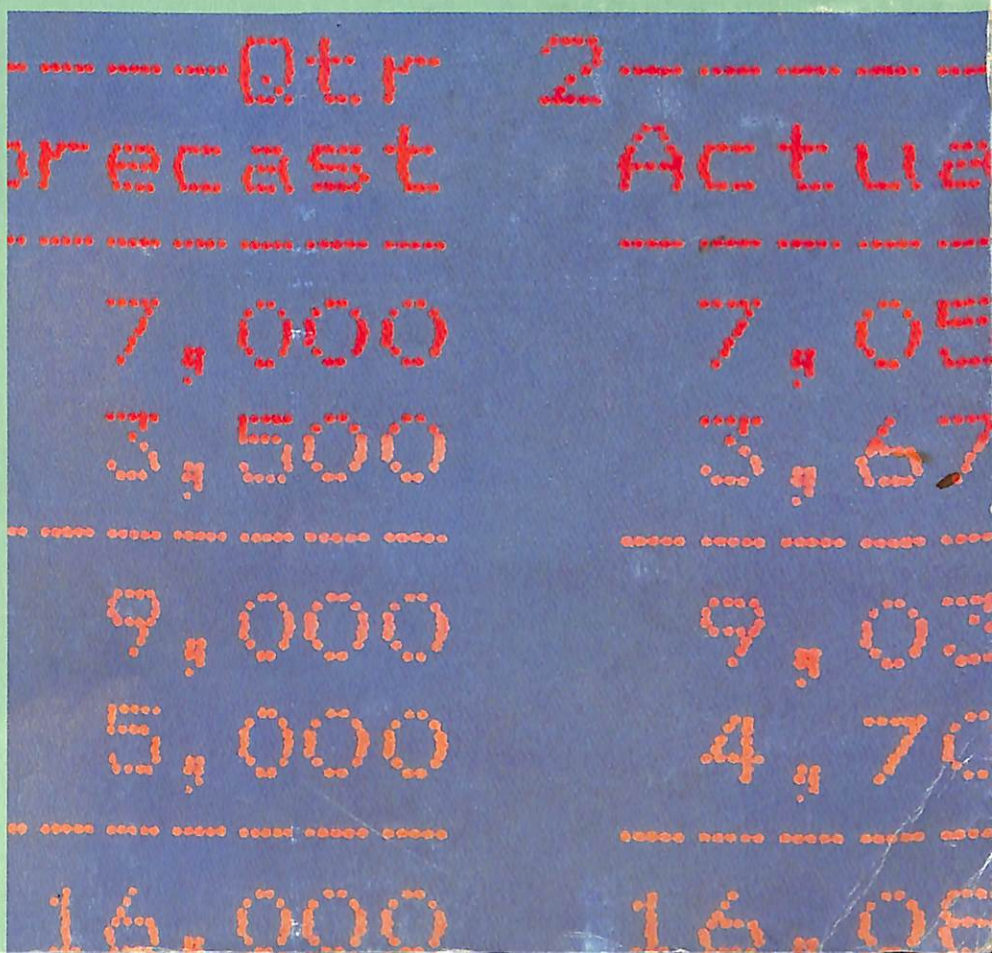
IBM

Business Series

Program No.5601-SAP

110199-0

IBM Planning Assistant



IBM·JX
personal computer

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About This Book

IBM Planning Assistant is one of a series of easy-to-use programs in the IBM Assistant Series. This book explains how you can use the Planning Assistant program to organize numerical data into row-and-column-oriented spreadsheets for planning purposes. It assumes that you are familiar with the general operation of your computer system. If you are not, read through your IBM Personal Computer JX *Guide to Operations* before beginning. It also assumes that you are working with 256KB or more of memory, an 80-column display, two diskette drives, and a parallel printer. The differences that result from having other equipment are discussed in Chapter 2, *Getting Started.*

The chapters contain detailed instructions for using Planning Assistant's features and examples to illustrate these features. After each step-by-step explanation, there is an example, which you can work through on your own computer. Anything that you are to type and the related item names, when following the examples, are printed in **bold** type. Sample spreadsheets are stored on the Planning Assistant program diskette for use with several examples. The best way to learn Planning Assistant is to read through the chapters, following along with the examples on your own computer.

An appendix provides information about error messages, and a Quick Reference Card summarizes all the functions and special keys used with Planning Assistant.

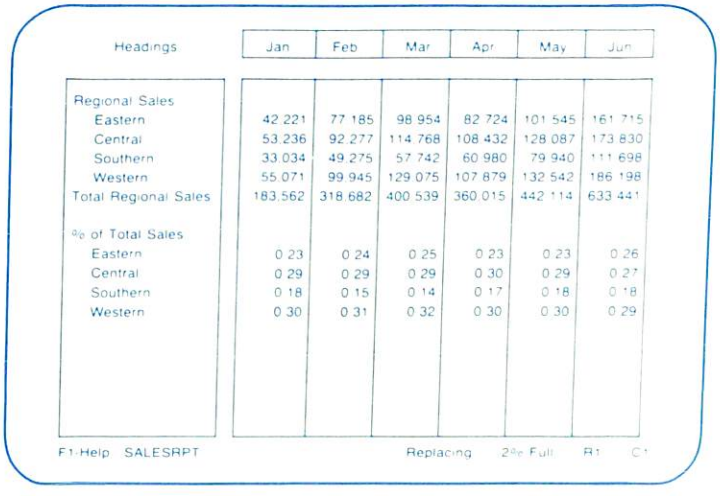
The terms *disk*, *diskette*, and *fixed disk* are used throughout this book. Where *diskette* is used, it applies to diskette drives and diskettes. Where *fixed disk* is used it applies only to the IBM nonremovable fixed disk drive. Where *disk* is used, it applies to both fixed disks and diskettes.

Contents

Chapter 1. Introduction

About IBM Planning Assistant

Planning Assistant is a computer program that you can use for all types of numerical planning, tracking, analyzing, and reporting. With Planning Assistant, you organize your numerical data into rows and columns, creating a report called a spreadsheet, like this sales report:



Since Planning Assistant is integrated with the other programs in the IBM Assistant Series, you can create and print or plot presentation-quality graphs from the data in your Planning Assistant spreadsheets using IBM Graphing Assistant. You can also print a copy of your

spreadsheet in a document that you produce with IBM Writing Assistant. In addition, Planning Assistant can read data directly from a file created with IBM Filing Assistant and place that data in the correct locations in your spreadsheet.

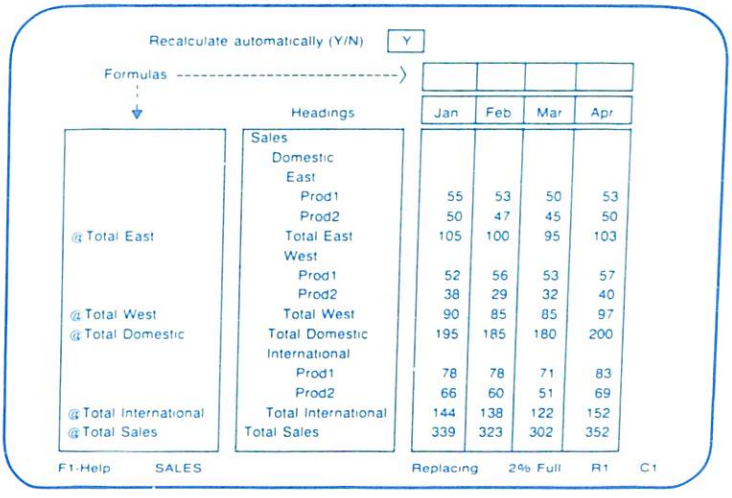
Planning Assistant is powerful enough to serve most planning needs, yet it is easy to learn and use. Planning Assistant uses plain English, making it easy to type your spreadsheet and to understand it after you've typed it. Shortcuts save typing time. The Quick Entry key, for example, allows you to enter certain headings automatically, such as the column headings in the sales report on the previous page.

You could also, if you wanted, automatically enter the headings in the sales report like this:

Headings	January	February	March	April	May	June
Regional Sales						
Eastern	42,221	77,185	98,954	82,724	101,545	161,715
Central	53,236	92,277	114,768	108,432	128,087	173,830
Southern	33,034	49,275	57,742	60,980	79,940	111,698
Western	55,071	99,945	129,075	107,879	132,542	186,198
Total Regional Sales	183,562	318,682	400,539	360,015	442,114	633,441
% of Total Sales						
Eastern	0.23	0.24	0.25	0.23	0.23	0.26
Central	0.29	0.29	0.29	0.30	0.29	0.27
Southern	0.18	0.15	0.14	0.17	0.18	0.18

You use your spreadsheet headings to create easy-to-write and easy-to-read formulas, and Planning Assistant calculates values in the spreadsheet according to these formulas.

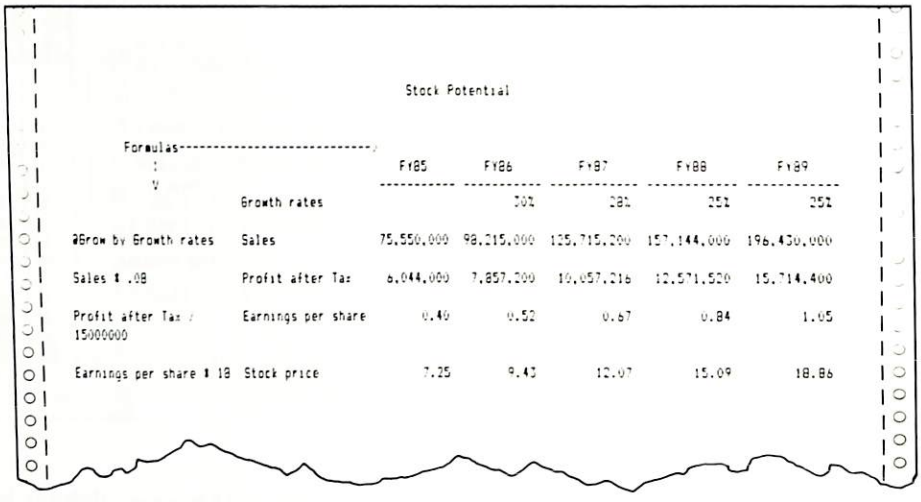
For example, look at this spreadsheet:



Every calculation in this spreadsheet is done as a result of one word, @Total. The word @Total is a *keyword,* and keywords are another feature of Planning Assistant designed to make your job easier. When you use a keyword in a formula region, Planning Assistant knows exactly what to do without your writing a long (or possibly complex) formula. Several other keywords are available, such as @Avg, @Min, @Max, @Cum, @Prev, and @Grow. Planning Assistant also offers several special financial keywords — @FV (Future Value), @NPV (Net Present Value), and @Payment.

You can also create formulas yourself using English words and standard math operators (+, -, *, /).

For example, look at the formulas in this printed copy of a spreadsheet that analyzes the potential of a company's stock:

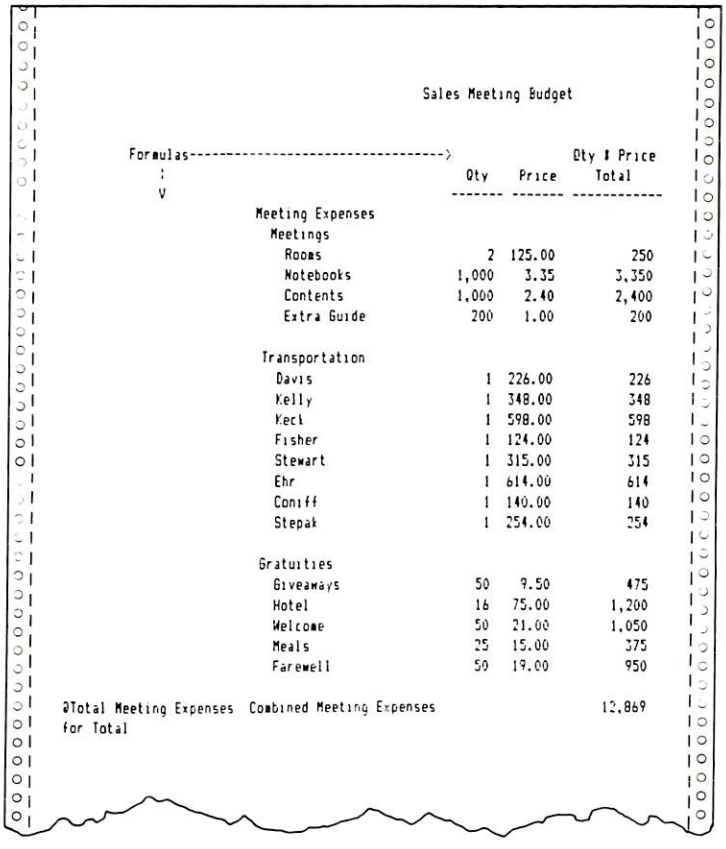


Stock Potential

Formulas		FY85	FY86	FY87	FY88	FY89
	Growth rates		30%	28%	25%	25%
@Grow by Growth rates	Sales	75,550,000	98,215,000	135,715,200	157,144,000	196,430,000
Sales * .08	Profit after Tax	6,044,000	7,857,200	10,857,216	12,571,520	15,714,400
Profit after Tax / 15000000	Earnings per share	0.40	0.52	0.67	0.84	1.05
Earnings per share * 18	Stock price	7.25	9.43	12.07	15.09	18.86

Each formula in this spreadsheet performs its calculation on the entire row. Many times a row or column calculation is perfectly adequate, and the formula for such a calculation is usually quite simple. But for those times when a row or column calculation is not adequate, Planning Assistant allows you to perform calculations on specified values in a row or column, or on just one value.

For example, look at this printed copy of a budget for a sales meeting:



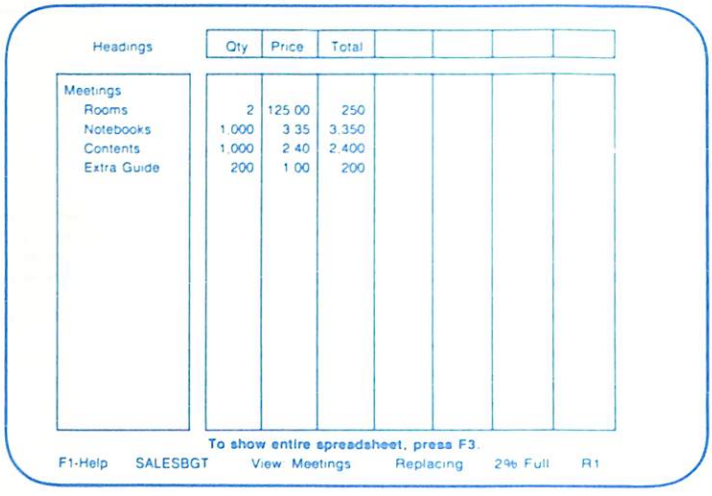
Sales Meeting Budget

Formulas---------->		Qty	Price	Qty * Price Total
	Meeting Expenses			
	Meetings			
	Rooms	2	125.00	250
	Notebooks	1,000	3.35	3,350
	Contents	1,000	2.40	2,400
	Extra Guide	200	1.00	200
	Transportation			
	Davis	1	226.00	226
	Kelly	1	348.00	348
	Keck	1	598.00	598
	Fisher	1	124.00	124
	Stewart	1	315.00	315
	Ehr	1	614.00	614
	Coniff	1	140.00	140
	Stepak	1	254.00	254
	Gratuities			
	Giveaways	50	9.50	475
	Hotel	16	75.00	1,200
	Welcome	50	21.00	1,050
	Meals	25	15.00	375
	Farewell	50	19.00	950
@Total Meeting Expenses for Total	Combined Meeting Expenses			12,869

The formula for the final spreadsheet row (@Total Meeting Expenses for Total) includes only the Total column by simply adding the words "for Total" at the end of the formula.

Once you create a spreadsheet, Planning Assistant lets you define and work with a selected portion of the spreadsheet, called a view.

You might create a view like this one of the sales meeting budget, for example:

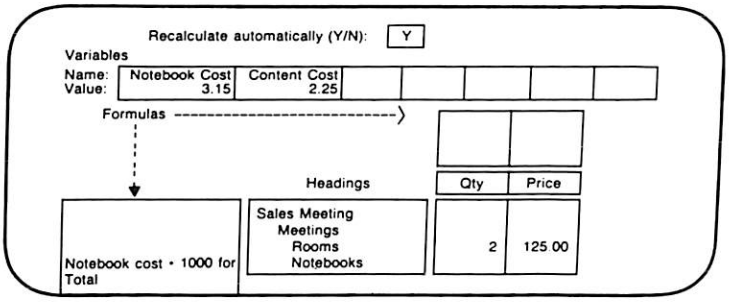


With views you can break a large spreadsheet into smaller, more manageable pieces that are easier to work with. At any time, however, you can return to the entire spreadsheet.

Other Planning Assistant features include two special functions, Variables and Target, which allow you to easily decide "What if...?" with your spreadsheets. With Target you can set a target value and then find the value that you need to get that target value. For example, you can set a sales goal for the coming year, and then use Target to see what your monthly sales have to be in order to achieve this goal.

With Variables you can change key values in order to compare different results.

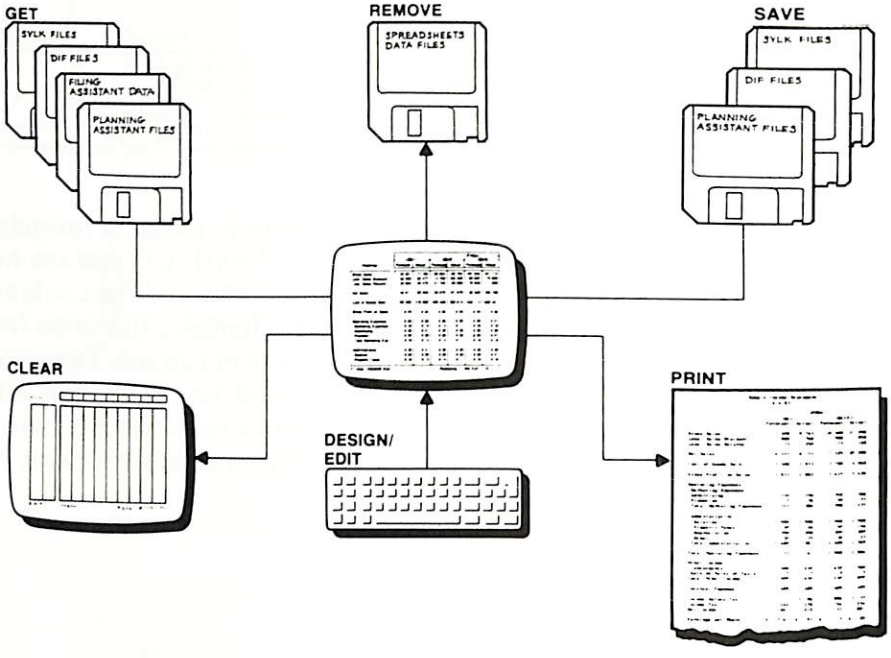
For example, suppose you create these variables for the sales meeting budget:



By using the Variable names in formulas (for example, Notebook Cost * 1000), you can see how different costs for the notebooks and the contents affect the budget by simply changing the value for one or more of the variables. Or, you can use Target to work backwards; that is, if you know how much you want to spend for notebooks and contents, you can then find out how much you can spend per unit based on that amount.

How Planning Assistant Works

The Planning Assistant program has six main functions. The following diagram shows how these functions work together:



IBM Planning Assistant

You use the **Design/Edit** function to create a new spreadsheet or to edit an already existing spreadsheet. When you are using the **Design/Edit** function, you can use any of the special functions of Planning Assistant controlled by the function keys.

The next three Main Menu functions allow you to manage the disk storage of spreadsheet files. The **Get** function lets you retrieve a spreadsheet from a disk for editing or printing. It also lets you consolidate two

spreadsheets and get data from files created using IBM Filing Assistant, from DIF (Data Interchange Format) files, and from SYLK (Symbolic Link format) files. The **Save** function lets you save spreadsheets on a disk and save spreadsheets as DIF or SYLK files. The **Remove** function permanently deletes any unwanted spreadsheet or other file from a disk. When using any of these functions, you can list all the files on your disk, in a specific directory, or in a related group of files.

With the **Print** function, you can print a spreadsheet on your printer, with or without its formulas and variables, and you can print a spreadsheet to a disk file to be printed at a later time in a IBM Writing Assistant document. You can also print a copy of a view.

You use the **Clear** function to clear the working copy of the spreadsheet currently stored there when you want to begin a new spreadsheet. You can also clear only the values from the spreadsheet in the working copy when you want to use its headings and formulas for a new spreadsheet.

The last selection on the menu, **Exit**, lets you leave Planning Assistant to perform DOS commands or to start another program.

Chapter 2. Getting Started

This chapter explains how to get started using Planning Assistant. It describes the equipment you need, shows how to use a special Setup program to customize the program diskette for your computer system, tells how Planning Assistant works with different equipment, and gives instructions for making a backup copy of the program diskette. *It is very important that you follow these backup instructions before using the Planning Assistant program diskette for the first time.*

The chapter also explains how to start the program, select functions from the Main Menu, use Planning Assistant's special keys, and ask for help from the Help screen. When you have finished reading the chapter, and have followed the instructions, you will be ready to begin using the Planning Assistant program.

What You Need to Use Planning Assistant

To use Planning Assistant, you need the following equipment:

- An IBM Personal Computer JX at least 128KB memory, and one diskette drive (see the table of different memory sizes and approximate corresponding spreadsheet sizes in the following note)

- An IBM Display
- A parallel or serial printer, properly connected to your computer
- The IBM PC JX Disk Operating System (DOS)
- The Planning Assistant package, including the program diskette, the instructional manual, and several sample spreadsheets stored on the program diskette
- Several blank, formatted diskettes or a fixed disk for spreadsheet storage
- A blank formatted diskette to backup your program diskette

Note: Spreadsheet size depends on many factors (for example, number of values, number and length of formulas, headings and column groups, and so forth). Approximations of sizes you can expect for various amounts of memory are:

Memory Size	128KB	256KB	384KB or more
Number of Rows	32	176	255
Number of Columns	20	64	70

Making a Backup Copy of the Program Diskette

Before using the Planning Assistant program diskette for the first time or before installing the program on a fixed disk, you should make a backup copy of the program diskette. You can copy the diskette only once, so follow the instructions below very carefully.

1. Start DOS from drive A (or from your fixed disk). Refer to your IBM *Disk Operating System* book for instructions.

2. When the DOS prompt A> appears, place the Planning Assistant diskette in drive A.

3. Type **BACKUP** and press the Enter key.

4. An instruction screen appears next. The instructions will vary depending on whether you have one or two drives. Have ready a blank diskette that has been formatted.

   If you have two drives: Place the blank diskette in drive B and press the Enter key. You will see the in-use lights on the disk drives come on alternately a few times; then a message will inform you that the backup procedure is complete. (If the message "Insert disk with COMMAND.COM" appears, you must restart DOS.)

   If you have only one drive: Insert the Planning Assistant diskette when you are asked for it and the blank diskette when you are asked for it. Switch the two diskettes as many times as requested, until a message

appears informing you that the backup procedure is complete. (If the message "Insert disk with COMMAND.COM" appears, you must restart DOS.)

5. Remove the diskettes from the drives, and label the blank diskette with a felt-tipped pen. Write-protect the original Planning Assistant diskette and store it in a safe place. From now on, work with the backup copy as your Planning Assistant program diskette.

Using the Setup Program

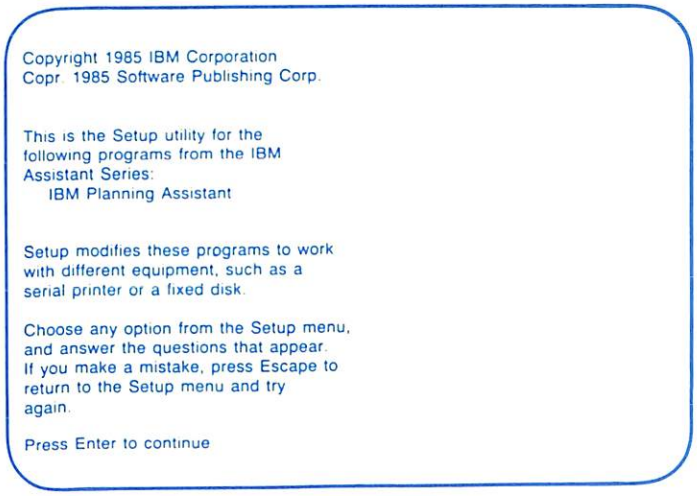
Planning Assistant comes set up to work with an IBM Personal Computer JX Display, and a parallel printer. If you have a serial printer, you need to use the Setup program to modify Planning Assistant to work properly with your computer system. The Setup program can also install the Planning Assistant program on a fixed disk. Use Setup after you have made a backup copy of Planning Assistant.

To run the Setup program, follow these steps:

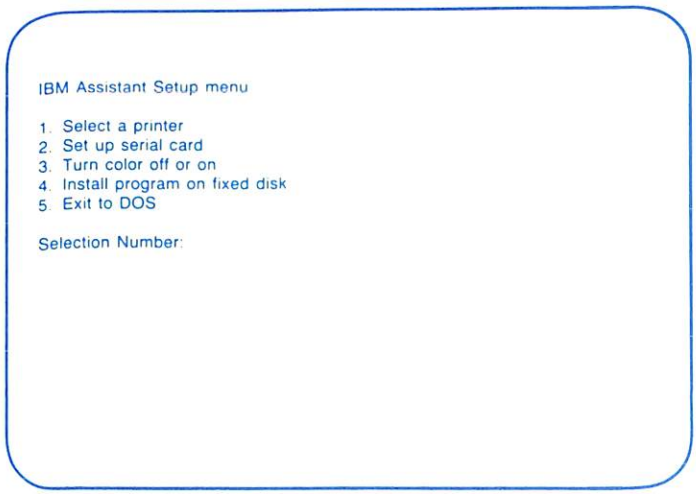
1. If your computer is switched off, start DOS before beginning (refer to your IBM *Disk Operating System* book for instructions on starting DOS). Otherwise, exit from whatever program you have been using. You should see the A> prompt on the screen.

2. Insert the Planning Assistant program diskette (write-protect removed) in drive A. Then type

SETUP in response to the prompt. Press the Enter key to continue. The following screen appears:

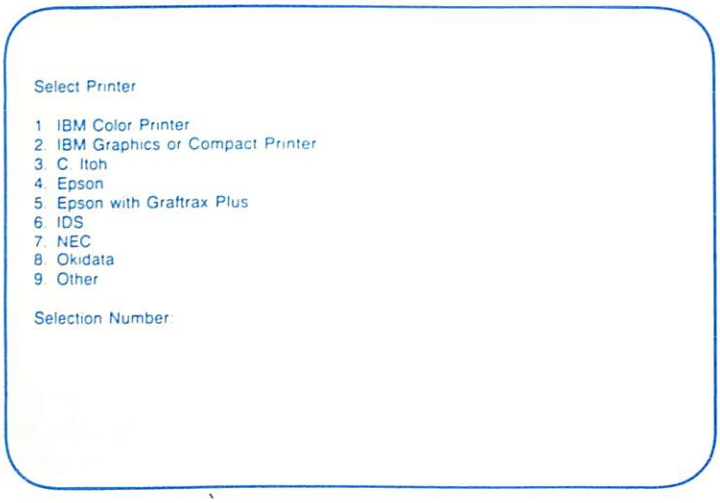


Note the instruction to press Escape if you make a mistake while using the Setup program. Press Enter as instructed and the Setup menu appears:



Selecting a Printer

If you are using a printer other than the IBM Graphics Printer or IBM 80 CPS Matrix Printer, run Setup and choose the **Select a Printer** function. Type **1** following **Selection Number** and then press the Enter key. The following list of printers appears:



Type the number that corresponds to your printer and press the Enter key. Setup then asks you:

```
Selected printer connects to
(LPT1:,LPT2:,LPT3:,COM1:,COM2:)
```

Enter one of the LPT choices (followed by a colon) for a parallel printer, or COM1: or COM2: for a serial printer, then press the Enter key. Setup stores the information on the Planning Assistant program diskette. This assigns your printer to the name PRINTER, which is entered as the default value in the **Print to:** option. Next you see the message

```
IBM Planning Assistant - OK
```

and you return to the Setup menu.

Setting Up a Serial Printer

If you have a serial printer, you need to supply Planning Assistant with certain information about that printer before it can print properly. Planning Assistant uses this information to set up the RS-232C card.

To set up a serial printer, choose option 2 on the Setup program menu. The following questions will appear one at a time.

```
Baud rate:
(110,150,300,600,
1200,2400,4800,9600)

Parity (odd,even,none):

Number of data bits (7 or 8):

Number of stop bits (1 or 2):

XON/XOFF protocol:  (Y/N)
```

Answer each question appropriately for your printer, and press the Enter key after each answer. Your printer book should give you this information, or you can call your dealer for help. Many serial printers work with the following values:

baud rate	2400
parity	odd
number of data bits	8
number of stop bits	1
XON/XOFF protocol	no

After you answer the last question, Setup displays the OK message and returns to the Setup menu.

Switching Color Off or On

To change the display, select option 3 on the Setup menu. The program asks you:

```
Type C for color, N for no color:
```

Type your answer, press the Enter key, and the information is stored on the Planning Assistant diskette. Setup displays the OK message and then returns to the Setup menu.

Installing the Program on a Fixed Disk

If you have a system with a fixed disk, you can install Planning Assistant on the fixed disk, eliminating the need to start the program from diskette each time you want to use it.

> **Note:** You are only allowed to install Planning Assistant *five* times using the Setup program. If you are experiencing disk failures that require you to install the program to your fixed disk several times in a row, contact your dealer for help before using your limit of allowed installations.

See Appendix B for detailed steps for installing Planning Assistant on your fixed disk. These steps must be followed before using option 4 of the Setup menu.

Exiting from the Setup Program

After using any one or more of the Setup options, select option 5 to leave the Setup program. The DOS prompt A> reappears, and you are ready to begin using Planning Assistant.

Running Setup from a Fixed Disk

If you have already installed Planning Assistant on a fixed disk, you can run Setup from that disk. Set the default drive to the fixed disk before starting Setup. Any new information you enter is stored on the fixed disk.

Using Planning Assistant with Different Equipment

This book assumes that your computer system includes 256KB of memory, an 80-column display, two diskette drives, and a parallel printer. The following sections explain what to do or to expect if your equipment is different from what the program or the book assumes.

Single Drive Systems

Planning Assistant works with one diskette drive. If your computer has 384KB of memory or more, you can remove the Planning Assistant program diskette after starting Planning Assistant and immediately insert the diskette on which you store your spreadsheets. If your computer has less than 384KB of memory, you need to keep the Planning Assistant diskette in the drive,except

when using the Get, Save, Remove or Print functions. Planning Assistant tells you when to insert the diskette on which you store spreadsheets (called a spreadsheet diskette), and when to replace the program diskette.

Fixed Disk Systems

If you have a fixed disk, you can save your Planning Assistant spreadsheet files in any directory on the fixed disk by simply preceding the filename with the directory name. See your DOS book for a description of directory names.

Color Monitors

Planning Assistant will work in color on an IBM Personal Computer JX.

The colors used on the menus and spreadsheets for the background, foreground, and system prompts are preset to a combination agreeable to many people, but other combinations are available. You can cycle through the available combinations by pressing Shift-PF3 (press Shift and, while holding it down, press PF3). When you reach a color combination you like, simply leave it on the screen and continue using Planning Assistant.

Starting Planning Assistant

The procedure for starting the Planning Assistant program depends on whether or not your computer is already switched on, and whether or not you have used the Setup program to install Planning Assistant on the fixed disk.

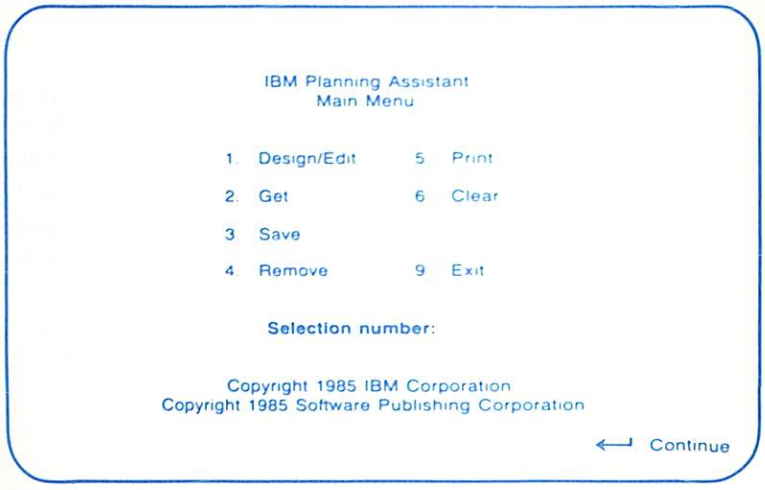
- If your computer is switched off, insert the DOS diskette in drive A and switch the computer on. Enter the date and time when requested to do so, and press the Enter key each time. When the DOS prompt appears, replace the DOS diskette with the Planning Assistant diskette. (If drive A is single-sided, use drive B. Change the default drive by typing B: and pressing Enter.) Type **G** for "go" and press the Enter key.

- If the computer is switched on, exit from whatever program you are using. When the DOS prompt appears, insert the Planning Assistant diskette in drive A. Type **G** and press the Enter key.

- If you have installed Planning Assistant on the fixed disk, make sure the default directory is the directory where you installed Planning Assistant, type **PLAN** and press the Enter key.

The Planning Assistant Main Menu

The Planning Assistant Main Menu lists the six main functions provided by Planning Assistant:



This menu appears when you first start Planning Assistant, and whenever you press the Escape key a sufficient number of times. The cursor is always positioned in Selection Number. To select a function from this menu, type the number that corresponds to the function you want to use, and press Enter.

Special Keys Used by Planning Assistant

As you work with Planning Assistant, you use several special keys to move the cursor and to perform other desired tasks. These keys are described below:

Key	What It Does
↵	**Enter.** On any menu, Enter tells Planning Assistant to begin or continue the selected function. When you are typing or editing a spreadsheet, Enter moves the cursor to the next row of the same column. (Enter does not move the cursor across the boundaries of the spreadsheet.)
Esc	**Escape.** Cancels the current operation and returns you to the previous operation, saving your most current work in the computer's temporary memory as it does so. Press Esc again, as many times as necessary, to return to the Main Menu.
↑	**Cursor Up.** Moves the cursor up one line.
↓	**Cursor Down.** Moves the cursor down one line.
→	**Cursor Right.** Moves the cursor to the right one space.

←	**Cursor Left.** Moves the cursor to the left one space.
Ctrl-Home	**Control-Home.** Moves the cursor to the upper left corner of the values region.
Ctrl-End	**Control-End (Fn– ↓).** Moves the cursor to the lower right corner of the values region.
PgUp	**Page Up (Fn–←).** Displays the previous screen of data.
PgDn	**Page Down (Fn–→).** Displays the next screen of data.
Ctrl-PgUp	**Control-Page Up (Ctrl–Fn–←).** Moves the cursor to the top of the same column.
Ctrl-PgDn	**Control-Page Down (Ctrl–Fn–→).** Moves the cursor to the bottom of the same column.
End	**End (Fn– ↓).** Moves the cursor to the right end of the same row.
Home	**Home.** Moves the cursor to the left end of the same row.
←	**Backspace** Moves the cursor to the left one space and erases the character in that location.

The following keys let you move easily between the columns of the spreadsheet:

→|	**Tab.** Moves the cursor to the beginning of the next column.
|←	**Shift-Tab.** Moves the cursor to the beginning of the previous column.

(Use Ctrl → and Ctrl ← in place of Tab and Shift-Tab, if you find them more convenient.)

Planning Assistant uses your computer's function keys for many special functions.

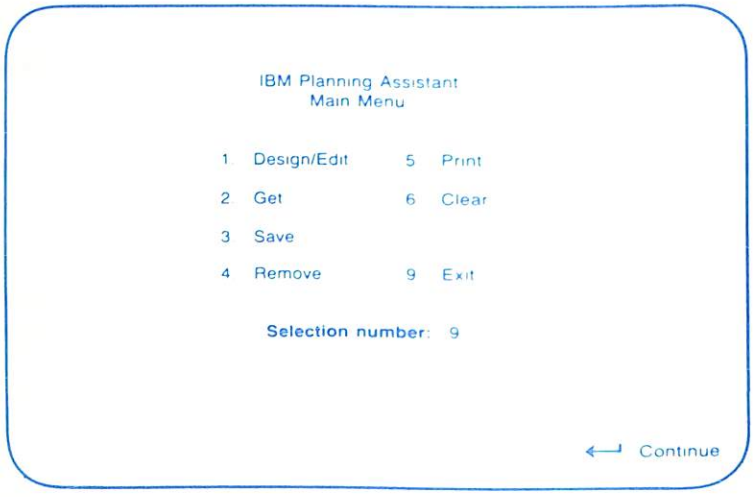
Press the function key to begin the function, and then press Esc or the same key again to stop the function. The function keys are explained throughout the book, and all of the keys are summarized in the *Quick Reference Card*.

When You Need Help

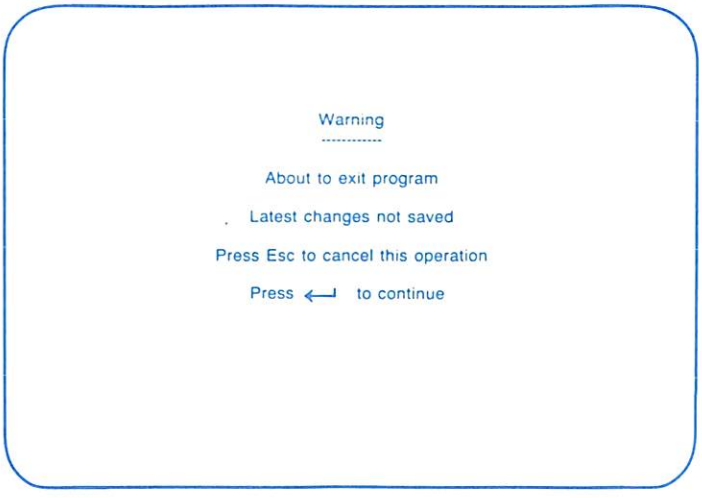
Help screens are available whenever the message **PF1-Help** appears in the bottom left-hand corner of the screen and the Planning Asistant diskette is in the drive. When you press PF1, Planning Assistant displays a brief explanation of the function you are currently using. If another Help screen is indicated in the lower-right corner of the screen, press Enter to see this screen or press Esc to return to what you were doing without viewing the other screen.

Exiting from Planning Assistant

When you want to stop using Planning Assistant in order to perform DOS commands or to run another program, press Esc until you return to Planning Assistant's Main Menu. Type **9** after **Selection number**, so the screen looks like this:



Press Enter to continue. If you have not saved the current spreadsheet since making any changes, Planning Assistant displays a warning:



Save the spreadsheet (see Chapter 4) and select Exit again, or press Enter to exit without saving the working copy.

As you exit from Planning Assistant, the screen clears. If the message "Insert disk with COMMAND.COM" appears, you must restart DOS. When the DOS prompt appears on the screen, you can insert the DOS diskette to use DOS commands, or you can start using another program.

Summary

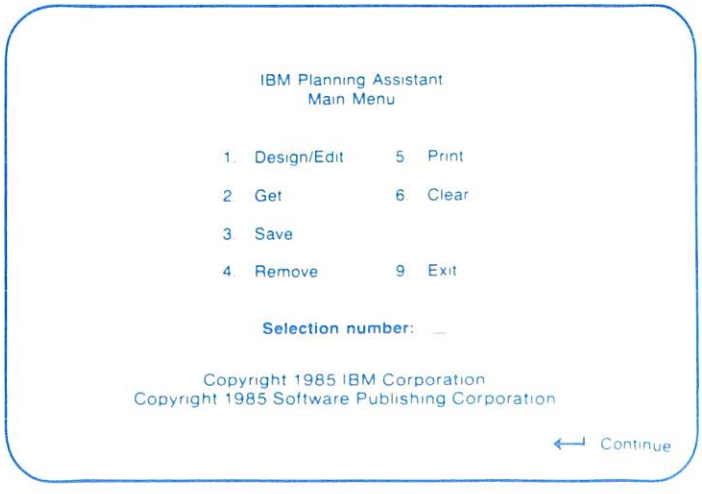
- Press the Shift-PF3 key to review and change the color combinations displayed on the screen.
- Be sure to make a backup copy of the Planning Assistant program diskette before using Planning Assistant the first time.
- Store the original copy of Planning Assistant in a safe place and work with the backup copy.
- To use a serial printer, use the Setup program to supply Planning Assistant with certain needed information.
- To start Planning Assistant from the diskette, first start DOS from the DOS diskette, then insert the Planning Assistant program diskette, type **G**, and press Enter.
- When you need help, you can press PF1 when it appears on the screen to display one of Planning Assistant's Help screens.

Chapter 3. Designing a Simple Spreadsheet

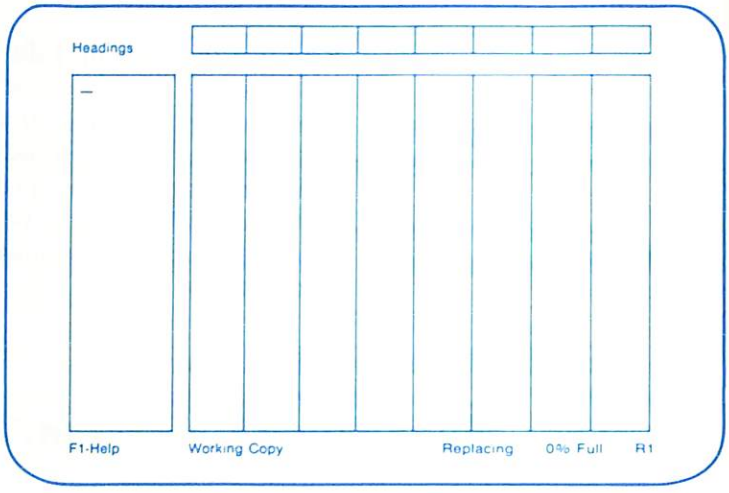
You use the **Design/Edit** function to design a new spreadsheet and to revise an existing spreadsheet. This chapter explains how to use the Design/Edit function to design a simple spreadsheet. It talks about the different parts of the spreadsheet, how to enter row and column headings, how to enter numerical values, how to create and enter formulas, and a few keyword calculations.

Selecting the Design/Edit Function

To begin designing a spreadsheet, start the Planning Assistant program according to the directions in Chapter 2, *Getting Started.* The Main Menu appears on the screen with the cursor positioned after Selection Number, ready for you to type in your menu selection:



Let's use the **Design/Edit** function to create a six-month income statement for a fictitious mail order company called VideoMail. First, type **1** in **Selection number**. Then press the Enter key, and Planning Assistant displays a blank spreadsheet:



The Parts of the Spreadsheet

Before you start your spreadsheet, take a look at the screen. Every spreadsheet is divided into several regions, as described in the following sections:

Headings Regions. The headings regions appear at the top and left edge of your screen. You enter words and phrases in these regions to identify the rows and columns of values in your spreadsheet. The row headings region extends from the word Headings in the upper-left corner down to the bottom of the screen. The column headings region extends to the right of Headings. These two regions are always visible, but in a large spreadsheet only some of the headings are visible at one time.

Values Region. The values region is in the center of the screen, divided by vertical lines. You enter numbers in this region; calculated values also appear here. Some portion of the values region is always visible, but only a small portion of the values in a large spreadsheet is visible at one time.

Cursor. The cursor is the small blinking underline in the first position of the row headings region. It appears here whenever you first start Planning Assistant and select Design/Edit. If you have a color monitor, the cursor and the characters at the cursor location are highlighted in a contrasting color or white (depending on the colors you have chosen and the spreadsheet location). The cursor always marks the location where any character you type appears. You can move to the different parts of a large spreadsheet quickly and easily using a variety of cursor movement keys. (Cursor movement is explained in Chapter 2 and summarized in the *Quick Reference Card.*)

Message Region. The message region is at the bottom of the screen and *always* tells you:

- When Help is available.
- The name of your spreadsheet (if you are creating a new spreadsheet, it says Working Copy).
- If you have pressed Ins to insert characters (Inserting appears instead of Replacing).
- How much of the available computer memory has been used (0% Full).
- The row and column number of the cursor's position (R1 — only one letter appears if the cursor is in a headings region).

The message region is also used to display other types of messages, when appropriate, such as requests for more information or error messages.

The Working Copy

The working copy is a temporary storage area in your computer. When you are creating a new spreadsheet, Planning Assistant stores it in this area. When you retrieve a spreadsheet from a disk for editing, Planning Assistant makes a copy of it and places that copy in this area. Any changes made to this retrieved spreadsheet are made only in the working copy. The version stored on the disk remains the same. When you finish creating or editing your spreadsheet, you must use the Save function (Chapter 4) to store the new or edited spreadsheet on a disk if you want to keep it. Any data stored only in the working copy is permanently lost when you exit Planning Assistant or turn off your computer.

Entering Row Headings

The row headings region is nine spaces wide when the blank spreadsheet first appears on the screen. As you type your headings, this region automatically expands to the size of your widest heading, up to a maximum of 25 characters. You can use any characters you choose in your headings. However, if you use quotation marks, parentheses, colons, or any of the arithmetic symbols *, +, -, or /, you must treat them specially when entering formulas, as explained later in this chapter. Press Enter to move to the beginning of the next row.

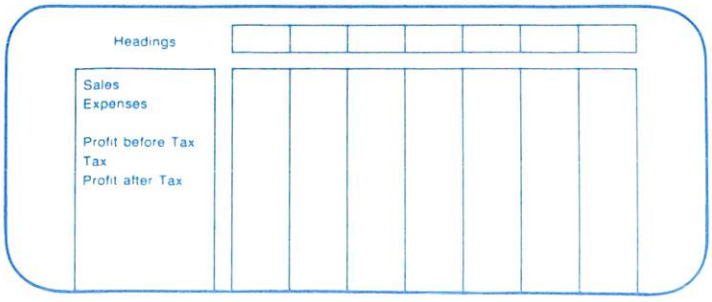
For example, let's enter row headings in our income statement. The blank Planning Assistant spreadsheet should be on your screen, and the cursor ready for your first heading. Type **Sales.**

If you make a mistake while typing, use the Backspace key to back up and retype the characters in error.

Now press Enter, and the cursor moves to the beginning of the second row. Type **Expenses** as your second heading, and then press Enter two more times and type the following headings, each on its own line:

```
Profit before Tax
Tax
Profit after Tax
```

You can see your headings region expand as you type the longer headings. Your row headings should look like this:



Entering Column Headings

When you first select Design/Edit, each column in the blank spreadsheet is seven spaces wide. As you type your column headings, each column expands to accommodate the size of its heading, up to a maximum of 25 characters. As with row headings, you can use any characters you choose in these headings.

For example, let's enter column headings for the income statement. Move the cursor to the first column heading by first pressing the Ctrl-Home keys to move to the upper-left corner of the values region and then pressing the up-arrow key. Suppose that the fiscal year for the company begins in July; type **Jul** as your first column heading. Then press the Tab key to move to the second column. Notice that Planning Assistant centers your heading when you move to the next column.

Now type **Aug** in the second column. You could continue moving from column to column and typing the rest of the months of the year; however, Planning Assistant gives you an easier way to do this.

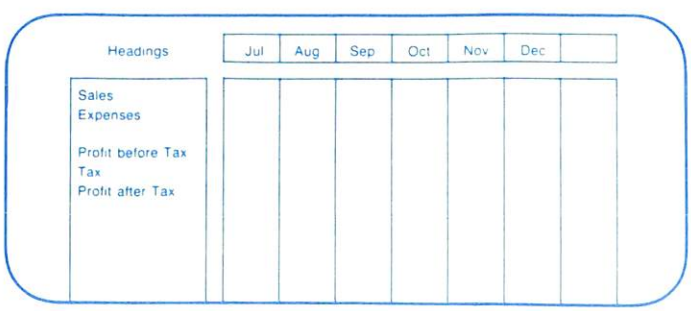
Entering Headings with Quick Entry

Enter a series of related headings automatically by using PF2, Planning Assistant's Quick Entry key. Move the cursor into the headings region and press PF2 before or after you type the first heading in the series. Then press Tab (for column headings) or the down-arrow key (for row headings) once for each heading you want to enter automatically. For instance,

if you type	each Tab enters
Jan	Feb, Mar, Apr, May....
June	July, August, September...
OCTOBER	NOVEMBER, DECEMBER, JANUARY...
Oct83	Nov83, Dec83, Jan84...
Week 1	Week 2, Week 3, Week 4...
QTR 1	QTR 2, QTR 3, QTR 4...
FY82	FY83, FY84, FY85...
1984	1985, 1986, 1987...
1	2, 3, 4, 5, 6, 7...

Stop the Quick Entry function by pressing PF2 again or changing the direction of the cursor.

Let's use the Quick Entry key to complete the column headings in the income statement. First, press PF2. (If you press the wrong function key by mistake, just press it again to turn it off.) Then press Tab. If you began your column headings in the last section, Sep appears in the next column. Press Tab again, and Oct appears. Continue pressing Tab until Dec appears, and then press Ctrl-Home. Your column headings should look like this:



You may want to use the Quick Entry key with headings other than those in the previous list. The following rules explain how Planning Assistant recognizes and processes headings automatically:

- it recognizes the full names or three-letter abbreviations of months and enters the next month in the series, following the capitalization you use.
- it exactly duplicates text (other than the names of months), including capitalization.
- it recognizes whole numbers and increases them by one.

Entering Values in the Spreadsheet

You are now ready to type values in your spreadsheet. Use either the numbers at the top of the keyboard or the numeric keypad at the right of the keyboard. As you type your numbers, use either Tab to move the cursor along the row or Enter to move down the column.

For example, let's enter some values in the income statement. Type the following values in the Sales row:

	Jul	Aug	Sep	Oct	Nov	Dec
Sales	13993	13907	16999	55231	77547	70003

Notice that Planning Assistant displays your numbers with commas after you move the cursor away from them. When you type an entry in the values region, Planning Assistant allows you to type anything. When you move the cursor away from the entry, Planning Assistant modifies it, if necessary, to conform to the Global Format default instruction (whole numbers with

commas). (Chapter 5 explains how to format your spreadsheet to display dollar signs, percent signs, or decimal places.)

No matter what Planning Assistant displays, it stores an entry according to the following rules:

- it stores up to 14 digits (including decimal places) for each number entered.
- it accepts the digits 1, 2, 3, 4, 5, 6, 7, 8, 9, 0, a decimal point (.), and a leading minus sign (-).
- it ignores a leading plus sign (+), multiple minus signs, and multiple decimal points. (It stores the first decimal point typed.)
- it does not accept a number that contains a mathematical operator (+, -, /,*); for example, 123 + 45. (See *Using Planning Assistant's Calculator* in Chapter 5.)
- it treats an entry containing any alphabetic characters as text and does not perform calculations on it.

Repeating Values with Quick Entry

If you want to enter the same value several times consecutively, use the Quick Entry key (PF2). In the values region, the Quick Entry function duplicates a value. It does not manipulate the value in any way.

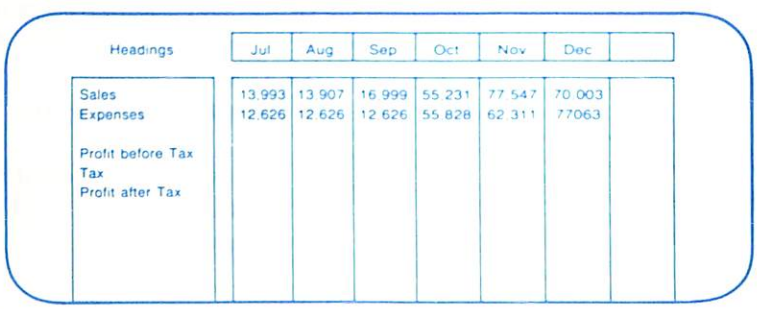
Press PF2 before or after you type the value to be duplicated. Then move to the next row or column in any direction, using the appropriate cursor movement key. The number appears each time you press the cursor movement key until you press PF2 again or change directions.

For example, let's enter the first three Expenses values in the income statement automatically. Press Ctrl-Home and then the down-arrow key to move to the beginning of the Expenses row. Now press PF2 and type **12626.** Press Tab, and the number 12,626 appears in the August (Aug) column. Press Tab again, and 12,626 also appears in the September (Sep) column.

Press PF2 again, and then Tab. Now finish the Expenses row with the following list of values:

```
Oct     55828
Nov     62311
Dec     77063
```

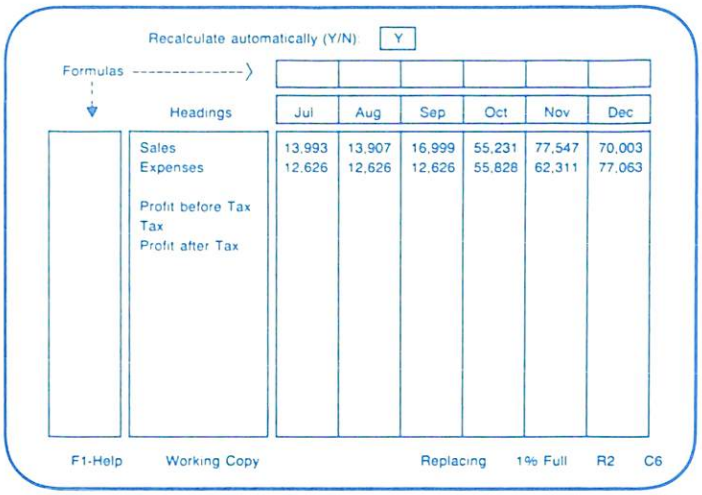
Your spreadsheet should look like this:



Headings	Jul	Aug	Sep	Oct	Nov	Dec	
Sales	13,993	13,907	16,999	55,231	77,547	70,003	
Expenses	12,626	12,626	12,626	55,828	62,311	77063	
Profit before Tax							
Tax							
Profit after Tax							

Creating and Entering Formulas

Formulas tell Planning Assistant how to calculate the values in a row or a column. You type formulas in two special regions (one for columns and one for rows) that appear on the screen when you press PF9, Planning Assistant's Formula key:



You can use Planning Assistant's *keywords* or create your own formulas in these regions.

Using Keywords

A *keyword* is a special word that instructs Planning Assistant to perform a specific, frequently-used calculation. A keyword looks like a common word or abbreviation preceded by an at sign (@). The following is a list of Planning Assistant's keywords and tells you what they can do:

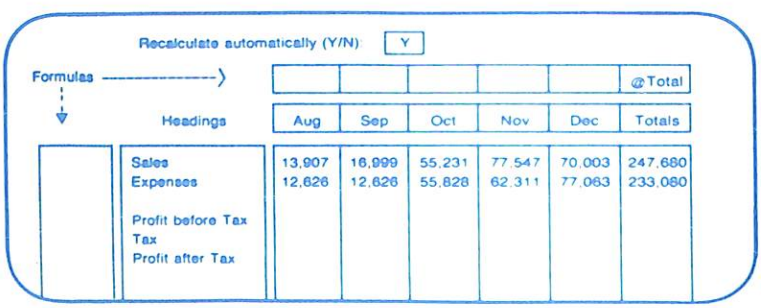
Keyword	What It Can Do
@Total	Calculate a variety of totals.
@Avg	Calculate a variety of averages.
@Min	Find smallest value in spreadsheet, or in different portions of spreadsheet.
@Max	Find largest value in spreadsheet, or in different portions of spreadsheet.
@Cum	Calculate a cumulative total.

@Grow	Increase values by specified amounts.
@Prev	Look back to find previous values needed for current calculation.
@Start	Provide start values for @Cum, @Prev, @Grow, @NPV, and @FV.
@NPV	Calculate net present value.
@FV	Calculate future value.
@Payment	Calculate amount of loan payment.

Most of the above keywords are explained in Chapter 6, *All About Groups, Keywords, and Formulas.* The financial keywords (@NPV, @FV, and @Payment) are explained in Chapter 7.

Let's try a simple use of a keyword right now. The keyword @Total, used alone, can total all the rows or columns in a spreadsheet. Let's use @Total to total the columns in the sample income statement.

First, press PF9 to display the formulas regions. Then, press Tab once and the up-arrow key twice to move the cursor into the column headings region of the first empty column of the spreadsheet. Type **Totals** as the heading for the column. Then, press the up-arrow key again to move the cursor into the formulas region. Type **@Total** as the formula and press the down-arrow key. Planning Assistant automatically calculates the total Sales and total Expenses for the months July through December:



Writing a Simple Formula

You can write your own formulas by combining row and column headings, keywords, numbers, variables (see Chapter 7), and the following mathematical operators:

+ add

- subtract

* multiply

/ divide

() perform this part of calculation first
(Parentheses can be nested five deep; that is, you can place parentheses inside other parentheses up to a total of five sets.)

Row and column formulas are written in the same way and entered in the same way. When writing a formula, follow these guidelines:

- Type row and column headings exactly as they appear in the headings region (except for use of capitalization).
- Space between the operators and the headings if you desire (spaces are optional).
- Enclose headings containing mathematical operators in quotation marks.
- Enclose headings consisting of only numbers in quotation marks.

Here are some simple formulas that you might create using Planning Assistant:

Total Income - Total Expenses
Number of Units * Price per Unit
.48 * (Sales - Expenses)
"Acctg/Legal" / Total Expenses

Let's type some formulas in the income statement. First, press Ctrl-Home to move to the upper-left corner of the values region. Then press a Shift key and, while holding it down, press Tab twice to move the cursor into the row formulas region. Next use Enter to move the cursor to the formula row to the left of the Profit before Tax heading. Type

```
Sales - Expenses
```

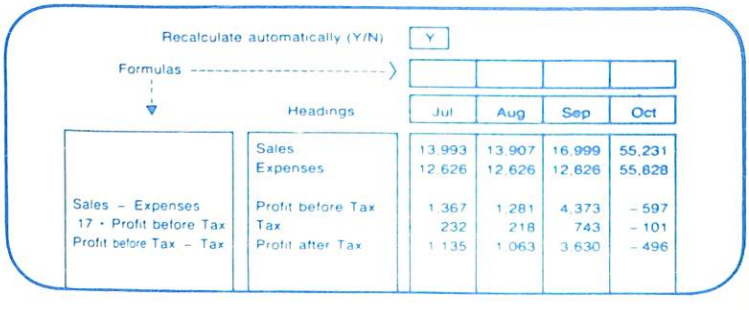
and press Enter to move the cursor next to the Tax heading. Notice how Planning Assistant fills in the values in the Profit before Tax row according to the formula you typed. Now type

```
.17 * Profit before Tax
```

as the formula for this heading. Press Enter again to move next to Profit after Tax, and Planning Assistant fills in the values for the row whose formula you just typed. Now type the formula

```
Profit before Tax - Tax
```

for Profit after Tax and press Enter one more time. Your now completed spreadsheet should look like this:



Since you have completed your formulas, press PF9 to have the formulas regions disappear from the screen.

Writing More Complex Formulas

Planning Assistant allows you to write formulas that are more complex than those discussed here. You can, for instance, create several formulas for one row or column, each referring to a different portion of the row or column. You can also create a formula that refers to just one value in a row or column. Writing these types of formulas is explained in Chapter 6, *All About Groups, Keywords, and Formulas.*

Entering Long or Multiple Formulas

As you type a formula, the formulas region expands to a maximum of 25 characters. Formulas are not limited to 25 characters, however. If you have a long formula (or several different formulas) in a row or column, Planning Assistant automatically wraps the formula to the beginning of the next line. The spreadsheet splits, and the formulas region keeps growing until you complete your formula or reach the maximum of 10 lines (or 250 characters). When you press PF9 again to display the spreadsheet without the formulas, the breaks in the spreadsheet disappear.

Recalculating Automatically or Manually

When you press PF9 to display the formulas regions, an item named Recalculate Automatically also appears above the spreadsheet. The default for this item is Y for yes, which means that whenever you enter a value in a spreadsheet that affects a calculation elsewhere, Planning Assistant performs the calculation immediately.

If you change Recalculate Automatically to N for no, you must press PF5, the Recalculate key, each time you want to recalculate your spreadsheet. To change the default for Recalculate Automatically, move the cursor to this item by first using Ctrl-Home to move to the top of the values region, and then pressing the up-arrow key. Type N over the Y. Return the cursor to the values region by pressing Ctrl-Home again.

In small to medium-sized spreadsheets, automatic recalculations are instantaneous. If you are making numerous changes to a large spreadsheet, however, it could be somewhat time consuming for Planning Assistant to recalculate after every value change. In such cases, we recommend that you change the entry for Recalculate Automatically to N, make all desired changes to your spreadsheet, and then press PF5 to have Planning Assistant recalculate your spreadsheet only once.

We also recommend that you set Recalculate Automatically to N if your computer has only 128KB of memory. Planning Assistant needs to access the Planning Assistant program diskette often when recalculating in only 128KB, and the program will work more efficiently if you only recalculate occasionally using PF5.

Entering Comments in the Spreadsheet

Planning Assistant allows you to enter comments (up to 177 characters) in your spreadsheet without affecting its general format. When an entry in the values region contains a letter of the alphabet, Planning Assistant considers this entry to be text, even if it contains numbers. When typing text, you can cross column boundaries rather than expanding column widths. Consequently, you should be careful how you position text in your spreadsheet, or you could overwrite values that you do not want to lose.

For example, let's enter a comment in the income statement. Press Enter and then press Tab two times to move the cursor into the August column of the second empty row at the bottom of the spreadsheet. Type

```
Spreadsheet completed
```

followed by today's date to see how Planning Assistant handles your text.

Once you enter an alphabetic character, Planning Assistant interprets any additional characters as text, regardless of what they are. Thus, to enter a date, precede it with a letter or word. Similarly, to enter a few dashes, precede them with a letter.

You will usually want to add text after completing your spreadsheet, so that the column sizes remain the same. Otherwise, if you type two text strings on the same line, and later change values so that the column(s) separating them shrink, the strings will overlap and the first will overlay the second.

Extended ASCII Characters

IBM Planning Assistant supports a 177 character subset of the extended ASCII character set. These characters can be used by Planning Assistant as headings in the headings region or as comments in the values region. The ASCII codes are:

21
32 - 126
128 - 175
179 - 180
191 - 197
217 - 219
223 - 230
235 - 238
240 - 243
246 - 250

Leaving the Design/Edit Function

You can leave the Design/Edit function at any time while entering or editing a spreadsheet by pressing Esc as many times as necessary to return to the Main Menu. Your spreadsheet remains in the working copy, unless you use the Clear, Get, or Exit functions or turn off your computer. To permanently save your spreadsheet, you must use the Save function to store your spreadsheet on a disk. To return to the spreadsheet from the Main Menu, simply select Design/Edit again.

Summary

- Use the Design/Edit function to design a new spreadsheet or edit an old one.
- Headings identify the rows and columns of values in a spreadsheet.
- You can enter headings and values automatically with Planning Assistant's Quick Entry key (PF2).
- Formulas tell Planning Assistant how to calculate values in a row or column.
- Planning Assistant provides keywords, such as @Total, for certain commonly-used calculations.
- Planning Assistant can recalculate your spreadsheet automatically or only when you press the Recalculate key (PF5).
- You can enter text in a spreadsheet without affecting the width of your columns.

Chapter 4. Saving and Retrieving Spreadsheets

You use the Get, Save, and Remove functions to manage the spreadsheets and other files that you store on a disk. This chapter explains how to use these functions, and it also explains how to consolidate two spreadsheets and how to display a list of files in a directory.

Saving a Spreadsheet

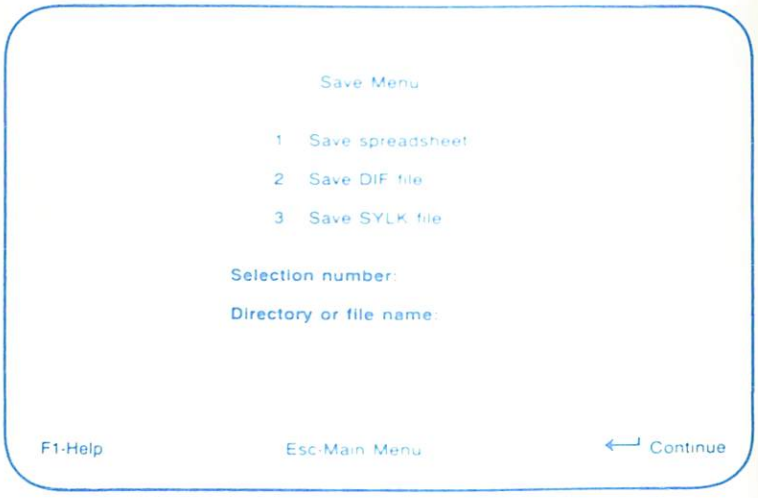
Use the Save function to save the working copy on a disk. Until you use this function, any spreadsheet that you create only exists in the computer's temporary memory — if you turn off the computer or exit the program, you lose the spreadsheet. You can save a spreadsheet as a Planning Assistant file, or as a DIF or SYLK file for use with other software programs.

We recommend that you save frequently while working on a spreadsheet (every half hour is a good rule) — especially if you are creating a large spreadsheet. You can too easily lose information because of a power outage or some inadvertent error. We also suggest that you keep a duplicate diskette copy of any large spreadsheet in case the original becomes damaged or worn out.

Selecting the Save Function

To begin the Save function, return to the Main Menu (press Esc, if necessary), type 3 in Selection Number,

and press Enter. The Save Menu appears on the screen:



To use an option from this menu, type its number in Selection Number, press the Tab key and type the file name (including the directory name, if you do not want to save to the default directory) in the Directory or File Name item, and press Enter.

Naming Planning Assistant Spreadsheet Files

You can store IBM Planning Assistant spreadsheets on both diskettes and fixed disks. To the computer, Planning Assistant spreadsheets look just like other DOS files. They can be managed with DOS, and can co-exist on disks with other files.

A simple spreadsheet name typically has two components: the name of the drive and the name of the spreadsheet. The drive name always ends with a colon (:). For example, B:Budget refers to the spreadsheet named Budget stored on whatever diskette is in drive B. If you use a file name on its own, without a preceding drive name (for example, Budget), Planning Assistant assumes the file is in the default drive (drive A unless you have changed it).

The name given to a spreadsheet must be different from the other file names on the disk. It can be up to eight characters long, including letters and numbers. A file name can also have an optional extension of a period and up to three characters (for example, Budget.ss — to identify your spreadsheet files). If a file name has an extension, you must always use the extension with the name when referring to that file.

You can use path names when naming your spreadsheet files (for example, C: budgets personal). For a complete description of the rules for using DOS commands and naming DOS files, see your DOS manual.

Saving a Planning Assistant Spreadsheet

Let's save the income statement completed in Chapter 3 on a blank formatted diskette. First, make sure the diskette is in drive B. Then, return to the Main Menu (press Esc, if necessary), type **3** in **Selection number**, and press Enter to display the Save Menu. Now type **1** to select **Save spreadsheet**. Press Tab and type **B:Income** after **Directory or file name**, as shown below:

Now press Enter, and Planning Assistant saves the spreadsheet and returns to the Main Menu.

Should you have a spreadsheet stored under the same name, Planning Assistant displays a warning screen. Press Esc to return to the Main Menu, and save the working copy under a different name.

Notice that the spreadsheet remains in the working copy even after you save it. You can continue editing (select Design/Edit) or choose another function from the Main Menu.

Saving DIF and SYLK Files

If you want to graph the data in your spreadsheet with IBM Graphing Assistant, you must first save the spreadsheet as a DIF file. (A DIF file is simply a spreadsheet saved in Data Interchange Format.) You may also want to save a Planning Assistant spreadsheet as a DIF or SYLK file in order to use the spreadsheet with a program outside the IBM Assistant Series. (For example, 1–2–3 by Lotus Development Corp. can read DIF files, and Multiplan by Microsoft can read SYLK files. Note, however, that your spreadsheet is restricted to 63 columns by Multiplan.)

To save a spreadsheet as a DIF or SYLK file, first select the Save function from the Main Menu. When the Save Menu appears, select either Save DIF File or Save SYLK File. Type a file name (including a directory name, if needed) in Directory or File Name, and press Enter. Planning Assistant saves DIF files in column order, and saves values, but not formulas in SYLK files.

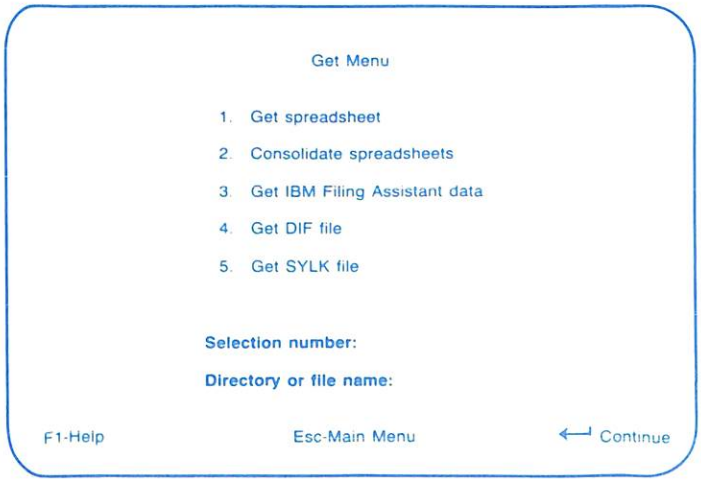
Retrieving a Spreadsheet

Use the Get function to retrieve a previously-stored spreadsheet from a disk. Also use the Get function to retrieve data into a spreadsheet from an IBM Filing Assistant file (see Chapter 9) or from a DIF or SYLK file.

When you retrieve a spreadsheet, Planning Assistant copies the spreadsheet into the working copy. Any editing changes made to this copy affect the working copy only — the spreadsheet on the disk remains the same. (To make your editing changes permanent, use the Save function to store the modified spreadsheet.)

Selecting the Get Function

To begin the Get function, return to the Main Menu (press Esc, if necessary), type 2 in Selection Number and press Enter. The Get Menu appears on the screen:



To use an option from this menu, type its number in Selection Number, type the file name (including the directory name, if needed) in Directory or File Name, and press Enter.

Listing Files in a Directory

Often you might want to list the files on a disk or in a directory. Perhaps you do not remember the exact spelling of the file you want to get, for example.

To display a directory listing on the screen, type an option number from the Get Menu (or Save Menu) in the Selection Number item. Then, type only the directory name in Directory or File Name. Some directory names are:

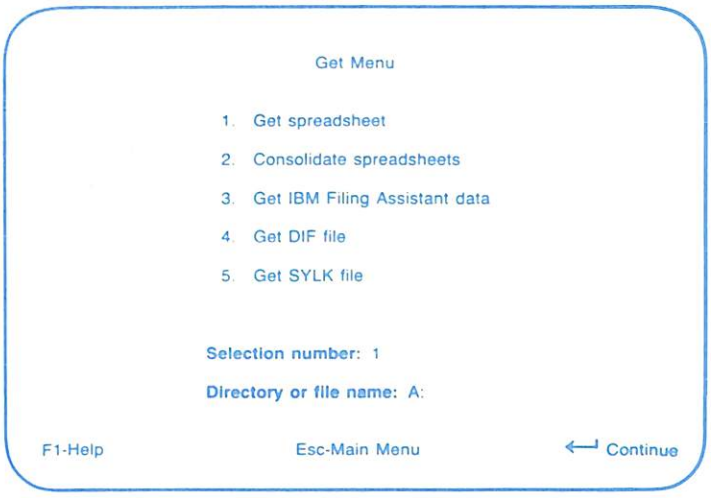
B:	to show all files stored on the diskette in drive B
C:\myfiles\	to show all files stored in the directory named MYFILES on the disk named C:

Press Enter, and Planning Assistant displays the list of files in that directory, prompting you for the name of the spreadsheet you want to get at the same time. If there are more files in the list than can be shown on one screen, use the Page Down key (Fn–→) to see the rest of the list.

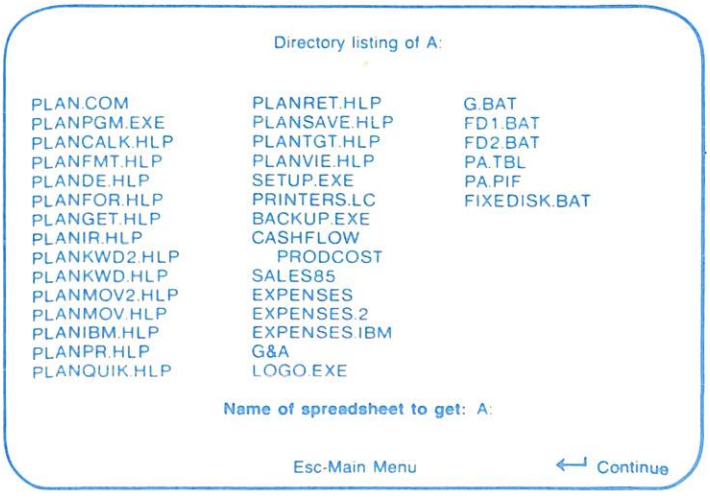
To continue with the selected Get option, type a file name in the Name of Spreadsheet to Get item and press Enter again. If you do not want to continue for some reason, press Esc to return to the Main Menu.

For example, let's list the files on the Planning Assistant diskette in drive A. First type **2** in the **Selection number** item on the Main Menu and press Enter. When the Get Menu appears, type **1** in **Selection number**, press Tab to move to **Directory or file name**, and type **A:**, if necessary.

Your screen should look like this:



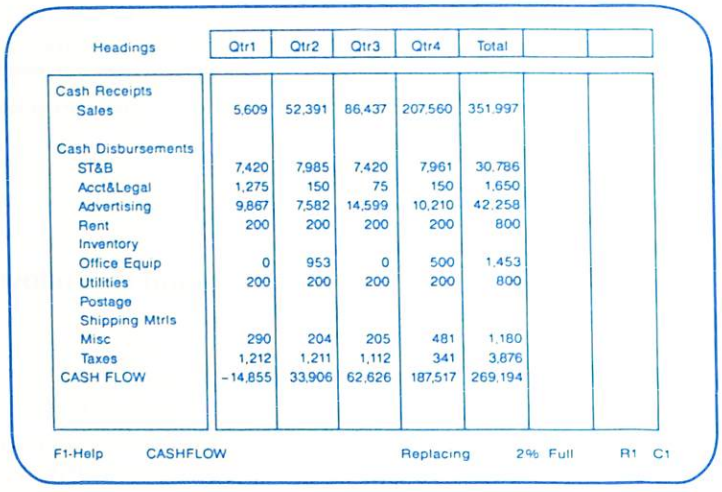
Press Enter, and the following screen appears:



Retrieving a Planning Assistant Spreadsheet

Let's retrieve one of several sample spreadsheets stored on your Planning Assistant program diskette. If you followed the example in the last section, the directory listing of the Planning Assistant diskette is on the screen; type **Cashflow** after the A: in the Name of Spreadsheet to Get item and press Enter.

Planning Assistant retrieves the Cashflow spreadsheet and places it in the working copy. If you had not saved the income statement in the working copy, Planning Assistant would have warned you before overwriting it, giving you the opportunity to return to the Main Menu, save the spreadsheet, and select Get again.
Your screen should now look like this:



Headings	Qtr1	Qtr2	Qtr3	Qtr4	Total		
Cash Receipts							
Sales	5,609	52,391	86,437	207,560	351,997		
Cash Disbursements							
ST&B	7,420	7,985	7,420	7,961	30,786		
Acct&Legal	1,275	150	75	150	1,650		
Advertising	9,867	7,582	14,599	10,210	42,258		
Rent	200	200	200	200	800		
Inventory							
Office Equip	0	953	0	500	1,453		
Utilities	200	200	200	200	800		
Postage							
Shipping Mtrls							
Misc	290	204	205	481	1,180		
Taxes	1,212	1,211	1,112	341	3,876		
CASH FLOW	-14,855	33,906	62,626	187,517	269,194		

F1-Help CASHFLOW Replacing 2% Full R1 C1

You can begin editing or press Esc to return to the Main Menu and select another function.

Retrieving DIF and SYLK Files

To retrieve a DIF or SYLK file, first select the Get function from the Main Menu. When the Get Menu appears select either the Get DIF File or the Get SYLK File option. Type a file name in the Directory or File Name item, and press Enter.

When getting data from either of these types of files, Planning Assistant retrieves only headings and values; it ignores formulas and any comments in the values portion of the spreadsheet. Planning Assistant also requires that the files be stored in the following manner:

- The first three rows of the spreadsheet must be blank or contain only column headings. Insert rows in the DIF or SYLK file, if necessary.
- The first column of the spreadsheet must contain the row headings.
- DIF files must be saved by columns.

Consolidating Spreadsheets

Use the Consolidate Spreadsheets option on the Get Menu to combine one spreadsheet with another. When consolidating spreadsheets, Planning Assistant combines values from a spreadsheet on disk with those on the spreadsheet in the working copy according to the following rules:

- It adds values wherever row and column headings match exactly.
- It ignores rows and columns without matching headings.
- If it finds more than one row or column with the same heading, it looks for a group name.
- If it cannot find any matching headings, Planning Assistant does nothing.

To consolidate spreadsheets, start with a spreadsheet in the working copy. Then, select the Get function. Type 2 in the Selection Number item of the Get Menu, move to Directory or File Name, and type the name of the spreadsheet you want to combine with the working copy (including the directory name, if necessary). Place the diskette containing this file in drive B, and press Enter. Before consolidating spreadsheets, Planning Assistant displays a warning message. Press

Enter again to have Planning Assistant complete the consolidation and return to the Main Menu.

The Cashflow spreadsheet retrieved in the last section was created by consolidating two spreadsheets, each containing expenses for a different category. Another spreadsheet, containing product costs, has not yet been consolidated into the Cashflow spreadsheet.
It looks like this:

Headings	Qtr1	Qtr2	Qtr3	Qtr4	Total
Product Costs					
ST&B	6,741	6,176	6,741	10,444	30,102
Inventory	14,317	15,004	15,004	150,187	194,512
Shipping Mtrls	890	234	238	1,050	2,412
Postage	5,600	5,485	8,751	21,339	41,175
Rent	400	400	400	400	1,600
Utilities	1,435	1,055	1,025	1,666	5,181
Misc	175	150	123	302	750
Total Product Costs	29,558	28,504	32,282	185,388	275,732

Let's use Consolidate spreadsheets to combine this spreadsheet with the Cashflow spreadsheet. First, press Esc to return to the Main Menu, and type **2** in **Selection number**. Press Enter and also type **2** in **Selection number** on the Get Menu. Press Tab and type **Prodcost** after the A: in **Directory or file name**. Press Enter again, and the following message appears:

Warning

About to consolidate spreadsheets

Press Esc to cancel this operation

Press ← to continue

Press Enter one more time, and Planning Assistant consolidates the two spreadsheets.
The Cashflow spreadsheet should now look like this:

Headings	Qtr1	Qtr2	Qtr3	Qtr4	Total		
Cash Receipts							
Sales	5,609	52,391	86,437	207,560	351,997		
Cash Disbursements							
ST&B	14,161	14,161	14,161	18,405	60,888		
Acct&Legal	1,275	150	75	150	1,650		
Advertising	9,867	7,582	14,599	10,210	42,258		
Rent	600	600	600	600	2,400		
Inventory	14,317	15,004	15,004	150,187	194,512		
Office Equip	0	953	0	500	1,453		
Utilities	1,635	1,255	1,225	1,866	5,981		
Postage	5,600	5,485	8,751	21,339	41,175		
Shipping Mtrls	890	234	238	1,050	2,412		
Misc	465	354	328	783	1,930		
Taxes	1,212	1,211	1,112	341	3,876		
CASH FLOW	-44,413	5,402	30,344	2,129	-6,538		

F1-Help CASHFLOW Replacing 2% Full R1 C1

Notice that the Inventory, Postage, and Shipping Mtrls rows were filled in, and the values in the ST&B, Rent, Utilities and Misc rows were increased.

Now save this consolidated spreadsheet to a formatted diskette. (This Cashflow spreadsheet is used in other examples in this book.)

Removing a File

Use the Remove function to permanently erase a spreadsheet file or any other file from a diskette or fixed disk. Be very sure of your decision when you remove a file, because there is no recovery once the function is complete.

To remove a file, type 4 in the Selection Number item of the Main Menu and press Enter. A screen appears listing the files in the last directory that you used. Type the file name in the Name of File to Remove item and

press Enter. Planning Assistant displays a warning screen to give you a chance to change your mind before it removes the file. Press Enter again to remove the file, or press Esc to return to the Main Menu.

To list the files in a different directory, type only a directory name in the Name of File to Remove item and press Enter. The specified directory listing appears on the screen.

> **Warning:** Once you remove a spreadsheet or file, there is no way to recover it. Make sure you really want to delete it permanently from the diskette before using this function.

Summary

- Use the Save function to save the working copy on a disk as a Planning Assistant spreadsheet. Also use Save to save a spreadsheet as a DIF or a SYLK file.
- Save your spreadsheets frequently and keep duplicate copies of important or lengthy spreadsheets.
- Use the Get function to retrieve a copy of a spreadsheet into the working copy. Also use Get to consolidate spreadsheets, retrieve a spreadsheet stored as a DIF or SYLK file, and get data from a file created with IBM Filing Assistant (see Chapter 9).
- Use either the Get, Save, or Remove function to list the files in a directory.
- Use the Remove function to permanently erase a spreadsheet or other file from a disk.

Chapter 5. Editing a Spreadsheet

As you create a spreadsheet, you will probably make some typing errors, or you might simply want to change something after entering it. You might also want to make extensive changes to an existing spreadsheet, or change the way in which the values are formatted. This chapter explains different ways of editing a spreadsheet. It also explains how to clear the working copy.

Simple Editing

You can make simple corrections to a spreadsheet in one of the following ways:

Backspace. To change the last few characters typed, use the Backspace key to back up, erasing characters as the cursor moves. Then retype the characters.

Replace. To replace one or more characters, move the cursor to the first character you want to replace and type the replacement. If the replacement has fewer characters than the original entry, delete the leftover characters. If it has more characters, insert the characters that won't fit.

Delete. To delete one or more characters, move the cursor to the first character that you want to delete and press the Delete (Del) key. Press Del once for each character that you want to remove. Any characters following deleted characters are moved to the left to fill up the empty space.

Insert. To insert characters into something typed previously, move the cursor to the location where you want to make the insertion, press the Insert key (Ins), and type. Press Ins again to stop inserting and return to replace mode.

Erase Entry. To erase a complete entry (heading, formula, value, etc.) and start over, move the cursor to the selected entry and press PF6, the Erase Entry key.

Erase Adjacent Entries. To erase several adjacent entries from a row or column (in the values or headings region), first use PF6 to erase one entry. Then press PF2, Quick Entry. Next, use up arrow, down arrow, Tab or Shift-Tab to move along a row or column erasing entries. Finally, press PF2 again or change directions to stop Quick Entry.

Let's try some simple editing with the Cashflow spreadsheet that you retrieved and consolidated with PRODCOST in Chapter 4. First, move the cursor to the third quarter figure for Inventory under Cash Disbursements, as shown here:

Headings	Qtr1	Qtr2	Qtr3	Qtr4	Total
Cash Receipts					
Sales	5,609	52,391	86,437	207,560	351,997
Cash Disbursements					
ST&B	14,161	14,161	14,161	18,405	60,888
Acct&Legal	1,275	150	75	150	1,650
Advertising	9,867	7,582	14,599	10,210	42,258
Rent	600	600	600	600	2,400
Inventory	14,317	15,004	15,004	150,187	194,512
Office Equip	0	953	0	500	1,453
Utilities	1,635	1,255	1,225	1,866	5,981
Postage	5,600	5,485	8,751	21,339	41,175
Shipping Mtrls	890	234	238	1,050	2,412
Misc	465	354	328	783	1,930
Taxes	1,212	1,211	1,112	341	3,876
CASH FLOW	-44,413	5,402	30,344	2,129	-6,539

F1-Help CASHFLOW Replacing 2% Full R1 C1

Suppose this figure is incorrect. Let's correct it. Move the cursor to the first digit (1), type **37989**, and press Tab. If you followed these instructions exactly, you

typed over the comma in the original number and ow your number is 379,894 instead of 37,989:

Cash Disbursements							
ST&B	14,161	14,161	14,161	18,405	60,888		
Acct&Legal	1,275	150	75	150	1,650		
Advertising	9,867	7,582	14,599	10,210	42,258		
Rent	600	600	600	600	2,400		
Inventory	14,317	15,004	379,894	150,187	559,402		
Office Equip	0	953	0	500	1,453		
Utilities	1,635	1,255	1,225	1,866	5,981		
Postage	5,600	5,485	8,751	21,339	41,175		
Shipping Mtrls	890	234	238	1,050	2,412		
Misc	465	354	328	783	1,930		
Taxes	1,212	1,211	1,112	341	3,876		
CASH FLOW	-44,413	5,402	-334,546	2,129	-371,428		

To delete the unwanted 4 on the end of 379,894, move the cursor to the 4 and press Del once. Press Tab again, and notice that the column width shrinks one space to the left as you shorten the widest entry in the column. Your number now looks like this:

Cash Disbursements							
ST&B	14,161	14,161	14,161	18,405	60,888		
Acct&Legal	1,275	150	75	150	1,650		
Advertising	9,867	7,582	14,599	10,210	42,258		
Rent	600	600	600	600	2,400		
Inventory	14,317	15,004	37,989	150,187	217,497		
Office Equip	0	953	0	500	1,453		
Utilities	1,635	1,255	1,225	1,866	5,981		
Postage	5,600	5,485	8,751	21,339	41,175		
Shipping Mtrls	890	234	238	1,050	2,412		
Misc	465	354	328	783	1,930		
Taxes	1,212	1,211	1,112	341	3,876		
CASH FLOW	-44,413	5,402	7,359	2,129	-29,523		

Next, look at the first quarter Sales figure. This figure should be 56,009 not 5,609.
Move the cursor to the 0 in 5,609, like this:

Headings	Qtr1	Qtr2	Qtr3	Qtr4	Total		
Cash Receipts							
Sales	5,609	52,391	86,437	207,560	351,997		
Cash Disbursements							
ST&B	14,161	14,161	14,161	18,405	60,888		
Acct&Legal	1,275	150	75	150	1,650		
Advertising	9,867	7,582	14,599	10,210	42,258		
Rent	600	600	600	600	2,400		
Inventory	14,317	15,004	37,989	150,187	217,497		
Office Equip	0	953	0	500	1,453		
Utilities	1,635	1,255	1,225	1,866	5,981		

Now press Ins. Notice that the cursor changes from a blinking underscore to a blinking rectangle, and that the message "Inserting" appears in the message region. Type **0**, and the characters 5,6 move to the left to make room for the 0:

Headings	Qtr1	Qtr2	Qtr3	Qtr4	Total		
Cash Receipts							
Sales	5,6009	52,391	86,437	207,560	351,997		
Cash Disbursements							
ST&B	14,161	14,161	14,161	18,405	60,888		
Acct&Legal	1,275	150	75	150	1,650		
Advertising	9,867	7,582	14,599	10,210	42,258		
Rent	600	600	600	600	2,400		
Inventory	14,317	15,004	37,989	150,187	217,497		
Office Equip	0	953	0	500	1,453		
Utilities	1,635	1,255	1,225	1,866	5,981		

Press Tab, and Planning Assistant places the comma in the correct position in the number and stores it in the working copy. Now press Ins again to turn off insert mode. Let's make one more correction. Suppose the second quarter Advertising figure is also incorrect:

Cash Disbursements							
ST&B	14,161	14,161	14,161	18,405	60,888		
Acct&Legal	1,275	150	75	150	1,650		
Advertising	9,867	7,582	14,599	10,210	42,258		
Rent	600	600	600	600	2,400		
Inventory	14,317	15,004	37,989	150,187	217,497		
Office Equip	0	953	0	500	1,453		
Utilities	1,635	1,255	1,225	1,866	5,981		
Postage	5,600	5,485	8,751	21,339	41,175		
Shipping Mtrls	890	234	238	1,050	2,412		
Misc	465	354	328	783	1,930		
Taxes	1,212	1,211	1,112	341	3,876		
CASH FLOW	5,987	5,402	7,359	2,129	20,877		

Let's correct it by first moving the cursor to that figure and then pressing PF6. The cell is now empty and ready for you to enter another number. Type **6,469** and press Tab to complete your editing.

Manipulating Rows and Columns

At times you may want to do extensive editing of a spreadsheet. This might include inserting new rows and columns, deleting existing rows and columns, moving a row or column to a different location in the spreadsheet, or copying a row or column into other locations. When making numerous changes, set the Recalculate Automatically item (press PF9, the Formula key, to see this item) to N to prevent Planning Assistant from recalculating the spreadsheet every time you make a change. Then, use the Recalculate key (PF5) when you finish editing.

Very rarely when you make extensive edits, the % FULL indicator may reach 100%. To free up memory so that you can continue to edit, Save your spreadsheet and Get it again.

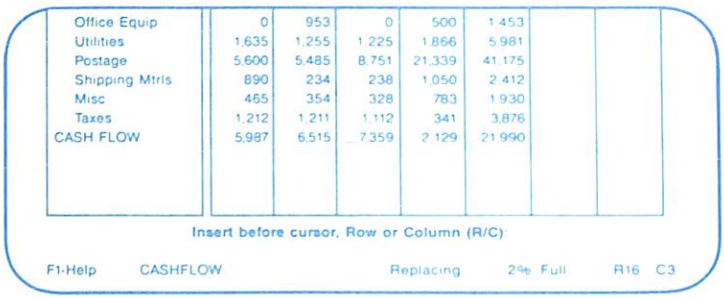
Inserting Rows and Columns

To insert a new row in a spreadsheet, move the cursor into the row directly below where you want to make the insertion. Press PF7, the Insert Row/Col key, and Planning Assistant instructs you, in the message region, to indicate whether you want to insert a row or a column by typing R or C. Type R, and the row containing the cursor moves down to make room for the new row.

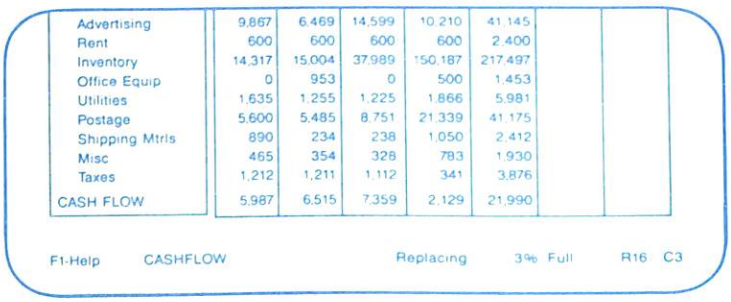
To insert a new column, move the cursor into the column directly to the right of where you want to make the insertion. Press PF7, and when Planning Assistant instructs you to type R or C, type C. The column containing the cursor moves to the right to make room for the new column.

For example, let's insert a blank row in the Cashflow spreadsheet to separate the CASH FLOW figures from the Cash Disbursements. First, move the cursor anywhere in the CASH FLOW row and press PF7. Insert Before Cursor, Row or Column (R/C) appears in the message region, with the cursor positioned after it.

Another blinking cursor marks the location of the cursor in the spreadsheet.



Type **R**, and a new row appears between the rows CASH FLOW and Taxes:



Deleting Rows and Columns

To delete a row or column, first move the cursor into the row or column. Press Shift-PF7, the Delete Row/Col key, and Planning Assistant instructs you to type R or C. Type R to remove the row in which the cursor is positioned. Type C to remove the column in which the cursor is positioned. Planning Assistant displays the warning message:

```
Are you sure (Y/N)?
```

Type Y for yes, and Planning Assistant deletes the row or column. Type N for no, and Planning Assistant cancels the Delete function.

For example, let's delete the Total column from the Cashflow spreadsheet. Move the cursor into this column and press Shift-PF7. When Delete Row or Column appears, type **C**. Type **Y** in response to the message **Are you sure (Y/N)?**, and the Total column disappears.

Reusing Rows and Columns

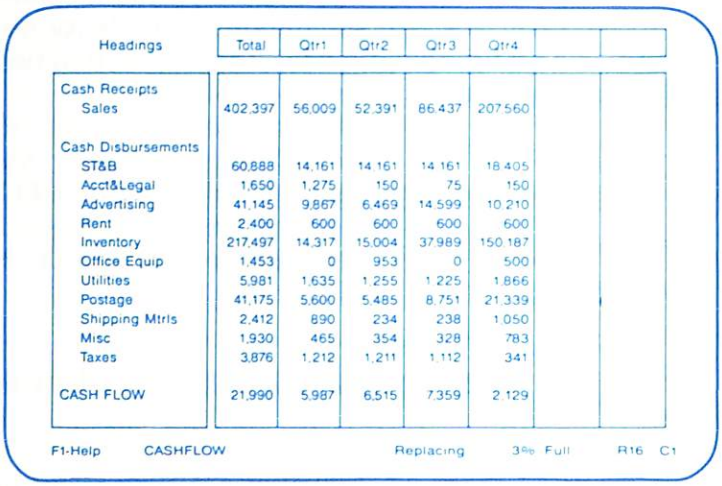
When you use Shift-PF7 to delete a row or column, Planning Assistant stores the row or column in your computer's memory until you use Shift-PF7 again, copy another row or column, leave the program, or turn off your machine. Thus, you can reuse the most-recently deleted row or column to the spreadsheet using Shift-PF8, the Reuse Row/Col key. This key is useful for preventing the loss of a row or column accidentally deleted, and also for moving and copying rows and columns to different locations in the spreadsheet.

Moving Rows and Columns

To move a row or column to a new location in the spreadsheet, first use Shift-PF7 to delete the row or column. Then, as with inserting a row or column, move the cursor to the location where you want to reuse it, and press Shift-PF8 (Reuse Row/Col). If you are moving a row, the other rows in the spreadsheet move down to make room for the previously-deleted row. If you are moving a column, the other columns in the spreadsheet move to the right to make room.

For example, let's reuse the Total column that you deleted from the Cashflow spreadsheet in the previous section. Suppose you really want to see your Totals in the first column. Move the cursor to the Qtr1 column and press Shift-PF8.

Your spreadsheet should now look like this:



Headings	Total	Qtr1	Qtr2	Qtr3	Qtr4		
Cash Receipts							
Sales	402,397	56,009	52,391	86,437	207,560		
Cash Disbursements							
ST&B	60,888	14,161	14,161	14,161	18,405		
Acct&Legal	1,650	1,275	150	75	150		
Advertising	41,145	9,867	6,469	14,599	10,210		
Rent	2,400	600	600	600	600		
Inventory	217,497	14,317	15,004	37,989	150,187		
Office Equip	1,453	0	953	0	500		
Utilities	5,981	1,635	1,255	1,225	1,866		
Postage	41,175	5,600	5,485	8,751	21,339		
Shipping Mtrls	2,412	890	234	238	1,050		
Misc	1,930	465	354	328	783		
Taxes	3,876	1,212	1,211	1,112	341		
CASH FLOW	21,990	5,987	6,515	7,359	2,129		

F1-Help CASHFLOW Replacing 3% Full R16 C1

Copying Rows and Columns

To copy a row or column to another location, first place the cursor anywhere in the row or column to be copied and press PF8, the Copy Row/Col key. When Planning Assistant instructs you to type R or C, type R to copy the row, or type C to copy the column. Then move the cursor to that position where you want the copy to appear. Press Shift-PF8, Reuse Row/Col. If you are copying a row, the other rows in the spreadsheet move down to make room for the copy. If you are copying a column, the other columns in the spreadsheet move to the right to make room for the copy.

Using Planning Assistant's Calculator

With Planning Assistant's four-function calculator, you can add to, subtract from, multiply or divide a value previously typed, or currently being typed, into the spreadsheet. This feature allows you to enter several values into the same location of the spreadsheet, one

after another, without having to manipulate them ahead of time. Or, you can adjust a value previously typed into the spreadsheet, as necessary, without needing any other tools. Use the same mathematical operators with the Calculator that you use to create formulas:

+ add

- subtract

* multiply

/ divide

() perform this part of calculation first (can be nested five deep)

To use the Calculator, first move the cursor to the location where you want to perform a calculation. Then press PF4, the Calculator key, and the message

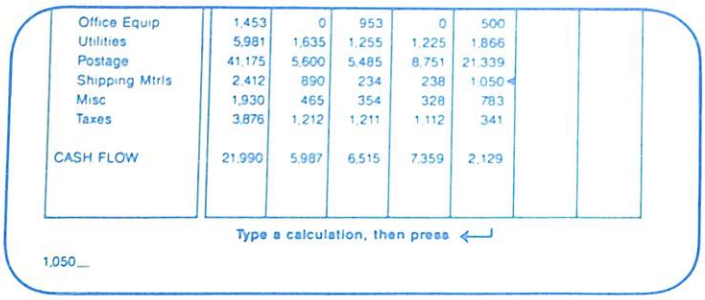
```
Type a calculation, then press ↵
```

appears in the message region. The cursor is positioned at the beginning of the next line, ready for you to type a number. The original position of the cursor in the spreadsheet is marked by an arrow.

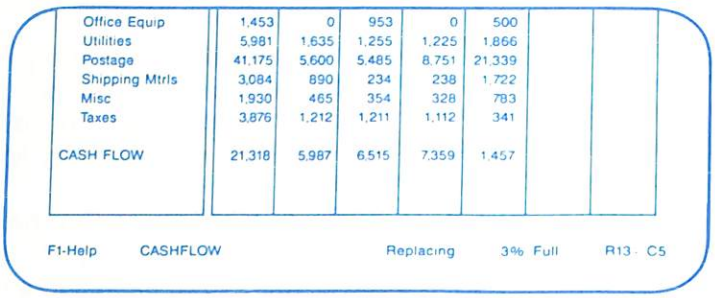
If the cursor location in the spreadsheet contains a value when you press PF4, this value appears on the line after the above message, and the cursor appears after the value, ready for you to type an operator.

Continue alternately typing numbers and mathematical operators until you want Planning Assistant to complete the calculation. Then press Enter, and Planning Assistant places the answer to the calculation at the original position of the cursor in the spreadsheet and turns off the calculator. To cancel the operation without completing the calculation, press PF4 again or Esc.

For example, let's do a calculation on a value in the Cashflow spreadsheet. Suppose a fourth quarter purchase of shipping materials was left out of the spreadsheet. Move the cursor to the fourth quarter column of the Shipping Mtrls row.
Press PF4 and the following message appears:



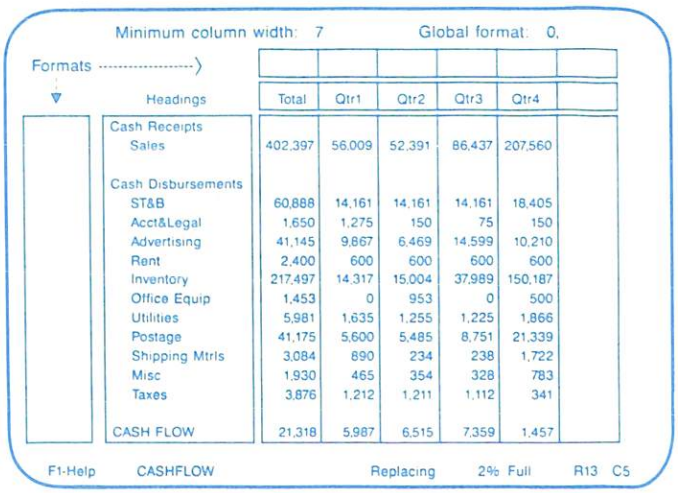
After the number 1,050, type **+672**, and then press Enter. Planning Assistant adds 672 to the original value and places the result, 1722, in the spreadsheet:



Formatting the Spreadsheet

You can format your spreadsheet so that no column is ever narrower than a size you specify and you can determine how values should look when you display or print them. You control these two aspects of the spreadsheet's appearance by using the Format key, Shift-PF2.

When you press Shift-PF2, four new areas appear on the screen. Two of these, Minimum Column Width and Global Format, appear at the top of the screen, outside the spreadsheet:



The Minimum Column Width determines the smallest size to which any column ever shrinks, and the Global Format determines how Planning Assistant displays and prints all the values in the spreadsheet. You can get to these areas from the spreadsheet by using the up-arrow key. Use Tab to move from the Minimum Column Width to the Global Format and Shift-Tab to move back again. Also use Tab (or the down-arrow key) to return to the spreadsheet.

The other two regions appear at the top and left side of the spreadsheet, next to the headings regions. They are the format regions for individual rows and columns of the spreadsheet. You can supersede the global format instruction by entering special instructions for any row or column in these two regions.

Changing the Minimum Column Width

The actual width of a column is determined either by the setting of the Minimum Column Width item or by the widest entry in the column (heading or value).

When you first select Design/Edit, each column contains seven spaces, the default value for the Minimum Column Width item.

To change the default value, first press Shift-PF2, then move the cursor to the Minimum Column Width item. Type over the current default using any number from 3 to 25.

Formatting Values

When you format a value, you determine how Planning Assistant displays it in the spreadsheet. Create formatting instructions using the following symbols:

,	display numbers with commas
$	display numbers with a dollar sign to the left
%	display numbers with a percent sign to the right, and divide by 100 when using the numbers in a formula
n	round numbers to n decimal places (n = 0 through 7)

Changing the Global Format

The default value for the Global Format is a zero and a comma (0,), which causes Planning Assistant to display all values in the spreadsheet as whole numbers with properly-placed commas. To change the global format, press Shift-PF2 and move the cursor to the Global Format item. Type over the default value using symbols from the previous list. You can type up to four characters (three symbols and a number) in any order.

The following list shows some example format instructions and illustrates how Planning Assistant

would display the number 1000.5 according to each instruction:

Format Instruction	1000.5 is displayed as:	Comments
0,$	$1,001	Planning Assistant adds a dollar sign and a comma and rounds the value to the nearest whole number.
2$	$1000.50	Planning Assistant adds a dollar sign and displays the number with two decimal places.
0%	1001%	Planning Assistant adds a percent sign and rounds the value to the nearest whole number.
2%	1000.50%	Planning Assistant adds a percent sign and displays the number with two decimal places.
5,	1,000.50000	Planning Assistant adds a comma and displays the number with five decimal places.

For example, let's change the global format for the Cashflow spreadsheet. First, press Shift-PF2, if you have not already done so. Then move the cursor to Global Format and type **2$** over the default Global Format.

Press Enter and your spreadsheet should now look like this:

Minimum column width 7 Global format 2$

Formats ----------)

Headings	Total	Qtr1	Qtr2	Qtr3	Qtr4
Cash Receipts					
Sales	$402397 00	$56009 00	$52391 00	$86437 00	$207560 00
Cash Disbursements					
ST&B	$ 60888 00	$14161 00	$14161 00	$14161 00	$ 18405 00
Acct&Legal	$ 1650 00	$ 1275 00	$ 150 00	$ 75 00	$ 150 00
Advertising	$ 41145 00	$ 9867 00	$ 6459 00	$14599 00	$ 10210 00
Rent	$ 2400 00	$ 600 00	$ 600 00	$ 600 00	$ 600 00
Inventory	$217497 00	$14317 00	$15004 00	$37989 00	$150187 00
Office Equip	$ 1453 00	$ 0 00	$ 953 00	$ 0 00	$ 500 00
Utilities	$ 5981 00	$ 1635 00	$ 1255 00	$ 1225 00	$ 1866 00
Postage	$ 41175 00	$ 5600 00	$ 5485 00	$ 8751 00	$ 21339 00
Shipping Mtrls	$ 3084 00	$ 890 00	$ 234 00	$ 238 00	$ 1722 00
Misc	$ 1930 00	$ 465 00	$ 354 00	$ 328 00	$ 783 00
Taxes	$ 3876 00	$ 1212 00	$ 1211 00	$ 1112 00	$ 341 00
CASH FLOW	$ 21318 00	$ 5987 00	$ 6515 00	$ 7359 00	$ 1457 00

F1-Help CASHFLOW Replacing 2% Full

Changing the Format for Individual Rows and Columns

To format an individual row or column differently from the global format, move the cursor into the format region above the selected column or to the left of the selected row. Choosing from the same symbols that you use for the global format (, $ % 0-7), type a format instruction for the row or column. You can type characters, in any order. (Column formats take precedence over row formats where they intersect.)

Individual format instructions completely override the Global Format instruction. Consequently, individual format instructions must contain every symbol that you want Planning Assistant to use to format the individual row or column, even if the symbol is repeated in the Global Format item.

For example, suppose you want to see a dollar sign in only the first row of the Cashflow spreadsheet. First, change the Global Format to **2,**. Then move into the row format region to the left of the Sales row. Type **2,$** and press Enter. Your spreadsheet should look like this:

Minimum column width: 7 Global format: 2,

Formats ---------->					
▼	Headings	Total	Qtr1	Qtr2	Qtr3
2,$	Cash Receipts				
	Sales	$402,397 00	$56,009 00	$52,391 00	$86,437 00
	Cash Disbursements				
	ST&B	60,888 00	14,161 00	14,161 00	14,161 00
	Acct&Legal	1,650 00	1,275 00	150 00	75 00
	Advertising	41,145 00	9,867 00	6,469 00	14,599 00
	Rent	2,400 00	600 00	600 00	600 00
	Inventory	217,497 00	14,317 00	15,004 00	37,989 00
	Office Equip	1,453 00	0 00	953 00	0 00
	Utilities	5,981 00	1,635 00	1,255 00	1,225 00
	Postage	41,175 00	5,600 00	5,485 00	8,751 00
	Shipping Mtrls	3,084 00	890 00	234 00	238 00
	Misc	1,930 00	465 00	354 00	328 00
	Taxes	3,876 00	1,212 00	1,211 00	1,112 00
	CASH FLOW	21,318 00	5,987 00	6,515 00	7,359 00

F1-Help CASHFLOW Replacing 2% Full R3

Now press Shift-PF2 again to save the format instructions and have the format regions disappear from the screen.

Entering Percentages and Using the % Format

When you use the % format symbol, Planning Assistant stores any number you enter exactly as you type it, but displays it with a percent (%) sign. If you use a number controlled by the % format in a formula, Planning Assistant divides the number by 100 before performing the calculation indicated by the formula. If, for instance, you type the number 12 into a row controlled by the % format, Planning Assistant stores the number as 12 and displays it as 12%. If you then use this row in a formula, Planning Assistant divides the number by 100, thus using .12 in the calculation.

Unless you include the % format symbol, Planning Assistant treats a number that you might think of as a

percentage just like any other number in the spreadsheet. If you type the number 12%, Planning Assistant ignores the percent sign and stores and displays the number as 12. If you type the number .12, Planning Assistant stores and displays the number as .12.

If you change the format of an existing row or column that has a formula to %, press PF5 to display the number with a percent symbol.

Displaying Multiple Decimal Places

Planning Assistant stores 14 significant digits (including decimal places) for every value entered in a spreadsheet. The number of decimal places stored for each value can vary, depending on how large the whole number is. The number of decimal places Planning Assistant *displays* depends on the number (from 0 to 7) in the Global Format or individual row or column format.

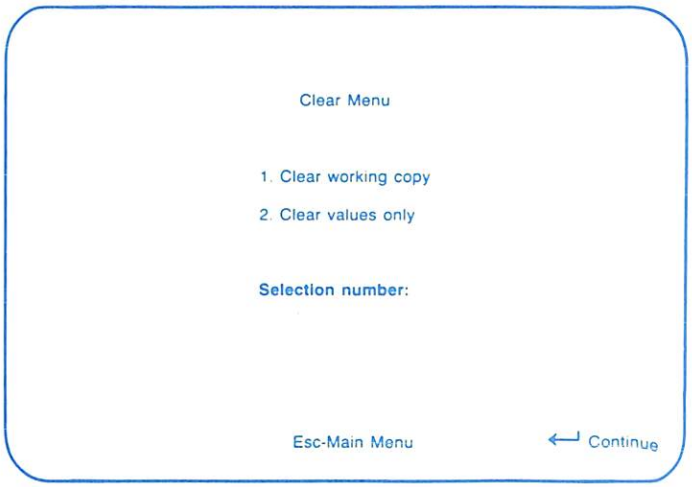
If you request that Planning Assistant display more decimal places than it has stored for a value, Planning Assistant displays the decimal places it has stored and fills in the additional places required by the format instruction with zeros. Suppose, for instance, you format a row to display seven decimal places, and one of the values in that row is 3,146.25. Planning Assistant displays it as 3,146.2500000.

Using the Clear Function

Use the Clear function to erase all the contents of the working copy. Also use Clear to remove only the values region in the working copy, if you want to reuse the same headings, formulas, and variables.

Selecting the Clear Function

To begin the Clear function, return to the Main Menu (press Esc, if necessary), type 6 in the Selection Number item, and press Enter. The Clear Menu appears on the screen:



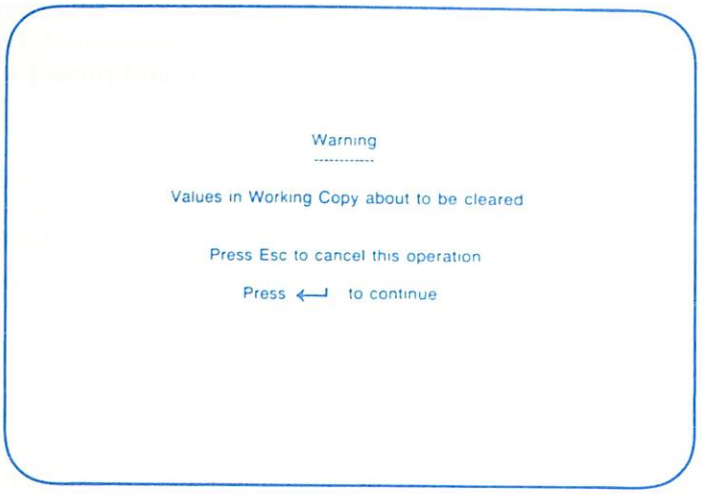
To use an option from this menu, type its number in Selection Number and press Enter.

Clearing the Values in the Working Copy

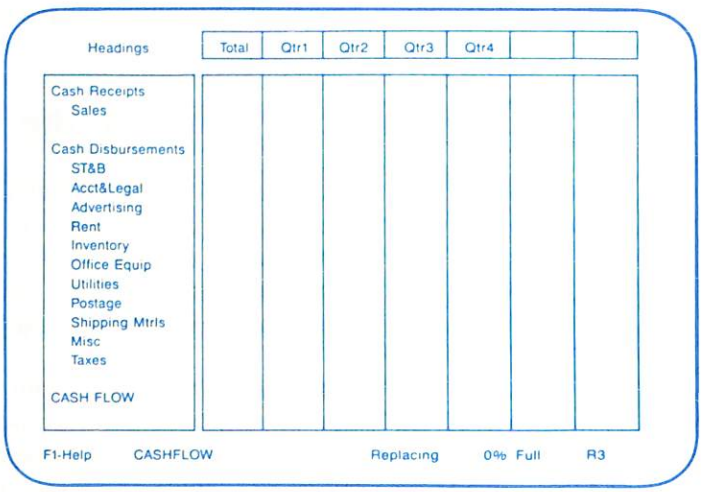
You use the Clear Values Only option to erase only the values from a spreadsheet. Many times the design of a spreadsheet can be useful again and again. For example, once you have set up a budget, you can use the same basic format year after year.

Let's clear the values from the Cashflow spreadsheet in the working copy. First, press Esc to return to the Main Menu. Type **6** in **Selection number**, and press Enter to display the Clear Menu. Now type **2** in **Selection number** and press Enter again.

Planning Assistant displays the following warning:



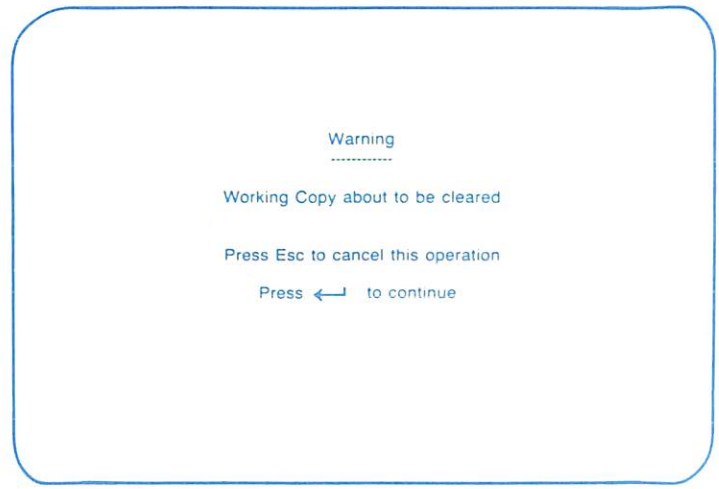
Since you do not need the values in this spreadsheet any longer, press Enter. Planning Assistant clears the values from the spreadsheet and returns to the working copy, which now displays only row and column headings:



Clearing the Working Copy

The Clear Working Copy option, on the other hand, erases all the contents of the working copy, preparing it for a new spreadsheet.

For example, let's remove the entire Cashflow spreadsheet from the working copy. First, return to the Main Menu (press Esc, if necessary), type **6** in **Selection number**, and press Enter to display the Clear Menu. Now type **1** in **Selection number** and press Enter again. Planning Assistant warns you that the working copy is about to be cleared:



Press Enter, and Planning Assistant clears the spreadsheet from the working copy and returns to the now blank working copy.

Summary

- You can make simple corrections to a spreadsheet by typing over characters and by using Backspace, Insert (Ins), Delete (Del), and Erase Entry (PF6).

- You can insert new rows and columns in a spreadsheet and delete, reuse, and copy existing rows and columns.
- Planning Assistant's four-function calculator (PF4) allows you to perform calculations on a value previously typed, or currently being typed, into the spreadsheet.
- The Minimum Column Width (a number from 3 to 25) determines the smallest width any column ever shrinks to.
- The Global Format controls the appearance of all the values in the spreadsheet.
- You can supersede the global format by entering format instructions in the row and column format regions.
- The Clear function erases the working copy so you can create a new spreadsheet. You can either clear all the contents of the working copy, or clear only the values in the working copy.

Chapter 6. All About Groups, Keywords, and Formulas

In Chapter 3, you learned that Planning Assistant provides *keywords* — special words used to perform frequently-used calculations — and tried a simple use of the keyword @Total. This chapter explains how to use Planning Assistant's keywords (except the financial keywords discussed in Chapter 7). Before talking about the keywords, it explains how to create and use groups of headings — an important part of using keywords and formulas.

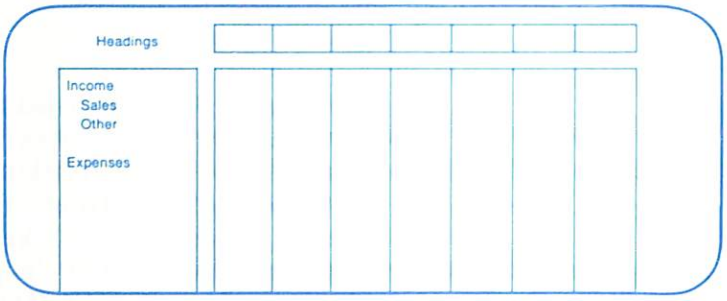
You also learned in Chapter 3 how to write a simple formula. This chapter explains how to refer in a formula to a range of row or column values or just one value. All of these features make Planning Assistant capable of performing almost any task, while still being easy to use.

Why Groups are Important

When you create groups of headings, you enable certain keywords to work on a portion of a spreadsheet. Groups also allow you to use the same heading in different parts of a spreadsheet without confusion. In addition, groups clarify the organization of a spreadsheet, making it easy to read.

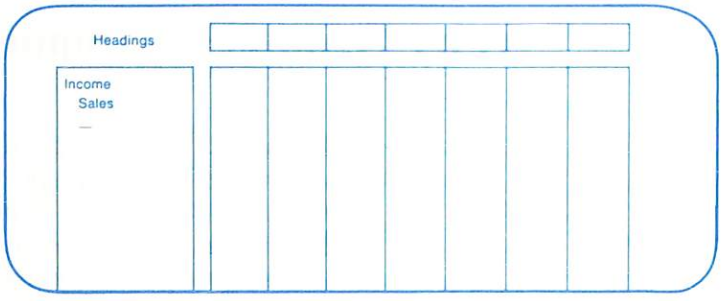
Grouping Row Headings

You create a group of row headings by indenting the members of the group under the group name, like this:



Income is the name of this group and Sales and Other are members of the group. Since Expenses is not indented, Planning Assistant knows that it is not a member of the group.

Planning Assistant makes it easy for you to line up your indented headings. Each time you press Enter in the row headings region, Planning Assistant moves the cursor to the position directly below the first character of the heading just typed, like this:



If you want to end a group, move the cursor to the left until it lines up with the group heading and type the next heading.

For example, let's create a spreadsheet called SALES85 that contains groups. This spreadsheet compares sales figures, forecast and actual, for one classification of

video games (Adventure Games) sold by VideoMail. Your working copy should be blank (use the Clear function, if necessary), and the cursor in the first position of the row headings region. Type

```
Adventure Games
```

as your first row heading. Press Enter to move to the next line, and press the space bar twice to indent two spaces. Type

```
Time Warp
```

(the name of one of the adventure games and the first member of the Adventure Games group) as the next heading. The Time Warp game has been developed for two video game machines, so let's create a sub-group under Time Warp that shows the sales for each machine.

Press Enter, then press the space bar twice to indent two spaces. Type **Machine1**, press Enter, and type **Machine2**. Press Enter again, and then backspace twice to position the cursor under the T in Time Warp. Type

```
Total Time Warp
```

as the heading that ends this group. Now let's enter the name of another game. Press Enter twice to move down two rows and type

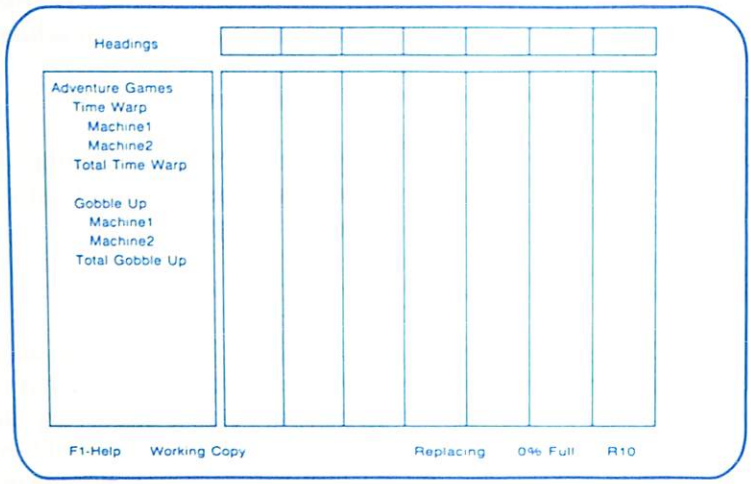
```
Gobble Up
```

as the second member of the Adventure Games group. Gobble Up has also been developed for Machine 1 and Machine 2, so press Enter, indent two spaces, and type **Machine1**. Press Enter again and type **Machine2**. Finally, press Enter one more time. Backspace two spaces to position the cursor under the G in Gobble Up, and type

```
Total Gobble Up
```

as the last heading, ending the group.

Your screen should look like this:



Grouping Column Headings

You create groups in the column headings by stacking headings on top of each other — again with the group members under the group name. You might want to group the months of the year by quarters, for example, like this:

---------- Qtr 1----------		
Jan	Feb	Mar

Or, you might want to group headings within each month, like this:

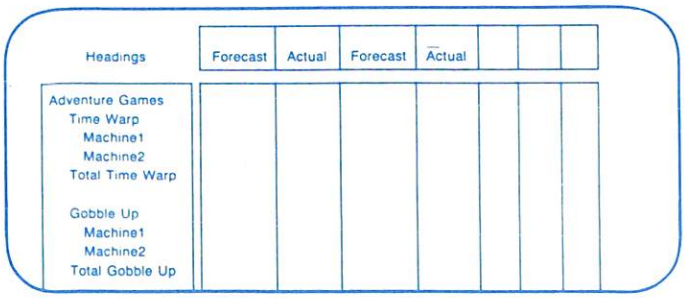
--------- Jan ----------		---------- Feb ---------	
Forecast	Actual	Forecast	Actual

By using PF7 (Insert Row/Col) to create up to two additional rows in the column headings region, you can make room for a total of three levels of column headings.

To create a column group heading, first insert a blank row for the heading, and then type a few dashes in the first column that you want included in the group (the dashes signal Planning Assistant that you are doing a column grouping). Next, type your group heading. Finally, type enough dashes to move the cursor into the last column that you want included in the group. Press Tab, and Planning Assistant centers the group heading over the group members. (You can have a maximum of 25 columns under a column group heading.)

For example, let's create some column groupings in the SALES85 spreadsheet. Move the cursor to the first column of the column headings region and type **Forecast**. Press Tab, and type **Actual**. Now, press Tab again and type **Forecast** again. Press Tab and type **Actual** one more time.

Next, press PF7 (Insert Row/Col), and type **R** to create a new row in which to create the column groups. The cursor is now positioned in this new row, at the beginning of the same column:



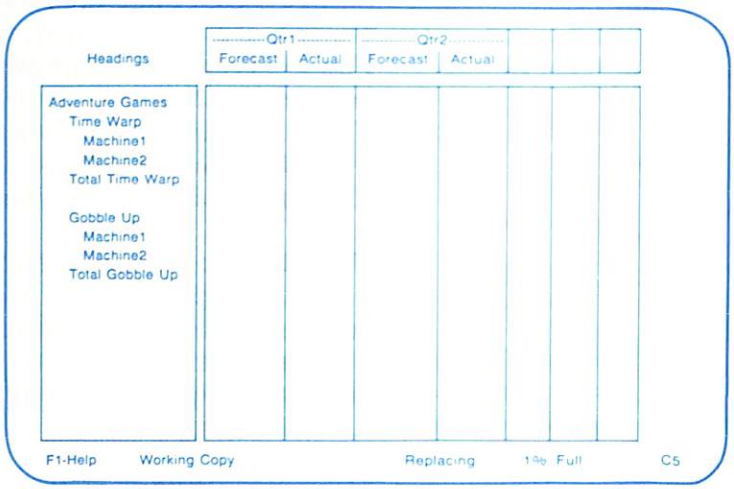
Move the cursor to the beginning of the row by pressing Home. Now type the following characters just as they appear here:

```
-Qtr1-----
```

(one dash, Qtr1, and five dashes). Press Tab, and your heading is centered over the first group of Forecast and Actual headings. Now type

```
---Qtr2---
```

(three dashes, Qtr2, and three dashes) and press Tab again. Your screen should look like this:



As you can see, any number of dashes can be used at the beginning of the group name.

Editing Column Groups

You may sometime want to extend a group heading to add the column at the right edge of the group. To do this, first move the cursor into the group heading, a few spaces to the left of the column to be added. Then, type enough dashes to cross the vertical line dividing the column group from the new column and press Tab. Planning Assistant adjusts the group heading to include the new column. (To include the column at the left edge of the group, you must recreate the group heading, beginning the heading over the column to be included.)

To shorten a group heading by deleting the column at either edge from the group (but not from the spreadsheet), move the cursor into that portion of the group heading over the column to be deleted. Remove the dashes over the column and press Tab. Planning Assistant adjusts the group heading to exclude the column.

If you insert or delete columns inside a group, Planning Assistant automatically re-centers the group heading.

Using Keywords with Groups

Now that you know how groups are created, let's take a look at specific ways in which groups are used with keywords. The following chart shows the different ways in which the keywords @Total, @Avg, @Min and @Max can be used:

Keyword	What It Can Do
@Total	Total groups of rows or columns Total rows or columns with same heading (in different groups) Total all rows or columns
@Avg	Average groups of rows or columns Average rows or columns with same heading (in different groups) Average all rows or columns
@Min	Find smallest value in group of rows or columns Find smallest value in rows or columns with same heading (in different groups) Find smallest value in all rows or columns
@Max	Find largest value in group of rows or columns Find largest value in rows or columns with same heading (in different groups) Find largest value in all rows or columns

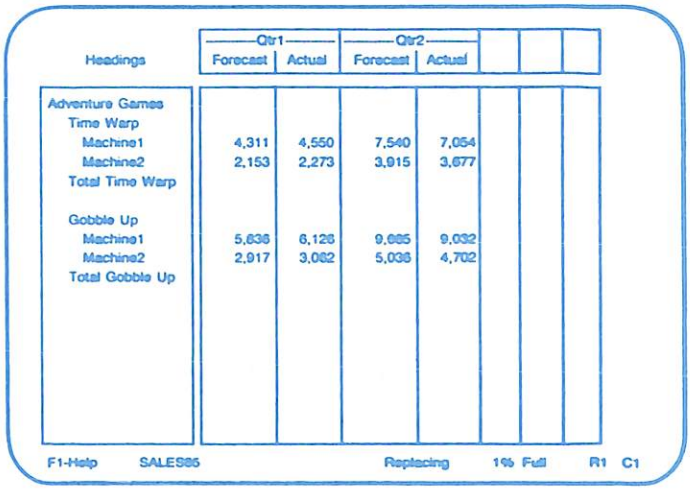
You can see from this chart how important groups are to these four keywords. Each of them may be used by itself in a group, or they may be combined with one another in a group. Combining them in a group is possible because each of the keywords knows to exclude other keyword calculations (except @Prev, @Grow, and @Payment) from its own calculation. The following sections explain how to use @Total, @Avg, @Min, and @Max in each situation listed in the above chart.

@Total, @Avg, @Min, and @Max with Groups of Rows

To use @Total, @Avg, @Min, and @Max with a group of rows, type the keyword in the formula region (press PF9) to the left of the row where you want the keyword values to appear. (Use any heading you choose in the headings region to the right of the keyword formula.) Type the group heading immediately after the keyword, and press Enter. The keyword values appear in the spreadsheet.

For example, let's use @Total with the groups in the SALES85 spreadsheet. But first, you need some values. Use the Get function to retrieve a copy of the SALES85 spreadsheet from the Planning Assistant program diskette. As you retrieve the spreadsheet, Planning Assistant displays a message saying that your latest changes have not been saved. Disregard this message and press Enter to complete the operation.

This copy of SALES85 contains values and looks like this:



Headings	Qtr1 Forecast	Qtr1 Actual	Qtr2 Forecast	Qtr2 Actual			
Adventure Games							
Time Warp							
Machine1	4,311	4,550	7,540	7,054			
Machine2	2,153	2,273	3,915	3,677			
Total Time Warp							
Gobble Up							
Machine1	5,636	6,126	9,685	9,032			
Machine2	2,917	3,082	5,036	4,702			
Total Gobble Up							

F1-Help SALES85 Replacing 1% Full R1 C1

To total the groups of rows in this spreadsheet, first press PF9, the Formula key. Then, move the cursor into the formula region to the left of the Total Time Warp row, type

```
@Total Time Warp
```

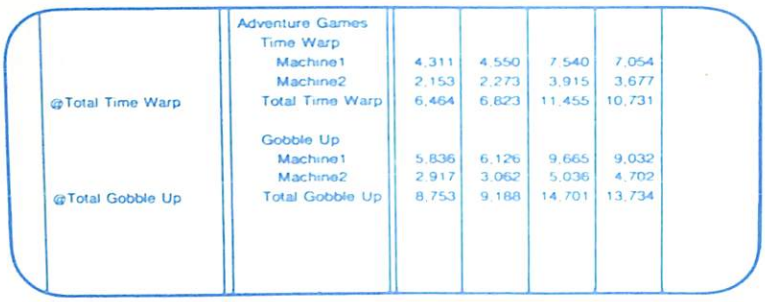
and press Enter. The numbers that appear in the Total Time Warp row are a total of the Time Warp Machine1 and Time Warp Machine2 rows.

Now move to the formula region to the left of the Total Gobble Up row. Type

```
@Total Gobble Up
```

and press Enter again.

The totals for the Gobble Up group appear on the screen:



	Adventure Games				
	Time Warp				
	Machine1	4,311	4,550	7,540	7,054
	Machine2	2,153	2,273	3,915	3,677
@Total Time Warp	Total Time Warp	6,464	6,823	11,455	10,731
	Gobble Up				
	Machine1	5,836	6,126	9,665	9,032
	Machine2	2,917	3,062	5,036	4,702
@Total Gobble Up	Total Gobble Up	8,753	9,188	14,701	13,734

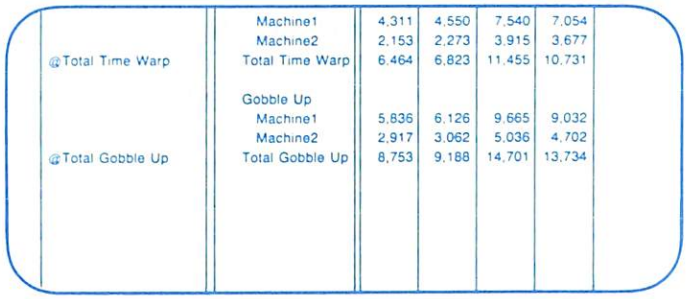
@Total, @Avg, @Min, and @Max and Rows with Same Heading

To have @Total, @Avg, @Min, and @Max perform a calculation on all rows that share the same heading, even though they are in different groups in the spreadsheet, type the keyword in the formula region to the left of the row where you want the keyword values to appear. Type the row heading to which the keyword refers immediately after the keyword.

The heading used with this keyword formula should begin at the left margin of the row headings region, since rows with the same heading but in different groups can be at a variety of indentations in the spreadsheet (see the *Why Indentation is Important in Row Groups* section that follows).

For example, using the SALES85 spreadsheet again, let's have Planning Assistant total the sales income from all games developed for Machine1 and Machine2 and from all Adventure Games.

First, move the cursor to the second blank row below the Total Gobble Up heading (make sure it's at the left margin of the row headings region):



	Machine1	4,311	4,550	7,540	7,054
	Machine2	2,153	2,273	3,915	3,677
@Total Time Warp	Total Time Warp	6,464	6,823	11,455	10,731
	Gobble Up				
	Machine1	5,836	6,126	9,665	9,032
	Machine2	2,917	3,062	5,036	4,702
@Total Gobble Up	Total Gobble Up	8,753	9,188	14,701	13,734

Type the following headings in the next two rows

```
Total Machine1
Total Machine2
```

and press Enter. This time type

```
Total Adventure Games
```

as the final row heading in the spreadsheet.

Now press Shift-Tab to move into the formulas region and move the cursor to the row whose heading is Total Machine1. Type

```
@Total Machine1
```

and press Enter. The totals that appear in this row are the sum of the Time Warp Machine1 values and the Gobble Up Machine1 values.

In the formula region for the Total Machine2 row, type

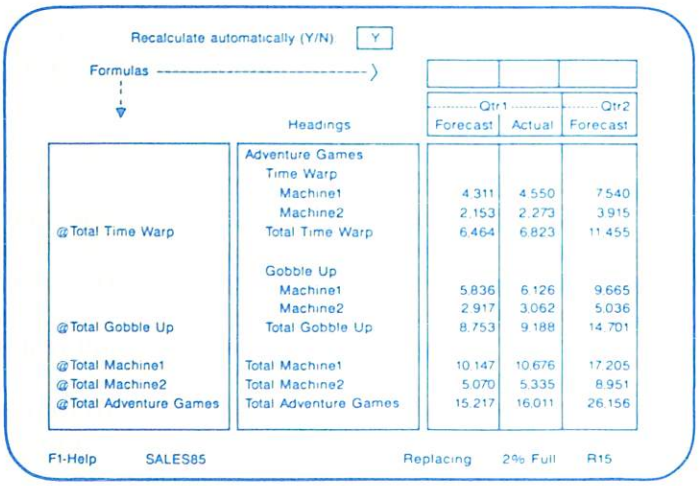
```
@Total Machine2
```

and press Enter to have Planning Assistant calculate the total sales for Machine2.

Finally, let's total the sales for all Adventure Games. Type

```
@Total Adventure Games
```

and press Enter one more time. @Total calculates the total sales from all Adventure Games, without including any of the other total rows within the group, and places these totals in the spreadsheet. (@Total, @Avg, @Min, and @Max always exclude other rows and columns containing keyword formulas, including themselves, from their calculations.) Your screen should now look like this:



Why Indentation is Important in Row Groups

The indentation of row headings begins from the left margin of the row headings region. Your major groups are at the left margin of the spreadsheet with sub-groups indented under them. (It works like an outline for a report or a speech.)

By creating groups, you limit the spreadsheet area in which a keyword (or any formula) works. A keyword or formula for a row heading positioned at the left margin of the spreadsheet has no limits. It works on the entire spreadsheet. This is why you placed the

Total Machine1 and Total Machine2 row headings at the left margin of the spreadsheet in the example for the previous section. By being at the left margin, these headings included every indentation level in the spreadsheet, and their keyword formulas could find all matching headings at any level in the spreadsheet.

When you use a formula with a row that has an indented heading (that is, a member of a group), that formula looks within its own group for any heading to which it refers. When you used @Total Time Warp next to the row heading Total Time Warp in the example for the *@Total, @Avg, @Min, and @Max with Groups of Rows* section, it looked within its group for the heading Time Warp. Let's look at it again:

	Adventure Games			
	Time Warp			
	Machine1	4,311	4,550	7,540
	Machine2	2,153	2,273	3,915
@Total Time Warp	Total Time Warp	6,464	6,823	11,455
	Gobble Up			
	Machine1	5,836	6,126	9,665
	Machine2	2,917	3,062	5,036
@Total Gobble Up	Total Gobble Up	8,753	9,188	14,701
@Total Machine1	Total Machine1	10,147	10,676	17,205
@Total Machine2	Total Machine2	5,070	5,335	8,951
@Total Adventure Games	Total Adventure Games	15,217	16,011	26,156

1. The Total Time Warp heading is indented at the same level as the headings Time Warp, Gobble Up, and Total Gobble Up. They are all members of the Adventure Games group.

2. The keyword formula @Total Time Warp looks at the same level of indentation as the Total Time Warp heading for a heading called Time Warp.

3. Finding Time Warp a group heading, Planning Assistant totals the members of the group in its calculation.

If a keyword or formula can't find a heading within its own group, it looks in the next closest group to the left. If it can't find the heading there, it continues to move out through the spreadsheet until it eventually finds a

matching heading. If no heading is found, perhaps because of a typing error, an error message is displayed.

Distinguishing Rows and Columns with the Same Heading

When a heading has been used in several rows or columns in a spreadsheet, it is important to tell Planning Assistant how to distinguish between the rows or columns when you want to refer to *one* of them in a formula *outside* of its group. To specify one of several identical headings, combine the heading with its group name. For instance, to use the values from the Machine1 row for the Time Warp group in a calculation outside of that group, type the name as Time Warp Machine1.

@Total, @Avg, @Min, and @Max with Groups of Columns

You can use @Total, @Avg, @Min, and @Max with a group of columns in your spreadsheet by combining the keyword with the group name in the formula region of a column, like this example using @Max:

Formulas ---------->				@Max Qtr1		
		Qtr1		Maximum	Qtr2	
Headings		Jan	Feb	Mar	Sales	Apr	May
	Sales						
	Product 1	100	50	58	100	75	79
	Product 2	25	19	22	25	31	29
	Product 3	45	40	52	52	55	55
@Total Sales	Total Sales	170	109	132	170	161	163

In this example, Planning Assistant looks at the values in Jan, Feb, and Mar, which are grouped under the heading Qtr1, and places the largest sales value for each product for the three-month period in the Maximum Sales column.

@Total, @Avg, @Min, and @Max and Columns with Same Heading

@Total, @Avg, @Min, and @Max can also perform calculations on all columns that share the same heading, though they are in different groups in the spreadsheet. Type a formula for a column that combines the keyword and the heading from the columns you want to use with the keyword.

For example, let's total all the forecast columns and then all the actual columns in the SALES85 spreadsheet. Move the cursor to the column headings region (after pressing PF9 to remove the formulas regions from the screen) and type the headings

```
Total          Total
Forecast       Actual
```

as column headings, each in its own column, like this:

Headings	Qtr1 Forecast	Qtr1 Actual	Qtr2 Forecast	Qtr2 Actual	Total Forecast	Total Actual
Adventure Games						
Time Warp						
Machine1	4,311	4,550	7,540	7,054		
Machine2	2,153	2,273	3,915	3,677		
Total Time Warp	6,464	6,823	11,455	10,731		
Gobble Up						
Machine1	5,836	6,126	9,665	9,032		
Machine2	2,917	3,062	5,036	4,702		
Total Gobble Up	8,753	9,188	14,701	13,734		

Now move the cursor into the formula region above the Total Forecast column (after pressing PF9 to restore the formulas regions to view) and type

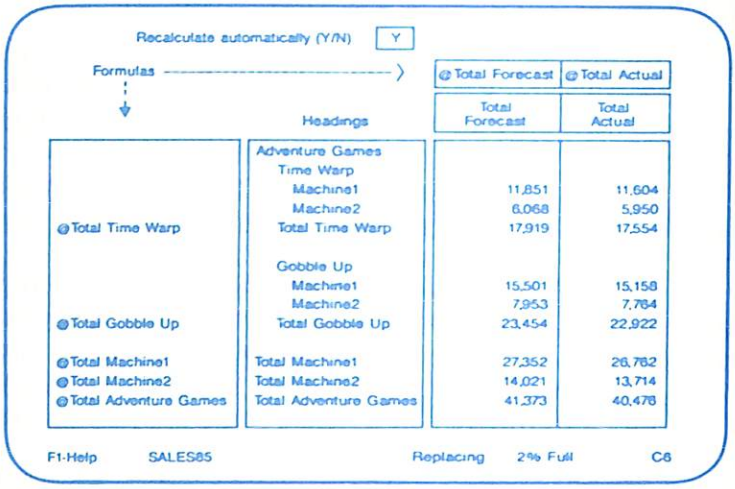
```
@Total Forecast
```

as the formula. Finally, move into the formula region above the Total Actual column, type

```
@Total Actual
```

and press Enter.

Your totals should look like this:



Suppose you added third and fourth quarter Forecast and Actual columns to the right of the Total Actual and Total Forecast columns. @Total Actual and @Total Forecast would then give you the totals for all four quarters, even though the third and fourth quarter information appears to the right of the totals columns.

@Total, @Avg, @Min, and @Max with all Rows or Columns

To use @Total, @Avg, @Min, and @Max to perform calculations on all the rows or all the columns in the spreadsheet, follow these guidelines:

- For rows, position the heading for the row in which the keyword is used at the left margin (not part of a group).
- For columns, make sure the heading for the column in which the keyword is used is not part of a column group.

- Use the selected keyword alone in the row or column formulas region (that is, do not combine the keyword with any heading).

Using @Cum, @Grow, @Prev, and @Start

The keywords @Cum and @Grow work on an individual row or column. @Prev refers to a previous single value in the spreadsheet, and @Start is used only to support @Cum, @Grow and @Prev. (@Start can also be used with the financial keyword @FV, explained in Chapter 7.) The following sections give specific instructions on using these keywords and show how they might be used in a spreadsheet.

@Cum

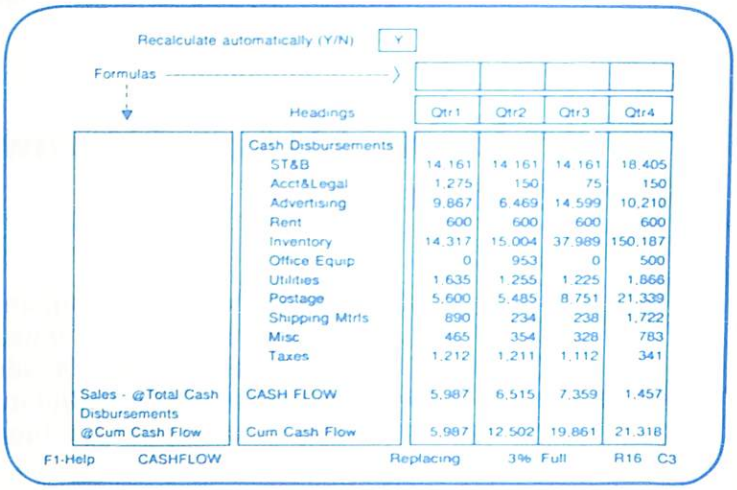
Use @Cum to calculate cumulative totals of values in a row or column. To use @Cum, type

@Cum "row or column heading"

as the formula for another row or column.

Suppose you were to calculate the cumulative cash flow in a spreadsheet like the Cashflow spreadsheet used in Chapters 4 and 5.

It would look like this:



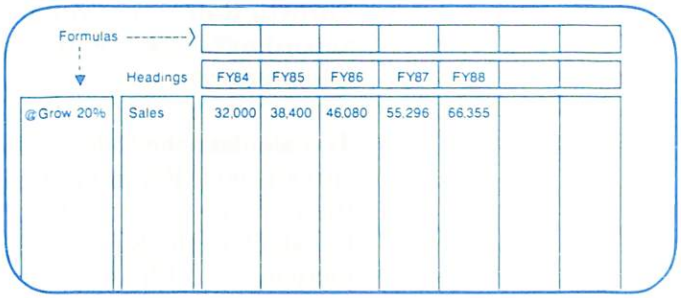
When @Cum calculates the cumulative value for the first quarter, it automatically adds zero to the first quarter cash flow value. When it calculates the second quarter cumulative value, @Cum takes the first quarter cumulative value and adds it to the second quarter cash flow value, and so on.

@Grow

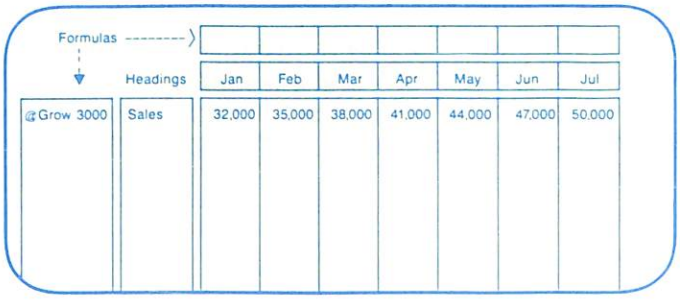
You use the keyword @Grow to have Planning Assistant automatically enter values in a row or column where each successive value is a certain amount greater (or less) than the one before it.

Suppose, for example, you want to see what it would look like if sales grew at a rate of 20% a year. Type @Grow 20% as the formula for the Sales row (be sure to include the percent sign), and type the first value in that row. Planning Assistant does the rest.

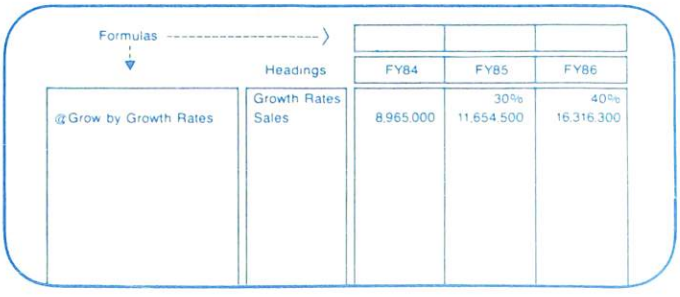
It might look like this:



You can also have Planning Assistant simply add a set amount to each value in a row or column. For instance, you might type @Grow 3000 in the formula region for a row and then type the first value in that row. Planning Assistant automatically fills in the rest of the values, adding 3000 to each successive value. It might look like this:



Growing by a Row of Growth Rates. You can vary the growth rate used with @Grow (that is, have Sales grow by 30% one year, 40% the next year, etc.) by setting up your spreadsheet like this:



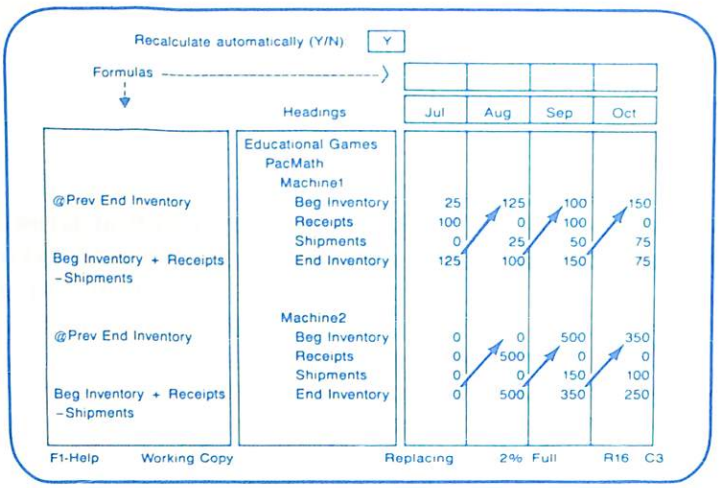
Using the preposition "by" with @Grow is optional. Also, note that in order to display percent signs in the Growth Rates row, you must format the row accordingly. (See *Formatting the Spreadsheet* in Chapter 5.)

To calculate the Sales values for a particular year in this spreadsheet, Planning Assistant increases the sales for the previous year by the growth rate specified (that is, to calculate the Sales for FY85, Planning Assistant increases the FY84 sales value by 30%).

@Prev

@Prev is a keyword that is ordinarily used in row formulas. It does not perform a calculation on another row or rows, but looks backward in the spreadsheet to find an existing value that is needed for a current calculation.

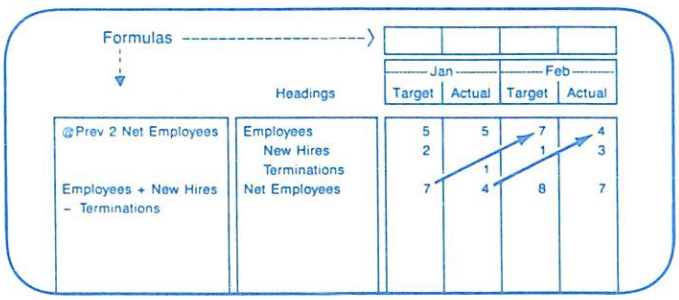
For instance, look at the following spreadsheet used to track inventory:



All inventory information for July is typed in, and then, as the arrows indicate, the keyword phrase @Prev End Inventory looks backward to find the ending inventory

for July and uses it as the beginning inventory for August.

If the value that @Prev is looking for is more than one column back in the spreadsheet, specify how many columns @Prev has to go back to find the value needed. For instance, look at the following spreadsheet used to track staffing:



In this spreadsheet, the figures for Employees in Jan (Target and Actual) are typed in, and then, as the arrows indicate, the formula @Prev 2 Net Employees tells Planning Assistant to look back two columns and use the Net Employees Target and Actual figures for Jan as the Employees Target and Actual values for Feb, and so on.

@Start

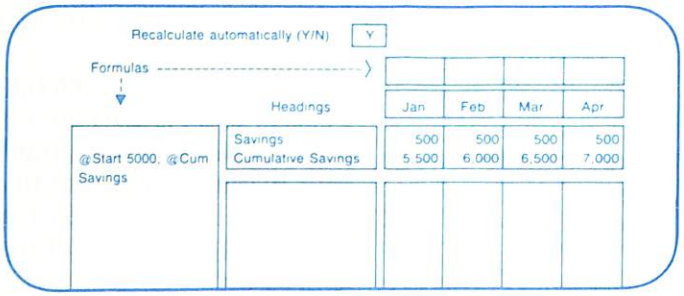
The keyword @Start lets you create from one to five start values for the keywords @Cum, @Prev, and @Grow. Start values are historical values that are not included in the current spreadsheet, but are important to calculations in the current spreadsheet. For instance, if you have a Savings row in your budget for the current year, you might use @Start to add into the budget the balance in savings at the end of last year.

To use @Start, type

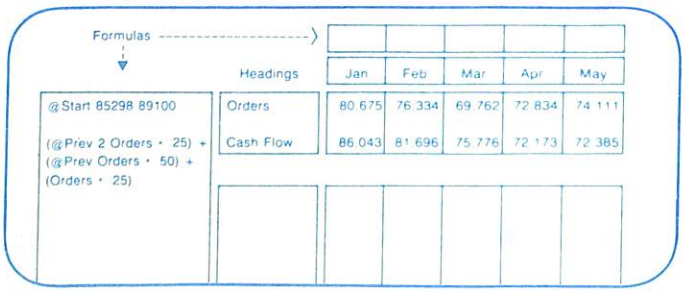
@Start "n"; "keyword formula"

in the formula region for a row or column. Up to five values or variable names (see Chapter 7) can be used for "n." If you are using several start values (perhaps you want @Prev to look back for more than one value), use a space to separate the values from each other (for example, @Start 5 5 5). Use a semi-colon to separate @Start and its start values from the keyword it is used with or from other formulas in the region. (Two keywords or formulas used for the same row or column must always be separated by a semi- colon.)

Using @Start with @Cum. Suppose you want to calculate cumulative totals of the amount you save each month, and you want to include in your totals the amount in savings at the end of last year. Your spreadsheet might look like this:



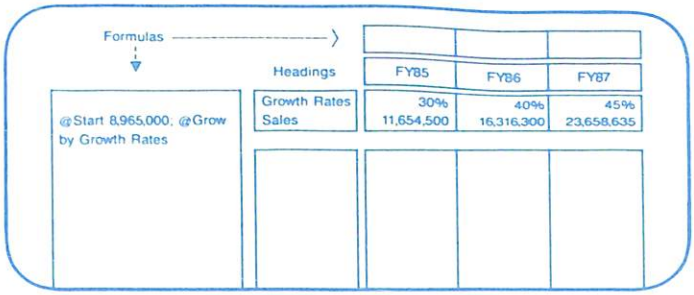
Using @Start with @Prev. Suppose that the total revenue received by a company in a month from product sales is divided as follows: 25% of the revenue is from sales orders made two months ago, 50% of the revenue is from orders made last month, and 25% of the revenue is from orders made during the current month. Now look at the following spreadsheet:



The start values in this spreadsheet are the historical value for Orders. They provide Planning Assistant with two Orders values, one for November (85298) and one for December (89100) of the previous year. The formula for Cash Flow tells Planning Assistant to add 25% of 85298, 50% of 89100, and 25% of 80675 and place the result in Jan Cash Flow, and so on.

Notice that in this example @Start is not used on the same row as @Prev, because @Prev is looking in the Orders row for its values.

Using @Start with @Grow. Look at the following spreadsheet, which is similar to the spreadsheet used in the *Growing by a Row of Growth Rates* section earlier in this chapter:



In this spreadsheet, Planning Assistant again calculates the Sales values for a given year by increasing the sales for the previous year by the growth rate specified. This time, however, @Start provides the Sales value for FY84, and to calculate the Sales for FY85, Planning Assistant increases the FY84 sales value by 30%.

More about Formulas

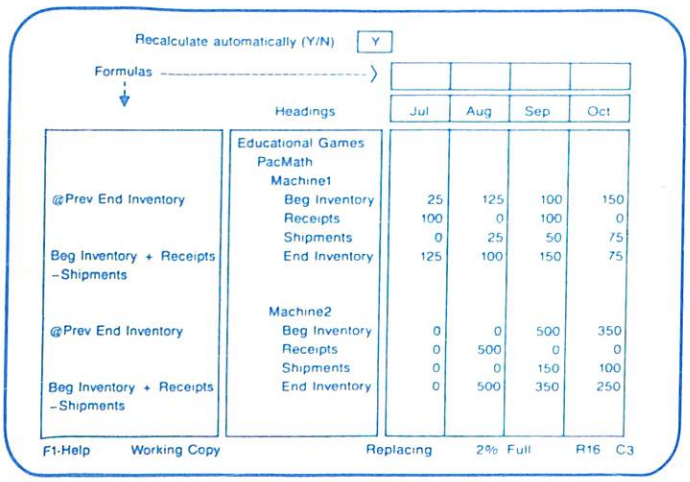
Usually, a Planning Assistant formula performs its calculations on every value in the specified row or column (for example, all the spreadsheet examples used thus far in this book). Most of the time, you want

Planning Assistant to calculate the entire row or column. But other times, one formula might not be appropriate for all the values in a row or column. Planning Assistant allows you to create multiple formulas for a row or column, separated by semi-colons, each controlling only specified values in the row or column. You can even refer to just one value (or cell) in a row or column.

Formulas Referring to Only Specified Values (using "for" and "except")

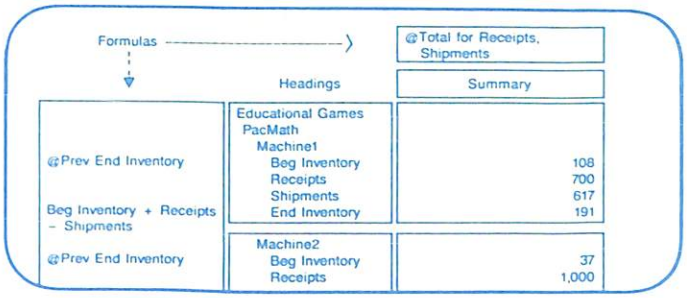
To create a formula that refers to only specified values in a row or column, type the word "for" (or "except") at the end of the formula (without quotation marks) followed by a list of the row or column headings for those values that Planning Assistant is to use in (or exclude from) the calculation.

For instance, let's look at the inventory spreadsheet used in the *@Prev* section again:

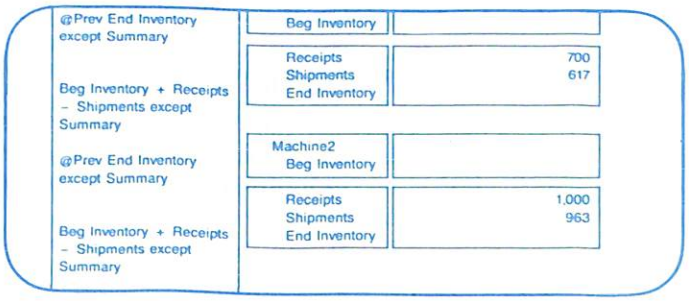


In this spreadsheet, you might want to see a total of the receipts and shipments for the six-month period, but exclude totals for the beginning and ending inventory rows, since such totals would be meaningless. To total

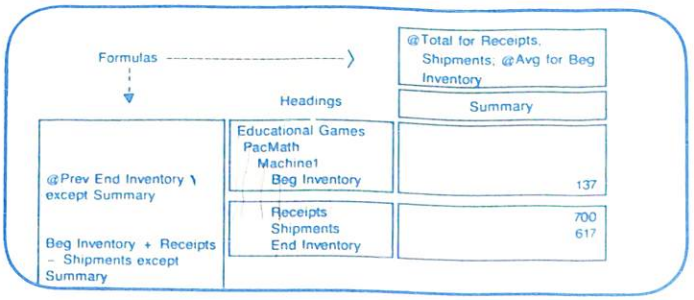
the receipts and shipments, you would create a column formula with a "for" phrase, like this:



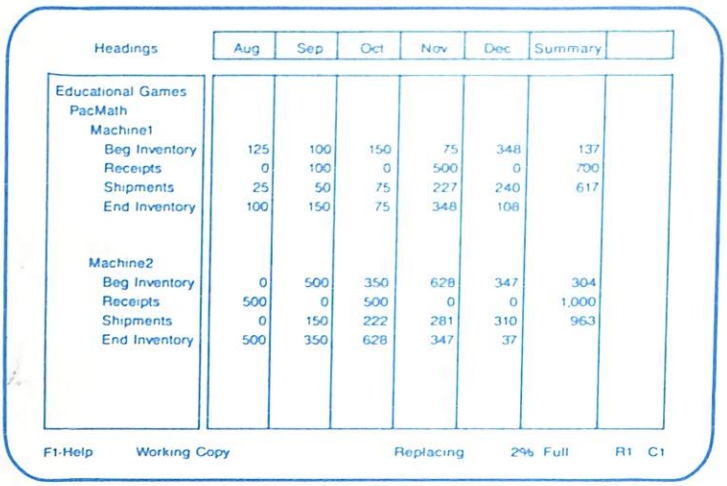
Then, you would use an "except" phrase in the Beg Inventory and End Inventory rows to eliminate the Summary column from their calculations, like this:



You could also add another formula to do a different calculation on other spreadsheet rows. For instance, maybe you want to see an average beginning inventory figure. The formula would look like this (notice the semi-colon separating the two formulas):



After all the above changes, the inventory spreadsheet would look like this:



Headings	Aug	Sep	Oct	Nov	Dec	Summary
Educational Games						
PacMath						
Machine1						
Beg Inventory	125	100	150	75	348	137
Receipts	0	100	0	500	0	700
Shipments	25	50	75	227	240	617
End Inventory	100	150	75	348	108	
Machine2						
Beg Inventory	0	500	350	628	347	304
Receipts	500	0	500	0	0	1,000
Shipments	0	150	222	281	310	963
End Inventory	500	350	628	347	37	

F1-Help Working Copy Replacing 2% Full R1 C1

The "for" or "except" phrase can refer to a single row or column heading, to a group heading, to several row or column headings (separated by commas), or to a single heading that refers to several different rows or columns in the spreadsheet.

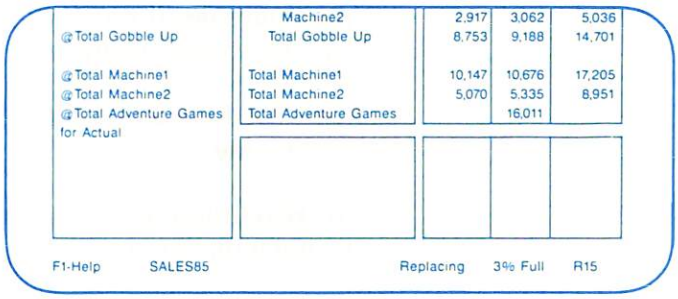
When using "for" or "except" phrases, follow these guidelines:

- Use only one "for" *or* one "except" phrase in a single formula.
- Make sure that "for" or "except" phrases in multiple formulas in the same row or column do not refer to the same values.
- In a row formula, only refer to column headings in a "for" or "except" phrase; in a column formula, only refer to row headings.

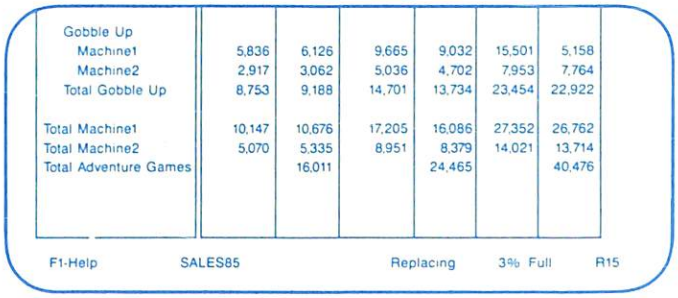
For example, suppose in the SALES85 spreadsheet you want to see only the actual values in the Total Adventure Games row. Press PF9 and move the cursor into the formula region to the left of this row. Type the phrase

for Actual

after the phrase @Total Adventure Games, which is already there, and press Enter. Your formula would now look like this:



Now press F9. Your screen should look like this:



Now save the completed SALES85 spreadsheet to the diskette on which you saved the income statement in Chapter 4.

Formulas Referring to One Value (using "in")

Formulas can also refer to just one value location (or cell) in a spreadsheet. To do this, type the heading for the row (or column) that the value is in, then the word "in," and finally the heading for the column (or row) the value is in (which heading you use first is not important). For instance, the phrase "Sales in January" in a spreadsheet where Sales is a row heading refers to the Sales value in the January column.

	January	February	March
Sales	34,987	29,006	33,789

Suppose, for instance, you want to see what percentage the sales for the different games and machines are of the total sales for all the Adventure Games. You could use the column formula

> Total Actual / Total Actual in Total Adventure Games

to create these percentages in your spreadsheet. It would look like this:

Headings	Qtr2 Actual	Qtr2 Forecast	Qtr2 Actual	Total Forecast	Total Actual	% of Total
Adventure Games						
Time Warp						
Machine1	4,550	7,540	7,054	11,851	11,064	29%
Machine2	2,273	3,915	3,677	6,068	5,950	15%
Total Time Warp	6,823	11,455	10,731	17,919	17,554	43%
Gobble Up						
Machine1	6,126	9,665	9,032	15,501	15,158	37%
Machine2	3,062	5,036	4,702	7,953	7,764	19%
Total Gobble Up	9,188	14,701	13,734	23,454	22,922	57%
Total Machine1	10,676	17,205	16,086	27,352	26,762	66%
Total Machine2	5,335	8,951	8,379	14,021	13,714	34%
Total Adventure Games	16,011		24,465		40,476	100%

F1-Help SALES85 Replacing 3% Full R16 C3

The formula for the % of Total column causes each value in the Total Actual column to be divided by the Total Actual value in the Total Adventure Games row. Using a percent format for the column causes the values to be displayed as percentages (see *Formatting the Spreadsheet* in Chapter 5).

Summary

- Grouping headings in a spreadsheet:

  — Enables keywords to work on a portion of a spreadsheet
  — Allows you to use the same heading more than once in a spreadsheet
  — Organizes the spreadsheet visually

- Keywords are special words that instruct Planning Assistant to automatically perform certain commonly-used calculations.

- Keywords discussed in this chapter are @Total, @Avg, @Min, @Max, @Cum, @Grow, @Prev, and @Start.

- Formulas may refer to only specified values in a row or column (by using the words "for" or "except"), or to only one value in a row or column (by using the word "in").

Chapter 7. Using Planning Assistant to Decide "What if?"

This chapter discusses those features of Planning Assistant that are particularly useful in making business decisions. It includes Planning Assistant's financial keywords and assumes that you know how to use the financial functions associated with these keywords. It also includes Variables and the Target function.

The Financial Keywords

Planning Assistant's financial keywords allow you to calculate future value (@FV), net present value (@NPV), and loan payments (@Payment). (You can also calculate internal rate of return by combining @NPV with the Target function.) These keywords, like other Planning Assistant keywords, are typed in the formulas regions (PF9).

@FV (Future Value)

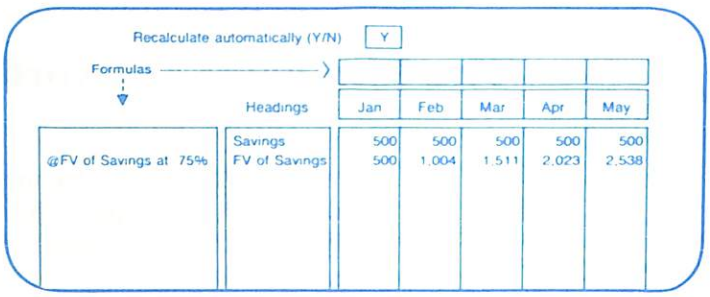
@FV calculates the future value of money invested today (or over a period of time), given a compound interest rate. @FV (future value) performs its calculation on a designated row or column, and it fills in values in an entire row or column.

To calculate Future Value, type

@FV of "row or column heading" **at** "i" %

as the formula for another row or column (typing those characters shown in bold exactly as they appear here). Make sure the interest rate you use for i is a per period rate; for example, enter a value of .75% (that is, 9%/12) for i if the annual rate is 9% but Future Value is calculated for 12 monthly periods (as in the example below). Also, you may enter a row or column of varying interest rates or make "i" a variable (see the *Using Variables* section later in this chapter).

Suppose, for example, you want to see the total value of your savings at the end of a year in which you make deposits of $500 each month, including accrued interest. It might look like this:



Note: Planning Assistant calculates Future Value period-by-period. To the cash flow in a particular period (CF_n) it adds the sum of the Future Value in the preceding period (FV_{n-1}) and the interest it would accrue over one period ($FV_{n-1} * i$), following the formula:

$$FV_n = (FV_{n-1})*(1 + i) + CF_n, \text{ where}$$

FV_n = Future Value at row or column n
CF_n = Cash Flow at row or column n
n = row or column number
i = interest rate per period

@NPV (Net Present Value)

The keyword @NPV calculates the present value of future cash inflows and outflows from a project or investment, less the initial cash outlay, at a given discount rate. @NPV performs its calculation on a designated row or column. It places the @NPV value in the first position of the @NPV row or column that is included in the calculation.

To calculate Net Present Value, type

@NPV of "row or column heading" **at** "i" %

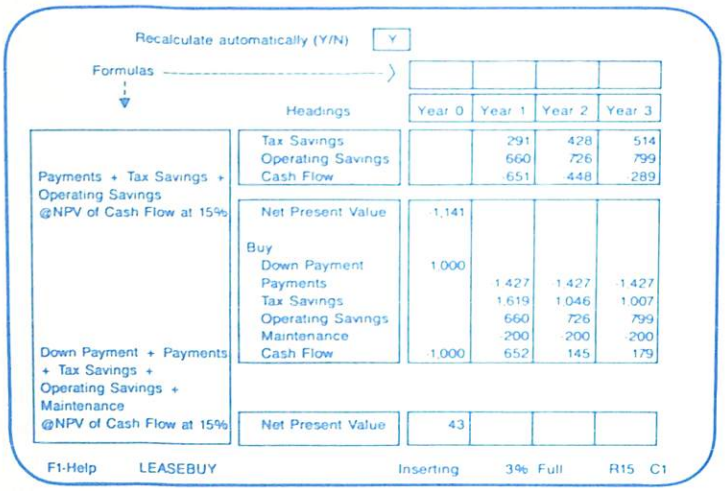
as the formula for another row or column (again typing those characters shown in bold exactly as they appear here). Enter the discount or interest rate (i) as a per period rate; that is, if the time period involved in the net present value calculation is 12 months and the annual simple interest rate is 12%, i should be 1. As with @FV, the "i" may also be a row or column of varying interest rates or a variable (see the *Using Variables* section later in this chapter).

Here is an example of how you might use @NPV to decide whether to lease or buy a copier for your office:

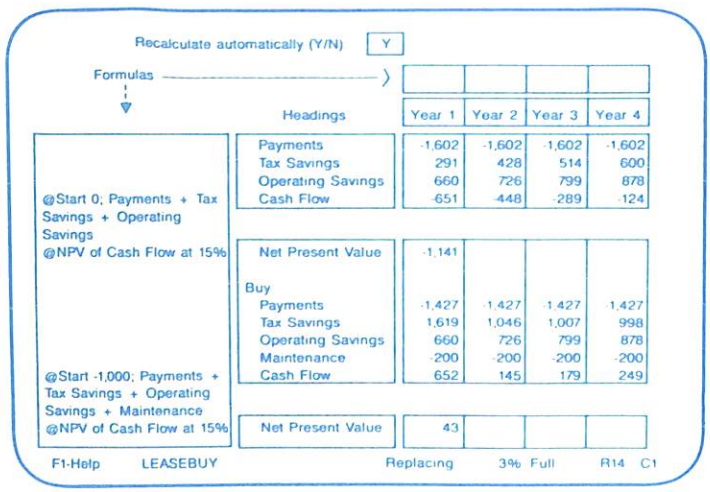
Headings	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	
Lease							
Payments		-1,602	-1,602	-1,602	-1,602	-1,602	
Tax Savings		291	428	514	600	685	
Operating Savings		660	726	799	878	966	
Cash Flow		-651	-448	-289	-124	49	
Net Present Value	-1,141						
Buy							
Down Payment	-1,000						
Payments		-1,427	-1,427	-1,427	-1,427	-1,427	
Tax Savings		1,619	1,046	1,007	998	874	
Operating Savings		660	726	799	878	966	
Maintenance		-200	-200	-200	-200	-200	
Cash Flow	-1,000	652	145	179	249	213	
Net Present Value	43						

F1-Help LEASEBUY Replacing 3% Full R1 C1

This spreadsheet uses a Year 0 column to provide the initial cash outlays for the net present value calculations (leaving the column blank indicates no initial cash outlay for the Lease calculation). The formulas for both net present value rows look like this:



You can also use @Start to provide the initial cash outlay for net present value calculations. In the lease-versus-buy example, it would look like this:



Note: The present quantity *P* which in *n* periods will accumulate to some amount, say the cash flow

at period *n* (CF_n) at the rate of interest *i* per period, compounded each period, is:

$P = CF_n/(1 + i)^n$

Net Present Value is the sum of the present values of the future cash flows (positive or negative), including any initial cash outlay.

The formula which Planning Assistant follows for the calculation of Net Present Value (NPV) is:

$NPV = CF_0 + CF_1/(1+i) + CF_2/(1+i)^2 + \ldots + CF_x/(1+i)^x$, where

CF_n = Cash Flow at row or column n (n = row or column number)
i = interest rate per period
x = last row or column in spreadsheet

@Payment

The keyword @Payment is made up of three elements — loan amount, length of time involved (in number of periods), and interest rate (per period).

@Payment calculates a single value — the per period payment amount for the loan — and usually fills in the entire row or column with this number. If the number of periods specified in the @Payment formula is less than the number of rows or columns available in the spreadsheet, however, @Payment places as many values in the spreadsheet as there are number of periods specified in the formula.

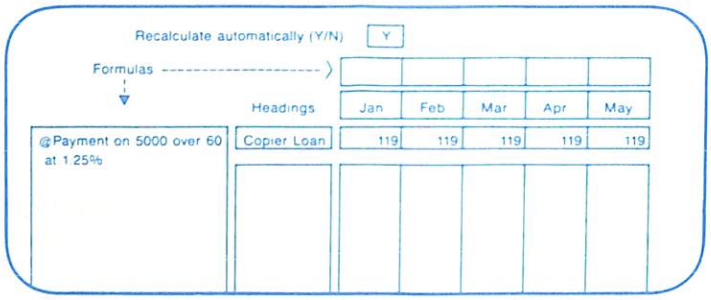
To calculate a payment, type

@Payment on "amount" **over** "n periods" **at** "i" %

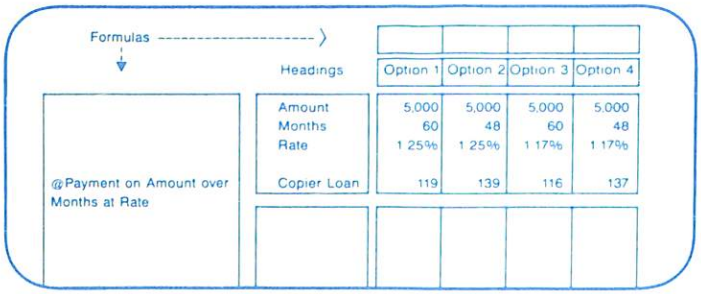
as the formula for a row or column (typing those characters shown in bold exactly as they appear here). The "amount" is the total amount of the loan. The "n

periods" is the total number of periods in the life of the loan (for example, for a 30-year loan with monthly payments, this number is 360), and "i" is the annual interest rate for the loan divided into a per period rate (for example, a 15% annual rate for a loan with monthly payments is entered as 1.25%).

Suppose, for example, you want to use @Payment to calculate the monthly payment on a loan of $5000 for 5 years at an annual rate of 15%. It would look like this:



The three elements - "amount," "n periods," and "i" - can be entered into the keyword formula as values, variables (see the *Using Variables* section later in this chapter), or row or column headings (referring to rows or columns of varying loan amounts, time periods, and interest rates). You could also set up your spreadsheet like this, and see what the payments for different amounts, numbers of periods, and interest rate combinations would be:



Note: If each payment *P* were deposited each period for *n* periods at the rate of interest *i* per

period, compounded each period, the accumulated deposits would equal the sum which would result if the loan amount had been deposited to accumulate interest for the same *n* periods at the same rate of interest *i*. That is,

$$P*((1+i)^{n-1})/i = L*(1+i)^n$$

or restated, it is the formula Planning Assistant follows:

$$P = (L*i)/(1 - (1/(1+i)^n)), \text{ where}$$

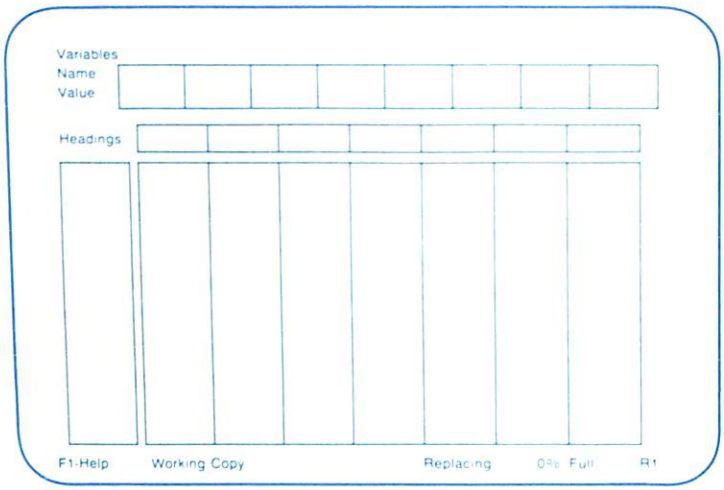
P = Payment
L = Loan amount
i = interest rate per period
n = number of periods

Using Variables and the Target Function

The Variable and Target function keys allow you to easily create and evaluate different plans. Variables and Target are like opposite sides of the same coin. With Variables you can create different sets of circumstances in order to see what the end result will be. With Target, you can say what you want the end result to be, and then find the circumstance that allows you to get to this end result.

Using Variables

The variables region appears at the top of the screen when you press Shift-PF9, the Variables key:



You move the cursor into the variables region from the spreadsheet using the up-arrow key. A variable is created by typing a name in the name section, avoiding names that have been used as row or column headings, and then typing a value in the value section directly below the name. Use Enter to move from each variable name to its value. Planning Assistant allows you to create up to 20 variables with names of up to 25 characters each (including spaces) per spreadsheet.

Once you create a variable, you can use its name in any formula. Whenever Planning Assistant sees the variable name, it uses the associated value in whatever calculation it is performing. If you change the value associated with the variable name, Planning Assistant recalculates the spreadsheet based on the change (as long as Recalculate Automatically is set to Y). If you want to see the variables with your formulas, press Shift-PF9 when the formulas are on the screen (or press PF9 when the variables are on the screen).

For example, suppose you want to compare the payments for a new copier to the amounts you are

currently spending for office equipment. Get the spreadsheet named EXPENSES from your Planning Assistant diskette. It looks like this:

Headings	Jul	Aug	Sep	Oct	Nov	Dec	Total
G&A Expenses							
ST&B	1,371	1,371	1,604	1,371	1,371	1,964	9,052
Rent	110	110	110	110	110	110	660
Utilities	60	60	60	60	60	60	360
Acct/Legal	1,500	0	75	0	150	0	1,725
Office Equip	488	0	0	1,000	0	300	1,788
Misc	34	15	19	0	63	148	279
Total G&A Expenses	3,563	1,556	1,868	2,541	1,754	2,582	13,864

With the spreadsheet on the screen, press Shift-PF9, and then move to the first position of the variables region:

Variables

Name								
Value								

Headings	Jul	Aug	Sep	Oct	Nov	Dec	Total
G&A Expenses							
ST&B	1,371	1,371	1,604	1,371	1,371	1,964	9,052
Rent	110	110	110	110	110	110	660
Utilities	60	60	60	60	60	60	360
Acct/Legal	1,500	0	75	0	150	0	1,725
Office Equip	488	0	0	1,000	0	300	1,788

Type **Amount**. Then press Enter and type **5000** as the value for Amount. Press up-arrow and then Tab to move to the next variable section. Type **Months**, press Enter, and type **60** as the value for Months. Move to the next section and type **Rate**. Press Enter and type **1.25%** as the value for Rate. Your screen should look like this:

Variables

Name	Amount	Months	Rate				
Value	5000	60	1.25%				

Headings	Jul	Aug	Sep	Oct	Nov	Dec	Total
G&A Expenses							
ST&B	1,371	1,371	1,604	1,371	1,371	1,964	9,052
Rent	110	110	110	110	110	110	660
Utilities	60	60	60	60	60	60	360
Acct/Legal	1,500	0	75	0	150	0	1,725
Office Equip	488	0	0	1,000	0	300	1,788

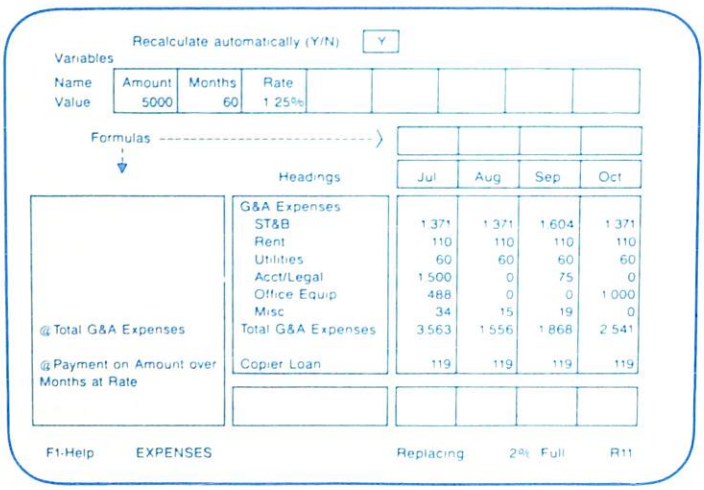
Move back into the spreadsheet using the down-arrow key or Ctrl-Home. Then move into the headings region of the second blank row below Total G&A Expenses and type

```
Copier Loan
```

as the heading. Next press PF9, Planning Assistant's Formula key. Move into the formula region to the left of Copier Loan and type

```
@Payment on Amount over Months at Rate
```

as the formula. Finally, press Enter. Your screen should now look like this:



Now you can compare the cost of the copier to the amount spent for office equipment during the first half of the fiscal year. And, you can change the variable values (all or only one) to compare the costs of different loans for the copier.

Targeting a Value

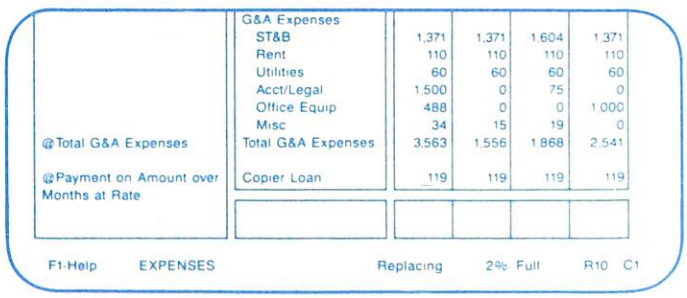
The Target function can be used with values related by a formula. Target works in both the values and the variables regions. To use the Target function, first

place the cursor where you are going to enter your target value — the end result that you wish to achieve. This location should be controlled by a formula. Then, press Shift- PF4, Planning Assistant's Target key, and Planning Assistant instructs you to type your target value. Do so and press PF10.

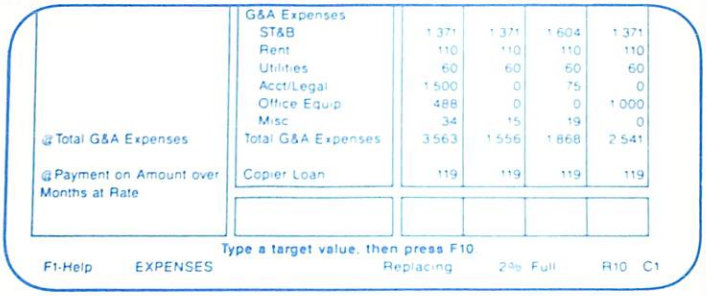
Next, Planning Assistant instructs you to move to the value to solve for. This value should be in a row or column in which the values have been typed into the spreadsheet or in the variables region. It should *not* be in a row or column that is the result of a formula calculation. After moving to your selected location, press PF10 again. The value needed to arrive at your target value appears at the cursor position.

If you use Target in a large spreadsheet, it could take Planning Assistant quite a long time to find the target value. If you decide to cancel the Target function when targeting is in progress, press any key.

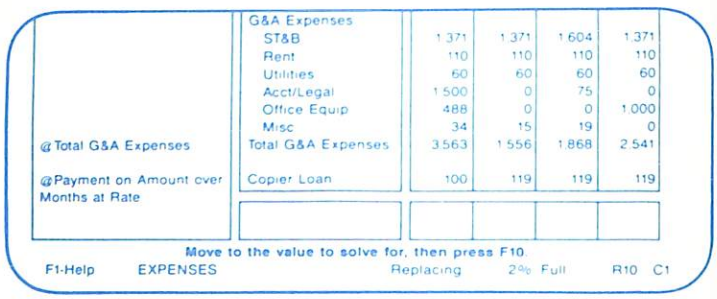
For example, suppose you decide you can only afford a monthly payment of $100 on a loan for a copier. You want to find out how much you can finance for this amount. Using the EXPENSES spreadsheet again, press Shift-PF9 if the variables are not already on the screen, and move to the first column in the Copier Loan row:



Then, press Shift-PF4. A message appears in the message region, as follows:

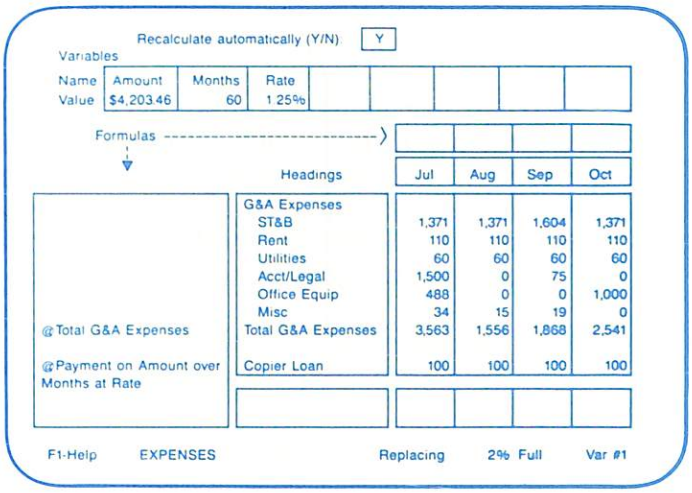


Type **100** as your target value and press PF10. Another **message** appears:



Move the cursor to the value portion of the Amount variable (5000). Now press PF10 again.

The loan amount that corresponds to the targeted payment amount appears:



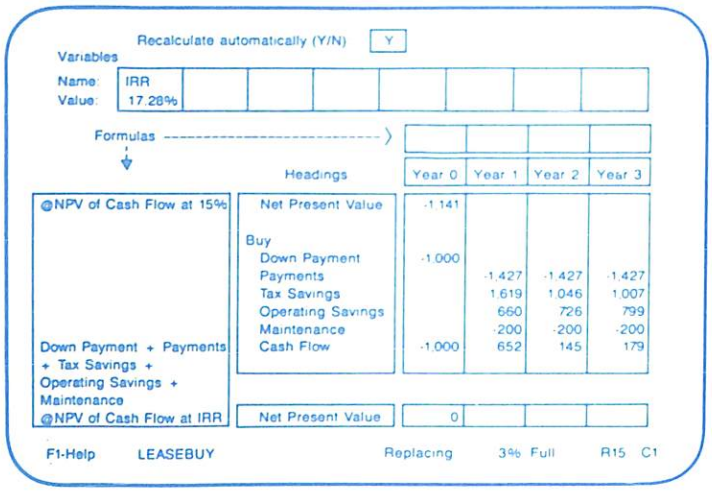
Using Target to Find Internal Rate of Return

Internal rate of return is the discount rate that causes the net present value of a stream of cash outflows and inflows to be equal to zero. To calculate an internal rate of return with Planning Assistant, use the Target function with the @NPV keyword. When you type the keyword phrase (@NPV of "row or column heading" at "i"%), do not type a number for the interest rate (i), but refer to a variable instead. For instance, type the following:

@NPV of "row or column heading" **at IRR**

(IRR is the variable.) Move the cursor to the first column of the net present value row, press Shift-PF4, the Target key, and type 0 as your target value. Press PF10, and Planning Assistant instructs you to move to the value to solve for. Move to the value portion of the IRR variable and press PF10. The answer is the internal rate of return.

For instance, here is how you could adjust the example used earlier in this chapter for net present value to calculate an internal rate of return:



Note: This calculation could take quite some time. To interrupt it, press any key.

Summary

- Planning Assistant's financial keywords are @FV, @NPV, and @Payment.
- Variables consist of a name and a value. Use a variable name in a formula, and Planning Assistant uses the variable value in its calculation.
- Use the Target function to find a value that will allow you to achieve a targeted value.
- Use the Target function with the keyword @NPV to calculate an internal rate of return.

Chapter 8. Dividing a Spreadsheet

Planning Assistant provides ways in which you can divide a spreadsheet after you have created it. For instance, you can create views in order to work with just those rows and columns that you need at any one time. You can also add horizontal lines across the spreadsheet to visually group related rows.

This chapter explains how to define and use views and add horizontal lines to the spreadsheet.

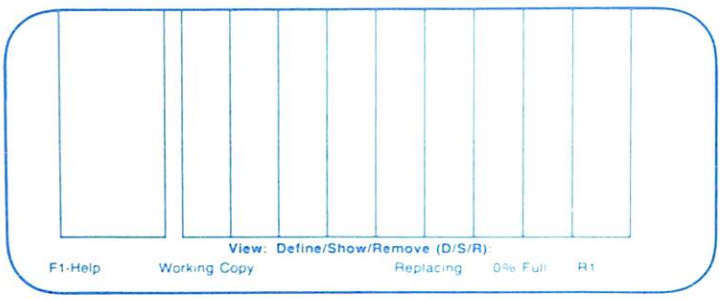
Working with Views

If your spreadsheet is somewhat large, you may want to work with only a portion of it at one time. Planning Assistant allows you to create "views," which are made up of selected rows and columns of a larger spreadsheet. A view is very useful for creating a smaller work area for data entry and editing. Views can also be useful for creating summaries of a large spreadsheet and for reviewing different combinations of rows and columns. You can create, save the definition of, and print (see Chapter 10) up to 4 views for each of your spreadsheets.

Beginning the View Function

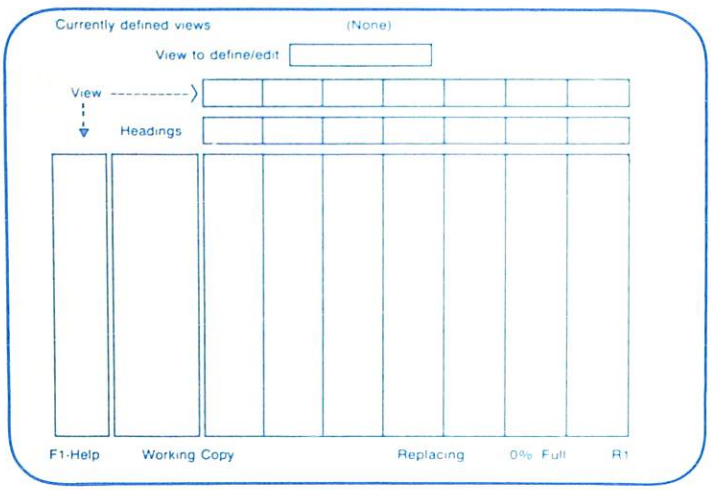
To select the rows and columns to appear in a view, you first press PF3, Planning Assistant's View key, with a spreadsheet on the screen. Planning Assistant instructs you, in the message region at the bottom of the screen,

to indicate whether you want to define, show, or remove a view:



Defining a View

When you press PF3 and type D to define a view, Planning Assistant displays special regions above and to the left of the headings:



At the top of the screen, Planning Assistant lists any existing views and an item called View to Define/Edit. At this point, the cursor is at this item. You type a name for your view here. The name can be up to 15 characters (including spaces). Then move the cursor into the spreadsheet. Now select the rows and columns you want to include in your view in *one* of the following ways:

- To select *only a few rows and/or columns*, type a plus sign (+) in the view regions to the left of each row and above each column to be included in the view.

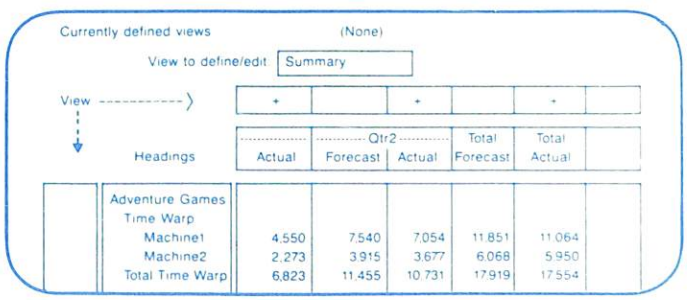
- To select *all but a few rows and/or columns*, type a minus sign (−) in the view regions to the left of each row and above each column to be excluded from the view.

If you select some rows, but do not select any columns, the view will include all the columns in the spreadsheet. In the same way, if you select some columns, but no rows, you will see all the rows.

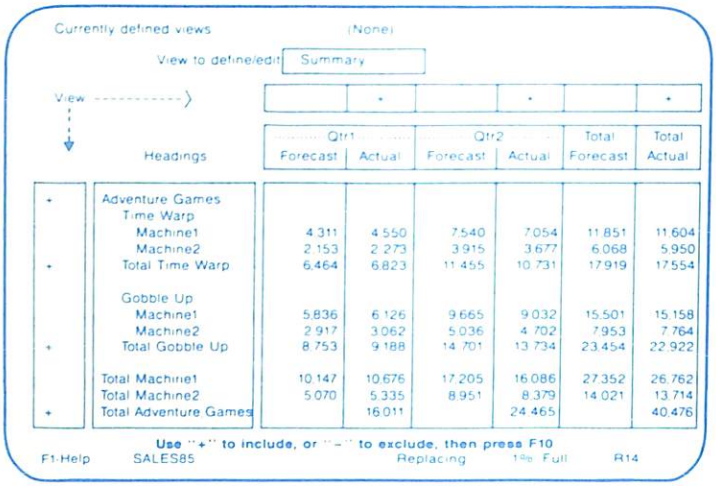
When you finish selecting the rows and columns for your view, press PF3 again. Planning Assistant temporarily saves the view definition and the view regions disappear from the screen. (To permanently save the view definition, save the spreadsheet.)

For example, let's define a view that shows a summary of the actual sales figures from the SALES85 spreadsheet, which you created in Chapter 6. First, retrieve the spreadsheet from the diskette you stored it on.

Now press PF3, and type **D** when Planning Assistant asks you to type D, S or R. When the view regions appear, type **Summary** in **View to define/edit** and press Tab to move the cursor into the view region above the columns. Type + in the view region above each Actual column (including Totals). Your screen should look like this:



Next, move into the view region next to the rows. Type + next to Adventure Games, Total Time Warp, Total Gobble Up, and Total Adventure Games. Now your screen should look like this:



Press PF3 again to store the view definition and have the view regions disappear from the screen.

Showing a View

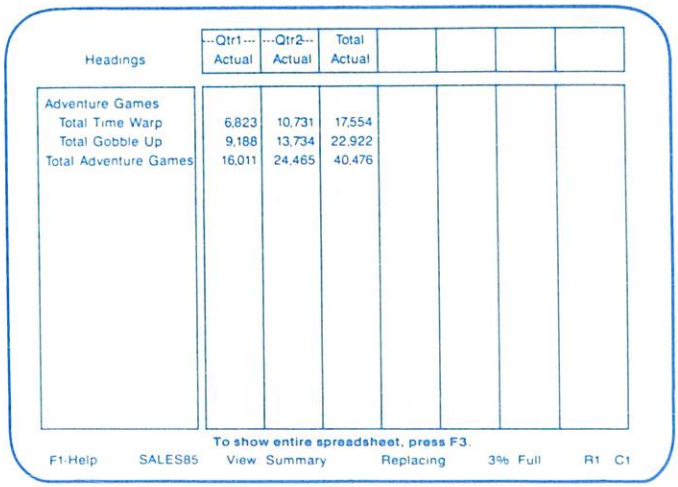
To store a view definition and immediately show the view, press PF10 after completing the view definition. To show a previously-defined view, press PF3 and type S after the message **View: Define/Show/Remove (D/S/R):**. Planning Assistant lists the existing views, with the name of the most-recently defined or used view in the View to Show item. Press PF10 to show that view, or type another view name and then press PF10. The current spreadsheet is replaced by the selected view, with the following message in the message region:

```
To show entire spreadsheet, press F3
```

As this message directs, press PF3 to return to the main spreadsheet.

When you display a view, you can analyze it, change formats, look at the formulas, enter new values, and change existing values. Any values you enter or change in the view are also entered or changed in the main spreadsheet. However, you *cannot* insert or delete a row or column nor change a heading or formula in a view.

Let's display the view that you created in the last section. Press PF3 and type **S** after **Veiw: Define/Show/Remove (D/S/R):**. Since Summary appears in the View to Show item, simply press PF10 to show this view:



Press PF3 again to return to the main SALES85 spreadsheet.

Editing a View Definition

To edit an existing view, press PF3 and type D after View: Define/Show/Remove (D/S/R):. Type the name of the view you want to edit and move the cursor into the spreadsheet.

The pluses and/or minuses that you entered when you defined the view appear in the view regions. You can add and remove rows or columns from the view by

erasing or adding pluses and minuses. Once you have made your desired changes, either press PF10 to store the revised view definition and show the view, or press PF3 again to store the view definition and return to the main spreadsheet.

Removing a View Definition

To remove the definition of a view, press PF3 and type R when Planning Assistant instructs you to type D, S or R. Planning Assistant displays the list of currently defined views and an item called View to Remove. Type the name of the view you want to remove. Press PF10, and Planning Assistant removes the view. The list of views and View to Remove disappear from the screen, and Planning Assistant displays a message indicating it has removed the view.

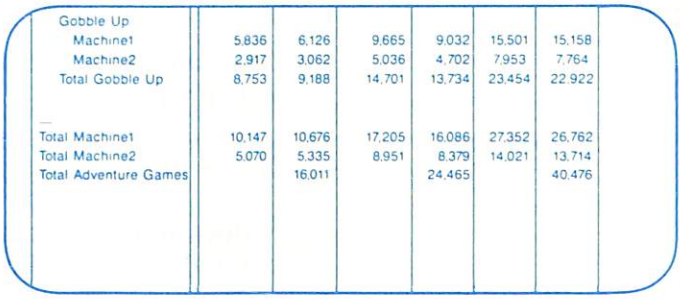
If you change your mind about removing a view before you press PF10, press PF3 to cancel the function and have the View to Remove item disappear.

Dividing Spreadsheet Sections

Planning Assistant can help you easily divide your spreadsheet into sections with lines of dashes, equals signs, or underlines. To create a dividing line horizontally across a spreadsheet, type a -, = or __ in the headings region of a blank row and press Tab. A line of the selected symbol automatically appears in this row of the spreadsheet.

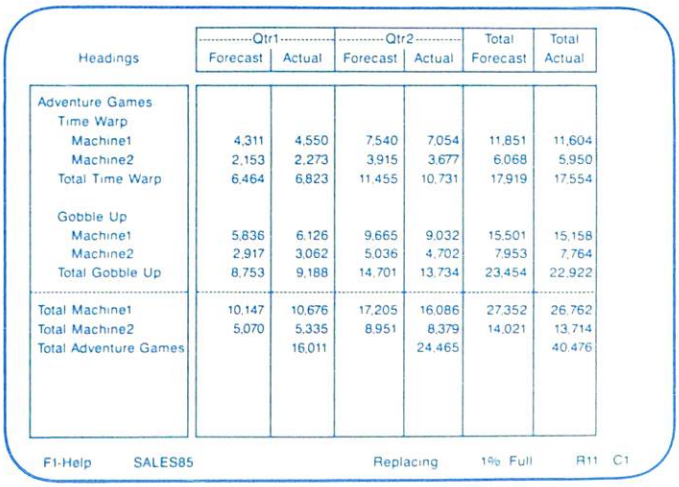
To remove the dashes from the spreadsheet, move the cursor into the row heading region where the first dash appears and press PF6, the Erase Entry key. Then, move the cursor to another row or column, and the line of dashes disappears.

For example, let's use a row of dashes to divide the Time Warp and Gobble Up row groups from the Total rows at the bottom of the SALES85 spreadsheet. Move the cursor to this position in the spreadsheet:



Gobble Up						
Machine1	5,836	6,126	9,665	9,032	15,501	15,158
Machine2	2,917	3,062	5,036	4,702	7,953	7,764
Total Gobble Up	8,753	9,188	14,701	13,734	23,454	22,922
Total Machine1	10,147	10,676	17,205	16,086	27,352	26,762
Total Machine2	5,070	5,335	8,951	8,379	14,021	13,714
Total Adventure Games		16,011		24,465		40,476

Now type a dash (-) and press Tab. Your spreadsheet should now look like this:



Headings	Qtr1 Forecast	Qtr1 Actual	Qtr2 Forecast	Qtr2 Actual	Total Forecast	Total Actual
Adventure Games						
Time Warp						
Machine1	4,311	4,550	7,540	7,054	11,851	11,604
Machine2	2,153	2,273	3,915	3,677	6,068	5,950
Total Time Warp	6,464	6,823	11,455	10,731	17,919	17,554
Gobble Up						
Machine1	5,836	6,126	9,665	9,032	15,501	15,158
Machine2	2,917	3,062	5,036	4,702	7,953	7,764
Total Gobble Up	8,753	9,188	14,701	13,734	23,454	22,922
Total Machine1	10,147	10,676	17,205	16,086	27,352	26,762
Total Machine2	5,070	5,335	8,951	8,379	14,021	13,714
Total Adventure Games		16,011		24,465		40,476

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Summary

- Views are made up of selected rows and columns of a larger spreadsheet.
- You can create and save up to four view definitions per spreadsheet.
- Use + or - to select rows and columns for a view.
- Values entered or changed in a view are also entered or changed in the main spreadsheet.
- You can divide your spreadsheet into sections with dashes, equals signs, or underlines.

Chapter 9. Getting Data from an IBM Filing Assistant File

The Get Filing Assistant Data option of the Get function allows you to retrieve numerical data stored in a file created with Filing Assistant and place it in a Planning Assistant spreadsheet. This chapter explains different ways of using this option.

> **Note:** The Planning Assistant diskette contains a sample file named EXPENSES.IBM that you will use for the examples in this chapter. Remove the write-protect tab from your Planning Assistant diskette before beginning the examples.

Selecting the Get Filing Assistant Data Option

When you use Filing Assistant, you keep information in forms of your own design. All the forms in a particular Filing Assistant file have the same design. All have places for the same items of information and the same item names.

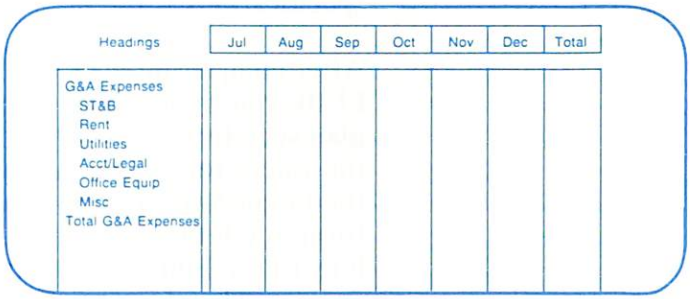
Suppose you have established a Filing Assistant file containing individual records for various categories of business expense, including G&A expenses.

One of the filled in forms in the file might look like this:

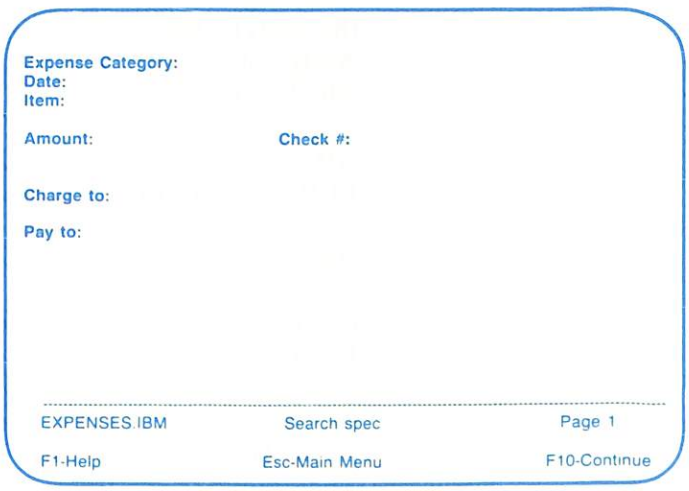
To copy data from a Filing Assistant file into a spreadsheet, first make sure the spreadsheet is in the working copy and the diskette containing the Filing Assistant file is in a diskette drive. Then, select the Get function from the Planning Assistant Main Menu. When the Get Menu appears, type a 3 in Selection Number, enter the name of the Filing Assistant file in Directory or File Name (including the directory name, if necessary), and press Enter. A search specification form from the Filing Assistant file appears on the screen.

For example, let's retrieve data from a Filing Assistant file containing forms like the one above into an expenses spreadsheet. This spreadsheet (without values) is stored on the Planning Assistant program diskette under the name G&A. Get the spreadsheet at this time.

Your screen should look like this:



Now press Esc to return to the Main Menu again. Again select the Get function, but when the Get Menu appears on the screen, type **3** in **Selection number**. Move the cursor to **Directory or file name** and type **A:Expenses.ibm**. Press Enter and the search spec form from the Filing Assistant file named EXPENSES.IBM appears on the screen:



Using Specification Forms

You use the search specification form to tell Planning Assistant which forms in the Filing Assistant file to copy data from. Use search specifications just as you

do when working with Filing Assistant. (See the Filing Assistant book for a complete explanation of search specifications.)

After completing the search spec form and pressing PF10, you fill in a plan specification form. You use the plan spec form to tell Planning Assistant where to find the values for the spreadsheet in the forms it reads from the Filing Assistant file. You also use the plan spec form to tell Planning Assistant how to match dates and how to use Filing Assistant data with spreadsheet groups. The plan spec form is explained later in this chapter.

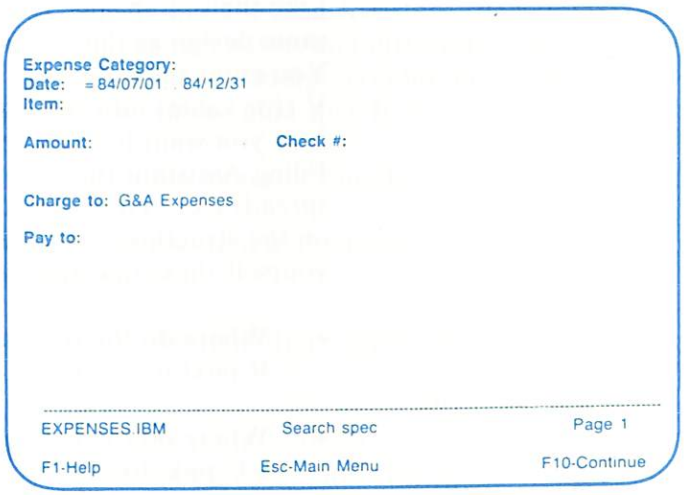
Filling in Search Specifications

The search specification form is a blank form of the same design as the forms in the Filing Assistant file which contains the data to be set in the spreadsheet. Planning Assistant compares the entries you make in the search spec with entries in the forms in the Filing Assistant file and collects data only from those forms which match.

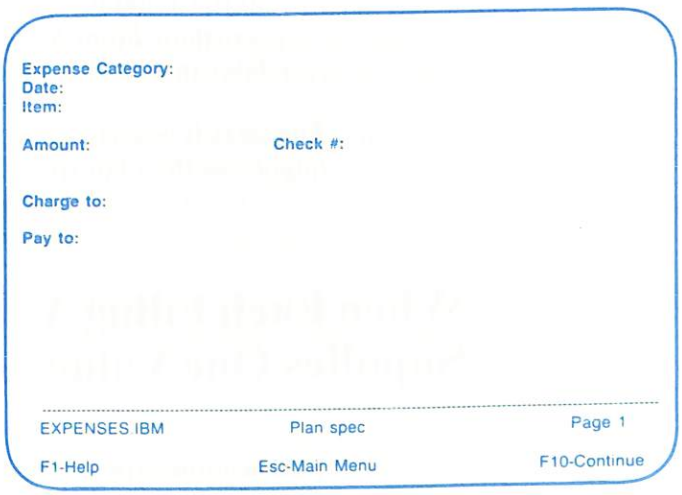
After you complete your search specifications, press PF10. If you want to read data from all the forms in the file, press PF10 without entering anything in the search spec form.

For example, let's use search specifications to tell Planning Assistant to copy data from all forms containing purchases charged to G&A Expenses in the second half of FY1984. Press Tab to move the cursor to the **Date** item and type **=84/07/01..84/12/31**. Then move to the **Charge to** item and type **G&A Expenses**.

It should look like this:



Press PF10, and the plan spec form appears:



Filling in Plan Specifications

Like the search spec form, the plan spec form is of the same design as the forms in the Filing Assistant file. You enter the letters R (for row), C (for column), and V (for value) into the form to tell Planning Assistant how you want to organize the numerical data from the Filing Assistant file into the rows and columns of the spreadsheet. How you use these specifications depends on the structure of your Filing Assistant file. Ask yourself these questions:

- Where do the row headings come from? Enter an R next to this item.
- Where do the column headings come from? Enter a C next to this item.
- Where do the values come from? If only one item supplies a value, enter V next to this item. If two or more items supply values, enter RV or CV next to these items as explained in the *When Each Filing Assistant Form Supplies Multiple Values* section later in this chapter.

The next few sections explain the different ways you might use the plan specifications.

When Each Filing Assistant Form Supplies One Value

This section explains how you place Filing Assistant data in a Planning Assistant spreadsheet when each form in the Filing Assistant file supplies only one spreadsheet value.

Using R, C, and V Separately

When each form in the Filing Assistant file supplies only one spreadsheet value, and different items on the form supply the row headings, column headings, and values, you fill out the plan spec form in this way:

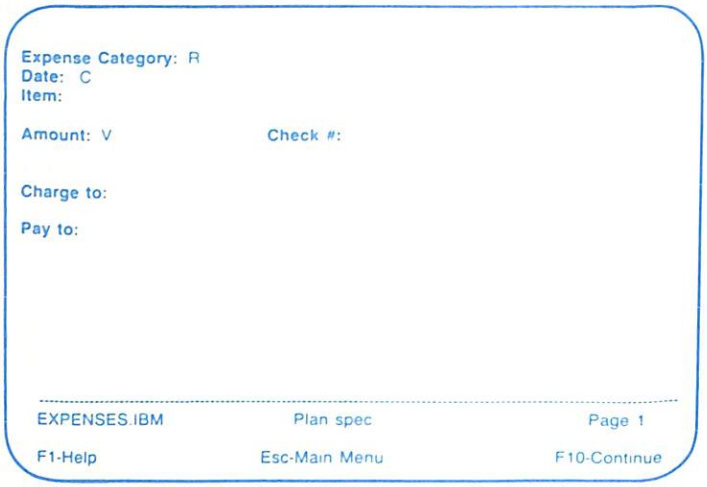
- Enter R in the item that supplies the row headings.
- Enter C in the item that supplies the column headings.
- Enter V in the item that supplies the values.

When R and C are entered in items, Planning Assistant compares the data in those items on each Filing Assistant form with the row and column headings in the spreadsheet. When Planning Assistant finds a match, it adds the designated value into the spreadsheet. If there is no match, Planning Assistant ignores the form.

For example, each of the forms in our EXPENSES.IBM file supplies one value to our spreadsheet named G&A, so complete the plan spec form as follows:

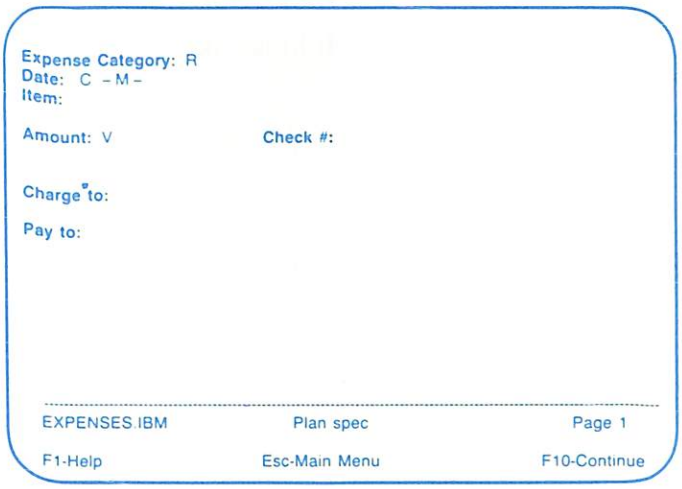
- Since the row headings in our G&A spreadsheet match data in the Expense Category item in the EXPENSES.IBM file, type **R** after **Expense Category** on the plan spec form.
- Since the column headings in the expenses spreadsheet are dates, type **C** after **Date** on the plan spec.
- Since the values to be copied into the expenses spreadsheet are stored in the Amount item in the Filing Assistant file, type **V** after **Amount** on the plan spec.

It should look like this now:



In this example, you want Planning Assistant to combine the G&A expenses for different days of the month and place the month's total in the G&A spreadsheet. The dates in the G&A spreadsheet headings are months. The dates in the EXPENSES.IBM file are in the year, month, day (*yy/mm/dd*) format recommended by Filing Assistant, so type **-M-** after the C in the **Date** item on your plan spec form. This tells Planning Assistant to match the month part of the date in the Filing Assistant file, which is the middle, with the spreadsheet heading. (Date instructions are explained fully in the *Telling Planning Assistant How to Match Dates* section later in this chapter.)

Now the plan spec looks like this:



Press PF10, and Planning Assistant retrieves the specified information from the Filing Assistant file and places it into the appropriate places in the spreadsheet.

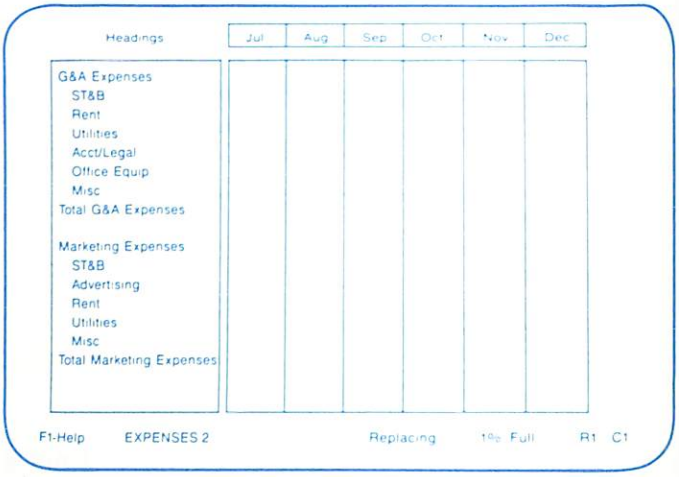
Headings	Jul	Aug	Sep	Oct	Nov	Dec	Total
G&A Expenses							
ST&B	1,371	1,371	1,604	1,371	1,371	1,964	9,052
Rent	110	110	110	110	110	110	660
Utilities	60	60	60	60	60	60	360
Acct/Legal	1,500		75	150			1,725
Office Equip	488			1,000		300	1,787
Misc	34	15	19		63	148	278
Total G&A Expenses	3,563	1,556	1,868	2,691	1,604	2,581	13,862

When an Item Appears in Multiple Groups

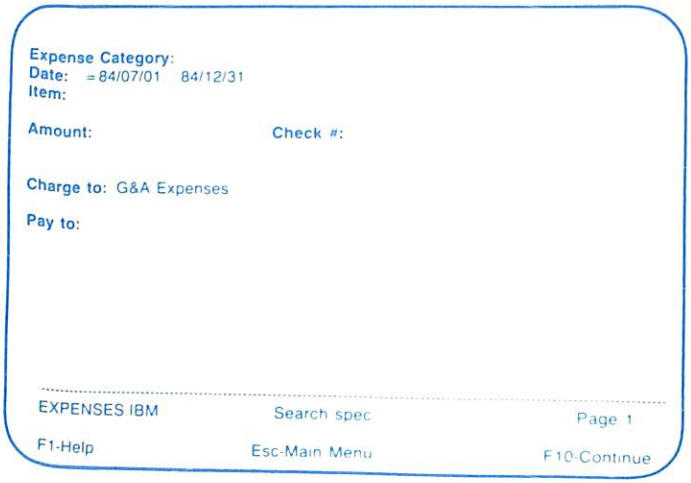
When a Filing Assistant item that supplies a value matches a row or column heading used in more than one group, you need to tell Planning Assistant into which group the value should go. To do this, type the group heading followed by a plus sign after the R or C in the plan spec.

For example, Get the expenses spreadsheet stored on the Planning Assistant diskette under the name EXPENSES.2.

It looks like this:

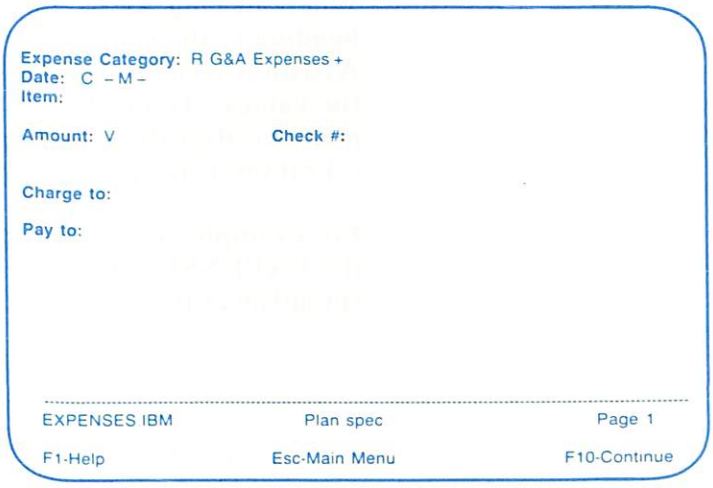


To retrieve data from the EXPENSES.IBM file into only the G&A Expenses group, fill in the search spec like this:



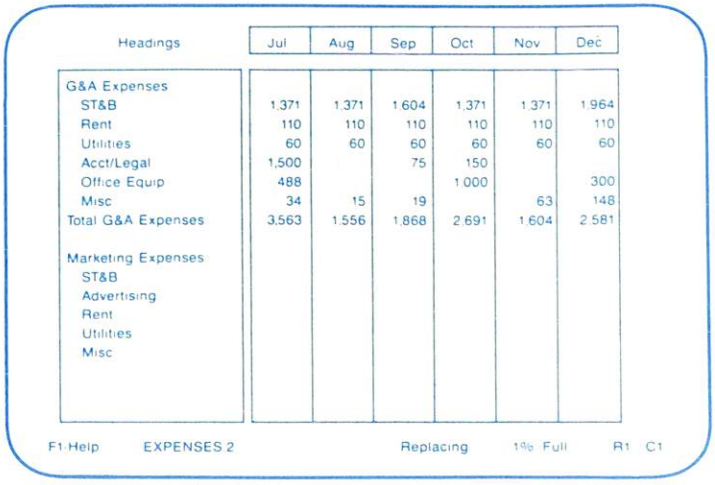
Since the Expense Category item in the EXPENSES.IBM file contains row headings used in

both the G&A Expenses and Marketing Expenses groups, fill in the plan spec like this:



The R in Expense Category tells Planning Assistant to match the data in this item with the row headings in the spreadsheet. The G&A Expenses+ after the R tells Planning Assistant that the row headings in the spreadsheet are members of a group whose heading is G&A Expenses.

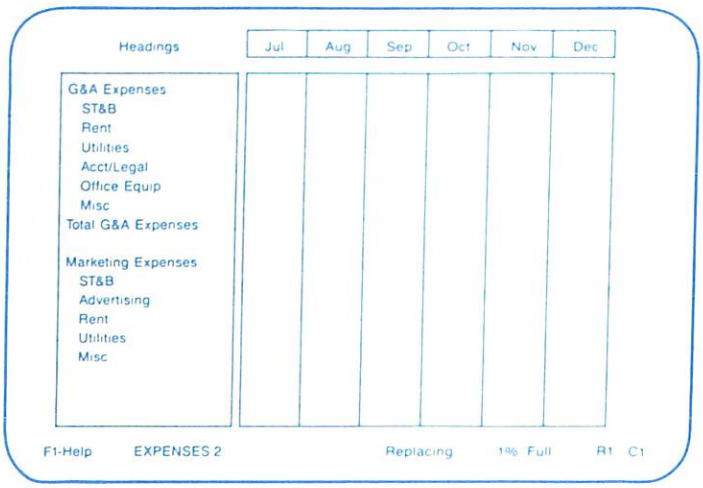
Press PF10, and Planning Assistant retrieves only G&A Expenses from the Filing Assistant file and puts the data into the appropriate places in the spreadsheet.



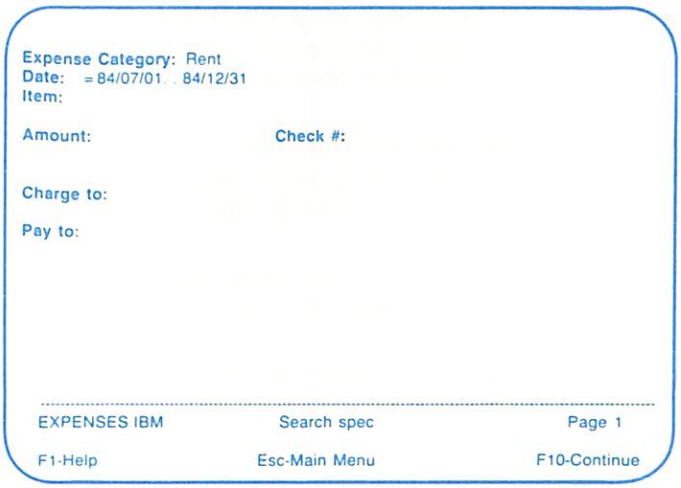
When an Item Appears as a Group Heading

When a Filing Assistant file item matches a group heading in the spreadsheet, you need to tell Planning Assistant which member within the group is to receive the values. To do this, type the heading of the group member after the Planning Assistant specification (R or C) on the plan spec form.

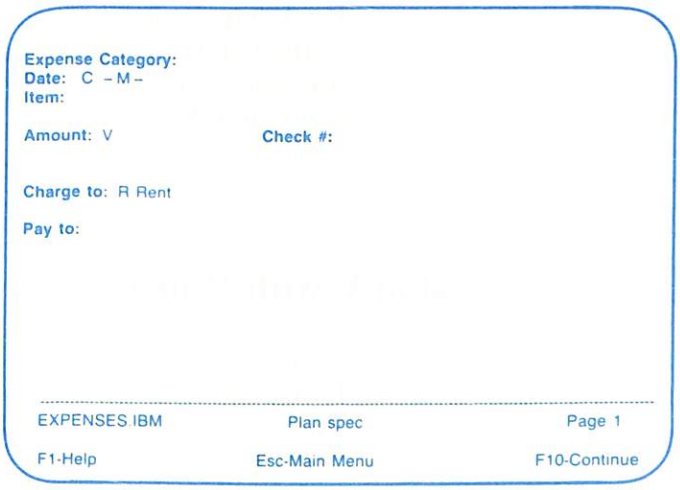
For example, let's retrieve only the Rent expenses from the EXPENSES.IBM file into the EXPENSES.2 spreadsheet that looks like this:



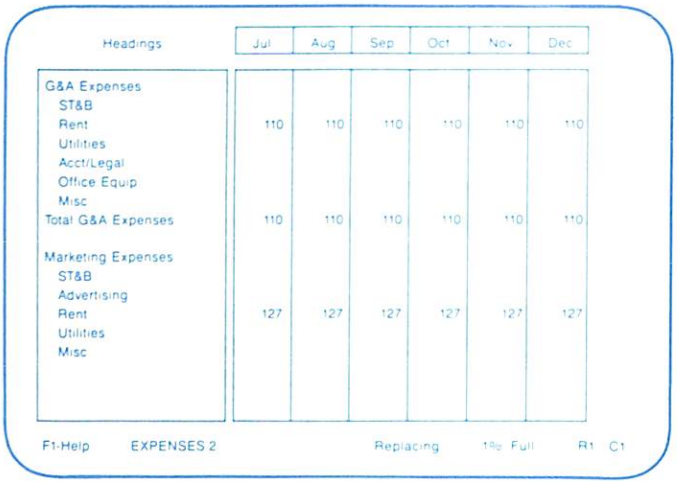
The Expense Category item in the EXPENSES.IBM file contains Rent and the other categories of business expense in this spreadsheet except the group headings (G&A Expenses and Marketing Expenses), which are in the Charge To item. To tell Planning Assistant to retrieve data only from those forms with Rent in the Expense Category item, fill in the search spec like this:



Since only the Rent values should go into the spreadsheet and not the values for all the data in the Expense Category item, R should be placed in the Charge To item with the word Rent after it in the plan spec. Fill in the plan spec like this:



Press PF10. Planning Assistant retrieves the Rent values charged to both G&A Expenses and Marketing Expenses and then places the values correctly in the spreadsheet by using (as the plan spec directs) the Charge To item as the row group heading and Rent as the group member.



When Each Filing Assistant Form Supplies Multiple Values

If a Filing Assistant form supplies more than one value to the Planning Assistant spreadsheet, then you must use more than one V on the plan spec. This is done by combining V with R or C. The next three sections explain how to fill out the plan spec form in this situation.

Using V with R or C

You combine V with R or C when each form in the Filing Assistant file supplies multiple spreadsheet values. When each form supplies multiple values, the items supplying the values should have item *names* that match either the row or column headings in the Planning Assistant spreadsheet. (If the row or column headings don't match, see the next section.) To combine V with R or C, use one of the following:

- Enter R next to the item that supplies the row headings and CV next to the items that supply the column headings and the values.

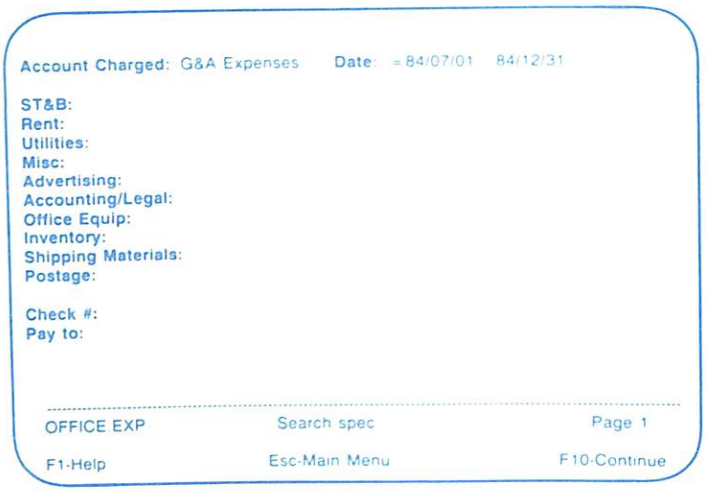
- Enter C next to the item that supplies the column headings and RV next to the items that supply the row headings and the values.

Note that you can either use V alone in one item in the plan spec or use RV or CV, but you cannot do both.

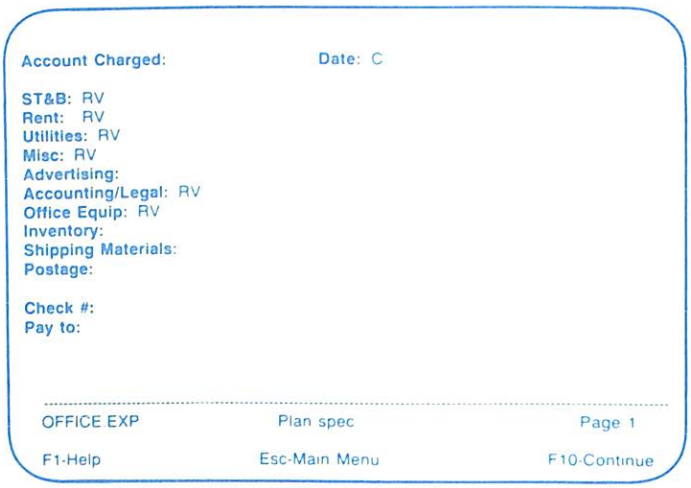
Suppose, for instance, the Filing Assistant file used to create the Expenses spreadsheet looked like this:

With a Filing Assistant file that looked like this, you could tell Planning Assistant to copy data from all forms containing purchases charged to G&A Expenses in the second half of FY1984.

The search spec form would look like this:



Since you know which items are G&A expenses, you collect that data by filling in the plan spec form like this:

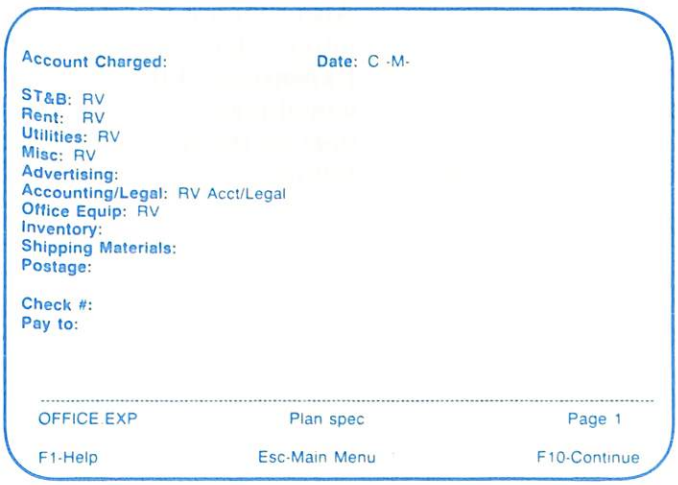


On the plan spec, the C in the Date item tells Planning Assistant to match the data in this item with the date-oriented column headings in the G&A spreadsheet. The RVs in the other items tell Planning Assistant to match these item names with the row headings and use the values in the items as the values for the corresponding rows.

When Item Names and Spreadsheet Headings Don't Match

Sometimes it may not be possible or desirable for a heading in a spreadsheet to match an item name in a Filing Assistant file. Perhaps, for instance, an item name contains more than 25 characters, the maximum number allowed in a heading. When the item name and the spreadsheet heading don't match, type the heading after the appropriate plan specification (RV or CV) in the plan spec form.

For instance, the Filing Assistant form shown in the previous section has Accounting/Legal as an item name, while the Expenses spreadsheet has Acct/Legal as a row heading. To retrieve values from the Accounting/Legal item into the Acct/Legal row, you would enter Acct/Legal after the RV in the Accounting/Legal item in the plan spec:



An Item Name in Multiple Groups

When the Filing Assistant file item *name* matches multiple rows or columns in the spreadsheet, type the group heading and the row or column heading after the RV or CV in the plan spec.

Suppose, for instance, you wanted to retrieve only the G&A Expenses from the Filing Assistant file that looks like this:

Also suppose you wanted to retrieve the G&A Expenses into the Expenses spreadsheet containing both the G&A Expenses and the Marketing Expenses groups. You would type G&A Expenses in the Account Charged item on the search spec and fill in the plan spec as follows:

For each item name that appears in both the G&A Expenses and the Marketing Expenses groups in the spreadsheet, you would enter the group heading after the plan specification (RV) and then repeat the row heading after the group heading.

Completing Date Instructions

If the formats for dates in the Filing Assistant file and those for dates in the spreadsheet are different, or if a date heading on the spreadsheet is a group heading, you must complete your date instruction on the plan spec with more than R or C.

Telling Planning Assistant How to Match Dates

Planning Assistant expects to finds dates in a Filing Assistant file in a number format (for example, 84/06 or 84/06/21). If the dates in your Filing Assistant file exactly match the dates in your spreadsheet, simply put R or C in the item that supplies the date in the plan spec. However, if you tell Planning Assistant to match Filing Assistant file dates to *date-oriented* spreadsheet headings (for example, January), you must also tell Planning Assistant what the dates look like in the Filing Assistant file and which portion of the dates to match to the spreadsheet headings. If your dates are divided into three parts and look like this,

84/01/30

type an instruction containing one of the following letters and two dashes: Y (for year), M (for month), or D (for day). The date instruction should follow the Planning Assistant specification (R or C) on the plan spec.

The following chart shows how it works:

Instruction	What It Means
Y– –	Match the first part of the date, which is the year, with the spreadsheet heading.
–M–	Match the middle part of the date, which is the month, with the spreadsheet heading.
– –D	Match the last part of the date, which is the day, with the spreadsheet heading.

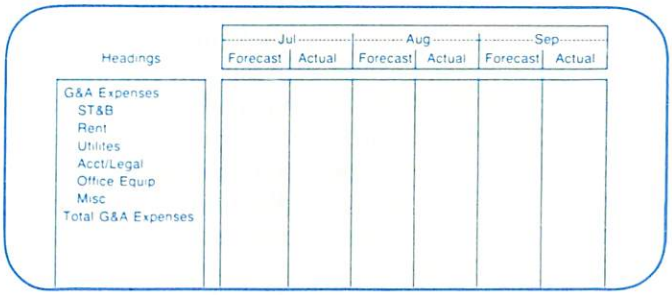
The letter (Y, M, or D) and the dashes can be in any order, but the order should correspond to the order in the Filing Assistant file. If your dates are divided into only two parts, use Y, M, or D with one dash.

Planning Assistant combines the data in the Filing Assistant file according to your date instruction. This means that when you tell Planning Assistant to match the month portion of the Filing Assistant date with column headings that are the names of months, Planning Assistant adds individual values from different days of a month in the Filing Assistant file and puts the resulting value in the correct column. In matching the month portion of a date with a spreadsheet heading, Planning Assistant matches the number 01 with either 01, Jan, JAN, January, or JANUARY, and so on.

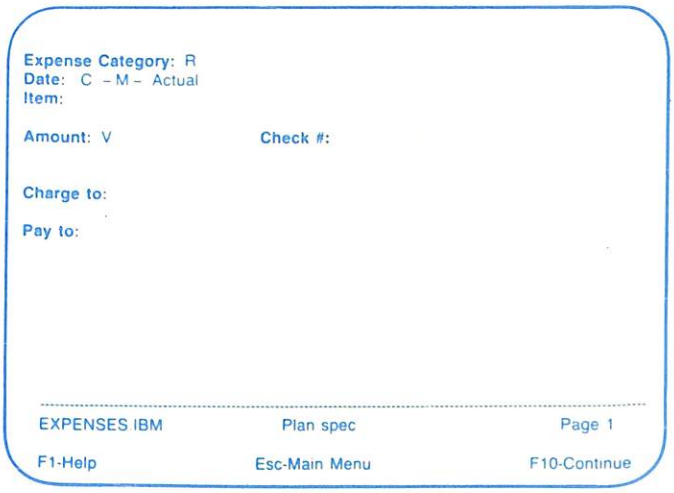
Date-oriented Headings as Group Headings

When date-oriented spreadsheet headings are group headings, you need to tell Planning Assistant which member of the group is to receive Filing Assistant file data. To do this, enter the heading of the group member *after* the date instruction in the plan spec, leaving a space between the date instruction and the spreadsheet heading.

Suppose, for instance, the Expenses spreadsheet looked like this:



To retrieve the G&A expenses from the EXPENSES.IBM file into this spreadsheet, the plan spec would have to tell Planning Assistant to put the values, which are actual expenditures, in the Actual column of each month group. It would look like this:



Summary

- Use the Get Filing Assistant Data option of the Get function to retrieve data from a Filing Assistant file into a Planning Assistant spreadsheet.
- Use Filing Assistant's search specifications to tell Planning Assistant from which Filing Assistant forms to retrieve data.
- Use the letters R, C, and V to tell Planning Assistant which items in the Filing Assistant file contain the spreadsheet row headings, column headings, and values.
- Use Y, M, or D with dashes to tell Planning Assistant the order of dates in the Filing Assistant file.
- It is not necessary that item names in the Filing Assistant file match the headings in the spreadsheet.

Chapter 10. Printing a Spreadsheet

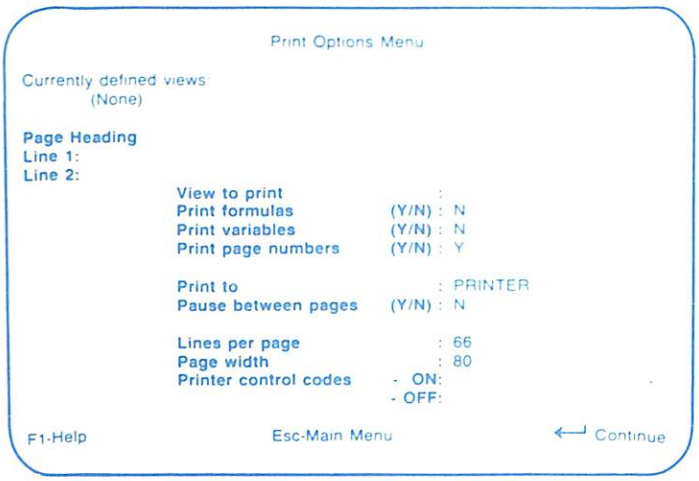
This chapter explains how to use the Print function to produce a paper copy of the spreadsheet in the working copy — the entire spreadsheet, part of the spreadsheet, the formulas, and/or any existing variables. Planning Assistant comes set up to work with a parallel printer, but will print spreadsheets to any supported printer that is properly connected to your computer system. (Use the Setup program described in Chapter 2 to modify the Planning Assistant program diskette to work with a serial printer.)

This chapter also explains how to use the Print function to print to a disk, creating a text file that can be used by IBM Writing Assistant to place a copy of your spreadsheet in a Writing Assistant document.

Selecting the Print Function

To begin the Print function, return to the Main Menu (press Esc, if necessary), type 5 in Selection Number, and press Enter.

The Print Options Menu appears on the screen:



If you want to use the default values shown for these options, press Enter without making any changes.

To change any item, press Tab to move the cursor to that item and type over the default value. Use Shift-Tab to move backwards through the items. When you have made all the desired changes, press Enter.

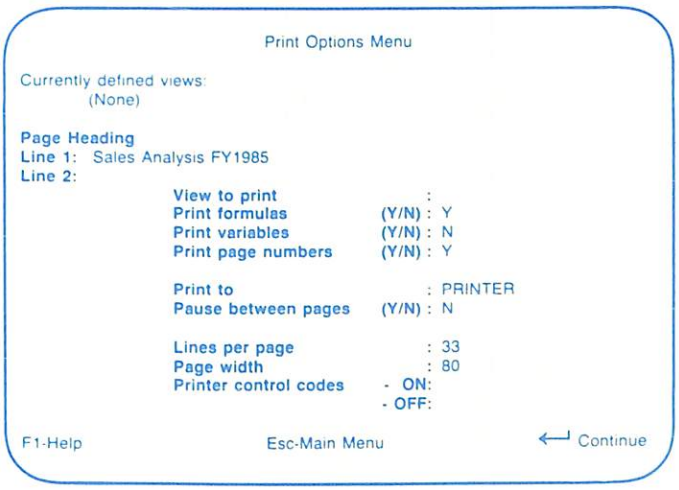
Printing a Planning Assistant Spreadsheet

Let's print a copy of the SALES85 spreadsheet. First, retrieve a copy of the spreadsheet from the diskette on which you stored it. Then return to the Main Menu, type **5** in **Selection number**, and press Enter. The Print Options Menu appears.

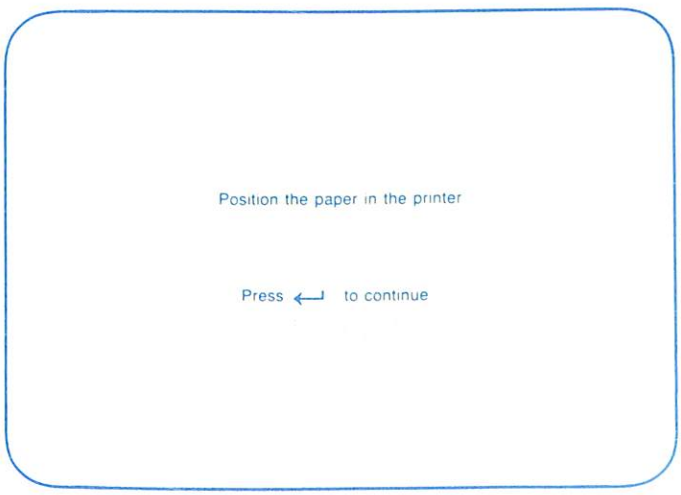
The cursor is positioned in the Page Heading Line 1 item, so enter a page heading by typing

```
Sales Analysis  FY1985
```

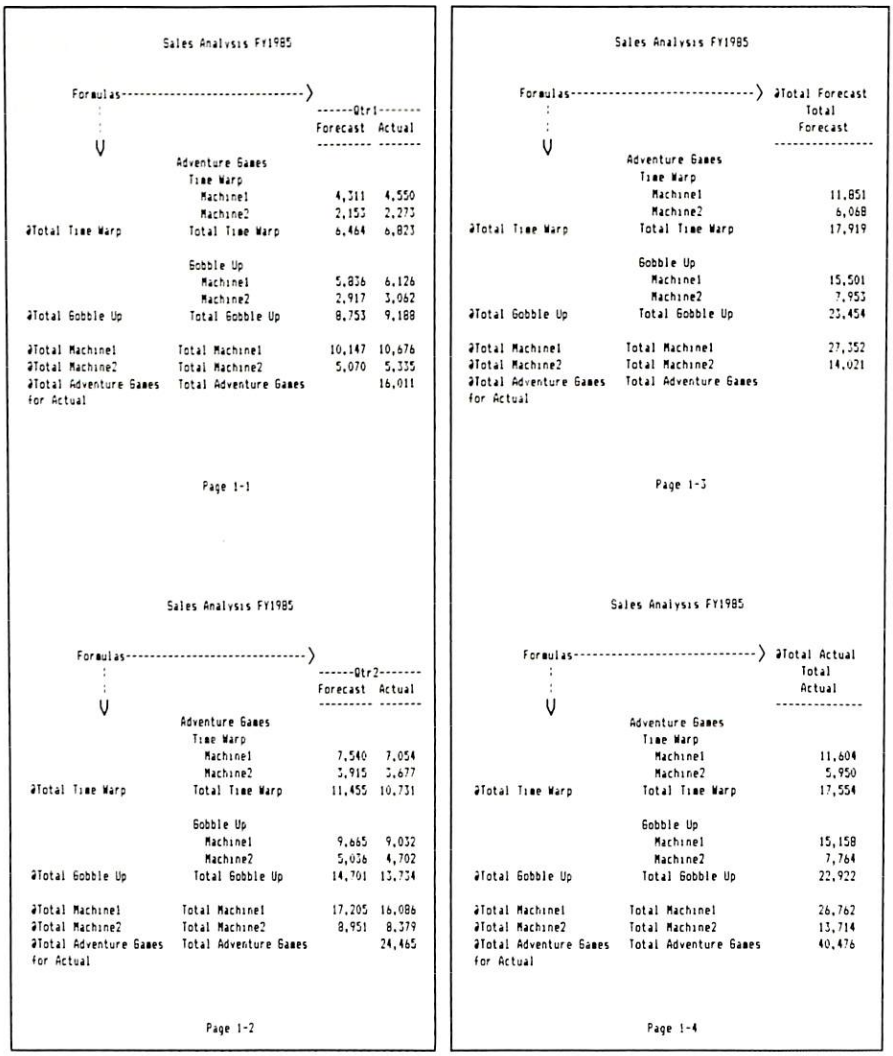
on the first line. Next, move to the **Print formulas** item and type **Y** to have Planning Assistant print your formulas. Now, press Tab to move to the **Lines per page** item and type **33** over the number 66. If you are printing with a parallel printer such as an IBM Graphics printer using standard-size printer paper, you can print the spreadsheet without any additional changes to this menu. Your screen should look like this:



Press Enter, and Planning Assistant asks you to get your printer ready:



When your printer is loaded with paper and turned on, press Enter again, and Planning Assistant prints your spreadsheet. It should look like this:



Sales Analysis FY1985

Formulas		Qtr1 Forecast	Qtr1 Actual
	Adventure Games		
	Time Warp		
	Machine1	4,311	4,550
	Machine2	2,153	2,273
@Total Time Warp	Total Time Warp	6,464	6,823
	Gobble Up		
	Machine1	5,836	6,126
	Machine2	2,917	3,062
@Total Gobble Up	Total Gobble Up	8,753	9,188
@Total Machine1	Total Machine1	10,147	10,676
@Total Machine2	Total Machine2	5,070	5,335
@Total Adventure Games for Actual	Total Adventure Games		16,011

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Sales Analysis FY1985

Formulas		Qtr2 Forecast	Qtr2 Actual
	Adventure Games		
	Time Warp		
	Machine1	7,540	7,054
	Machine2	3,915	3,677
@Total Time Warp	Total Time Warp	11,455	10,731
	Gobble Up		
	Machine1	9,665	9,032
	Machine2	5,036	4,702
@Total Gobble Up	Total Gobble Up	14,701	13,734
@Total Machine1	Total Machine1	17,205	16,086
@Total Machine2	Total Machine2	8,951	8,379
@Total Adventure Games for Actual	Total Adventure Games		24,465

Page 1-2

Sales Analysis FY1985

Formulas		@Total Forecast Total Forecast
	Adventure Games	
	Time Warp	
	Machine1	11,851
	Machine2	6,068
@Total Time Warp	Total Time Warp	17,919
	Gobble Up	
	Machine1	15,501
	Machine2	7,953
@Total Gobble Up	Total Gobble Up	23,454
@Total Machine1	Total Machine1	27,352
@Total Machine2	Total Machine2	14,021
@Total Adventure Games for Actual	Total Adventure Games	

Page 1-3

Sales Analysis FY1985

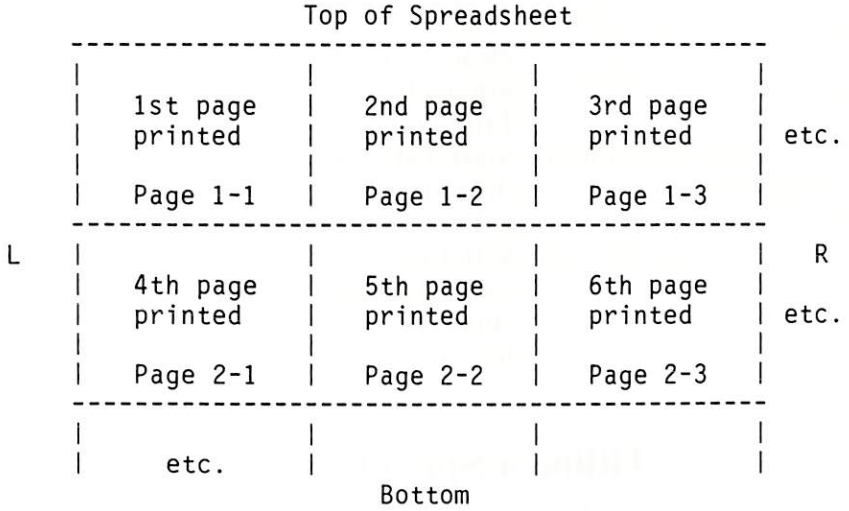
Formulas		@Total Actual Total Actual
	Adventure Games	
	Time Warp	
	Machine1	11,604
	Machine2	5,950
@Total Time Warp	Total Time Warp	17,554
	Gobble Up	
	Machine1	15,158
	Machine2	7,764
@Total Gobble Up	Total Gobble Up	22,922
@Total Machine1	Total Machine1	26,762
@Total Machine2	Total Machine2	13,714
@Total Adventure Games for Actual	Total Adventure Games	40,476

Page 1-4

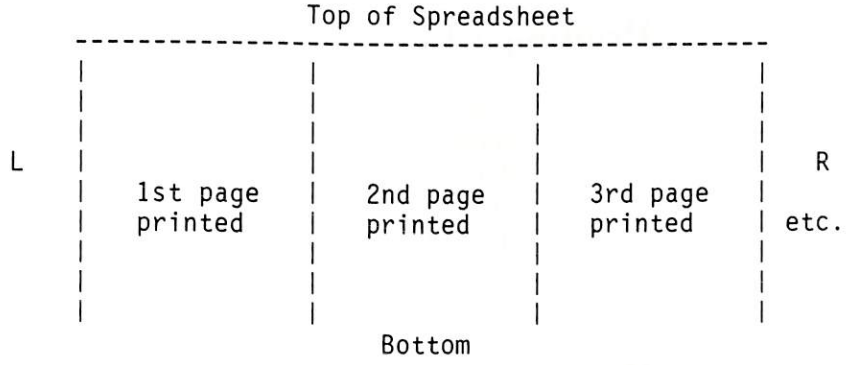
The Printing Sequence

Notice the order in which Planning Assistant printed the pages of the SALES85 spreadsheet. If you are printing a large spreadsheet that will not fit on one

sheet of paper, Planning Assistant prints it in sections, according to the following diagram:



If you want to print all the rows without page breaks, set the Lines per Page item to 0. In this case, if the spreadsheet is too wide to fit on one sheet of paper, Planning Assistant prints it in sections from left to right, like this:



Notice that Planning Assistant prints the column headings at the top of each page of the spreadsheet, and the row headings at the left side of each page. Thus, each page of the spreadsheet can stand alone. The page numbers make the order of the pages immediately obvious.

A Closer Look at the Print Options

Whenever you start the Planning Assistant program or clear the working copy, the print options default values are in effect. You can change as many items on the Print Options Menu as necessary (using Tab and Shift-Tab to move between items) by typing over the default values. Any changes that you make to these default values when printing a spreadsheet are stored with the spreadsheet, so you don't have to make the same changes each time you want to print that spreadsheet. The following sections explain when and how to modify the print options.

Titling a Spreadsheet

You can have Planning Assistant print a page heading that is up to two lines long at the top of each page of a spreadsheet. Each line of the title can have 70 characters. Planning Assistant centers the title in the top margin of each page of the spreadsheet.

Printing a View

If this item is blank (the default value), Planning Assistant prints the entire spreadsheet. If you have defined one or more views for the spreadsheet, you can print a view by placing its name in the View to Print item. Planning Assistant displays a list of views at the top of the Print Options Menu.

Printing Formulas

You can have Planning Assistant print spreadsheet formulas by changing the default value for the Print Formulas item from N to Y. Formulas appear on the printed copy of the spreadsheet in the same locations

that they occupy on the screen. Planning Assistant prints the formulas on each page of the printed spreadsheet.

Printing Variables

You can also have Planning Assistant print any variables created for use in a spreadsheet by changing the default value for the Print Variables item from N to Y. Variables appear at the top of each page of the printed spreadsheet.

Printing Page Numbers

Planning Assistant automatically numbers the pages of your spreadsheet unless you indicate that it should not by changing the default value of Print Page Numbers from Y to N.

Printing to Different Printers

Planning Assistant prints to any supported printer properly connected to your computer system. The default value, PRINTER, in the Print To item assumes that you have a parallel printer. If you use a serial printer, use the Setup program explained in Chapter 2 to modify the Planning Assistant program diskette to work with your serial printer.

Printing as a Disk File

You can print a spreadsheet as a disk file by entering a directory and file name (such as A:Budget or B:Forecast) in the Print To item. Planning Assistant prints the spreadsheet to the file on the disk, just as it would appear on paper. This feature converts your spreadsheet to an ASCII text file that you can access

with Writing Assistant and other word processors or transfer to another computer over a communications link.

Before printing to a disk file that you may want to append to a Writing Assistant document, change the Page Width item to 78 so that Writing Assistant can read the spreadsheet correctly.

Pausing Between Pages

If you want to print on single sheet paper, change Pause between Pages to Y so that Planning Assistant pauses after printing each page to allow you to insert a clean sheet of paper. When Planning Assistant reaches the end of each page it displays the message:

```
Put a new page in your printer
```

After changing the paper, press Enter to print the next page.

Choosing the Number of Lines per Page

The number in the Lines per Page item should correspond to the number of lines on your printer paper. If you are printing on standard 8-1/2 x 11 paper, the default value of 66 is correct for most printers. If you are using shorter or longer paper, you need to modify this value accordingly. Planning Assistant automatically includes a top and bottom margin when printing a spreadsheet.

Choosing the Page Width

The number in the Page Width item indicates the number of characters that can be printed on one line, including a left and right margin automatically included by Planning Assistant. If you are printing on standard

8-1/2 x 11 paper, the default page width of 80 is correct for most printers.

If you are using 8-1/2 x 11 paper and printing in compressed mode, set Page Width to 132. If you are using 11 x 14 paper and printing in compressed mode, set Page Width to 240. Do not enter a number larger than 240 in the Page Width item.

If you want to print your spreadsheet as a disk file to be used by Writing Assistant, change the Page Width item to 78 so Writing Assistant can read the spreadsheet correctly.

Sending Special Codes to Your Printer

Most printers allow you to print in a variety of print styles (or modes) by sending special codes to your printer. With Planning Assistant, you send special printer codes by typing their decimal equivalent in the Printer Control Codes item. You can send codes to set a special mode for printing, and then send codes to turn that mode off after printing is done. (If you do not turn off the code, your printer continues to print in the special mode until you either send the proper code, or turn your printer off.)

For example, if you have an IBM Graphics printer and want to print your spreadsheet in compressed mode (17 characters per inch) and then turn off compressed mode when printing is finished, fill in the Printer Control Codes item like this:

```
Printer Control Codes  -ON: 15
                      -OFF: 18
```

(Before printing a spreadsheet in compressed mode, be sure to change the Page Width item to 132 or 240.)

To set some modes, you need to send two characters. Both are decimal equivalents, and they are separated by a space. For example, if you have an Okidata printer and want to print in bold and then turn off bold when

printing is finished, fill in the Printer Control Codes item like this:

```
Printer Control Codes  -ON: 27 84
                      -OFF: 27 73
```

Control codes vary from printer to printer, so check your printer manual for the codes that turn special print modes on and off for your printer. If your manual lists these control codes as ASCII characters, remember to translate them to their decimal equivalents.

Stopping the Print Function

You can temporarily stop printing by pressing the space bar and then resume printing by pressing Enter. You can completely cancel the Print function at any time by pressing Esc. Planning Assistant immediately stops sending to your printer and returns to the Main Menu.

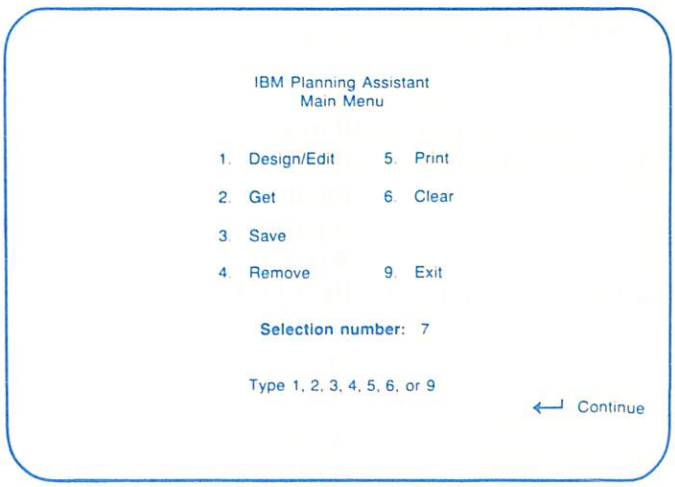
Summary

- Use the Print function to:
  - Produce a paper copy of the spreadsheet in the working copy
  - Print formulas and variables with a spreadsheet
  - Print a spreadsheet to a disk, creating a text file for use with Writing Assistant
  - Print a view
- Changes made to the print options when printing a spreadsheet are stored with the spreadsheet.

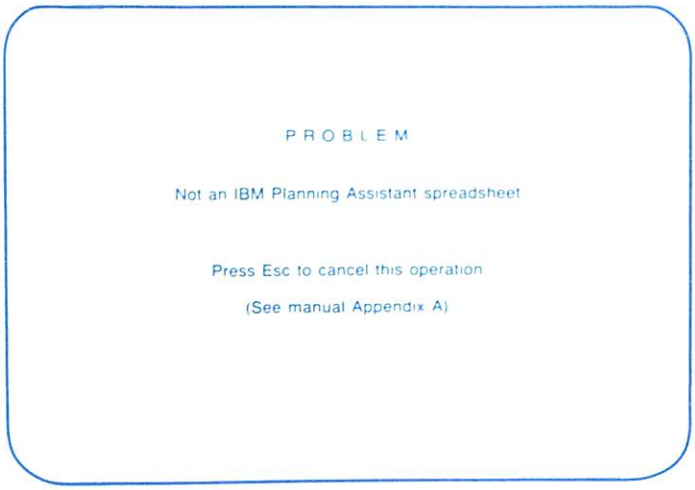
Appendix A. Messages

Planning Assistant displays a message whenever it encounters an error condition. Certain errors are the result of mistakes you make as you use the program, while others are the result of physical limitations or problems with certain parts of your computer system.

Most of these messages appear in the message area at the bottom of the screen:



Planning Assistant displays other messages on a separate screen:



If you encounter one of these messages, simply locate the message in the alphabetical list below and follow the instructions. If the message is displayed on a separate screen, you can restart normal Planning Assistant operation by pressing Esc until you return to the Main Menu.

*****

Asterisks in the values region indicate that Planning Assistant cannot supply values for the row or column. Some possible causes are:

- Planning Assistant cannot evaluate the formula controlling the row or column. For example, the formula may contain a missing operator or an incorrect use of parentheses. You must correct the formula.

- The numeric value for the row or column exceeds the maximum that Planning Assistant can store for a value. If the row or column is controlled by a formula, check to make sure that the formula is correct.

Ambiguous heading in formula (at row xxx) (at column xxx)

Either you just typed a formula that contains an ambiguous heading or you made a change to the spreadsheet that created an ambiguous heading in a formula (Planning Assistant displays the row or column number (xxx) of the formula that contains the ambiguous reference).

Before Planning Assistant can evaluate the formula, you must correct it or change a row or column heading to eliminate the ambiguity. Some possible causes of the error and corrective actions include:

- Heading appears in more than one group. Correct the formula by preceding the heading with the group name.
- Heading appears more than once in a group. Rename a heading so that there are no duplicate headings in the group.
- Heading is a column group name. Correct the formula by using a column heading that is not a group name.

If you were editing the spreadsheet, you can correct the formula by displaying the formulas regions (press PF9). Then, move the cursor to the row or column that has the number shown in the error message. (Planning Assistant displays the row and column number of the cursor's position in the lower right corner of the message region.)

Bad file name

You typed a file name that could not be recognized or you tried to refer to a device that does not exist in your system. Make sure the file name is typed correctly and that it contains only allowable characters (see your

DOS book). Also make sure the device name is typed correctly.

Both diskettes must have the write-protect tab removed

Remove the write-protect from the Planning Assistant program diskette and the blank diskette.

Calculator does not work here

The Calculator (PF4) works only in the values region and on variable values. It does not work on a value that is derived from a formula. Make sure that the cursor is positioned at a value and that the value is not derived from a formula. (To display the formulas regions, press PF9.)

Cannot access file: *filename*

The Setup program cannot find the indicated file on the diskette. Use the DOS DIR command to see if the file is on the diskette. If the file is missing, try your original copy of the program diskette. If the file is present, there may be a physical problem with a disk drive, disk controller, diskette, or fixed disk. Some possible causes and corrective actions are:

- Diskette inserted incorrectly. Remove the diskette, then re-insert it properly.
- Malfunction. DO NOT USE THIS DISKETTE AGAIN. If I/O error persists, take the disk drive to your computer dealer for testing.

Cannot access program diskette

Check that the program diskette is in the default drive; for example, if the DOS prompt is A>, the program diskette should be in drive A.

Cannot access target drive

The drive or directory that you specified for installing the program cannot be found. Run the Setup program again, being sure to enter the correct name for the fixed disk (or directory). Or, you might have tried to install Planning Assistant in a directory that has the maximum number of files on it. If you have some unneeded files, remove them, or install Planning Assistant in a different directory.

The disk or cable may have a physical problem. Contact your computer dealer for help.

Cannot change this in a view

You cannot change, insert or delete a heading, variable or formula in a view. To make the requested change, return to the main spreadsheet (press PF3).

Cannot find file

Planning Assistant cannot locate the file on the drive or directory. Type the correct file name, including the extension if it has one. If you need a list of files in the directory, enter just a drive name followed by a colon, such as B:, then press Enter.

Cannot find Help file

Planning Assistant cannot locate the files containing Help information on the diskette. Make sure that the Planning Assistant program diskette is in the drive. If it is, the Help files may have been deleted. If you backed up your Planning Assistant program diskette, use the backup copy.

Cannot find Planning Assistant

Planning Assistant is not on the disk in the drive. Make sure that you have the Planning Assistant diskette in the drive.

Cannot find printer information

The printer file is missing from the Planning Assistant program disk. (It may have been deleted accidentally.) If you backed up your Planning Assistant program diskette, use the original copy.

Cannot insert more

You have reached the maximum number of column headings, columns, rows, or variables. For corrective actions, see the appropriate following messages.

Cannot insert more column headings

The columns headings region can contain only 3 rows of column headings.

Cannot insert more columns

You have reached the maximum number of columns allowed (70) for a spreadsheet. Before you can insert more columns, you must make your spreadsheet smaller. If the spreadsheet has unneeded columns, delete them. Or, divide the spreadsheet into two or more smaller spreadsheets. You could then use the Consolidate spreadsheets option on the Get Menu to create a summary spreadsheet of the smaller spreadsheets.

Cannot insert more rows

You have reached the maximum number of rows allowed (255) for a spreadsheet. Before you can insert more rows, you must make your spreadsheet smaller. If the spreadsheet has unneeded rows, delete them. Or, divide the spreadsheet into two or more smaller spreadsheets. You could then use the Consolidate spreadsheets option on the Get Menu to create a summary spreadsheet of the smaller spreadsheets.

Cannot insert more variables

You have reached the maximum number of variables allowed (20) for a spreadsheet. If there are unneeded variables, delete them. Then, insert the variable.

Cannot load Planning Assistant

Planning Assistant cannot be loaded from the disk. This is most likely caused by a disk error. If you backed up your Planning Assistant program diskette, use the original copy.

Cannot print to the screen

You cannot print a spreadsheet on the screen. Enter the device name of your printer (such as PRN:) or a directory and file name.

Cannot type comments here

You cannot type a comment at the current cursor position. Type comments only when the cursor is in the values region.

On the JX, this message may also occur if you attempt to type a comment in a view. To type a comment, return to the main spreadsheet (press PF3).

Cannot type comments in a view

You cannot type a comment in a view. To type a comment, return to the main spreadsheet (press PF3).

Change dashes in row headings region

After you have used a line of dashes (or equal signs) to divide a spreadsheet, you cannot type over them or blank them out in the values region. To change a line of dashes to equal signs (or vice versa), move the cursor to the row headings region, type the new character (= or -) and press Tab. To delete a line of dashes (or equal signs), move the cursor to the row headings region, press PF6 (the Erase Entry key) and then press Tab.

Create a spreadsheet first

Before you can get Filing Assistant data or print a spreadsheet, there must be a spreadsheet in the working copy. Press Esc until you return to the Main Menu,

then select Design/Edit to create a spreadsheet or Get to retrieve a spreadsheet.

Before you can define a view, the spreadsheet must have both row and column headings.

Directory is full

You attempted to store a file on a disk, but the directory is full. If you have unneeded files on the disk, remove them: Press Esc until you return to the Main Menu, then use the Remove function to delete the files. Or, save the files on another directory.

Disk has been changed

The Planning Assistant file disk has been removed from the disk drive. Replace the disk.

Disk is full

Planning Assistant tried to write some information on a disk, but there was no room. If the disk has unneeded files, remove them: Press Esc until you return to the Main Menu, then use the Remove function to delete the files. Or, remove the diskette and replace it with a diskette with room for the file. Do not exit from Planning Assistant before saving the spreadsheet. You could lose both the changes made to the spreadsheet in the working copy and the spreadsheet file on disk.

On the JX, this message may also occur if you attempted to store a file on a disk, but the directory is full. If you have unneeded files on the disk, remove them: Press Esc until you return to the Main Menu, then use the Remove function to delete the files. Or, save the files on another directory.

Diskette is write-protected

You attempted to save or print to a diskette that is write-protected. Remove the write-protect from the diskette.

Drive is not ready

Either the disk is not inserted properly or there is no disk in the drive. Make sure that the drive contains a disk and that it is inserted properly.

Enter C on plan spec

The plan spec is missing a C (for column). Type C in the item that contains the data that you want Planning Assistant to match with the column headings. Or, type CV in one or more items so that Planning Assistant will match the item name (or names) with the column headings and use the values in that item (or items) for the spreadsheet values.

Enter one C or many CVs, but not both

You have included both C and CV in the plan spec. Use C in one item or CV in one or more items, but not both.

Enter R on plan spec

The plan spec is missing an R (for row). Type R in the item that contains the data that you want Planning Assistant to match with the row headings. Or, type RV in one or more items so that Planning Assistant will match the item name (or names) with the row headings and use the values in that item (or items) for the spreadsheet values.

Enter one R or many RVs, but not both

You have included both R and RV in the plan spec. Use R in one item or RV in one or more items, but not both.

Enter V on plan spec

The plan spec is missing a V (for value). Type V in the item that will provide the values for the spreadsheet. Or, type CV or RV in one or more items so that Planning Assistant will match the item name (or names) with the column or row headings and use the values in that item (or items) for the spreadsheet values.

Enter view name

Type a name for the view. The view name can be up to 15 characters long, including spaces.

Error in formula

The formula you just entered contains an error and Planning Assistant cannot evaluate it. If possible, Planning Assistant positions the cursor at the error. Common sources of error in formulas include:

- Formula ends with an operator, such as: savings+.
- Operators are adjacent to each other, such as: savings+*interest or (savings+) or (*savings)
- Operator is missing, such as the * in the following: (a+b)(c+d) or (a+b)c

On the JX, this message may also indicate incorrect use of parentheses in the formula. Common errors in the use of parentheses include:

- Unequal number of right and left parentheses, such as: ((a+b)
- Incorrectly placed parentheses, such as: (a+b))+(c
- Parentheses nested more than five deep

Correct the formula.

File is maximum size

To get data from a Filing Assistant file, Planning Assistant must store the search spec in the file; however, the file has reached maximum size. You can use Filing Assistant to copy the design to a new file and transfer forms there. Or, if there are unneeded forms in the file, remove them.

File is not in DIF

The file you specified was not saved in DIF (Data Interchange Format). Planning Assistant cannot read data from another program that is not saved in DIF. Make sure you typed the correct file name, including extension if it has one. (To list the files in the directory, enter just a drive name followed by a colon, such as B:, the press Enter.) If necessary, go back to the program and save the date in DIF.

If the file name is correct, you may have inadvertently saved the spreadsheet as a different type of file (such as a SYLK file). Try another option on the Get Menu to retrieve the file.

File is not in SYLK format

The file you specified was not saved in SYLK (Symbolic Link) format. Planning Assistant cannot read data from another program that is not in SYLK

format. Make sure you typed the correct file name, including extension if it has one. (To list the files in the directory, enter just a drive name followed by a colon, such as B:, then press Enter.) If necessary, go back to the program and save the data in SYLK format.

If the file name is correct, you may have inadvertently saved the spreadsheet as a different type of file (such as a DIF file). Try another option on the Get Menu to retrieve the file.

Formula cannot use its own heading

The formula you just entered includes the heading of the row or column containing the formula. A formula cannot refer to its own heading. Correct the formula.

Help is not available here

You have Pressed PF1 for Help, but there is no Help information available for this screen or function. Help is available only when you see PF1-Help at the lower left corner of the screen.

Internal error

Your fixed disk is probably malfunctioning. Contact your dealer for help.

Invalid date specification

The date specification in the plan spec is invalid. Enter a date specification containing a Y (for year), M (for month), or D (for day), and one or two dashes (-), one for each date field that you want Planning Assistant to ignore.

Invalid selection. Please re-enter

You have entered a selection that is not on the menu. Enter a number from the menu that corresponds to the function you want to perform. For example, at the Main Menu enter a number between 1 and 6 or the number 9 to Exit.

I/O ERROR

There is a physical problem with a disk drive, disk controller, diskette, or fixed disk. Some possible corrective actions are:

- Diskette inserted incorrectly. Remove the diskette; then re-insert it properly.
- Unformatted diskette. You must format the diskette using the DOS FORMAT command before using it with Planning Assistant.
- Malfunction. DO NOT USE THIS DISKETTE AGAIN. If the I/O error persists, take the disk drive to your computer dealer for testing.
- Fixed disk. Your fixed disk is probably malfunctioning. Contact your dealer for help.

Keyword is incomplete

Planning Assistant cannot complete the calculation because the keyword is missing some information. For example, you may have omitted the interest rate for the keyword @NPV or @FV. Complete the keyword.

Maximum page width is 240

The maximum page width for a printed spreadsheet is 240 characters. Type a number that is 240 or less.

Not an IBM Filing Assistant data file

The file you specified is not a Filing Assistant file. Be sure you have your Filing Assistant file diskette in the expected drive (drive B). Type the correct file name, including extension if it has one. If the diskette is not in drive B, include the drive or directory with the file name. (To list the files in the directory, enter just a drive name followed by a colon, such as B:, then press Enter.)

Not an IBM Planning Assistant spreadsheet

You have tried to retrieve a file that was not created by Planning Assistant and saved as a Planning Assistant spreadsheet. Type the correct file name, including extension if it has one. (For a list of files in the directory, enter just a drive name followed by a colon, such as B:, then press Enter.)

If the file name is correct, you may have inadvertently saved the spreadsheet as another type of file. Try another option on the Get Menu to retrieve the file. (Keep in mind that Planning Assistant retrieves only headings and values from DIF and SYLK files.)

Not a valid device name

Enter a valid device name, such as PRN: or COM1:.

Not enough memory available

Be sure you are using the program diskette labeled for your equipment. If you have the correct program diskette, there is not enough memory available to perform the requested function. Make the spreadsheet smaller by deleting unnecessary rows or columns. Or, divide the spreadsheet into two smaller spreadsheets. First, save the current spreadsheet; then, create a new spreadsheet with only headings and transfer data to it using the Consolidate spreadsheets option on the Get Menu. Finally, delete the rows and columns transferred to the new spreadsheet from the original spreadsheet.

If you have a memory-resident program (such as a print spooler or you are using the Random Access Memory to act like a disk), remove it to free more memory for Planning Assistant's use. (Save the spreadsheet on disk before you exit from Planning Assistant.)

Not related to target cell

The cursor is positioned at a value or variable that is not related to the target value by a formula. Move the cursor to a value that is related to the target value. (To display the formulas regions, press PF9.)

Nothing deleted or copied yet

You must delete (Shift-PF7) or copy (PF8) a row or column before you can reuse it.

If you have already tried to delete or copy a row or column, it may have been unsuccessful because there was not enough memory available to perform the function.

Odd number of quotation marks

You have entered an odd number of quotation marks in the formula and Planning Assistant cannot evaluate it. To correct the formula, add or remove quotation marks so that there is an even number of them.

Only 5 start values are allowed

You have entered more than five values after the keyword @Start. Delete start values until you have no more than five.

Only one FOR or EXCEPT in a formula

A formula can contain one "for" or one "except," but not both. Retype the formula.

Operators not allowed in values

A value cannot contain the operators +, -, * or /. Retype the value without operators. If you want to perform a calculation on a value, use Planning Assistant's Calculator (PF4).

Page length is not long enough

The page length you specified is not long enough for Planning Assistant to print the requested information. The page length must be long enough to include the column headings; at least one row of values; and, if you request them, column formulas, variables, and/or page heading. Enter a larger number for the Lines Per Page item.

Page width is not wide enough

The page width you specified is not wide enough for Planning Assistant to print the requested information. The page width must be large enough to include the row headings; at least one column of values; and, if you request them, row formulas. Enter a larger number for the Page Width item.

Parentheses used incorrectly

The formula you just entered contains an incorrect use of parentheses. Planning Assistant cannot evaluate it. Common errors in the use of parentheses include:

- Unequal number of right and left parentheses, such as: ((a+b)
- Incorrectly placed parentheses, such as: (a+b))+(c

Possible circular formulas involving row *xxx* (column *xxx*), you may recalculate using PF5

This message may occur when you have formulas that refer to each other in so complex a manner that Planning Assistant performs the calculations in more than one pass. Some values may not be completely calculated until you press PF5, Recalculate, a second time. (For an extremely complicated worksheet, you may have to press PF5 a third or fourth time until values remain the same.)

If values continue to change when yu press PF5, then two or more formulas refer to each other in a circular way. For example, the formula at row (or column) *xxx* might refer to another row or column that is controlled by a formula. That formula, in turn, refers to the heading at row (or column) *xxx*.

If necessary, press PF9 to display the formulas regions. Then, move the cursor to the row or column that has the number shown in the error message. (Planning Assistant displays the row and column number of the cursor's position in the lower right corner of the message region.) Check each heading reference in the formula to see if the corresponding row or column is controlled by a formula that refers to row (or column) *xxx*. If not, check to see if it refers to another formula that refers to the heading at row (or column) *xxx*.

This error condition can also be the result of using a keyword to perform calculations on the entire spreadsheet and then creating another formula that uses data in the column or row controlled by the first keyword. A solution to this error condition is to create a group heading to limit the range of the keyword.

Planning Assistant already exists on "drive"

You have already installed Planning Assistant on the drive. You are ready to use Planning Assistant.

Printer is not ready

Check to see that your printer is properly connected, turned on, online and has paper.

Program to copy not found

The Setup program cannot find the Planning Assistant program files on the program diskette. See your dealer for help.

Program too big to fit in memory

There is not enough memory available for Planning Assistant.

Quick Entry does not work here

Use the Quick Entry key (PF2) only when the cursor is in the values or headings region.

Replace program diskette in drive

Planning Assistant cannot locate a necessary program file or the files containing Help information on the diskette. Make sure that the Planning Assistant program diskette is in the drive. If it is, the files may have been deleted. If you backed up your Planning Assistant program diskette, use the original copy.

Selected function does not work here

The function you selected (Copy, Insert, Delete or Reuse) does not work at the current cursor position. To perform one of these functions on a row, first move the cursor into the values region, row headings region or a region to the left of the rows. To perform the function on a column, move the cursor into the values region, column headings region or a region above the columns.

If you were trying to reuse a column heading row, the cursor must be in the column headings region. To reuse a variable, move the cursor to the variables region.

On the JX, this message may also occur when you are using Calculator, Quick Entry, and Target. The Calculator (PF4) works only in the values region and on variable values. It does not work on a value that is derived from a formula. Make sure that the cursor is

positioned at a value and that the value is not derived from a formula. (To display the formulas regions, press PF9.) Use the Quick Entry key (PF2) only when the cursor is in the values or headings region.

If this message occurs when you are using Target on the JX, the error may be that the value cannot be used as a value to solve for because it is derived from a formula. Target can only solve for values typed into the spreadsheet. Or the error may be that you are using as a target a value that is not derived from a formula. Move the cursor to a value that is derived from a formula. (To display the formula region, press PF9.)

Target cannot solve for this value

The value cannot be used as a value to solve for because it is derived from a formula. Target can only solve for values typed into the spreadsheet. (To display the formulas regions, press PF9.)

Target does not work on this value

The value is not derived from a formula and cannot be used as a target value. Move the cursor to a value that is derived from a formula. (To display the formulas Regions, press PF9.)

The program diskette could not be backed up

The backup procedure failed. Check to make sure you followed the procedure correctly. The blank diskette, which is to contain the backup copy, might be defective; or there might be a physical problem with the disk drive or disk controller.

The program must be on the same drive as the Setup program

Type the name of the drive that contains the Planning Assistant and Setup program diskette.

This function does not work in a view

The function you selected (Copy, Insert, Delete, or Reuse) does not work in a view. To perform one of these functions, you must return to the main spreadsheet (press PF3).

This is last column

In a main spreadsheet, you have reached the maximum number of columns allowed (70). You cannot move the cursor beyond this column. Before you can add columns you must make the spreadsheet smaller. If it has unneeded columns, delete them.

Or, divide the spreadsheet into two smaller spreadsheets. First, save the current spreadsheet; then, create a new spreadsheet with only headings and transfer data to it using the Consolidate spreadsheets option on the Get Menu. Finally, delete the rows and columns transferred to the new spreadsheet from the original spreadsheet.

In a view, the cursor is positioned at the last column in the view. You cannot move the cursor beyond this column.

On the JX, this message also appears when you have reached the maximum number of variables allowed (20) on a spreadsheet . Before you can add another variable, you must delete one.

This is last row

In a main spreadsheet, you have reached the maximum number of rows allowed (255). You cannot add rows to this spreadsheet nor move the cursor beyond this row. Before you can add more rows, you must make the spreadsheet smaller. If it has unneeded rows, delete them.

Or, divide the spreadsheet into two smaller spreadsheets. First, save the current spreadsheet; then, create a new spreadsheet with only headings and transfer data to it using the Consolidate spreadsheets option on the Get Menu. Finally, delete the rows and columns transferred to the new spreadsheet from the original spreadsheet.

In a view, the cursor is positioned at the last row in the view. You cannot move the cursor beyond this row.

This is last variable

You have reached the maximum number of variables allowed (20) on a spreadsheet . Before you can add another variable, you must delete one.

This is maximum length

The item or region that you are creating or editing has reached its maximum length. Planning Assistant will not allow you to enter or insert more characters for the item or region. If you are trying to type over the contents, make sure you are not in Insert mode (press the Ins key). If you are trying to edit a formula that is at, or close to, its maximum of 10 lines, you may not be able to insert more characters in the formula. When a formula is at its maximum of 10 lines you cannot delete quotation marks within the formula.

This program has already been installed five times

The Setup program allows you to install the program on the fixed disk five times. However, if you made a backup copy of the program diskette, it can also be installed five times. Run the program again, this time using the backup copy.

> **Note:** If you are having problems with your fixed disk that make it necessary to install Planning Assistant repeatedly, contact your computer dealer.

To delete these headings, use F6

You cannot delete the last (bottom) row of column headings with the Delete Row/Col key. To delete the last row of column headings, use PF6, the Erase Entry key.

Too many operators in formula

The formula contains too many operators (+ - * / ()) for Planning Assistant to evaluate it. Some possible corrective actions are:

- Make the formula shorter by combining numbers; for example, perform simple calculations (such as 2+2+2) and enter the result (6) in the formula.
- Eliminate some numbers from the formula by creating variables with their values; then, use the variables in the formula.
- Divide the formula into two or more smaller formulas and enter each in the formulas region.

Too many parentheses

The formula you just entered contains parentheses that are nested more than five deep and Planning Assistant cannot evaluate it. Correct the formula.

Unknown reference in formula (at row *xxx*) (at column *xxx*)

The formula contains a reference that currently is not a heading or variable. If you just typed in the formula, Planning Assistant positions the cursor at the unknown reference. Make sure that you typed the formula correctly. Common sources of error include:

- Keyword was not preceded by @.
- Heading or variable name contains an operator (+ - * / ()). Make sure that this type of heading or variable name is in quotation marks, such as "Profit-before-Tax."
- Row, column, or variable does not yet exist. Create a row or column with the heading or a variable with that name.

If you were editing the spreadsheet, your editing change created an unknown reference in a formula. Planning Assistant displays the row or column number (*xxx*) of the formula containing the unknown reference. Before Planning Assistant can evaluate the formula, you must create a row or column with the heading or a variable with that name; or you must remove the reference from the formula.

To correct the formula, first display the formulas regions (press PF9). Then, move the cursor to the row or column that has the number shown in the error message. (Planning Assistant displays the row and column number of the cursor's position in the lower right corner of the message region.)

Use only numbers and operators

The Calculator uses only numbers and the operators +, -, *, /, (and). You cannot include a heading or variable in a calculation. Retype the calculation.

Variable or heading used too many times

You have used a variable or a row or column heading in more different formulas than Planning Assistant can accept. Use the variable or heading in fewer formulas. You may be able to avoid this problem with a heading by deleting several formulas and then adding a formula that creates a synonym for the heading. Use the synonym in subsequent formulas.

View is not defined

Type a view name from the list of currently defined views displayed by Planning Assistant.

Views need at least 1 row and column

When you define a view, you must include at least one row and one column in the view. You cannot exclude all rows or all columns. Type a + in the view region to include a row or column; or type a - to exclude a row or column.

You can define only 4 views

You have already defined four views, the maximum allowed for a spreadsheet. Type the name of a view from the list of currently defined views printed by Planning Assistant. If you want to define a new view, you must remove an existing one.

You can only back up your IBM Assistant Series diskette once

You have already backed up the Planning Assistant program diskette once. You cannot back it up again.

Your screen is full

Your current action is causing your spreadsheet to exceed the maximum number of lines that can be displayed on your screen. (On a color monitor, this message appears when your screen still has two free lines.) This problem happens if you attempt some combination of the following:

- to create formulas for rows and columns that take up more than a total of 12 lines (for example, a 10-line row formula plus a 4-line column formula)
- to create two or three lines of column headings
- to display the variables on the screen with the formulas

Display the variables and formulas separately, reduce the number of rows in the column headings, or shorten one or both formulas to allow your spreadsheet to fit on the screen.

Appendix B. Installing Planning Assistant on the Fixed Disk

Please read the complete procedure before you perform this installation.

1. Exit the Setup program by choosing option 5 to leave the Setup program.

2. Type **FIXEDISK** and press Enter.

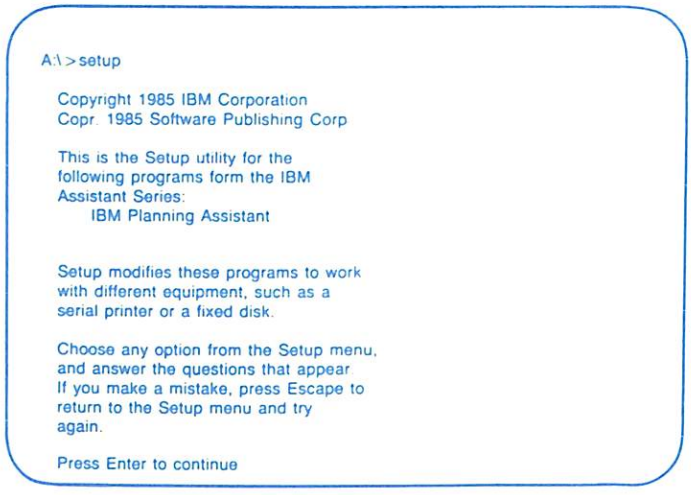
   This creates a directory named \ASSIST on the fixed disk, in which your Assistant program will be installed as you continue with the steps below. It also creates a special file in the root directory, named PLAN.BAT, that makes the program faster to start from the fixed disk. Make sure you don't accidentally erase this special file as you work with your disk.

3. Insert the Planning Assistant program diskette (write-protect removed) in drive A.

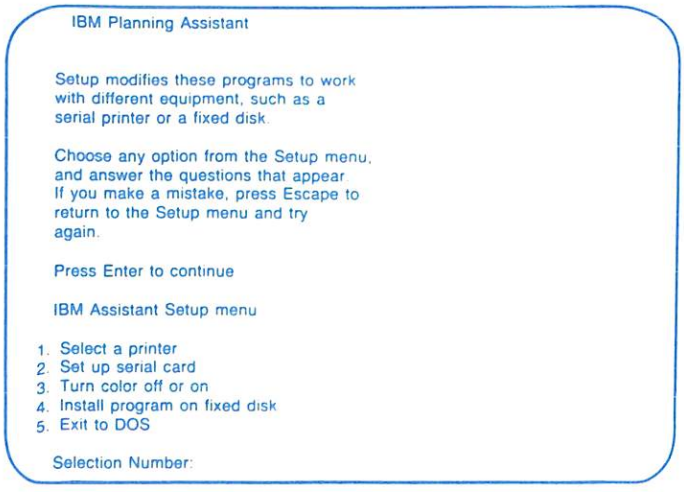
   Note: You must use your original Planning Assistant program diskette (not your Backup diskette) to install the program on the fixed disk.

   Then type **SETUP** in response to the prompt. Press the Enter key to continue.

The following prompt appears.



4. Press Enter as instructed and the Setup menu appears.



5. To install Planning Assistant on your fixed disk, choose option 4 of the Setup Menu. The program responds

   ```
   Enter full path name on fixed disk:
   ```

   Type the following after the prompt:

   ```
   C:\ASSIST
   ```

   Press the Enter key to continue. Both Planning Assistant and Setup are copied to Drive C in path name ASSIST. You will receive an OK message and the Setup menu will appear.

6. Select option 5 to exit from the Setup program.

You can, if you wish, install Planning Assistant in any directory you choose. Type that directory name when Setup asks for the drive name for the fixed disk. Use the DOS COPY command to copy the following files to that directory:

G.BAT
LOGO.EXE
PA.TBL
PA.PIF

Thereafter, to start the program, make sure the default directory is the directory in which you installed the program, then type PLAN and press the Enter key.

Refer to your IBM *Disk Operating System* book for instructions on copying files.

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