the Control Panel. Then you can use the arrow keys to position the cursor and type your changes (or use the backspace key, ←, to remove characters).

Exercise: Edit the label in A1 to read Stock Trades for the Year.

Solution: *Move:* Pointer to A1

Press: F2 (Edit), edit the label, and press ENTER.



Notice that when you type, your letters are *inserted* into the existing text. If you would prefer to *overwrite* instead, simply press ⇧–INS. This key switches between these two modes.

Using The UNDO Feature

With earlier versions of Lotus 1-2-3, if you erased a range of numbers and then changed your mind, it was too late. Those numbers were gone for good—but not any more!

Just UNDO It. 1-2-3 now has a wonderful UNDO feature that cancels your last operation and returns the worksheet to its former appearance. You can use this feature any time the UNDO indicator is displayed at the bottom of the worksheet.

To activate the UNDO feature, select /Worksheet Global Default Other Undo Enable. Then select Update and Quit.

Exercise: Undo the last operation.

Solution: *Press:* ALT–F4 (Undo)

Undo That To Me One More Time. If you didn't really want to undo the last operation after all, 1-2-3 even lets you undo an UNDO! So now, return the worksheet to its former appearance by pressing ALT–F4 (Undo).

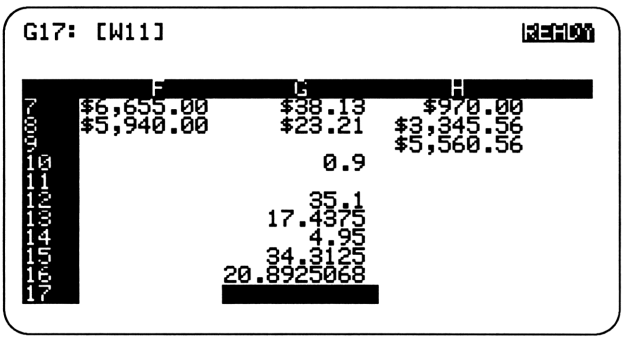
Changing Several Cells At Once

Sometimes the changes you need to make to your data are not as simple as just overwriting or editing a single entry. In certain cases, you'll need to make the same change to several cells. For example, the Sell Prices on your worksheet don't include the broker's 10% commission. So you need to multiply *each price* by 90%. Fortunately, 1-2-3 has an easy way to do this: *matrix multiplication*.

Exercise: Multiply each Sell Price amount by .9 (to reflect the fact that your broker took 10% of your total return).

Solution:

Move: Pointer to **G10**
Type: **.9** [ENTER]
Select: /Data Matrix Multiply
Type: **g4..g8** [ENTER] (data range)
Type: **g10** [ENTER] (location of the multiplier)
Type: **g12** [ENTER] (location of the new numbers)
Move: Pointer to **G17** to see the results

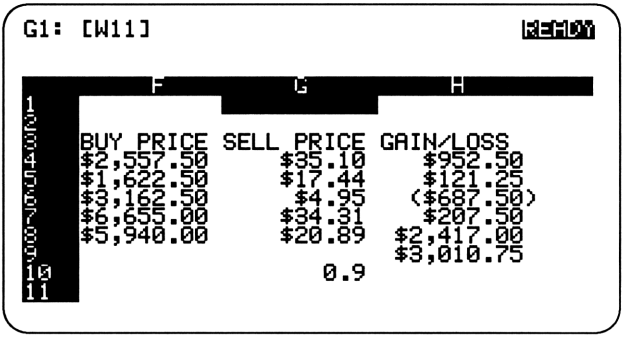


All right, now replace the old sell prices with the new.

Exercise: Copy the corrected prices to cells **G4** through **G8**.

Solution: *Select:* /Copy
Type: **g12..g16** ENTER (the *From* range)
Type: **g4** ENTER (the *To* range)
Move: Pointer to **G1** to see the results

Now apply the Currency format with 2 decimal places to cells **G4** through **G8**, using /Range Format.



Value Judgement. In this exercise, the data you copied were numbers. But if those cells had contained formulas, /Copy would have copied the formulas (the "real" contents of those cells). But what if you wanted to copy or move the *results* of those formula calculations—the *displayed* values—instead of their underlying formulas?

The solution is to use the /Range Value command. This is really a type of copy command that copies only *displayed* values. As with the /Copy command, you must specify a *From* range and a *To* range.

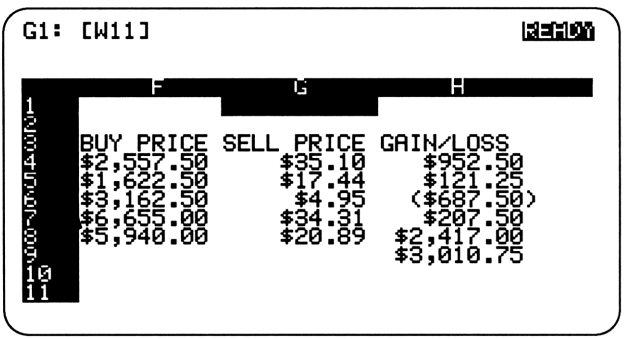
Erasing Data

What can you do about the accumulation of "trash" on your worksheet —numbers, labels, and other items that you no longer need? On your sample worksheet, for instance, you now have some items in G10 through G16 that can be eliminated.

To remove data from the worksheet, always use /Range Erase. This command empties the cells you specify *without affecting formatting,* such as label alignment, column width, or number formats.

Exercise: Erase the data in G10 through G16.

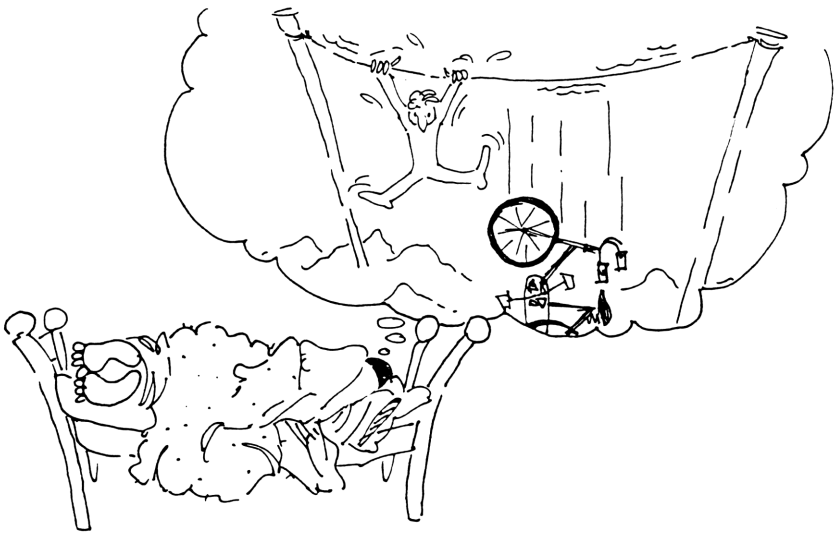
Solution: *Select:* /Range Erase
Type: g10..g16 ENTER

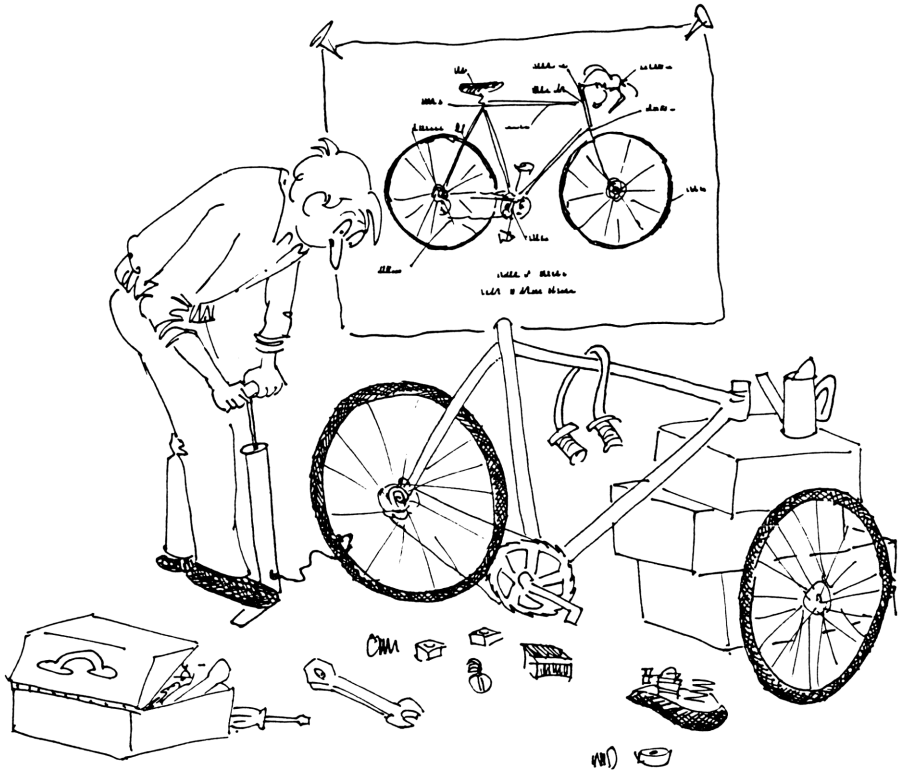


Filling In Blanks. You may be tempted to remove an item by pressing the space bar to blank it out—but don't! A space is considered to be a label, so although the cell may *look* empty, it will actually contain the Left (') label prefix (as the Control Panel will show).

Quick Review Of "Changing Your Mind"

- When the **UNDO** indicator is displayed, you can cancel your last operation by pressing ALT–F4 (Undo).
- You can replace an item by entering a new item in its place.
- Pressing F2 (Edit) lets you make selective changes to an item.
- The /Data Matrix Multiply command will multiply all numbers in a range by another number.
- The /Range Value command copies only displayed values, not their underlying formats, formulas, or functions.
- The /Range Erase command erases data but leaves cell formatting intact.





5: Fine-Tuning The Worksheet

Even when your data and formulas are right, the worksheet still might benefit from a little improvement. This lesson will show you how.

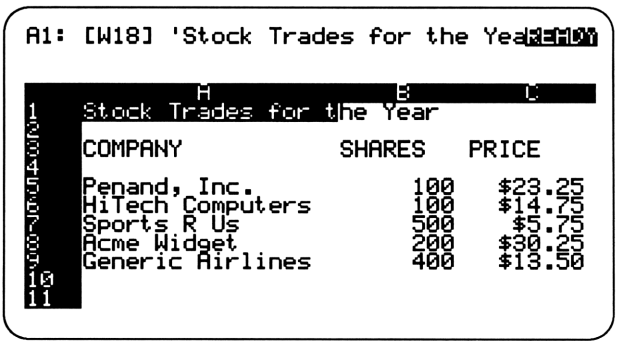
The /Move Command

1-2-3's /Move command moves a range of cells to a location you specify. As with /Copy and /Range Value, you must give the *From* and *To* ranges. You may indicate just the upper left cell of the *To* range.

A Moving Experience. Be careful: If the *To* range already contains data, the data will be erased (overwritten) by the data being moved.

Exercise: Move the stock information down one row to give some room between the column headings and the data.

Solution: *Select:* /Move
Type: a4..h9 ENTER (the *From* range)
Type: a5 ENTER (the *To* range)



Notice that your calculations are still correct! The cell addresses in your formulas and functions were *adjusted* when you moved the data.

Inserting Rows And Columns

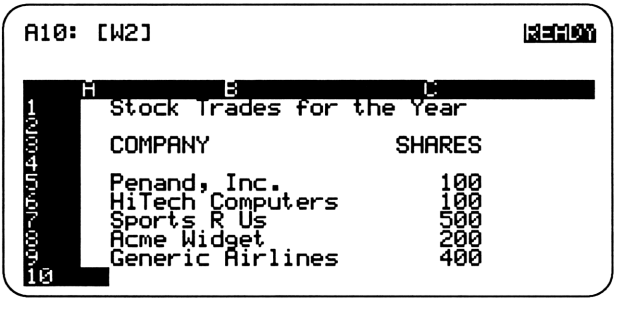
You've just moved a range of data down to create a blank row. Another way to get the same result is to *insert* a blank row.

Exercise: Insert a blank row between the last record and the GAIN/LOSS grand total.

Solution: *Move:* Pointer to row 10
Select: /Worksheet Insert Row
Press: ENTER to specify the current row

Then: Insert a column to the left of your data, and change its width to 2 characters. (You'll use this column later.)

Solution: *Move:* Pointer to column A
Select: /Worksheet Insert Column
Press: ENTER to specify the current column
Select: /Worksheet Column Set-Width
Type: 2 ENTER



Deleting. To delete rows or columns, select /Worksheet Delete and then either Row or Column. Then enter the appropriate range.

Drawing Lines

One of the best ways to improve your worksheet's appearance is to draw lines to separate sections of your data.

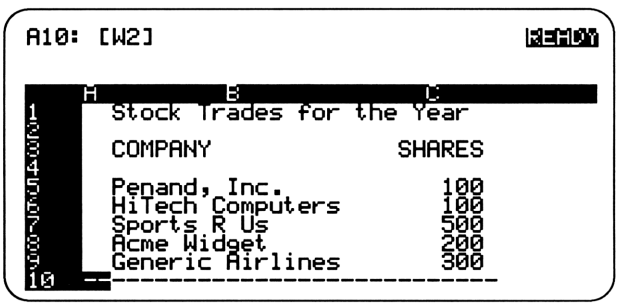
A Drawn-Out Drama. Since the program doesn't have a line-drawing feature, you can use dashes. But typing dashes across the entire worksheet would be too much work. 1-2-3 lets you fill a cell with a character (such as a dash) by typing a back slash (\) and the character.

Exercise: Fill cell A10 with dashes.

Solution: *Move:* Pointer to A10
Type: \- ENTER

Then: Copy cell A10 to the range B10 through I10.

Solution: *Select:* /Copy
Press: ENTER (A10 is the *From* range)
Type: b10..i10 ENTER (the *To* range)

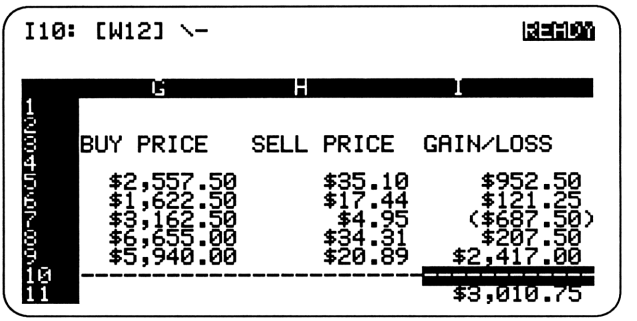


Changing Column Widths

You know how to change the width of any given column (from page 23). But you can also change the width of a *range* of columns.

Exercise: Change the width of columns G, H, and I to 12.

Solution: *Select:* /Worksheet Column Column-Range Set-Width
Type: g1..i1 ENTER
Type: 12 ENTER and move to I10 to see the result.



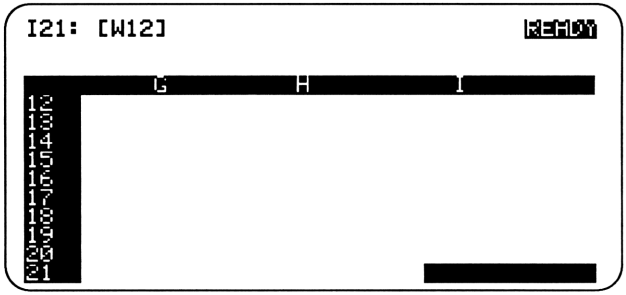
To change the columns back to their previous widths, you could select /Worksheet Column Column-Range Reset. But not now. Instead, notice that since you've widened the last three columns, the labels no longer line up with their numbers.

Exercise: Right-align the labels in cells G3 through I3.

Solution: *Select:* /Range Label Right
Type: g3..i3 ENTER

Titles

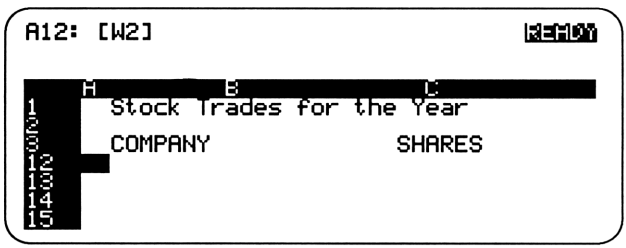
In this short worksheet, you can always see what each column of data means—because you can see the label at the head of the column. But what if you had 50 stock trades? To see the problem, press (Shift)-(PG DN).



To overcome this problem, you can freeze selected rows or columns so that they always remain on-screen as *titles* to your data.

Exercise: Freeze rows 1 through 3.

Solution: *Move:* Pointer to A4 ((Shift)-(HOME) (▼)(▼)(▼))
Select: /Worksheet Titles Horizontal
Type: (Shift)-(PG DN). The category headings remain!



Now clear the Titles area: Select /Worksheet Titles Clear.

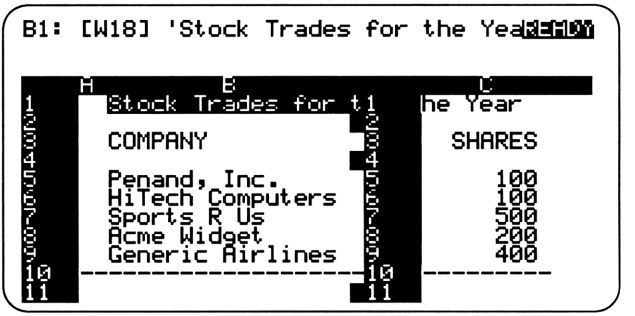
Windows

Another way to see different parts of a worksheet on the same screen is to create a *window.* It's most useful with large worksheets.

Exercise: Split the screen into two vertical windows.

Move: Pointer to C1

Select: /Worksheet Window Vertical



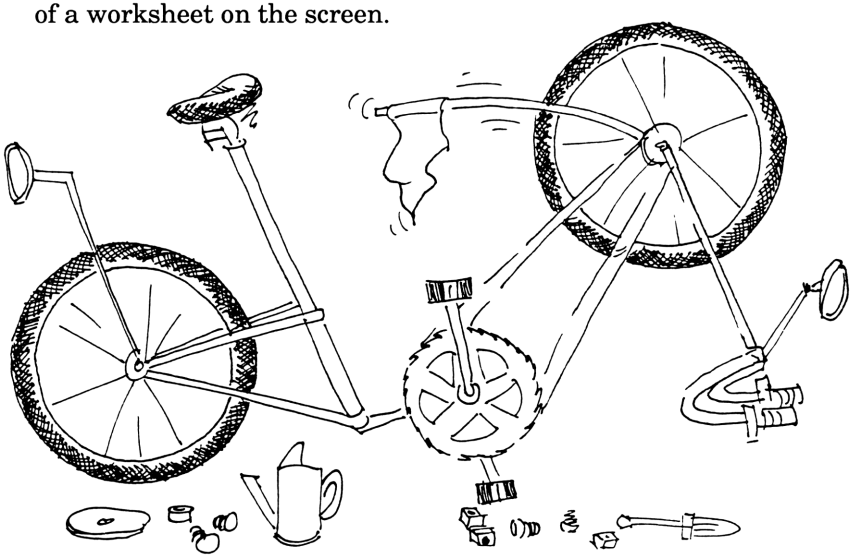
Now move the pointer to the right. The right-side window doesn't move (because the pointer is in the left-side window). But keep in mind that you're not working with two separate worksheets—just two different *views* of the *same* worksheet.

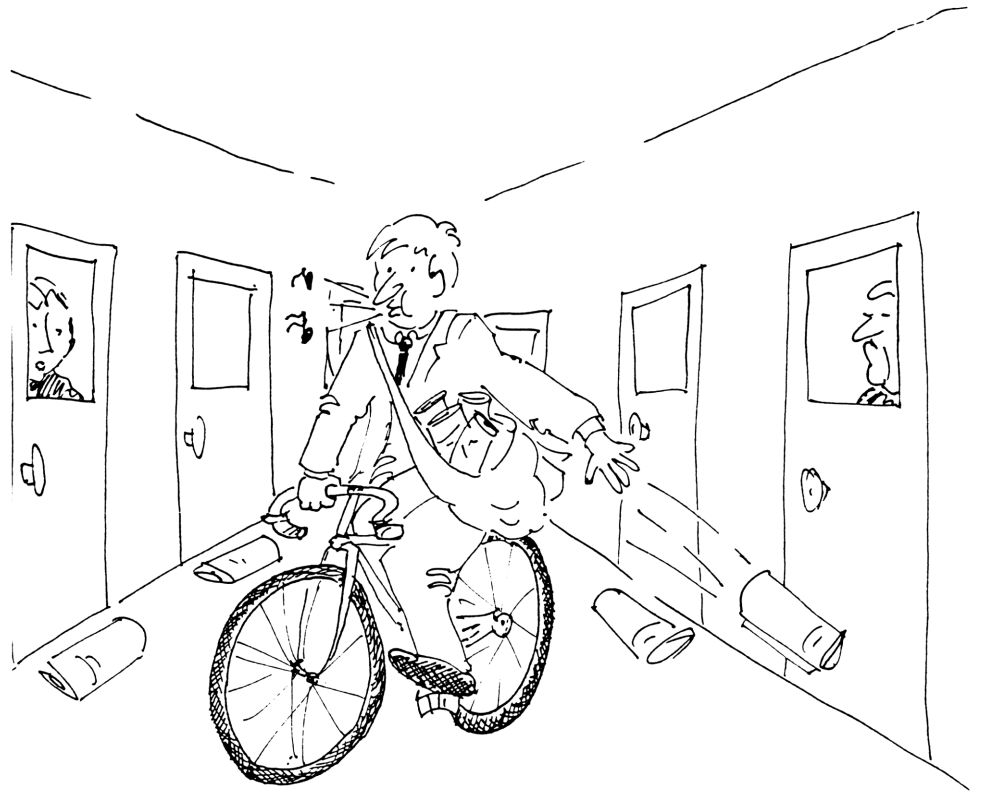
To move the pointer to the other window, press F6 (Window). To return to a normal screen, select /Worksheet Window Clear.

That Synching Feeling. When you move the pointer up/down in a vertical window, or left/right in a horizontal window, both windows move together in synchrony. This is probably the way you'd normally want it; but if not, select /Worksheet Window Unsync.

Quick Review Of "Fine-Tuning The Worksheet"

- The /Move command lets you move a range of data (the *From* range) to a new location (the *To* range).
- To insert blank rows or columns, use /Worksheet Insert.
- To fill a cell with a character, type \ and the character.
- To change the widths of all columns in a range, use /Worksheet Column Column-Range Set-Width.
- The /Worksheet Titles command causes specified columns or rows to remain in view regardless of the pointer's location.
- The /Worksheet Window command lets you see two different parts of a worksheet on the screen.





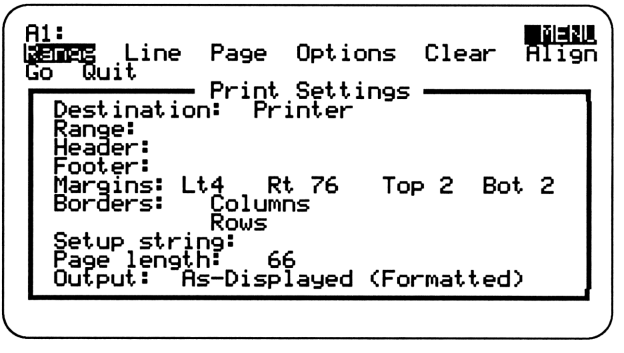
6: Printing The Worksheet

This lesson will show you how to print your worksheet—and how to improve the appearance of that printout—to maximize its clarity and persuasive power.

Introduction To Printing

When you initiate a print operation by selecting /Print, you then choose from a menu with only two options: Printer and File. The Printer option prints the worksheet now. The File option saves the worksheet as an unformatted ASCII text file, so that you can bring it into your word processing program or another spreadsheet program.

Select the Printer option, and you'll see this menu:



Here's a brief description of each command:

Range	Specifies the range of cells to print.
Line	Advances the printer paper one line.
Page	Advances the printer paper to the next page.
Options	Lets you improve your printout.
Clear	Resets the print settings.
Align	Tells 1-2-3 that the paper is positioned in the printer.
Go	Starts the print job.

Aligning The Paper

When you print a worksheet, it may take up only part of a page. So when you're ready to print another page, you have to go to the printer and adjust the paper again. But why not let 1-2-3 do the work for you?

With a dot-matrix printer, you'll need to position the paper manually before you start. If you're using a laser printer, the paper is already in position. Then, by using the /Print Printer Align command, you notify 1-2-3 that the paper is correctly positioned in your printer.

Exercise: Tell 1-2-3 that you've aligned the printer paper. Make sure your printer is "on-line."

Solution: *Select:* /Print Printer Align

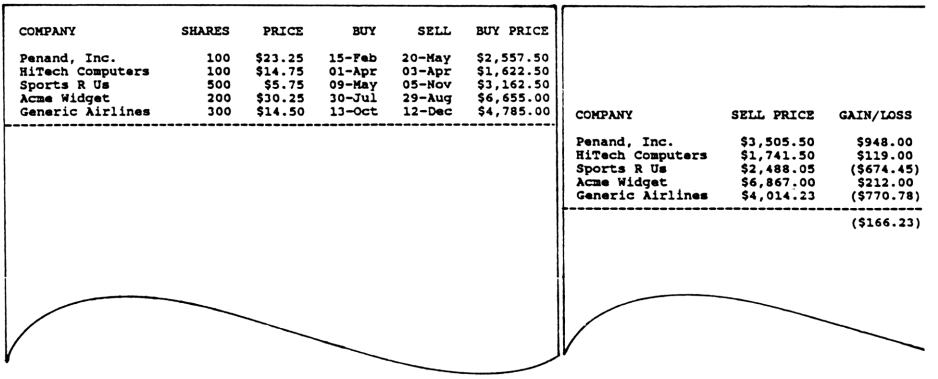
Although the program gives no confirmation, it now knows where the printer head is positioned on the paper.

Easy, right? And *after* you print, the /Print Printer Page command will automatically advance the paper to a new page!*

*/Print Printer Align also resets the page number to 1. So if you're including page numbers on the printout, and you want your next printout to start at page 1, use the Align command after the Page command.

Adjusting Page Length

If you're using a laser printer, you may find that each page prints a little farther down than the last one, like this:



COMPANY	SHARES	PRICE	BUY	SELL	BUY PRICE
Penand, Inc.	100	$23.25	15-Feb	20-May	$2,557.50
HiTech Computers	100	$14.75	01-Apr	03-Apr	$1,622.50
Sports R Us	500	$5.75	09-May	05-Nov	$3,162.50
Acme Widget	200	$30.25	30-Jul	29-Aug	$6,655.00
Generic Airlines	300	$14.50	13-Oct	12-Dec	$4,785.00

COMPANY	SELL PRICE	GAIN/LOSS
Penand, Inc.	$3,505.50	$948.00
HiTech Computers	$1,741.50	$119.00
Sports R Us	$2,488.05	($674.45)
Acme Widget	$6,867.00	$212.00
Generic Airlines	$4,014.23	($770.78)
		($166.23)

If this problem occurs, it means that your printer is allowing fewer lines per page than 1-2-3's default page length.

That default page length is initially set at 66 lines. But some printers (for example, the Hewlett-Packard LaserJets) allow only 60 lines per page. Each printer's own manual will tell you how many lines it can put on a page.

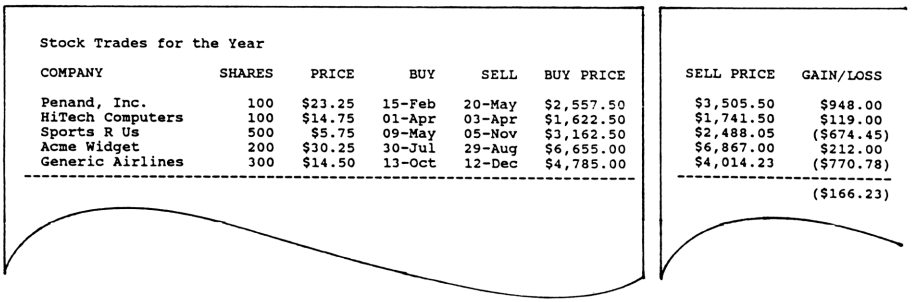
To change 1-2-3's default page length for all worksheets, you would select /Worksheet Global Default Printer Pg-Length, then enter the new page length. Then to save this change, you would back up one level and select Update.

Printing The Worksheet

Now that you've aligned your paper, you're ready to print. You simply *specify a range to print,* then select the Go command.

Exercise: Print the entire active area of the worksheet.

Solution: *Select:* /, Print, Printer, Range
Type: a1..i11 ENTER
Select: Go



Stock Trades for the Year

COMPANY	SHARES	PRICE	BUY	SELL	BUY PRICE	SELL PRICE	GAIN/LOSS
Penand, Inc.	100	$23.25	15-Feb	20-May	$2,557.50	$3,505.50	$948.00
HiTech Computers	100	$14.75	01-Apr	03-Apr	$1,622.50	$1,741.50	$119.00
Sports R Us	500	$5.75	09-May	05-Nov	$3,162.50	$2,488.05	($674.45)
Acme Widget	200	$30.25	30-Jul	29-Aug	$6,655.00	$6,867.00	$212.00
Generic Airlines	300	$14.50	13-Oct	12-Dec	$4,785.00	$4,014.23	($770.78)
							($166.23)

Then: Since you used Align earlier, you can now let 1-2-3 advance the paper for you. Do this, then reset the page number to 1, to prepare for the next printout.

Solution: *Select:* Page
Select: Align

You're now ready for another printout.

Problems With The Printout

The printout you just did certainly presents all of your data, but not in a very satisfactory way. First of all, it splits your data over two pages. And the second page doesn't include the stock names, so it's not clear which numbers go with which stock.

Extensive Alterations. An obvious way to overcome these problems is to narrow your columns, abbreviate your labels, and use number formats that take up less space.

So, using those strategies, you *could* eventually get a printout that looks like this:

```
Stock Trades for the Year

COMPANY       SHRS   PRICE      BUY      SELL      BUY $     SELL $      +/- $

Penand, Inc.   100   23.25   15-Feb    20-May   2557.50    3505.50     948.00
HiTech Comp.   100   14.75   01-Apr    03-Apr   1622.50    1741.50     119.00
Sports R Us    500    5.75   09-May    05-Nov   3162.50    2488.05    -674.45
Acme Widget    200   30.25   30-Jul    29-Aug   6655.00    6867.00     212.00
Generic Air.   300   14.50   13-Oct    12-Dec   4785.00    4014.23    -770.78
-------------------------------------------------------------------------------
                                                                      -166.23
```

That method solves the problems, but it's a lot of work—and the result still isn't great. On the next three pages, you'll learn some better solutions.

Solution 1: Add Borders

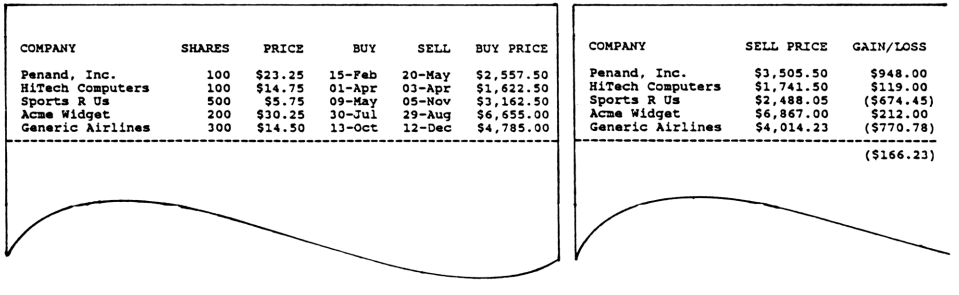
If the worksheet extends over two pages, you can improve the readability by using the Borders option. It lets you specify the rows and columns to appear on every page.

Taking On Borders. On your sample worksheet, you want the stock names to appear on every page of the printout.

Exercise: Specify columns A and B as a Borders area to be printed on each page, then print the worksheet.

Solution: *Select*: /Print Printer Options Borders Columns
Type: a1..b1 ENTER

Now print the worksheet using the range C3..I11.



COMPANY	SHARES	PRICE	BUY	SELL	BUY PRICE
Penand, Inc.	100	$23.25	15-Feb	20-May	$2,557.50
HiTech Computers	100	$14.75	01-Apr	03-Apr	$1,622.50
Sports R Us	500	$5.75	09-May	05-Nov	$3,162.50
Acme Widget	200	$30.25	30-Jul	29-Aug	$6,655.00
Generic Airlines	300	$14.50	13-Oct	12-Dec	$4,785.00

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Sports R Us	$2,488.05	($674.45)
Acme Widget	$6,867.00	$212.00
Generic Airlines	$4,014.23	($770.78)
		($166.23)

To remove the borders: /Print Printer Clear Borders. Then advance the paper by selecting Page, and reset the page number to 1 by selecting Align.

Solution 2: Use Condensed Print

If you want the printout to appear on just one page, try condensed print! Available on most dot-matrix printers, this feature allows you to print up to 132 characters across a page.

To use condensed print, select /Print Printer Options Setup and then enter a special code called a setup string. For many printers, the code for condensed print is \015. Then, once you've printed the worksheet, you can return to normal printing by deleting the setup string at the Setup menu.

Marginal Thinking. 1-2-3's left margin is initially set at 4, and the right margin at 76. These numbers are the number of characters from the left edge of the paper. So you can print 72 characters across a page.

When you use condensed print, you need to extend the right margin to allow room for more characters. If you don't do this, the printout will cover only about two-thirds of the page (72 smaller characters). To adjust the right margin, you select /Print Printer Options Margins Right, then enter the new margin.

Other Features. Depending on your printer, you may have a number of special print capabilities, such as large type or double-strike. Check your printer manual to see which ones are available to you. And check your 1-2-3 reference manual for the appropriate setup strings.

Solution 3: Hide Some Columns

Another solution is simply to leave out some of the less important columns.

Less Is More. By printing selected columns, not only do you get the printout on one sheet, but you help your reader by focusing attention on the pertinent information.

Exercise: First, reset the print range to **a1..i11**. Then hide columns **G** and **H**, and print the worksheet.

Solution: *Select:* /**W**orksheet **C**olumn **H**ide
Type: **g1..h1** ENTER
Select: /**P**rint **P**rinter **G**o

```
Stock Trades for the Year

COMPANY              SHARES     PRICE       BUY      SELL    GAIN/LOSS

Penand, Inc.            100    $23.25    15-Feb    20-May      $948.00
HiTech Computers        100    $14.75    01-Apr    03-Apr      $119.00
Sports R Us             500     $5.75    09-May    05-Nov     ($674.45)
Acme Widget             200    $30.25    30-Jul    29-Aug      $212.00
Generic Airlines        300    $14.50    13-Oct    12-Dec     ($770.78)
-------------------------------------------------------------------------
                                                              ($166.23)
```

Return the worksheet to normal by selecting /**W**orksheet **C**olumn **D**isplay and entering the range **g1..h1**. Now select /**P**rint **P**rinter **P**age to advance the paper, and **A**lign to reset the page number to 1.

Adding A Header Or Footer

Headers and footers are text lines that appear in the top and bottom lines of each page of your printout. This text is normally left-aligned, but you can use the | (bar) character to position items in the center or on the right: The first bar you type tells 1-2-3 to place the following text in the center; the second bar says to right-align the following text.

Handsome Prints. Two informative items you can add to a header or footer are the current date and the page number. To include the current date, type @; to include the page number, type #.

Exercise: Create a footer that includes today's date in the center and the page number on the right side.

Solution: *Select:* /Print Printer Options Footer
Type: Stock Trades |@ |# ENTER
Select: Quit Go

```
Stock Trades                    10-Feb-90                    1
```

Now advance the paper by selecting /Print Printer Page, and reset the page number to 1 by selecting Align.

Debugging The Worksheet

Finally, look at one other *very* useful type of printout—often overlooked because it's hidden away five levels deep in the menus.

This type of printout shows the *actual* content of each cell (not the *displayed* content). So you'll see formulas column widths, formatting, and label alignments. All of this information helps you find errors ("bugs") in your worksheet.

Exercise: Print out the actual content of each cell.

Solution: *Select:* /Print Printer Options Other Cell-Formulas then Quit then Go.

```
B1: [W18] 'Stock Trades for the Year
B3: [W18] 'COMPANY
C3: "SHARES
D3: "PRICE
E3: "BUY
F3: "SELL
G3: [W12] "BUY PRICE
H3: (C2) [W12] "SELL PRICE
I3: (C2) [W12] "GAIN/LOSS
B5: [W18] 'Penand, Inc.
C5: 100
D5: (C2) 23.25
E5: (D2) @DATE(90,2,15)
F5: (D2) @DATE(90,5,20)
G5: (C2) [W12] (C5*D5)*1.1
H5: (C2) [W12] 3505.5
I5: (C2) [W12] +H5-G5
B6: [W18] 'HiTech Computers
```

Now select Page Align. Then, to return to a normal printout, select Options Other As-Displayed.

Now save this worksheet (using /File Save). Then erase it by selecting /Worksheet Erase Yes. And this might also be a good time to select /Coffee Cream Sugar and take a break.

Quick Review Of "Printing The Worksheet"

- /Print File saves a worksheet as an unformatted text file, while /Print Printer lets you print the worksheet.

- Before beginning a printout, you should position the paper and then select /Print Printer Align.

- To print, specify a range (/Print Printer Range) and then select /Print Printer Go.

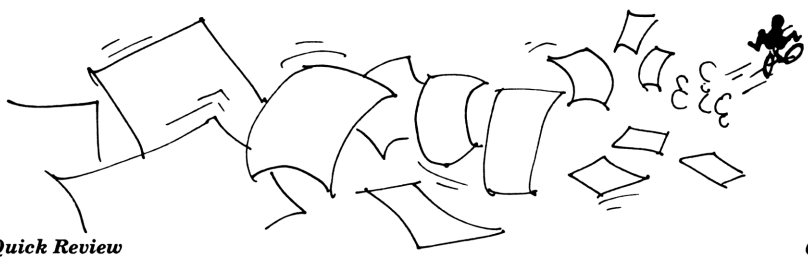
- After printing, advance the paper with /Print Printer Page, and then reset the page number to 1 (if necessary), with /Print Printer Align .

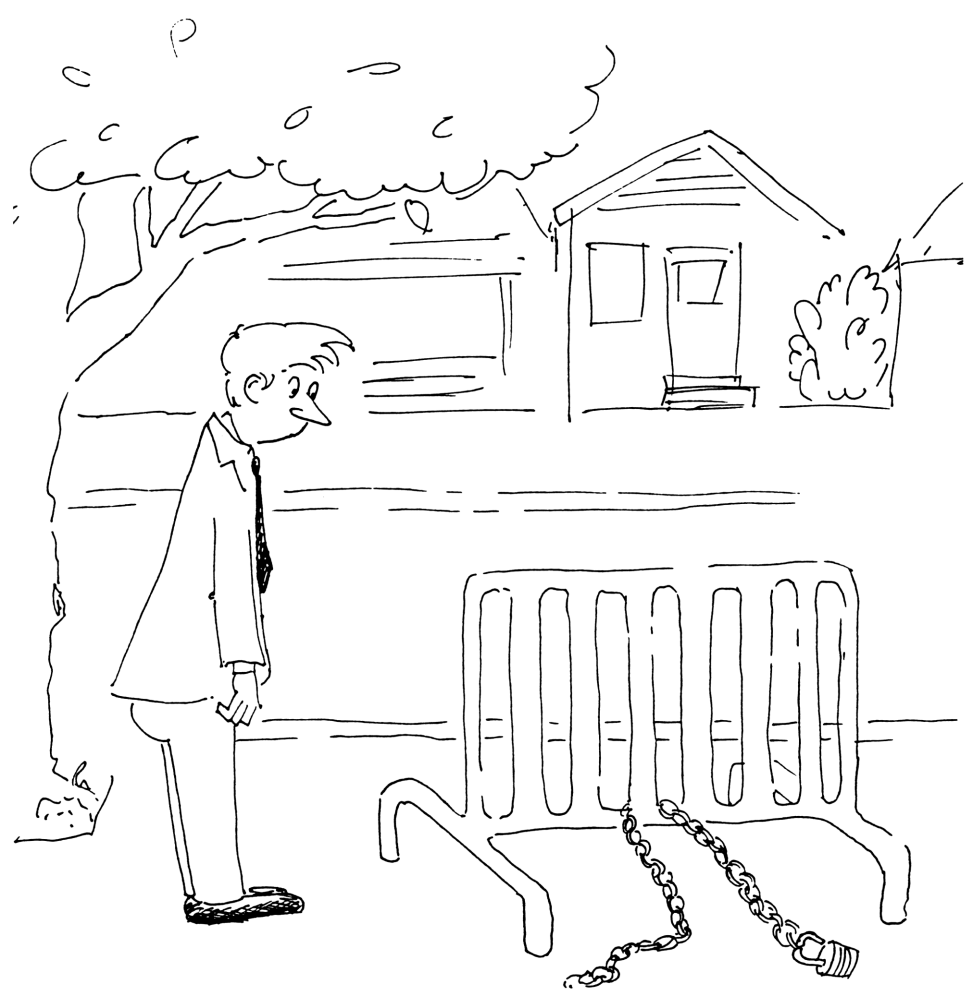
- To include certain rows or columns on every page of a printout, use /Print Printer Options Borders.

- For condensed print, select /Print Printer Options Setup, and then enter \015 as the setup string. Be sure to widen the right margin when using condensed print.

- To print only selected columns, simply hide the unwanted ones with /Worksheet Columns Hide.

- To print the actual contents of cells, first select /Print Printer Options Other Cell-Formulas.





7: Managing Your Files

It doesn't do you any good to create wonderful worksheets if you can't save them, protect them, locate them, and retrieve them. This lesson shows you how.

File Types

1-2-3 allows you to create and save three types of files:

- Worksheet file: Saves the data and all formats on a worksheet.
- Print file: Saves the data *without* formats, as an ASCII text file.
- Graph file: Saves a graphic image (for later printing).

The Name Game. When saving a 1-2-3 file, you must give it a name that follows these *DOS* rules:

- The name may use a maximum of eight characters.
- The name may *not* use any of these characters:

< > + = : ; . , " ^

- The name *may not include spaces* (but you can use an underscore to represent a space, like this: MEMO_FEB).

You'll also want to make your file names as descriptive as possible (sometimes a challenge with only eight letters)—so that you'll know from its name what it contains.

When you save a file, 1-2-3 will add an *extension* to that file name to indicate the file type:

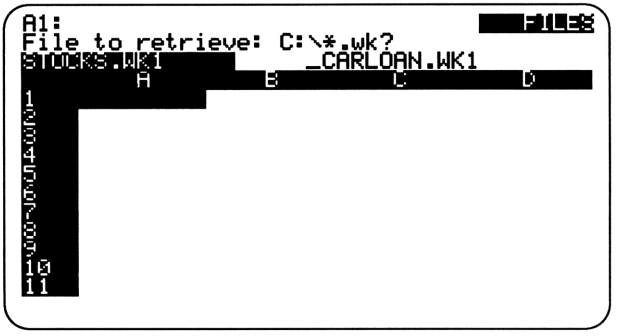
- .WK1 is the extension for a Worksheet file's name.
- .PRN is the extension for a Print file's name.
- .PIC is the extension for a Graph file's name.

Retrieving A File

The /File Retrieve command retrieves a worksheet from your disk, thus making it the current worksheet. When you retrieve a file, make sure the current worksheet is empty—because the file you're retrieving will *overwrite* your current worksheet.

Exercise: Retrieve the STOCKS worksheet.

Solution: *Select:* /File Retrieve



If you have lots of files, the names will extend off the screen to the right. If so, use the ◀ and ▶ keys to move the pointer.

Move: Pointer to STOCKS.WK1
Press: ENTER

Of course, instead of selecting the file name with the pointer, you can type the file name. If you do type it and it's a Worksheet file, you don't need to include the .WK1 extension.

Protecting A File

If your worksheet contains confidential or sensitive data, you may want to protect it with a password, so that only authorized persons can retrieve the file. To add a password, you select /File Save, add a space after the file name, then type P.

Exercise: Add the optimistic password, GAINS, to the current worksheet.

Solution:

Select: /File Save
Press: Space bar
Type: P [ENTER]
Type: GAINS [ENTER]
Type: GAINS [ENTER] (to confirm)
Select: Replace

Capital Gains. From now on, when you retrieve this file, you'll be prompted for the password. If you forget it, there's no way to open the file (believe it!). And 1-2-3 knows the difference between uppercase and lowercase letters. So if GAINS is the password, typing gains won't get you into the file.

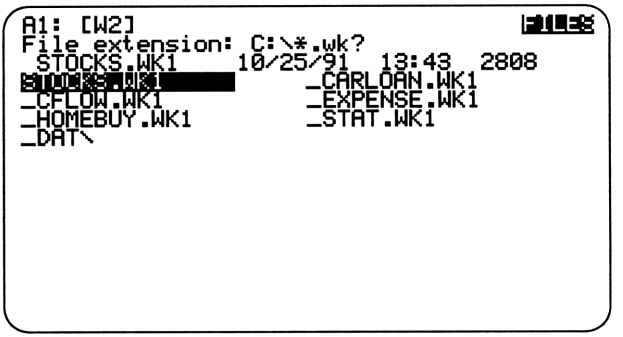
To remove a password from the worksheet: Select /File Save, then delete the [PSWRD PROT] indicator, and press [ENTER]. Then select Replace.

Listing Files

Use /File List to list all or some of your 1-2-3 files. You can choose to list Worksheet, Print, or Graph files, or all three types.

Exercise: List all Worksheet files in the current directory.

Solution: *Select:* /File List Worksheet



Now return to the worksheet by pressing ENTER.

Directory Assistance. When you use the /File List command, 1-2-3 shows you the files in the current, or default, directory. It also shows you any subdirectories within the current directory (see _DAT\ in the figure above). To change the default directory (for the current worksheet only), use the /File Directory command, then type the new directory name.*

*To change the default directory for *all* new worksheets, use /Worksheet Global Default Directory (and then, after typing the new directory name, be sure to select the Update command so your change will be saved).

Quick Review Of "Managing Your Files"

- 1-2-3 identifies different file types with different extensions: .WK1 for worksheets, .PRN for print files, and .PIC for graph files.

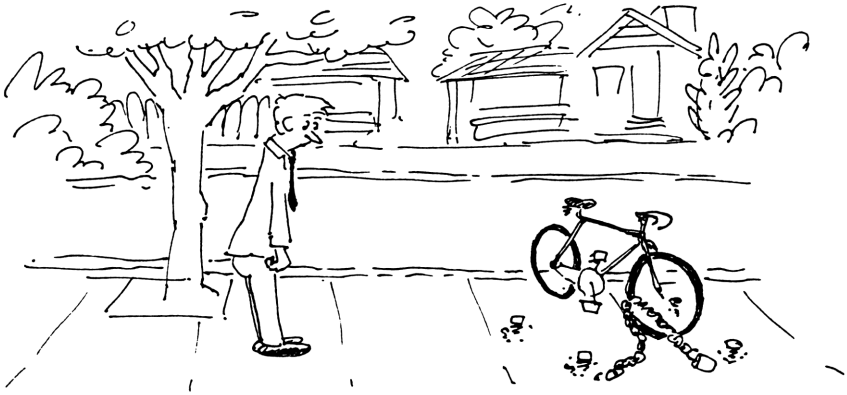
- To retrieve a file, select /File Retrieve.

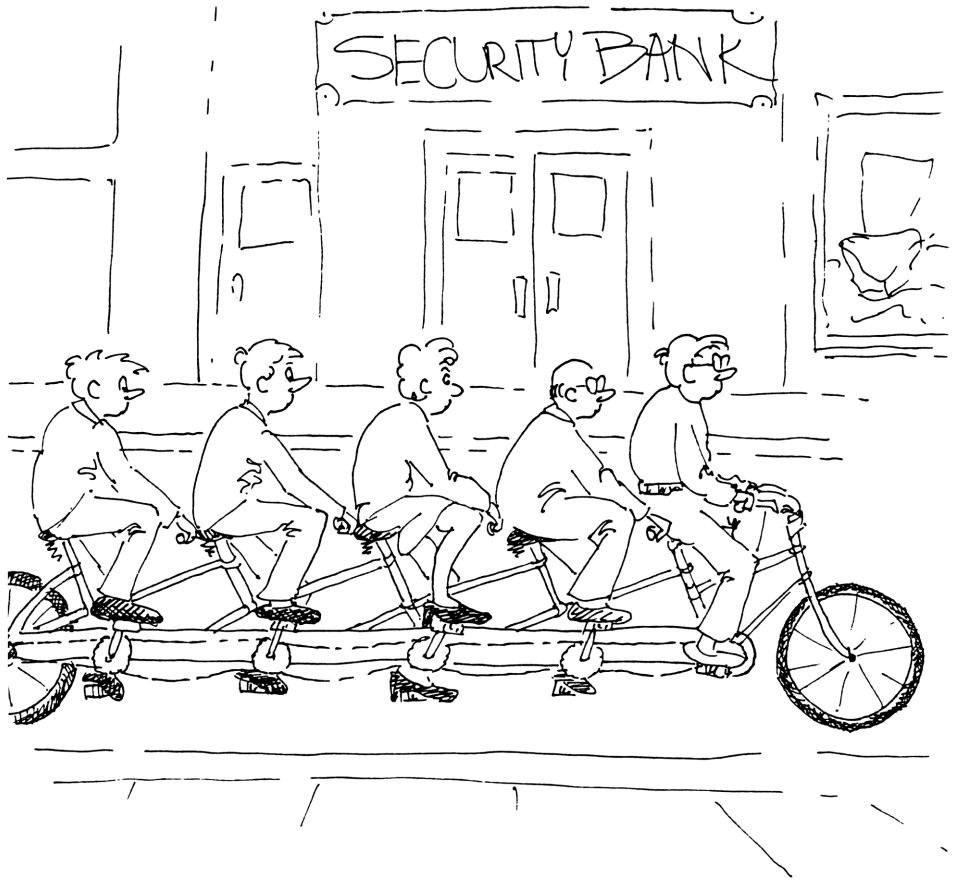
- To add a password to a file, select /File Save, add a space after the file name, type P, and press ENTER. Then you must enter the password twice (once to create it, again to confirm it).

- To open a protected file, you must enter the password exactly as you created it.

- To list the 1-2-3 files that are stored in the current directory, select /File List, then Worksheet, Print, or Graph, depending upon which file types you want to see listed.

- To change the default directory for all worksheets, you must select /Worksheet Global Default Directory, enter the directory name, and then select Update.





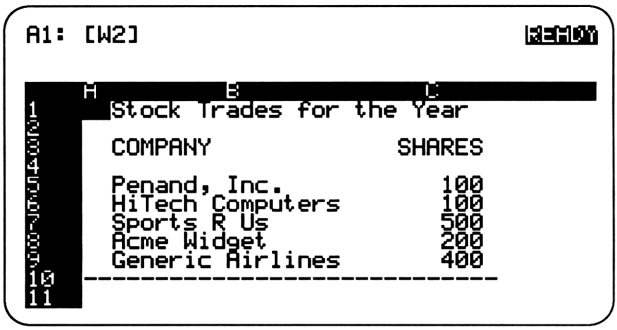
8: Using Databases

There's much more to 1-2-3 than calculations. The program's /Data commands give you powerful record-keeping abilities—and this lesson will show you how to use those commands.

Introduction To Databases

1-2-3's /Data commands provide you with great flexibility in the way you organize and present your data. But to use these commands, you need to arrange your data in a special format called a *database.*

A database is a set of data laid out so that each row contains related information, and each column represents a category. That is, each row is a *record,* and each column is a *field.* Look at your sample worksheet:



Notice that each column holds a category of information: COMPANY, SHARES, PRICE, etc.—these are the fields. And each row contains a complete set of data fields for each company—each row is a record. A phone book is another good example of a database. It contains three fields (name, address, and phone number) and thousands of records.

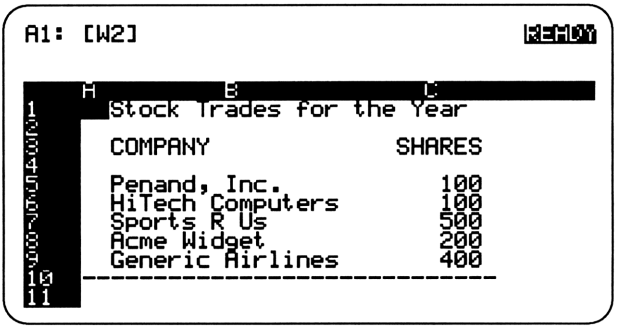
Treating each row as a unit allows you to rearrange and locate records. Thus, if you were to sort these data alphabetically according to COMPANY, then Acme Widget would move to the top of the list—*along with all data in that company's record* (which is what you want).

Rules For Databases

1-2-3 has three strict rules for databases:

- Rule 1: Each field must have a field name.
- Rule 2: A field must contain either all numbers or all labels.
- Rule 3: Blank rows or columns are not allowed.

So...is your worksheet set up as a database? Check it out:



Well...almost: Rules 1 and 2 are met, since each field has a name and contains either all numbers or all labels. But there's a blank row between the field names and the data—a definite no-no.

Exercise: Remove the blank row.

Solution: *Move:* Pointer to row 4
Select: /Worksheet Delete Row
Press: ENTER to specify row 4

Querying The Database

The /Data Query command is the most powerful data management feature available in 1-2-3. /Data Query *locates* records in your database that meet *criteria* you set.

For example, if you had a parts inventory, you could locate just the parts that were purchased before February 15. Or, in an employee database, you could locate just the employees who have taken more than five vacation days. The possibilities are endless.

Although this querying technique is most useful with a large database, you'll be able to see how it works on your small sample worksheet.

Two Ways To Query. 1-2-3 provides two ways to query a database:

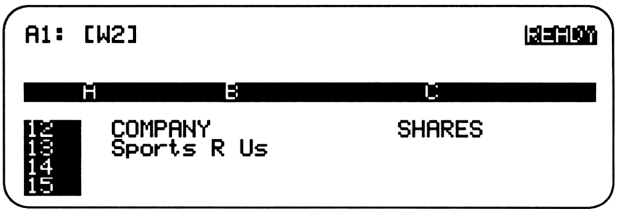
- The Find option simply places a highlight bar at the first record that meets your criteria. To locate other records that meet the criteria, you press the ▼ key.

- The Extract option *copies* the records that meet your criteria to a location you specify. This method is useful for creating summary reports that focus on specific data.

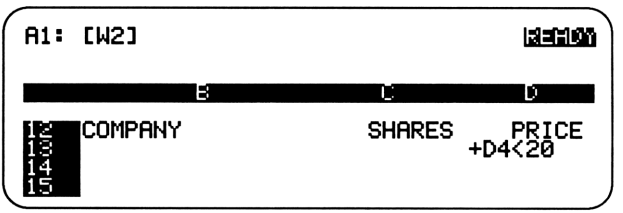
Writing Criteria

Before you can find or extract records, you must tell 1-2-3 the criteria to be used in the selection process. You write criteria in the two-row *Criteria range.* The top row contains the field names; the bottom row, the criteria.

Label Criteria. Label criteria are easy. In the Criteria range, you simply type the required data under the appropriate field name. For example, suppose you have a much longer list of stocks, and that you bought some stocks more than once. The criterion shown below would locate all records containing Sports R Us in the COMPANY field:

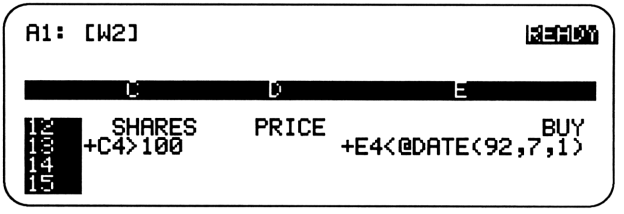


Number Criteria. This technique is a little bit trickier: You write a formula that includes the address of the cell *below the field name* in the field column you're going to search. For example, this criterion selects records with prices below $20.00:



In essence, the formula is saying, "Choose values in the PRICE field (starting in cell D4) that are less than 20."

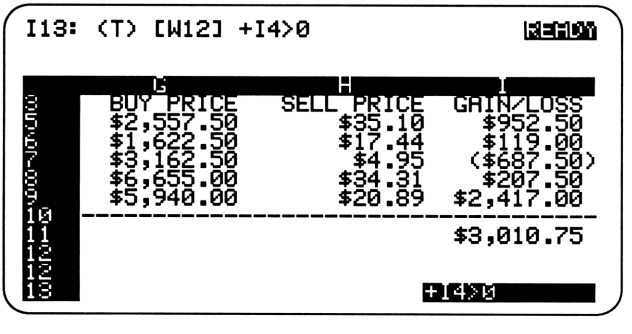
Multiple Criteria. To be more selective, you can specify multiple criteria. For example, these criteria restrict the number of SHARES to be greater than 100 and the BUY date to be prior to 01-Jul:



Exercise: Write a criterion to select profitable stock trades (those for which the GAIN/LOSS amount was more than zero).

Solution: *Move:* Pointer to I13
Type: +i4>0 ENTER

(To see the formula as you typed it, you'll have to format cell I13 with /Range Format Text.)



Setting The Ranges

Now that you've written the criterion, you need to specify three ranges: Input, Criteria, and Output.

- The Input range tells 1-2-3 which records to include in the query operation. You *must* include the field names in this range.
- The Criteria range tells 1-2-3 where you've written the requirements for the query operation. It consists of two rows.
- The Output range tells 1-2-3 where to copy the extracted records, if you're doing an Extract (an Output range is not needed for Find). For convenience, you can specify just the top row of this range.

Each range must include at least one field name, and the names must be spelled the same in all three ranges. To avoid mistakes, it's easiest to copy the field names from the Input range to the other ranges.

Exercise: Copy the field names to the Criteria range and the Output range.

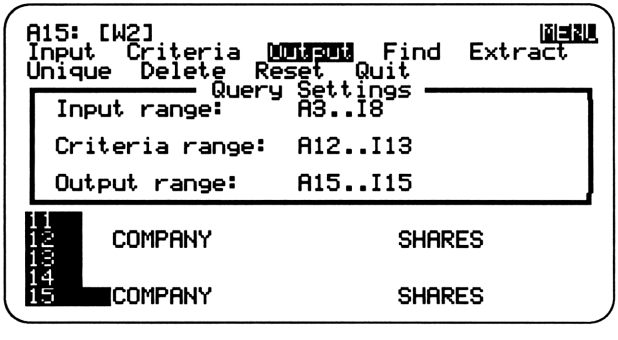
Solution:

Select: /Copy
Type: a3..i3 ENTER (*From* range)
Type: a12 ENTER (*To* range)
Select: /Copy
Type: a3..i3 ENTER (*From* range)
Type: a15 ENTER (*To* range)

Now that you've copied the field names, you're ready to specify the ranges that are needed for query operations. Notice that each range includes the field names.

Exercise: Set the Input, Criteria, and Output ranges.

Solution: *Select:* /Data Query Input
Type: a3..i8 ENTER
Select: Criteria
Type: a12..i13 ENTER
Select: Output
Type: a15..i15 ENTER



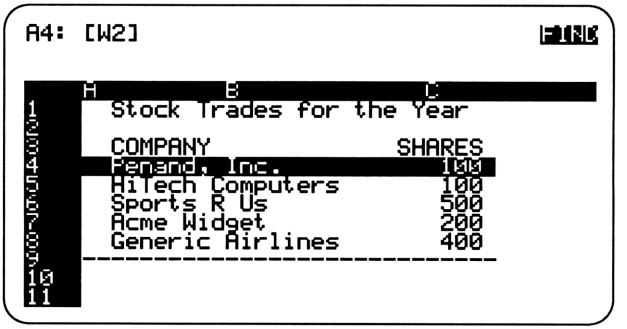
Now you're ready to query the database. Note: To remove the settings box, press F6 (Window).

Finding Records

Here's the fun part. You've arranged your data in a database format, written your criterion, and specified your ranges. If all went well, you're now ready to find and extract records. Start with Find.

Exercise: Find the stocks trades that produced a profit.

Solution: *Select:* /Data Query Find



To find the next record, press the ▼ key. When you reach the last record that meets the criterion, 1-2-3 will beep. Then press the ESC key to return to the menu.

If the Find command didn't work for you, check these things:

- Are the "empty" cells in the Criteria range really empty? (A label prefix in one of these cells can cause problems.)
- Did you write the criterion exactly as shown?
- When you specified the Input, Criteria, and Output ranges, did you include the field names in those ranges?

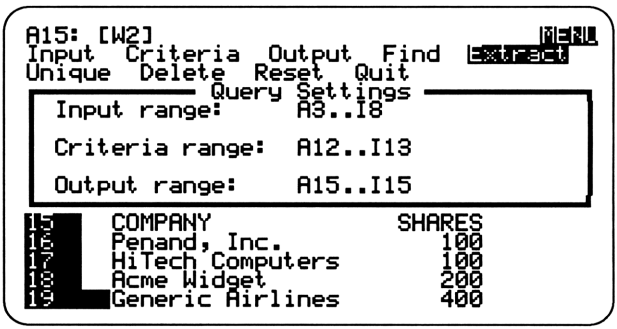
Extracting Records

Now use the same criterion, but this time extract the records—that is, copy them to the Output range.

Exercise: Extract all records with a positive gain/loss amount, using the same ranges as in the Find exercise.

Solution: *Move:* Pointer to A19 so that you can see the Output range

Select: /Data Query Extract



Extracting Selected Fields. You don't have to copy all of the fields to your Output range. To copy data from selected fields, include only those field names in the Output range. For example, to extract just the stock name and the gain/loss amount, you would include just two field names, COMPANY and GAIN/LOSS, in the Output range.

Sorting Records

Besides querying a database, the other technique you'll find most useful is sorting. With the /Data Sort command, you can rearrange your records alphabetically or numerically.

To sort records in a database, you need to specify two ranges:

- The Data Range covers all of the records you want to include in the sort. This range must *not* include the field names. If it does, they will be sorted along with your data records.
- The Primary Key is the single cell containing the name of the field that will be used to determine the sort order.

To sort the database alphabetically by company name, you need to specify the field name COMPANY as the Primary Key.

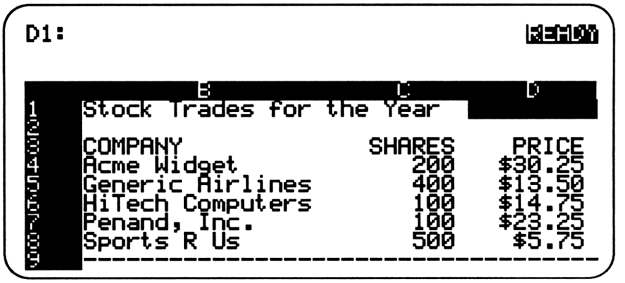
Exercise: Set the Data Range (A4..I8) and specify the Primary Key (the field name COMPANY), to prepare for a sort.

Solution:

Select: /Data Sort Data-Range
Type: a4..i8 [ENTER]
Select: Primary-Key
Type: b3 [ENTER]
Type: A [ENTER] (ascending order)

Exercise: Sort the database.

Solution: *Select:* Go and press ⇧-HOME ▶▶▶ to see:



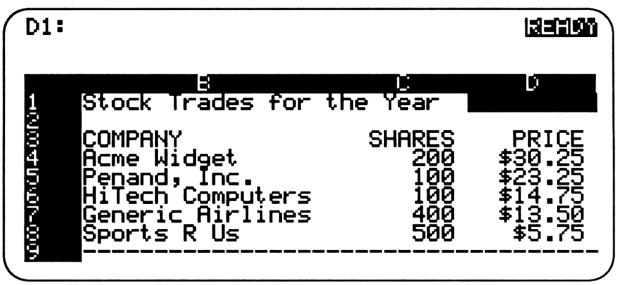
Exercise: Sort the records based on the share price, by setting the PRICE field name as the new Primary Key.

Solution: *Select:* /Data Sort Primary-Key

Type: d3 ENTER

Type: D ENTER (descending order)

Select: Go



Secondary Keys. If you have records that contain the same value in the Primary Key field, 1-2-3 will decide which one comes first when you sort. To determine this order yourself, you can select a Secondary Key —a field used to "break ties" that occur in the Primary Key field.

Numbering Records

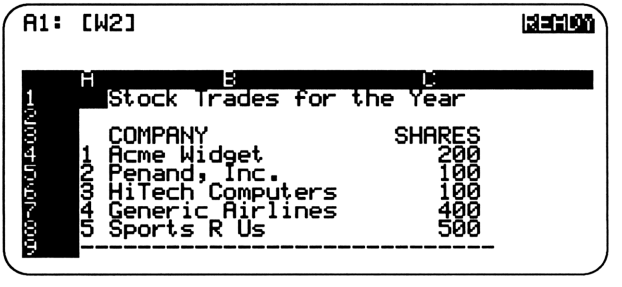
The last /Data command to try is /Data Fill. This command fills a range with a sequence of numbers—a sequence of your own choosing. For example, you could use:

- 1, 2, 3, 4, etc.
- 0.21, 0.42, 0.63, 0.84, etc.
- 5, 0, -5, -10, etc.

You can specify any start number, any step (the difference between successive numbers), and any stop number.

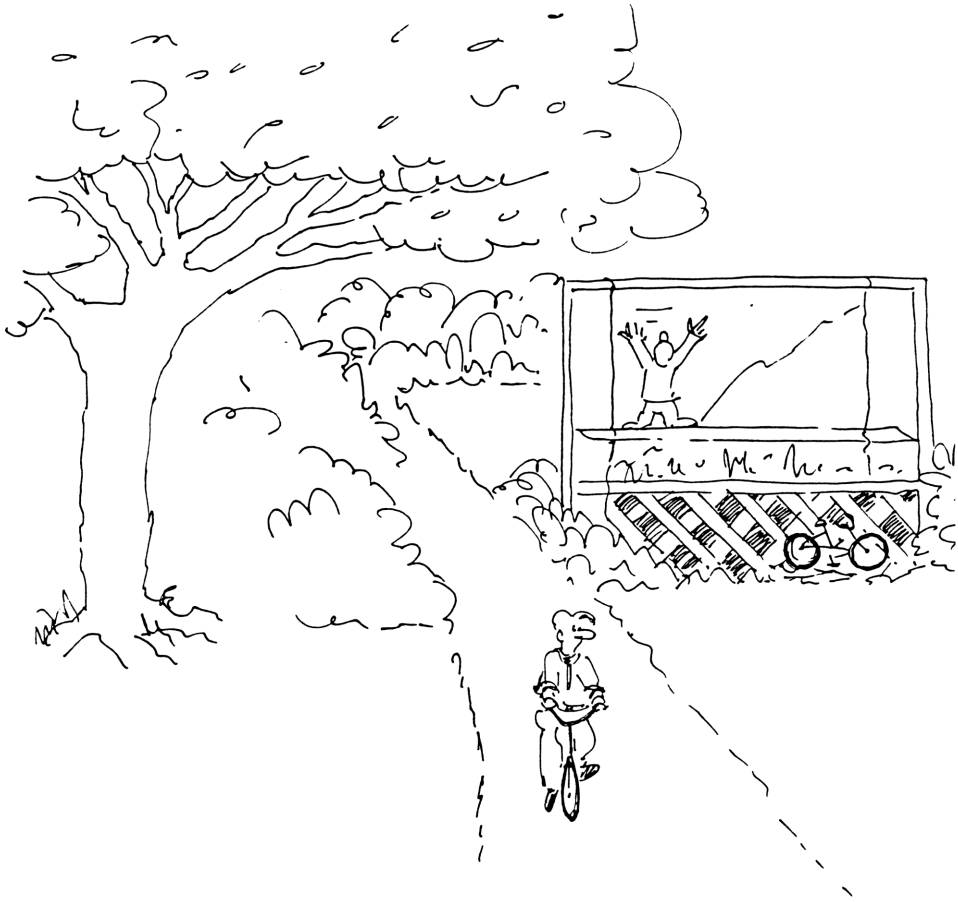
Exercise: Number the stock trades on your worksheet.

Solution: *Select:* /Data Fill
Type: a4..a8 [ENTER]
Type: 1 [ENTER] (the Start number)
Type: 1 [ENTER] (the Step number)
Type: 5 [ENTER] (the End number)
Press: [↑]-[HOME] to see the results



Quick Review Of "Using Databases"

- In a database, each column is a field and each row is a record.
- To be considered a database, your data must be arranged so that: each field has a field name; each field contains either all numbers or all labels; and there aren't any blank rows or columns.
- The /Data Query Find command finds records that meet your criteria.
- The /Data Query Extract command copies records that meet your criteria.
- The first row of the Input, Criteria, and Output ranges must contain at least one field name.
- To sort records, use /Data Sort.
- The /Data Fill command fills a given range with a sequence of numbers.



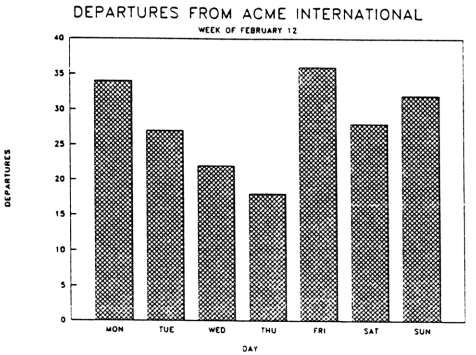
9: Creating Graphs

Words and numbers convey facts accurately, but pictures give you an immediate impression of patterns in your data. This lesson will show you how to create a graph, improve it, and then print it.

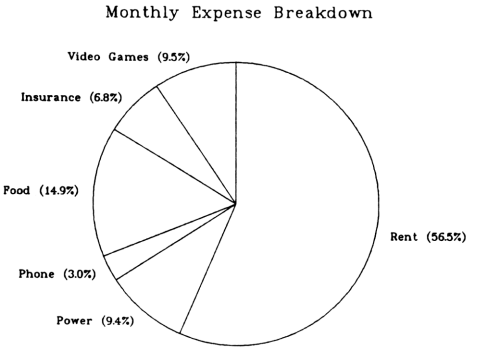
Five Types Of Graphs

1-2-3 allows you to turn your numbers into five types of graphs: Line, Bar, Stacked Bar, Pie, and XY.

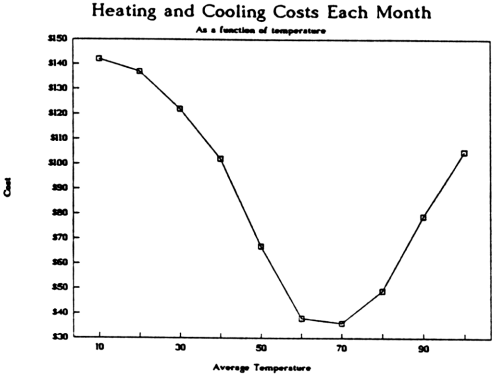
Line, **Bar**, and **Stacked Bar** graphs each show how a single variable affects different categories. In this illustration, the variable is airline departures, and the categories are days of the week.



Pie graphs show how a single category is broken down into parts. In this illustration, the category is monthly expenses, and the parts are rent, power, phone, and so on.

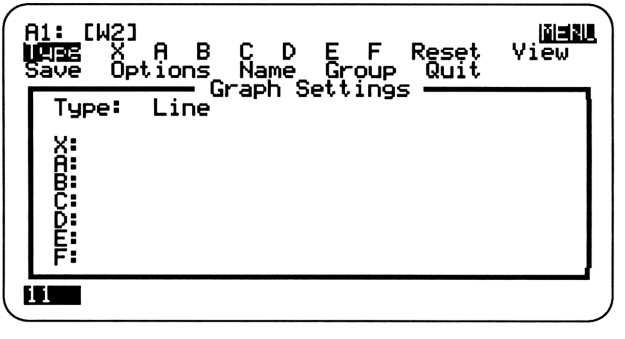


XY graphs show how two variables affect each other. In this example, the two variables are heating/cooling cost and outside temperature.



Exercise: Bring up the /Graph menu.

Solution: *Select:* /Graph



The /Graph menu shows the settings for the current graph (since you haven't created a graph yet, the settings are blank).

Graph Terminology

Creating a graph requires only a few steps. But first, you need to understand the language.

Coming to Terms. All graphs except the Pie have an X-axis (horizontal) and a Y-axis (vertical). For these graphs, you must specify the X range—the range on the worksheet containing the labels or values for the X-axis.

For Line, Bar, or Stacked Bar graphs, the X range will contain labels that identify categories. But for an XY graph, the X range will contain numbers that are parts of a continuous scale.

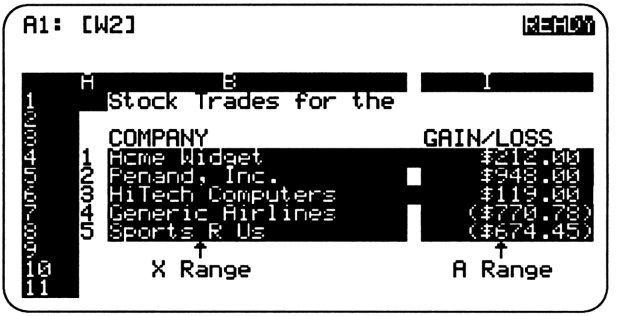
All graphs except the Pie can have up to six data ranges. For example, on a Line graph, each data range would be represented by a separate line. To create a graph, you must specify at least one data range. The data ranges are called A, B, C, D, E, and F (these names do *not* refer to columns A through F!).

For a Pie graph, the X range contains the labels for the pie slices. And since a Pie graph can have only one data range, the numbers that show the size of each slice make up data range A.

Creating A Graph

Now that you know the basics, you're ready to create a graph. For a simple graph, you need to choose the graph type and specify the X range plus at least one data range.

Exercise: Create a bar graph with one data range that shows the gain or loss for each stock trade. You'll be specifying these ranges:



Solution: *Select:* /Graph Type Bar
Select: X
Type: b4..b8 ENTER
Select: A
Type: i4..i8 ENTER

Group Encounter. You can save some time when setting graph ranges if your data are arranged in this order: X range, A range, B range, etc. With your columns arranged like this, you can then select /, Graph, Group, Columnwise, and 1-2-3 will set each range for you.

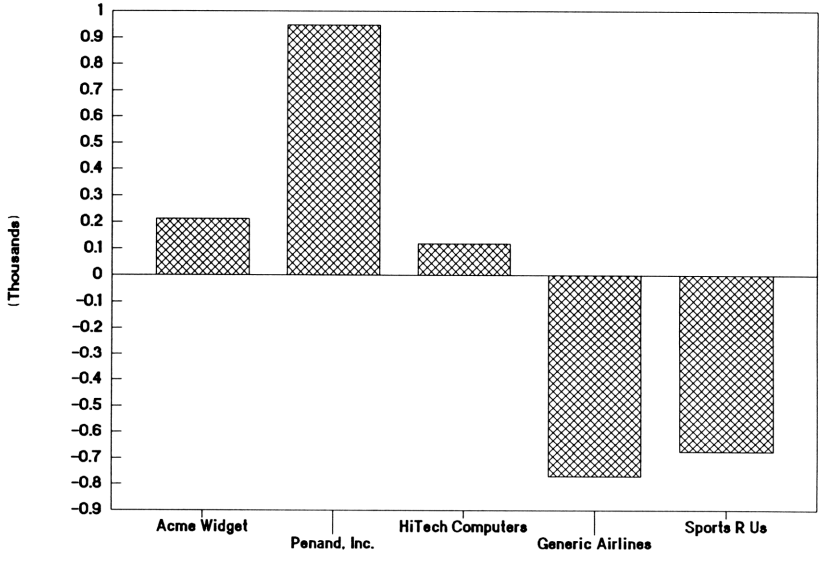
Viewing A Graph

If your computer can display graphics, you can view your 1-2-3 graph on the display. Often, when you first view a graph on the smaller HP 95LX display, it will seem scrunched. A printout will show the detail without being scrunched into a small display.

Exercise: View the current graph.

Solution: *Select:* /Graph View

Press: ⊕ to magnify the graph, and then use the arrow keys to scroll around the graph.



(The image shown here is actually a printout—but you get the idea). Now press ESC to return to the worksheet.

Improving A Graph

Right now, your graph conveys just the basics. To make the graph more attractive and useful to a reader, use various graph *options.*

Exercise: Add a *title* and *axis labels* to the bar graph.

Solution:
Select: /Graph Options Titles First
Type: STOCK TRADES ENTER
Select: Titles X-Axis
Type: Stock Name ENTER
Select: Titles Y-Axis
Type: Gain/Loss ENTER

Exercise: Change the *format* of the numbers on the *Y-axis* so they appear as dollars with one decimal.

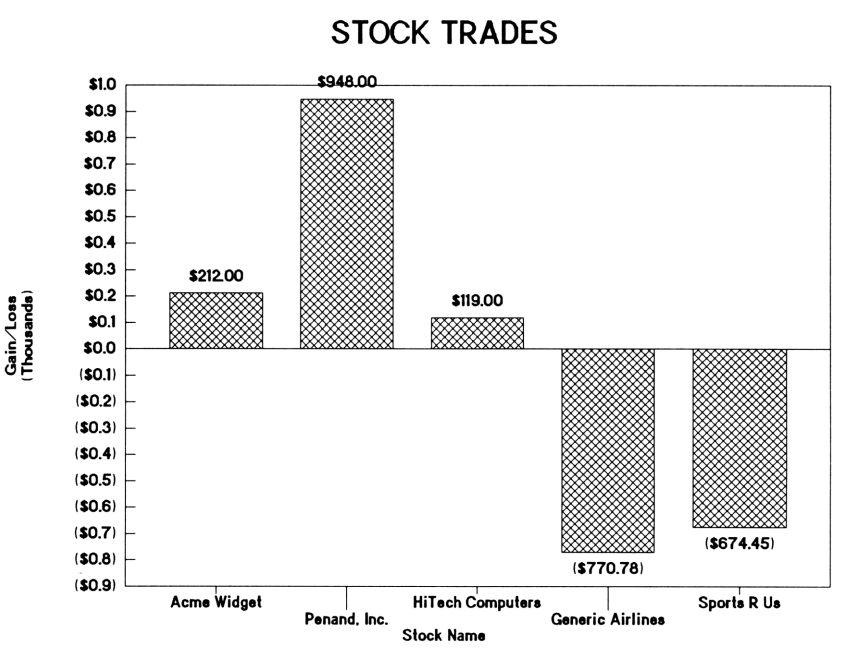
Solution:
Select: Scale Y-Scale Format Currency
Type: 1 ENTER
Select: Quit

Exercise: Display the *actual value* of each bar on the graph.

Solution:
Select: Data-Labels, A
Type: i4..i8 ENTER
Select: Above
Select: Quit two times

Exercise: Now view the resulting graph and see how much more effective it is (this illustration is actually a printout).

Solution: *Select:* /Graph View



Other Options. You may find these commands useful, too:

- Legend: Identifies each data range (if there are more than one).
- Format: Lets you choose to display points, lines, points and lines, or neither for Line and XY graphs.
- Grid: Draws horizontal and/or vertical grid lines on the graph.
- Color: Used for printing the graph with a color printer.
- B&W: Displays the graph in black and white.

Naming And Saving A Graph

Naming a graph and *saving* a graph are different functions:

If you want to create *more than one* graph on the *same worksheet,* you must *name* each graph after you create it, using /Graph Name Create and then typing the name.

After naming one such graph, you can *reset* (with /Graph Reset) some or all of the graph settings (the data ranges, X range, and so on), then enter the new settings for the next graph. And after creating and naming several such graphs, you can then use the /Graph Name Use command to choose which one to use as your current graph.

On the other hand, if you want to *print* the current graph, you must *save* it using the /Graph Save command.

Exercise: Save the current graph so it can be printed.

Solution: *Select:* /Graph Save
Type: STOCKS [ENTER]

1-2-3 adds the extension .PIC to identify it as a graph file. Be aware that this command saves only the *graph* image—not the worksheet—so be sure to save your worksheet, too, using /File Save.

Printing A Graph

You're now ready (and anxious) to print your bar graph. But you can't do it from the 1-2-3 program *or with any of the built-in HP 95LX applications*. The PrintGraph application that is included with the PC version of Lotus 1-2-3, version 2.2 is not included in the HP 95LX version.

However, you may use any graphics printing program that can print .PIC files. You can either download this program into the HP 95LX or upload the graph file to a PC that has the program.*

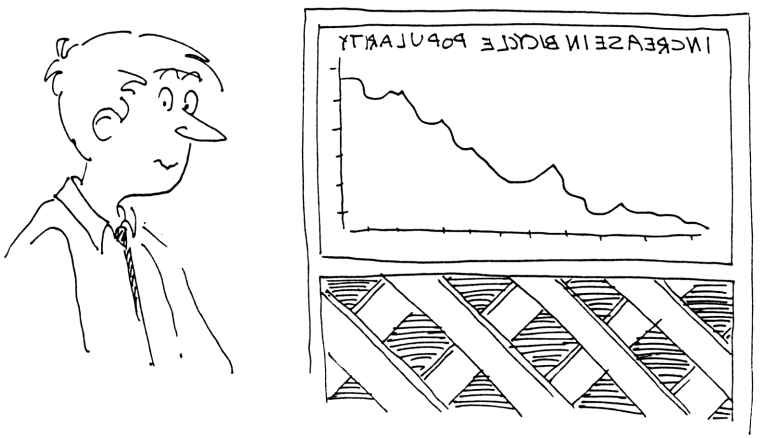
To print the graph from the HP 95LX using a downloaded program:

1. Make sure the graph is named and saved (with /Graph Save) and the worksheet containing the graph is saved (with /File Save).
2. Quit 1-2-3 by pressing /Quit Yes.
3. Quit all other open applications on the HP 95LX, after first saving any open files.
4. Open the Filer (press ▭), highlight the name of the graphics printing program that you are using and press F4 (RUN). This launches the graphics program.
5. Identify the graph file you wish to print (STOCKS.PIC in this case), and the directory in which to find it.
6. Depending upon the graphics program, you may select the dimensions of the printed graph, colors, and other such details.
7. Make sure the printer settings are correct and print the graph.

*See your *User's Guide* or Grapevine's *The Answers You Need for the HP 95LX* for details about either of these procedures.

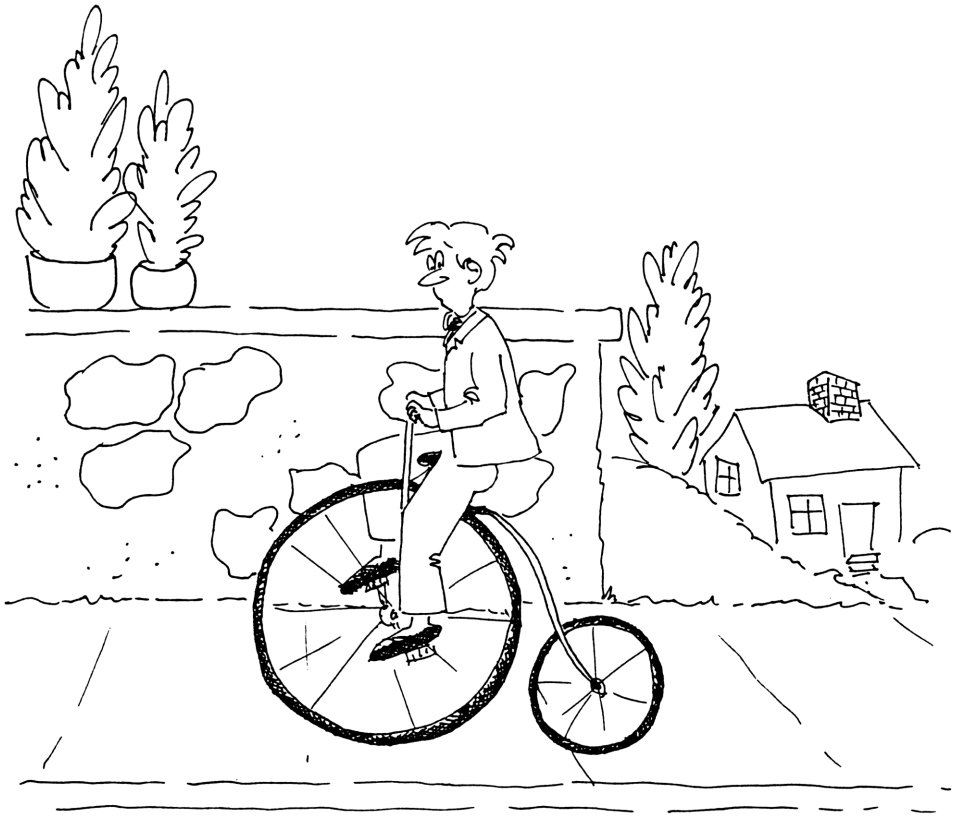
Quick Review Of "Creating Graphs"

- To create a graph, you must select a graph type and then specify some ranges: the range containing the X-axis labels or values, and at least one range containing data.
- The /Graph View command displays your graph on-screen.
- The /Graph Options command allows you to add titles and axis labels, format the numbers on the Y-axis, and make other improvements.
- To create more than one graph on a worksheet, you must name each graph after creating it with /Graph Name Create.
- To print a graph, you must save it using /Graph Save, then exit 1-2-3 and then use a separate graphics printing program—located either on the HP 95LX or on a standard desktop PC. In the first case, the program must be downloaded to the HP 95LX. In the second case, the graph file must be uploaded to the PC.



Notes*

*Use this page to jot down information about your printer settings, graphics printing program, or any other specific details that you need to remember about printing graphs on *your printer* with *your graphics program.*



10: Using Macros

Typing the same command sequences over and over can be tedious. In this lesson, you'll learn how to save keystrokes by telling the 1-2-3 program to enter frequently-used command sequences for you.

Introduction To Macros

You can tell 1-2-3 to type command sequences for you by saving the commands in a special file called a macro. Once created, the macro tells 1-2-3 to type the commands it contains—whenever you press the keys to "call" the macro.

When to Use a Macro. You can create a macro to execute any combination of commands, labels, values, and even pointer movement instructions. Macros come in handy for a wide variety of tasks. For example:

- If you often need to apply the Currency format to an individual cell, you could automate the operation with a simple macro.

- If you need to enter columns of data in an odd pattern—for example, in row 2, then 3, then 5, then repeat—a macro would allow you to move the pointer to the correct cell by pressing ENTER after each entry.

- If you often set up worksheets with particular column widths, formats, and label alignments, you could have 1-2-3 do the work for you by activating a macro.

Of course, you can find many other uses for macros, too, depending on your particular needs and your appetite for learning additional macro commands.

Macro Commands

In a macro, you may include *labels, formulas* and *functions, command sequences, pointer movement instructions,* and *advanced programming commands.*

The idea is to string together a collection of commands in such a way that the result, when executed by 1-2-3, does something useful for you.

Here are some commonly used macro commands:

Action	Command
Bring up Command Menu	'/
Execute a menu command	The initial letter of a menu command
Enter data	~
Wait for you to type data	{?}
Move right one cell	{right}
Move left one cell	{left}
Move up one cell	{up}
Move down one cell	{down}
Move up one screen	{pgup}
Move down one screen	{pgdn}
Move to cell A1	{home}

Just in Case. Macro commands may be created in either uppercase or lowercase letters. That is, {right} is the same as {RIGHT}.

Rules And Suggestions

As with most things, macros come with rules that must be followed, and suggestions that may be followed.

Macro Rules:

1. Type each macro command as a label. To make things easy, just type a left-aligned label prefix (') before each command.

2. Type labels and command sequences "as is," but be sure to enclose all other macro commands in squiggly brackets { }.

3. Leave the cell below the last command empty.

Macro Suggestions:

1. Put your macro in an out-of-the-way part of your worksheet—in a consistent location so you can easily remember where it is.

2. Put each command on a separate row (as opposed to writing the macro as one long label). This method simplifies changes and error detections.

3. Type an English description of each command in the adjacent column. This way, when you return to the worksheet at a later date, you'll have no trouble deciphering your macro.

Creating A Macro

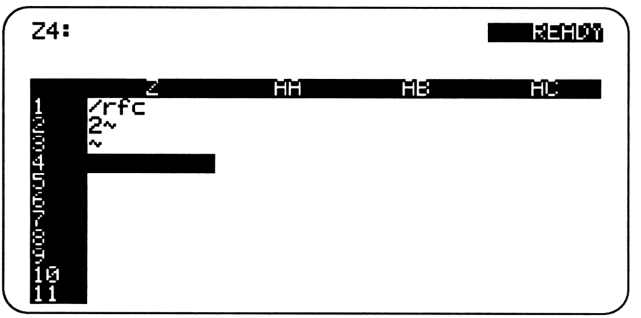
Now that you know the basics of macros, you're ready to try one. First, open a new spreadsheet by pressing [123].

The three steps involved in creating a macro are: 1) write it; 2) name it; 3) document it.

Writing The Macro. Step 1 is to enter the commands in the macro.

Exercise: Create a macro that applies the Currency format with two decimal places to the current cell.

Solution: *Move:* Pointer to Z1 (use [F5] (GoTo))
Type: '/rfc [▼]
Type: '2~ [▼]
Type: '~ [▼]



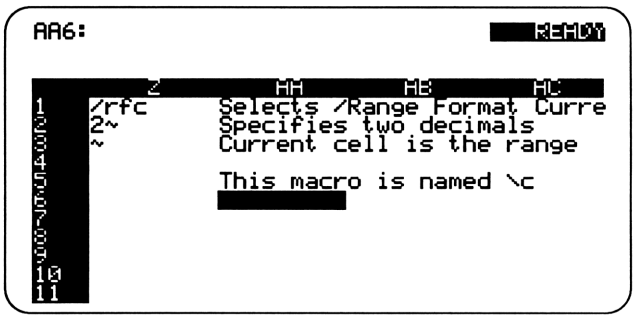
Naming the Macro. This is Step 2: To tell 1-2-3 that these labels are really macro commands, you must name the first cell of the macro. The easy way is to name it \ followed by a single letter.

Exercise: Name the macro \C.

Solution: *Move:* Pointer to Z1
Select: /Range Name Create
Type: \C ENTER
Press: ENTER (to specify Z1 as the range to name)

Documenting The Macro. Now for Step 3: You should write a brief description of each command.

Exercise: Document your \C macro as shown, starting in cell AA1:

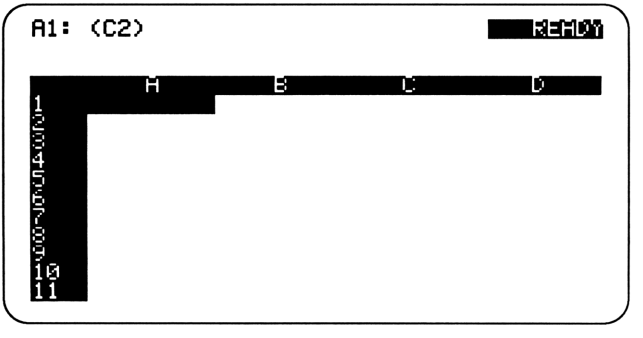


Using A Macro

After you've written, named, and documented the macro, you're ready to use it. To activate a macro, hold down the ALT key, and then press the letter name of the macro.

Exercise: Activate the macro \C in cell A1.

Solution: *Move:* Pointer to A1
Press: ALT-C



Notice the (C2) indicator in the Control Panel. It shows that the Currency format with 2 decimals has been applied to this cell.

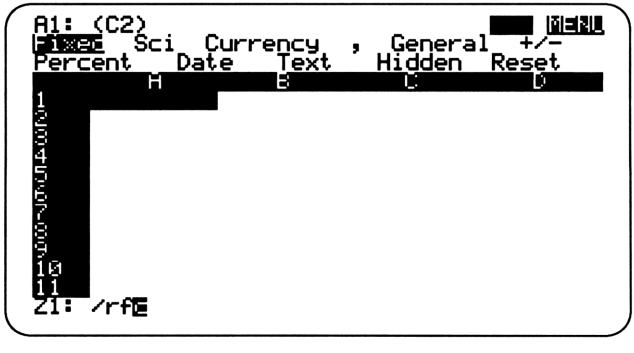
Making Changes To A Macro

Macros don't always work right the first time (usually due to gremlins, sunspots, or, on rare occasions, human error). You find the errors by going through the macro slowly, using the ALT–F2 (Step) feature.

Exercise: Go through the \C macro one step at a time.

Solution: *Press:* ALT–F2 (Step)
Press: ALT–C
Press: ENTER to execute each step of the macro.

Each time you press ENTER, you'll see the next keystroke typed at the bottom of the screen. For example, here is how the worksheet should look after you press ENTER three times.



When you've gone through all of the steps, press ALT–F2 (Step) to turn off the Step mode.

Quick Review Of "Using Macros"

- A macro is a series of commands that will be executed when you activate the macro.

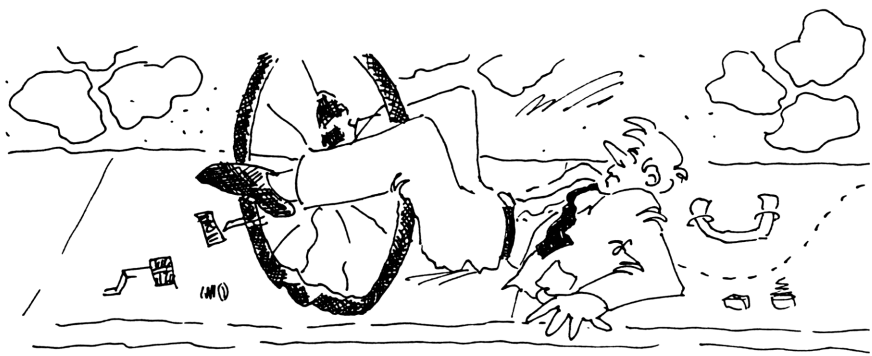
- The rules for macros are as follows:

  - Each instruction must be a label.
  - Labels and command sequences are not enclosed in braces ("squiggly brackets"), but all other instructions are.
  - The cell below the last instruction must be empty.

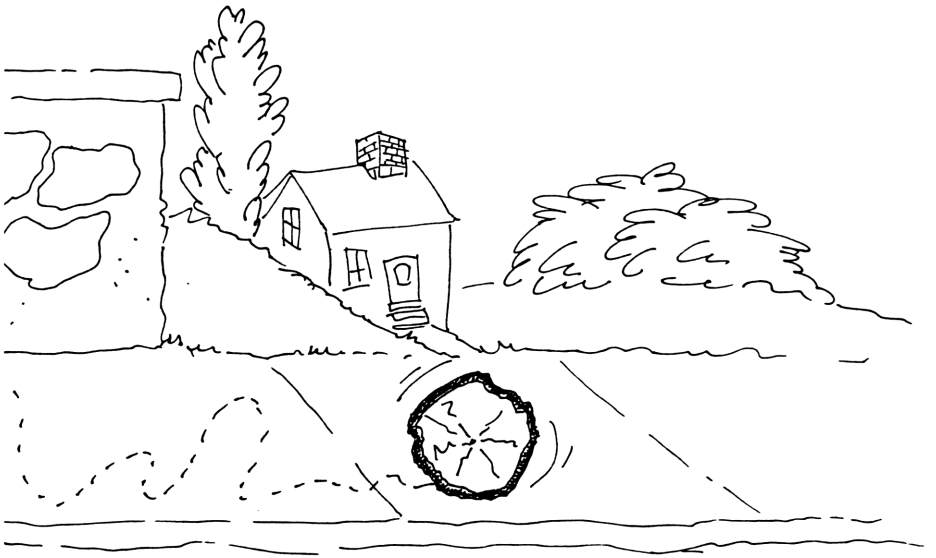
- To name a macro, use /Range Name Create and then name the first cell \, followed by a single letter (for example, \S).

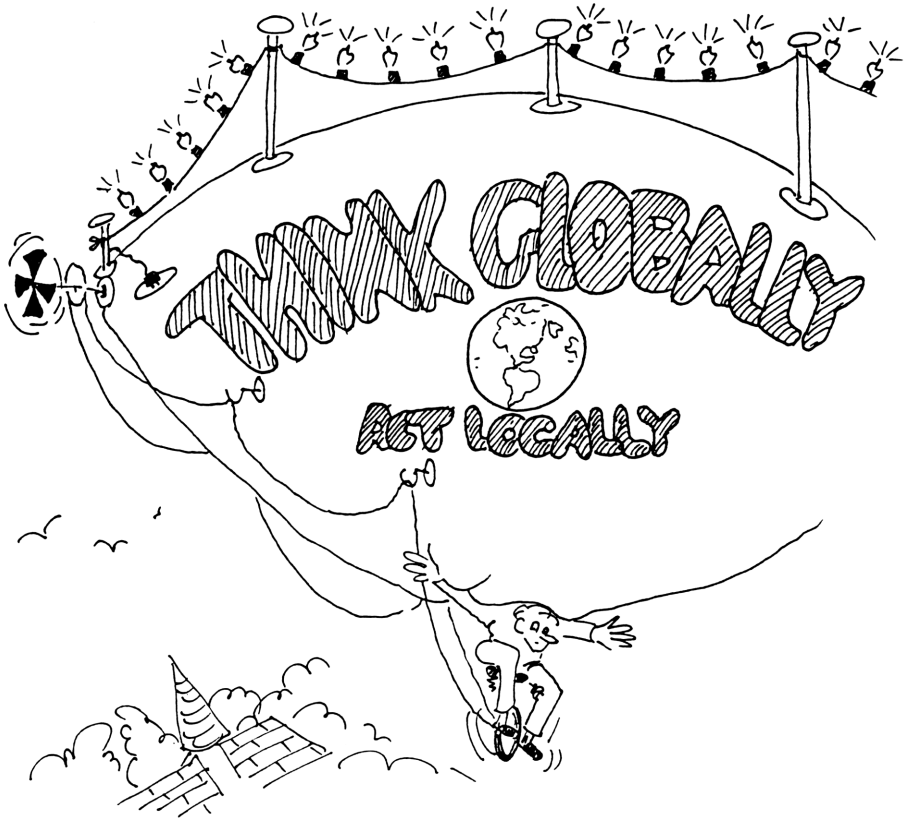
- To activate a macro, press ALT and the letter name together (for example, ALT-S).

- To go through a macro one instruction at a time, press ALT-F2 (Step). Then activate the macro and press ENTER to execute each step. To exit the Step mode, press ALT-F2 (Step).



Your Favorite Macros





11: Making Global Changes

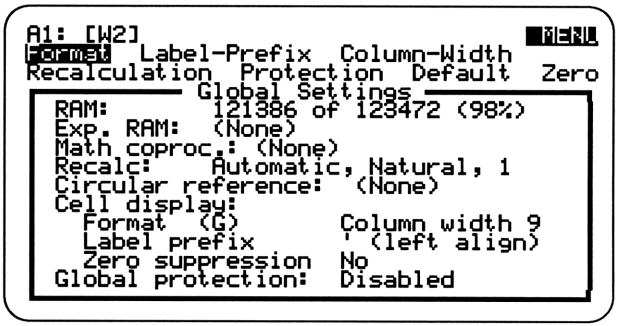
Sometimes you'll want to make changes that affect the entire worksheet instead of selected ranges. This final lesson will show you how to change the appearance of all labels and numbers and how to change 1-2-3's default settings.

Global Commands

1-2-3's /Worksheet Global commands let you make changes that affect all data on a worksheet. To see how they work, retrieve your STOCKS.WK1 worksheet (press /File Retrieve, type stocks, press ENTER).

Exercise: Bring up the /Worksheet Global command menu.

Solution: *Select:* /Worksheet Global



Labels vs. Numbers. When you change the global *number* format, all numbers you enter *and all existing numbers* will be displayed in that format. But when you change the global *label* alignment, *only new labels* that you enter will follow the new global label alignment setting. Neither of these global changes affects *ranges* that you've set (or will set later) with either /Range Format or /Range Label.

Protecting Cells

You've taken a lot of time in setting up your STOCKS.WK1 worksheet, so now use 1-2-3's Protection feature to safeguard your data.

Exercise: Protect the entire worksheet.

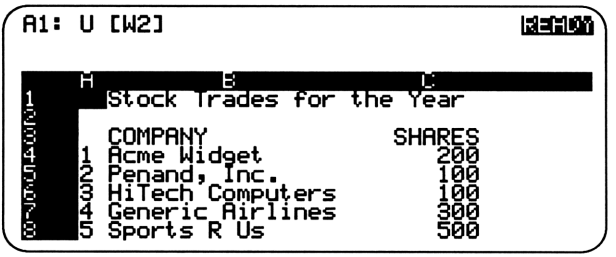
Solution: /Worksheet Global Protection Enable

Unprotecting Ranges. Notice the PR indicator in the Control Panel. It means that *all* cells are currently protected; you can't change any of their contents. However, 1-2-3 lets you remove the protection for *selected ranges,* so that you can enter and edit data only there.

Exercise: Remove the protection from cells A1 through I2.

Solution: *Select:* /Range Unprot

Type: a1..i2 ENTER



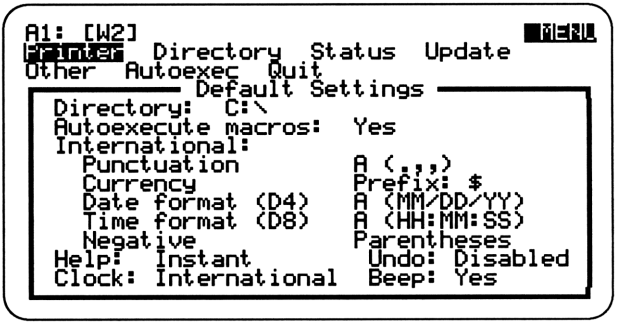
The U indicator identifies an unprotected cell. Now, to unprotect the worksheet again, you must first *re-protect* any unprotected ranges, using /Range Prot. *Then* you can remove the global protection with /Worksheet Global Protection Disable.

Changing Default Settings

1-2-3's default settings are the formatting, alignment, and other settings that are automatically assumed and applied to every new worksheet. But you can change default settings as needed.

Exercise: Bring up the Default command menu.

Solution: *Select:* /Worksheet Global Default

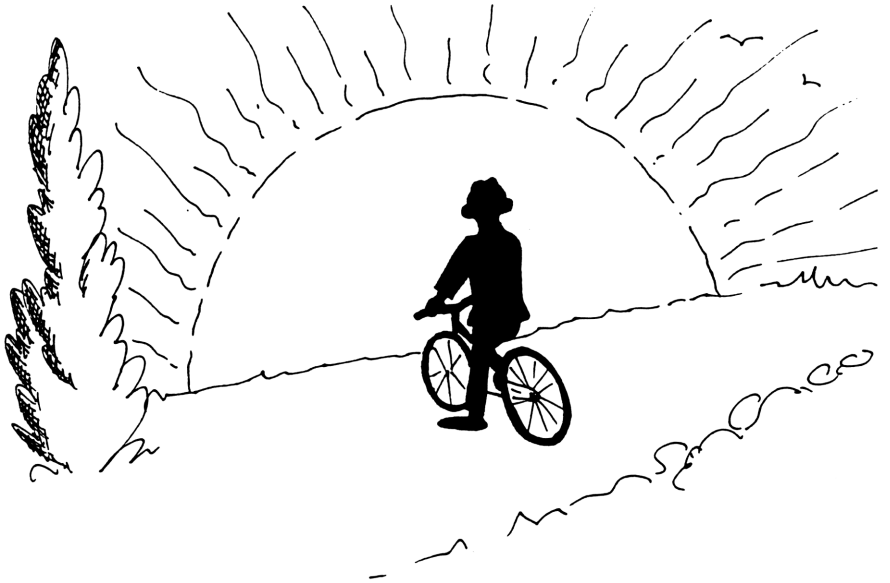


Here, you can change default settings for the printer, the directory, the date format, and other items. If you do make a change, be sure to then select the Update command, or else your new setting won't be saved.

Local Changes. You can override global defaults for the *current* worksheet. For example, /Worksheet Global Format lets you override the default number format for the current worksheet only.

Quick Review Of "Making Global Changes"

- The /Worksheet Global commands let you make changes that affect the entire worksheet.
- Changing the global alignment doesn't affect existing labels.
- Changing the global number format affects all numbers, including ones you've already entered.
- The /Worksheet Global Protection Enable command protects the worksheet. The /Range Unprot command removes protection in a specified range.



Appendix A: Backsolving

Normally, you cannot enter a *target* value into a Lotus 1-2-3 formula—attempting to do so will simply overwrite the formula—and then ***backsolve*** for one of its variables. But the version of Lotus in the HP 95LX is able to work in combination with the built-in HP calculator and its Solve feature to do exactly that.

This Solve feature treats formulas and variables differently than does 1-2-3. For example, look at how each treats the BUY PRICE formula:

Lotus 1-2-3: `BUY PRICE = SHARES*PRICE *1.1`
Calculator: `BUY PRICE-(SHARES*PRICE*1.1)=0`

With 1-2-3, the formula cell (BUY PRICE) can only be calculated after the variables (SHARES and PRICE) are given values. Entering a values for BUY PRICE and SHARES does not make it possible to *work backwards* and figure what the PRICE must be.

With the Solve feature, all three of these (BUY PRICE, SHARES, and PRICE) are treated as variables that are arranged in a formula that is set to equal zero. Thus, you can enter values into any two of the variables—in any order—and use the formula to solve for the third.

There are two ways that you can take advantage of the HP Solve feature to add backsolving to your 1-2-3 worksheets:

- You can use a standard 1-2-3 formula and backsolve for its variables;
- You can create a "Solve" section on the worksheet that mimics the Solve approach to formula-making.

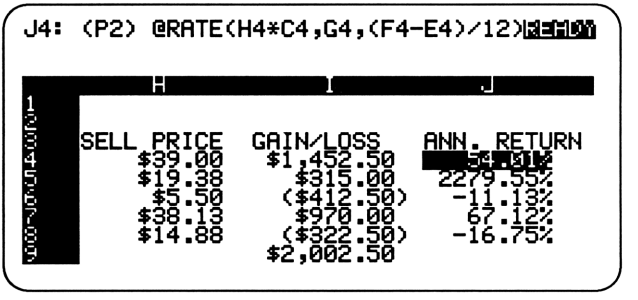
An Example

In the STOCKS worksheet that you've built during this course, you calculated the gain or loss from each stock trade, but do you know what annualized return you received from each trade? You can use the @RATE function which finds the interest rate that transforms a given present value (BUY PRICE) into a given future value (SELL PRICE) over a given period (SELL–BUY).

Exercise: Open your STOCKS worksheet (/File Retrieve) and add a column that calculates the annualize return for each trade. Format the column as a percentage to 2 decimal places.

Solution:

Move: Pointer to I3.
Type: ANN. RETURN ▼
Type: @rate(h4*c4,g4,(f4–e4)/12)*12 ENTER
Press: /Copy ENTER
Type: j5..j8 ENTER
Press: /Range Format Percentage 2 ENTER
Type: j4..j8 ENTER



Backsolving: Two Methods

Method 1: Using a standard Lotus Formula

The annual return percentage for a stock trade is a good candidate for making into a target. Suppose you wanted to know what price you should sell a stock for to garner a *target* annualized return—say 20%.

Exercise: Assuming that you purchase 400 shares of Generic Airlines stock on April 15, 1992 for $13.50 per share, how much must you sell it for on December 31, 1992 to earn a 20% annualized return (pre-tax, of course).

Solution: Enter the new information for the stock:

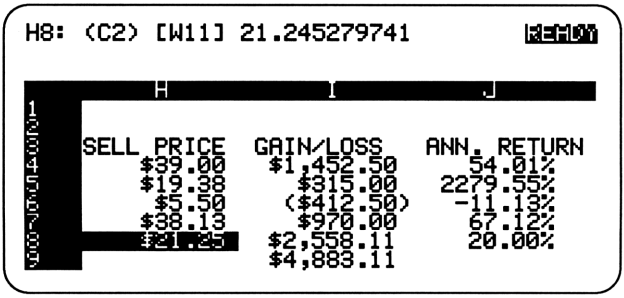
Move: Pointer to B8.
Type: 400▶
13.50▶
@date(92,4,15)▶
@date(92,12,31)▶

Enter the target value for the formula (.2 or 20%):

Press: [Alt], [MENU], Solve, [F8] (1-2-3), [F8] (Form)
Move: Pointer to the formula, J8, and press [ENTER]
Type: .2 [F9] (VALUE) to enter the target value

Backsolve for the the sell value

Press: [F10] (Solve)
Move: Pointer to the cell you want to solve for, H8.
Press: [ENTER], and then [123] to see the results.



Now you know what target you're shooting for—a **$21.25** sell price. Move the pointer to **I8** and notice that the formula still exists even though you "entered" a value on top of it during the backsolve process.

Method 2: Using a "Solve" Formula

This approach requires an extra cell for each formula, allowing the original formula cell (**J8** in the previous exercise) to behave as a variable. The formula, set equal to zero, is entered in the extra cell.

Exercise: Repeat the last exercise, except treat the **ANN. RETURN** as a variable just like **SELL PRICE** or **BUY PRICE** instead of as the "formula" cell. Use a target return of 25%.

Solution: Create the "zero" expression cell:

Move: Pointer to **L8**
Type: **+j8-(@rate(h8*c8,g8,(f8-e8)/12)*12)** ENTER

Enter the new value for **ANN. RETURN**:
Move: Pointer to **J8**
Type: **.25** ENTER

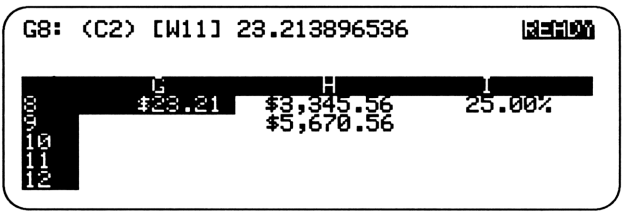
Set the formula value to zero:

Press: ▦, MENU, Solve, F8 (1-2-3), F8 (Form)
Move: Pointer to K8, the zero cell, and press ENTER.
Type: 0 F9 (VALUE)

Backsolve for the selling price (in cell H8):

Press: F10 (Solve)
Move: Pointer to G8, and press ENTER.

To see the results, press 123:



The difference between the two methods is one of flexibility. Method 1 can only use target values in the formula "variable," while Method 2 allows you to put values in any group of variables and backsolve for the remaining variable. However, the cost for the greater flexibility of Method 2 is the fact that it adds an additional cell to the worksheet.

Thus, in many cases (particularly in already established worksheets where space and layout considerations are important), Method 1 may be preferable. In new worksheets that you expect to use for lots of "what-iffing," you will probably find Method 2 the better one.

Appendix B: Class Dismissed

Well, that's it—everything you always wanted to know about 1-2-3 (well...almost...). You've learned a lot in these pages. And the best way to retain your new knowledge now is to *practice.*

You're also ready to go exploring on your own. So here are a few topics you may want to look into:

- @ functions that are relevant to your work.
- Database statistical functions.
- Relative versus absolute cell addresses.
- Changing a graph's fonts, size, and orientation.
- The /File Xtract and /File Combine commands.

By the way, if you liked this book, there are many others that you—or someone you know—will certainly enjoy also. Here are descriptions of a couple of them:

The Answers You Need for the HP 95LX Palmtop

In Grapevines's unmistakably clear, friendly style, here are the quick answers to the most commonly asked questions about your HP 95LX Palmtop. You'll learn how to install applications, use the clipboard, lists, macros, printers, the SOLVER with Lotus 1-2-3, plotting and charting, appointments and memos, files, directories, Downloading/uploading files, and much more—packed in one handy little book. The power of the HP 95LX Palmtop will be at your fingertips!

An Easy Course in Using Lotus 1-2-3

This friendly, well-paced tutorial uses a learn-by doing approach to bring you to comfort and proficiency with Lotus 1-2-3. The example-rich, chapter-by-chapter Easy Course format offers quizzes and notes at regular intervals. And the Projects at the end of each section give you real experience with large spreadsheets and methods for saving time and space. This *Easy Course* teaches —with energy and patience.

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1-2-3 Quick Reference

Important Keys

Bring up Command Menu	/ or MENU
Back up one step	ESC
Get help	F1 (Help)
Edit the current cell	F2 (Edit)
Move pointer to a cell	F5 (Go To)
Move pointer to A1	↖–HOME
Move pointer between windows	F6 (Window)
Cancel the last operation	ALT–F4 (Undo)
Backsolve:	▦, MENU, Solve, F8 (1–2–3)

/Worksheet Commands

Set width of a column	Worksheet Column Set-Width
Set width of several col.	Worksheet Column Column-Range Set-Width
Hide/restore columns	Worksheet Column Hide/Display
Ins/del rows/columns	Worksheet Insert/Delete Row/Column
Freeze a titles area	Worksheet Titles Horizontal/Vertical
Create a window	Worksheet Window Horizontal/Vertical
Erase the worksheet	Worksheet Erase Yes
Insert page break	Worksheet Page

/Worksheet Global Commands

Set width of all columns	Worksheet Global Column-Width
Set alignment of all labels	Worksheet Global Label-Prefix
Set format of all numbers	Worksheet Global Format
Global protection on/off	Worksheet Global Protection Enable/Disable
Change default directory	Worksheet Global Default Directory
Save global default changes	Worksheet Global Default Update

/Range Commands

Align labels in a range	Range Label
Format numbers in a range	Range Format
Hide data in a range	Range Format Hidden
Display formulas in a range	Range Format Text
Reset format in a range	Range Format Reset
Name a range	Range Name Create
Unprotect a range	Range Unprot

/Print Commands

Set print range	Print Printer Range
Print a specified range	Print Printer Go
Align page and reset page number to 1	Print Printer Align
Advance paper after printing	Print Printer Page
Add header/footer	Print Printer Options Header/Footer

/File Commands

Save the worksheet	File Save
Retrieve a file	File Retrieve
List your 1-2-3 files	File List
Change the directory for the current session	File Directory
Erase a file from disk	File Erase

/Graph Commands

Specify a graph type	Graph Type
Specify a data range	Graph A/B/C/D/E/F (pick one range at a time)
Specify X-axis labels or values	Graph X
Set all ranges at once	Graph Group
View the graph	Graph View
Name/use a graph	Graph Name Create/Use
Save graph for printing	Graph Save
Add a main title	Graph Options Titles First

/Data Commands

Fill a range with numbers	Data Fill
Sort records	Data Sort Go
Find records meeting criteria	Data Query Find
Extract records meeting criteria	Data Query Extract
Multiply a range by a number	Data Matrix Multiply

Macros

Activate a macro	Press ALT and the macro's letter name.
Interrupt a macro	CTRL–BREAK CTRL–BREAK
Turn Step mode on/off	ALT–F2 (Step)

About the Author

Robert W. Harris is an instructional designer who develops custom training courses and materials for corporate clients. For more than four years, he taught Lotus 1-2-3 and other computer courses at the Department of Energy's Savannah River Laboratory. Harris holds a B.A. in Visual Arts from Furman University and an M.A. in Cognitive Psychology from the University of South Carolina.

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