CalcADAM

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ADAMCalc Quick Reference Card

A handy, quick reference to ADAMCalc commands and functions. After you learn ADAMCalc, use this card to help you remember ADAMCalc's functions and commands.

Named Constants

PI	ratio of the circumference to the diameter. Equals approximately 3.141592653.
E	used for natural logarithms. Equals approximately 2.718281828459045.
FALSE or **F**	Returns 0, the logical value for false.
TRUE or **T**	Returns 1, the logical value for true.

Operators

+	add
–	subtract
*	multiply
/	divide
=	equals
^	raise to a power
>	greater than
<	less than
>= or =>	greater than or equal to
<= or =<	less than or equal to
<> or ><	not equal
AND	returns true if both conditions are true.
OR	returns true if one condition is true.
NOT	returns the opposite of the logical value: false if the condition is true; true if the condition is false.

Precedence of Operations

First:	Any operations within parentheses
Second:	Negative Values, NOT
Third:	Exponentiation
Fourth:	Multiplication
Fifth:	Division
Sixth:	Addition
Seventh:	Subtraction
Eighth:	AND, OR

Functions

ABS (N)	absolute value of N.
ARCTAN (N)	arctangent (inverse tangent) of N.
AVERAGE (cell area) or **AVG (cell area)**	average or mean of the specified numeric cells.
COL or **C**	the number of the column that contains the formula.
COS (N)	cosine of N.
COUNT (cell area) or **CNT (cell area)**	the number of numeric cells in the cell area.
EXP (N)	Exponent. 2.7182818 to the power of N.
IF (condition; true value; false value)	If the condition is true, the true value is returned. If the condition is false, the false value is returned.
INT (N)	Returns the largest integer less than or equal to N.
LKUP (N; cell area; offset)	Looks up N in a table of values and returns a value associated with N.
LN (N)	the natural logarithm of N.
LOG (N)	the base 10 logarithm of N.
MAX (cell area)	the largest number in the cell area.
MIN (cell area)	the smallest number in the cell area.
NPV (rate; cell area)	Net Present Value. The current value of future cash flow, given a specified interest rate.
ROW or **R**	the number of the row that contains the formula.
SIGN (N)	a number that represents the algebraic sign of N.
SIN (N)	the sine of N.
SQRT (N)	the positive square root of N.
STDEV (cell area)	the sample standard deviation of the values in the cell area.
SUM (cell area)	the sum of the numbers in the cell area.
TAN (N)	the tangent of N.

ADAMCalc Commands

AUTO RECALC

When this key is highlighted, formulas are calculated immediately.

BLANK

Removes the contents of a cell, a row, a column, a block or the entire spreadsheet. The numbering of rows and columns and column widths are not changed. The size of the defined spreadsheet is changed with BLANK SHEET only.

COLOR OPTIONS

Changes the color of the text and the background on the screen.

COLUMN WIDTH

Changes the width of a column. You can change the width of one column, several columns (a subrow) or all of the columns on the defined spreadsheet. You can change the global (default) width with GLOBAL WIDTH.

COPY

Duplicates the formula associated with one cell, row, column or line in another cell, row, column or line. A line is part of a row or column.

DELETE

Removes a column or row from the spreadsheet, renumbers the columns and rows, and adjusts names and fixed references that involve those columns or rows. Relative references are not adjusted. Also can be used to erase the entire spreadsheet.

EDIT CELL

Used to change the format and contents of spreadsheet entries, make automatic cell references, and move the cell pointer right or down automatically. Command keys used within EDIT CELL are Insert, Delete, Clear and Undo.

FORMAT

Changes the way spreadsheet entries are displayed by cell, row, column, block or the entire spreadsheet. You can change the global (default) format with GLOBAL FORMAT.

The available formats are:

Whole Numbers	Percentages
Money	Stock
Default	Bar Graph
Free Format	Science E-Form
Commas	No Commas
Left Adjust	Right Adjust

GO TO (command key @)

Sends the cell pointer immediately to the specified cell or to a named cell, row or column.

@@ finds the last occurrence of a cyclic calculation.

HOLD/RELEASE

Keeps a special display of specified columns and rows constantly in a window.

HELP (command key ?)

Allows you to access nine Help Screens, containing brief descriptions of ADAMCalc commands, functions, formulas and special keys.

INSERT

Allows you to put a new row or column between two existing ones. Surrounding rows and columns are renumbered accordingly, and fixed references and names are properly adjusted. Relative references are not adjusted.

MANUAL RECALC

Keeps ADAMCalc from recalculating automatically.

MOVE

Allows you to relocate a cell to another cell, a row to another row, or a column to another column. The formula and value associated with the cell, row or column are moved.

NAMES

Gives a name to a cell, row or column. The name of a cell replaces the cell coordinates. The name of a column or row replaces the number of the column or row. You can use names in formulas and GO TO a name.

Print (command key)

Begins the printing process. When you press the Print key, smart keys appear with the printing options. You can print either the values or the formulas of the spreadsheet.

SEARCH

Looks through the part of the spreadsheet you specify for cells that contain the characters you specify.

SORT

Arranges text in alphabetical order or in reverse alphabetical order. Arranges numbers in ascending or descending order. You can sort columns or parts of columns. However, the whole row that contains the sorted value is moved to a new location. No recalculation takes place, and ADAMCalc is put into MANUAL RECALC mode.

Store/Get (command key)

Allows you to interact with files on the disk or data pack. The major options within Store/Get are:

RENAME
DELETE FILE
STORE SHEET
STORE VALUES
MERGE
GET

Use STORE SHEET to create files that can be read by ADAMCalc. Use STORE VALUES to create files that can be read by SmartWriter, SmartBasic, or SmartLogo.

Wild Card (command key)

Starts ADAMCalc's calculator, which uses a screen display, the keyboard and the keypad to work like a simple calculator.

WINDOW OPTIONS

Allows you to change the way the spreadsheet is displayed by creating and changing windows. A window is an area of the display through which the spreadsheet can be viewed. Up to six windows can be created, but only one window is active at one time. The active window contains the cell pointer, so it can be scrolled and acted upon by all the ADAMCalc commands. The display in the non-active windows remains stationary, but its contents always match the contents of the active window.

Examples Using ADAMCalc Syntax

[3,1]	fixed reference
[3, C-2]	relative reference
[4,5: 15,5]	cell area reference
[expenses, 15]	cell reference with name
{total cost }	comment
([3,2] + [5,15])/2	evaluate expression in parentheses first

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What is a Spreadsheet?

A spreadsheet is a piece of paper, divided into rows and columns, that helps you work with numbers. Accountants and other people in the business world use spreadsheets to figure out how a company is performing financially. But spreadsheets have other uses. Without realizing it you may have used a spreadsheet in your home already. Have you ever planned a family budget, listing monthly expenses for the year, and totaling them up month by month? Or, have you figured out vacation plans by comparing airfares and hotel costs? How about your checkbook record? All of these are simple spreadsheets.

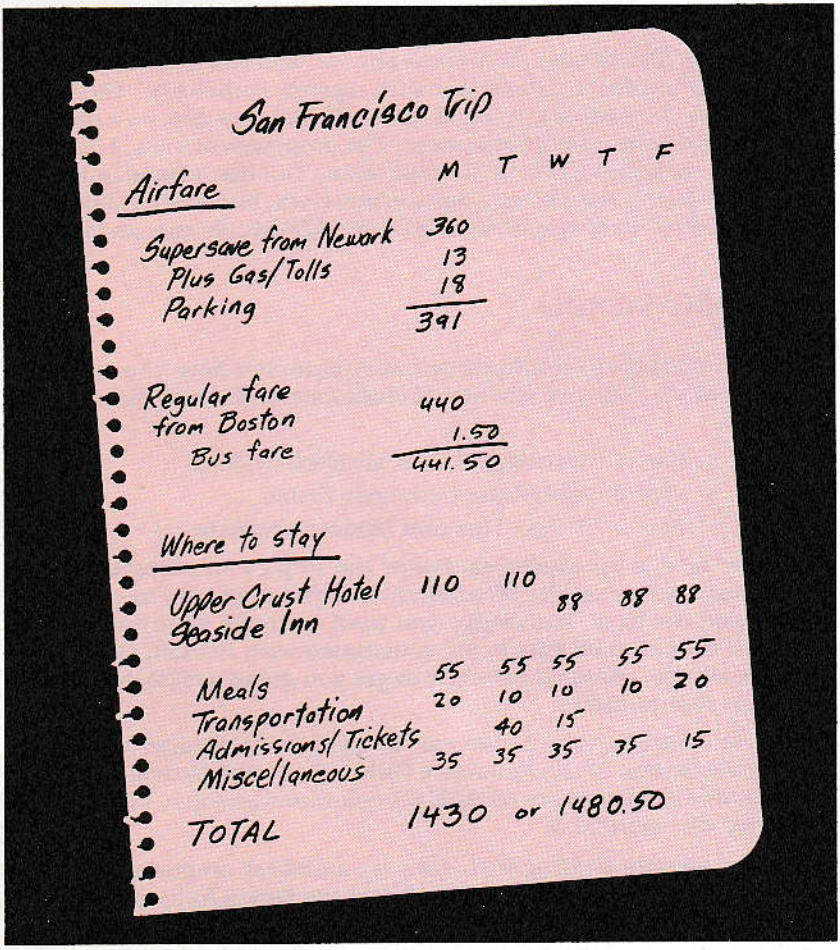

FIGURE 1: YOUR VACATION PLAN IS A SIMPLE SPREADSHEET

ADAMCalc is an electronic spreadsheet. Why an electronic spreadsheet? Arithmetic on paper can be time-consuming. Think of what happens when you think you've got your taxes all figured out, and then you have to change a number on line 4! That changes many of your figures and you've got to recalculate. That takes time and introduces the possibility of errors. With ADAMCalc, you change one number and ADAMCalc automatically recalculates all the other numbers affected by the change.

ADAMCalc is easy to learn and easy to use, because its commands are on smart keys. Every time you look at the screen, you'll see what commands are available. The smart keys change as you use them, guiding you through a command step by step. If you need help, the nine Help Screens give you a concise summary of ADAMCalc's features. Built into ADAMCalc are many shortcuts that can save you time and increase the power of ADAMCalc as you become experienced with the program.

Who can use ADAMCalc? Just about anyone who has to solve problems that involve numbers. A teenager with algebra homework. The family "budget director" who is trying to figure out the best deal on a personal loan, or choose the wisest investment. The proprietor of a small business who wants to know when he'll break even. You don't have to know a lot of math to use ADAMCalc, but the more you know about how your numbers relate to one another, the more ADAMCalc can do for you.

Using this Manual

This manual is divided into three main parts that help you learn and use ADAMCalc. The manual also includes appendixes, a glossary and an index.

Part 1: Learning ADAMCalc Step-by-Step
Part 2: ADAMCalc Reference Guide
Part 3: Design Tips and Model Spreadsheets

If you are new to spreadsheets, follow the step-by-step lessons in Part 1. This part uses example spreadsheets that you might use in your home to give you the basic knowledge you need to create your own spreadsheets. It doesn't take long to get acquainted with ADAMCalc...Lesson 1 uses a simple, personal example to get you going with ADAMCalc in less than ten minutes!

After you complete Part 1, you can easily look up a point or get additional information in the Reference Guide. The alphabetical command descriptions discuss every ADAMCalc command and give helpful hints for using the command.

If you are already familiar with other spreadsheet programs, you may want to skim through Part 1, Part 2 and the Quick Reference Card to get an overview of ADAMCalc. If you are familiar with VisiCalc® , see the comparison of VisiCalc and ADAMCalc features in Appendix 2. Part of learning is doing, so get ADAMCalc running on ADAM, and experiment!

On the ADAMCalc data pack or disk are some working electronic spreadsheets that handle common financial situations for the homeowner like loan analysis and a family budget. The businessman will find the Breakeven Analysis and the Balance Sheet helpful. The lessons use some of these model spreadsheets as examples. You can use these spreadsheets to experiment and learn ADAMCalc, or you can enter your own figures, and use them as working tools. Part 3 describes and illustrates the model spreadsheets.

Appendix 1 tells you what to expect when you use optional equipment (like the 64K Memory Expander) with ADAMCalc. The lessons in Part 1 assume that you have only the basic equipment that is supplied with ADAM.

PART 1:

LEARNING ADAMCALC STEP-BY-STEP

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Getting Started

To start ADAMCalc first make sure there are no data packs or disks in the drives. Check to see that your ADAM is on. If ADAMCalc is on a data pack, insert the data pack in the data pack drive, with the label facing out and the tape side down. Close the door and pull the Computer Reset Switch.

If ADAMCalc is on disk, be sure the disk drive is on. Then open the drive latch and insert the disk with the label up and the write protect notch on the left. Close the drive latch by pulling it down and out slightly. Pull the Computer Reset Switch.

The ADAMCalc program begins to load. The ADAMCalc title screen appears.

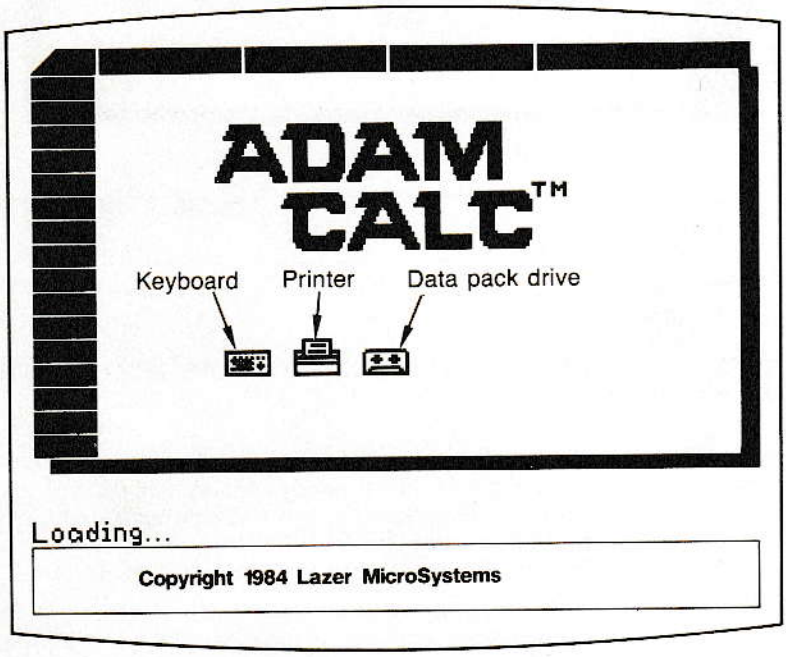


FIGURE 2: THE ADAMCALC TITLE SCREEN SHOWS YOU WHAT EQUIPMENT IS CONNECTED TO YOUR ADAM

The pictures show what equipment you have connected to your ADAM Family Computer System. The lessons assume that you have only the equipment that comes with the basic system, as pictured above. If you have optional equipment, like the 64K Memory Expander or a disk drive, that equipment is also pictured on the title screen.

When the program is fully loaded, the following message and smart keys appear.

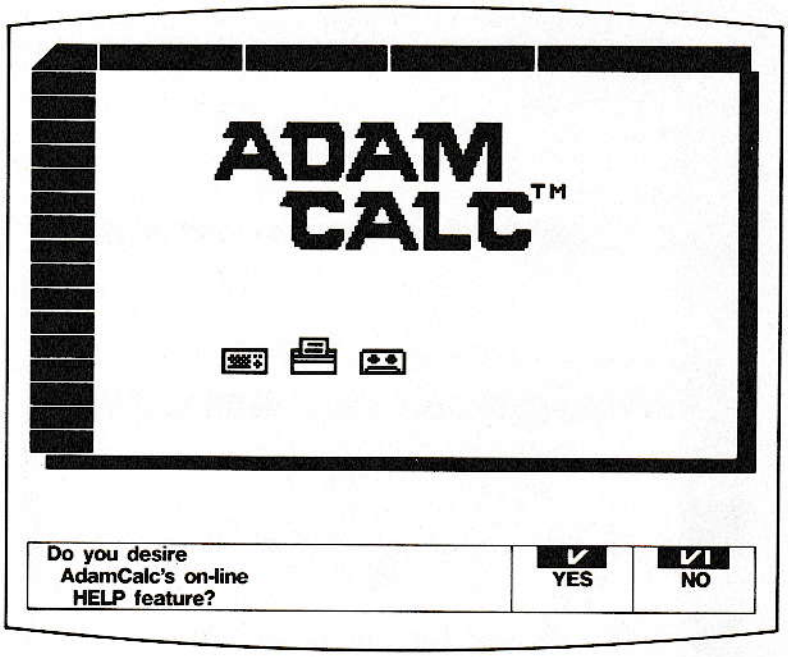


FIGURE 3: ANSWER YES IF YOU WANT TO BE able TO USE THE HELP SCREENS

If you'd like to be able to refer to the Help Screens while you are working, press YES. The Help Screens take up some memory space you could otherwise use for a spreadsheet, so you may want to press NO and look up information in the Instruction Guide. When the ADAMCalc smart keys appear, you're ready to start calculating the ADAMCalc way!

The lessons often instruct you to store your work. It's best to use a blank data pack or disk for storing spreadsheets to save wear and tear on your ADAMCalc program data pack or disk.

Note: If the program does not load, re-insert the data pack or disk in the drive and pull the Computer Reset Switch again. If you still have problems, make sure your ADAM is operating correctly, referring to the procedures in the System Check Out and Troubleshooting Guide, the Set-Up Manual, or the Disk Drive Owner's Manual, if you have a disk drive. After you correct any system problems, if the program still does not load, contact Coleco's Customer Service Department as described in the Service Policy on Page 155.

Introduction to the Screen

Before you can do much with ADAMCalc, you must understand what the graphics and pointers on the screen are for.

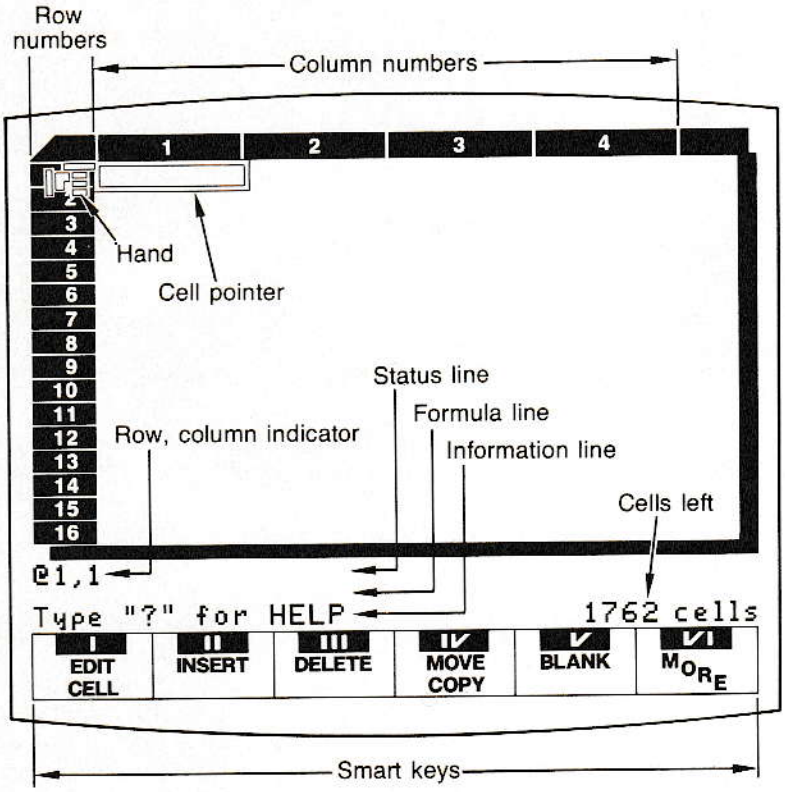


FIGURE 4: THE ADAMCALC SCREEN

ADAMCalc has up to 255 rows and 255 columns that represent the rows and columns of an accountant's spreadsheet. Rows go across the screen; columns go down the screen. Notice the row and column numbers. The imaginary rectangle formed by the intersection of a row and column is a **cell.** The **cell pointer** indicates what cell you are dealing with -- the **active cell.** Move the cell pointer by pressing the right arrow key several times. As you move the cell pointer, watch the **row, column indicator** on the status line. The value changes to reflect the position of the cell pointer. The first number is the row number; the second number is the column number.

As you start building a spreadsheet, you need to check the **cells left indicator** from time to time. This indicator tells you approximately how many more cells you can use before ADAMCalc's memory is full, and it changes frequently as you work. Many factors other than the number of cells used affect how much memory space is left. That's why you should use the cells left indicator as an approximate guide and not an exact count of how many cells are left.

Five of the fifteen entry level smart keys are shown at the bottom of the screen now. The entry level smart keys allow you to initiate ADAMCalc's major commands; they show up when you are not involved in a particular command. To see five more of the entry level smart keys, press MORE (VI). Then press MORE again to see the remaining five. Press MORE again and the first set re-appears. When you are using one smart key and you finish that command, the entry level smart keys that contain that command re-appear. Take advantage of this convenience by grouping your tasks.

Some ADAMCalc commands are initiated with command keys such as Print and Store/Get. This instruction guide refers to smart keys in all capital letters (EDIT CELL). Command keys are in upper and lower case (Print).

The formula line does not contain anything yet. The formula line and other indicators will show up as you start filling in cells. They will be discussed as they appear.

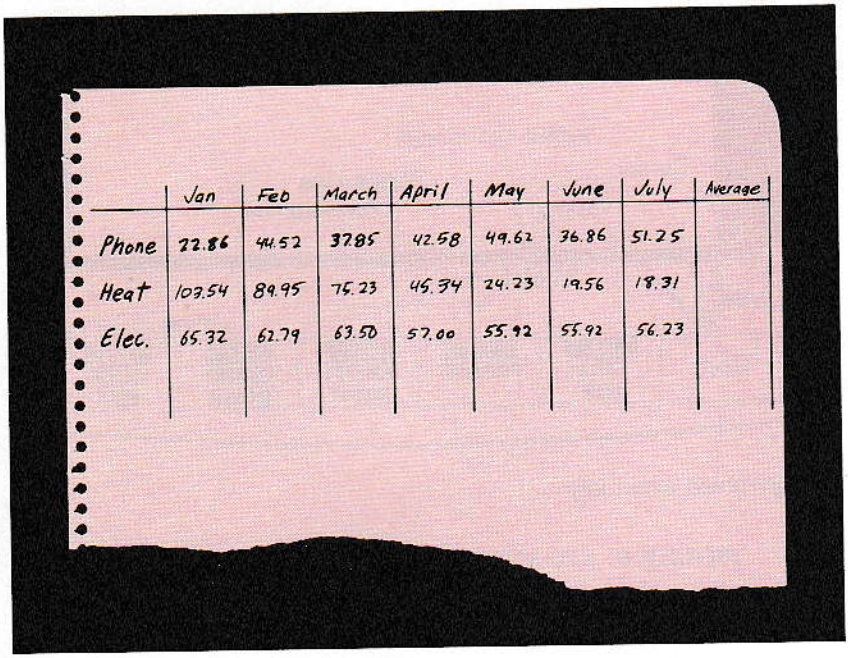
Lesson 1: Your First Spreadsheet

Enough explanation! Want to try a simple example of a spreadsheet that you can enter and see working? This lesson teaches you the basics of entering a spreadsheet and building simple formulas to make it work. You'll try a few shortcuts that make the job easier. In five minutes or so, you'll have a spreadsheet that averages numbers automatically!

Suppose that you wanted to start a family budget. One of the first things you might want to know is how much you are spending per month on expenses like telephone and electric bills. You might also want to average these monthly expenses.

The Family Budget: From Paper to ADAMCalc in 5 Minutes

Figure 5 shows a spreadsheet of family budget information on paper. Enter this spreadsheet into ADAMCalc according to the following instructions. Be sure to follow the instructions exactly so you get a spreadsheet that works like the example. It's a good idea to recheck your work before you press DONE EDIT or Return to make an entry.



	Jan	Feb	March	April	May	June	July	Average
Phone	22.86	44.52	37.85	42.58	49.62	36.86	51.25	
Heat	103.54	89.95	75.23	45.34	24.23	19.56	18.31	
Elec.	65.32	62.79	63.50	57.00	55.92	55.92	56.23	

FIGURE 5: THE BEGINNINGS OF A FAMILY BUDGET

First, press the Home key to quickly bring the cell pointer to row 1, column 1.

Press the right arrow key to move the cell pointer to row 1, column 2. Type JAN. Notice that the hand now points to the **formula line**, which contains a **cursor** and the letters you typed. In ADAMCalc you use the cell pointer to show where you want the information to go on the spreadsheet, but you type on the formula line. The hand points to the formula line to show that this is where the activity is taking place. The cursor marks your place on the formula line. Did you notice that the smart keys changed, too? Any time you type information into a cell, the smart keys change to the "EDIT CELL" smart keys. The lessons will teach you about all of these keys, but for now, look at smart key I.

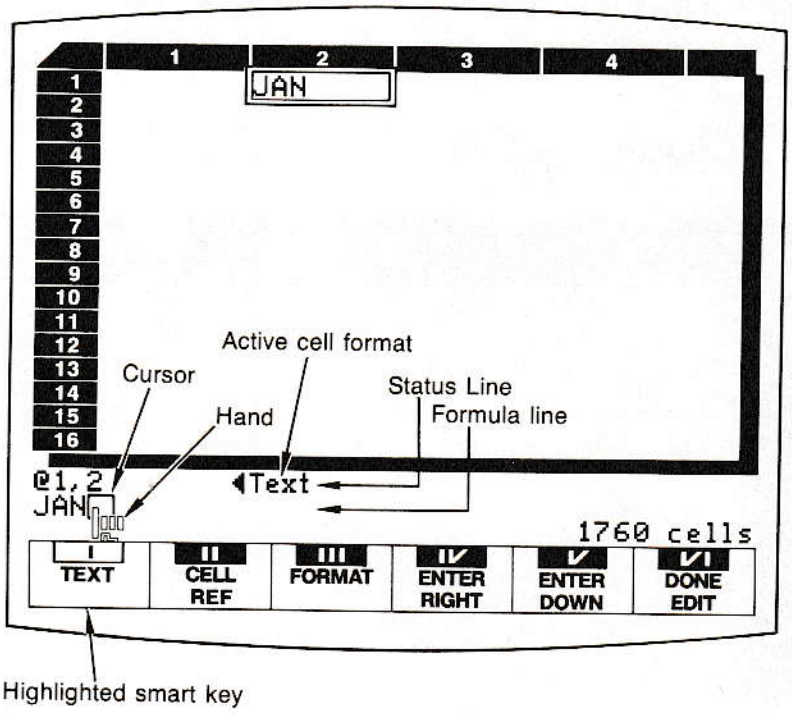


FIGURE 6: ADAMCALC HANDLES YOUR ENTRIES

Entering Into ADAMCalc

Smart key I, TEXT, controls whether the characters you type are treated as text or numbers. Text cannot be calculated; numbers can. As shown in Figure 6, TEXT is highlighted, indicating that the characters you typed (JAN) will be treated as text. ADAMCalc assumes you are entering text because the first character you typed was a letter (J).

If the first character you type is a number, ADAMCalc assumes you are entering numbers, and smart key I is not highlighted.

Press DONE EDIT (VI) or Return to enter the information from the formula line into row 1, column 2 (1,2). The smart keys change back to the entry level. Now look at the bottom of the screen to see ADAMCalc's latest report about the status of the spreadsheet. The **status line** tells you that 1,2 contains JAN. **Active cell format** tells you some characteristics of the active cell. Format includes such characteristics as whether the cell contains text or numbers, if it is lined up on the right or the left side of the column and how a number is represented. As you can see, the format of 1,2 is Text.

Press the right arrow key to move the cell pointer to row 1, column 3. Type FEB and press Return.

Press the right arrow key again to move the cell pointer to row 1, column 4. Type MARCH and press Return.

It looks like there aren't any more columns for the rest of the months, but don't despair. Press the right arrow key again. Column 5 moves onto the screen and column 1 disappears temporarily off the left side of the screen. Obviously, you can't see 255 rows and columns on the screen at one time, but you can get to any part of the spreadsheet with the arrow keys.

Continue moving the cell pointer and typing the titles of the columns from Figure 5.

Now enter the titles of the expense categories in column 1. Move the cell pointer to 3,1 and type Phone. This time, before you press Return, press ENTER DOWN (V). Now when you press Return, Phone is entered in 3,1 and the cell pointer automatically moves down one row in the same column.

Type Heat in 4,1 and press Return.

Type Electric in 5,1. This time press DONE EDIT, since that is all the text you want to enter in column 1 for now.

So far, so good! Now, get some numbers into your spreadsheet so you can see it working. When you start ADAMCalc, it represents all numbers as dollars and cents because the default format is MONEY. That's perfect for this example, because the numbers you are interested in are dollars and cents.

Move the cell pointer to 3,2, and type 22.86. Note that TEXT (I) is not highlighted -- you are typing numbers, not text. ENTER DOWN (V) is highlighted because you were using it before. Press ENTER RIGHT (IV). ENTER RIGHT is now highlighted and your numbers will be entered across row 3 as you type.

Continue typing the numbers on the third row of the spreadsheet, pressing Return after each one. Press DONE EDIT (VI) after you enter 51.25 in column 8. Use the same procedure to enter the numbers in rows 4 and 5.

What about Mistakes?

What if you make a mistake while typing? The simplest way to correct errors is to move the cursor with the arrow keys or backspace to the incorrect character and type right over it. (Other ways to correct errors on the formula line are discussed in Lesson 2.)

If you mistakenly mix up numbers and text, and get error messages like NEED FORMULA, EXTRA DATA ON LINE, or NAME PROBLEM, press EDIT CELL (I), then use the TEXT smart key to change the entry.

If you ever press the wrong smart key and find yourself in unfamiliar territory, there is an easy way out. Press the Escape/WP key at the top left corner of the keyboard once or twice and the entry level smart keys reappear.

Now that you've got both text and numeric entries, move the cell pointer around and watch the status line. It reports the format and what you entered for each cell. Your entries are either TEXT or DEFAULT format.

ADAMCalc has a handy shortcut called GO TO that lets you zip around the spreadsheet in record time. Type @ (while holding down the shift key) to start the GO TO command, then type the coordinates for the cell you want to go to (3, 7 for example) and press Return. Immediately the cell pointer jumps to 3,7.

Making the Spreadsheet Work with Formulas and Functions

You didn't enter any numbers in the column called AVERAGE because ADAMCalc is going to calculate the average of the monthly expenses for you! ADAMCalc already knows how to compute an average and do other mathematical and logical **functions.** But you have to give ADAMCalc instructions about what to average and where to display the average. The instructions are expressed in a **formula.** The rules ADAMCalc uses for formulas are called **syntax.**

Move the cell pointer to 3,9, the location of the first average. Type the following formula.

AVG([3,2:3,8])

What does this formula mean? AVG stands for average. The numbers and symbols inside the parentheses tell ADAMCalc what to average. Each of these numbers and symbols mean something:

[ ] Square brackets enclose a **cell reference.** The cell coordinates inside the brackets can refer to one cell or an area of cells.

: A colon indicates that the cell coordinates refer to an area of cells. A **cell area** is a group of cells in a rectangle, defined by a top left corner and a bottom right corner.

3,2 and 3,8 are cell coordinates. 3,2 (row 3, column 2) is the top left corner of the cell area. 3,8 (row 3, column 8) is the bottom right corner of the cell area. So, the cell area looks like this:

	1	2	3	4	5	6	7	8	9
1		JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AVERAGE
2									
3	Phone	$22.86	$44.52	$37.85	$42.58	$49.62	$36.86	$51.25	
4	Heat	$103.54	$89.95	$75.23	$45.34	$24.23	$19.56		
5	Electric	$65.32	$62.79	$63.50	$57.00	$55.92	$55.92		

Check TEXT (I). The highlight is on because the first character you typed was the letter "A." Since you are typing a formula, it should be treated as numbers, not text. So press TEXT (I) to turn off the highlight. Also be careful if you use the Lock key to type capital letters...make sure you press the Lock key again to return to lower case when you type numbers. Recheck your formula line and when everything is OK, press DONE EDIT (VI) and watch what happens in 3,9. ADAMCalc calculates the average of your monthly telephone bills and puts the answer ($40.79) in 3,9!

To compute the average of the monthly heat bills, first move the cell pointer to 4,9. The formula will be much the same as the formula to average the telephone bills, but the cell area is different. Type the formula AVG([4,2:4,8]), press TEXT to turn the highlight off and press Return. The number 53.74 should appear in 4,9.

By now, you can probably figure out how to get an average of the electric bills. Move the cell pointer to 5,9, type the formula AVG([5,2:5,8]), press TEXT to turn the highlight off and press Return. The number 59.53 should appear in 5,9.

Just for fun, see what would happen to the heat bill average if some of the monthly bills went up quite a bit. Change a few of the numbers by moving the cell pointer to the cells and typing new numbers. As you press Return to enter a number, the calculation message appears briefly. You don't have to worry about a thing; ADAMCalc accurately computes new averages.

	1	2	3	4	5	6	7	8	9
1		JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AVERAGE
2									
3	Phone	$22.86	$44.52	$37.85	$42.58	$49.62	$36.86	$51.25	$40.79
4	Heat	$103.54	$89.95	$75.23	$45.34	$24.23	$19.56	$18.31	$53.74
5	Electric	$65.32	$62.79	$63.50	$57.00	$55.92	$55.92	$56.23	$59.53

THE COMPLETED FAMILY BUDGET SPREADSHEET

In just a few minutes, you created a working spreadsheet!

But this lesson is just an introduction to the powers of ADAMCalc. Lessons 2 through 5 introduce additional ADAMCalc features. Before you move on, store your first spreadsheet on a data pack so you can use it in Lesson 2. Then you'll have a chance to see the Help Screens.

Storing the Spreadsheet

This description of storing a spreadsheet assumes that you have one data pack drive. See Appendix 1 for information on storing with additional data pack and disk drives. To store a spreadsheet, first remove the ADAMCalc data pack and insert a blank data pack. Press the Store/Get command key, then press STORE SHEET (III). The messages "Drive 1" and "Getting Directory" appear at the bottom of the screen. The directory of file names appears, listing the names of all the files on the data pack.

Press NEW FILE (VI). Then type in the name BUDGET for your file. When you are done typing the file name, press DONE EDIT (VI) or Return. The data pack or disk spins as your file is being stored. When the directory disappears and the spreadsheet reappears, your work is stored.

ADAMCalc Can Help

Following the instructions in this lesson, you created a real spreadsheet. When you start making spreadsheets on your own, you won't be following step-by-step instructions, but you may need some help. ADAMCalc's Help Screens can give you a quick answer to a quick question. To see the Help Screens make sure the entry level smart keys are showing. If you are in the middle of a command, either finish the command or press Escape/WP to return to the entry level smart keys. Then hold down the SHIFT key and press the question mark. (When the program was loaded if you said that you did not want Help, you can't see the Help Screens. Instead, the message "Help was removed" appears.)

First you see a screen that gives you some simple instructions on using the Help Screens. Pressing the appropriate smart keys gets you the kind of help you need.

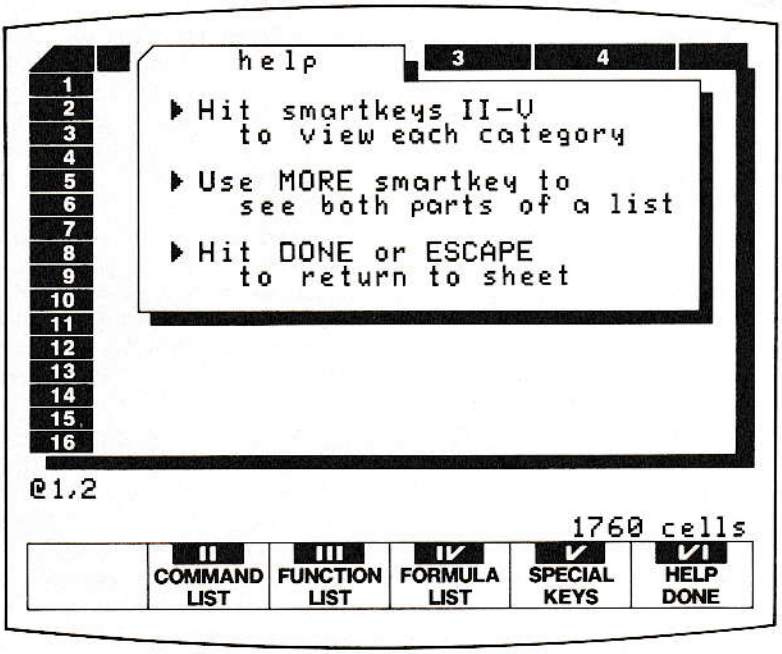


FIGURE 7: HOW TO GET HELP

For example, press FUNCTION LIST (III) to see a list of the functions included in ADAMCalc, with a brief definition. It takes more than one screen to display the whole list, so press MORE (I) to see the second screen.

If you're not sure what you need help with, browse through the Help Screens by pressing the different smart keys until you spot the thing you want.

When you are done with the Help Screens, press HELP DONE (VI) or Escape/WP. The spreadsheet that was on the screen when you went into the Help Screens returns.

If you want to erase the spreadsheet from the screen and continue working with ADAMCalc, press DELETE (III), then DELETE SHEET (VI).

If you want to erase the screen and stop working with ADAMCalc, remove all the disks or data packs. Pull Computer Reset or turn the computer off.

Lesson 1 Wrap-up

This wrap-up summarizes the major concepts you learned in Lesson 1 and includes some hints that make them easier to use.

- ADAMCalc treats text and numbers differently. Text cannot be computed. Formulas must be numeric. ADAMCalc assumes you want text when you type letters, and numbers when you type numbers or special characters. Use the TEXT smart key (I) to tell ADAMCalc how an entry should be treated. When TEXT is highlighted the entry is treated as text. When TEXT is not highlighted the entry is treated as numeric.
- You manipulate information on the spreadsheet with the same kind of mathematical formulas you use to manipulate numbers on paper. ADAMCalc expects the formulas to be expressed according to certain rules, ADAMCalc's syntax. When you haven't followed ADAMCalc syntax, messages appear on the screen to help you present the formula correctly. See Sections 2 and 4 of the Reference Guide for more information.
- ADAMCalc has many built-in functions - mathematical and logical operations it is programmed to do. You can make use of these functions by calling them by name in a formula. See Section 3 of the Reference Guide for a complete list and descriptions of ADAMCalc's functions.
- Several characteristics are attached to every cell. Numeric cells are defined by three characteristics:

  Formula: The numbers or letters you type in. The formula may be a single number or it may be a mathematical or logical expression. The formula shows up on the formula line.

  Format: The way the value is displayed and treated, for example as whole numbers with commas.

  Value: The number that results from a calculation. Shows on the spreadsheet and on the status line, often represented differently.

- Text cells contain the text and a format that controls whether the text is lined up to the right or the left in a cell.
- Typing in a new formula for a cell replaces any value or formula that was there before. Changing the formula of a numeric cell does not change its format. See Sections 2 and 3 of the Reference Guide for a complete discussion of formulas and functions.
- Escape/WP lets you leave a command without putting it into effect, and brings back the entry level smart keys.
- ENTER RIGHT (IV) and ENTER DOWN (V) are shortcut keys that move the cell pointer along a column or row as you make entries. These keys keep using the same format until you change it, or until the cell pointer is on a cell that has a different format. Then, ENTER RIGHT and ENTER DOWN pick up the new format and use it until the next change.

Lesson 2: More Features, More Power

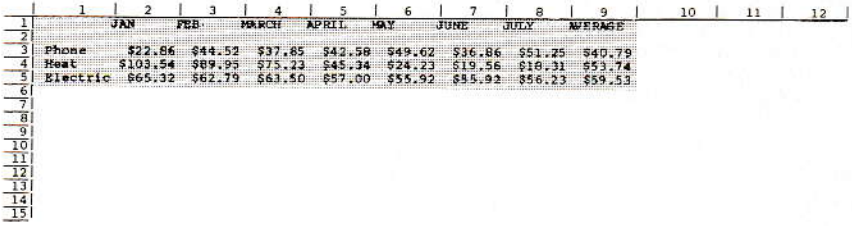
This lesson expands on many of the ideas in the first lesson. Some of the major points covered are:

The significance of the defined spreadsheet.

How to make more sophisticated use of ADAMCalc's ability to manipulate numbers, including an explanation of format, defaults, and relative cell references.

How to save time with the COPY command.

You need the spreadsheet called BUDGET that you created in Lesson 1 as an example. Insert the data pack that contains BUDGET. Bring it to the screen by pressing the Store/Get command key, then GET (VI). The messages "Getting Directory" and "Drive 1" appear. Then a directory of file names appears. (If you have more than one drive, see Appendix 1 for further information.) Move the pointer to BUDGET using the arrow keys and press SELECT FILE (V). The message "Getting" shows up on the information line. Then the message disappears and the spreadsheet BUDGET comes up on the screen.



	1	2	3	4	5	6	7	8	9	10	11	12
1		JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AVERAGE			
2												
3	Phone	$22.86	$44.52	$37.85	$42.58	$49.62	$36.86	$51.25	$40.79			
4	Heat	$103.54	$89.95	$75.23	$45.34	$24.23	$19.56	$18.31	$53.74			
5	Electric	$65.32	$62.79	$63.50	$57.00	$55.92	$55.92	$56.23	$59.53			
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												

FIGURE 8: THE DEFINED SPREADSHEET

Before you get into Lesson 2, it's important to understand the idea of the **defined spreadsheet.** The defined spreadsheet consists of all the cells that are currently being used for the spreadsheet. The easiest way to picture the defined spreadsheet is to locate the cell that contains a value that is the furthest down and the furthest right on the sheet. On the spreadsheet BUDGET, that cell is 5,9. If you draw an imaginary rectangle with the corners at 5,9 and 1,1 as shown in Figure 8, the rectangle represents the defined spreadsheet.

As you enter information in cells beyond 5,9, you expand the defined spreadsheet. As you try the commands in this lesson, don't worry if you see numbers changing on the screen. ADAMCalc is just doing its job of automatically recalculating as you change numbers and formulas.

Moving Around on the Spreadsheet

You can move around quickly using the arrow keys in combination with the Control key or the Home key. To see how they work, go back to 1,1 with the Home key. Home, used with arrows, moves the cell pointer to the edges of the defined spreadsheet. (This is a good way to find out how big the defined spreadsheet is!) Hold down the Home key and press the right arrow key. The cell pointer moves to column 9, the right edge of the defined spreadsheet. Control, used with arrows, moves a new screenful of the spreadsheet into view. Hold down the Control key and press the right arrow. The screen moves over so you can see Columns 13 through 16. If you keep holding down Control and pressing the right arrow you can move all the way out to column 255, screenful by screenful.

The Control, Home and arrow keys work similarly to move the cursor on the formula line. The control stick on game controller 1 can be used in place of the arrow keys. Experiment with these controls until you feel comfortable with them.

INSERT and DELETE

Suppose you wanted to change the budget you started in Lesson 1, adding rows for other bills, adding a column for totals, and erasing the column for July. Figure 9 shows how you might envision making these changes on your spreadsheet.

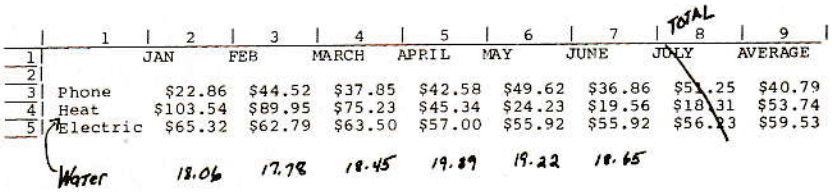


FIGURE 9: THE FAMILY BUDGET - REVISED

First, add the water bills. Put the cell pointer on row 5 because you want to insert a new row 5. Press INSERT (II). Then press INSERT ROW (III). Voila! Row 5 is now blank and the row for electric bills has moved down to row 6. Enter the water bill amounts in row 5. Don't forget to put an averaging formula in row 5, column 9, as you learned in Lesson 1.

Think about the consequences of this change for a minute. Remember from Lesson 1 that your formula for averaging electric bills referred to row 5. Is that formula now referring to the wrong row? Move the cell pointer to 6,9 and look at the formula line. The formula has automatically been changed! All the references to row 5 are now row 6.

Insert the column for TOTAL the same way you inserted the row, except start with the cell pointer in column 9 and choose INSERT COLUMN (IV) instead of INSERT ROW.

Deleting is very similar to inserting. Delete column 8, the July bills, by putting the cell pointer on column 8 and pressing DELETE (III) and DELETE COLUMN (IV). Just as in INSERT, surrounding columns are renumbered as necessary and column numbers in formulas are changed to match.

DELETE also includes a smart key called DELETE SHEET (VI). Be careful--don't press this one unless you really want to say goodbye forever to an entire spreadsheet.

Formulas that Work Hard

You learned a lot about formulas through the simple example in Lesson 1, but there are more variations.

To total your telephone bills for six months you could use this formula:

[3,2] + [3,3] + [3,4] + [3,5] + [3,6] + [3,7]

Note that each complete reference to a cell (a row number and a column number) is enclosed in brackets. This kind of cell reference is known as a **fixed reference** because it uses specific row and column numbers.

Or you could use the following formula, which uses a function (SUM) and an area of cells.

SUM([3,2:3,7])

As you learned in Lesson 1, the cell reference is enclosed in brackets, and the fact that you are referring to a cell area is indicated by the colon. The elements to be summed are enclosed in parentheses.

Although both formulas produce the same results, sometimes one method is more convenient. Enter one of these formulas in 3,8. Make sure TEXT is not highlighted when you press DONE EDIT or Return. Create and enter similar formulas in 4,8, 5,8, and 6,8 to add up the heat, water and electric bills. Remember that the formula in 4,8 should refer to cells 4,2 through 4,7; the formula in 5,8 should refer to cells 5,2 through 5,7 and so on.

Sometimes, one number on the spreadsheet depends on another. Suppose you heard that the electric company was going to increase its rates in the coming year by 5 percent in February and another 5 percent in June. In this case, you want to plan ahead, anticipating the increase in your budget. To budget for the rate increase, you could add 5 percent to the January bill, and use that figure for the February, March, April and May bills. Then you could increase the May bill by 5 percent and use that figure for the June bill.

Up until now you have been using **fixed references** which refer to cells by specific row and column numbers. When one figure depends on another, it's often preferable to use **relative cell references.** Relative cell references indicate a position on the spreadsheet relative to the cell that contains the formula, such as "the cell above this cell," or "the cell two cells to the right of this cell."

In the cell for the February electric bill (6,3) you need the following formula. Put the cell pointer on 6,3 and type:

[ROW, COL–1] + [ROW, COL–1] * .05

ROW stands for this row; COL stands for this column. This relative cell reference uses ROW and COL to say, look at the row the formula is in (row 6). Look at the column the formula is in (column 3), then subtract one column. This results in row 6, column 2, which contains the January electric bill. You multiply the January bill by .05 to figure out the 5 percent increase, then add the increase to the January bill amount. If you enter the formula correctly, the February bill should be $68.59.

To estimate the March, April and May bills, use the value of the February bill. With relative cell references, you can create one formula ([ROW, COL–1]) that can be used for all three. And you won't have to type it all three places, because you can use the COPY command to duplicate the formula. You can also copy the formula from 6,3 into 6,7 so you can use the same formula to handle both rate increases.

Save Time with COPY

COPY goes hand in hand with relative cell references. Relative cell references let you create a formula that you can use more than once because you don't refer to cells by specific row and column numbers. COPY allows you to duplicate a formula without having to re-type it.

First enter the formula [ROW, COL–1] in 6,4. Then you can copy it into 6,5 and 6,6.

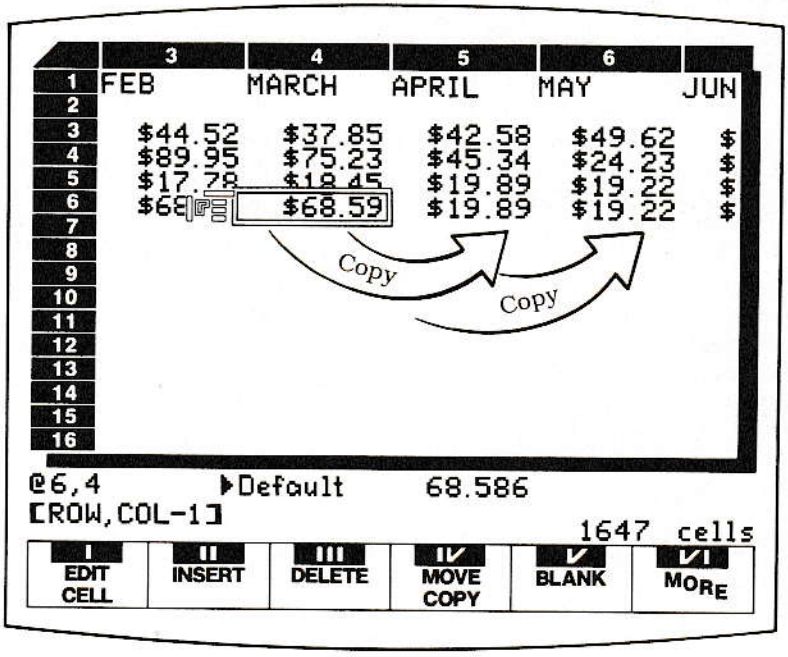


FIGURE 10: COPY FORMULAS WITH RELATIVE CELL REFERENCES TO SAVE TIME

To begin copying, press MOVE/COPY (IV) in the entry level, then press COPY (V). You now choose whether you are going to copy a cell, a row, a column or a line. A **line** is part of a row or column. You want to copy one cell, so put the cell pointer on 6,4 and press COPY CELL (II). You now choose if you want to copy **to** a cell, a row, a column or a line. You want the formula to appear in a part of a row (a line). Put the cell pointer at the beginning of the line (6,5) and press COPY TO LINE (V). Put the cell pointer at the end of the line (6,6) and press COPY TO LINE (V). The formula you have in 6,4 is copied to 6,5 and 6,6.

Use COPY CELL (II) and COPY TO CELL (II) to copy the formula from 6,3 into 6,7.

COPY is versatile; you can copy columns into rows or parts of rows and vice versa. But before you go wild copying formulas, check Section 1 of the Reference Guide to see the results of various kinds of copying. For example, copying rows to columns and columns to rows creates a block, which may not be the result you expect.

	1	2	3	4	5	6	7	8	9
1		JAN	FEB	MARCH	APRIL	MAY	JUNE	TOTALS	AVERAGE
2									
3	Phone	$22.86	$44.52	$37.85	$42.58	$49.62	$36.86	$234.29	$39.05
4	Heat	$103.54	$89.95	$75.23	$45.34	$24.23	$19.56	$357.85	$59.64
5	Water	$18.06	$17.78	$18.45	$19.89	$19.22	$18.65	$112.05	$18.67
6	Electric	$65.32	$68.59	$68.59	$68.59	$68.59	$72.02	$411.68	$68.61

FIGURE 11: THE REVISED FAMILY BUDGET SPREADSHEET

Changing and Correcting Formulas

Now that you are dealing with more complicated formulas, you need to know how to make changes and corrections to the formula without having to type over the whole thing. How about the Insert and Delete command keys?

Move the cell pointer to 4,2 and type 87. Don't press Return yet. What if you wanted to change that number to 95.87? Press the Home key and the cursor goes to the beginning of the formula line, over the 8. Press the Insert command key. The hand pops up and pushes 87 to the right, opening up a space for the characters you want to insert.

You can now type 95. before the 8. When you are done inserting, press Insert again to turn it off and get rid of the extra space.

Change the number to 5.87, by deleting the 9. Put the cursor over the character you want to delete, the 9. Press the Delete command key. The 9 disappears and the 5 moves over so it's now at the cursor. Press Retu. n to enter the number into the spreadsheet.

Other keys that help you make changes on the formula line are Undo and Clear. If you start to change something on the formula line and then press Undo, the changes are ignored and the formula line goes back to the way it was before you made the change. Clear erases everything on the formula line. If you mistakenly hit Clear, press Undo immediately and everything that was cleared comes back!

Blank your Mistakes

You have already seen how to change the contents of a particular cell. What if you had mistakenly typed in the wrong values in an entire row? It could be tedious to edit the whole row, cell by cell. Instead, you can use BLANK to remove the contents of one cell or many cells. Try this command by blanking row 4.

Put the cell pointer anywhere in row 4 and press BLANK (V). Notice the options you have to blank everything from one cell to the whole spreadsheet. Press BLANK ROW (III). A blank line shows up where row 4 used to be. That's different from DELETE, because the numbering of the rows hasn't changed. But all the information associated with the cells in row 4 is gone.

Use BLANK when you want to remove the contents of the cells, but keep the row/column numbering the same.

Use BLANK when you want to remove the contents of the cells in a column but keep the column width the same.

Use DELETE to remove a whole column or row and renumber the surrounding columns and rows.

BLANK does not free up as much memory space as DELETE does. BLANK SHEET reduces the size of the defined spreadsheet; the other BLANK options do not.

DELETE SHEET resets the format and column width defaults to their initial settings. BLANK changes the format to the format default. It does not affect column width. See The Importance Of Format or the Reference Guide for information on format and column width.

The Importance of Format

ADAMCalc can display numbers and text in different ways, called formats. Formats are assigned by two methods. You assign a specific format to a part of the spreadsheet, or a default format is used. When ADAMCalc is loaded, the default format is:

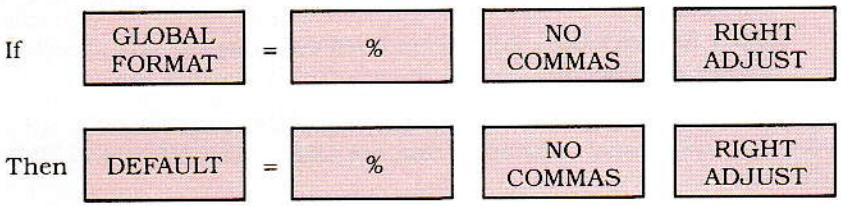
Money format - numbers are represented as dollars and cents.
Numbers in the thousands have commas.
Numbers are lined up to the right in a cell.
Text is lined up to the left in a cell.

When you are entering a new spreadsheet and have not yet assigned any specific formats, the default format is in effect for everything. The default format does not always meet your needs. You can change the format for any part of the spreadsheet that already contains information with the two methods mentioned before:

Changing the default format.

Assigning specific formats to parts of the spreadsheet.

The default format is controlled by the GLOBAL FORMAT command.



Since you have not changed the default format since you loaded ADAMCalc, the initial default format is still in effect. That's fine, because you want your figures represented as dollars and cents.

Just so you can see what the numbers would look like in different formats, assign a different, specific format to column 6. Start by pressing FORMAT (I). (Remember, you may have to press MORE (VI) until FORMAT shows up as smart key 1.) Put the cell pointer in column 6 and press FORMAT COLUMN (IV). Four of the format choices are shown. Press MORE (V) to see four more choices. Press MORE (V) again to see the last four choices. Press one of the choices and press FORMAT DONE (VI) to see how column 6 looks in a different format.

A brief description of each format follows. See the Reference Guide for further detail.

DEFAULT (I) - Whatever the current default format is.

BAR GRAPH (II) - Creates a graph on the screen. The graph is composed of special symbols (▒). One symbol represents 1, two symbols represent 2, and so on. To make an accurate bar graph, the column must be wide enough to display all the symbols.

FREE FORMAT (III) - Displays up to eight digits, including decimals, in the most efficient way. Trailing zeroes are dropped and the placement of the decimal point varies. Numbers with more than eight digits are expressed in Science E-form.

SCIENCE E-FORM (IV) - Uses scientific notation (exponential form). Represents numbers as one digit followed by a number of decimal places. This number is multiplied by a power of 10. The number following the E is the power of 10.

WHOLE #(I) - The number is rounded to the nearest whole number.

% (II) - The number you enter is multiplied by 100 and followed by a percent sign. A plus or minus sign precedes the number. One decimal place is displayed.

MONEY (III) - A dollar sign precedes each entry. Entries are rounded to two decimal places.

STOCK (IV) - A plus or minus sign precedes each entry. Up to five digits are displayed before the decimal point and three decimal places are displayed after the decimal point.

COMMAS (I) - Commas are placed between groups of thousands.

NO COMMAS (II) - Commas are not placed between groups of thousands.

LEFT ADJUST (III) - Entries are lined up at the left side of a cell.

RIGHT ADJUST (IV) - Entries are lined up at the right side of a cell.

Most of the formats have to do with the way numbers are represented. The only two formats that affect text are LEFT ADJUST and RIGHT ADJUST.

For the sake of experimentation, see what column 6 would look like in several different formats. Remember to press FORMAT DONE (VI) after you have pressed one of the format choices. Don't be alarmed if the decimal points move around or some characters are added or subtracted from the numbers as you change formats. If the number gets too long to fit in column 6 because of added characters, some of these special symbols <<< appear.

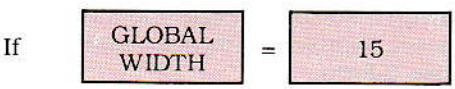
COLUMN WIDTH

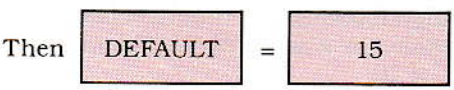
A problem with column width may come up occasionally because you changed formats, or because the columns just aren't wide enough for your numbers. Like FORMAT, if you have not assigned a specific width to a column or a group of columns, the default width is used. ADAMCalc starts with a default column width of 8 characters. You can change column width in two ways:

Changing the default column width.

Assigning specific widths to columns.

You can change the default width through the GLOBAL WIDTH command.





To assign a specific width to column 6, press COLUMN WIDTH (II). Then choose WIDTH COLUMN (IV) because you want to change the width of column 6 only. Press DEFAULT (V) to turn off the highlight. (IF DEFAULT is highlighted when you press DONE, you get the default width.) Then press the up arrow key to make the width displayed in the message area larger, or the down arrow key to make the displayed width smaller. When the width you want is displayed, press DONE (VI) and the column width is changed.

Make columns for numbers one space wider than the number of digits you want to display to leave room for + or - signs before the number.

Lesson 2 Wrap-Up

This wrap-up summarizes the major concepts of Lesson 2.

- When you INSERT or DELETE columns and rows, all surrounding columns and rows are renumbered. ADAMCalc adjusts fixed references to the new row/column numbering. Check relative references to make sure they are referring to the right information.
- Relative cell references are important tools because the same formula can be used in more than one location.
- COPY goes hand in hand with relative cell references to save time and retyping.
- The format chosen for a part of the spreadsheet determines how values are displayed. The format in use for each cell is shown on the status line.
- If a specific format or column width has not been assigned to a part of the spreadsheet, it uses the global default format or column width. Files are stored with all specific and global settings.

Lesson 3: Answering the "What-If's"

Answering the Question "How Much Can I Borrow?" with ADAMCalc

Here's a more complex example that lets you exercise what ADAMCalc does best, answering the "what-if's." You've probably been in the situation of wanting to borrow some money...and often you know about how much you can afford for a monthly payment, and how much interest the banks are charging. But how much can you borrow based on those facts, and a certain period of time to pay the loan? A change in one of these variables can mean a change in another one...and that's where ADAMCalc's power to handle "what-if's" comes in.

This lesson teaches you more about formulas and cell references as you experiment with a loan. The lesson also introduces names, which save you from remembering cell coordinates. The options for printing are described, so you can print your spreadsheet in different ways.

You must use specific numbers and formulas in the example spreadsheet, so you can follow the logic and see that it is working. Once you have the spreadsheet working, you can change it to suit you own purposes. For the sake of this example, assume that you can afford $140 as a payment. The information that varies from bank to bank is:

Interest rate.

How many payments you will make in one year and how many payments you will make overall.

	1	2	3	4
1		Bank 1	Bank 2	Bank 3
2				
3	Desired	140.00	140.00	140.00
4	Payment			
5				
6	Interest Rate	.12	.125	.127
7				
8	No. of Payments	12	4	12
9	per year			
10				
11	Total Number	24	24	36
12	of payments			
13				

FIGURE 12: BUILD A SPREADSHEET FROM THE BASIC FACTS

Get the Facts First

Get started by entering the skeleton of the spreadsheet as shown in Figure 12. First, change the width of the first column to 15 characters. Press COLUMN WIDTH (II), then WIDTH COLUMN (IV). Press the up arrow key until the message says "Current width = 15. Press DONE (VI).

Then change the global (default) width to 10 characters. Press COLUMN WIDTH (II), then GLOBAL WIDTH (I). Then press the up arrow key until the message says "Current width = 10. Press DONE (VI).

The default format should still be MONEY. (If it is not, change it.) Once you have the basic ingredients of the spreadsheet entered from Figure 12, you can change the formats to meet your needs. Change cells 6,2 through 6,4 to %. Change cells 8,2, 8,3, 8,4 and 11,2, 11,3 and 11,4 to WHOLE #. If you need help changing formats, refer to Lesson 2 or the Reference Guide.

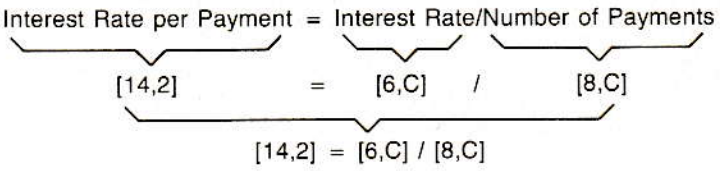
All set? You have the desired monthly payment, the interest rate, the number of payments per year and the total number of payments on the spreadsheet. The next step is to create formulas that manipulate those three items to figure out the other information you need. The columns contain variables based on different banks, but the formulas should be the same no matter what bank you deal with. To save time and keep your spreadsheet flexible this example instructs you to make generic formulas and put them in column 2. You use the relative reference "C" to indicate "this column" rather than specifying a particular column number. Then you copy those formulas into columns 3 and 4.

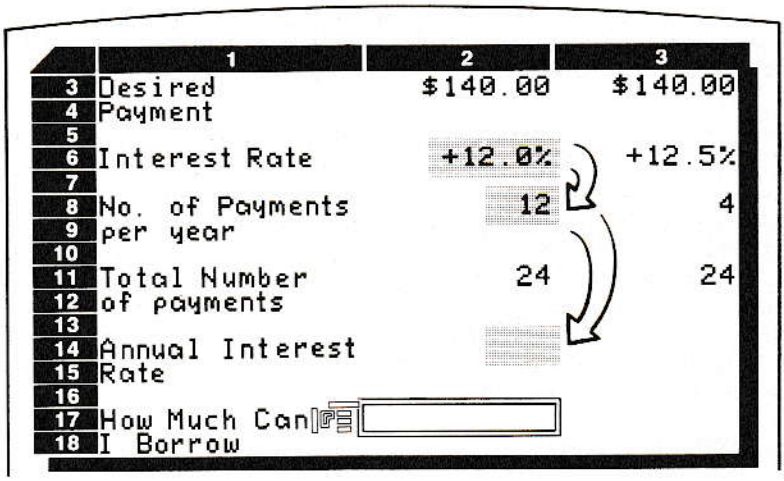
Figuring out the Formulas

When you must create more complicated formulas, it helps to write out the formulas in words on a scratch pad first. Then you can translate them into mathematical, spreadsheet formulas.

The formula that determines how much you can borrow is known as present value. You probably wouldn't know this formula off the top of your head, so it's given to you later in this lesson. Often you'll want to refer to sources like accounting books and government publications to find the formulas and other information to make a useful spreadsheet.

One part of the present value formula is the interest rate per payment. Find the interest rate per payment by dividing the interest rate by the number of payments.





Put the cell pointer in 14,2 and type the following formula.

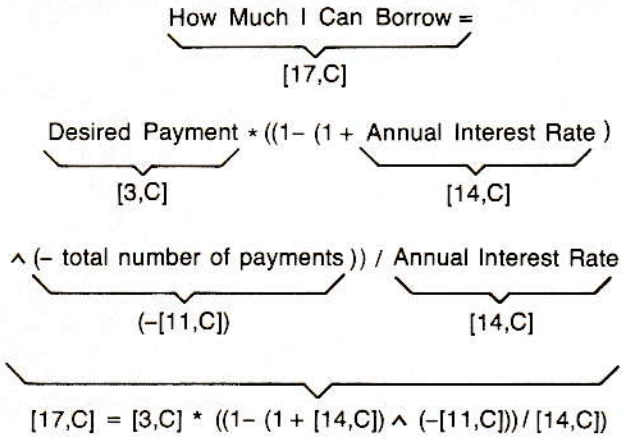
[6,C] / [8,C]

Press DONE EDIT (VI). The number $.01 appears in 14,2. What you really want here is a percentage, not dollars, so change the format of 14,2 to %. If you need help changing formats, refer to Lesson 2 or the Reference Guide.

Embedding **comments** in the formula ensures that you will be able to read and understand your formulas a long time after you create them. Comments are reminders to yourself about what a formula is and what it does. They have no effect on the calculation. Comments consist of any characters, enclosed by braces { }. For example, in the Annual Interest Rate formula, you could put comments like this:

{interest rate } [6,C] / {number of payments per year } [8,C]

Cell References - Automatically!



This formula calculates the amount you could borrow. The parentheses make a big difference because they show which parts of the formula should be calculated first. The results of most formulas differ when parentheses are put in different places. See Section 2 of the Reference Guide for a complete discussion of the order of operations.

ADAMCalc has a shortcut for referring to cells that makes creating formulas easier. The shortcut is a smart key called CELL REF that automatically gives you either a fixed or a relative cell reference on the formula line when you point to a particular cell.

Remember from Lesson 2 that a fixed reference contains specific row and column numbers, like [2,3] or [5,8 : 9,15]. Relative references use ROW or COL to refer to rows and columns in relation to the cell the formula is in.

Try the CELL REF command to create the "How Much Can I Borrow" formula. You will be typing in parts of the formula and using the CELL REF command whenever you need to refer to another cell.

The formula belongs in row 17, so start with the cell pointer in 17,2. Press EDIT CELL (I) and TEXT (I) to turn off the TEXT highlight. Press CELL REF (II). Note the smart key, FIXED REF (I). To get a relative reference (which is what you want in this case), don't do anything. If you press this key, it will be highlighted and you will get a fixed reference. Now move the cell pointer to the first item in the formula, which is the first Desired Payment amount in 3,2. Now press SELECT CELL (II) because you want to refer to this one cell.

Watch what happens on the formula line! The relative reference [R-14,C] appears. Don't press Return at this point because you'll continue to do automatic cell references until this formula is complete.

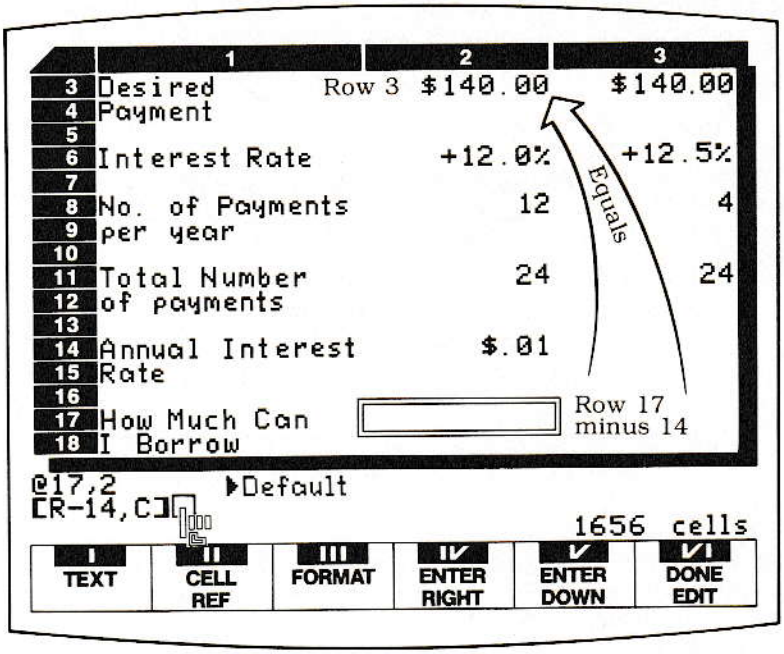


FIGURE 13: CELL REF CAN PUT A RELATIVE REFERENCE ON THE FORMULA LINE FOR YOU.

The next element of the formula is the multiplication sign. Type an asterisk to indicate multiplication. Now type the next characters of the formula until you come to a cell reference. Your formula should look like this:

[R–14,C] * ((1–(1 +

Now do an automatic cell reference to 14,2 Annual Interest Rate. Press CELL REF (II), move the cell pointer to 14,2 and press SELECT CELL (II). The relative reference [R–3,C] appears. Continue typing the formula until you reach the next cell reference. The formula line should look like this:

[R–14,C] * ((1–(1 +[R–3,C]) ^ (–

For another automatic cell reference, press CELL REF (II), move the cell pointer to 11,2, Total Number of Payments, and press SELECT CELL (II). The relative reference [R–6,C] appears. Continue typing the formula until you reach the last cell reference. The formula line should now look like this:

[R–14,C] * ((1–(1 +[R–3,C]) ^ (–[R–6,C]))/

Notice that the formula line is too long for the whole line to be displayed at once. The triangle pointing to the left at the beginning of the line lets you know that there is more of the formula to the left.

Do another automatic cell reference to Annual Interest Rate, 14,2. When you are done, the formula line should contain:

[R-14,C] * ((1-(1 +[R-3,C]) ^ (-[R-6,C]))/[R-3,C])

Press Home to get back to the beginning of the formula line. Recheck the line to make sure you have all of the parentheses and symbols in the right places, and press DONE EDIT (VI). If you entered all of the information correctly, the number in 17,2 will be $2,974.07.

Now COPY your formulas into columns 3 and 4.

COPY FROM	COPY TO
14,2	14,3 and 14,4
17,2	17,3 and 17,4

Would you like to take a moment to pat yourself on the back? You've just completed a useful financial analysis tool and learned a lot about ADAMCalc, spreadsheets and formulas in the process. Now enjoy the fruits of your labor. Have fun putting different figures in the Desired Payment, Interest Rate and Number of Payments cells and watch ADAMCalc recompute the spreadsheet based on these new numbers.

The spreadsheet you have just created, along with the Loan Payment Schedule model and the Loan Cost Analysis model in Part 3, can give you a broad analysis of a loan.

	1	2	3	4
1		Bank 1	Bank 2	Bank 3
2				
3	Desired	$140.00	$140.00	$140.00
4	Payment			
5				
6	Interest Rate	+12.0%	+12.5%	+12.7%
7				
8	No. of Payments	12	4	12
9	per year			
10				
11	Total Number	24	24	36
12	of payments			
13				
14	Annual Interest	+1.0%	+3.1%	+1.1%
15	Rate			
16				
17	How Much Can	$2,974.07	$2,339.36	$4,172.92
18	I Borrow			

FIGURE 14: THE COMPLETED "HOW MUCH CAN I BORROW" SPREADSHEET

The Convenience of Names

If you're not good at remembering cell references, you'll like NAMES (V). You can give a name to a cell, a row or a column. Then instead of remembering coordinates, you can name names. Formulas are easier to read, too. And you can GO TO a name.

Try a name in the spreadsheet you have just created. In the formula for How Much Can I Borrow, you refer to Annual Interest Rate twice with a relative cell reference. Give Annual Interest Rate the name AnnRate.

To create a name, press NAMES (V), then DEFINE NAME (V). A directory of names appears. (At this point, there shouldn't be any names on the directory because you haven't created any yet.) Type AnnRate and press DONE EDIT (VI). This brings back your spreadsheet so you can move the cell pointer to the cell you want to name. Move the cell pointer to 14,2 and press NAME CELL (II). The names directory comes back, and AnnRate is on it, with its cell coordinates. Press DONE (VI).

Put this name to use and see how much easier it is to read the formula. Move the cell pointer to 17,2, How Much Can I Borrow. Using EDIT CELL (I), replace the two references [R–3,C] with AnnRate. You don't need brackets around a named cell in a formula -- but make sure you spell it just as it appears on the names directory, including capital letters. Recheck to make sure you haven't accidentally deleted any other characters of the formula. The formula should now look like this:

[R–14,C] * ((1–(1 +AnnRate) ^ (–[R–6,C]))/AnnRate)

When you press DONE EDIT the spreadsheet is recalculated. If you used the name correctly, all the numbers stay the same. If you made a mistake, you will probably see the message NAME PROBLEM on the screen. If so, check the names directory and your formula.

You can see how names make your formulas easier to type and easier to read, even in a small spreadsheet. If you insert or delete rows or columns, the name references are adjusted accordingly. Think of how great this command would be in a large spreadsheet that refers to a few numbers all the time!

Printing the Spreadsheet

Printing a spreadsheet gives you a lot of flexibility. Maybe you'll enclose a part of a spreadsheet in your tax return. Or track your organization's finances on ADAMCalc and print a yearly treasurer's report.

You always print the spreadsheet that is currently on the screen. Press the Print command key to get started. The smart keys show you the options available. Press PAPER OPTIONS (III) first, so ADAMCalc can adjust to the type of paper you are using. Notice that the smart keys for FANFOLD (II) and 11 INCH paper (IV) are highlighted. If you just press DONE (VI) at this point, ADAMCalc sets up for printing on continuous form, 11-inch paper. (To use single sheets of paper or 14" paper, press those smart keys before you press DONE.)

Now you must choose to print either formulas or values. If you print formulas, you print the formulas associated with the cells, row by row. If you print values, you print the spreadsheet as it appears on the screen.

	1	2	3	4
1		Bank 1	Bank 2	Bank 3
2				
3	Desired	$140.00	$140.00	$140.00
4	Payment			
5				
6	Interest Rate	+12.0%	+12.5%	+12.7%
7				
8	No. of Payments	12	4	12
9	per year			
10				
11	Total Number	24	24	36
12	of payments			
13				
14	Annual Interest	+1.0%	+3.1%	+1.1%
15	Rate			
16				
17	How Much Can	$2,974.07	$2,339.36	$4,172.92
18	I Borrow			

PRINT VALUES

```
Page  1
@1,2;<Text;Bank 1
@1,3;<Text;Bank 2
@1,4;<Text;Bank 3
@3,1;<Text;Desired
@3,2;>Default;140
@3,3;>Default;140
@3,4;>Default;140
@4,1;<Text;Payment
@6,1;<Text;Interest Rate
@6,2;>Percent;.12
@6,3;>Percent;.125
@6,4;>Percent;.127
@7,1;<Text;
@8,1;<Text;No. of Payments
@8,2;>Whole#;12
@8,3;>Whole#;4
@8,4;>Free;12
@9,1;<Text;per year
@11,1;<Text;Total Number
@11,2;>Whole#;24
@11,3;>Whole#;24
@11,4;>Free;36
@12,1;<Text;of payments
@13,1;<Text;
@14,1;>Text;Annual Interest
@14,2;>Percent;[6,C]/[8,C]
@14,3;>Percent;[6,C]/[8,C]
@14,4;>Percent;[6,C]/[8,C]
@15,1;<Text;Rate
@16,1;<Text;
@17,1;<Text;How Much Can
@17,2;>Default;[R-14,C]*((1-(1+AnnRate)^(-[R-6,C]))/AnnRate)
@17,3;>Default;[R-14,C]*((1-(1+[R-3,C])^(-[R-6,C]))/[R-3,C])
@17,4;>Default;[R-14,C]*((1-(1+[R-3,C])^(-[R-6,C]))/[R-3,C])
@18,1;<Text;I Borrow
```

PRINT FORMULA

FIGURE 15: TWO WAYS TO PRINT A SPREADSHEET

Start with PRINT VALUES (VI). Then press PRINT SHEET (VI) to print the entire spreadsheet. Three new smart keys are highlighted.

NUMBER ROW (III) prints the row number shown on the screen.

NUMBER COLUMN (IV) prints the column number shown on the screen.

NUMBER PAGE (V) prints a page number at the top left corner of the page.

Only the smart keys that are highlighted have an effect on printing. To prevent a page number from being printed, press NUMBER PAGE (IV) and the highlight goes off. Leave the other smart keys highlighted so you can see the effect of row and column numbers on your printed copy. Make sure you have paper in your printer, then press START PRINT (VI). When the printing is completed, your printed copy resembles the screen.

But what if you wanted to see the formulas behind the numbers on the printed spreadsheet? Go through the Print command again, but this time, choose PRINT FORMULA (V) and PRINT SHEET (VI). Three smart keys show up highlighted.

PRINT FORMAT (III) prints the format you are using for each cell.

PRINT COORDS (IV) prints the coordinates of each cell.

NUMBER PAGE (V) prints a page number at the top left corner of each page.

This time, leave all the smart keys alone, check the paper in the printer and press START PRINT (VI). Compare the two printed copies.

Obviously, you couldn't use the PRINT FORMULA version as a treasurer's report, but if you want to analyze your formulas, it gives you the information you need. It's also useful as a printed backup to your spreadsheet.

Section 1 of the Reference Guide gives you additional information so you can take full advantage of ADAMCalc's printing options.

Variations on the Store/Get Theme

Use STORE SHEET (III) to store the loan spreadsheet on a blank data pack or disk with the name LOAN, as you learned in Lesson 2. ADAMCalc offers four other commands that allow you to interact with the data pack or disk. The smart keys make these commands self-explanatory, especially if you are familiar with STORE SHEET. See Section 1 of the Reference Guide for more information on these commands.

STORE VALUES (IV) allows you to store the spreadsheet in a way that can be read by SmartWriter. You can incorporate the spreadsheet into reports and memoranda that you create with SmartWriter. Remember that the STORE VALUES version of a spreadsheet does not contain the formulas you need to make it work in ADAMCalc. Often, you'll want to store one spreadsheet with both STORE SHEET and STORE VALUES so you can get it from ADAMCalc and from SmartWriter.

RENAME (I) allows you to change the name of an existing file.

DELETE FILE (II) allows you to delete files from a data pack or disk. Use this command with caution, because once you delete a file, there is no way to get it back through ADAMCalc. (See the Reference Guide for information on getting the backup version of a deleted file.) When you press SELECT FILE in this command, the file indicated by the pointer is deleted.

MERGE (V) is a little more complicated. MERGE lets you combine the contents of two spreadsheets in a particular way. A spreadsheet that is on the screen is combined with a file from the data pack or disk. The file value replaces the screen value. The file also brings new formats, columns widths, defaults, and names into memory.

It's best to check your formulas after merging spreadsheets. A formula may be erroneously referring to a cell and giving you inaccurate information.

Lesson 3 Wrap-Up

- Automatic cell references can save you time and make it easier to create relative references.
- Use the NAMES command when you must refer to a certain cell, column or row frequently in formulas, especially in a large spreadsheet. Then you can refer to a name rather than to coordinates.
- You can print the spreadsheet as it appears on the screen with PRINT VALUES or print just the formulas with PRINT FORMULA.
- All the things you want to do with files are available with the Store/Get command key. You can name and store a new file, store over an old file name, rename a file, delete a file or merge two files. When two spreadsheets are merged, the file being brought into memory supersedes the spreadsheet currently in memory.
- STORE VALUES creates a file that can be read by SmartWriter. STORE SHEET creates a file that can be read by ADAMCalc.

Lesson 4: Sort, Search and Calculate

SORT allows you to rearrange your entries as much as you like. For example you could rearrange your investment records any way you want: by the largest return, alphabetically by company, by the amount of the initial investment, or by date.

SEARCH helps you look through the formulas in the spreadsheet for cell coordinates, comments, or any combination of characters. SEARCH does what could be a tedious task automatically and accurately.

ADAMCalc's built-in calculator puts a full-function calculator at your fingertips, using the ADAM keyboard or game controller keypad.

To see how these commands work, get one of the model spreadsheets, BreakEven.

Sort to your Heart's Content

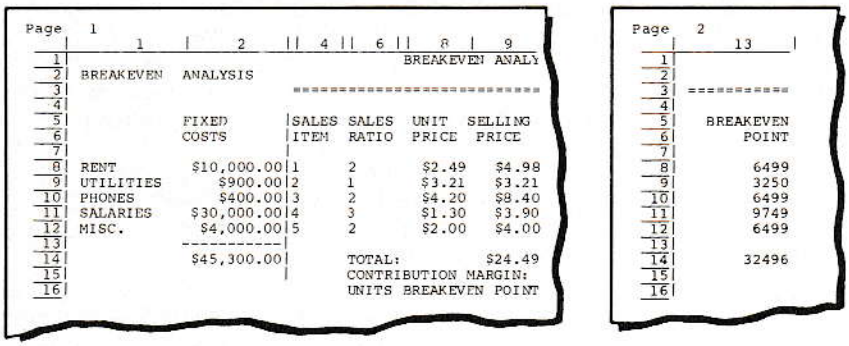
The fixed costs accounted for on rows 8 through 12 of the Breakeven Analysis are listed in no particular order. What if you wanted to see the costs in order from the lowest to the highest? You can sort the fixed costs to show you that information.

Put the cell pointer on Column 2 and press SORT (I). LO-HI SORT (I) indicates that the fixed costs will be sorted from the lowest number to the highest number. Since that is how you want to see the costs, you don't have to do anything.

To sort only the costs, you must sort only part of the column. The total in row 14 shouldn't be included. So move the cell pointer to the first entry to be included in the sort (8,2) and press SORT SUBCOL (V). Then move the cell pointer to the last item to be sorted (12,2) and press SORT SUBCOL (V). The fixed costs are automatically and efficiently sorted for you.

The message "Sorting - no recalc," appears and ADAMCalc is put into MANUAL RECALC mode. That's because as the costs are sorted, the whole row that contains a cost is moved. Rows 8 through 12 may end up in different places and row references in formulas may be pointing to the wrong information. Rather than recalculate and give you inaccurate information, ADAMCalc gives you an opportunity to check your formulas and recalculate when you are ready.

It's good practice to sort the most important columns or rows first and to sort in smaller chunks, between blank lines, if possible.



Page 1

	1	2	4	6	8	9
1						BREAKEVEN ANALY
2	BREAKEVEN	ANALYSIS				
3						==========
4						
5		FIXED	SALES	SALES	UNIT	SELLING
6		COSTS	ITEM	RATIO	PRICE	PRICE
7						
8	RENT	$10,000.00	1	2	$2.49	$4.98
9	UTILITIES	$900.00	2	1	$3.21	$3.21
10	PHONES	$400.00	3	2	$4.20	$8.40
11	SALARIES	$30,000.00	4	3	$1.30	$3.90
12	MISC.	$4,000.00	5	2	$2.00	$4.00
13		----------				
14		$45,300.00		TOTAL:		$24.49
15				CONTRIBUTION MARGIN:		
16				UNITS BREAKEVEN POINT		

Page 2

	13
1	
2	
3	==========
4	
5	BREAKEVEN
6	POINT
7	
8	6499
9	3250
10	6499
11	9749
12	6499
13	
14	32496
15	
16	

BEFORE

Page 1

	1	2	4	6	8	9
1						BREAKEVEN ANALY
2	BREAKEVEN	ANALYSIS				
3						==========
4						
5		FIXED	SALES	SALES	UNIT	SELLING
6		COSTS	ITEM	RATIO	PRICE	PRICE
7						
8	PHONES	$400.00	3	2	$4.20	$8.40
9	UTILITIES	$900.00	2	1	$3.21	$3.21
10	MISC.	$4,000.00	5	2	$2.00	$4.00
11	RENT	$10,000.00	1	2	$2.49	$4.98
12	SALARIES	$30,000.00	4	3	$1.30	$3.90
13		----------				
14		$45,300.00		TOTAL:		$24.49
15				CONTRIBUTION MARGIN:		
16				UNITS BREAKEVEN POINT		

Page 2

	13
1	
2	
3	==========
4	
5	BREAKEVEN
6	POINT
7	
8	6499
9	3250
10	6499
11	6499
12	9749
13	
14	32496
15	
16	

AFTER

FIGURE 16: SORTING THE FIXED COSTS -- BEFORE AND AFTER

An Easy Way to Search

The SUM function is used frequently in the Breakeven Analysis. Suppose you want to recheck all your SUMs and need to track down every formula that includes SUM. Press SEARCH (II). Since you want to find every place in the spreadsheet where SUM occurs, press SEARCH SHEET (VI). A cursor appears on the formula line next to the words "Search for". Just type in the characters you want to find, in this case, SUM. ADAMCalc tries to match up exactly what you type in with a formula, paying attention to capital letters versus lower case letters, punctuation and spacing, so you must be precise.

Press DONE EDIT (VI) or Return and ADAMCalc immediately finds the first occurrence of SUM in a formula. The message "Found formula" appears on the information line. Press SEARCH NEXT (I) and ADAMCalc finds the next occurrence of SUM in the spreadsheet. When there are no more, the message "No formula found" appears on the information line.

Since SEARCH finds things so easily, it makes the use of comments even more advisable. Using a combination of comments and SEARCH you can look through and change a spreadsheet in no time.

The Calculator

To use the built-in calculator, press Wild Card when the entry level smart keys or the EDIT CELL smart keys are showing.

The screen changes to look like a calculator, and now ADAMCalc works like a hand-held calculator! Try it ... add 2 + 2. Press the number 2 key on the keyboard, the plus key, the 2 key and the equals key. (Remember that = is upper case. Hold down the shift key when you type =.) As you press keys, the numbers appear in the calculator display.

You can use both the keyboard and the game controller to operate the calculator. Most of the symbols should be familiar.

Screen Calculator	Keyboard Key	Game Controller Keypad Key	Purpose
0-9	0-9	0-9	Numeric entries
+	+		Addition
–	–		Subtraction
*	*		Multiplication
/	/		Division
.	.	*	Decimal Point
+/–	Smart Key I		Change sign
C	c or C		Clear
E	e or E		Exponent
^	^		Exponentiation
=	=		Equals

To turn off the calculator and return to the spreadsheet, press OFF (VI).

SAVE VALUE (V) appears only if you started the calculator from the EDIT CELL smart keys. SAVE VALUE brings the number from the calculator display to the formula line at the cursor position. Be sure to delete any extra spaces inserted in the formula line by SAVE VALUE.

Lesson 4 Wrap-Up

- SORT rearranges the entries in a column from low numbers to high numbers and alphabetical order, or from high numbers to low numbers and reverse alphabetical order. As the sort takes place, whole rows are moved.
- It's wise to store your original spreadsheet first, then do a sorted version. Sort in small quantities, between blank lines if possible.
- No recalculation is done during a sort, and ADAMCalc automatically switches into MANUAL RECALC mode.
- SEARCH lets you find up to 28 characters on the formula line. It's especially convenient when you use names and comments.
- Wild Card lets you use ADAMCalc's built-in calculator for quick calculations. When you use the calculator from the EDIT CELL command, press SAVE VALUE to bring the calculated value to the formula line.

Lesson 5: A New Look For ADAMCalc

This lesson shows you how you can change the way ADAMCalc displays information with HOLD/RELEASE, WINDOW OPTIONS and COLOR OPTIONS. All of these commands affect the screen as you are working with it; you cannot store "held" areas, windows or colors.

HOLD/RELEASE

HOLD/RELEASE lets you keep selected rows and columns on the screen at all times. This feature is convenient when you have a particularly long or wide spreadsheet. As you scroll through the sheet, the column and row titles scroll off the screen. Sometimes, you might get confused about which row is which. HOLD/RELEASE solves this problem. To see how it works, first get one of the model spreadsheets -- LoadSched.

Scroll through the spreadsheet a few times to get familiar with its contents. It can be hard to remember what column you're dealing with when the titles in rows 11 and 12 are not on the screen.

Make life easier by keeping those titles on the screen at all times. Press HOLD/RELEASE (IV). Now put the cell pointer in row 11, which contains the titles, and press HOLD ROW (I). A shaded copy of row 11 appears at the top of the screen; it is held and will not scroll off the screen. Do the same for row 12. Scroll around with the up and down arrow keys to see the effect of the held rows.

Now put the cell pointer in column 1 and press HOLD COLUMN (II) to keep the payment numbers from scrolling off the screen. Scroll around with the left and right arrow keys to see the effect of the held columns. You can hold up to 8 rows and 4 columns at the same time, but you can't fill up a whole window with held rows and columns.

The held rows stack up in sequence at the top of the screen; the held columns stack up at the left edge of the screen. The more you hold, the less of your regular spreadsheet you see. Also notice that holding a column or row does not remove it from the regular spreadsheet -- it holds a copy of that column or row on the screen.

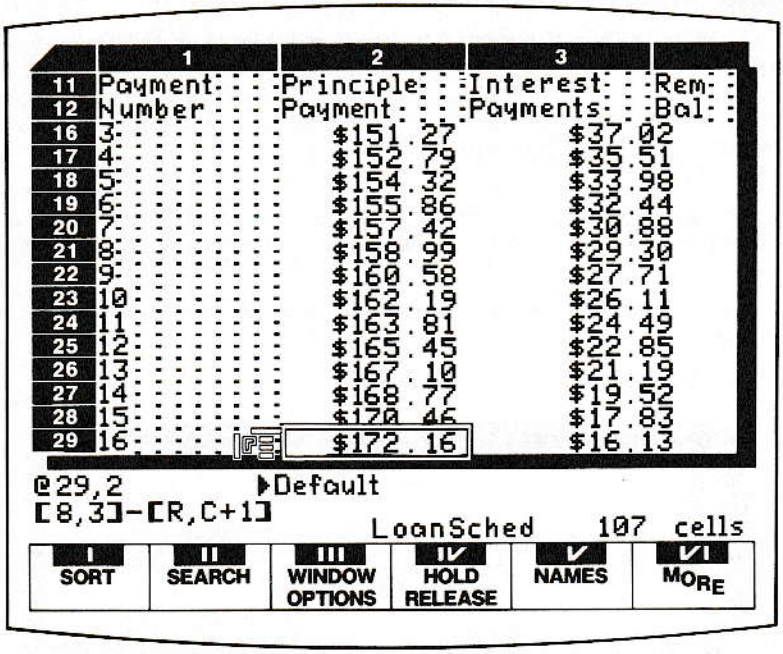


FIGURE 17: HOLDING THE TITLES OF COLUMNS AND ROWS MAKES A LARGE SPREADSHEET EASIER TO READ

To remove a held column or row, press RELEASE COLUMN (IV) or RELEASE ROW (III). The bottom held row or the right-most held column is released. For this example, press RELEASE ALL (V) to release everything that was held.

A New Window on ADAMCalc

WINDOW OPTIONS (III) gives you a new window on ADAMCalc! As you know, the screen acts like a window on a large spreadsheet. The window that ADAMCalc normally uses is 35 characters by 16 lines. But you can create new windows or change windows on your spreadsheet with the WINDOW OPTIONS command.

How is this useful? In a large spreadsheet, you may find yourself continually scrolling to certain parts of the spreadsheet to look at frequently used numbers. Windows let you look at several parts of the spreadsheet at once!

To get the idea of how windows work, divide your screen into two windows.

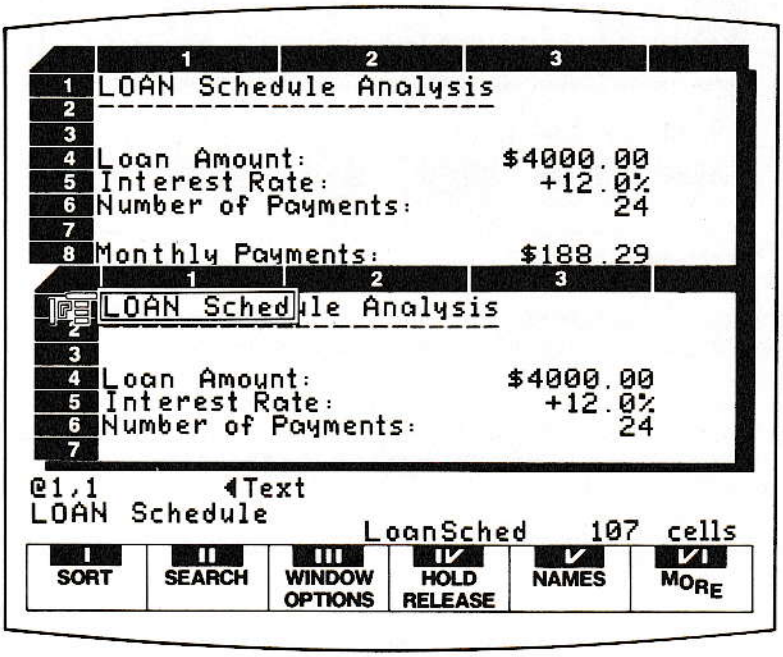


FIGURE 18: DIVIDE YOUR SCREEN INTO TWO WINDOWS

LoanSched, which should still be on your screen, provides a good example. First press Home to get to a good starting point. Press WINDOW OPTIONS (III). Notice that a different color border appears, showing the size and location of the present window. The hand points to the upper left corner of the window. You need to change this window to look like the top window in Figure 18.

Start by pressing ADJUST WINDOW (V). The smart key and the hand indicate that you may change the location of the upper left corner of the window. That doesn't need to change, so just press DONE (V). Now you may change the location of the lower right corner of the window. Do that by pressing the up arrow key until the box formed by the border is 8 rows deep. Then press DONE (V). You're half done!

To create the second window, press CREATE WINDOW (IV). See the window pointer that appears on the screen? It shows you the smallest window possible and the location of the upper left corner of that window. Move the pointer with the arrow keys until it is at the left edge, on the black line at the bottom of the first window. Press DONE (V). Now press the arrow keys to expand the window's width and length as far as it will go. Press DONE (V) and press DONE (VI) again.

The cell pointer is in the new window; it is the active window. Press the arrow keys to move the cell pointer around. Notice that only the display in the bottom window scrolls. The display in the top window stays where it was when you began to create the new window.

To make the top window active, press WINDOW OPTIONS (III). The hand and the border show that the bottom window is active. Press SELECT WINDOW (I) to point the hand at the top window. Press MAKE ACTIVE (II) and the top window is the active one. When you press DONE (VI), you will see that the cell pointer is now in the top window.

Any changes that you make in the active window, such as inserting rows, changing formulas, or changing column widths, are reflected in all other windows.

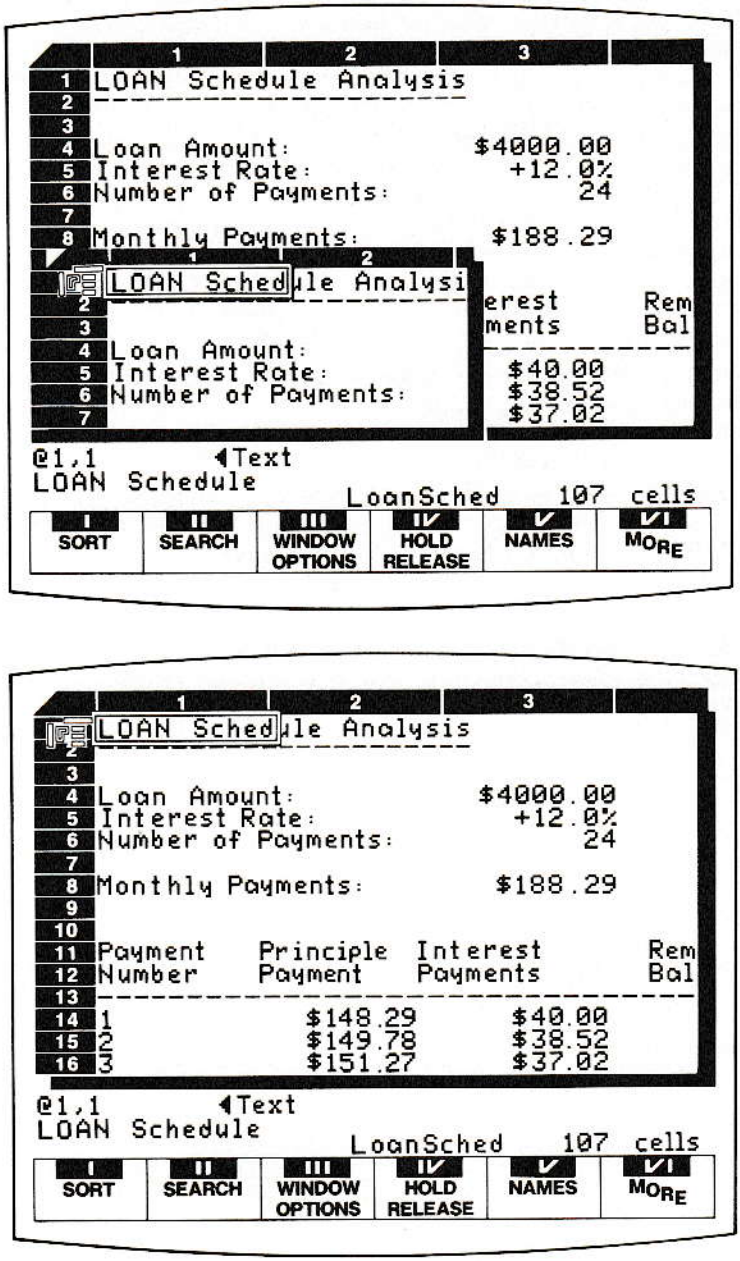


FIGURE 19: THE ACTIVE WINDOW SOMETIMES HIDES OTHER WINDOWS

In this example, you made two windows so you could see two areas of the spreadsheet at once. You can create up to six windows, small and large, all over the screen. Windows can overlap. When a large window is made active, it may hide some of the smaller windows that fall within the same area.

A note about HOLD/RELEASE in relation to windows...Held rows and columns appear only in the window in which they were originally held.

Pick a Color

Just for fun, change the color of your screen. Press COLOR OPTIONS (III), and a list of the available colors is displayed. The screen shows you what the color of the text and the color of the background look like. Use the arrow keys to point the hand to the colors that you like.

Press SELECT COLOR (V) and the screen changes to those colors. Change your mind? Want to see something in blue? Keep trying on different colors until you find one you like. Then press DONE (VI).

Members of the family will like working with their favorite colors on the screen. But, COLOR OPTIONS is more than fun. Some televisions pick up certain color combinations better than others.

Lesson 5 Wrap-Up

- Hold parts of the spreadsheet that you want to remain in one window all the time. Held areas appear only in the window in which they were put on hold.
- Held areas of the spreadsheet, windows and screen colors cannot be stored.
- Create and adjust windows to see different parts of the spreadsheet at once. Remember, when it is active, a large window hides a small window that shares the same space on the screen.
- Use SELECT WINDOW and MAKE ACTIVE to see what the windows look like together before you resume working with the spreadsheet.
- COLOR OPTIONS lets you change the text and background color of the screen to colors that are most pleasing to you.

PART 2:

ADAMCALC REFERENCE GUIDE

TABLE OF CONTENTS

SECTION 1: COMMANDS

This section of the reference guide lists and describes each ADAMCalc command alphabetically. The Commands Directory is a complete list of ADAMCalc commands that shows how the commands relate to one another.

Following the directory are full descriptions of each command, including examples of their use, helpful hints and cross references to related commands. Most of these commands appear on the smart keys. Some commands are initiated with command keys, rather than smart keys. This is noted in parentheses beside the name of the command. Smart keys are in upper case (EDIT CELL). Command keys are in upper and lower case (Print).

COMMANDS DIRECTORY

MOVE/COPY
- MOVE
  - MOVE CELL
  - MOVE ROW
  - MOVE COLUMN
  - MOVE TO ROW
  - MOVE TO CELL
  - MOVE TO COLUMN
- COPY
  - COPY CELL
  - COPY ROW
  - COPY COLUMN
  - COPY LINE
  - COPY TO CELL
  - COPY TO ROW
  - COPY TO COLUMN
  - COPY TO LINE
  - COPY TO SUBROW
  - COPY TO SUBCOL

NAMES
- ALTER NAME
- DEFINE NAME
- DELETE NAME
- DELETE ALL
- NAME CELL
- NAME ROW
- NAME COLUMN

Print
- PAPER OPTIONS
  - FANFOLD
  - SINGLE SHEET
  - 11 INCH
  - 14 INCH
- PRINT CELL
- PRINT ROW
- PRINT COLUMN
- PRINT BLOCK
- PRINT SHEET
- PRINT FORMULA
  - 1 LINE ONLY
  - PRINT FORMAT
  - PRINT COORDS

PRINT VALUES
  - NUMBER ROW
  - NUMBER COLUMN
  - NUMBER PAGE
- START PRINT
- STOP PRINT
- PRINT PAGE

SORT
- LO-HI SORT (HI-LO SORT)
- SORT COLUMN
- SORT SUBCOL

SEARCH
- SEARCH NEXT
- SEARCH ROW
- SEARCH COLUMN
- SEARCH BLOCK
- SEARCH SHEET

Store/Get
- RENAME
- DELETE FILE
- STORE SHEET
- STORE VALUES
- MERGE
- GET
  - DISK 1
  - DISK 2
  - DRIVE 1
  - DRIVE 2
  - SELECT DRIVE
  - SELECT FILE
  - NEW FILE

Wild Card
- +/–
- SAVE VALUE
- OFF

WINDOW OPTIONS
- CREATE WINDOW
- ADJUST WINDOW
- SELECT WINDOW
- MAKE ACTIVE
- DELETE WINDOW

COMMAND DESCRIPTIONS

ADJUST WINDOW

Allows you to change the size and location of any window.

Example

Press WINDOW OPTIONS.

Press SELECT WINDOW until the hand is pointing to the window you want to adjust.

Press ADJUST WINDOW.

Use the arrow keys to move the border indicating the placement of the upper left corner of the window. Press DONE.

Use the arrow keys to move the border indicating the placement of the lower right corner of the window.

Press DONE.

Press DONE again to return to the entry level.

See Also: SELECT WINDOW
WINDOW OPTIONS

ALTER NAME

Changes a name that has been established through the NAMES command. You can change the name itself, as well as what the name refers to.

Names can have up to ten alphanumeric characters and must start with a letter. No spaces or special characters are allowed. Capital letters are considered to be different than lower case letters. The names of the ADAMCalc functions (for example, IF or TAN) are reserved words that you cannot use as names in the spreadsheet.

Example

To change the name "All," which refers to a column, to the name "Total" and make it refer to one cell:

Press NAMES.

Move the cell pointer to All.

Press ALTER NAME.

Type Total and press DONE EDIT or Return.

Move the cell pointer to the cell to be named.

Press NAME CELL.

Press DONE.

See Also: NAMES
DEFINE NAME
DELETE NAME
DELETE ALL

AUTO RECALC

When this key is highlighted, values are calculated and entered in the spreadsheet immediately.

Example:

With AUTO RECALC on, you edit a cell that is involved in a formula. When you press DONE EDIT or Return, the formula is immediately recalculated. The message "Calculating" appears on the information line. The changed values appear on the spreadsheet when the recalculation is completed.

See Also: MANUAL RECALC

BAR GRAPH

A format that creates a graph on the screen. The graph is composed of special symbols (▒▒▒). One symbol represents 1, two symbols represent 2, and so on. Decimals are dropped.

Example

To represent a cell that contains the number 3 in bar graph format:

Press FORMAT.

Put the cell pointer in the desired cell.

Press FORMAT CELL.

Press BAR GRAPH. Press FORMAT DONE.

Three symbols appear in the cell.

Helpful Hints

Be sure the column is wide enough to accommodate the number of symbols needed to represent the number.

See Also: COLUMN WIDTH
FORMAT

BLANK

Removes the contents of a cell, a row, a column, a block or the entire spreadsheet. The numbering of rows and columns, and column widths are not changed. The size of the defined spreadsheet is changed with BLANK SHEET only.

Example

To blank a block:

Press BLANK.

Move the cell pointer to the top left corner of the block. Press BLANK  .

Move the cell pointer to the bottom right corner of the block. Press BLANK  .

Helpful Hints

When you need more room in memory for a spreadsheet, use DELETE rather than BLANK to free up as much space as possible.

See Also: DELETE

BLANK BLOCK
BLANK CELL
BLANK COLUMN
BLANK ROW

See BLANK.

BLANK SHEET

Removes the contents of all the cells in the spreadsheet and changes the size of the defined spreadsheet to one cell by one cell. Column widths are not changed. The format is changed to the default format.

See Also: DELETE SHEET

CELL REF

Automatically creates either a fixed or relative cell reference and puts it in the formula line. A fixed reference uses particular row and column numbers (for example, [3,15]). A relative reference uses ROW (R) and/or COL (C) to indicate rows and columns relative to the cell the formula is in.

Example

To build a formula with automatic relative cell references:

1. Put the cell pointer in the cell that should contain the formula.
2. Press EDIT CELL.
3. Type any parts of the formula that precede the cell reference (for example, the name of a function). Press TEXT to turn off the highlight, if necessary.
4. Press CELL REF.
5. Move the cell pointer to the area to which you want to refer.
6. Choose what you want a reference to (cell, row, column, block or sheet).
7. Enter other parts of the formula (plus signs, etc.)
8. Repeat Steps 3 through 7 until the formula is complete.
9. Press DONE EDIT to return to the entry level.

Helpful Hints

The automatic cell reference appears on the formula line beginning at the cursor and may replace characters that are already on the formula line. To insert an automatic cell reference between existing characters, press the Insert command key.

Be sure TEXT is not highlighted when you do cell references. If TEXT is highlighted, the formula line is treated as text and cannot be calculated. Instead, the formula line itself appears on the spreadsheet.

See Also: FIXED REF

CLEAR (command key)

When the hand is pointing to the formula line, CLEAR erases everything on the formula line. Otherwise, CLEAR has no function.

COLOR OPTIONS

Changes the color of the text and the background on the screen.

Example

Press COLOR OPTIONS.

Use the arrow keys to move the hand to the color combination of your choice.

Press SELECT COLOR to see what the colors will look like. Press DONE to begin using the spreadsheet with the new colors in effect.

COLUMN WIDTH

Changes the width of a column. You can change the width of one column, several columns (a subrow) or all of the columns on the defined spreadsheet. You can also change the default width through GLOBAL WIDTH.

Example

To widen columns 2 through 5:

Press COLUMN WIDTH.

Put the cell pointer in column 2.

Press WIDTH SUBROW.

Put the cell pointer in column 5.

Press WIDTH SUBROW.

Press DEFAULT to turn off the highlight.

Press the up arrow key until the value displayed in the message area is the width you want.

Press DONE.

Helpful Hints

Make columns for numbers one space wider than the number of digits you want to display.

If you have not set a specific width for a column, it uses the default width. The initial default width is 8 characters. You can change the default width, and you can change a column from a specific width to the global (default) width. The default column width must be between 4 and 73 characters. Specified widths may be from 1 to 73 characters.

When you change the default width, any columns that are using the default width are immediately changed.

If you change the width of a held column, the width of the special display of the column is **not** changed accordingly. However, the information displayed is the same.

See Also: DEFAULT
GLOBAL WIDTH

COMMAND LIST

One of the Help smart keys. Displays a list of the ADAMCalc commands with brief explanations of their uses.

See Also: HELP
FUNCTION LIST
FORMULA LIST
SPECIAL KEYS

COMMAS

A FORMAT option in which commas are used between groups of thousands to the left of the decimal point. Used in conjunction with another format option.

Example

Press FORMAT.

Press FORMAT SHEET.

Press MONEY.

If COMMAS is highlighted, press FORMAT DONE.

If NO COMMAS is highlighted, press COMMAS, then press FORMAT DONE.

See Also: NO COMMAS
FORMAT

COPY

Duplicates the formula associated with one cell, row, column or line in another cell, row, column or line. A line is part of a row or column.

Example

To copy a row into a row:

Press MOVE/COPY.
Press COPY.
Move the cell pointer to the row to be copied.
Press COPY ROW.
Move the cell pointer to the row you want the copy to appear in.
Press COPY TO ROW.

Helpful Hints

When you copy to a part of the spreadsheet that already contains information, the existing information is replaced by the information you are copying.

Check the cells left indicator to make sure you have enough room to complete a copy. You should have more than twice the number of cells you are copying.

Copying a cell to a row or column fills up that row or column to the borders of the defined spreadsheet. You can copy beyond the border of the defined spreadsheet in this case with COPY TO LINE.

Copying something horizontal (such as a row) into something vertical (such as a subcolumn) creates a block as illustrated in the following examples. When the block is created, if the "copied from" portion overlaps the "copied to" portion, the result is different. Compare the last two examples for an illustration of this situation.

	1	2	3	4
1	a	b	c	d
2	e	f	g	h
3	i	j	k	l

BEGINNING SPREADSHEET

	1	2	3	4	5	6
1	a	b	a	b	a	b
2	e	f	a	b	a	b
3	i	j	a	b	a	b

RESULT OF COPYING ROW 1 TO COLUMN 3

	1	2	3	4	5	6	7	8
1	a	b	c	d	a	b	c	d
2	e	f	g	h	a	b	c	d
3	i	j	k	l	a	b	c	d
4					a	b	c	d

RESULT OF COPYING ROW 1 TO SUBCOL [1,5:4,5]

	1	2	3	4	5	6
1	a	b	a	b	a	b
2	e	f	a	b	a	b
3	i	j	a	b	a	b
4			a	b	a	b
5			a	b	a	b

RESULT OF COPYING ROW 1 TO SUBCOL [1,3:5,3]

CREATE WINDOW

Makes a new window. You specify the size and location of the new window with the arrow keys. Only one window is active at one time, that is, one window contains the cell pointer. The newly created window is the active window until you make another window active. You can have up to six windows at one time.

Example

Press WINDOW OPTIONS.

Press CREATE WINDOW.

Use the arrow keys to move the hand to where you want the upper left corner of the new window to appear.

Press DONE.

Use the arrow keys to move the hand to where you want the lower right corner of the window to appear.

Press DONE.

Helpful Hints

When a large and a small window share the same space, the large window, when active, may partially or completely hide the smaller window. To see two large areas of the spreadsheet simultaneously, adjust the large window so it does not overlap the second window.

See Also: WINDOW OPTIONS
SELECT WINDOW
ADJUST WINDOW
DELETE WINDOW
MAKE ACTIVE

DEFAULT

In the FORMAT command, DEFAULT (I) changes the format of the specified part of the spreadsheet (cell, row, column, block or sheet) to a predetermined (default) format.

In the COLUMN WIDTH command, DEFAULT changes the column width of the specified part of the spreadsheet to a predetermined (default) width.

When ADAMCalc starts, the initial default format for numbers is MONEY, COMMAS, RIGHT ADJUST. The initial default format for text is LEFT ADJUST. The initial default column width is 8 characters. You can change the default settings through GLOBAL FORMAT and GLOBAL WIDTH.

Example

To change the format for row 10 to DEFAULT:

Press FORMAT.

Put the cell pointer in row 10.

Press FORMAT ROW.

DEFAULT is highlighted, indicating that the default format is in effect.

Press FORMAT DONE.

Helpful Hints

If a part of the spreadsheet has not been assigned a specific format or column width, it uses the default.

Default column width must be between 4 and 73 characters. Specific columns may be set to between 1 and 73 characters.

See Also: FORMAT
COLUMN WIDTH
GLOBAL FORMAT
GLOBAL WIDTH

DEFINE NAME

Creates a name for a cell, row or column that can be used in place of coordinates. Names make it easier to read and create formulas.

Names can have up to ten alphanumeric characters and must start with a letter. No spaces or special characters are allowed. Capital letters are considered to be different than lower case letters. The names of the ADAMCalc functions (for example, IF or TAN) are reserved words that you cannot use as names in the spreadsheet.

Example

To name row 15 DISCOUNT:

Press NAMES.
Press DEFINE NAME.
Type DISCOUNT.
Press DONE EDIT.
Move the cell pointer to row 15.
Press NAME ROW.
Press DONE.

Helpful Hints

If you put an illegal character (for example #) in a name, the illegal character and all the characters to its right are ignored.

The name of a cell is a complete cell reference. The name of a row only replaces the row number — you must provide a column number or name to go with it. The name of a column only replaces the column number — you must provide a row number or name to go with it.

When you use the name of a cell in a formula, it does not need brackets.

See Also: ALTER NAME
DELETE NAME
DELETE ALL
NAMES

Delete (command key)

Erases the character at the cursor position in the formula line.

DELETE

Removes a column or row from the spreadsheet, renumbers the columns and rows, and changes fixed references that involve those columns or rows. Relative references are not adjusted. Also can be used to erase the entire spreadsheet.

Example

To remove a column:

Press DELETE.

Put the cell pointer in the column to be removed.

Press DELETE COLUMN.

Helpful Hints

Deleting changes the size of the defined spreadsheet. When you need more memory space, use DELETE rather than BLANK to erase unused areas, especially at the borders of the defined spreadsheet.

Check relative references after deleting.

If you delete a named row, cell or column, the name is not deleted. It still refers to the row, cell or column you specified, but that row, cell or column now contains different information. You may want to change the name, change the reference, or delete the name.

Delete only within the defined spreadsheet.

See Also: BLANK

DELETE ALL

Deletes all the names you have established in a spreadsheet.

See Also: ALTER NAME
DELETE NAME
NAMES

DELETE COLUMN

See DELETE.

DELETE FILE

Begins the process of deleting a file. When the file name is selected from the directory, the file is deleted.

Example

To delete the file named SALES in Drive 2:

Press Store/Get.

Press DELETE FILE.

Press Drive 2.

Press DONE.

When the file directory appears, move the cell pointer to SALES.

Press SELECT FILE. The file is deleted.

Helpful Hints

Think twice before you delete a file. Once it is deleted, you cannot get it back through ADAMCalc. However, when you delete a file, a backup version is created. Knowledgeable SmartBasic programmers can use the SmartBasic Recover command to get a backup copy of the file. You can also get the backup version of the file through the SmartWriter backup file directory. Use SmartWriter to store the file with a different name. Then it can be used in ADAMCalc again.

The blank data packs you use for storing spreadsheets will eventually become full. To free up space, use SmartWriter, SmartBasic or SmartLogo to delete ADAMCalc backup files and other files you no longer need. You may have to delete a number of files to make room for one new file.

DELETE NAME

Deletes the name indicated by the cell pointer.

Example

Press NAMES.

A list of the names you have created appears on the screen. Put the pointer on the name you want to delete.

Press DELETE NAME.

Press DONE.

Helpful Hints

If you delete a name that you used in formulas, be sure to change the formulas so they are not referring to a non-existent name.

See Also: ALTER NAME
DELETE ALL
NAMES

DELETE ROW

See DELETE.

DELETE SHEET

Erases the defined spreadsheet, leaving an empty, one cell by one cell spreadsheet. Removes all names and returns to the initial default format and column width settings. Windows and held areas are not affected.

See Also: DELETE

DELETE WINDOW

Deletes the selected window, the window to which the hand is pointing. This key appears only if there is more than one window.

Example

Press WINDOW OPTIONS.

Press SELECT WINDOW until the hand is pointing to the window you want to delete.

Press DELETE WINDOW.

Press DONE.

See Also: ADJUST WINDOW
SELECT WINDOW
CREATE WINDOW
WINDOW OPTIONS

EDIT CELL

Used to change the content and format of spreadsheet entries, make automatic cell references, and move the cell pointer right or down automatically. The options within EDIT CELL are:

TEXT (or not text)
CELL REF
FORMAT
ENTER RIGHT
ENTER DOWN
DONE EDIT

See Also: The options listed above.
Clear
Undo
Insert
Delete

ENTER DOWN

When highlighted, enters a value or formula into the spreadsheet and moves the cell pointer down one cell.

Example

Type a formula. When the EDIT CELL smart keys appear, press ENTER DOWN.

When you press Return, the formula is entered in the active cell and the cell pointer moves down one cell.

Helpful Hints

This command is helpful when you must enter a whole row of like information; for example, all text OR all numbers. That's because the format stays the same until you change it or until the cell pointer comes to a cell that has a different format. Then ENTER DOWN picks up the new format and uses it until another new format is used.

When you press DONE EDIT, the smart keys change to the entry level. However, ENTER DOWN stays highlighted until you press ENTER RIGHT or press ENTER DOWN again, turning off the highlight.

It's best to use DONE EDIT to enter the last cell.

If you press Return without entering anything, the "blank" cell contains zero, and will be treated as zero in SORT and functions like AVERAGE and STDEV.

See Also: ENTER RIGHT

ENTER RIGHT

When highlighted, enters a formula into the spreadsheet and moves the cell pointer to the right one cell.

Example

Type a formula. When the EDIT CELL smart keys appear, press ENTER RIGHT.

When you press Return, the formula is entered in the active cell and the cell pointer moves right one cell.

Helpful Hints

This command is helpful when you must enter a whole row of like information; for example, all text OR all numbers. That's because the format stays the same until you change it or until the cell pointer comes to a cell that has a different format. Then ENTER RIGHT picks up the new format and uses it until another new format is used.

When you press DONE EDIT, the smart keys change to the entry level. However, ENTER RIGHT stays highlighted until you press ENTER DOWN or press ENTER RIGHT again, turning off the highlight.

It's best to use DONE EDIT to enter the last cell.

If you press Return without entering anything, the "blank" cell contains zero, and will be treated as zero in SORT and functions like AVERAGE and STDEV.

See Also: ENTER DOWN

Escape/WP (command key)

Leaves the command in progress without making any further changes and displays the entry level smart keys. If you press Escape while using CELL REF, the EDIT CELL smart keys appear. In the first level of MOVE/COPY, press MORE to return to the entry level.

You cannot Escape if you are trying to store or get from a disk and there is no disk in the drive. Insert a disk in the drive, then press Escape.

FANFOLD

Adjusts ADAMCalc for printing with continuous form, fanfold paper, either 11 inches or 14 inches long.

See Also: SINGLE SHEET
11 INCH
14 INCH

FIXED REF

Displays in the formula line the coordinates of the selected cell, row, column, or block or the entire spreadsheet. A fixed reference uses specific row and column numbers, for example, [3,15]. Rows, columns, blocks and the spreadsheet are expressed as ranges. The spreadsheet fixed reference is always [1,1:255,255].

Example

To automatically get a fixed reference to column 5 into a formula:

Press EDIT CELL.

Type any part of the formula that precedes the reference to column 5. If TEXT is highlighted, press TEXT.

Press CELL REF.

Press FIXED REF.

Move the cell pointer to column 5.

Press SELECT COLUMN.

The reference [1,5: 255,5] appears on the formula line.

Type any part of the formula that follows the reference to column 5.

Helpful Hints

The automatic cell reference appears on the formula line beginning at the cursor position, and may replace characters that are already on the formula line. To insert an automatic cell reference between existing characters, press the Insert command key.

Be sure TEXT is not highlighted when you do cell references. If TEXT is highlighted, the formula line is treated as text, and cannot be calculated. Instead, the formula line itself appears on the spreadsheet.

See Also: CELL REF

FORMAT

Changes the characteristics of spreadsheet entries, by cell, row, column, block or the entire spreadsheet. The format determines the way the entry is displayed. You must enter information first, then format it.

If part of the spreadsheet does not have a specific format assigned, it uses the default format. You can change the default format with GLOBAL FORMAT.

The available formats are:

Whole Numbers	Percentages
Money	Stock
Default	Bar Graph
Free Format	Science E-Form
Commas	No Commas
Left Adjust	Right Adjust

The only formats that affect text are Right Adjust and Left Adjust.

Example

To change column 8 to percentages:

Press FORMAT.
Put the cell pointer in column 8.
Press FORMAT COLUMN.
Press %.
Press FORMAT DONE.

Column 8 is formatted for percentages up to the border of the defined spreadsheet.

Helpful Hints

When ADAMCalc is loaded, the initial default format for numbers is MONEY, COMMAS, RIGHT ADJUST.

When the smart keys showing the individual formats appear, DEFAULT is highlighted. When you FORMAT CELL, the smart key highlights reflect the format of that cell. If you press FORMAT DONE when DEFAULT is highlighted, you always get the current default format, no matter what other keys may be highlighted.

There are two ways to put the whole spreadsheet in one format. The first way is to let the whole spreadsheet use the default format; you do not assign any specific formats. The other way is to change the default to the format you want using GLOBAL FORMAT, then FORMAT SHEET and DEFAULT.

In the EDIT CELL smart keys, FORMAT controls the format for one cell only. The formats available depend on whether the cell is text or numeric. To change a cell from text to numeric, or vice versa, use TEXT.

See Also: DEFAULT
GLOBAL FORMAT
The individual formats

FORMAT BLOCK
FORMAT CELL
FORMAT COLUMN
FORMAT ROW
FORMAT SHEET

See FORMAT.

FORMULA LIST

One of the Help smart keys. Briefly describes ADAMCalc's formulas, syntax and operators.

See Also: HELP
COMMAND LIST
FUNCTION LIST
SPECIAL KEYS

FREE FORMAT

One of the numerical formats that displays numbers in the most efficient manner, considering the column width. The placement of the decimal point varies. Displays up to 8 digits, including decimals, then uses Science E-Form.

FUNCTION LIST

One of the Help smart keys. Displays a list of ADAMCalc's functions and a brief description of their use.

See Also: HELP
COMMAND LIST
FORMULA LIST
SPECIAL KEYS

GET

Brings a specified file from the data pack or disk to the screen, so it can be viewed, changed, and/or printed.

Example

To get a file from a data pack:

Press command key Store/Get.

Press GET.

If you have more than one drive, press the smart key for the drive that contains the data pack.

When the file directory appears, move the pointer to the name of the file you want.

Press SELECT FILE.

Helpful Hints

When you get a file, anything that was previously on the screen is lost. So before you bring a new spreadsheet to the screen, make sure you store the spreadsheet on the screen if you want to keep it permanently.

In ADAMCalc, you can only get spreadsheets that have been stored with the STORE SHEET command. Spreadsheets stored with the STORE VALUES command must be retrieved with SmartWriter, SmartBasic or SmartLogo.

See Also: MERGE

GLOBAL FORMAT

Allows you to change the default format. Any part of the spreadsheet that you have not assigned a specific format uses the global (default) format. When ADAMCalc is loaded, the default format is MONEY, COMMAS and RIGHT ADJUST for numerical entries and LEFT ADJUST for text.

Example

To change the default format from MONEY to PERCENTAGES:

Press FORMAT

Press GLOBAL FORMAT.

Press PERCENTAGES.

Press FORMAT DONE.

See Also: DEFAULT
FORMAT

GLOBAL WIDTH

Allows you to change the default column width. Any part of the spreadsheet that you have not assigned a specific column width uses the default width. When ADAMCalc is loaded, the default column width is 8 characters.

Example

To change the default column width to 14 characters:

Press COLUMN WIDTH.

Press GLOBAL WIDTH.

Press the up arrow key until the message says "Current width = 14".

Press DONE.

See Also: DEFAULT
COLUMN WIDTH

GO TO (command key - @)

Sends the cell pointer immediately to the specified cell or to a named cell, row or column. This key can be used with most commands that require the cell pointer to be moved around on the spreadsheet, except EDIT CELL.

Type @@ and press Return to find the last occurrence of a cyclic calculation. Then you can try to adjust the formula so a cyclic calculation does not occur.

Example

To move the cell pointer quickly to the row named INTEREST:

Press SHIFT and @.

Type INTEREST and press Return.

The cell pointer goes to the row named INTEREST, but stays in the same column.

Helpful Hints

You can refer either to a named row or a named column in one GO TO command, but not both.

HELP (command key - ?)

Displays screens that briefly explain ADAMCalc commands, functions, formulas and special keys. This key can be used only at the entry level.

Helpful Hints

If you pressed NO to answer the question, "Do you want on-line help," when ADAMCalc was loaded, you cannot see the Help Screens. The message "Help was removed" appears instead. To be able to use the Help Screens, store the spreadsheet you're working with on a disk or data pack, and pull Computer Reset to load ADAMCalc again.

See Also: COMMAND LIST
FUNCTION LIST
FORMULA LIST
SPECIAL KEYS

HOLD/RELEASE

Keeps a special display of specified columns and/or rows constantly in a window. Held rows appear at the top of the window, beginning with the first row you held and ending with the last row you held. Held columns are displayed similarly at the left side of the window.

Held areas appear only in the window in which they were put on hold.

Example

If you used row 2 for column headings, and wanted to keep those column headings constantly in view while you scrolled through the rest of the spreadsheet:

Press HOLD/RELEASE.
Put the cell pointer on row 2.
Press HOLD ROW.
Press DONE.

A shaded copy of row 2 appears at the top of the window. As you scroll down into the spreadsheet, this special display of row 2 remains in the window.

Helpful Hints

Don't go overboard holding rows and columns — the more you hold, the less space you have to view the rest of the spreadsheet. You can have up to 8 rows and 4 columns held, but you can never fill the whole window with held areas.

Held areas are not stored, nor are they deleted with DELETE SHEET.

The special display of a held column is not adjusted when the held column is changed to a new column width.

See Also: RELEASE ROW
RELEASE COLUMN
RELEASE ALL

HOLD COLUMN
HOLD ROW

See HOLD/RELEASE.

Home (command key)

On the spreadsheet, sends the cell pointer to 1,1. Used with arrow keys, HOME sends the cell pointer to the borders of the defined spreadsheet.

On the formula line, sends the cursor to the first position on the formula line. Used with the right or left arrow keys, HOME sends the cursor to the beginning or end of the formula.

Insert (command key)

Allows you to add new characters to an existing formula on the formula line. The characters are added to the left of the character the hand points to. Press Insert once to begin inserting characters; press Insert again to stop inserting characters.

Helpful Hints

If the formula line contains 250 characters (the maximum), pressing Insert drops the last three characters from the formula line.

See Also: Undo

INSERT

Allows you to put a new row or column between two existing ones. Surrounding rows and columns are renumbered accordingly, and fixed references and names are properly adjusted. Relative references and cell references within other cell references are not adjusted.

Example

To insert a column between existing columns 4 and 5:

Press INSERT.
Put the cell pointer in column 5.
Press INSERT COLUMN.

LEFT ADJUST

One of the FORMAT options, which causes text or numbers to be lined up at the left side of a cell.

Example

To make numerical entries line up at the left side of a column:

Press FORMAT.

Put the cell pointer in the column to be affected.

Press FORMAT COLUMN.

Press the smart key for the format you want.

Press LEFT ADJUST.

Helpful Hints

Numbers using DEFAULT format use the RIGHT ADJUST/LEFT ADJUST and the COMMAS/NO COMMAS settings you chose for DEFAULT.

See Also: RIGHT ADJUST
FORMAT
DEFAULT

MAKE ACTIVE

Makes the selected window the active window. The active window is the window in which the cell pointer is located.

Example

To make a window active:

Press WINDOW OPTIONS.

Press SELECT WINDOW until the hand is pointing to the desired window.

Press MAKE ACTIVE.

Press DONE.

See Also: CREATE WINDOW
ADJUST WINDOW
SELECT WINDOW

MANUAL RECALC

Keeps ADAMCalc from recalculating automatically. When MANUAL RECALC is highlighted and then pressed, ADAMCalc recalculates.

Example

To stop ADAMCalc from recalculating every time a new cell is created, press MANUAL RECALC. MANUAL RECALC is highlighted.

When you want a recalculation, press MANUAL RECALC.

See Also: AUTO RECALC

MERGE

Brings a new file to the screen and combines it with the spreadsheet that is already on the screen. If the file has a different value in a cell than the spreadsheet on the screen, the file's value replaces the screen value.

The column widths, names and global settings in the file replace those of the spreadsheet on the screen.

Example

Sheet 1 has sales figures for 1984 from rows 2 through 16, and sales projections for 1985 on rows 18 through 24. Sheet 2 has sales figures for 1985 on rows 2 through 16. You can merge these two spreadsheets, so you have 1985 sales on rows 2 through 16 and 1985 sales projections on rows 18 through 24.

With Sheet 1 on the screen, press Store/Get.

Press MERGE.

When the directory appears, put the cell pointer on Sheet 2.

Press SELECT FILE.

Rows 2 through 16 of Sheet 1 are replaced by rows 2 through 16 of Sheet 2. There is no change to rows 18 through 24 of Sheet 1, because Sheet 2 has no values to replace those rows.

Helpful Hints

If you plan to merge spreadsheets, check your formulas. After the merge, a formula may be erroneously referring to a cell and giving you inaccurate information.

As with GET, only spreadsheets stored with STORE SHEET can be merged.

See Also: GET
STORE SHEET

MONEY

One of the FORMAT options. Numbers are expressed as dollars and cents and are rounded to two decimal places. A dollar sign precedes the number.

Example

7869 is represented as $7,869.00 in MONEY format.

Helpful Hints

The largest number that can be displayed in MONEY format is $999,999.00. If you need larger numbers, translate them into thousands. See the Balance Sheet Model Spreadsheet for an example.

See Also: FORMAT
DEFAULT

MOVE/COPY

See MOVE or COPY.

MOVE

Allows you to relocate a cell to another cell, a row to another row or a column to another column. The formula and value associated with the cell, row or column are moved. Cell references are not automatically adjusted.

Example

To move column 7 to column 15:

Press MOVE/COPY.

Press MOVE.

With the cell pointer in column 7, press MOVE COLUMN.

With the cell pointer in column 15, press MOVE TO COLUMN.

The old column 8 is now column 7. The old column 7 appears in column 15. The old column 15 appears in column 14 and all subsequent columns have moved to the right one column.

Helpful Hints

If you move a cell into a column with a different width, the whole column is changed to the width of the moved cell.

If you move a column to another column, it keeps its original width.

If you move a column to a column on its right, the moved column is placed to the right of the "move to" column. If you move a column to a column on its left, the moved column is placed to the left of the "move to" column. Rows are placed above or below the "move to" row similarly.

Don't try a move unless you have enough cells left. You should have more than double the number of cells you are moving. If you run out of room in the middle of a move, the moved information will appear in the row or column adjacent to where it was supposed to move. In addition, only part of the material will be moved. To get out of the move operation without losing anything, delete the row or column that contains the moved information.

Don't move into row or column 255.

NAMES

Gives a name to a cell, row or column. The name of a cell replaces the cell coordinates. The name of a column or row replaces the **number** of the column or row. You can use names in formulas and GO TO a name. You can define up to 64 names for a spreadsheet.

Example

The formula [sales, Year1] + [sales, Year2] is equivalent to the formula [3,5] + [3,6] when row 3 is named sales, column 5 is named Year1 and column 6 is named Year2. The formula rate/2 is equivalent to the formula [15,6]/2 when cell 15,6 is named rate.

See Also: DEFINE NAME
DELETE ALL
DELETE NAME
ALTER NAME
GO TO

NAME CELL
NAME COLUMN
NAME ROW

See DEFINE NAME.

NEW FILE

Indicates that the spreadsheet to be stored is to be considered a new file. You enter a new name for this file.

Example

To store a spreadsheet in Drive 1 as a new file called Charges:

Press Store/Get.
Press STORE SHEET.
If DRIVE 1 is not highlighted, press DRIVE 1.
Press DONE.
Press NEW FILE.
Type Charges (the name for the file).
Press DONE EDIT or Return.

Helpful Hints

Files names can be up to ten characters. Spaces cannot be used. Letters, numbers and the following special characters can be used:

¦ ! @ # $ & ` + ~ ^ , / ' { } - _

See Also: Store/Get
STORE SHEET
STORE VALUES

NO COMMAS

A FORMAT option in which commas are not used between groups of thousands in numbers. Used in conjunction with another format option.

Example

Press FORMAT.
Press FORMAT SHEET.
Press STOCK.
Press NO COMMAS.
Press FORMAT DONE.

See Also: COMMAS
FORMAT

NUMBER COLUMN

When highlighted, instructs the printer to print column numbers on the printed copy when you use PRINT VALUES.

Example

Press Print.
Press PRINT VALUES.
Press PRINT SHEET.
If NUMBER COLUMN is highlighted, press START PRINT.
If NUMBER COLUMN is not highlighted, press NUMBER COLUMN, then press START PRINT.

Helpful Hints

When the column width is 1 or 2, the column number does not print.

See Also: PRINT VALUES

NUMBER PAGE

When highlighted, instructs the printer to print a page number at the top left corner of each printed page.

Example

To print page numbers on each page of a printed spreadsheet:

Press Print.
Press PRINT FORMULA.
Press PRINT SHEET.
If NUMBER PAGE is highlighted, press START PRINT.
If NUMBER PAGE is not highlighted, press NUMBER PAGE, then press START PRINT.

See Also: PRINT SHEET
PRINT VALUES

NUMBER ROW

Same as NUMBER COLUMN, except prints row numbers.

OFF

Turns off the ADAMCalc calculator, and returns the spreadsheet and smart keys that were displayed before you pressed Wild Card.

See Also: Wild Card

PAPER OPTIONS

Prepares ADAMCalc for the kind of paper in the printer. The paper options are: FANFOLD
SINGLE SHEET
11 INCH
14 INCH

PERCENTAGES

One of the format options. The amount you enter is multiplied by 100. A plus or minus sign precedes the number and a percentage sign follows it. One decimal place is displayed.

Example

Press FORMAT.
Press FORMAT COLUMN.
Press %.
Press FORMAT DONE.

See Also: FORMAT

Print (command key)

Begins the printing process. When you press the Print key, smart keys appear with the printing options. The major printing options are:
PAPER OPTIONS
PRINT FORMULA
PRINT VALUES

PRINT BLOCK
PRINT CELL
PRINT COLUMN
PRINT ROW
PRINT SHEET

See PRINT FORMULA and PRINT VALUES.

PRINT COORDS

When highlighted, prints the row and column number when you print formulas.

Example

If PRINT COORDS is chosen, the printed copy looks like this:

```
@1,1;
@1,2;JAN
@1,3;FEB
@1,4;MARCH
@1,5;APRIL
@1,6;MAY
@1,7;JUNE
@1,8;TOTALS
@1,9;AVERAGE
@3,1;Phone
@3,2;22.86
@3,3;44.52
@3,4;37.85
@3,5;42.58
@3,6;49.62
@3,7;36.86
@3,8;SUM([3,2:3,7])
@3,9;AVG([3,2 : 3,7])
@4,1;Heat
@4,2;103.54
@4,3;89.95
@4,4;75.23
@4,5;45.34
@4,6;24.23
@4,7;19.56
@4,8;[4,2] + [4,3] + [4,4] + [4,5] + [4, 6] + [4,7]
@4,9;AVG([4,2:4,7])
@5,1;Water
@5,2;18.06
@5,3;17.78
@5,4;18.45
@5,5;19.89
@5,6;19.22
@5,7;18.65
@5,8;SUM ( [5,2: 5,7])
@5,9;AVG([5,2:5,7])
```

See Also: PRINT FORMAT
PRINT FORMULA

PRINT FORMAT

When highlighted, prints the format used for a cell, when you print formulas.

Example

PRINT FORMAT used with PRINT COORDS produces a printed copy that looks like this:

```
@1,1;>Text;
@1,2;<Text;JAN
@1,3;<Text;FEB
@1,4;<Text;MARCH
@1,5;<Text;APRIL
@1,6;<Text;MAY
@1,7;<Text;JUNE
@1,8;<Text;TOTALS
@1,9;<Text;AVERAGE
@3,1;<Text;Phone
@3,2;>Default;22.86
@3,3;>Default;44.52
@3,4;>Default;37.85
@3,5;>Default;42.58
@3,6;>Default;49.62
@3,7;>Default;36.86
@3,8;<Default;SUM([3,2:3,7])
@3,9;>Default;AVG([3,2 : 3,7])
@4,1;<Text;Heat
@4,2;>Default;103.54
@4,3;>Default;89.95
@4,4;>Default;75.23
@4,5;>Default;45.34
@4,6;>Default;24.23
@4,7;>Default;19.56
@4,8;>Default;[4,2] + [4,3] + [4,4] + [4,5] + [4, 6] + [4,7]
@4,9;>Default;AVG([4,2:4,7])
@5,1;<Text;Water
@5,2;>Default;18.06
@5,3;>Default;17.78
@5,4;>Default;18.45
@5,5;>Default;19.89
@5,6;>Default;19.22
@5,7;>Default;18.65
@5,8;>Default;SUM ( [5,2: 5,7])
@5,9;>Default;AVG([5,2:5,7])
```

See Also: PRINT COORDS
PRINT FORMULA

PRINT FORMULA

Prints the formulas of the spreadsheet on the screen with their formats and coordinates, if desired. You can choose how much of the spreadsheet you want printed (cell, row, column, block or sheet) and whether to number the pages.

Example

To print the formulas in a part of a spreadsheet, with format and coordinates, but no page numbering.

With the spreadsheet on the screen, press Print.

Press PRINT FORMULA.

Put the cell pointer at the first cell to be printed.

Press PRINT ▛ (BLOCK).

Put the cell pointer at the last cell to be printed.

Press PRINT ▟ (BLOCK).

Press PRINT FORMAT, if it is not highlighted.

Press PRINT COORDS, if it is not highlighted.

Press NUMBER PAGE if it **is** highlighted. (Only highlighted smart keys will take effect.)

Press START PRINT.

See Also: PRINT FORMAT
PRINT COORDS
NUMBER PAGE
1 LINE ONLY
PRINT VALUES

PRINT PAGE

When you are using single sheets of paper, the printer stops at the end of each page. You put another piece of paper in the printer and press PRINT PAGE to begin printing again.

PRINT ROW
PRINT SHEET

See PRINT FORMULA or PRINT VALUES.

PRINT VALUES

Prints the spreadsheet on the screen roughly as it appears with row and column numbers, if desired. You can choose how much of the spreadsheet you want printed (cell, row, column, block or sheet) and whether to number the pages.

Example

To print a spreadsheet with column and row numbers, and page numbering.

With the spreadsheet on the screen, press Print.
Press PRINT VALUES.
Press PRINT SHEET.
Press NUMBER ROW, if it is not highlighted.
Press NUMBER COLUMN, if it is not highlighted.
Press NUMBER PAGE, if it is not highlighted.
(Only highlighted smart keys take effect.)
Press START PRINT.

Helpful Hints

If the spreadsheet has more columns and rows than fit on the size of paper you are using, each page contains part of the spreadsheet. The illustration shows the sequence in which the parts of a large spreadsheet are printed.

1	4	7
2	5	8
3	6	9

See Also: NUMBER ROW
NUMBER COLUMN
NUMBER PAGE
PRINT FORMULA

RELEASE ALL

Eliminates the special display of all held rows and/or columns in the selected window. This smart key appears only when rows or columns are being held.

Example

To eliminate all held rows from the selected window:

Press HOLD/RELEASE.

Press RELEASE ALL.

See Also: RELEASE ROW
RELEASE COLUMN

RELEASE COLUMN

Eliminates the special display of the rightmost held column. This smart key appears only when a column is being held.

Example

To eliminate the last held column from the selected window:

Press HOLD/RELEASE.

Press RELEASE COLUMN.

See Also: RELEASE ROW
RELEASE ALL

RELEASE ROW

Eliminates the special display of the last held row: that is, the row nearest the bottom of the selected window. This smart key appears only when a row is being held.

Example

To eliminate the last held row from the selected window:

Press HOLD/RELEASE.

Press RELEASE ROW.

The last held row is released.

See Also: RELEASE COLUMN
RELEASE ALL

RENAME

Gives an existing file a new name. The contents of the file are not affected.

Example

To change the name of the file TAXES to 1984TAXES:

Press Store/Get.
Press RENAME.
When the file directory appears, move the cell pointer to TAXES.
Press SELECT FILE.
Type 1984TAXES (the new name for the file).
Press DONE EDIT or Return.

Helpful Hints

You must use a file name that has not been used before. Files names can be up to ten characters. Spaces cannot be used. Letters, numbers and the following special characters can be used:

¦ ! @ # $ & ` + ~ ^ , / ' { } - _

RIGHT ADJUST

A FORMAT option that lines up text or numbers at the right side of a cell.

Example

To make entries line up at the right side of a column:

Press FORMAT.
Put the cell pointer in the column to be affected.
Press FORMAT COLUMN.
Press the smart key for the desired format.
If RIGHT ADJUST is not highlighted, press RIGHT ADJUST.

Helpful Hints

Except when you are formatting a cell, DEFAULT, RIGHT ADJUST and NO COMMAS (the default format) are highlighted. If you don't change these choices, your entries will use default format.

See Also: LEFT ADJUST

SAVE VALUE

Puts the number currently displayed on the calculator on the formula line. This smart key is available only when the calculator was started from the EDIT CELL smart keys.

Example

To calculate a value for cell 8,15 and enter that value on the spreadsheet.

Move the cell pointer to 8,15.

Press EDIT CELL. Make sure TEXT is not highlighted.

Press Wild Card.

Calculate the value on the calculator. When the desired value is showing in the calculator display, press SAVE VALUE. The value is put on the formula line with a space after it.

Press OFF.

The EDIT CELL smart keys return. Remove the space if necessary.

Press DONE EDIT and the value is entered in 8,15.

SCIENCE E-FORM

One of the format options that uses scientific notation. Numbers are expressed as a single digit, followed by a decimal point and additional digits. The number is multiplied by a power of 10 (exponent). The number after the E represents the power of 10.

The number may be rounded, depending on the column width. Commas are never displayed.

Example

7869 is represented as 7.869E +03 in SCIENCE E-FORM format, when the column width is ten or more characters.

See Also: FORMAT

SEARCH

Looks through the part of the spreadsheet you specify for formulas that contain up to 28 characters that you specify, including spaces. You can search a row, a column, a block, or the entire spreadsheet.

Example

To look through a spreadsheet for formulas that refer to cell 9 C:

Press SEARCH.
Press SEARCH SHEET.
Type 9,C.
Press DONE EDIT.

The cell pointer goes to the first formula that contains 9,C. The SEARCH smart keys return, allowing you to continue the search with SEARCH NEXT. To end the search, press Escape/WP.

Helpful Hints

When searching, ADAMCalc considers capital letters to be different than small letters. Spaces make a difference, too.

ADAMCalc finds every cell that contains the specified characters, even if they are within other characters. For example, searching for **at** finds **at** as well as r**at**e and d**at**e.

If you don't type in any characters for ADAMCalc to find, it will "find" all the cells in the spreadsheet.

See Also: SEARCH NEXT

SEARCH NEXT

Finds the next occurrence of the characters you last searched for.

Example

To look through the entire spreadsheet for formulas that refer to 9,C:

Press SEARCH.
Press SEARCH SHEET.
If 9,C is not already displayed, type 9,C.
Press DONE EDIT.
The cell pointer goes to the first cell that contains 9,C.
Press SEARCH NEXT.
The cell pointer goes to the next cell that contains 9,C.

Helpful Hints

Always select the part of the sheet you want to search before pressing SEARCH NEXT the first time.

See Also: SEARCH

SEARCH BLOCK
SEARCH COLUMN
SEARCH ROW
SEARCH SHEET

See SEARCH.

SELECT CELL
SELECT ROW
SELECT COLUMN
SELECT SHEET

When you are making a cell reference, you use these commands to tell ADAMCalc what part of the spreadsheet you want to refer to.

See Also: CELL REF
FIXED REF

SELECT DRIVE

When you are working with files, this command allows you to specify which drive holds the data pack or disk you want to work with. The drive indicated by the highlighted smart key is the one that is accessed.

For details on how various commands use SELECT DRIVE, see:

GET
MERGE
RENAME
DELETE FILE
STORE SHEET
STORE VALUES

SELECT FILE

Used in several commands that handle files. When the file directory is on the screen, this command takes action on the file that the cell pointer is pointing to.

For details on how various commands use SELECT FILE, see:

GET
MERGE
RENAME
DELETE FILE
STORE SHEET
STORE VALUES

SELECT WINDOW

Points the hand to each window in sequence, indicating which window is to be deleted, adjusted or made active. SELECT WINDOW appears only when the spreadsheet has more than one window.

Example

To select the third window:

Press WINDOW OPTIONS.

Press SELECT WINDOW until the hand is pointing at the third window.

See Also: ADJUST WINDOW
CREATE WINDOW
DELETE WINDOW
MAKE ACTIVE

SINGLE SHEET

Adjusts ADAMCalc for printing on single sheets of paper. If more than one page is required, the printer stops at the end of the page. You insert a piece of paper and press PRINT PAGE to continue printing.

See Also: PAPER OPTIONS
FANFOLD

SORT

Arranges text in alphabetical order or reverse alphabetical order. Arranges numbers from low to high values or from high to low values. You sort columns or parts of columns. However, the whole row that contains the sorted value is moved to a new location. No recalculation takes place, and ADAMCalc is put into MANUAL RECALC mode.

Example

To sort a column of numbers in ascending order, excluding the column headings.

Press SORT.

Put the cell pointer on the first entry in the column that is to be included in the sort. Press SORT SUBCOL.

Put the cell pointer on the last entry in the column that is to be included in the sort. Press SORT SUBCOL.

Helpful Hints

Blank lines are not sorted and stay in their original places. It's often helpful to sort subcolumns between blank lines, rather than to sort whole columns. ADAMCalc sorts both text and numbers but does not separate text from numbers in a column.

Once a spreadsheet has been sorted, it can be difficult to get it back to its original state. Also, because rows have moved, cell references may be pointing to the wrong rows. To preserve the original spreadsheet and also create a sorted version, follow this procedure:

Create and store the original spreadsheet.

Sort the spreadsheet.

Print the sorted spreadsheet, and store it under a **different name** than the original.

The Sort Sequence

!	A or a	[
"	B or b	\
#	C or c	]
$	D or d	^
%	E or e	
&	F or f	_
'	G or g	`
(	H or h	{
)	I or i	|
*	J or j	}
+	K or k	~
-	L or l	
.	M or m	
/	N or n	
:	O or o	
;	P or p	
<	Q or q	
=	R or r	
>	S or s	
?	T or t	
@	U or u	
	V or v	
	W or w	
	X or x	
	Y or y	
	Z or z	

See Also: SORT LO-HI
SORT HI-LO

SORT COL
SORT SUBCOL

See SORT.

SORT LO-HI
SORT HI-LO

Allows you to change the order of the sort. SORT LO-HI sorts letters in alphabetical order and numbers from smallest to largest. SORT HI-LO sorts letters in reverse alphabetical order and numbers from largest to smallest.

See Also: SORT

SPECIAL KEYS

One of the Help smart keys. Shows a list of keys used in a special way by ADAMCalc.

See Also: HELP
COMMAND LIST
FORMULA LIST
FUNCTION LIST

START PRINT

Starts the printing of the specified material.

See Also: STOP PRINT
PRINT PAGE

STOCK

One of the format options. Numbers have three decimal places and are preceded by a plus or minus sign. Accepts up to five digits before the decimal point.

Example

7869 is represented as +7869.000 in STOCK format with NO COMMAS.

See Also: FORMAT

STOP PRINT

Stops the printer and returns the entry level smart keys. The print job in progress must be re-started by going through the print sequence again. You can save time by using PRINT BLOCK to print the remainder of the spreadsheet.

Store/Get (command key)

Allows you to interact with the disk or data pack. Smart keys appear after you press Store/Get to allow you to save spreadsheets on the data pack or disk, or bring stored spreadsheets to the screen. The major options within Store/Get are:

RENAME
DELETE FILE
STORE SHEET
STORE VALUES
MERGE
GET

STORE SHEET

Saves the spreadsheet on the screen on the specified data pack or disk, with a specified file name. The spreadsheet is saved with its formulas, formats, columns widths, and names. Windows and held areas are not stored. Only spreadsheets stored with STORE SHEET can be retrieved with ADAMCalc.

Example

You want to store a new version of the spreadsheet called TAXES over the old version on the data pack. The data pack is in the second data pack drive.

Press Store/Get.

Press STORE SHEET.

Press DRIVE 2.

Press DONE.

When the file directory appears, move the cell pointer to the file name TAXES.

Do not change the file name. Just press SELECT FILE.

When the file is stored, the spreadsheet re-appears on the screen.

Helpful Hints

Be careful that you don't accidentally store one spreadsheet with the same name as a different spreadsheet. If you do, the second spreadsheet replaces the first one, and the first one is lost.

Files names can be up to ten characters. Spaces cannot be used. Letters, numbers and the following special characters can be used:

¦ ! @ # $ & ` + ~ ^ , / ' { } - _

See Also: STORE VALUES

STORE VALUES

Saves the spreadsheet on the screen in a file that can be accessed by SmartWriter, SmartBasic or SmartLogo but not by ADAMCalc. The file does not contain formulas, formats, or names. If you try to GET a file stored with STORE VALUES in ADAMCalc you get a blank screen.

Example

To store a newly created spreadsheet for use with SmartWriter:

Press Store/Get.
Press STORE VALUES.
When the file directory appears, press NEW FILE.
Type a name for the file.
Press DONE or Return.

When the file is stored, the spreadsheet reappears on the screen.

Helpful Hints

The file name should indicate a STORE VALUES file so you don't confuse it with a STORE SHEET/ADAMCalc file. You may want to store some spreadsheets with both STORE SHEET and STORE VALUES, using different file names.

In SmartWriter, it's easiest to read the spreadsheet in the Moving Window format with the horizontal margins set at 1 and 80.

Files names can be up to ten characters. Spaces cannot be used. Letters, numbers and the following special characters can be used:

! ! @ # $ & ` + ~ ^ , / ' { } - _

See Also: STORE SHEET

TEXT

Part of the EDIT CELL smart keys. When this smart key is highlighted, whatever is typed is treated as text. When it is not highlighted, whatever is typed is treated as numbers.

You can change an entry to text from numbers and vice versa with this key. If you type a quote (") in the entry level, the EDIT CELL smart keys appear with TEXT highlighted and a blank formula line. If you type an equals sign (=) in the entry level, the EDIT CELL smart keys appear with TEXT not highlighted, and a blank formula line.

Example

To change text to numbers:

Put the cell pointer on the cell to be changed.
Press EDIT CELL.
Press TEXT.
Press DONE EDIT.

Undo (command key)

Cancels any changes made on the formula line and returns the characters that were there originally. When characters are cleared from the formula line, pressing Undo immediately brings them back.

WHOLE

One of the FORMAT options. Numbers are rounded to the nearest whole number. The largest whole number that can be accommodated is 9,999,999.

Example

7869.8 is prepresented as 7870 in WHOLE #format with NO COMMAS.

See Also: FORMAT

WIDTH COLUMN

Allows you to assign a column width to one column.

See Also: COLUMN WIDTH

WIDTH SHEET

Allows you to assign a column width to all the columns in the spreadsheet.

See Also: COLUMN WIDTH

WIDTH SUBROW

Allows you to assign a column width to several side-by-side columns.

Example

To change the width of columns 6 through 9 from default to 17:

Press COLUMN WIDTH.
Put the cell pointer in column 6.
Press WIDTH SUBROW.
Put the cell pointer in column 9.
Press WIDTH SUBROW.
Press DEFAULT. Press the up arrow key until the message reads "Current width = 17.
Press DONE.

See Also: COLUMN WIDTH

WILD CARD (command key)

Starts ADAMCalc's calculator. The screen displays a calculator. You press keys on the keyboard and/or game controller keypad to add, subtract, multiply, and divide as you would on a simple calculator.

You can press Wild Card to start the calculator when the entry level smart keys or the EDIT CELL smart keys are showing. If you began from the EDIT CELL smart keys, the SAVE VALUE smart key appears. SAVE VALUE takes the number from the calculator display and puts it on the formula line beginning at the cursor position. The number is followed by a space.

Screen Calculator	Keyboard Key	Game Controller Keypad Key	Purpose
0-9	0-9	0-9	Numeric entries
+	+		Addition
–	–		Subtraction
*	*		Multiplication
/	/		Division
.	.	*	Decimal Point
+/–	Smart Key I		Change sign
C	c or C		Clear
E	e or E		Exponent
^	^		Exponentiation
=	=		Equals

C - Clears the calculator. The display shows 0, and any operation in progress is forgotten.

E - Exponent. Indicates that a number is raised to a power of 10.

^ - Exponentiation. Causes the number in the display to be raised to the power of the next number entered.

+/– - Changes the sign of the number currently being entered. Only – is shown on the display. The sign of an exponent is separate from the sign of the number itself, and must be specified separately. Numbers are initially assumed to be positive.

Helpful Hints

If you are trying to enter numbers in the calculator and nothing happens, you might have the Lock key on, giving you upper case characters (! instead of 1, for example). Press Lock once to return to lower case characters.

When you use SAVE VALUE, be sure to remove any extra spaces from the formula line.

When you enter a negative number, the sign is displayed after you enter the operator.

See Also: SAVE VALUE
OFF

WINDOW OPTIONS

Allows you to change the way the spreadsheet is displayed by creating and changing windows. A window is an area of the display through which the spreadsheet can be viewed. Up to six windows can be created, but only one window is active at one time. The active window contains the cell pointer, so it can be scrolled and acted upon by all the ADAMCalc commands. The display in the non-active windows remains stationary, but its contents always match the contents of the active window.

Several windows may overlap, so when the largest window is active, the others are temporarily hidden.

Windows are not stored, and they are not changed by most operations such as GET, MERGE or DELETE SHEET.

The normal window is 35 characters wide and 16 lines long. The smallest possible window is 1 character wide and 1 line long.

See Also: SELECT WINDOW
CREATE WINDOW
ADJUST WINDOW
DELETE WINDOW
MAKE ACTIVE

1 LINE ONLY

When you use PRINT FORMULA, 1 LINE ONLY allows you to cut off long formulas at 80 characters. If you do not press 1 LINE ONLY, formulas longer than 80 characters are printed on several lines.

11 INCH

Adjusts ADAMCalc for printing on paper that is 11 inches long.

See Also: PAPER OPTIONS

14 INCH

Adjusts ADAMCalc for printing on paper that is 14 inches long.

See Also: PAPER OPTIONS

SECTION 2: FORMULAS

A formula is a mathematical or logical statement that manipulates numbers. ADAMCalc handles formulas that are made up of seven different elements: functions, numbers, cell references, operators, names, comments and named constants. Functions are described in Section 3. The other elements are described in this section.

Formulas can be up to 250 characters.

Numbers

ADAMCalc recognizes eight significant digits in numbers. Numbers are rounded up at 5. To work with numbers in the millions, use FREE FORMAT, and expect any number after the eighth digit to be rounded.

Cell References

There are several types of cell references. All are used to get the current value of a cell or group of cells.

A **single cell reference** gets the value of one cell. A single cell reference is indicated by this sequence: a left bracket; an expression, number or name for the row that contains the cell; a comma; an expression, number or name for the column that contains the cell; and a right bracket. You may have a cell reference within a cell reference.

Examples

[3,4]

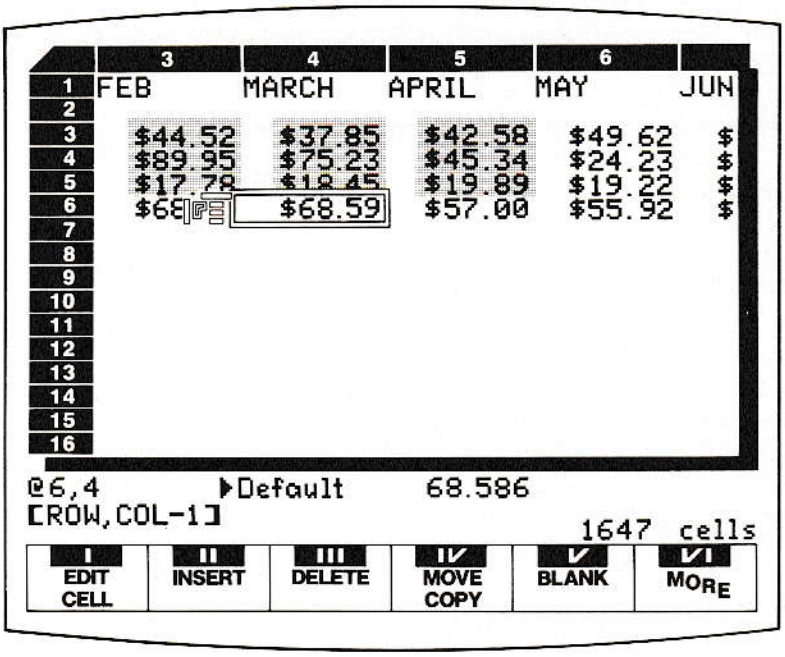
[3*2, 7]

[[3,2],5]

A **cell area reference** gets the value of a group of cells, and is indicated similarly. You can think of cell area reference as two single cell references that identify the corners of the cell area as follows: a left bracket, the single cell reference for the top corner, colon, the single cell reference for the bottom right corner, right bracket.

Example

[3,3:5,5] is the cell area reference for the following cells:



Fixed references use names or specific numbers to refer to rows and columns; they do use the functions ROW (R) or COL(C).

Relative references use the functions ROW or COL. By adding or subtracting a number from ROW or COL, you can reference a cell that is that number of cells away.

Example

[ROW + 1, COL + 1] resides in 2,6. ROW + 1 is row 3. COL + 1 is column 7. So [ROW + 1, COL + 1] refers to cell 3,7.

Mixed references consist of a cell area reference in which the first coordinate is a fixed reference and the second coordinate is a relative reference. A mixed reference allows you to insert or delete rows and columns in an area of the spreadsheet without adjusting formulas.

Example

[2,2: R,C–1]

Operators

+	add
–	subtract
*	multiply
/	divide
=	equals
^	raise to a power
NOT	returns the opposite of the logical value: False if the condition is true; True if the condition is false. Must be in parentheses.
AND	returns true if both conditions are true.
OR	returns true if one condition is true.
>	greater than
<	less than
>= or =>	greater than or equal to
<= or =<	less than or equal to
<> or ><	not equal

The order in which ADAMCalc handles these operations is:

First:	Any operations within parentheses
Second:	Negative Values, NOT
Third:	Exponentiation
Fourth:	Multiplication
Fifth:	Division
Sixth:	Addition
Seventh:	Subtraction
Eighth:	AND, OR

Be careful about placing parentheses. For example, an exponentiation symbol outside of parentheses can yield a different answer than when it's inside parentheses.

Names

Refer to NAMES in the Command Descriptions, Section 2.

Comments

Comments are any characters enclosed in braces { } within a formula. Comments are reminders or hints about the parts of the formula and its purpose. The characters inside the braces have no effect on the calculation.

Named Constants

PI

The ratio of the circumference to the diameter. Mathematical symbol is π. Equals approximately 3.141592653.

E

Used for natural logarithms. Equals approximately 2.718281828459045.

FALSE
F

Returns 0, which is a logical value for false. Can be used to test a formula to ensure that the false value of an IF function does not cause errors.

Example

IF ([16, 20] > 100; AVG ([1,1:16,20]); FALSE)

TRUE
T

Returns 1, which is a logical value for true. Can be used to test a formula to ensure that the true value of an IF function does not cause errors.

SECTION 3: FUNCTIONS

Built into ADAMCalc are 21 mathematical and logical functions. These functions are tools you use in formulas. Each function is described in this section, and examples of its use are provided. In general, you use a function by typing its name, followed by a mathematical or logical expression. The expression is enclosed in parentheses.

FUNCTION DIRECTORY

FUNCTION DESCRIPTIONS

ABS (N)

Gives the absolute value of N. If N is negative, it is changed to positive.

Example

ABS (2.7) = 2.7
ABS (AVG ([1,1:1,10]) – [1,1]) results in how far the first item is from the average.

ABS (SIN([1,1]))

See Also: SIGN for the sign of a number. ABS is equivalent to N*SIGN(N).

ARCTAN(N)

Gives the arctangent (inverse tangent) of N as an angle in radians from –PI/2 to PI/2.

Example

ARCTAN (0)
ARCTAN ([1,1])
ARCTAN (TAN(1))

See Also: TAN

AVERAGE (cell area)
AVG

Gives the average or mean of the specified numeric cells, including numeric cells that contain zero. Text and blank cells are ignored. Equivalent to SUM (cell area) / COUNT(cell area). The cell containing AVERAGE should come after the cells to be averaged.

Example

AVG ([1,1 :3,3])

COL
C

Gives the number of the column which contains the formula. Used in relative cell references.

Example

[34,COL] in column 6 refers to row 34, column 6.

COS (N)

Gives the cosine of N as an angle in radians from –1 to 1.

Example

COS (0)
COS ([2,3])
COS (PI)

For Arcosine, use PI/2–ARCTAN (X/SQRT(1–X*X))

See Also: TAN
SIN

COUNT(cell area)
CNT

Returns the number of numeric cells in the cell area, including cells that contain zero. Text and blank cells are ignored. However, blank cells created with ENTER RIGHT or ENTER DOWN contain zero. The cell containing COUNT should come after the cells to be counted.

Example

SUM ([1,1:3,3]) / COUNT ([1,1:3,3])
CNT ([1,2:5,2]) = 5

EXP(N)

Calculates E (2.7182818, the base of the natural logarithm) to the power of N. this is the inverse function of LN. EXP(N) is equivalent to 2.71828^N or E^N

Examples

EXP (LN(3)) = 3
(EXP ([3,2]) – EXP (–[3,2]))/2 = hyperbolic sine of [3,2]

See Also: LN

IF (condition; true value; false value)

If the condition is true, the true value is returned. If the condition is false, the false value is returned. If the condition cannot be interpreted by ADAMCalc, the false value is returned.

Example

IF can be used to check values against certain conditions, and return different values depending on the results.

This example checks if the value one cell to the left is greater than 90. If so, 100 is returned. If not, 10 is added to the value.

IF ([ROW, COL–1] > 90; 100; [ROW, COL–1] + 10)

INT (N)

Returns the largest integer less than or equal to N.

Examples

INT (10) is 10
INT (109.9) is 109
INT (–35.899) is –36
INT (–1.1) is –2
INT (–1.7) is –2

LKUP (N; cell area; offset)

Looks up N in a table of values and returns a value associated with N. The cell area consists of one row or one column (or part of a row or column) in the table. The associated value is in the same row or column as N, but offset from the row or column in which N is located.

ADAMCalc searches the cell area until it finds the largest value less than or equal to N. If all the values in the cell area are less than N, the last value is used. If all the values in the cell area are greater than N, 0 is returned.

Since the offset is specified, the values returned do not have to be adjacent to the table. The offset must be in the range –128 through 127. Refer to tables with fixed references.

Example 1

To look up the deductible associated with an income of $1750.00:

LKUP (1750; [3,2:6,2]; 2). This formula (in 3,1) finds the largest value less than or equal to 1750 in column 2 (1700). The formula returns 62, because 62 is the value in the cell two cells to the right of 1700.

	1	2	3	4
1		Income	Percent Tax	Deductible
2				
3	$62.00	1300	.05	49
4		1700	.1	62
5		1800	.12	75
6		2000	.15	100

Example 2

The scout troop needs to know how to split up the proceeds from a light bulb fund raiser. The following spreadsheet lets them enter the scout's name and number of light bulbs sold, and derive the troop's share and the light bulb company's share. The formulas are:

In cell 3,3: LKUP ([R,C–1];[8,1:13,1];2)
In cell 3,5: LKUP ([R,C–3];[8,1:13,1];4)

	1	2	3	4	5	6
1	SCOUT	BULBS	TROOP'S		COMPANY'S	
2		SOLD	SHARE		SHARE	
3	Jimmy	102	$22.00		$15.00	
4						
5	----------					
6	TABLE					
7	# of Bulbs	Amount				
8	60	$48.00	$9.00		$6.00	
9	80	$64.00	$13.00		$10.00	
10	100	$80.00	$22.00		$15.00	
11	144	$115.00	$41.00		$25.00	
12	220	$176.00	$65.00		$35.00	
13						

LN (N)

Returns the natural logarithm of N, the logarithm based e. N must be positive. If N is less than or equal to 0, the BAD VALUE error message is returned.

Examples

LN ([3,7])
LN (EXP(2)) = 2
LN (E) = 1

See Also: ABS
EXP

LOG (N)

Calculates the base 10 logarithm of N. N must be positive. If N is equal to or less than zero, the BAD VALUE error message is returned.

Example

LOG (2) = .30103
LOG (10^ 2) = 2

See Also: ABS
LN

MAX (cell area)

Returns the largest number included in the cell area. Returns zero if there are no numbers in the cell area.

Example

MAX ([3,1:4,5])

See Also: MIN

MIN (cell area)

Returns the smallest number included in the cell area. Returns zero if there are no numbers in the cell area.

Example

MIN ([2,2:3,3])

See Also: MAX

NPV (rate; cell area)

NPV (net present value) returns the current value of future cash flow, given a specified interest rate.

The formula for NPV is:

$$\sum_{i=1}^{n} \frac{\text{cell area}}{(1+\text{rate})^i}$$

Rate is an interest rate, expressed as a decimal fraction. The first value in the cell area represents cash flow at the end of the first period, the second represents the cash flow at the end of the next period, and so on.

Example

Suppose you plan to purchase a newstand, and you project the yearly income as shown in the following spreadsheet. The formula NPV ([1,4]; [2,2:6,2]) is in cell 2,4. If the net present value equals or is less than what you pay for the newstand, it is a good investment.

	1	2	3	4
1	Year	Income	Discount Rate	.15
2	1984	$12,000.00	Net Present	$49,680.88
3	1985	$13,400.00	Value	
4	1986	$16,320.00		
5	1987	$16,500.00		
6	1988	$18,000.00		

ROW
R

Gives the number of the row in which the formula appears. Used in relative cell references.

Example

[ROW,5] refers to the row in which the formula resides and column 5.

See Also: COL

SIGN (N)

Gives a number which represents the algebraic sign of N.

Positive = 1
Negative = –1

Example

IF (SIGN([1,2]) = –1; –[1,2]; [1,2])

See Also: ABS

SIN(N)

Returns the sine of N, an angle in radians from –1 to 1.

Example

SIN (0)
SIN (PI)
SIN ([3,2])

For Arcsine, use ARCTAN(X/SQRT(1–X*X))

See Also: COS
TAN

SQRT (N)

Returns the positive square root of N. N must be positive. If N is negative, the BAD VALUE error message appears.

Example

SQRT ([1,1] ^2 + [3,4]^2)
SQRT (2) = 1.41421

STDEV (cell area)

Returns the sample standard deviation of the values included in the cell area. Text and blank cells created with ENTER RIGHT and ENTER DOWN have a value of 0. The formula used for standard deviation is:

$$s = \sqrt{\frac{\text{cell area}}{\Sigma x^2 - \frac{(\Sigma x)^2}{n}}{n-1}}$$

Example

STDEV ([3,1:3,3])

SECTION 4: ERROR MESSAGES

ADAMCalc has two kinds of error messages, described in the following two lists. The text of the message gives you an idea of how to correct your error.

The following messages report errors that occur during calculation and appear in the cells of the spreadsheet. Because ADAMCalc checks the formula character by character from left to right, the error message may be reporting only a symptom of the problem, not the real problem. Often, characters are in the wrong order. Check your formulas against the examples in Section 2, Formulas. The explanation of some of the possible errors can help you figure out how to fix the formula.

Spreadsheet Error Message	Explanation
',' Needed	This comma between the row and column is missing.
']' Needed	The ending bracket of a cell reference is missing.
'[' Needed	The beginning bracket of a cell reference is missing.
')' Needed	The ending parentheses is missing from a function or an expression.
'(' Needed	The beginning parentheses is missing from a function or an expression.
':' Needed	The colon is missing from a cell area reference.
';' Needed	1. The semicolon is missing between function elements. 2. The operator is missing from an IF statement.
Bad Character	1. An invalid character. Valid characters are letters, numbers, parentheses, brackets, braces, and operators. 2. A valid character in the wrong place.
Bad Number	A numeric constant is incorrect; usually the exponent is larger than 38.
Bad Formula	The first expression in the IF function is a problem. May be referring to a cell that contains an error, or a divide by zero error. May be too many brackets or parentheses.
Bad Operator	The operator is missing or there is an invalid operator. See list of operators in Section 2.

Spreadsheet Error Message	Explanation
Bad Value	1. A function is trying to operate on an invalid value, for example, SQRT (–1), LN(0). 2. A function is trying to operate on a value that is too large, for example, EXP (89).
Cell Range	1. A cell area is not defined as an upper left corner followed by a lower right corner. 2. The cell area in the LKUP function is not a row or column or a part of a row or column.
Div by Zero	The formula or function is trying to divide by zero.
Extra Data On Line	Characters are not in the expected order. May be missing an operator or a starting comment brace. May have used the letter l instead of the number 1 or the letter O instead of the number 0. May be a space in the wrong place. Numbers and letters may be mixed.
Name Problem	1. Formula contains a name that is not on the names directory. 2. A function name or constant is mispelled.
Need Formula	Formula ends with an operator. Supply an expression after the operator or delete the operator. Letters may have been entered instead of numbers.
Offset Range	The value of the offset in the LKUP function is not –128 through 127.
Overflow	The formula or function is trying to calculate a number that is too large. Greater than 10^{38} or smaller than 10^{-38}.
Refers to Error	This cell refers to a cell that has an error value.
Row/Col Range	The number of the row or column is not 1 through 255.
Too Complex	1. Too many expressions in parentheses. 2. Too many cell references that reference other cells (particularly with functions like SUM and AVERAGE).
# <> !	The column width is too narrow to display any number in the current format. Change the format and/or the column width.
<<<<	The value is too large to be displayed in its current format and column width. Change the format and/or the column width.

These error messages report problems with the command that you are trying to complete. They appear in the yellow message area beside the smart keys.

Smart Key Error Message	Explanation
Bad File Name	The file name begins with an invalid character.
Can't Add File	File name is a reserved word. The directory or the disk or the data pack are full, so another file cannot be stored. Use another disk or data pack. If you don't need any files on the disk or data pack, it can be completely erased through SmartBasic or SmartLogo and reused. Or, delete the backup files through SmartBasic, SmartWriter, SmartLogo.
Can't Add Name	A name cannot be added because there are already 64 names, because memory is full, or the name is a reserved word (such as SUM).
Close Error	A file or directory could not be closed after it was opened.
Create Error	During a STORE, a new file could not be made. Check the disk or data pack.
Delete Protected	This file was protected from deletion by another program. Use the UNLOCK command in SmartBasic to make it accessible.
Help Was Removed	You did not want the Help Screens; you answered NO to the question "Do you want on-line help" when ADAMCalc was loaded. To use Help, you must store the spreadsheet in memory and re-load ADAMCalc.
File Exists	The file name is already on the directory, and cannot be used again. Use a different name or delete the other file that uses the name.
Name Not Known	The name in a GO TO command is not on the names directory.
Need a Valid Name	A name must start with a letter, not a number or special character.
Not Enough Room	ADAMCalc memory is full. To free up memory space, delete some parts of the spreadsheet. Perhaps you can delete some blank areas within the defined spreadsheet. If you try to get a spreadsheet that is too large, only the part of the spreadsheet that fits is brought into memory.

Open Error	A file or directory cannot be accessed. Make sure the drives are attached and operating, that the drive contains a disk or data pack, and the drive doors are completely closed.
Read Error	A file or directory cannot be read. Make sure the drive is attached and operating, and that a data pack or disk is in the drive.
Rename Error	The file cannot be renamed.
Write Error	Cannot write to this file. Make sure the drive is attached and operating, and that a data pack or disk is in the drive.

PART 3:

DESIGN TIPS AND MODEL SPREADSHEETS

SECTION 1: HOW TO DESIGN A USEFUL SPREADSHEET

Good Design Starts on Paper

You thought computers were going to make paper obsolete? Guess again. The most effective way to design a spreadsheet is to analyze your problem on paper before you start working on the computer. That way you'll make fewer false starts and mistakes, and end up with a spreadsheet that truly meets your needs. If you have a complicated project, expect to spend some time making modifications. Careful thought before you begin helps keep changes to a minimum.

If your applications are simple, you may not use all of this design advice right away. Sooner or later ADAMCalc's power will lead you to try more ambitious projects. Then, understanding the principles of good design will come in handy.

The Four Steps of Spreadsheet Design

Analyzing a problem and planning a spreadsheet solution to it can be broken into four steps.

Step 1: What do you want to know?

Step 2: What are the variables and how do they relate to one another?

Step 3: What are the components of the problem?

Step 4: Does the spreadsheet work?

Sometimes when you complete a later step, you'll want to reconsider an earlier one. The important point is to begin at Step 1 and consider all four.

Step 1: What do you want to know?

This step may seem obvious, but it's the key to creating useful spreadsheets. The first step in designing any spreadsheet is a clear statement of the problem. Take the loan example in Lesson 3, for instance. If you use that spreadsheet to answer the question, "How much could I borrow given the desired periodic payment, the payment plan and the interest rate," you're right on target. But if you want to answer the question, "How much interest would I be charged over the term of the loan," the Lesson 3 spreadsheet won't help you. To answer the second question, you would need to break out each payment into principal and interest as the Loan Payment Schedule model does. Be very clear about the questions you want to answer to make sure your spreadsheet does its job.

Tips on Defining the Problem

Keep the problem definition short and simple. You can fill in the details later. What you want is a concise but accurate overview of your objectives for the spreadsheet.

Look for hidden benefits. Stating the problem often uncovers related problems. Consider our loan example. The question about how much you can afford to borrow uses many of the same variables as the Loan Payment Schedule. With a little extra thought and work, you could build a spreadsheet that answered both questions.

Step 2: What are the variables and how do they relate to each other?

List all the known and the unknown variables that need to be considered to solve the problem. Once you have listed the smallest set of variables that will yield an adequate working answer, write down the mathematical expressions that relate what you **want** to know to what you already **do** know.

Tips on Listing Variables and the Relationships Between Them

Survey the available resources for information pertaining to your problem, and the formulas that can give you answers. Regarding money matters and consumer products, for example, three of the best sources are free or almost free. One is the federal government. Many government departments collect and publish information such as the average cost per mile of operating different makes and models of cars, or average income projections by occupation and region. Call your congressperson's office to find out how to order publications from the U.S. Government Printing Office.

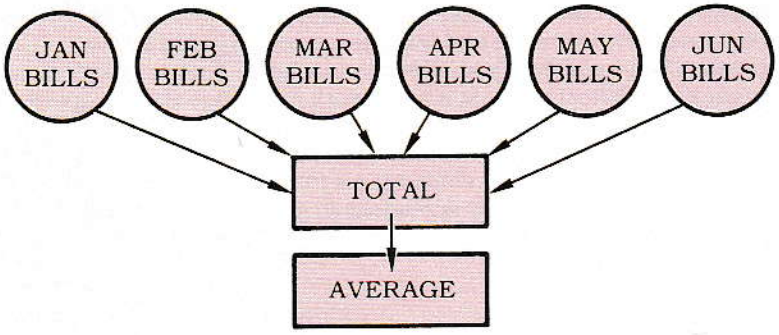
A second source is the business section of your daily paper for current loan rates, money market rates, and other economic data. A third source is reference material available in your public library. An experienced reference librarian can steer you to books that contain formulas you can use to construct practical spreadsheets.

As you list the variables relevant to your problem, you may find that a complete solution would require a long list. If you took every possible variable into account, you'd never finish a spreadsheet. Make a judgement about the practical scope of your spreadsheet and leave perfection to the mathematicians.

Step 3: What are the components of your problem?

Once you know the scope of the problem and the variables and formulas you need to use, it's time to structure the spreadsheet. A modular approach allows you to reuse parts of the spreadsheet and to perfect the spreadsheet piece by piece.

You may find it helpful to plan the structure of the spreadsheet on two sheets of paper. One sheet is for a flow chart showing the basic components and how they pass information to one another. The other is for a sketch of the spreadsheet as it will appear on the screen or on paper. Don't worry using the "correct" programmer's flow chart symbols. Three symbols may be all you need. For example, use a circle for information you enter. Use a block for information calculated by the program, and use arrows to show how information passes from one component to the next. Here's a simple flow chart that uses these symbols to show the structure of the Lesson 2 budget example:



Tips on Structuring your Program

Remember the person at the keyboard. Whether you or someone else is going to put information into the spreadsheet, the flow of the task should be easy and natural. If the information to be entered is on five pieces of paper, structure your spreadsheet so you can enter all the information from page one before going to page two, instead of searching back and forth to find the required information. Design your spreadsheet so that everything possible is calculated by ADAMCalc — rather than by you!

Remember ADAMCalc's features. Consider how the labor saving features such as functions and relative cell references can speed your project to completion.

Remember the biggest shortcut of all: recycle your work! When possible, modify an existing spreadsheet rather than starting over. The more spreadsheets you do, the more you'll be able to save time by copying and revamping them to meet your requirements.

Don't forget the reader. Most spreadsheets end up on paper. A well laid out visual design communicates the essential facts in a way that is easy to grasp.

Step 4: Does the spreadsheet work?

The final step is to test the spreadsheet. If you designed your spreadsheet in a modular way, you can test and correct each part as you complete it, then test all the parts together.

Testing Tips

If your spreadsheet is complex, first create a simplified version that incorporates the basic formulas and components. Put sample data into the stripped-down version, and test the answers against known or hand-calculated figures. When you're sure your basic design is sound, complete the spreadsheet and test it again with more data that yields known answers. When something doesn't work the way you think it should, refer to your flow chart first. Check each component to see if it is passing the correct value to other components that depend on it. When you've thoroughly "debugged" your spreadsheet, you're ready to enter all your data and trust your spreadsheet to do the calculations.

SECTION 2: MODEL SPREADSHEETS

This section explains how to use the model spreadsheets on your disk or data pack. The models are working spreadsheets, with variables and formulas already built in, that can help you analyze your financial situation. You enter your own variables to make the sheets apply to your particular situation.

Most of the models contain sample variables. Replace these variables with numbers that tell your financial story.

The Home Budget model and the Home Inventory model are "skeleton" spreadsheets that contain titles, formulas and other information you need to get started. They do not contain variables. That's because these sheets contain lots of variables and it would be time-consuming for you to replace them all.

Each one of the models (including the Home Budget and Home Inventory) is illustrated in this section with sample variables filled in. In the illustrations, variables are shaded so you can easily tell them apart from cells that contain formulas. When you are entering variables in large spreadsheets, stay in MANUAL RECALC mode so you don't have to wait for ADAMCalc to recalculate every entry. Also, don't be alarmed if you see the "DIVIDE BY ZERO" error message — it's probably there because you haven't filled in a particular variable yet.

You can customize the model spreadsheets as you wish. Add and delete rows and columns; or change the formulas to make the model work differently. If you add much to a large sheet, you may have to break it into two smaller sheets. Before you make any changes, store the model spreadsheet under a different file name and use the new file as your customized version. This way, you can always go back to the original model spreadsheet.

Be careful that you don't accidentally put numbers into cells that contain formulas. It's a good idea to print each model spreadsheet with PRINT FORMULA before you start experimenting with it. Then you can easily look up and recreate a formula in case you do write over one. You might also be interested in seeing exactly what formulas are behind the values you see displayed.

Loan Cost Analysis and Loan Payment Schedule
File Names: LoanCost and LoanSched

The Loan Payment Schedule Model and the Loan Cost Analysis Model use much of the same information, so they are discussed together. The How Much Can I Borrow spreadsheet from Lesson 3 is also tied into this discussion.

Definition of the Problem

Whether you manage money for business or personal purposes, there may be times when you need to borrow money. The decision to borrow involves many factors that affect your financial picture. Different institutions offer different loan arrangements and calculate interest differently. Paying off a loan quickly means you pay less overall, but each payment is higher. Of course, the amount you put down and the amount you borrow have much to do with how much the loan costs you.

ADAMCalc's loan spreadsheets can help answer questions like these:

What will a particular loan cost?

What will my monthly payment be, based on a given loan arrangement?

How does the length of time taken to repay the loan affect the situation?

How does the amount of the down payment affect the situation?

Based on a certain monthly payment, how much money could you borrow, with different interest rates and repayment schedules?

Related Issues

There are hidden costs and benefits in borrowing money. The down payment comes out of assets that could be earning money. But if you itemize deductions on your tax return, you can deduct the interest you pay. So you need to know what part of your payments are going toward interest and how much interest you have paid at certain intervals. In times of high inflation, you pay back a loan with dollars that are less valuable than those you borrowed. If you are in business you may derive a tax benefit from the capital investment you make with the loan.

Variables and Formulas

Unless you specialize in money matters, you must look up formulas in a business math book or talk to a financial person to get the information you need to analyze problems like these. Experts sometimes use different terms to refer to the same thing, but the loan models are based on the following definitions.

Principal:	The amount of money borrowed.
Interest:	The amount of money you are charged for using the principal for a certain period of time.
Interest Rate:	The percentage of the unrepaid principal that will be charged for use of principal. Usually expressed as an annual rate.
Periodic Interest:	The amount of money that will be charged for each loan period.
Period:	The period of time used to schedule recomputation of interest due on the remaining principal. This may not be the same period of time used in the repayment schedule.
Term:	The amount of time, expressed in periods, in which you are scheduled to repay a loan.

The Loan Cost Analysis is built around a formula that determines the payment for each period based on principal, interest and term. The Loan Schedule uses the same monthly payment formula, but also breaks down each payment into principal and interest. The How Much Can I Borrow spreadsheet from Lesson 3 calculates how much you can borrow based on payment per period, interest and term. You could build a spreadsheet that would answer all of the loan questions, but it would be cumbersome.

The Loan Cost Analysis

This spreadsheet consists of six components:

Basic Loan Information: Once you have entered the five variables, the Monthly Payment is computed using a direct reduction formula.

Nominal Cost: Three values are computed from the basic loan information: Total Payment, Total Cost and Total Interest.

Opportunity Factor: Estimate and enter as Investment the annual interest that you could have earned from the down payment during the term of the loan. ADAMCalc calculates the cost of not investing the down payment and removing it from assets. This calculation does not deduct capital gains tax, so you might want to adjust the estimated annual interest rate accordingly, or modify the formula to deduct an estimated capital gains tax.

Tax Deduction: Omit this item if you will not be itemizing deductions on your federal tax return. Otherwise, enter your tax bracket as a decimal (30 % bracket equals .3). ADAMCalc calculates the value of deducting the interest to be paid on the loan.

Inflation Factor: Enter an estimate of the annual rate of inflation during the term of the loan. ADAMCalc calculates the value of this inflation factor.

Adjusted Cost: ADAMCalc adds the opportunity factor, the tax deduction and the inflation factor to the nominal cost of the loan to arrive at a net cost.

Loan Payment Schedule

This spreadsheet uses much of the same basic loan information as the Loan Cost Analysis. It computes each scheduled payment during the term of the loan, so you can see how much interest and how much of the principal you have paid at any point. It also can give you a better understanding of how loan payments work.

Variables and Formulas

Each row from 14 to 84 represents one payment. The same formula is used in each row to compute the payment due per period.

The interest portion of the first payment is determined by multiplying the interest due each period by the unrepaid principal. In the first loan period, the unrepaid principal is the full amount borrowed. Most of the first payment goes toward interest, but some of it reduces the principal. In the second payment period the same formula is used, but since the principal is lower, a smaller portion of the monthly payment goes toward interest and a greater portion goes toward principal. Examine the Interest Payments and Remaining Balance in the spreadsheet to see how this works.

Using the Spreadsheet

When the Payment Number in column 1 equals the Number of Payments in row 6 and the Remaining Balance equals 0, the loan is paid off. Since the spreadsheet allows for 84 payments, you will see values being calculated beyond that point, but you can ignore them.

The How Much Can I Borrow Spreadsheet

This spreadsheet computes principal from other loan information. See Lesson 3 for information about building this spreadsheet.

Page 1

	1	2	3	4
1	LOAN COST ANALYSIS			
2				
3				
4	Loan Amount:	$7,000.00	$5,000.00	$3,000.00
5	Interest Rate:	.095	.095	.095
6	Number of Payments:	36	36	36
7	Payments per Year:	12	12	12
8				
9	Monthly Payments:	$224.23	$160.16	$96.10
10				
11	Down Payment:		$2,000.00	$4,000.00
12				
13				
14	NOMINAL COST			
15				
16	Total Payment:	$8,072.30	$5,765.93	$3,459.56
17				
18	Total Cost:	$8,072.30	$7,765.93	$7,459.56
19				
20	Total Interest:	$1,072.30	$2,765.93	$4,459.56
21				
22				
23	A: OPPORTUNITY FACTOR			
24				
25	Investment (ann. interest)	.08	.08	.08
26				
27	Cost	$.00	$519.42	$1,038.85
28				
29				
30	B: TAX DEDUCTION			
31				
32	Tax Bracket (Pct.)	.3	.3	.3
33				
34	Value	$321.69	$829.78	$1,337.87
35				
36				
37	C: INFLATION FACTOR			
38				
39	Inflation (Pct.)	.08	.08	.08
40				
41	Value	$1,498.03	$1,070.02	$642.01
42				
43				
44	ADJUSTED COST			
45				
46	NET.....	$6,252.58	$6,385.56	$6,518.53
47				
48				

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LOAN Schedule Analysis

Loan Amount:	$4,000.00
Interest Rate:	+12.0%
Number of Payments:	24
Monthly Payments:	$188.29

Payment Number	Principle Payment	Interest Payments	Remaining Balance	Cumulative Interest	Cumulative Principle
1	$148.29	$40.00	$3,851.71	$40.00	$148.29
2	$149.78	$38.52	$3,701.93	$78.52	$298.07
3	$151.27	$37.02	$3,550.65	$115.54	$449.35
4	$152.79	$35.51	$3,397.87	$151.04	$602.13
5	$154.32	$33.98	$3,243.55	$185.02	$756.45
6	$155.86	$32.44	$3,087.69	$217.46	$912.31
7	$157.42	$30.88	$2,930.28	$248.33	$1,069.72
8	$158.99	$29.30	$2,771.29	$277.64	$1,228.71
9	$160.58	$27.71	$2,610.70	$305.35	$1,389.30
10	$162.19	$26.11	$2,448.52	$331.46	$1,551.48
11	$163.81	$24.49	$2,284.71	$355.94	$1,715.29
12	$165.45	$22.85	$2,119.26	$378.79	$1,880.74
13	$167.10	$21.19	$1,952.16	$399.98	$2,047.84
14	$168.77	$19.52	$1,783.39	$419.50	$2,216.61
15	$170.46	$17.83	$1,612.93	$437.34	$2,387.07
16	$172.16	$16.13	$1,440.76	$453.47	$2,559.24
17	$173.89	$14.41	$1,266.88	$467.87	$2,733.12
18	$175.63	$12.67	$1,091.25	$480.54	$2,908.75
19	$177.38	$10.91	$913.87	$491.46	$3,086.13
20	$179.16	$9.14	$734.72	$500.59	$3,265.28
21	$180.95	$7.35	$553.77	$507.94	$3,446.23
22	$182.76	$5.54	$371.01	$513.48	$3,628.99
23	$184.58	$3.71	$186.43	$517.19	$3,813.57
24	$186.43	$1.86	-$.00	$519.05	$4,000.00
0	$188.29	-$.00	-$188.29	$519.05	$4,188.29
0	$190.18	-$1.88	-$378.47	$517.17	$4,378.47
0	$192.08	-$3.78	-$570.55	$513.39	$4,570.55
0	$194.00	-$5.71	-$764.55	$507.68	$4,764.55
0	$195.94	-$7.65	-$960.49	$500.03	$4,960.49
0	$197.90	-$9.60	-$1,158.39	$490.43	$5,158.39
0	$199.88	-$11.58	-$1,358.26	$478.85	$5,358.26
0	$201.88	-$13.58	-$1,560.14	$465.26	$5,560.14
0	$203.90	-$15.60	-$1,764.04	$449.66	$5,764.04
0	$205.93	-$17.64	-$1,969.97	$432.02	$5,969.97
0	$207.99	-$19.70	-$2,177.96	$412.32	$6,177.96
0	$210.07	-$21.78	-$2,388.04	$390.54	$6,388.04
0	$212.17	-$23.88	-$2,600.21	$366.66	$6,600.21
0	$214.30	-$26.00	-$2,814.51	$340.66	$6,814.51
0	$216.44	-$28.15	-$3,030.95	$312.51	$7,030.95
0	$218.60	-$30.31	-$3,249.55	$282.21	$7,249.55
0	$220.79	-$32.50	-$3,470.34	$249.71	$7,470.34
0	$223.00	-$34.70	-$3,693.34	$215.01	$7,693.34
0	$225.23	-$36.93	-$3,918.56	$178.07	$7,918.56

Page 2

	1	2	3	4	5	6
57	0	$227.48	-$39.19	-$4,146.04	$138.89	$8,146.04
58	0	$229.75	-$41.46	-$4,375.80	$97.43	$8,375.80
59	0	$232.05	-$43.76	-$4,607.85	$53.67	$8,607.85
60	0	$234.37	-$46.08	-$4,842.22	$7.59	$8,842.22
61	0	$236.72	-$48.42	-$5,078.94	-$40.83	$9,078.94
62	0	$239.08	-$50.79	-$5,318.02	-$91.62	$9,318.02
63	0	$241.47	-$53.18	-$5,559.50	-$144.80	$9,559.50
64	0	$243.89	-$55.59	-$5,803.39	-$200.40	$9,803.39
65	0	$246.33	-$58.03	-$6,049.71	-$258.43	$10,049.71
66	0	$248.79	-$60.50	-$6,298.50	-$318.93	$10,298.50
67	0	$251.28	-$62.99	-$6,549.78	-$381.91	$10,549.78
68	0	$253.79	-$65.50	-$6,803.57	-$447.41	$10,803.57
69	0	$256.33	-$68.04	-$7,059.90	-$515.45	$11,059.90
70	0	$258.89	-$70.60	-$7,318.80	-$586.05	$11,318.80
71	0	$261.48	-$73.19	-$7,580.28	-$659.23	$11,580.28
72	0	$264.10	-$75.80	-$7,844.38	-$735.04	$11,844.38
73	0	$266.74	-$78.44	-$8,111.11	-$813.48	$12,111.11
74	0	$269.41	-$81.11	-$8,380.52	-$894.59	$12,380.52
75	0	$272.10	-$83.81	-$8,652.62	-$978.40	$12,652.62
76	0	$274.82	-$86.53	-$8,927.44	-$1,064.92	$12,927.44
77	0	$277.57	-$89.27	-$9,205.01	-$1,154.20	$13,205.01
78	0	$280.34	-$92.05	-$9,485.35	-$1,246.25	$13,485.35
79	0	$283.15	-$94.85	-$9,768.50	-$1,341.10	$13,768.50
80	0	$285.98	-$97.68	-$10,054.48	-$1,438.79	$14,054.48
81	0	$288.84	-$100.54	-$10,343.31	-$1,539.33	$14,343.31
82	0	$291.73	-$103.43	-$10,635.04	-$1,642.76	$14,635.04
83	0	$294.64	-$106.35	-$10,929.69	-$1,749.11	$14,929.69
84	0	$297.59	-$109.30	-$11,227.28	-$1,858.41	$15,227.28

Home Budget
File Name: HomeBudget

Important Note: Before you use this spreadsheet, copy the formula from 13,3 into 13,2. Also, change the formulas in Row 48 to R–35 rather than R–36.

A budget is a tool for planning expected income and expenses over time and helps you spend your money wisely. The questions the Home Budget spreadsheet answers are:

> How does my actual spending compare with my budgeted spending?
>
> How far over or under budget are my actual expenditures? In other words, what is the variance?

The answers to these questions are based on a general idea of how you will spend money over a period of time, and how much income you will have.

Variables and Formulas

A few variables are shown in the illustration as an example. These variables are not in the model spreadsheet on your data pack or disk.

Each row represents a type of expense. The budget period represented by the columns is a month.

The formula that calculates Variance in column 17 subtracts the Total spent on each type of expense from the Budget amount. Column 15 uses the function AVG to give you an average of the amount of money earned or spent per month in each category. Row 13, Total Income, totals all the income categories above row 13. Row 47 calculates the total money spent per month using the SUM function. Row 48 subtracts Total Expense from Total Income.

Page 1

	1	2	3	4	5	6
1	Home Budget					
2						
3	INCOME	BUDGET	JANUARY	FEBUARY	MARCH	APRIL
4						
5	NET PAY-HUSBAND	$1,416.00	$1,416.67	$1,416.67	$1,416.67	$1,416.67
6	NET PAY-WIFE	$1,250.00	$1,250.00	$1,250.00	$1,250.00	$1,250.00
7	PENSION/ANNUITY					
8	INTEREST					
9	DIVIDENDS					
10	OTHER INCOME					
11	" "					
12	" "					
13	TOTAL INCOME	$2,666.00	$2,666.67	$2,666.67	$2,666.67	$2,666.67
14	EXPENSES					
15						
16	HOUSING PAYMENT	$350.00	$350.00	$350.00	$350.00	$350.00
17	HEAT	$100.00	$100.00	$100.00	$50.00	$40.00
18	WATER					
19	ELECTRICITY	$50.00	$55.00	$55.00	$45.00	$45.00
20	GAS					
21	PHONE					
22	MAINTENANCE					
23	HOME IMPROVEMENT					
24	FOOD					
25	TAXES					
26	TRANSPORTATION					
27	LIFE INSURANCE					
28	AUTO INSURANCE					
29	HEALTH INSURANCE					
30	OTHER INSURANCE					
31	CHILDCARE					
32	MEDICAL/DENTAL					
33	SAVINGS					
34	CLOTHES					
35	PERSONAL NEEDS					
36	PERSONAL LOAN					
37	AUTO LOAN					
38	INTEREST EXPENSE					
39	GIFTS					
40	DONATIONS					
41	ENTERTAINMENT					
42	TRAVEL					
43	TUITION					
44	CASH					
45	OTHER EXPENSES					
46	" "					
47	TOTAL EXPENSE	$500.00	$505.00	$505.00	$445.00	$435.00
48	TOTAL	$2,166.00	$2,161.67	$2,161.67	$2,221.67	$2,231.67

Page 2

	7	8	9	10	11	12
1						
2						
3	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER
4						
5	$1,416.67	$1,416.67	$1,416.67	$1,416.67	$1,416.67	$1,416.67
6	$1,250.00	$1,250.00	$1,250.00	$1,250.00	$1,250.00	$1,250.00
7						
8						
9						
10						
11						
12						
13	$2,666.67	$2,666.67	$2,666.67	$2,666.67	$2,666.67	$2,666.67
14						
15						
16	$350.00	$350.00	$350.00	$350.00	$350.00	$350.00
17	$10.00	$10.00	$10.00	$10.00	$50.00	$100.00
18						
19	$45.00	$45.00	$45.00	$55.00	$55.00	$55.00
20						
21						
22						
23						
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28						
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39						
40						
41						
42						
43						
44						
45						
46						
47	$405.00	$405.00	$405.00	$415.00	$455.00	$505.00
48	$2,261.67	$2,261.67	$2,261.67	$2,251.67	$2,211.67	$2,161.67

Page 3

	13	14	15	16	17
1					
2					
3	NOVEMBER	DECEMBER	AVERAGE	TOTAL	VARIANCE
4					
5	$1,416.67	$1,416.67	$1,416.67	$17,000.00	$8.00
6	$1,250.00	$1,250.00	$1,250.00	$15,000.00	$.00
7			Div By 0	$.00	$.00
8			Div By 0	$.00	$.00
9			Div By 0	$.00	$.00
10			Div By 0	$.00	$.00
11			Div By 0	$.00	$.00
12			Div By 0	$.00	$.00
13	$2,666.67	$2,666.67	$2,666.67	$32,000.00	$8.00
14					
15					
16	$350.00	$350.00	$350.00	$4,200.00	$.00
17	$100.00	$100.00	$56.67	$680.00	$520.00
18			Div By 0	$.00	$.00
19	$55.00	$55.00	$50.83	$610.00	-$10.00
20			Div By 0	$.00	$.00
21			Div By 0	$.00	$.00
22			Div By 0	$.00	$.00
23			Div By 0	$.00	$.00
24			Div By 0	$.00	$.00
25			Div By 0	$.00	$.00
26			Div By 0	$.00	$.00
27			Div By 0	$.00	$.00
28			Div By 0	$.00	$.00
29			Div By 0	$.00	$.00
30			Div By 0	$.00	$.00
31			Div By 0	$.00	$.00
32			Div By 0	$.00	$.00
33			Div By 0	$.00	$.00
34			Div By 0	$.00	$.00
35			Div By 0	$.00	$.00
36			Div By 0	$.00	$.00
37			Div By 0	$.00	$.00
38			Div By 0	$.00	$.00
39			Div By 0	$.00	$.00
40			Div By 0	$.00	$.00
41			Div By 0	$.00	$.00
42			Div By 0	$.00	$.00
43			Div By 0	$.00	$.00
44			Div By 0	$.00	$.00
45			Div By 0	$.00	$.00
46			Div By 0	$.00	$.00
47	$505.00	$505.00	$457.50	$5,490.00	$510.00
48	$2,161.67	$2,161.67	$2,209.17	$26,510.00	-$513.00

Home Inventory
File Name: HomeInv.

In case of a fire, burglary or other loss of property, you need to know the value of the property. The Home Inventory model allows you to identify your possessions and calculate their current resale value and replacement cost.

Page 1

	1	2	4	6	7	9	11
1			HOME INVENTORY				1984
2	AS OF Jan/5/85			INFLATION	RATE :	+6.0%	
3							
4		ITEM DESCRIPTION				ESTIMATED	
5				DATE		CURRENT	RELACE-
6			MAKE/	OF		RESALE	MENT
7	ROOM	ITEM	MODEL	PURCH	COST	VALUE	COST
8							
9	lv rm	stereo	Good Sound	1,981	1,535	$1258.70	$1811.30
10	Ktchn	microwave	Bargain	1,982	445	$391.60	$498.40
11						$.00	$.00
12						$.00	$.00
13						$.00	$.00
14						$.00	$.00
15						$.00	$.00
16						$.00	$.00
17						$.00	$.00
18						$.00	$.00
19						$.00	$.00
20						$.00	$.00
21						$.00	$.00
22						$.00	$.00
23						$.00	$.00
24						$.00	$.00
25						$.00	$.00
26						$.00	$.00
27						$.00	$.00
28						$.00	$.00
29						$.00	$.00
30						$.00	$.00
31						$.00	$.00
32						$.00	$.00
33						$.00	$.00
34						$.00	$.00
35						$.00	$.00
36						$.00	$.00
37						$.00	$.00
38						$.00	$.00
39						$.00	$.00
40						$.00	$.00
41						$.00	$.00
42						$.00	$.00
43						$.00	$.00
44						$.00	$.00
45						$.00	$.00
46						$.00	$.00
47						$.00	$.00
48						$.00	$.00
49						$.00	$.00
50						$.00	$.00
51						$.00	$.00
52						$.00	$.00

Variables and Formulas

Most of the information in this spreadsheet is variable. A few variables are shown in the illustration as an example. The variables are not in the model spreadsheet on your data pack or disk.

The formula in column 9 calculates the Current Resale Value by depreciating Cost 20 percent per year, taking into consideration the Inflation Rate. The Current Resale Value is never less than 20 percent of Cost. The Replacement Cost in column 11 is determined by multiplying Cost by Inflation Rate each year.

Be sure to enter the Date of Purchase as a year (e.g. 1982) and be sure to enter a year in 1,11.

IRA Planner
File Name: IRA.Plan

Important Note: Before you use this spreadsheet, change the formulas in cells 24,3 and 24,5. Insert parentheses as shown: ^ ([R-2,C]-1).

Individual Retirement Accounts (IRAs) let you shelter part of your annual gross earned income in investments until you retire. Understanding some of the features of IRAs will help you understand and use the IRA Planner spreadsheet. See a qualified financial advisor for complete information.

Currently, an individual can put up to $2000 of taxable income a year in an IRA; a couple can put in even more. The account must be managed by an authorized institution such as a bank or brokerage firm. The institution must give the investor regular reports on the account.

You can transfer money from one IRA custodial account to another only once a year without penalty.

When money is removed from an IRA, you must pay taxes on it. If you let the money stay in an IRA until you retire or reach age 59½, you can save on taxes because you will probably be in a lower tax bracket. You must pay substantial penalties if you take money out of an IRA before you are 59½.

Identifying the Problem

A common problem you may face with IRA accounts is organizing all the information you need to plan effectively. You may tend to put money in an IRA and then forget about it, even if it is not earning a good rate of return. IRAs are managed on a yearly basis and the IRA Planner is designed as a yearly tool. The institution that manages your IRAs may track them as a series of one-year accounts and report them to you separately, for example, John Doe's 1982 money fund account, John Doe's 1983 money fund account, etc. This can get confusing, especially if you change institutions a few times.

The IRA Planner Model will help you answer the following questions:

What accounts do I own and how much money is currently in each account?

What institution is holding each account?

What rate of return is each account currently earning?

When was each account opened or last added to?

How much money have I put into IRAs this year. Have I reached the legal limit (currently $2000) that I can shelter in an IRA?

What overall rate of return am I currently earning on my IRAs?

How much are my IRAs worth now?

How much money could I take out in a single payment when I retire if the rate of return stays the same and I don't add money? What if the rate of return goes up or down? What if I put more money in at the same rate or at different rates?

How much money could I receive as regular annuity payments, for a given number of payments, if my IRA continues to increase in value at a given rate?

Variables and Formulas

There are two parts to the IRA spreadsheet. The first part (rows 2 through 14) allow you to keep track of your IRA accounts with just enough, but not too much information. If you want to add to it, make sure to check relative cell references in the formulas.

The second part is a what-if section that lets you enter assumptions about rate of return, retirement age, future investments and withdrawals. The what-if section includes two columns so you can compare the effects of different scenarios.

Each of the entries is explained in detail below.

Accounts Section

Account Name - Use this column to identify each account, usually with the name of the institution that holds the account.

Account Type - Put your own code in this optional, two-character column to identify the type of account, for example, bonds, mutual funds, real estate.

Begin Yr $ - This column represents the money in the account at the beginning of a year. When you are done analyzing your IRAs each year, you can move the figure from the End Yr $ column into the Begin Yr $ column and blank the End Yr $ column. The yearly statement from the managing institution should give you the numbers you need to do this.

$ Added - This column represents any money you add to an account in a particular year. At the end of a year, be sure to erase this number and start over again for the new year.

$ Subtracted - This column represents any money you take out of the account in a particular year. At the end of a year, be sure to erase this number and start over again for the new year.

Date: month day year - Use these three columns to record the last date you added to or subtracted money from an account.

Yield - Many investments such as money funds and bonds have a certain yield.

End Yr $ - Use this column to record the amount of money in the account at the end of a year. The managing institution provides the information in the yearly statement. Once you have analyzed the year's progress and printed out your results, use this number as the Begin Yr $ for the new year.

This Yr Earnings - The column is the difference between the Begin Yr $ and the End Yr $ and takes into consideration any additions to or subtractions from the account during the year.

This Yr ROI (%) - ROI stands for return on investment. This figure indicates how well your investments are performing; managing institutions are not required to provide it. It is the ratio of This Yr Earnings to Begin Yr $, not counting current year additions and subtractions. The formula is complicated because it must consider not only the dollars added or subtracted during the year, but also the dollars earned by those dollars. Since the managing institution will have already deducted any fees from your year-end figure, the ROI will be an accurate, net figure.

Totals - These figures are sums of the figures above them except for the ROI. The Total ROI uses the other totals to report on overall IRA performance. The formula references the Last Payment Date to weight current year additions and subtractions accurately.

What-If Section

The "Current" column uses the totals from the Accounts section to show you what would happen if you keep paying the same amounts into your IRAs at the same rate of return. The "Other" column lets you test out assumptions.

Current ROI - This figure is not variable. It is the Total ROI from 14,16.

Other ROI - Enter an assumed ROI.

Current Add - This figure is not a variable. It is the Total $ Added from 14,5.

Other Add - Enter the amount you think you will add to your IRA yearly.

Retire in ? Years - The number is variable in both columns. Enter the number of years between now and when you want to start receiving annuity payments.

One Payout - ADAMCalc calculates how much you could receive in a single payment when you retire.

Annuity/Yr - ADAMCalc calculates how much you would receive in regular annuity payments. Current federal law requires that you remove all funds from your IRA by the time you reach the average life expectancy for people your age and sex. Your managing institution or insurance agent should be able to tell you what this is. A good way to use the annuity per year information is to enter the difference between your planned retirement age and the annuity age in row 22. Then the Annuity per Year will show you how much you would receive in regular annual payments between the time you retire and the time you must close your IRA accounts.

Using the IRA Planner

The IRA Planner allows rows for five accounts. If you need more, copy a blank account row as many times as you need it. You don't need to adjust the totals because they use mixed cell references.

If you do not update this spreadsheet for several years, the ROI could be inaccurate. If this happens, update your accounts but omit current year additions and subtractions. Then use ADAMCalc's calculator to divide the ROI in column 16 by the number of years since you last updated your spreadsheet. This gives you annual ROI figures that are useful for comparison.

To keep things simple, there is only one date for each account row. If you put money into a particular account more than once a year, the ROI for that account may not be accurate at the end of the year. To handle this situation, make sure that the $ Added column is accurate and put 6 on the totals line (row 14) in the month column. If you make irregular payments during the year, it's best to track those payments on a separate spreadsheet and calculate the correct value for the month column of the IRA Planner as follows: Multiply each payment by the number of the month in which it was made. Divide the result by the sum of the payments times the number of payments.

Don't forget that in making long-range plans, you must consider the effects of inflation and taxes. If you have used the other models, you probably already know how to use ADAMCalc to handle these factors. Be sure to check out your assumptions and plans with a qualified financial consultant.

Page 1

IRA ANALYSIS

Account Name	Begin Yr. $	$ Added	$ Subtr.	Date mo da yr	Yield
Alpha, Inc. C	$1000.00			12 5 84	.085
Brown and Co. S	$5000.00	$2000.00		6 11 85	
TOTALS	$6000.00	$2000.00	$.00	6	

WHAT IF:	Current	Other
ROI = SAME, ?	+10.6%	+8.0%
ADD = SAME, ?	$2000.00	$1000.00
RETIRE IN ? YRS	20	19
ANNUITY ? YRS	21	21
ONE PAYOUT	$189047.62	$79273.38
ANNUITY / YR	$22824.63	$7914.04

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End Year $	This yr. Earnings	This yr. ROI (%)
$1085.00	$85.00	+8.5%
$7680.00	$680.00	+10.9%
	$.00	Div By 0
	$.00	Div By 0
	$.00	Div By 0
$8765.00	$765.00	+10.6%

The Consolidated Balance Sheet
File Name: Balance

This spreadsheet is a simple, standard balance sheet. It presents the financial picture of a company, comparing and totalling assets and liabilities. The total assets equal the liabilities plus the shareholder's equity.

Variables and Formulas

Because of the nature of this spreadsheet, most of its information is variable.

The formulas are straightforward additions of various items that determine total assets, total liabilities, and stockholder's equity.

	1	2	4	5
1				
2	CONSOLIDATED BALANCE SHEET			
3	(AMOUNT IN THOUSANDS)			
4	----------			
5				
6	ASSETS:		LIABILITIES:	
7				
8	CURRENT ASSETS:		CURRENT LIABILITIES:	
9				
10	CASH.....	$1,503.00	LONG-TERM DEBT.....	$1,199.00
11	ACCOUNTS RECEIVABLE..	$7,600.00	NOTES PAYABLE.....	$5,433.00
12	INVENTORIES.....	$6,930.00	ACCOUNTS PAYABLE....	$5,108.00
13	INCOME TAX REFUND....	$3,425.00	INCOME TAXES PAYABLE	$2,800.00
14	OTHER CURRENT ASSETS.	$2,354.00	ACCRUED EXPENSES....	$1,712.50
15		----------		----------
16	TOTAL CURRENT ASSETS:	$21,812.00	TOTAL CURRENT LIABIL..	$16,252.50
17				
18	PROP,PLANT,EQUIP.....	$4,909.00	LONG-TERM DEBT.....	$2,000.00
19				
20	OTHER ASSETS.....	$2,398.00	DEFERRED INC TAX.....	$3,800.00
21		----------		
22			SUBORDINATED DEBENTURES	$1,000.00
23	TOTAL ASSETS:	$29,119.00		
24		----------		
25		----------	STOCKHOLDER'S EQUITY:	
26				
27			COMMON STOCK.....	$2,000.00
28			CAPITAL.....	$1,712.50
29			RETAINED EARNING'S...	$2,354.00
30				----------
31			TOTAL STOCKHOLDER'S	
32			-------EQUITY---------	$6,066.50
33				----------
34				
35			TOTAL LIABILITIES	
36			AND STOCKHOLDER'S	
37			-------EQUITY---------	$29,119.00
38				----------
39				----------

Breakeven Analysis
File Name: BreakEven

This spreadsheet is a tool for determining when a business will break even, based on costs, the selling price of various products, and the sales ratio of those products.

Variables and Formulas

A few fixed costs are variables. You can add rows after row 13 to categorize fixed costs to suit your own situation.

Many of the calculations depend on the Sales Ratio. The Sales Ratio shows what part of total sales each product represents. Total sales equals 10, so the individual product Sales Ratios should add up to 10.

Selling Price is calculated by multiplying Sales Ratio by Unit Price. Variable Cost is determined by multiplying Sales Ratio by Unit Cost.

The Contribution Margin is determined by subtracting the Total Variable Cost from the Total Selling Price. The total of the fixed costs is divided by the Contribution Margin to determine how many units must be sold to break even.

The breakeven point per product is determined by multiplying the units breakeven point by that product's sales ratio.

Page 1

	1	2	4	6	8	9	10	12
1					BREAKEVEN ANALYSIS			
2	BREAKEVEN	ANALYSIS						
3								
4								
5		FIXED	SALES	SALES	UNIT	SELLING	UNIT	VARIABLE
6		COSTS	ITEM	RATIO	PRICE	PRICE	COST	COST
7								
8	RENT	$10,000.00	1	2	$2.49	$4.98	$1.00	$2.00
9	UTILITIES	$900.00	2	1	$3.21	$3.21	$1.96	$1.96
10	PHONES	$400.00	3	2	$4.20	$8.40	$2.02	$4.04
11	SALARIES	$30,000.00	4	3	$1.30	$3.90	$.45	$1.35
12	MISC.	$4,000.00	5	2	$2.00	$4.00	$.60	$1.20
13								
14		$45,300.00		TOTAL:		$24.49	$6.03	$10.55
15				CONTRIBUTION MARGIN:			13.94	
16				UNITS BREAKEVEN POINT			3,249.641	

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	13
1	
2	
3	
4	
5	BREAKEVEN
6	POINT
7	
8	6499
9	3250
10	6499
11	9749
12	6499
13	
14	32496
15	
16	

APPENDIXES

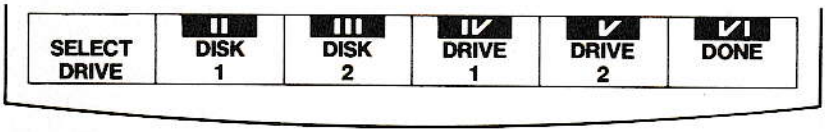
Appendix 1: Using ADAMCalc with Optional Equipment

This appendix tells you how to use ADAMCalc with the Second Data Drive, the 5¼" Disk Drive, and the 64K Memory Expander.

When you have optional equipment attached to your ADAM, the ADAMCalc title screen shows a picture of each piece of equipment. If a picture does not show up, make sure that the equipment is installed according to the instructions in the owner's manual. Also make sure that the disk drive power switch is on before you load ADAMCalc.

Using Additional Data Pack or Disk Drives

Any command that interacts with data packs or disks allows you to choose which drive you want to access by pressing the appropriate smart key and DONE. Sometimes these smart keys appear automatically; other times you can press SELECT DRIVE to make them appear. The smart keys look like this:



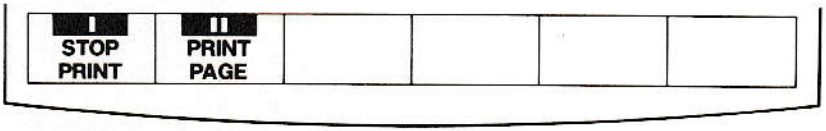
The drive that you last accessed is highlighted.

If the "Getting Directory" message stays on the screen a long time, check your drive. You may have forgotten to insert a disk, or the door latch may be open.

You cannot escape from commands that interact with a disk unless a disk is in the drive.

The 64K Memory Expander

If you have the 64K Memory Expander installed, you can begin printing a spreadsheet, and continue working on a spreadsheet on the screen at the same time. After you have chosen the various print options with the Print command and pressed START PRINT, the printer starts and the smart keys return to the entry level. If you are printing with single sheets of paper, the printer stops after each page. To continue, insert a new sheet of paper, press the Print command key and then press PRINT PAGE. At this point, if you want to return to a spreadsheet and the entry level smart keys, press Escape/WP.



To stop the printer at any time and cancel the print job in progress, press the Print command key and STOP PRINT. To restart the printer, you must go through the Print command again.

Appendix 2: ADAMCalc Features Compared with VisiCalc Features

Functions

If you are already familiar with VisiCalc, this chart will help you get acquainted with ADAMCalc functions more quickly.

ADAMCALC	VISICALC
ABS	@ABS
Use PI/2–ARCTAN(X/SQRT(1–X*X))	@ACOS
AND	@AND
Use ATAN(X/SQRT(1–X*X))	@ASIN
ARCTAN	@ATAN
AVERAGE	@AVERAGE
COS	@COS
COUNT	@COUNT
@@ plus on-screen error messages	@ERROR
EXP	@EXP
FALSE	@FALSE
IF	@IF
INT	@INT
LN	@LN
LOG	@LOG10
LKUP	@LOOKUP
MAX	@MAX
MIN	@MIN
NOT	@NOT
NPV	@NPV
OR	@OR
PI	@PI
SIN	@SIN
SQRT	@SQRT
SUM	@SUM
TAN	@TAN
TRUE	@TRUE

FUNCTIONS UNIQUE TO ADAMCALC:

E	the constant 2.71828....
SIGN	changes the sign of a number
STDEV	standard deviation

Commands

ADAMCalc uses smart keys and command keys to initiate commands. In this chart, smart keys are in capital letters; command keys are not.

ADAMCALC	VISICALC
BLANK	/B
BLANK	/C
DELETE	/D
EDIT CELL	/E
FORMAT CELL	/F
COLUMN WIDTH	/GC
FORMAT, DEFAULT	/GF
AUTO or MANUAL RECALC	/GR
INSERT	/I
MOVE	/M
Print	/P
COPY (optional cell references)	/R
Store/Get	/SL
	/SS
HOLD/RELEASE	/T
WINDOW OPTIONS	/W
@row, column	>
SELECT WINDOW	;
AUTO RECALC	!
FORMAT, BAR GRAPH	/F*
FORMAT, DEFAULT	/FD
FORMAT, FREE FORMAT	/FG
FORMAT, WHOLE #	/FI
FORMAT, RIGHT ADJUST	/FR
FORMAT, LEFT ADJUST	/FL
TEXT or "	"
TEXT (highlight off) or =	=
STORE VALUES	DIF™

Commands Unique to ADAMCalc	
COLOR OPTIONS	Selects screen colors
Home	GOTO [1,1]
Home/arrows	GOTO edge of this sheet
Control/arrows	GOTO next screen
NAME	Names sheet areas
? (shift)	Displays Help Screens
SORT	Sorts data in a column
SEARCH	Finds matching data
{ }	Encloses comments in formulas
@name	GOTO named area
Undo	Restores characters deleted from formula line
Clear	Deletes formula line
Wild Card	Turns on calculator
CELL REF	Automatic references to cells while entering formulas
Background Printing	With 64K Memory Expander
Unique Formats:	Science E-Form
	%
	Commas
	No Commas

GLOSSARY AND INDEX

GLOSSARY

active cell - the cell that the cell pointer is on.

active cell format - an on-screen indicator that tells you the format of the active cell.

active window - the window that contains the cell pointer.

block - a group of cells in a rectangle. The upper left corner and lower right corner of the rectangle are defined by positioning the cell pointer and pressing smart keys.

cell - the imaginary rectangle formed by the intersection of a row and column.

cell coordinates - the row and column number that identify the location of a cell.

cell area - a group of cells in a rectangle defined by a top right corner and a bottom left corner. Like a block, but expressed as a cell reference.

cells left indicator - tells you approximately how many more cells you can use before ADADMCalc's memory is full. It changes frequently as you work.

cell pointer - a rectangle that indicates what cell you are dealing with - the **active cell.**

column numbers - numbers that appear across the top of the screen to identify the columns.

command key - one of the keyboard keys, other than the smart keys, that initiates an ADAMCalc command.

comments - characters within a formula, enclosed by braces { }. Comments are reminders or hints about what a formula is and what it does. They have no effect on the calculation.

cursor - the square symbol on the formula line that shows where the next character will be typed.

cyclic calculation - a calculation in which the answer cannot be determined immediately because the cell that contains the formula is also part of the formula. A cyclic calculation may also result if two cells depend upon one another for the result, and neither cell can be calculated until the other one is calculated.

default - a variable used to determine format or column width when no particular format or column width has been assigned.

defined spreadsheet - all the cells that are currently being used for the spreadsheet.

edit - to change a word or number.

entry level smart keys - fifteen smart keys that allow you to initiate ADAMCalc's major commands; they show up when you are not involved in a particular command.

expression - a meaningful combination of mathematical and logical symbols.

file - a collection of data stored on an electro-magnetic medium such as a disk or data pack.

file names directory - a list of the names of all the files on a data pack or disk.

fixed reference - a reference to a cell that uses specific row and column numbers to identify the cell.

format - the way numbers and text are displayed and treated. Format includes such characteristics as whether the cell contains text or numbers, if it is lined up on the right or left side and how a number is represented. Some of the numeric formats are Money, Percentage, and Stock.

formula - the numbers or letters you type in to determine the contents of a cell. The formula may be a single number or it may be a mathematical or logical expression. The formula shows up on the formula line.

formula line - the middle line at the bottom of the screen, where you type the formula for a cell.

global - general or overall characteristic. Global formats and column widths are used when no specific format or column width is assigned.

hand - a pointer that shows you where activity is taking place.

Help Screens - nine screens that briefly explain ADAMCalc commands, formulas, functions and special keys.

highlighted smart key - a smart key that has a white background around the Roman numeral. Highlighted smart keys take effect when the command is done.

hold - to keep a special copy of specified rows and columns constantly on the screen.

information line - the last line at the bottom of the screen, which gives you messages about the command you are performing and other information.

line - part of a row or column.

mixed cell reference - a cell area reference that has a fixed reference as the first coordinate and a relative reference as the second coordinate.

named constants - numbers that have a fixed value and are assigned a name.

names directory - list of the names that have been defined in the spreadsheet and what they refer to.

numeric entries - Entries that can be computed. Numeric entries usually include functions, numbers, operators and special symbols used in cell referencing such as brackets and colons. Any character may be designated as numeric, but letters and other characters that have no special meaning in ADAMCalc have a value of 0.

operator - a mathematical or logical symbol that indicates a process.

reserved word - a word that has a special meaning in ADAMCalc and may not be used as a name. ADAMCalc functions are reserved words.

row, column indicator - an indicator that reports the row and column number where the cell pointer is located.

recalculate - ADAMCalc's process of figuring out the value of every formula and displaying it on the spreadsheet.

relative cell references - cell references that indicate a position on the spreadsheet relative to the cell pointer, such as "the cell above this cell," or "the cell two cells to the right of this cell." Uses the functions ROW and COL.

syntax - the rules and conventions ADAMCalc uses for formulas.

spreadsheet - piece of paper divided into rows and columns, that helps you work with numbers. Electronic spreadsheets replace the paper and pencil with a video screen and keyboard.

64K Memory Expander - an optional hardware accessory for ADAM that expands ADAM's memory to 128K.

status line - the first line at the bottom of the screen that reports the status of the active cell.

subcolumn - part of a column.

subrow - part of a row.

scroll - to move the display on the screen.

text entries - Text entries cannot be computed. They usually consist of letters, but any entry can be designated as text, and therefore, is not computed.

value - the number that results from a calculation. Shows on the spreadsheet and on the status line, often represented differently.

variables - parts of a formula that change.

window - an area of the video screen through which you view a part of the spreadsheet. ADAMCalc can have up to six windows at once, allowing you to look at several parts of the spreadsheet at once.

window pointer - an indicator that shows you the location of the corners of a window.

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90-DAY LIMITED WARRANTY

Coleco warrants to the original consumer purchaser in the United States of America that the physical components of this Medium ("medium" refers to the digital data pack or disk) will be free of defects in the material and workmanship for 90 days from the date of purchase under normal in-house use.

Coleco's sole and exclusive liability for defects in material and workmanship of the Medium shall be limited to repair or replacement at an authorized Coleco Service Center. This warranty does not obligate Coleco to bear the cost of transportation charges in connection with the repair or replacement of defective parts.

This warranty is invalid if the damage or defect is caused by accident, act of God, consumer abuse, unauthorized alteration or repair, vandalism or misuse.

Any implied warranties arising out of the sale of the Medium including the implied warranties of merchantability and fitness for a particular purpose are limited to the above 90-day period. In no event shall Coleco be liable to anyone for incidental, consequential, contingent or any other damages in connection with or arising out of the purchase or use of the Medium. Moreover, Coleco shall not be liable for any claim of any kind whatsoever by any other party against the user of the Medium.

This limited warranty does not extend to the programs contained in the Medium and the accompanying documentation (the "Programs"). Coleco does not warrant the Programs will be free from error or will meet the specific requirements or expectations of the consumer. The consumer assumes complete responsibility for any decisions made or actions taken based upon information obtained using the Programs. Any statements made concerning the utility of the Programs are not to be construed as express or implied warranties.

Coleco makes no warranty, either express or implied, including any implied warranties of merchantability and fitness for a particular purpose, in connection with the Programs, and all Programs are made available solely on an "as is" basis.

In no event shall Coleco be liable to anyone for incidental, consequential, contingent or any other damages in connection with or arising out of the purchase or use of the Programs and the sole and exclusive liability, if any, of Coleco, regardless of the form of action, shall not exceed the purchase price of the Medium. Moreover, Coleco shall not be liable for any claim of any kind whatsoever by any other party against the user of the Programs.

This warranty gives you specific legal rights, and you may have other rights which vary from State to State. Some states do not allow the exclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts, so the above limitations or exclusions may not apply to you.

SERVICE POLICY

Please read your Owner's Manual carefully before using your Medium. If your Medium fails to operate properly, please refer to the trouble-shooting checklist in the Operating Tips Manual or the Operating Procedures in the Disk Drive Manual. If you cannot correct the malfunction **after** consulting these manuals, please call Customer Service on Coleco's **toll-free service hotline: 1-800-842-1225 nationwide.** This service is in operation from 8:00 a.m. to 10:00 p.m. Eastern Time, Monday through Friday.

If Customer Service advises you to return your Medium, please return it postage prepaid and insured, with your name, address, proof of the date of purchase and a brief description of the problem to the Service Center you have been directed to return it to. If your Medium is found to be factory defective during the first 90 days, it will be repaired or replaced at no cost to you. If the Medium is found to have been consumer damaged or abused and therefore not covered by the warranty, then you will be advised, in advance, of repair costs.

If your Medium requires service after expiration of the 90-day Limited Warranty period, please call Coleco's toll-free service hotline for instructions on how to proceed: **1-800-842-1225 nationwide.**

IMPORTANT:
SAVE YOUR RECEIPTS SHOWING DATE OF PURCHASE.