

Part III

Crunching Numbers and Keeping Lists with Excel



Building and Formatting Worksheets



How to...

- Start a new workbook
- Work with Excel worksheets
- Enter text and numbers
- Adjust column widths and row heights
- Apply fonts and font sizes to text and numbers
- Use borders and shading to add visual interest
- Save workbook files

Excel is Office's application for storing and manipulating numbers and data in spreadsheets. If you think you don't know anything about spreadsheets, you're probably wrong. Ever created a table in Word? Ever written a list? Ever balanced your checkbook? Well, then you've already worked with a rudimentary spreadsheet. Excel calls them *worksheets* and stores them in groups called *workbooks*, but other than that, the concept is the same: rows and columns of numbers and text, stored in a logical fashion. Excel adds the ability to perform calculations and to sort and filter the data automatically, and you'll learn all these things in this and the subsequent chapters.

Touring the Excel Interface

The Excel application window looks a lot like the Word application window. You'll see a lot of the same toolbars and buttons, and the menu bar is virtually identical. There's a task pane on the right side of the window (the first time you open Excel, anyway) and a status bar across the bottom of the window. This, however, is where the similarity ends in terms of onscreen features. Because Excel is a spreadsheet program, the workbook window (Excel's equivalent of the Word document window) is a set of three worksheets, each containing 256 columns and 65,536 rows, which means each sheet has 16,777,216 cells. As shown in Figure 10-1, depending on your monitor size and resolution (we're using 1024×768 resolution), you may only be able to see a handful of columns and rows at once. You'll probably never use all 16,777,216 cells, but they're there if you need them. This grid is the workspace you'll use in Excel, typing numbers and text into the individual cells.

Starting a New Workbook

When you first open Excel, you're given a blank, new workbook file. As with all new blank workbooks, three worksheets are already in place: Sheet1, Sheet2, and Sheet3 (see Figure 10-1). You can change this as needed by choosing Tools | Options and on the General tab changing the Sheets in New Workbook option to the number of sheets you need.

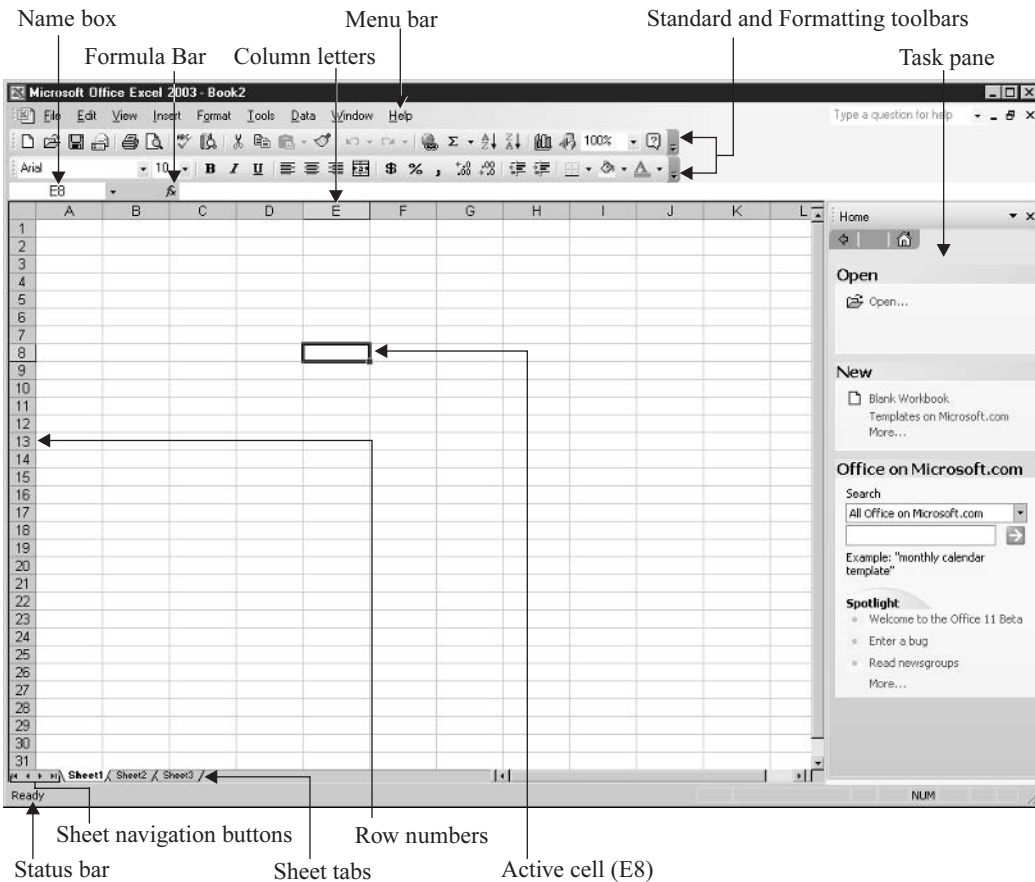


FIGURE 10-1 The Excel workbook window offers a grid and tools for storing text and numbers, plus a lot of the features you'll recognize from Word.

Understanding Worksheets

As stated previously, each worksheet contains 256 columns and more than 65,000 rows. Where these columns and rows intersect, you have *cells*, and you have more than 16 million per sheet. Each cell's address is its column letter and row number. If you're in cell E8, for example, you're in column E and row 8. The first cell in any worksheet is A1, and the last is IV65536. Figure 10-1 shows an active cell and the column letter and row number for that cell in the Name box. You'll also notice that the column letter and row number are highlighted for the active cell, making it easy to see where you are when you click inside a cell.

Of course, you can be in a cell that's not visible onscreen. If you click cell Z100 and then use the scroll bars to scroll up and left to look at cell A1, you're still in Z100, but that cell doesn't

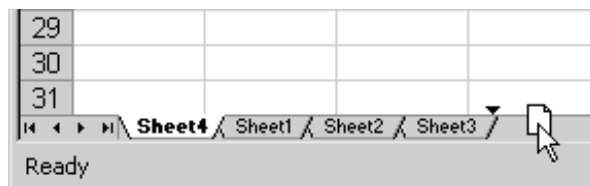
show onscreen at the same time as A1. That's where the Name box comes in handy. No matter which cell you're in, that address (or name, if you've named the cell, and you'll learn how to do that later) will appear in the Name box.

Switching Between Sheets

When you're working in a workbook, you might use only one of the sheets. Many users never venture beyond Sheet1 unless they're creating several related worksheets and want them in one workbook but on separate "pages" of that book. The process of switching between sheets is very simple—just click the tab for the sheet you want to switch to. On the keyboard, press CTRL-PAGE UP to move to a sheet to the left of your currently active sheet or CTRL-PAGE DOWN to move to a sheet to the right of the active sheet. When you're on the desired sheet, release CTRL. The active sheet tab turns white, and cell A1 in the active sheet becomes the active cell.

Adding and Deleting Worksheets to a Workbook

What if you need a new worksheet in the current workbook? Simply click the sheet that should be to the right of the new sheet and choose Insert | Worksheet. The new sheet appears to the left of the active sheet and becomes the new active sheet. Of course, once you've added sheets, you might need to rearrange them. To move sheets, just drag the sheet tabs with your mouse. Here you can see a new Sheet4 being dragged to the right so that it comes after Sheet3.



You can also create duplicate sheets by dragging them. Press and hold CTRL as you drag a sheet tab, and you'll drag a duplicate of that sheet, leaving the original in place. A plus sign will appear in the small sheet graphic that accompanies your mouse pointer as you drag.

Deleting sheets is also quite simple but should be done with great care, especially if there's data on them. If you realize you have an unnecessary sheet in the workbook after entering data onto the sheet, you'll want to make sure that data isn't essential to the workbook (the data will be deleted along with the sheet) or that you've copied it to another sheet in the workbook for safekeeping.

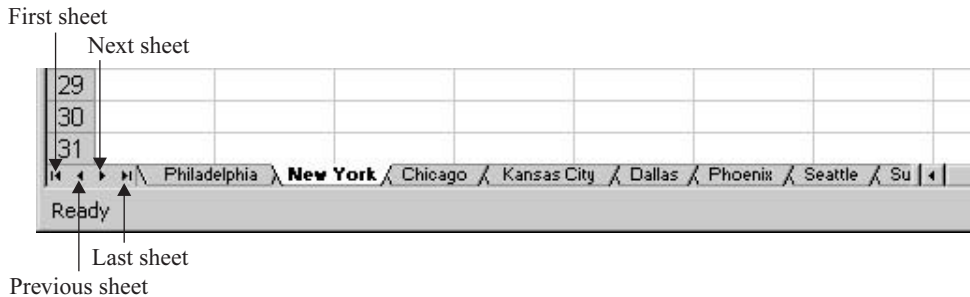
To get rid of a sheet, click its tab and choose Edit | Delete Sheet, or you can right-click the tab and choose Delete from the shortcut menu. If there is no data on the sheet, the sheet disappears immediately. If there is any data—even a single character in a single cell—Excel will prompt you that there might be data lost if you proceed.

Naming Sheets

As easy as it is to insert, delete, and rearrange sheets, it's even easier to rename them. Double-click the tab, and when the existing name turns black, simply type the new name and press ENTER or click in a cell on the sheet when you're finished typing the name. Here you can see Sheet1 is being renamed:



If in the renaming, your sheet tabs no longer fit within the space allocated for them on the bottom of the window, you can use the sheet-navigation buttons to move to a sheet with a tab that's not currently visible, clicking the appropriate button to move to the first tab in the book, the last tab in the book, or between the next and previous sheets.



Grouping and Ungrouping Sheets to Create Identical Worksheets

If your workbook will contain two or more sheets that have common layouts and content, you can save yourself a lot of time by grouping the worksheets before entering any data into them or applying any formats. Once the sheets are grouped, anything you do in any one of the sheets in the group is done to all of them. This includes entering text and numbers, creating formulas, applying any formatting, and changing column and row dimensions. For this reason, don't group the sheets until you're ready to build the content and formatting that are common to all the grouped sheets. You'll want to plan ahead of time. Think about the layout and content and know what you want before you start typing and applying formats to the worksheets.

To group sheets in your workbook, simply press CTRL, and while the key is pressed, click the tabs of the sheets you want in the group. If the sheets are in a series (say, sheets 1, 2, and 3), press and hold SHIFT, click the first tab in the group, and then click the last tab in the group. All

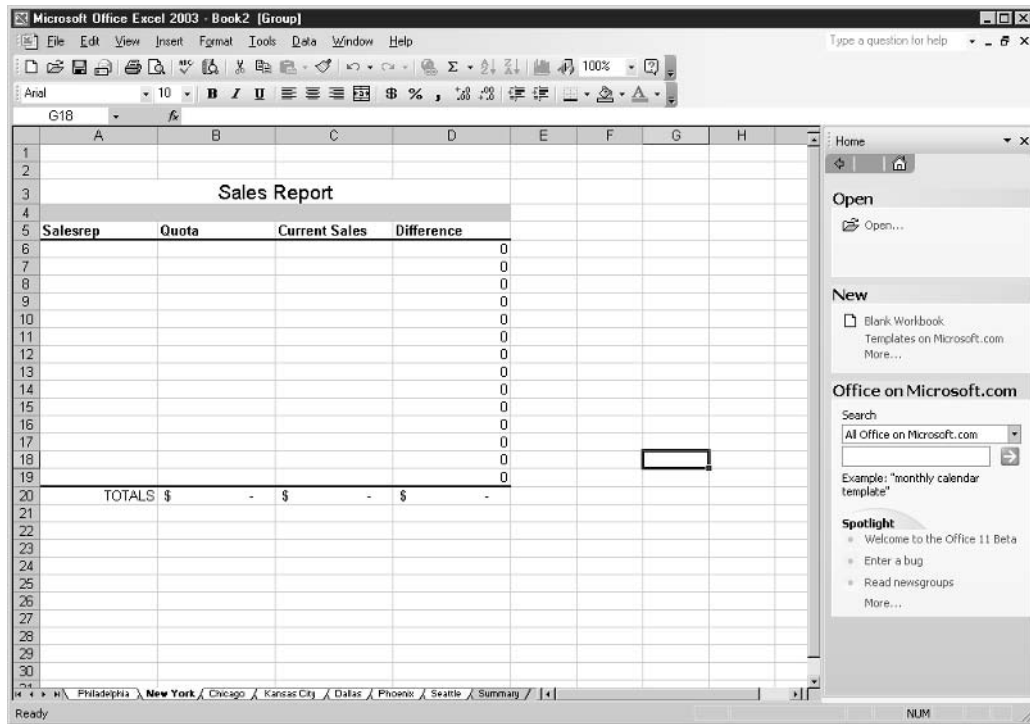


FIGURE 10-2 The Sales Report format shown here on the New York tab also appears on the other sheets that are grouped with it (indicated by the sheet tabs that are white).

the sheets between and including the first and last tabs you click will be grouped. Figure 10-2 shows a group of sheets, and because they're grouped, all the tabs in the group are white.

To ungroup a group of worksheets, click any tab outside the group or right-click the grouped tabs and choose Ungroup Sheets from the shortcut menu. Once the group is broken, each sheet returns to an independent status, and entries in a single sheet remain in that sheet, affecting none of the other sheets in the group—unless you’ve linked cells through pasting or formulas, and then only those cells will be affected.

Navigating Worksheets

With a worksheet of more than 16 million cells, it's important that you know how to get around quickly and easily. Nothing would waste more of your time using Excel than to have to scroll endlessly in a large worksheet, looking for the cell you want, or to have to use your mouse every time you wanted to select a different active cell. Excel makes it easy to use your mouse, the keyboard, and even a simple menu command to move from place to place in a worksheet. The following table lists these techniques:

Command or Action	Navigational Result
CTRL-HOME	Moves you to cell A1 and makes that the active cell.
CTRL-END	Moves you to the last cell in the worksheet that contains data.
PAGE DOWN	Moves you one screen-full of rows down the worksheet. The number of rows per screen varies by each user's monitor dimensions and the resolution the monitor is set at.
PAGE UP	Moves you one screen-full of rows up the worksheet.
ALT-PAGE DOWN	Moves you one screen-full of columns to the right.
ALT-PAGE UP	Moves you one screen-full of columns to the left.
CTRL-PAGE UP	Moves you one sheet to the left of the currently active sheet. If you're on Sheet2 when you press this key combination, you move to Sheet1.
CTRL-PAGE DOWN	Moves you one sheet to the right of the currently active sheet. If you're on Sheet2 when you press this key combination, you move to Sheet3.
CTRL-UP ARROW	Moves you to the top of the column you're currently in.
CTRL-DOWN ARROW	Moves you to the bottom of the column containing the active cell.
CTRL-LEFT ARROW	Moves you to the end of the row you're in at the time.
CTRL-RIGHT ARROW	Moves you to the first cell in the row containing the active cell.
CTRL-G	Opens the Go To dialog box, where you can enter a cell address and click OK to go to that cell.
Choose Edit Go To	Open the Go To dialog box and enter a cell address to go to. In the resulting dialog box, enter the address and then click OK to move to that cell.

To make small moves—for example, going from cell B5 to C10—you can easily click in the target cell with your mouse or use the arrow keys on your keyboard. You can also press TAB to go from cell to cell, moving one cell to the right of your current location. To move one cell to the left of your current location, press SHIFT-TAB. If you press ENTER, you'll go to the cell directly below the current cell.

SHORTCUT

Want to go from the end of one row to the beginning of the next one down? Press ENTER then HOME. This makes entering several rows of data go much faster.

Entering Worksheet Content

Typing text and numbers into a worksheet is very simple. Just click in the cell and start typing. There's no limit to what you can enter into a single cell, and you can format cells to wrap text, which gives you the ability to type paragraph text into a cell. Most worksheets, however, don't contain paragraph text. They normally contain heading and label text (at the tops of columns and at the beginning of rows) to identify the rest of the worksheet's content, whereas the cells within

the worksheet contain numbers and short strings of text. The following shows a typical worksheet that stores sales figures for a series of products.

	A	B	C	D	E	F	G	H
1								
2								
3								
4	First Quarter Sales by Product							
5								
6	Product Name	Product Number	Unit Price	Units Sold	Total Sales	Last Month	Comparison	
7								
8								

When you type numeric content into a cell, the numbers are automatically right-aligned as soon as you press ENTER. Click the Enter button (the green check to the left of the Formula Bar), or move to another cell. When you type text or any combination of text and numbers, the content is automatically left-aligned.

If the content you type exceeds the width of the cell, one of three things will happen, depending on what you've entered (text or numbers) and what's in the cell to the right of the cell with more content than width:

- If you enter more text than will fit into a cell, the extra text will overlap the cell to the right but won't actually fill that adjoining cell. It will simply appear on top of it, unless that cell has content already.
- If the adjoining cell has content, the overflow will be truncated (cut off) at the end of the cell. This illustration shows both text that overlaps the adjoining empty cell and text that's cut off because the next cell already has content of its own.

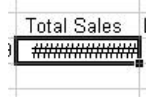
No text on the right lets this text display fully.

	A	B	C	D	E	F	G	H
1								
2								
3								
4	First Quarter Sales by Product							
5								
6	Product Name	Product Number	Unit Price	Units Sold	Total Sales	Last Month	Comparison	
7	Gunpowder Bird Seed							
8	Giant Sling Shot	SL172						
9	Anvil-on-a-Rope							
10	Jet-Powered Roller Skates	JP753						
11								

Content in cell B10 truncates this product name.

- If you enter numeric content into a cell and the cell isn't wide enough to accommodate it all, a variety of results can occur:

- If you've already adjusted the column width, which tells Excel you have a specific width in mind, the numbers will be displayed as pound signs, rather than just cutting off what doesn't fit (so you don't think a cell contains 10,000 when it really contains 100,000!).



- If the column width has never been manually adjusted, the column will automatically widen to accommodate the full number, unless the number is more than 11 digits long. If it is, an exponent is displayed, such as E+16.

No matter what you enter into a cell and no matter what happens to the entry in terms of its display in that cell, the entire entry will always show in the Formula Bar. If your text is being cut off by the adjoining cell's content, you can still see the whole string on the Formula Bar. Even if your numbers are displayed as pound signs, you can see the entire number, string of text, or the formula that gives you the result that should appear in the cell.

Editing Cell Content

Nobody's perfect. Even with the most thorough preparation and impeccable typing skills, you're bound to enter the wrong thing into a cell or the right thing into the wrong cell, or you'll misspell something or transpose some numbers. Luckily, correcting mistakes is very simple. Here are some tips:

- To replace the content of a cell, click in the cell and begin typing the replacement content. The very first keystroke after you click in the cell removes the current content and begins the replacement.
- To edit the content of a cell, click in the cell and press F2 or double-click to activate the cursor in the cell. Use LEFT ARROW and RIGHT ARROW to move among the characters/digits in the cell, and make your corrections using BACKSPACE or DELETE to remove unwanted text or numbers.
- You can always edit cell content on the Formula Bar. Click once in the cell to be corrected and then go to the Formula Bar. Your mouse pointer appears as an I-beam, as though you were on a page in a Word document. Click to place your cursor in the content and make your corrections.

After making your corrections, press ENTER to confirm, or click the Enter button on the Formula Bar. You can also confirm a cell's entry by clicking in any other cell on the worksheet. If you want to reverse your correction, returning the cell to its original content, press ESC or click the Cancel button on the Formula Bar. This works only if you haven't pressed ENTER or clicked the Enter button yet. Once you've confirmed a cell's entry or correction, the only way to go back to previous content is by clicking the Undo button. Bear in mind that Excel gives you only 16 levels of Undo—far fewer than the 100 levels that Word gives you.

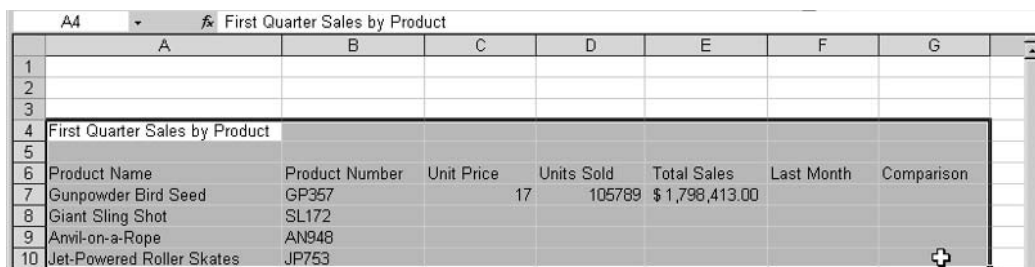
Selecting Cells, Blocks, Columns, and Rows

A quick way to enter a series of column headings is to select the block of cells that will contain them and then begin typing. If, for example, your headings will be in cells B3 through E3, you can select that range of cells and then type your first heading. Press ENTER, and you're automatically taken to the second cell in the range (C3, in this example), and so on. By selecting the block of cells, you're telling Excel where you're going to be working. The order you selected the cells in (dragging from B3 to E3) indicates the direction the entries will follow.

There are other reasons to select individual cells and blocks of cells, of course. You click in a particular cell to make it the active cell, at which point you can enter content or make a correction. Selecting blocks of cells enables you to apply formatting to several cells at once or to make a large-scale deletion. If you need to cut or copy content from your worksheet, selecting the cells that contain that content is the first step in the process.

Selecting a Block of Cells

To select a block of cells, click in the first cell in the range of cells you want to select. Press and hold the mouse button and then drag up or down and left or right through the adjoining cells you want to include in your selection, as shown here. This range (from A4 through G10) was started in A4 and ended at G10. Because the selection began in A4, that cell remains white.



	A	B	C	D	E	F	G
1							
2							
3							
4	First Quarter Sales by Product						
5							
6	Product Name	Product Number	Unit Price	Units Sold	Total Sales	Last Month	Comparison
7	Gunpowder Bird Seed	GP357	17	105789	\$ 1,798,413.00		
8	Giant Sling Shot	SL172					
9	Anvil-on-a-Rope	AN948					
10	Jet-Powered Roller Skates	JP753					

You can also select cells using the SHIFT key. Activate the first cell in the intended block of cells and then press SHIFT. With SHIFT pressed, click the arrow keys, and the selection will grow, following the direction of the arrow keys you press. When your selection is complete, release SHIFT and don't press the arrow keys again until you're ready to move away from and deselect the range.

Selecting Multiple Cell Ranges

You can also select multiple blocks and random individual cells by pressing CTRL as you gather selections. For example, you can select a range—A6 through G6—and then select the individual cells A8 and A10, then another range, such as G7 through G10, as shown here. By keeping CTRL pressed while the cells were clicked (for the individual cells) and dragged through (for the ranges/blocks), the selections were accumulated instead of each successive selection canceling out the previous one.

	A	B	C	D	E	F	G
1							
2							
3							
4	First Quarter Sales by Product						
5							
6	Product Name	Product Number	Unit Price	Units Sold	Total Sales	Last Month	Comparison
7	Gunpowder Bird Seed	GP357	17	105789	\$ 1,798,413.00		
8	Giant Sling Shot	SL172					
9	Anvil-on-a-Rope	AN948					
10	Jet-Powered Roller Skates	JP753					

TIP

You can't use the Cut or Copy command on nonconsecutive selections. If you select noncontiguous cells and then try to issue the Cut or Copy command, an error message appears, indicating that the command cannot be used on multiple selections.

Selecting Entire Columns and Rows

Another powerful selection method results in entire columns and rows being selected—very handy if everything in a given column or row should be formatted the same way or needs to be cut, copied, or deleted. To select an entire column, click the column letter once. Similarly, if you want to select an entire row, click the row number. When you make such a selection, the entire column or row is selected—all 256 cells in the row, or 65,536 cells in the column. To select multiple columns or rows, simply drag through the column letters (to select two or more contiguous columns) or the row numbers (to select several contiguous rows).

10

Inserting Rows and Columns

Just as you might forget a column heading or row label, you might completely forget an entire section of your worksheet—a whole column of numbers, a series of names, or a product that should have been added to a list of sales figures. It's very simple to insert the blank space you need to add the content that you forgot.

To insert a column, simply select the column to the right of the spot where the new column should be and then choose Insert | Columns. The new column appears, and everything to its right is moved over one column. You can insert multiple columns in one step by selecting a number of existing columns equal to the number of new columns you need and then choosing Insert | Columns. The new batch of columns appears to the right of the first column in the series you selected.

Inserting rows is just as simple and requires nearly an identical procedure. To insert a row, select the row beneath where you want the new row to appear and choose Insert | Rows. As the plural command name would imply, it's also possible to insert multiple rows all at once—just select the same number of existing rows as you want to insert and choose Insert | Rows. The existing content is moved down to accommodate the new blank rows.

Saving Workbook Files

Probably the most important step in the process of building a workbook is saving it. If I accomplish one thing with this chapter, I hope it's to keep you from having to redo hours of work because

you didn't save early or often enough. To protect yourself, make File | Save (or the CTRL-S shortcut) your first action after starting a workbook, and your repeated action during the process of building your worksheets.

Saving a New Workbook

After you've started a new workbook and done about five or ten minutes of work, you should save the file. Some people save the file immediately, giving it a name and choosing where to save it so that all they have to do is keep resaving it periodically as they work.

To save a file, you can pick one of the following methods: choose File | Save, press CTRL-S, or click the Save button on the Standard toolbar.

The *first* time you save the file, no matter what method you use, will bring up the Save As dialog box, which is virtually identical to that in Word, PowerPoint, and Access. There you have to choose what to call the workbook and where to store it. (You can also choose File | Save As for the first save.) It's after the first-time save that it matters which method you use. If you choose File | Save for a file that has already been saved, you'll update the file by resaving it to include your latest changes and additions, and no dialog box will appear. If you choose File | Save As in a previously saved file, the Save As dialog box opens, and you have the chance to save the file with a new name or to a new place, thus protecting the current version and creating a new version of the file.

Saving a Workbook as a Template

Just as grouping worksheets and then building a series of identical worksheets saves time and achieves greater consistency within a workbook, a template saves you time and assures you greater consistency among workbooks. Every worksheet based on a particular template will look and work the same way. Figure 10-3 shows a sales report template that would enable you to build the same report every time—from the headings, to the formatting (fonts, shading, and borders), to the formulas that tally the sales.

How to ...

Password-Protect Your Sensitive Worksheets

If you really want to protect the original from any changes, don't just save it with a new name. Instead, save it with a password. In the Save As dialog box, click the Tools button and choose General Options from the resulting menu. In the Save Options dialog box, enter a password to protect the file from being opened or modified. Only people who know the password you set up will be able to open or save the file with changes. Of course, make sure it's a password you can never forget, because there's no way to retrieve the password (or open the file) if you forget it.

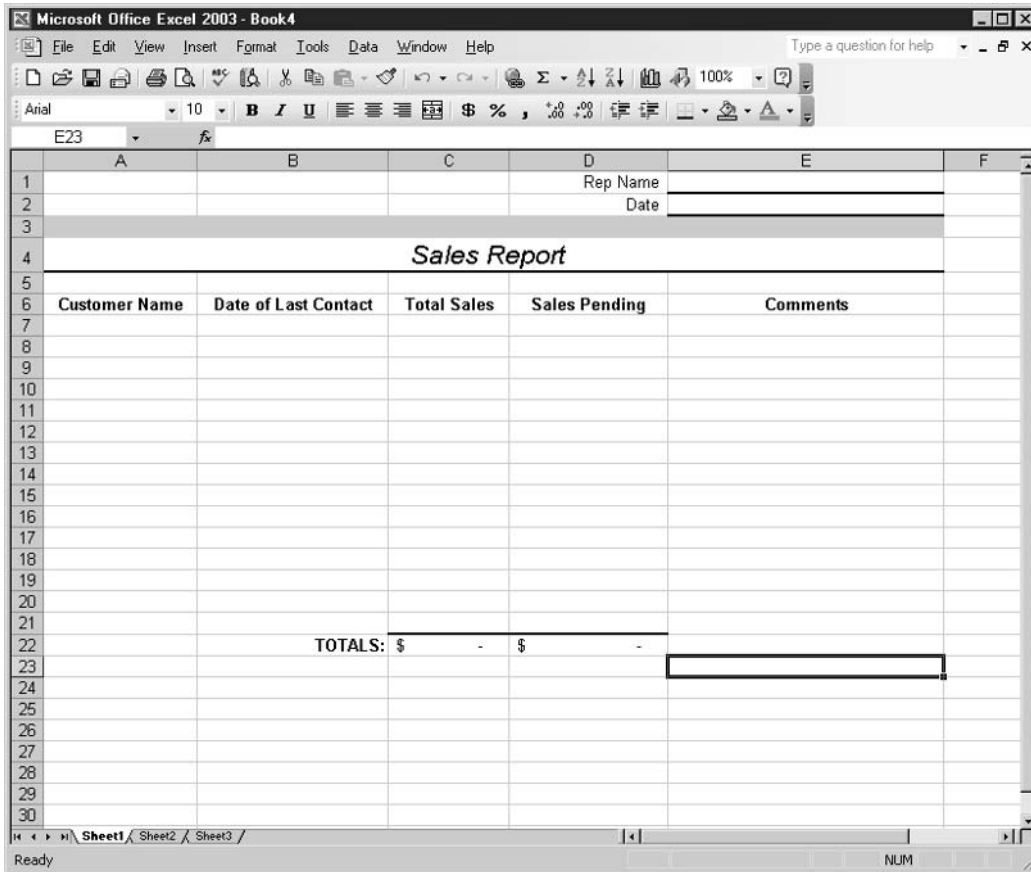


FIGURE 10-3 A template contains the basic structure, content, and formatting that each new workbook based on it should have.

The most important step in creating a template is planning. You want to be sure that the only content in the template-to-be is the content you want in every file that's created based on the template. For example, if you're creating an expense report template, you don't want specific expenses in the report. You want only the column headings, the row labels, and the formulas that total the columns and rows in the report.

TIP

If you want to use an existing, data-filled worksheet as a template, simply save the workbook as is and then remove the unique content—the data that you wouldn't want in other workbooks created based on this workbook. Then choose File | Save As, which you now know will open the Save As dialog box and close any existing version of the file, protecting it from changes.

Once this common content is built in and formatted as you want it, choose File | Save As and click the Save As Type drop list. From the list of file formats, choose Template (.xlt). You are immediately transported to the Templates folder, where all template files must be saved in order to use them again in the future. Name the file and click the Save button. The template will now be available when you click the On My Computer link on the New Workbook task pane. When you click that link, all the templates—both those that came with Excel and those you’ve created—appear in the Templates dialog box. To use one of them, double-click the desired template’s icon, and a new workbook is opened that’s based on the selected template.

Formatting Worksheet Content

Despite the old saying, “You can’t judge a book by its cover,” people do judge most things by the way they look, and worksheets are no exception. Formatting your worksheet enables you to dress it up, draw attention to important data, and make the worksheet more visually interesting overall. Good worksheet formatting can also make your data-entry process easier.

Formatting your worksheet is simple, and you’ll find that quite a few of the tools you use to change the appearance of your worksheet are the same tools you use in Word to format your documents. There are some differences, though, and these are immediately apparent when you look at the Excel Formatting toolbar. Tools for currency style, percentage style, and comma style as well as tools for increasing and decreasing the displayed decimal places are all right there (see Figure 10-4).

TIP

The formatting tools work just as you’d assume, based on what you already know about Word—select the content the formatting should apply to and then click the button for the formatting you want. But, unlike the Bold, Italic, and Underline tools, however, the Currency, Percentage, and Comma Style tools don’t toggle on and off. Once you’ve applied them, you must use the Undo button to reverse your action.

In addition to the Formatting toolbar is the Format | Cells command, which opens the Format Cells dialog box. Through this dialog box, you can change the appearance of your worksheet content—be it text or numbers—in many ways. The Format Cells dialog box contains tabs for Number, Alignment, Font, Border, Patterns, and Protection options that affect virtually every aspect of a cell’s appearance—from the font, to the color of the cell, to the way the content is aligned.

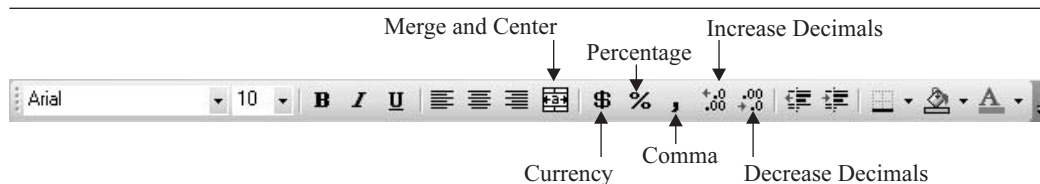


FIGURE 10-4

Excel’s Formatting toolbar includes the most commonly applied numeric formatting tools.

Of course, as with the toolbar buttons, you should have the cell or block of cells the formatting should apply to selected before opening this dialog box. You want Excel to know which cells you want to format. You can select entire rows or columns and apply formatting to them, which is very useful if every cell in a given column or row should be formatted the same way. It saves you time selecting smaller blocks repeatedly, and it helps you make certain that every cell in a given row or column will look as it should.

Applying Numeric Formats

When your worksheet contains numbers, it can be helpful to format them appropriately, if only so that people viewing your worksheet know that, for example, the numbers represent sales dollars and not units sold, or that the figures are percentages of another number on the same worksheet. Using the Formatting toolbar or the Format Cells dialog box, you can apply the formats that will help you and others quickly and easily interpret your numeric data.

To apply numeric formatting, you have several options:

- Use the Currency, Percentage, and Comma Style buttons on the Formatting toolbar.
- Adjust the number of displayed decimal places with the Increase Decimal and Decrease Decimal buttons.
- Choose Format | Cells, click the Number tab, and choose from a variety of number formatting options—for everything from money (Currency) to dates and times.

NOTE

The Increase and Decrease Decimal buttons don't work if you have anything other than numeric content selected. If you select a block of cells and even one of the cells contains text, the buttons won't work when you click them.

Most of the categories and the formatting options within them are fairly self-explanatory. One, however, is quite powerful, and maybe a little enigmatic for the first-time user. The Custom category allows you to build your own formats for specialized numbers, such as serial numbers, phone numbers, and dates, and combinations of text, symbols, and numbers that you might enter into your worksheet. As shown in Figure 10-5, plenty of Custom formats are built in, and a text box is provided for you to type your own into.

For example, imagine your company has product numbers such as 5-43489.2—a single digit followed by a dash, followed by five numbers, followed by a decimal point, then another number. This sort of number is ripe for typos. Another problem with a number like this is that Excel will see the dash and think you're trying to do some math. Creating a Custom format will eliminate this problem for the selected cells.

This Custom category is also great for creating date formats other than those offered by the Date category. You can set up any combination of date components: d for day, m for month, y for year. If, for example, you want the year first, with four digits, then the month, followed by the day, you could create the custom format yyyy-mmm-dd. (By using three m's, you're telling Excel you want the three-letter abbreviation for the month rather than the number of the month.)

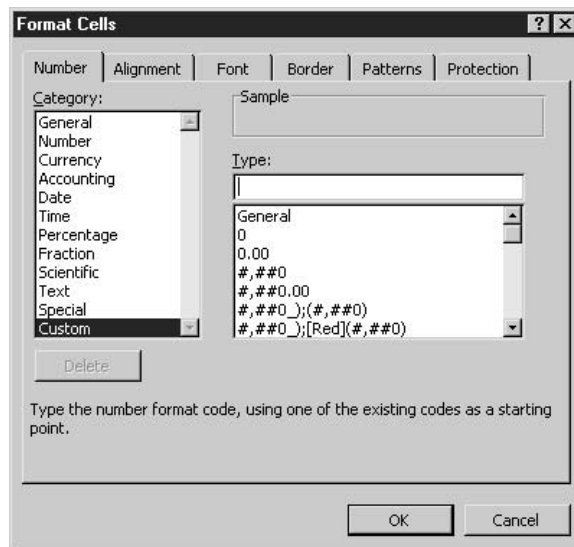


FIGURE 10-5 Need a special number format? Create it yourself in the Custom category.

Changing Fonts and Sizes

By default, Excel uses the Arial font, in 10-point size. This is a very legible font, and virtually every computer has Arial on it, which means you can share your worksheet with just about anyone and know that it will look the same for that person as it does for you. You can tell which font and size is in use for any cell in your worksheet by clicking that cell and viewing the displayed Font and Size settings on the Formatting toolbar.

CAUTION

When a block of cells is selected, the font and size of the first cell in the selected range (the cell you started your selection from) is what appears on the toolbar. This can be deceiving, especially if there is a different font or size applied to some of the cells in the selected range. For this reason, if you want to be certain which font or size is in use in a particular cell, be sure only that cell is selected when you view the toolbar's display.

Of course, not everyone likes the way Arial looks, and sometimes you need to change the fonts in your worksheets to make them match other documentation (such as an accompanying report, done in Word, in Times New Roman), to create a certain look or feeling, or to draw attention to titles or headings.

If you want to change the fonts on your worksheet, it's very quick and easy to do. Select the cells you want to format (press CTRL-A if you want to set a single font for the whole worksheet), then either use the Font and Size buttons' drop lists on the Formatting toolbar or choose Format | Cells. In the resulting Format Cells dialog box, click the Font tab and make use of the tools for selecting a font, size, style, and color. You can also apply special effects, such as strikethrough, to indicate content that is to be deleted or ignored.

When choosing a font, be sure that the one you choose makes both text and numbers legible. Some fonts are great on text but render numbers completely illegible. The script and artistic fonts are a perfect example. Further, if you know your worksheet will be photocopied or might be reduced to fit on one page when printed, pick a font that's clear even when small. To test this, reduce the Zoom setting on your page and see if you can still read the content. You can do this by choosing View | Zoom or clicking the Zoom button on the Standard toolbar. Choose 75 or 50 percent as the magnification level and test the legibility of your fonts and sizes.

Applying Color to Text and Numbers

If you choose to apply color to your fonts, pick a color that looks good both onscreen and when the worksheet is printed. Some colors look fine onscreen but wash out too much on paper. Also, you won't know for sure if everyone who's printing your worksheet has a color printer. For example, bright blue can become a very light gray when printed on a black-and-white printer. To apply color to your content, you can use the Font Color button on the Formatting toolbar, or you can use the Color option on the Font tab in the Format Cells dialog box.

Resetting the Default Font and Size for All Workbooks

If you absolutely hate Arial or must have 12-point text and numbers in your worksheets, you can change the default from Arial 10 to anything you want. Choose Tools | Options, and on the General tab change the Standard Font setting. From that point on, all worksheets will use your new setting as the default. Make any changes to the default with care. You could end up picking something that other users don't have on their computers (and their computers will make a potentially unappealing substitution) or that other people simply don't like. If you work with others who'll use your worksheets, use discretion when changing any of your Excel defaults.

Aligning Worksheet Content

By default, text is left-aligned in your worksheet cells, and numeric content is right-aligned. Nothing is centered by default. You can change the alignment of all or some of your worksheet content, however, simply by clicking the Alignment buttons on the Formatting toolbar or by using the Alignment tab in the Format Cells dialog box to change the way text is horizontally oriented in your worksheet cells.

Changing the Angle of Text

The Alignment tab in the Format Cells dialog box (choose Format | Cells to open the dialog box) provides more than simple left, right, and center alignment tools. You can also rotate your text on anything from a 90-degree to a minus-90-degree angle, as shown in Figure 10-6. This can be very handy for longer column headings. If you don't want to use space from left to right to accommodate a long heading, rotate the heading text so that it appears on an angle. It will take up less space from side to side, and you can keep your columns narrower and still display the entire column heading.

You can set the orientation by clicking the half-circle (it looks like a clock), or you can enter a specific number of degrees in the box below it. Either way, the bar in the half-circle shows how the text will appear at the selected angle: tilting down or up, or running straight up and down.

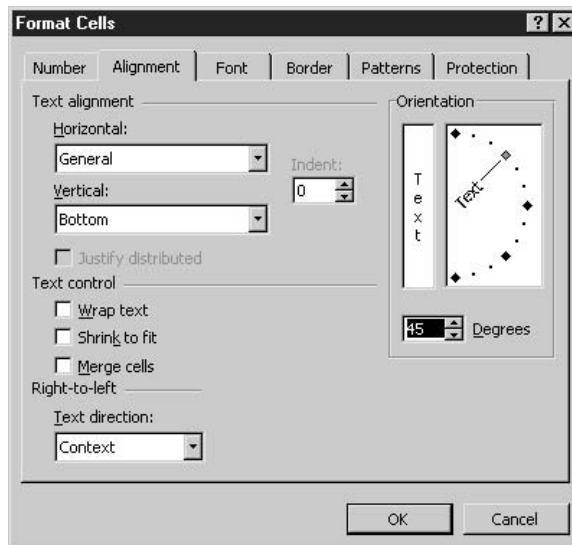


FIGURE 10-6 The Alignment tab allows you to control the horizontal placement of content within worksheet cells.

Wrapping and Shrinking Text to Fit

Other options in the Alignment tab include text controls. These settings allow you to have text wrap within a cell, making it possible to type paragraph text or longer column or row headings in a cell. You can also have the text shrink to fit within the confines of the cell, which would be determined by the column width and row height—but be careful that this doesn't make your text too small to read! You can also merge cells, which takes two or more cells and turns them into one larger cell—one that can easily house a long worksheet title or some instructional or explanatory text.

Using Merge and Center

The Formatting toolbar has a fourth alignment option: the Merge and Center button (refer back to Figure 10-4). This alignment option is especially useful for worksheet titles, because it allows you to center a title over the width of the worksheet data and merge the title into a single cell so it's truly centered.

To merge and center a worksheet title, select the cell containing the title as well as all the cells on either side of it, for the span of the worksheet's data. After selecting the cells, click the Merge and Center button. The selected cells are merged into one long cell, and the title text is centered within that single cell. After making this alignment change, you can tinker with it through the Format Cells dialog box using the Alignment tab.

Shading Worksheet Cells

Adding color to a worksheet can be done through the color of text and numbers and by changing the background color of worksheet cells. Color makes parts of the worksheet stand out, and it can also help you match your worksheet to folders, binders, and other materials that might accompany your printed worksheet. If your worksheet will be part of a visual presentation—perhaps shown on a big screen or over the web—you can use colors in your worksheet that will match the slides and graphics included in that presentation.

Applying color to worksheet cells is done in one of two ways:

- Use the Shading Color button on the Formatting toolbar.
- Choose Format | Cells and click the Patterns tab.

If you use the Shading Color button, you can pick from a palette of 40 colors. This palette looks just like the one you see if you use the Font Color button discussed earlier in the “Applying Color to Text and Numbers” section. Be sure to pick a color that won’t make the cell content illegible. A very dark shading with black text will be hard to read, as will a light shading with light text. Try to remember, too, that what looks good onscreen might not look good on paper if someone prints the worksheet, and that not everyone has a color printer. For example, bright yellow cells might look great onscreen, but they’re light gray on a black-and-white printer.

If you use the Patterns tab (so named because you can apply patterns as well as solid colors), you can choose from the same palette of 40 colors, plus a group of custom colors (if you’ve ever created custom colors using any of the other Office applications) and a series of 18 patterns, including no pattern, which reverts to a solid color.

How to ...

Apply Formatting Based on Cell Content

If you need to apply shading to cells, color to cell content, font formatting, borders, or any other visual formatting to parts of your worksheet and want the content of the cells to dictate which formatting is applied, you can use Excel’s Conditional Formatting tools to make it happen. With these tools, for example, you can shade every cell that contains a number higher or lower than a number you specify, or place a thick cell border around every cell containing a particular word or phrase. To access the Conditional Formatting tools, choose Format | Conditional Formatting, and use the Condition 1 box to choose how the worksheet content is analyzed and used to apply formatting you specify in the three adjacent text boxes/drop lists. You can set multiple conditions (click the Add >> button), applying a format to numbers below a certain level but above another level. After setting the criteria (the Conditional part of the process), click the Format button inside the Conditional Formatting dialog box to make your formatting selections for the cells that will meet your conditions.

Applying Borders

Borders break your worksheet into visual sections. By default, the gridlines on your worksheets don't print (you can set them to print, as discussed in Chapter 14), so borders are a great way to make it clear where one part of your worksheet ends and another begins. For example, if you have several columns of numbers and each one is summed at the bottom, you can place a dark or double border beneath the last numbers in each row.

To apply a border, you can use either of two methods:

- *Use the Borders tool on the Formatting toolbar.* You can turn on borders on any side of the selected cell or range, and you can choose from a variety of border styles and thicknesses.
- *For more options, including border color, choose Format | Cells and click the Border tab.* On this tab you can turn borders on and off on all sides of the selected cell(s) and also choose from different border styles. There are more options here than offered through the Borders button. To apply a colored border, click the Color drop list and choose a color from the palette that appears. Once your settings are complete, click OK to apply them and close the dialog box.

A third way to create cell borders is draw them with your mouse. To access this tool, choose Draw Borders from the bottom of the Borders button palette. When you make this selection, your mouse pointer is turned into a pencil and the Borders floating toolbar appears (see Figure 10-7).

	A	B	C	D	E	F	G	H
1								
2								
3			Marketing Budget - 2003					
4								
5								
6		Advertising		Allocated				
7			Print Ads	\$ 5,200.00				
8			Radio Spots	\$ 17,500.00				
9			Flyers	\$ 750.00				
10			Brochures	\$ 1,200.00				
11			Promotional Items	\$ 1,800.00				
12			Total	\$ 26,450.00				
13		Telemarketing						
14			Training	\$ 5,000.00				
15			Support	\$ 1,700.00				
16			Payroll	\$ 125,000.00				
17			Computers/Phones	\$ 9,800.00				
18			Total	\$ 141,500.00				
19		Other						
20			Seminars	\$ 5,400.00				
21			Conventions	\$ 7,500.00				
22			Total	\$ 12,900.00				
23								
24			Grand Total	\$ 180,850.00				
25								

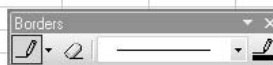


FIGURE 10-7 Click a cell wall to apply a border to it.

To apply a border in this fashion, choose a line style and a line color from the Borders toolbar—the styles range from solid lines to dashed or dotted lines—and then click the borders of cells to which you want to add that particular type of border. You can also click the Eraser button (it looks just like the eraser from Word’s Tables and Borders toolbar) and delete cell borders. Just click the border with your mouse, and it disappears.

Copying Cell Formats

Whatever the formatting you’ve applied to a cell, you can use the Format Painter to apply it to other cells, saving yourself the time and trouble of repeating all your formatting steps. Simply select the cell or range thereof that has the formatting attributes you want to use elsewhere on the worksheet. Then, click the Format Painter on the Standard toolbar (shown in Figure 10-8) and notice that as soon as you do, your mouse pointer has a paintbrush on it. Next, click in the single cell or drag through the range of cells that should be formatted to match your sample cell(s). After you release the mouse, the Format Painter is automatically turned off. If you want to copy your formatting to several locations on the same worksheet, double-click the Format Painter button to turn it on. It will remain on until you click it to turn it off or until you press ESC.

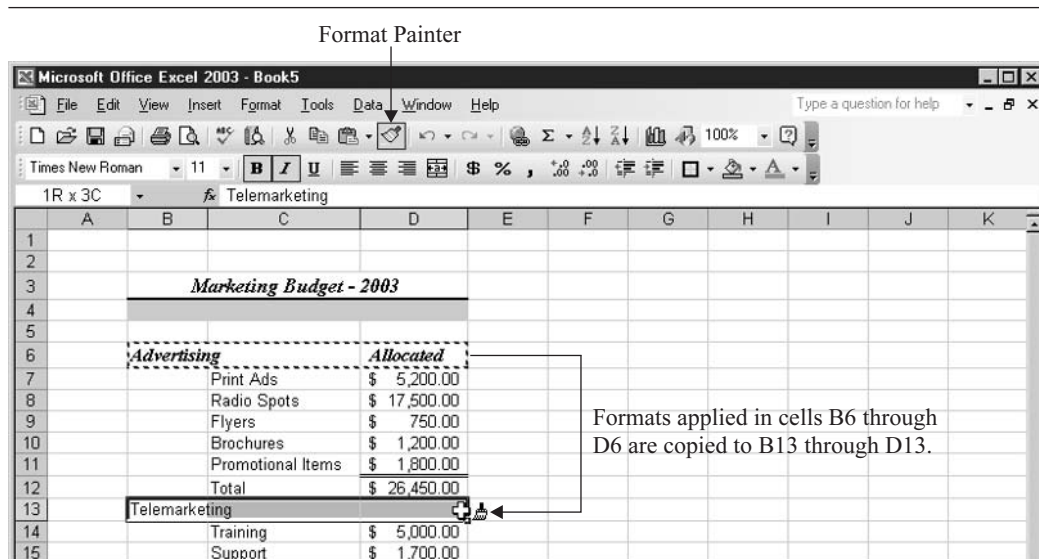


FIGURE 10-8 The Format Painter copies formatting from one cell to another.

Chapter 11

Working with Formulas and Functions



How to...

- Quickly sum a series of cells with a single toolbar command
- Build any formula from scratch
- Control the order of formula operations to make sure the right result is achieved
- Copy your formulas to multiple locations, making your worksheet more consistent throughout
- Use Excel's built-in functions to perform a variety of calculations, from averaging to calculating a loan payment

The benefits of using an electronic spreadsheet program rather than working with pencil, paper, and a calculator are well known. You can give the command to total a series of numbers (or perform any other type of calculation, including built-in operations, called *functions*), and the result appears automatically. If one of the numbers contributing to that total changes, the total changes automatically. No writing, no erasing. Further, Excel makes it possible to copy a formula from point A to point B and have the formula work in both places, referring to different cells in each place. Pretty slick, eh?

Understanding Spreadsheet Calculations

Performing mathematical operations in Excel is pretty simple, and even the more complex calculations can be performed with functions, built by tools that guide you through the process of “doing the math.” For formulas you create from scratch, however, you need to know the math behind the operation. If you want to figure out the difference between last year’s sales and this year’s, you need to know how to structure that formula—is it this year’s minus last year’s or last year’s minus this year’s? Once you know how the math should go, however, constructing the formula is easy, and Excel will perform the calculations flawlessly. And unlike your speedy fingers on a calculator, Excel won’t make a mistake.

When it comes to calculations on an Excel worksheet, they’re generally performed by telling Excel to take one cell’s numeric content and add it to, subtract it from, multiply it by, or divide it by another cell’s content. For example, if the number 50 is in cell B5 and the number 72 is in cell C5 and you want to multiply them, the formula should multiply B5 times C5, not 50 times 75. Why? So that if you change the number in B5 to 60, the result changes automatically. If you use the actual numbers in the formula, you have to redo the formula from the beginning, editing the formula within the worksheet to recalculate with new numbers. By using cell addresses in the formula, whatever’s in the cell is used in the formula, and changes need only be made in the cell in order to see them reflected in the formula result.

Excel has some basic structural requirements for formulas. First, the formula goes in the cell where the result should be, not in any of the cells that contribute to the formula. As shown next, the formula that calculates the difference between two years’ sales goes in the Difference column, and it refers to cells in the 2001 Sales and 2002 Sales columns.

SUM ✕ ✓ fx =C7-B7				
	A	B	C	D
1				
2				
3				
4	Sales Analysis			
5				
6		2001	2002	Difference
7	Philadelphia	5,246,780.00	5,321,100.50	=C7-B7
8	New York	14,895,630.00	14,534,810.62	
9	Chicago	1,089,540.00	1,904,657.62	
10	Kansas City	914,578.00	1,037,717.60	
11	Santa Fe	2,578,964.00	2,312,882.58	
12	San Diego	13,789,512.00	13,432,011.27	
13	Seattle	8,650,124.00	6,153,295.78	
14	Totals			

The second requirement is that all formulas begin with an equal sign. Why? Think of it this way: “This cell is EQUAL to...” as you click in a cell to start a formula. If you think of each formula as simply a sentence, expressed mathematically, you won’t forget the equal sign, and it can also help you organize your formula in your head before you begin to create it.

Performing Quick Addition with AutoSum

One of the simplest formulas is an AutoSum. It’s “Auto” because it’s automatic—it seeks out the cells near to the cell containing the AutoSum formula and automatically sums them. It’s “Sum” because it’s adding up a series of cells. As shown in this example, the columns in this worksheet need to be totaled. Each quarter’s sales can be totaled at the foot of each column, and each regional office’s individual sales can be totaled as well, in the last column of the worksheet.

11

B13 ✕ ✓ fx						
	A	B	C	D	E	F
1						
2						
3						
4	Quarterly Sales by Division					
5		Q1	Q2	Q3	Q4	TOTALS
6	Philadelphia	1,344,612.50	1,204,500.30	1,371,337.45	1,400,650.25	5,321,100.50
7	New York	3,975,700.25	3,426,200.40	3,875,125.35	3,257,784.62	14,534,810.62
8	Chicago	525,781.00	574,126.00	478,961.62	325,789.00	1,904,657.62
9	Kansas City	245,712.35	250,462.00	315,793.00	225,750.25	1,037,717.60
10	Santa Fe	625,796.25	715,987.40	345,951.78	625,147.15	2,312,882.58
11	San Diego	3,772,700.35	2,428,200.40	3,975,326.85	3,255,783.67	13,432,011.27
12	Seattle	1,825,612.70	1,304,705.30	1,721,357.43	1,301,620.35	6,153,295.78
13	TOTALS					
14						

Of course, you could do that by typing a long formula (starting with an equal sign, of course) that takes one cell plus another cell plus another cell and so forth, but that would take forever and increases the margin for error significantly. Using AutoSum simplifies, speeds, and streamlines the process of performing the most common of worksheet calculations: the summing of a row, column, or other range of numbers.

Using the AutoSum Function

Σ

To perform an AutoSum, simply click in the cell where the sum result should appear and then click the AutoSum button on the Standard toolbar. As soon as you click the AutoSum button, Excel looks at the cells surrounding the active cell and when it sees two or more cells with numbers in them, it assumes those are the cells you want to sum. It then places a dashed border around the cells to be summed and puts the AutoSum formula in the cell, awaiting your approval.

	SUM	X	✓	fx	=SUM(B6:B12)	
	A	B	C	D	E	F
1						
2						
3	Quarterly Sales by Division					
4						
5		Q1	Q2	Q3	Q4	TOTALS
6	Philadelphia	1,344,612.50	1,204,500.30	1,371,337.45	1,400,680.25	5,321,100.50
7	New York	3,975,700.25	3,426,200.40	3,875,125.35	3,257,784.62	14,534,810.62
8	Chicago	525,781.00	574,126.00	478,961.62	325,789.00	1,904,657.62
9	Kansas City	245,712.35	250,462.00	315,793.00	225,760.25	1,037,717.60
10	Santa Fe	625,796.25	715,987.40	345,951.78	625,147.15	2,312,882.58
11	San Diego	3,772,700.35	2,428,200.40	3,975,326.85	3,255,783.67	13,432,011.27
12	Seattle	1,825,612.70	1,304,705.30	1,721,357.43	1,301,620.35	6,153,295.78
13	TOTALS	=SUM(B6:B12)				
14		=SUM(number1, number2,...)				

How to ... Create and Use Custom Lists

You can use the paste process to copy any cell's content to adjoining cells or to create a list of consecutive items, such as days of the week, months of the year, or numeric patterns. If you want to repeat a name, number, or even fill in a series, all you need to do is drag the first cell through the adjoining cells. Excel will fill in the cells you drag through based on what was in the starting cell. Excel's custom lists can be pasted and filled in by typing the first (or any) item in the list. View the complete list of automatic custom lists and create your own by choosing Tools | Options and clicking the Custom Lists tab. To create a list of numbers following a pattern, establish the pattern in the first two cells and then select them both before pasting from the lower-right corner of the second cell—the cells to which you paste the content will perpetuate the pattern you established.

Pasting works for any calculation, not just AutoSum. To paste a function, click in the cell that contains the formula you want to use in the adjoining cells. When the cell containing the formula is active, point to the lower-right corner of the cell (look for the small black box in the corner). Your mouse turns to a black cross, and at that point you can drag your mouse through the adjoining cells, as shown here. When you've dragged through all the cells that should contain the formula, release your mouse, and the formulas are pasted. The results appear in the cells to which the formula was pasted.

B13 **f** =SUM(B6:B12)

	A	B	C	D	E	F
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						

Quarterly Sales by Division

	Q1	Q2	Q3	Q4	TOTALS
Philadelphia	1,344,612.50	1,204,500.30	1,371,337.45	1,400,650.25	5,321,100.50
New York	3,975,700.25	3,426,200.40	3,875,125.35	3,257,784.62	14,534,810.62
Chicago	525,781.00	574,126.00	478,961.62	325,789.00	1,904,657.62
Kansas City	245,712.35	250,462.00	315,793.00	225,750.25	1,037,717.60
Santa Fe	625,796.25	715,967.40	345,951.78	625,147.15	2,312,862.58
San Diego	3,772,700.35	2,428,200.40	3,975,326.85	3,255,783.67	13,432,011.27
Seattle	1,825,612.70	1,304,705.30	1,721,357.43	1,301,620.35	6,153,295.78
TOTALS	12,315,915.40				

Of course, you might be thinking that Excel is going to copy the formula from the first column or row to all the other columns or rows and you'll somehow have to update those copied versions to sum the columns or rows where they now appear. Wrong! Thanks to a concept called *relative addressing*, the formulas will update themselves to sum the cells relative to their new

position. A formula that summed numbers in column A will now sum numbers in column B, C, and so forth. As you can see in the Formula Bar shown next, the AutoSum that was pasted from column B is now summing cells in column C, automatically.

C13 =SUM(C6:C12)

	A	B	C	D	E	F
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						

Quarterly Sales by Division

	Q1	Q2	Q3	Q4	TOTALS
Philadelphia	1,344,612.50	1,204,500.30	1,371,337.45	1,400,650.25	5,321,100.50
New York	3,975,700.25	3,426,200.40	3,675,125.35	3,257,784.62	14,534,810.62
Chicago	525,781.00	574,126.00	478,961.62	325,789.00	1,904,657.62
Kansas City	245,712.35	250,462.00	315,793.00	225,750.25	1,037,717.60
Santa Fe	625,796.25	715,987.40	345,951.78	625,147.15	2,312,882.58
San Diego	3,772,700.35	2,428,200.40	3,975,326.85	3,255,783.67	13,432,011.27
Seattle	1,825,612.70	1,304,705.30	1,721,357.43	1,301,620.35	6,153,295.78
TOTALS	12,315,915.40	9,904,181.80	12,063,853.48	10,392,525.29	44,696,475.97

Creating Simple Formulas from Scratch

Imagine you want to take the sales total for a given sales rep and compare it to another rep’s total, or maybe you need to show the total expenses for a department as a percentage of the company’s total expenses. How would you do that? If you know how to do it on a calculator, you can do it in Excel.

Building formulas is very simple, assuming you stick to the rules: Place the formula in a cell on its own, start it with an equal sign, and press ENTER at the end to confirm the formula and perform the calculation. The other thing to remember is that Excel uses four simple operators for the main mathematical operations it performs:

- + (plus sign)

– (minus sign)

* (asterisk)

/ (slash)
- Addition

Subtraction

Multiplication

Division

If the numbers you want to calculate are in the worksheet, refer to them by their cell addresses. Also, try to get into the habit of using your mouse to click cells that you want to include in the formula rather than typing the addresses on the keyboard. It will save you time and reduce the margin for error, and you can construct formulas more logically, building them cell by cell, the way you think about the calculation that you’re setting up. For example, if you want to take one division’s first quarter sales (in cell B6) and figure out what percentage of the entire company’s sales they represent (the total sales for all the divisions for Q1 is in B13), you would type =, then click in cell B6, type / (to divide), and then click in cell B13. The formula =B6/B13 is created, but you were able to build it by thinking “Divide Philadelphia’s sales by the total of all the divisions’ sales to see what portion of the total its sales represent.”

Editing Formulas

As with any cell, if you want to replace the content, simply click in the cell and start typing the replacement content. In the case of a formula, if it's so out of whack that you want to start over completely, this is probably your best bet. Click in the cell, type an equal sign, and start all over again.

If your formula is salvageable—maybe you just need to change a single cell address, operator, or number—you can edit it in one of three ways:

- Click in the cell, then go up to the Formula Bar, position your cursor, and start editing, just as you would a cell containing text or numbers.
- Double-click the cell and edit the formula right within the cell. The formula won't appear in the cell unless you double-click it.
- Press F2 to activate the cursor in the cell and display the formula there as well. You can edit the formula right inside the cell.

When you're finished editing, press ENTER to recalculate with your changes in place.

TIP

You might notice that when you edit a formula, each cell address in the formula turns a different color, and the cells on the worksheet that were used in the formula change to colors that match their cell references in the formula. This color-coding helps you figure out where all the parts of the formula came from and assists you in editing the formula.

Understanding Relative vs. Absolute Addressing

You've seen relative addressing at work. When you paste an AutoSum formula from one cell into another, the formula updates relative to where you've pasted it. The opposite of this default behavior is called *absolute addressing*. Absolute addressing is a state in which one or more of the cells in a formula do not update, no matter where you paste the formula. Looking back to our worksheet with sales reps' totals and the percentage of the total sales represented by each, this is a perfect opportunity to save time with the paste function procedure, but to do so requires the use of absolute addressing.

Take the formula for Philadelphia's percentage of the total sales, =B6/B13. If you paste that formula down the column for the other divisions, the formula will update each time, becoming =B7/B14 for the next division, =B8/B15 for the division after that, and so on. Each time the formula moves down, the cell addresses will increment by one cell, following the rules of relative addressing. If, however, we instruct Excel to "always go back to cell B13 for the total sales," we can take the formula that calculates Philadelphia's percentage and paste it down the column to get the percentages for each individual division, as compared to the one total for everyone's sales.

So how do we tell Excel to use absolute addressing rather than relative? With the F4 key. Continuing to use Philadelphia's percentage formula as an example, when you click cell B13, press the F4 key. Figure 11-6 shows the result of our doing so: Dollar signs appear before the B and the 13 in the Formula Bar, indicating that the B (column location) and 13 (row location)

should remain fixed (or absolute)—when the formula is copied to columns C, E, G, and I, B13 will remain in the formula.

SUM ✕ ✓ 🔍 =B6/\$B\$13										
	A	B	C	D	E	F	G	H	I	J
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

Quarterly Sales by Division

	Q1	% of Total Sales	Q2	% of Total Sales	Q3	% of Total Sales	Q4	% of Total Sales	TOTALS
Philadelphia	1,344,612.50	=B6/\$B\$13	1,204,500.30		1,371,337.45		1,400,650.25		5,321,100.61
New York	3,875,700.25		3,426,200.40		3,875,125.35		3,257,784.62		14,534,810.62
Chicago	525,781.00		574,126.00		478,961.62		325,789.00		1,904,657.62
Kansas City	245,712.35		250,462.00		315,793.00		225,750.25		1,037,717.60
Santa Fe	625,796.25		715,987.40		345,951.78		625,147.15		2,312,882.58
San Diego	3,772,700.35		2,428,200.40		3,975,326.85		3,255,783.67		13,432,011.27
Seattle	1,625,612.70		1,304,705.30		1,721,357.43		1,301,620.35		6,153,295.78
TOTALS	12,315,915.40		9,904,181.80		12,083,853.48		10,392,525.29		44,696,476.08

TIP

A great way to make use of the absolute reference is to place a multiplier or divisor in a cell, intended for use as an absolute reference. Imagine a series of products, and you want to calculate a price increase, but you're not sure if you want to increase prices by 15 or 18 percent. If you place the multiplier (0.15 or 0.18) in a cell and then refer to that cell and turn it into an absolute reference, you can increase all the prices on the worksheet with one formula, pasted down the list of products.

Controlling the Order of Operations

Left to its own devices, Excel will perform the calculations in your formula in order—from left to right if all the operators are the same, or in order based on the operators if they vary throughout the formula. The operators-based order can be used to your advantage, enabling you to control the order of operations by using certain symbols in your formula. Without attempting to control the order of operations, you risk getting a wrong answer to your formula. Using real numbers to make the concept clearer, imagine this formula:

5 + 3 × 10 = 80

Five plus three is eight, times 10 is 80, right? If you typed the formula =5+3*10 into a cell on an Excel worksheet, however, the answer would be 35. Huh? Well, because of the order of operations, the multiplication would be performed first, then five would be added to that. Three times 10 is 30, add five, and you get 35. If you wanted to get the correct answer, you'd have to construct the formula as follows:

(5 + 3) × 10 = 80, or in Excel's format, =(5+3)*10

The parentheses tell Excel to perform the addition first, then to take that result and multiply it by 10. To help you remember and utilize the order of operations, remember the phrase “Please My Dear Aunt Sally,” where the first letters stand for the order of operations—Parentheses, Multiplication, Division, Addition, Subtraction.

Using 3-D Formula References

References to worksheets or workbooks other than the one that contains your formula are called *3-D* (three-dimensional) because they add depth to your formula. Instead of operating solely on the flat surface of a single active sheet, a formula that references a cell in another worksheet in the active workbook or that refers to a cell in another workbook entirely is creating a connection to data outside the current worksheet, and it’s therefore considered 3-D.

The scenarios that require pulling cells from other worksheets and workbooks are limited only by the scope of the data you have stored through Excel. Imagine that you want to project sales or productivity for the new year or an upcoming month, and you want to base the projection on data from the past. If that past data is in another worksheet, you need to reference the cell or cells containing it rather than reenter that data into your active sheet. Referencing the external cell is much less labor intensive than copying the external data to your active worksheet, and it reduces the margin of error.

Combining Worksheets in a Formula

Building a formula that references a cell in another worksheet (a worksheet within the same workbook as the formula) requires nothing more than your knowledge as to which worksheet contains the cell or cells you want to reference. Your 3-D formula starts just as any other formula does—type an equal sign and begin entering your formula. At the point where the external cell is required, simply click the sheet tab for the worksheet containing the desired cell, and when that sheet is displayed, click in the cell. The formula will now include the sheet name, followed by an exclamation point and then the cell address, as in `=F3+Sheet2!C6`.

In this example, cell C6 is in Sheet2, and it is being added to what’s in cell F3 on the active sheet (the sheet containing the formula). Obviously, having sheets that are named to indicate their content (“Sales” instead of “Sheet2”) would be a big help so you know which sheet tab to click as you build your 3-D formula.

Combining Workbooks in a Formula

When you know your formula will require references to cells in another workbook, open that workbook before you begin building the formula. You can use the taskbar to switch between workbooks when the time comes to select the cell from the external workbook, or you can use the Window menu in Excel to switch between workbooks.

Including a cell from another workbook is just as simple as including a cell from another worksheet in the same workbook. It’s just a matter of switching to the sheet (now found in

another workbook) that contains the cell you need and then clicking that cell. The following shows a formula that contains information inserted from another workbook—note the workbook name in brackets, followed by the sheet name (with an exclamation point), followed by the cell address from the external workbook.

J15		=J13/[Projected Sales.xls]2002 Projections!\$B\$7						
	C	D	E	F	G	H	I	J
4								
5	% of Total Sales	Q2	% of Total Sales	Q3	% of Total Sales	Q4	% of Total Sales	TOTALS
6	11%	1,204,500.30	12%	1,371,337.45	11%	1,400,650.25	13%	5,321,100.84
7	32%	3,426,200.40	35%	3,875,125.35	32%	3,257,784.62	33%	14,534,811.61
8	4%	574,126.00	6%	478,961.62	4%	325,789.00	3%	1,904,657.76
9	2%	250,462.00	3%	315,793.00	3%	225,750.25	2%	1,037,717.67
10	5%	715,987.40	7%	345,951.78	3%	625,147.15	6%	2,312,882.73
11	31%	2,428,200.40	25%	3,975,326.85	33%	3,255,783.67	33%	13,432,012.15
12	15%	1,304,705.30	13%	1,721,357.43	14%	1,301,620.35	13%	6,153,296.20
13		9,904,181.80		12,083,853.48		10,392,525.29		44,696,478.97
14								
15							Projection Comparison:	107%

When you've selected your external cell, press ENTER if that cell is the last component of the formula, or if the formula is not yet complete, switch back to the workbook containing the formula or switch to yet another workbook or worksheet to gather more cells for your formula.

TIP

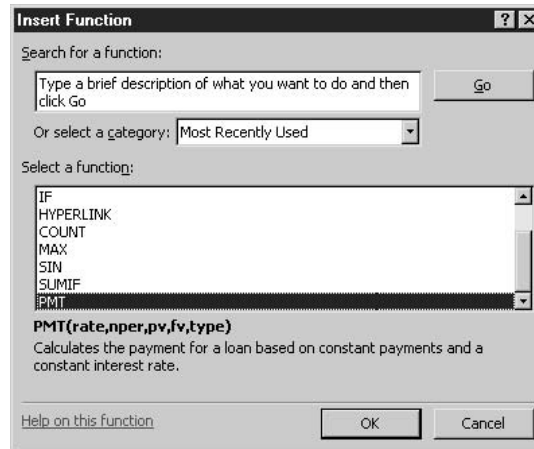
3-D references needn't include actual formulas that perform mathematical operations. If you simply want data from another worksheet or workbook's cell to appear (typically, for quick visual reference) in your active sheet, just type an equal sign in the cell that should contain the externally referenced cell's content and then go click in the cell that contains the data you want. Press ENTER to confirm, and the number (or text content, whatever's in the referenced cell) will appear in your active sheet.

Using Excel's Built-in Functions

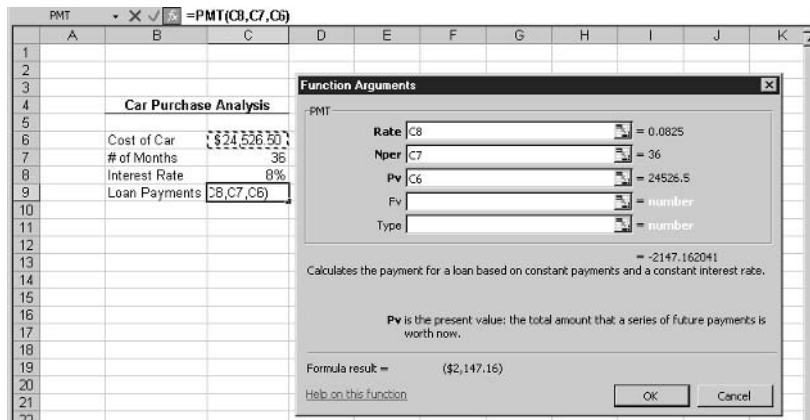
If you've used the AutoSum button, you've already used one of the built-in functions. The button invokes the SUM function—just one of more than 100 mathematical, statistical, and analytical functions, all ready and waiting to help you do things such as calculate the payment on a car loan or figure out how much an investment will be worth in 20 years.

The rest of Excel's functions can be invoked by using the Insert Function button (found on the Formula Bar, just to the left of the box where you enter/edit cell content) or by typing the function name after the equal sign and building the formula from there. Of course, the latter approach assumes you know the structure of the formula (which cell goes where within the formula, which operators to use, and any numeric or text content to include), but for functions such as SUM and AVERAGE (simple mathematical operations that most people know how to construct), you can usually forgo the Insert Function button.

For example, if you know you want to average the numbers in cells B6 through B12, you can simply type **=AVERAGE(B6:B12)** in the cell that should contain the average, and the result will appear when you press ENTER. If, on the other hand, you want to calculate a loan payment based on interest rates, down payments, length of the loan, and other variables, you'll want to use the Insert Function dialog box to select the appropriate function (PMT, in this case) and click OK.



In the Function Arguments dialog box that appears, you then build the function one component at a time, by entering arguments (cell addresses, text, or numbers). The results are shown in the Formula Result field at the bottom of the dialog box, and the Formula Bar shows the function.



Chapter 12

Building and Maintaining List Databases



How to...

- Create a useful list database in Excel
- Avoid common pitfalls in database construction and data entry
- Put your database in any order you need it
- Search for records and query your database
- View your data from a variety of perspectives

Excel isn't just an application for storing your budget reports and maintaining accounting information. That's just half the story! You can also use Excel to store data—lists of records that can be sorted, queried, and used to create a variety of interesting reports. Although Access is touted as the database application within the Office suite, Excel's database features enable you to store your lists in a perfect environment for them—a worksheet. With 65,536 rows in an Excel worksheet, you can store up to 65,535 pieces of information (save one row for the labels that identify the information), and with 256 columns, you can break that information down into 256 parts.

Understanding Database Concepts

What is a database, exactly? It's a collection of information. The Rolodex on your desk is a database, as is the phone book. When you call a store to ask if something's in stock, they're checking their database to find out. A list of people you're inviting to your wedding, even if it's written on a sheet of paper, is a database.

Database Terminology

Before you begin the process of building a database in Excel, it's important that you understand some database terms and commands. As with any field of endeavor, getting a handle on the language is key to your success, and it will help you navigate Excel's database tools:

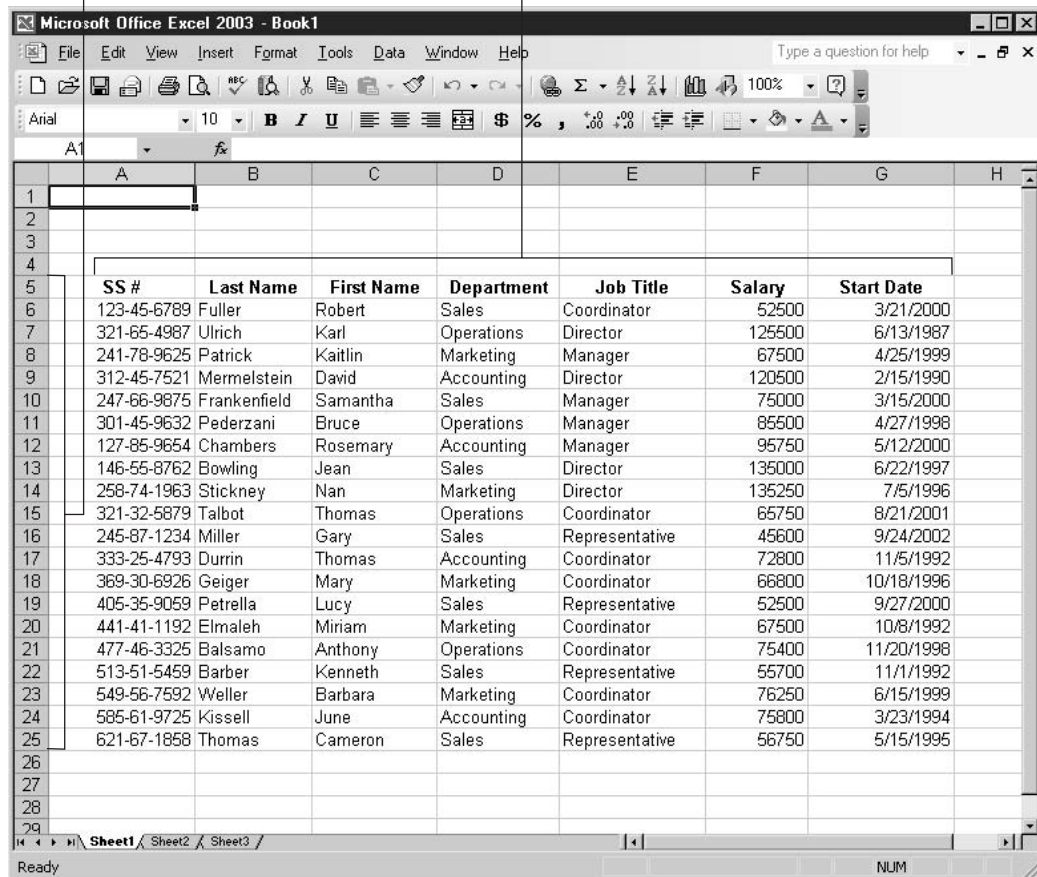
- **Fields and records** Remember how I said each piece of information could be broken down in to as many as 256 parts? Well, each piece of information is technically known as a *record*. Thinking again of the phone book, each listing in the phone book is a record. Also, each part of each record is a *field*. Records are broken into two or more fields, and each field is given a name. Again thinking of the phone book as a database, the field names would be Last Name, First Name, Address, and Phone Number. Figure 12-1 shows an employee database with several records (the rows), each broken into a series of fields (the columns).
- **Sorting** One of the first things most people want to do with a database is put the records in a specific order. That's called *sorting* the database. If you need to put a name and address list in alphabetical order by the Last Name field, or if you need to put a list of merchandise

in alphabetically ordered groups by Product Type and also in numerical order by Product Number, Excel provides tools for sorting a database on one or more fields.

- **Filtering** The process of viewing only certain records that meet a set of criteria is known as *filtering*. For example, if you have a list of customers and need to see only those who are in a certain state or who have a certain representative assigned to them, you can filter for records accordingly—say, for all the records with “PA” in the State field, or “Bob Smith” in the Sales Rep field.

Each row is a record.

Each column is a field and the column labels are the field names.



	A	B	C	D	E	F	G	H
	SS #	Last Name	First Name	Department	Job Title	Salary	Start Date	
6	123-45-6789	Fuller	Robert	Sales	Coordinator	52500	3/21/2000	
7	321-65-4987	Ulrich	Karl	Operations	Director	125500	6/13/1987	
8	241-78-9625	Patrick	Kaitlin	Marketing	Manager	67500	4/25/1999	
9	312-45-7521	Mermelstein	David	Accounting	Director	120500	2/15/1990	
10	247-66-9875	Frankenfield	Samantha	Sales	Manager	75000	3/15/2000	
11	301-45-9632	Pederzani	Bruce	Operations	Manager	85500	4/27/1998	
12	127-85-9654	Chambers	Rosemary	Accounting	Manager	95750	5/12/2000	
13	146-55-8762	Bowling	Jean	Sales	Director	135000	6/22/1997	
14	258-74-1963	Stickney	Nan	Marketing	Director	135250	7/5/1996	
15	321-32-5879	Talbot	Thomas	Operations	Coordinator	65750	8/21/2001	
16	245-87-1234	Miller	Gary	Sales	Representative	45600	9/24/2002	
17	333-25-4793	Durrin	Thomas	Accounting	Coordinator	72800	11/5/1992	
18	369-30-6926	Geiger	Mary	Marketing	Coordinator	66800	10/18/1996	
19	405-35-9059	Petrella	Lucy	Sales	Representative	52500	9/27/2000	
20	441-41-1192	Elmaleh	Miriam	Marketing	Coordinator	67500	10/8/1992	
21	477-46-3325	Balsamo	Anthony	Operations	Coordinator	75400	11/20/1998	
22	513-51-5459	Barber	Kenneth	Sales	Representative	55700	11/1/1992	
23	549-56-7592	Weller	Barbara	Marketing	Coordinator	76250	6/15/1999	
24	585-61-9725	Kissell	June	Accounting	Coordinator	75800	3/23/1994	
25	621-67-1858	Thomas	Cameron	Sales	Representative	56750	5/15/1995	
26								
27								
28								
29								

FIGURE 12-1 Logical layout is the key to an effective database.

Did you know?

Relational vs. Flat File Databases

The Office 2003 suite provides two different types of database tools. Access, which is a *relational* database, allows you to set up multiple database tables that can be related to each other by one or more common fields, such as a table that lists customers, and another table that lists customer credit limits. The two tables with this customer data in them can be linked by the common Customer Name or Customer Number field, and reports can then be created that draw data from both tables. Excel, which is a *flat file* database, allows you to build as many databases as you want, but each one is an island. Flat file databases can't be linked to each other, even if there's a great deal of overlap in the information stored within them.

Excel List Database Requirements

As simple as Excel is to use in building and maintaining a database, it does have some rules. If you don't follow them, your ability to sort, filter, and report on your data will be compromised:

- *Always set up your database horizontally.* The field names (column heading) should be in the first row of the database (though not necessarily the first row of the worksheet).
- *You can have only one row of field names.* If you need more than 256 fields (the total number of columns available in a single worksheet), you need to use Access instead of Excel to store your data.
- *Leave no blank rows within the database.* Any blank rows can make sorting difficult, because blank rows can prevent the entire database being sorted.
- *Use consistent spelling.* If you're entering a list of employees and the departments they work in, and some of the Department fields contain "Acctg." and others have "Accounting," a sort by department won't work properly.
- *Break the records into as many fields as possible.* The more fields you have, the more sorting and filtering options you'll have.

Building a List

With the rules for database setup in mind, you're ready to build the list. The building process consists of two steps: setting up the column headings (which are the field names) and entering the records. To begin entering the records into your list, simply click in the first cell of the first blank row under your columns headings and start typing the data for the first record. When you get to the end of the first record, press ENTER, then press HOME. This keyboard progression will take you to the first cell in the next row, where you can begin entering the second record in your

How to ...

Freeze Your Database Field Names

As you're entering records, you will eventually reach a point where if you go to the next row, the column headings will no longer show onscreen. This can be confusing for you as you continue to enter records. The answer? Keep your column headings onscreen by freezing the row that contains them. Select the row beneath your column headings and choose Window | Freeze Panes. The column headings (your field names) will now remain onscreen no matter how many rows of data you enter.

database. Remember, it's not important that you enter your records in a particular order. You can always sort them later, by any field in the database.

TIP

To speed your data entry, Excel's AutoComplete feature will try to guess what you're going to enter into cells in each field, based on previous entries in the same field. For example, if you're entering a list of employees and the Job Title field contains "Coordinator," simply typing "Co" will signal AutoComplete to fill the field with "Coordinator." If you also have "Consultant" in one or more of the cells in that same column/field, the guess won't be triggered until you type "Con" or "Coo." Once the guess appears, if it's correct, press TAB to accept it and move to the next field. If it's not correct, ignore it and keep typing the desired entry.

Sorting by a Single Field

12

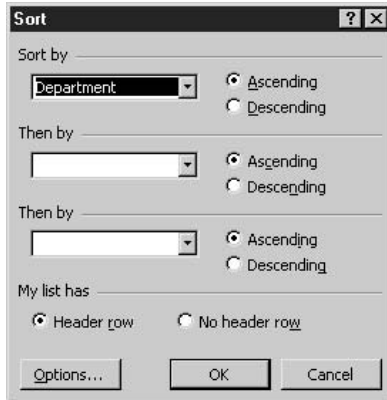


A single-field sort is very simple to do. Just click in any cell in the column that you want to sort by and then click either the Sort Ascending or Sort Descending button on the Standard toolbar. Once you've sorted by a single field, you can do subsequent single-field sorts by clicking in any other column and using the Sort buttons again. If the field(s) you've previously sorted by don't conflict with the new sort, the original order will be maintained. For example, in a list of employees, if you just sorted by Last Name, a sort by Department will list the employees by department, but for each department, the employees will remain in Last Name order.

Sorting by Multiple Fields

For larger databases, multiple-field sorts can turn your database into a series of groups of records, each group further sorted by an additional field or two. Using the employee list example, a logical multiple-field sort might include sorting by Department, and within that sort, sorting by Job Title, then by Last Name. The result? All the people in each department would be grouped, then within those Department groups, the records would be in order by Job Title. If there are two or more people in any department who have the same job title, those records would be in Last Name order.

To perform a multiple-field sort, choose Data | Sort. In the resulting Sort dialog box, you can choose the first field to sort by, then up to two subsequent fields by which to sort. When selecting fields, always start with the one that has the most duplicate entries; otherwise, there won't be enough records in the first sort-created group to sort by the remaining field(s).



As you can see, the Sort dialog box contains an option regarding a “header row” in your database. The *header row* is the row that contains your field names. If instead of seeing your field names in the Sort By and Then By text boxes you see Column A, B, C, and so on, make sure that the Header Row option is selected—this tells Excel to look to that row for your field names. If the option is selected and you're still not seeing your field names, click Cancel and go back to your worksheet. Make sure that the active cell is within the data portion of the sheet (not on a field name or a blank row below the rows of data) and then reopen the Sort dialog box.

Creating a Subtotal Report

Subtotal reports take your sorted list and perform calculations on each group created by the sort, be it a single-field sort that breaks one column into groups, or a multiple-field sort that creates several groups within the data. The calculations performed on each group in the sorted list can be any of 12 listed functions, but you'll find that SUM, AVERAGE, and COUNT are the most useful. Using our Department/Job Title/Last Name sort, we can SUM the Salary field for each Department grouping so that you can see how much is spent on payroll for each department. If you also want to COUNT the people in each department, you'll need to repeat the following procedure, preserving the first report and adding to it. Before any subtotal report is created, you need to perform the sort that will put the database in the proper order, an order that breaks your data into the groups that will be summed, counted, averaged, or otherwise calculated. After your sort is completed, choose Data | Subtotals. In the resulting dialog box (shown here), follow these steps:

Use these buttons to expand or collapse sections of the report.

	SS #	Last Name	First Name	Department	Job Title	Salary	Start Date
5	333-25-4793	Durrin	Thomas	Accounting	Coordinator	\$ 72,800.00	11/5/1992
6	585-61-9725	Kissell	June	Accounting	Coordinator	\$ 75,800.00	3/23/1994
7	312-45-7521	Mermelstein	David	Accounting	Director	\$ 120,500.00	2/15/1990
8	127-85-9654	Chambers	Rosemary	Accounting	Manager	\$ 95,750.00	5/12/2000
10				Accounting Total		\$ 364,850.00	
11	441-41-1192	Elmaleh	Miriam	Marketing	Coordinator	\$ 67,500.00	10/8/1992
12	369-30-6926	Geiger	Mary	Marketing	Coordinator	\$ 66,800.00	10/18/1996
13	549-56-7592	Weller	Barbara	Marketing	Coordinator	\$ 76,250.00	6/15/1999
14	258-74-1963	Stickney	Nan	Marketing	Director	\$ 135,250.00	7/5/1996
15	241-78-9625	Patrick	Kaitlin	Marketing	Manager	\$ 67,500.00	4/25/1999
16				Marketing Total		\$ 413,300.00	
17	477-46-3325	Balsamo	Anthony	Operations	Coordinator	\$ 75,400.00	11/20/1998
18	321-32-5879	Talbot	Thomas	Operations	Coordinator	\$ 65,750.00	8/21/2001
19	321-65-4987	Ulrich	Karl	Operations	Director	\$ 125,500.00	6/13/1987
20	301-45-9632	Pederzani	Bruce	Operations	Manager	\$ 85,500.00	4/27/1998
21				Operations Total		\$ 352,150.00	
22	123-45-6789	Fuller	Robert	Sales	Coordinator	\$ 52,500.00	3/21/2000
23	146-55-8762	Bowling	Jean	Sales	Director	\$ 135,000.00	6/22/1997
24	247-66-9875	Frankenfield	Samantha	Sales	Manager	\$ 75,000.00	3/15/2000
25	513-51-5459	Barber	Kenneth	Sales	Representative	\$ 55,700.00	11/1/1992
26	245-87-1234	Miller	Gary	Sales	Representative	\$ 45,600.00	9/24/2002
27	405-35-9059	Petrella	Lucy	Sales	Representative	\$ 52,500.00	9/27/2000
28	621-67-1858	Thomas	Cameron	Sales	Representative	\$ 56,750.00	5/15/1995
29				Sales Total		\$ 473,050.00	
30				Grand Total		\$ 1,603,350.00	

FIGURE 12-2 Sorting the records (shown earlier in Figure 12-1) by one or more fields makes it possible to perform calculations on the groups created by the sort.

The plus and minus sign buttons on the left allow you to expand and collapse parts of the report. If, for example, you've elected to see only the subtotals and no per-record detail, you can expand one of the subtotals to see its detail, leaving the other groups collapsed. Click the plus sign next to the subtotal you want to expand, and it turns to a minus sign, which indicates that all the detail that's available is already displayed.

TIP

To remove the Subtotal Report from your database, simply choose **Data | Subtotals** and click the **Remove All** button in the dialog box. The dialog box immediately closes, and the subtotals are removed from the database.

Searching for Specific Records

Nothing's worse than staring at a list of several hundred records and not being able to find the one you need. When this happens, you can use either of Excel's two features for filtering a database. First, there's AutoFilter, which enables you to select certain criteria for one or more fields in your database and see only the records that meet that criteria. Second, there's the Advanced Filter feature, which allows you to set up a sample record and to execute a search for all records that match the example.

Using AutoFilter to Locate and Display Records in a List

AutoFilter is simply an automatic tool for filtering an Excel database. To use this feature, follow these steps:

1. Click in any cell in your database and choose Data | Filter | AutoFilter. As soon as you choose this command, your database field names acquire drop lists, as shown here:

	A	B	C	D	E	F	G	H
1								
2								
3								
4								
5	SS #	Last Name	First Name	Department	Job Title	Salary	Start Date	
6	477-46-3325	Balsamo	Anthony	Operations	Sort Ascending	\$ 75,400.00	11/20/1998	
7	513-51-5459	Barber	Kenneth	Sales	Sort Descending	\$ 55,700.00	11/1/1992	
8	146-55-8762	Bowling	Jean	Sales	(All)	\$ 135,000.00	6/22/1997	
9	127-85-9654	Chambers	Rosemary	Accounting	(Top 10...)	\$ 95,750.00	5/12/2000	
10	333-25-4793	Durrin	Thomas	Accounting	(Custom...)	\$ 72,800.00	11/5/1992	
11	441-41-1192	Elmaleh	Miriam	Marketing	Coordinator	\$ 67,500.00	10/8/1992	
12	247-66-9875	Frankenfield	Samantha	Sales	Director	\$ 75,000.00	3/15/2000	
13	123-45-6789	Fuller	Robert	Sales	Manager	\$ 52,500.00	3/21/2000	
14	369-30-6926	Geiger	Mary	Marketing	Representative	\$ 66,800.00	10/18/1996	
15	585-61-9725	Kissell	June	Accounting	Coordinator	\$ 75,800.00	3/23/1994	

2. Select the field you want to filter your data by, click the drop list next to that field's name, and choose from one of three options (All, Top 10, and Custom) or pick one of the listed entries for that field.

After distilling the list based on the first filter, you can filter additional fields. The subsequent filters can reduce the list, potentially reducing the list to one record, or even to no records if none of the records match the criteria you've chosen. Note that your AutoFiltered list is in a temporary state:

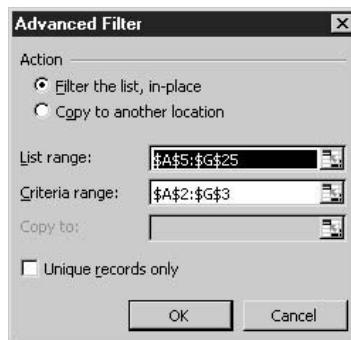
- To refilter or unfilter a field, simply click the filtered field's drop list again and choose All from the list to bring back all the records that were hidden by filtering that field, or choose different criteria from the list.
- To bring back all the records and unfilter all the fields in one fell swoop, choose Data | AutoFilter | Show All. The AutoFilter drop list remains onscreen for each field, but all the records are shown.

- To remove the AutoFilter feature from your worksheet, choose Data | Filter | AutoFilter. Select it to turn the feature on, select it again to turn it off.

Setting Up Advanced Filters

Within the Data | Filter submenu is the Advanced Filter command. This particular filtering tool allows you to set up an example that is compared to the database, and only those records that match it are displayed. To perform an Advanced Filter operation, follow these steps:

1. Create a space above your database on the same worksheet with your data by using the Insert | Rows command to add three or four rows above column headings.
2. Copy your field names to the top row of the sample area you've created.
3. Type the sample data in the cell(s) under one or more of the sample field names.
4. Click in any cell within your database and choose Data | Filter | Advanced Filter. The Advanced Filter dialog box opens.



5. In the Action section of the dialog box, choose where the results of your filter will appear: in place or copied to another area. If you choose to copy it to another location, you'll have to specify where.
6. Click the Criteria Range box and move the dialog box aside so you can select the cells that contain the sample area. This should include the copied column headings and the sample data entered below one or more of the field names.
7. Click OK. The criteria range (your sample area) is compared to the main database, and any matching records are displayed.

Figure 12-3 shows a sample area on the employee worksheet and the matching records displayed within the main database.

TIP

If you perform an advanced filter and no records appear, check for typos in your field names and sample data—this is the most common reason that filters don't work.

For numeric data, you can use > and < symbols within the sample data to refine the filter.

SS #	Last Name	First Name	Department	Job Title	Salary	Start Date
333-25-4793	Durrin	Thomas	Accounting	Coordinator	\$ 72,800.00	11/5/1992
585-61-9725	Kissell	June	Accounting	Coordinator	\$ 75,800.00	3/23/1994

FIGURE 12-3 Set up your example and compare it to the database to find records that match the criteria.

PivotTable Basics

The term “PivotTable” isn’t exactly self-explanatory. What *is* a PivotTable and what does it do? The best and simplest explanation I can give you is that a PivotTable is a report that allows you to turn (pivot) your data and view it from a variety of angles. The process of building a PivotTable is somewhat lengthy, but not terribly complex, and can be used to create a unique view of a database, such as our employee list, as shown in Figure 12-4.

Building a PivotTable

Once you’ve decided what you want to see on your report, it’s time to build it:

1. Click in any cell within your database and choose Data | PivotTable and PivotChart Report. Step 1 of the wizard appears.



Job Title data is in rows so that each title can be analyzed.

Choose a department from this drop list.

Department	Job Title	Sum of Salary
Accounting	Coordinator	148600
Accounting	Director	120500
Accounting	Manager	95750
Accounting	Grand Total	364850

The Salary field is viewed here, where it can be summed, averaged, or counted.

FIGURE 12-4 More intuitive than a sort or subtotal report, the PivotTable report gives you the ability to create unique perspectives on your data.

- 2.** Stick with the defaults. You're intending to analyze Microsoft Excel List Database, and you just want a PivotTable, so click Next to move to Step 2.
- 3.** In Step 2 of the wizard, confirm where the data you want to work with is located. The wizard should have selected your entire database, including the column headings. If this didn't happen, drag through the database to include the headings and all the rows.
- 4.** Click Next to move to Step 3.
- 5.** In Step 3 of the wizard, indicate where you want your report to appear—in a new worksheet or on the same worksheet as the data. Again, stick with the default here and choose the New Worksheet option.
- 6.** Click Finish. The wizard closes, and the empty PivotTable report, a toolbox listing your fields, and a floating toolbar appear onscreen, as shown in Figure 12-5.

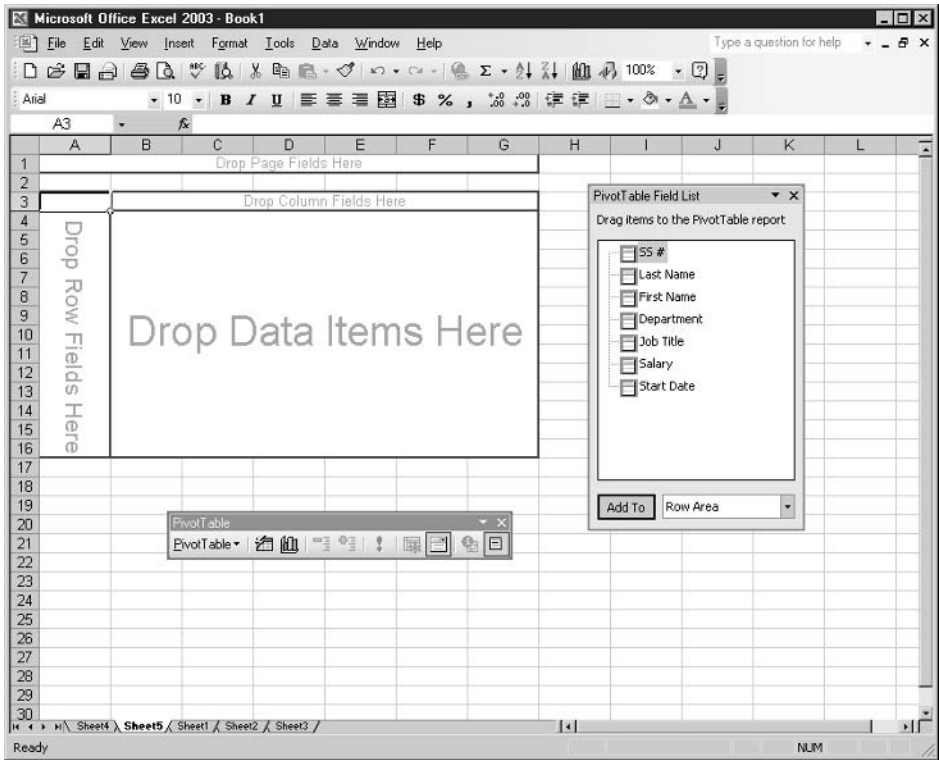
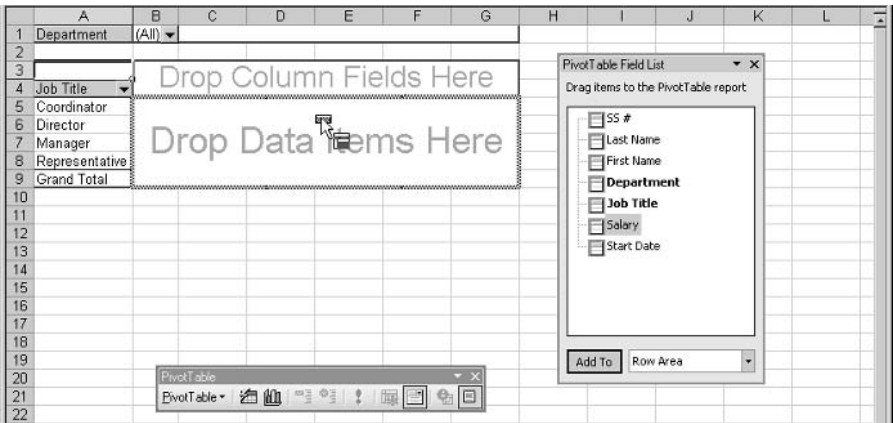


FIGURE 12-5 The basic layout of a PivotTable appears in four graphical boxes, along with a list of your fields and tools for customizing your PivotTable.

7. Move your field names from the PivotTable Field List into the empty sections of the PivotTable report by dragging the field names with your mouse.



Once your PivotTable is created and working as you want it to, you can close the PivotTable Field List box and PivotTable toolbar so that there's nothing cluttering your workspace. If you need to make changes to the report layout, you can redisplay the PivotTable Field List by right-clicking anywhere in the PivotTable report itself and choosing Show Field List. Once the field list is redisplayed, you can drag the fields into and out of the areas in the PivotTable, redesigning your report as desired.

Chapter 13

Charting Excel Data



How to...

- Understand chart types and charting terminology
- Choose the right type of chart for your data
- Build a useful and attractive chart
- Format charts for dynamic visual effects

If a picture's worth a thousand words, a chart is worth at least that many numbers. Worksheet cell after worksheet cell filled with numeric data can be mind-numbing to look at and very difficult for others to understand. One look at many worksheets and you might have absolutely no idea what the worksheet data means. What does it say? What does it prove? What message or information should you take away from looking at the worksheet? If you need to express a simple concept through your worksheet data (one division's sales are down, productivity is up in a certain part of the organization, more people like chocolate than vanilla), converting that data to a chart might be the way to go.

Using Charts to Enhance Worksheets

Although a chart will never replace your worksheet, it can be a significant enhancement. An Excel chart can be on the same worksheet with the data that created it, or the chart can be on its own sheet in the same workbook. An Excel chart can also live in an entirely different workbook, in a Word document, or in a PowerPoint presentation. The visual impact of a chart is useful just about anywhere that the plotted data will be displayed, discussed, or simply referred to. Figure 13-1 shows an Excel worksheet with a chart accompanying it.

Excel charts are free-floating objects appearing on top of the worksheet, not within any particular cell. Charts are linked to the data that was used to create them, so if the data is updated, the chart updates as well. The only time this isn't the case is if you paste an Excel chart into a Word document or PowerPoint presentation. When using a chart outside of the worksheet containing the charted data, you must use the Paste Special command to create a link between the chart and the Excel data if you want updates to occur in the pasted location. Chapter 2 discusses in detail the process of building these links.

Understanding Chart Types

Several major chart types are offered through Excel's charting tools. Each type of chart will express data differently, creating a different picture of your data. Figure 13-2 shows data from the same worksheet charted using three different chart types.

How do you know which type of chart to use for your data? Think about your goals for the chart. What story do you want to tell? To whom are you telling the story? If your goal is to show several groups of the same type of information and show how each group is different, you want a chart that shows *comparisons*. If you want to show how something is going, how progress is being made from one or more perspectives, you want a chart that shows *trends*. If you want to reflect the amount of something—"Yes" answers to a survey question, for example—you probably want a

Click the Chart Wizard tool to create a chart based on the selected worksheet content.

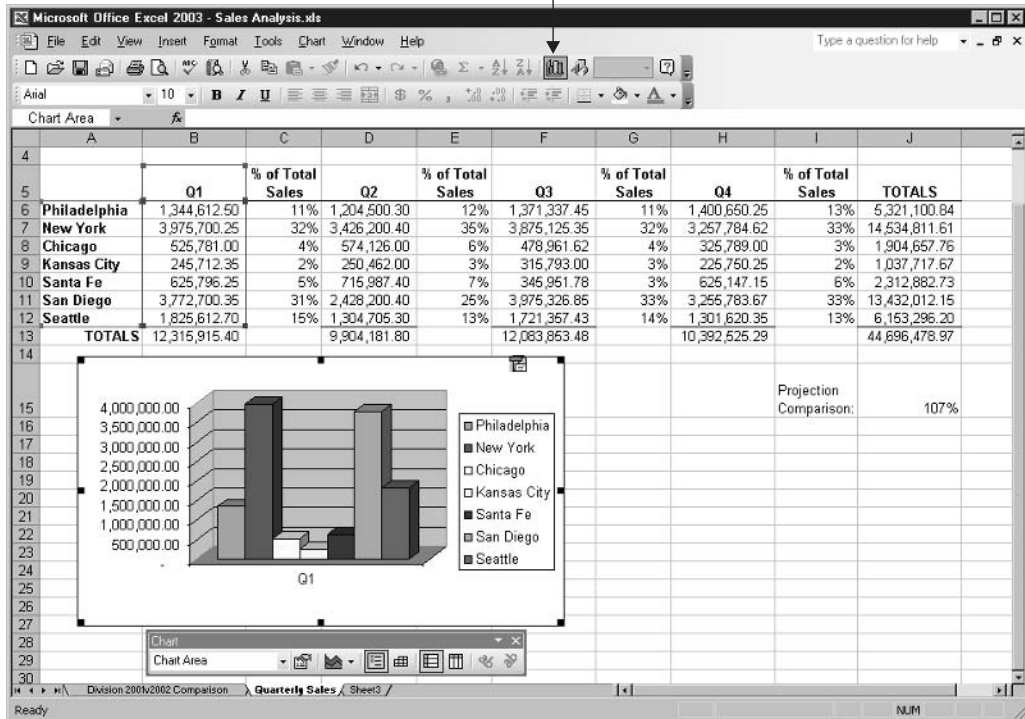


FIGURE 13-1 The data in the worksheet is clear enough, but the trends and comparisons it reveals are much clearer in the chart.

chart that shows *frequency*. You may also, however, want to see comparisons on a frequency chart—to see how many “No” answers (and “Don’t Know” responses) were given to the same question. Can a single chart type do both things? Sure it can. Consider these charting goals and the charts that will help you achieve them:

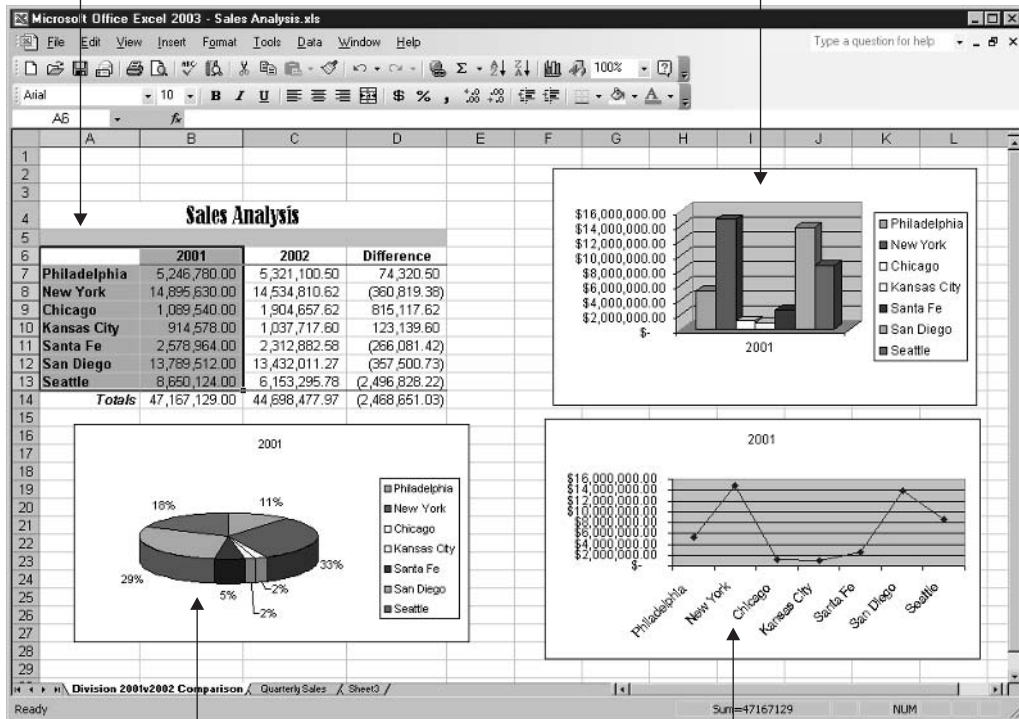
- Line charts and column charts are good choices for showing trends.
- Pie, bar, column, doughnut, and area charts are best for showing comparisons.
- Column charts can be used to show frequency. You can also use scatter charts, where each dot indicates a response or an occurrence of an event.

TIP

If you want to suggest a trend at the same time that you’re showing a comparison, use the Drawing toolbar’s Line or Arrow tools to draw one or more lines that indicate the direction things are headed. If your columns are generally getting higher over the course of time represented by the chart, draw a line (with an arrowhead) above the columns’ tops that emphasizes this “onward and upward” trend.

The data, including data labels from row and column headings, that makes up the chart

Column chart



Pie chart

Line chart

FIGURE 13-2 Use different types of charts to tell very similar stories in very different ways.

Understanding Chart Elements

Each row or column label and each piece of data in the area of your worksheet designated for charting creates a piece of the chart. Within the chart, the various parts have names, and it's important to learn them so that you can choose the right tools to adjust them later and also understand how they work together:

- **Data points** Each number in your worksheet—the total sales for a given location or the number of products sold in a given time period—is a *data point*.
- **Data series** Each logical collection of related data points is called a *data series*. If your chart contains the sales for January, February, and March for two sales divisions, one data series would be three month's worth of sales for one of the divisions. Another data series would be one month's worth of sales for both divisions.

NOTE

A pie chart can show only one data series at a time. If you want the look of a pie but need to plot more than one series, use a doughnut chart. Each concentric ring of colored sections is a different series.

- **Chart axes** Your chart's data is plotted along a vertical *value axis* and a horizontal *category axis*. The value axis is used to determine the value each column represents, and the category axis helps indicate the nature of the data being plotted.
- **The legend** A legend further explains the data represented, and normally appears on the right side of the chart, matching the colored bars/slices/lines with specific data series.
- **Titles** You can add a chart title and a title for each axis on your worksheet. Titles can be helpful to people who aren't familiar with the information included in your chart.
- **Gridlines** Typically running horizontally behind columns, bars, or lines on a chart, the gridlines help you visually connect the data points with a number on the value axis.
- **Plot area** This is the portion of the chart where the data is plotted. Legends and titles are not part of the plot area. You can resize the plot area (shown encompassed in a gray border on the active chart in Figure 13-3) within the chart object itself, or you can move the plot area so that the chart is no longer centered within the chart object.

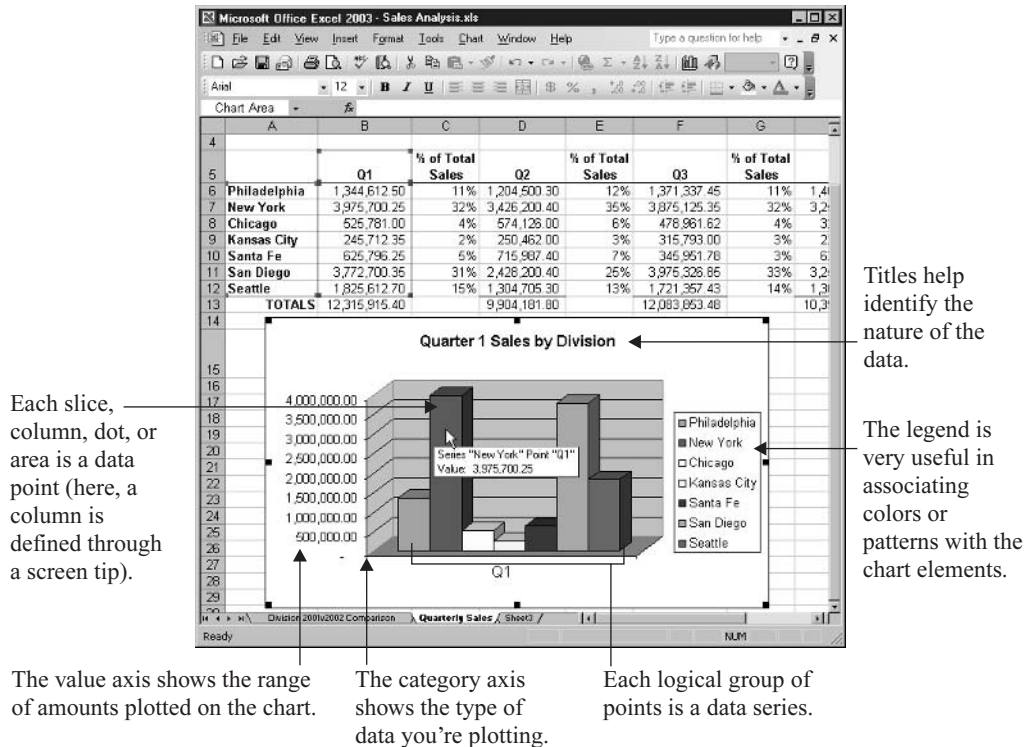


FIGURE 13-3 All your chart's data is within the movable and resizable plot area.

Building a Chart

The process of building a chart is relatively simple, thanks to the Chart Wizard, which appears as soon as you click the Chart Wizard tool. This wizard coaches you through the process of selecting a chart type, confirming which data to chart, applying any desired chart formats, and positioning your chart on the active worksheet or on a sheet all its own. Don't worry about all the choices you make through the wizard. Although planning is a good first step—best taken before you even open the Chart Wizard—you won't necessarily know everything your chart will need or how it will look best until you've actually created the chart in the first place, and at that point, you can go back and make changes.

Selecting Data for Charting

When you begin a new chart, the first step is to select the data that will be charted. This sounds easy enough, and it is—with one small caveat: It's very important to omit things that might make the chart confusing, such as the worksheet title and any cells with content unrelated to the chart's data. You also want to avoid selecting columns or rows of totals, averages, or other formulas that operate on the data you're charting—if you accidentally include them, they can be mistaken for the core data.

TIP

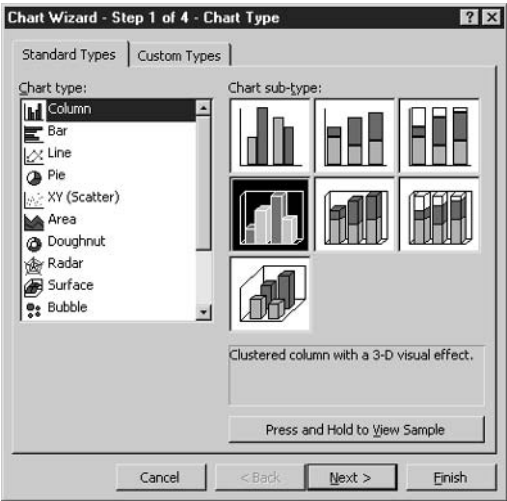
Your selection needn't be one contiguous range of cells. If you want to chart one column of numbers, select the row labels for as many cells in the column as you want to plot and identify. Then, with CTRL pressed, select the column with the data you want to plot.

Setting Up a New Chart

Once the data and headings are selected and the Chart Wizard is invoked, you're guided, step by step, through the logical steps in building a chart. Each of these steps is handled in a new dialog box, and virtually all of them contain two or more tabs. You don't need to delve into each tab for every chart you build, but there are plenty of options to play with should you need or want to. You'll use the Next and Back buttons to move forward and backward (respectively) within the wizard's dialog boxes, and of course, the Cancel button bails you out of the process without building the chart.

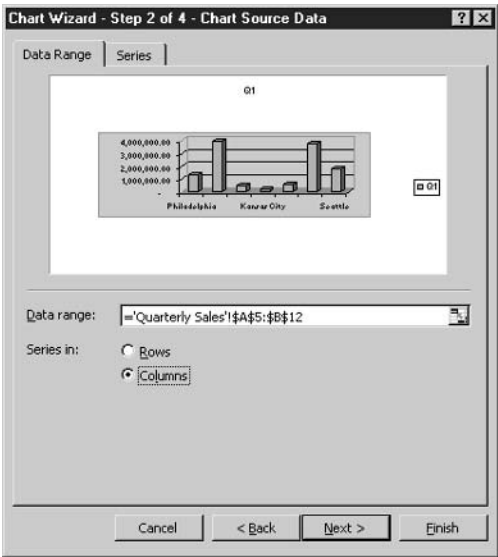
Step 1: Choosing the Best Chart for Your Data

Your choice of chart type should be based on the kind of message your chart should convey—trends, comparisons, or frequency. This will mean choosing between two- and three-dimensional charts, and various chart subtypes that meet specific charting needs, as shown here. The chart type you choose will affect the choices offered in the subsequent steps in the wizard. To proceed to the next step in the wizard, click the Next button.



Step 2: Confirming the Data to Chart

This wizard dialog box shows you your selected range of cells, expressed as a range or series of ranges, and displays a very rudimentary example of how that data will be charted with the chart type you selected in the previous step. As you can see here, you can also choose to plot the data series in columns or rows—this will determine which data goes into the category axis and which data goes into the legend. To see how this will affect your chart, experiment by clicking the Rows radio button and then switch back to Columns (the default). When you like what you see, click Next to move to Step 3.

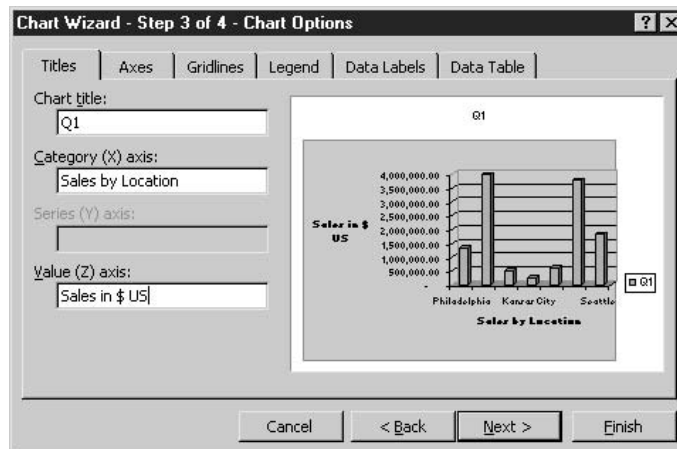


NOTE

If you don't want one or more of your chart's series to be included after all, click the Series tab and select the series to remove. You can also add series by entering a Value range and clicking the Add button. To designate a Value range, simply move the dialog box aside so you can see the desired portion of your worksheet.

Step 3: Setting Up Your Chart's Options

This step in the Chart Wizard process offers six tabs: Titles, Axes, Gridlines, Legend, Data Labels, and Data Table. For most charts, you won't have to tinker with the options in all six tabs, but you might want to customize your chart's titles, reposition or remove the legend, or change the style and frequency of the chart's gridlines. To view the options in each of these areas, click the corresponding tab.



Step 4: Selecting a Home for Your Chart

Here, you have two choices for where to place the chart you've just built: on the active sheet or on a new sheet entirely devoted to the chart. In the former case, the chart will be a floating object that can be moved anywhere on the sheet (or on any other existing sheet in the workbook, selected by clicking the drop list for this option). In the latter case, the chart will be a full page in size and cannot be moved. It becomes the entire sheet itself rather than being a movable graphic object. To name the new chart sheet, type a name in the As New Sheet text box.

When your chart's name and/or location have been established, click Finish. The chart appears as you've created it, on the sheet you chose for its final location.

Updating and Changing Charts

If you want your chart to update whenever the data on which it is based is changed, you're in luck. This is what happens automatically, whether your chart is on the sheet with that data or on a

sheet all by itself in the same workbook. If you don't want the chart to update—perhaps to freeze the chart's data in time while the worksheet goes on to be continuously updated—you can store the chart and a copy of the original data on a separate sheet and allow the original worksheet to continue being updated as needed. The chart will remain intact because the duplicate version of the data it is based on will remain unchanged.

If you need to change the range of cells included in your chart, select the chart and choose Chart | Source Data. The Source Data dialog box (see Figure 13-4) shows the current range of cells in the chart, and you can select a new range by moving the dialog box aside and dragging through a new range of cells.

TIP

If you want to add to the existing range, choose Chart | Add Data. You can type an added range (including any headings or labels you want to include) or move the resulting Add Data dialog box aside and drag through the range to be added. Click OK to add the range to your chart.

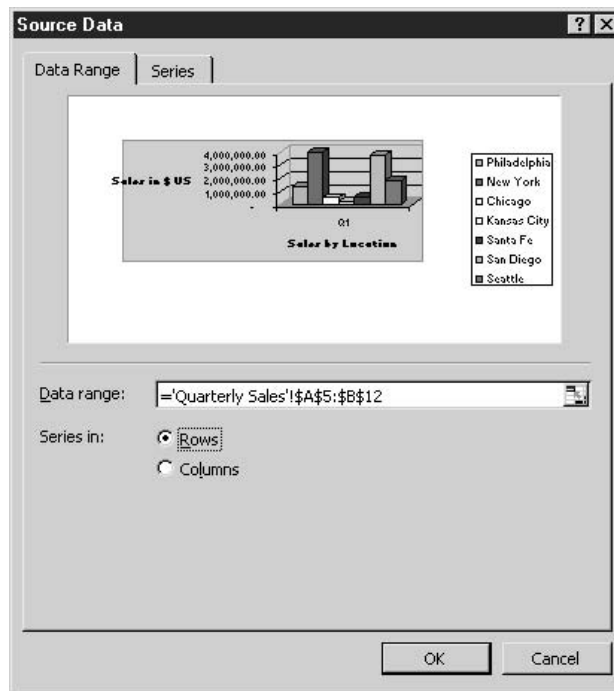
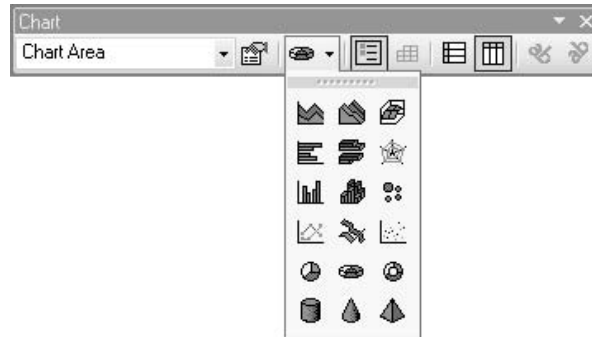


FIGURE 13-4 View and edit the chart's existing data range in the Source Data dialog box.

Changing Chart Types

To change from the type of chart you chose originally to a different chart type (or between 2-D and 3-D versions of the same chart type), click the Chart Type button on the Chart toolbar while your chart is selected. As you can see here, a palette of 18 choices appears when you click the button.



The first two columns represent the 2-D and 3-D varieties of five different chart types, and the third column offers five additional chart types. The options on the bottom row are the different 3-D shapes for use in bar and column charts—cylinders, pyramids, and cones.

Formatting a Chart

Although your chart may be fine as is, some charts need tweaking. Excel offers very simple tools for making changes in your chart's appearance, most of which resemble the same tools you used when building the chart in the first place. Excel also offers context-sensitive menus—on the menu bar and in the form of shortcut menus—that make selecting the chart element that needs changing or reformatting and then making the desired alterations very easy to do.

To take advantage of these tools, just click once on the chart element you want to change and choose **Format | Selected _____**, where the blank is the name of the chart element selected. You can also right-click any selected element and choose **Format** from the shortcut menu. The resulting dialog box offers options for editing the selected chart element—from the color of bars or slices, to the size and font of the axis or title text. The options offered in the dialog box will vary, depending on the chart element that's selected at the time the dialog box is opened.

TIP

*With your chart selected, choose **Chart | Options**. The same dialog box you saw in Step 3 in the Chart Wizard will open, and you can use the tabs to make changes, add new elements, and remove things from your chart that you no longer want. The Chart Options dialog box that appears will vary depending on the type of chart you have selected. For example, the options available for a pie chart are very different from those you'd see for a column chart.*

How to ...

Reposition Slice Values and Names on a Pie Chart

If you want to move a category name on a pie chart, click once on any of the names and then click once more on the individual name you want to move. The individual name acquires handles, and if you point to the border between the handles and drag, you can move the entire name anywhere you want on the chart. Note that if you drag a pie slice label (the category name or the percentage, for example) away from the slice, a line appears between the name and the slice so that it remains clear that the label pertains to that particular slice of the pie.

Editing Chart Text

To edit the text in a chart or axis title, just click twice on the text—these are two distinct clicks, not a double-click. On the first click, the title is selected, and on the second, your cursor is activated in the text box right on the chart. At this point, you can use the arrow keys to move within the text for editing it, or while the text is selected, you can retype the text to replace it entirely. If you open the Chart Options dialog box (Chart | Chart Options), you can edit your chart titles right within the dialog box rather than on the chart itself.

Resizing and Moving Charts

When a chart is an object on a worksheet—as opposed to being a sheet unto itself—you can move and resize it as you would any graphic element. When you click a chart object, handles appear on the four corners and in the middle of each side. These handles can be used to resize the chart, making it taller, wider, narrower, shorter, or some combination thereof. Figure 13-5 shows a selected chart and a handle in use—the dashed border shows how big the chart will be when the mouse is released.

Deleting Charts

To delete a chart object on any worksheet, just click the chart to select it (make sure the handles are on the perimeter of the chart, not on an element within the chart object) and press DELETE. You can also right-click the chart and choose Clear from the shortcut menu. If your chart is on a chart sheet all by itself, you need to delete the sheet. In so doing, you get rid of the chart as well. To delete the sheet, right-click the sheet tab and choose Delete from the shortcut menu.

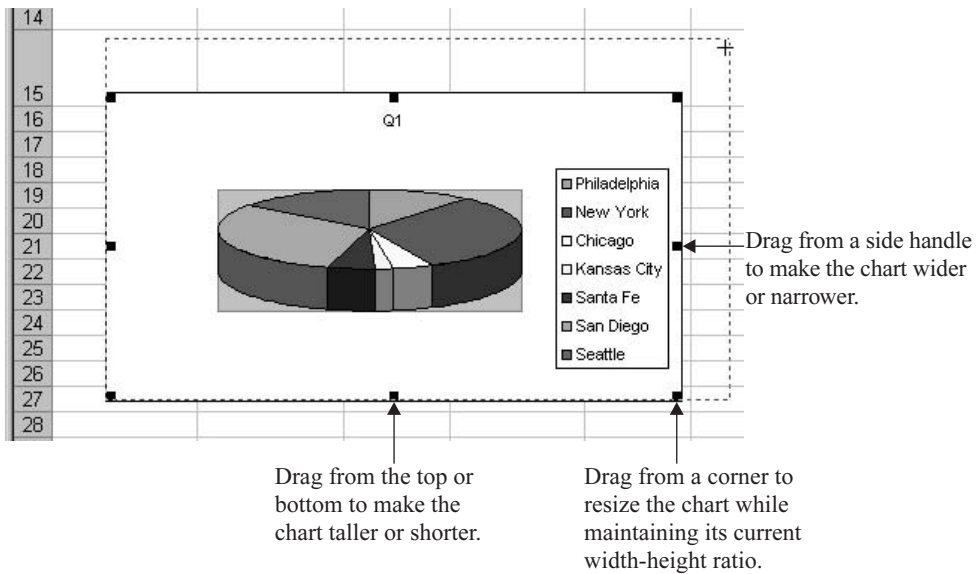


FIGURE 13-5 Choose a handle and drag it to resize the chart.

Chapter 14

Printing and Publishing Worksheets



How to...

- Print a selection, one or more worksheets, or an entire workbook
- Control how many sheets of paper your printout requires
- Customize the appearance of a printout
- Publish worksheet content to the web

More and more often, the worksheets we create are viewed only onscreen. Whether opened after being sent as an email attachment or viewed through a website, when you need to show someone else your worksheet, you don't necessarily need a printer to do so. So why even talk about printing? Because Excel offers so many options for printing that even if printing worksheets is something you rarely do, you'll want to know how to control your printout and make sure your printed worksheet makes a good impression. Another focus of this chapter is the publishing of Excel content to the web—saving a worksheet in HTML format and making the worksheet an interactive part of a web page.

Printing Workbooks and Worksheets

Printing a workbook or worksheet is extremely easy. Simply choose File | Print or click the Print button on the Standard toolbar, and after you click the OK button in the resulting Print dialog box (see Figure 14-1), your worksheet prints out. This simple procedure and result are just the tip of

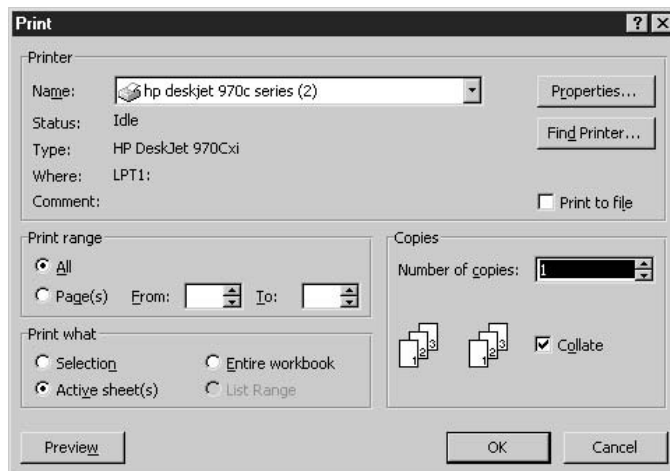


FIGURE 14-1 Choose your printer, which sheets to print, and how many copies to generate—all within the Print dialog box.

How to ... **Control Your Print Area**

The CTRL-P keyboard shortcut sends a default print job (one copy of every page in the active sheet) to the default printer (or the printer you last used in the current Excel session), offering no dialog box for you to use in customizing the print job. To get around this, you can set a print area for your worksheet so that you can use CTRL-P to do a quick print of a section of your worksheet. Select the area to be printed and then choose File | Print Area | Set Print Area. Until you clear the print area (File | Print Area | Clear Print Area), the designated print area will be what's printed if you press CTRL-P.

the iceberg, however. For example, what if you only want to print part of your worksheet? Or if your worksheet is large, what if you need it all to fit on one sheet of paper? Excel makes it possible to customize your printout to meet your needs.

The first thing to know: By default, when you choose to print (by choosing File | Print or by clicking the Print button on the toolbar), the active worksheet is printed. If you want to print more than one of your sheets or only some of the pages in a particular sheet, or if you want to print the entire workbook (all the sheets), you have to request it through the Print dialog box.

The second, and perhaps the more important thing to know: By default, Excel will print your worksheets on as many sheets as it needs to. If, based on the amount of content and your formatting, a worksheet spans four pages, your worksheet will print on four sheets of paper, the breaks between them indicated by dashed lines running along certain columns and rows on your worksheet.

Printing an Entire Workbook

What if you want to print all the worksheets in the active workbook? Easy enough—just click the Entire Workbook option in the Print dialog box. Many people are surprised by how many pages even a smallish worksheet can require when printed. You can find out how many pages your printout will require before actually sending the workbook to the printer by previewing the print job. To do this, choose File | Print and click the Entire Workbook option in the Print What section of the resulting Print dialog box. Then, click the Preview button in the lower-left corner of the dialog box, and the Print Preview window will open. When you view the preview, you'll see your active worksheet's first page, and by using the Next button at the top of the window, you can move through the workbook, page by page, worksheet by worksheet. The Zoom button lets you toggle between full-page and close-up views of your worksheet(s). To immediately find out how many pages the printout will require, look in the lower-left corner of the Preview window—the page count and the number of the current page are displayed.

Assuming all's well with the preview, you can go right to the printer by clicking the Print button in the Print Preview window, or you can close the preview and go back to your active worksheet and print later.

TIP

Why not choose File | Print Preview or click the Print Preview button on the Standard toolbar? Because without first specifying that you want to print the entire workbook, the preview will only show you the default—the pages of the active worksheet.

Printing Individual Worksheets

If you want to print one or more individual sheets in a workbook, you can do so through the Print dialog box. To print multiple sheets, you'll want to group the worksheets to print before opening the Print dialog box. Then, using the Print What section of the dialog box, click the Active Sheet(s) option.

If you want to print only certain pages within the active worksheet, make sure the desired sheet is the active one and then choose File | Print. In the Print dialog box, enter the page numbers you want to print. Unlike in Word, where you can print ranges and individual pages in the same print job, in Excel you're limited to printing ranges (1 to 5, for example).

Printing a Range of Cells

So you can print an entire workbook, a particular worksheet, or even a group of worksheets. What if you want to print just part of a worksheet? You can select as little as one cell or a large range of contiguous and noncontiguous blocks of cells on a single worksheet and print them. This is rather convenient if you want to print and share part of your worksheet with someone but don't want him or her to see the whole thing.

To print part of a worksheet, follow these steps:

1. Select the cell or range of cells that you want to print.
2. Choose File | Print. The Print dialog box opens.
3. In the Print dialog box, click the Selection option in the Print What section.
4. Click OK to send the print job to the printer.

Controlling Page Breaks and Page Count

Thus far, all the printing we've discussed has been based on using the default settings—letting the printout flow as it wants to, using as many sheets of paper as it wants to. That's fine for many print jobs, but there will be times when you want to control how many sheets of paper are used for a print job. To achieve this control, you have several choices. You can specify the number of pages you want and force Excel to shrink or expand your printed content to fit, or you can tinker with the worksheets' margins, paper size, and paper orientation to achieve the printout you need. You might find that using one or more techniques together will give you the exact printout you're looking for.

Adjusting Margins

Just as in a Word document, your worksheet has margins—space on the four sides of the page where no printing can occur. You can reduce or enlarge them in one of two ways:

- Choose File | Page Setup. On the Margins tab, enter the desired top, bottom, left, and right margins. You can also set header and footer margins. These represent the space set aside for things such as page numbers, your name, copyright information, or the date and time.

NOTE

The smallest margin you can set for any side of the page, or for your header/footer margin, is .25 inches.

- Choose File | Print Preview (or click the Print Preview button on the Standard toolbar) and click the Margins button in the preview window. This displays the margins for your pages as vertical and horizontal lines on the page, and you can drag the lines with your mouse to adjust them. Figure 14-2 shows the margins for a page, with one of the margins being adjusted (note the two-headed arrow on the right margin line).

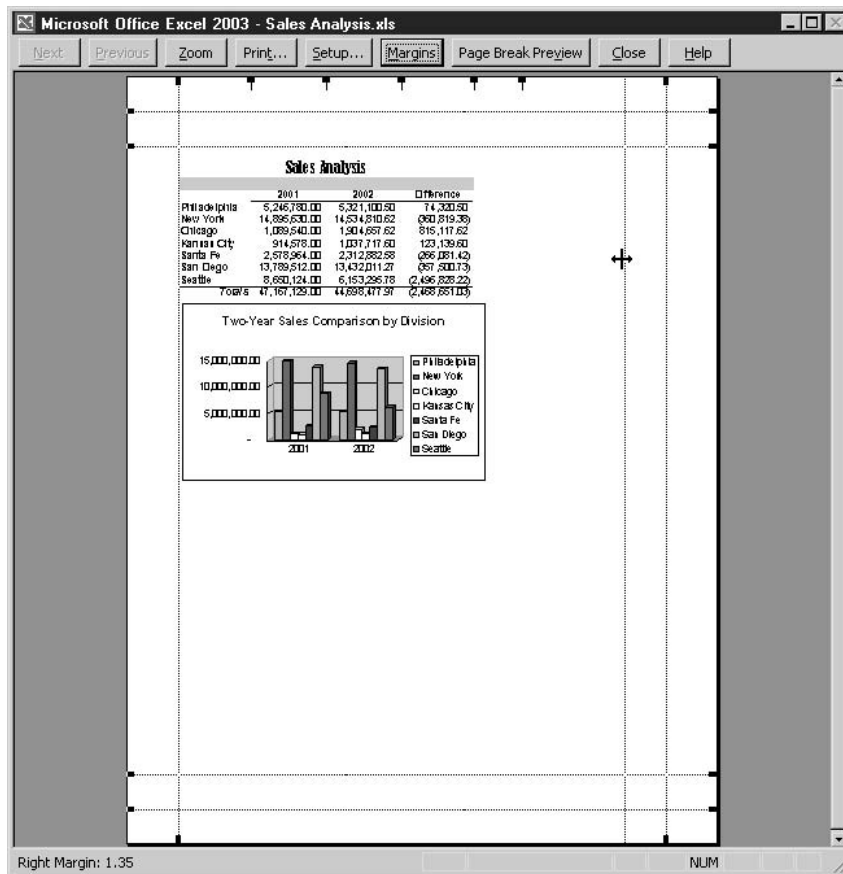


FIGURE 14-2 The Print Preview Margins view shows both page and header/footer margins.

Changing Paper Orientation and Size

Adjusting the size of your paper and how your printout is oriented (turned) on the page is easily done through the Page Setup dialog box's Page tab, shown in Figure 14-3. If your worksheet content is wider than it is tall, choose Landscape. If the worksheet is longer than it is wide, choose Portrait. While you're on the Page tab, you can also choose your paper size. Click the drop list next to that option and choose the size of the paper you intend to use for your printout.

Scaling the Printout

When all else fails to fit your worksheet on the number of pages you want, get tough and set some limits. On the Page Setup dialog box, click the Page tab and use the Scaling section (refer to Figure 14-3) to reduce or expand the number of pages in your printout. The Adjust To option allows you to reduce your printout to a percentage of the default 100 percent—be careful such a reduction doesn't render your content too tiny to read. Alternatively, you can use the Fit To option and enter the exact number of pages you want, such as 1 page wide by 2 pages tall. Such a setting will force your columns to fit on one page, and the rows of your worksheet onto two pages.

Working in Page Break Preview

If you choose View | Page Break Preview, your worksheet content appears very small, and thick blue lines appear on the page along with graphic page numbers behind the text. The blue lines, both dashed and solid, represent the page breaks, and when you hover the cursor over them, a two-headed arrow appears, which signals that you can drag the page breaks up, down, left, and

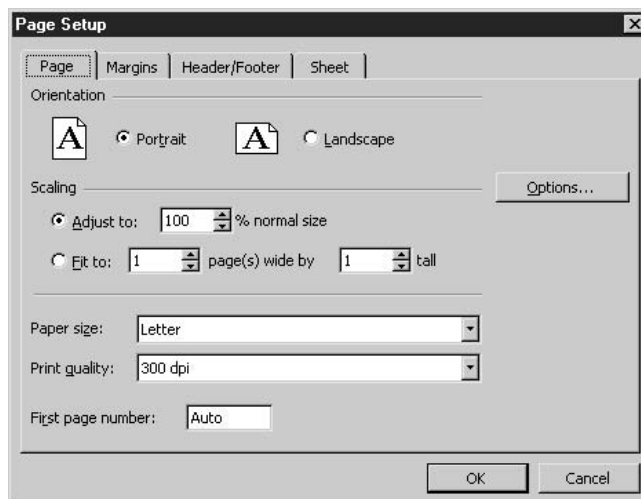


FIGURE 14-3 The Page Setup dialog box's Page tab gives you options for what page elements will be included in your printout.

right, moving them to just about anywhere you want them. After you've completed your page break adjustments, you can return to a normal view of your worksheet by choosing View | Normal.

	C	D	E	F	G	H	I	J	K
4									
5	% of Total Sales	Q2	% of Total Sales	Q3	% of Total Sales	Q4	% of Total Sales	TOTALS	
6	11%	1,204,500.30	12%	1,371,337.45	11%	1,400,650.25	13%	5,321,100.84	
7	32%	3,426,200.40	35%	3,875,125.35	32%	3,257,784.62	33%	14,534,811.61	
8	4%	574,126.00	6%	478,961.62	4%	325,789.00	3%	1,904,657.76	
9	2%	250,462.00	3%	315,793.00	3%	225,750.25	2%	1,037,717.67	
10	5%	715,987.40	7%	345,951.78	3%	625,147.15	6%	2,312,882.73	
11	31%	2,428,200.40	25%	3,975,326.85	33%	3,255,783.67	33%	13,432,012.15	
12	15%	1,304,705.30	13%	1,721,357.43	14%	1,301,620.35	13%	6,153,296.20	
13		9,904,181.80		12,083,853.48		10,392,525.29		44,696,478.97	
14									
15							Projection Comparison:	107%	

Working with Print Options

When you print a worksheet, the default settings don't include the gridlines, column letters and row numbers, or page numbers. For the times that you do want gridlines, column and row headings, and/or page numbers, it's easy enough to include them. You simply need to open the Page Setup dialog box and choose the options on the Sheet tab, shown in Figure 14-4.

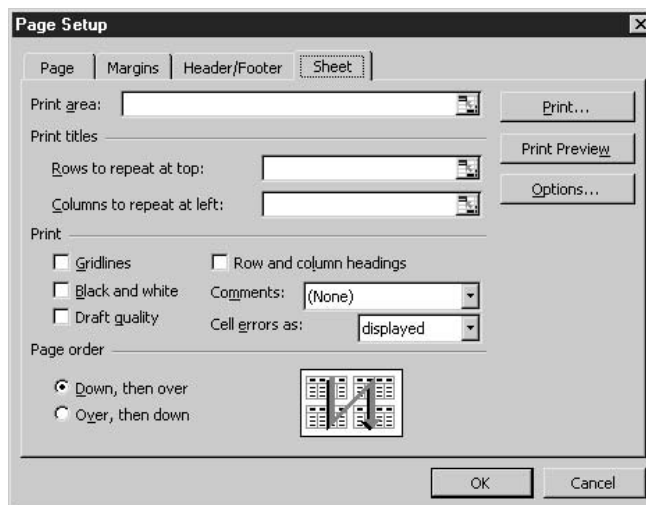


FIGURE 14-4 The Sheet tab allows you to control what's included in your printed worksheet.

In addition to turning on gridlines or setting your printout to black and white, you can use this tab to customize the following aspects of your printout:

- **Print Area** This option allows you to type or select a region of your worksheet to be designated as the area to print.
- **Print Titles** If you want your column headings or row labels to appear on each page of the printed worksheet, type the cell addresses where these headings and/or labels can be found, or move the dialog box aside and select the range with your mouse. This feature can be especially helpful when you're printing out a database with many, many rows of records.
- **Print** This section gives you the choices to print gridlines, to print in black and white, to print in draft quality, and to include the column letters and row numbers from the worksheet. You can also choose whether or not any cells with comments in them are printed, and if so, where they appear.
- **Page Order** By default, pages print down, then over, and the dialog box itself shows how this works with a graphical explanation. You can switch to Over, Then Down, which can be a good choice for worksheets that are much wider than they are tall.

Setting Up Headers and Footers

For printouts that have more than one page, it's a good idea to include page numbers on the second and subsequent pages, just as you would include them on a long letter or report done in Word. To add page numbers (or any other header or footer content), you need the Page Setup dialog box again. From within the dialog box, click the Header/Footer tab and view the current header or footer content in the large white boxes. By default, there is no header or footer content, but if you're working with a worksheet created by someone else, there might already be content there.

If you want to add or change header and/or footer content, use the Custom Header and Custom Footer buttons on the Header/Footer tab. The dialog box opened by either button (the Header dialog box is shown in Figure 14-5) gives you the ability to type your own text into the header or footer and to insert automatic data—the filename, the date, the time, the page number, and even the total number of pages, which is very handy for long printouts.

As you click the buttons to insert information, the insertions appear as fields, with symbols and names relevant to Excel's programming. For example, if you click the Date button, `&[DATE]` appears in the active section of the header or footer. The actual date will appear only on the printed worksheet or in the Print Preview window. Be sure to press SPACEBAR between inserted pieces of data (and any extra text you add manually) so that the text and numbers don't run together when printed. Click OK to apply your header or footer to the worksheet.

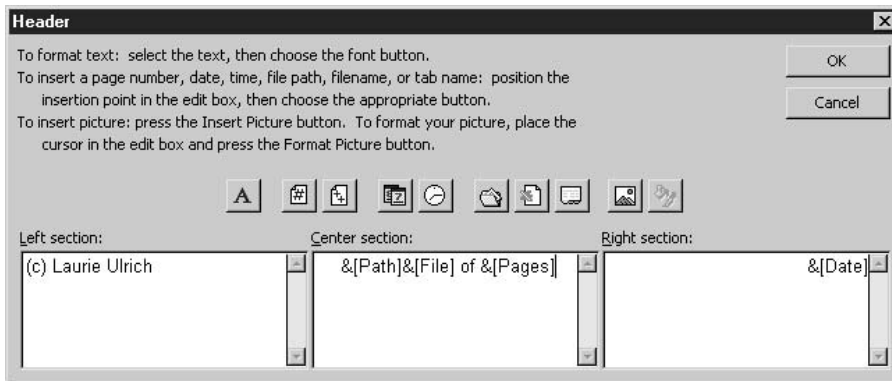


FIGURE 14-5 Use this dialog box to create custom headers; there's a similar one for footers.

Publishing Excel Content to the Web

Imagine that you're presenting a new commission plan to your company's sales reps or that you're instituting a new retirement plan. You've created a worksheet—perhaps one that contains charts—that shows how the new plan will work, and you'd like anyone who's interested to be able to view and even play with the sheet to see what his or her new commission or pension will be under a variety of different circumstances. Perhaps the best way to share the worksheet and give people the chance to play with it is to save it as HTML and post the worksheet to the web, adding the ability for people to interact with the data—adding, deleting, changing, even performing their own calculations on it through a mini version of the Excel toolbars. Page visitors will be able to locally save their version of the worksheet content as an Excel file, while the version on the web page remains intact for each new site visitor.

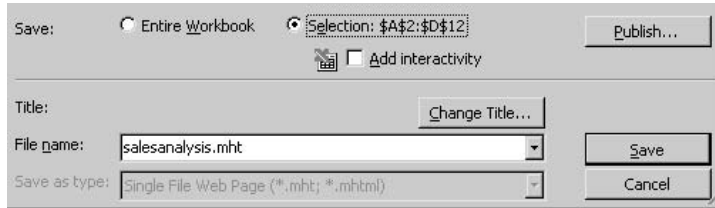
TIP

See Chapters 26 and 27 to find out how to use FrontPage to create web pages that can house any kind of information—text, numbers, and images—and to post that information to the web.

Saving Your Worksheet as a Web Page

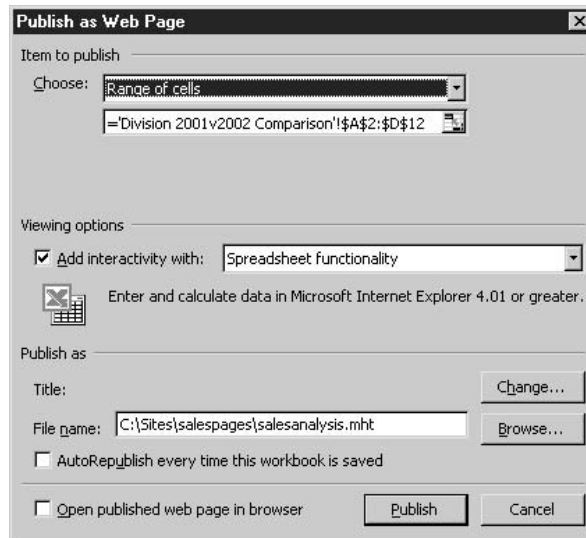
The process of saving a worksheet as HTML is surprisingly easy. You can save a portion of a single worksheet, an entire worksheet, or a group of sheets, or you can publish an entire workbook.

Choosing File | Save As Web Page opens the Save As dialog box, with some options you don't see if you simply choose File | Save As:

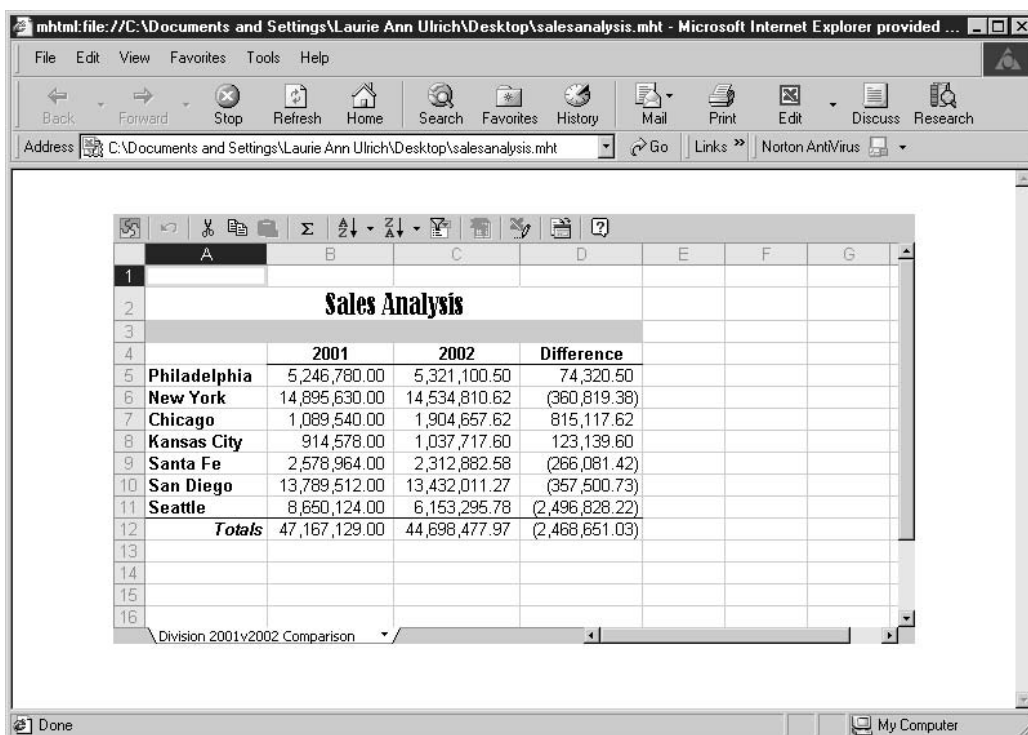


To save your worksheet as an HTML file for use on the web, follow these steps:

1. Select the range of cells you want to publish and then choose File | Save As Web Page.
2. Type a filename for the HTML file. It should be short, and you should use only lowercase letters, and no spaces. The .htm extension will be added automatically, or the .mht (Microsoft's proprietary format) extension will be applied if you choose Add Interactivity (see Step 4 of this procedure).
3. Choose what you want to publish—the entire workbook or a selection. The Selection option will list the range you selected prior to opening the dialog box.
4. Click the Add Interactivity check box if you want people to be able to work with the data online.
5. Click the Publish button. The Publish as Web Page dialog box opens. You can verify your selection in the Item to Publish section, and choose to preview your page right after publishing by checking the Open Published Web Page in Browser option. Checking the AutoRepublish option keeps the web content up-to-date.



6. Click Publish to complete the process of saving your worksheet as an HTML file. Here is the resulting page, including interactivity tools.

**NOTE**

Be sure to use the *Open Published Page in Web Browser* option so that your new page opens immediately in an Internet Explorer window. If you used the *Change Title* option, the title you gave the document appears on the browser's title bar.