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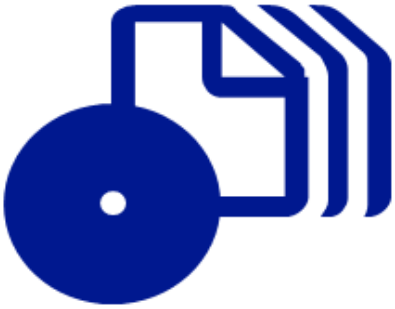

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For Jean

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Acknowledgments

The wheels on the book go round and round. . . . Thanks to Curtis Philips, who organized the road trip and made sure the kids didn't stick their heads out the windows. Thanks to Rozanne Whalen, John Pierce, Andrea Fox, and William Meyers, who kept the drivers on point and made sure all systems were "go." Sincere thanks to all others who had a hand in this (and related) excursions, including but not limited to Devon Musgrave, Juliana Aldous, Claudette Moore, Maria Gargiulo, and fondly, Sandra Haynes.

The traditional musical shout-out goes to John Mayer, who writes a lot of good tunes but really made a lot of people cry (and for a songwriter, that's a *great* thing) wishing he could *Stop This Train*.

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Conventions and Features Used in This Book

This book uses special text and design conventions to help you find the information you need more easily.

Text Conventions

Convention	Meaning
Abbreviated commands for navigating the ribbon	For your convenience, this book uses abbreviated commands. For example, "Click Home, Insert, Insert Cells" means that you should click the Home tab on the ribbon, then click the Insert button, and finally click the Insert Cells command.
Boldface type	**Boldface** indicates text that you type.
Initial Capital Letters	The first letters of the names of tabs, dialog boxes, dialog box elements, and commands are capitalized. Example: the Save As dialog box.
Italicized type	*Italicized* type indicates new terms.
Plus sign (+) in text	Keyboard shortcuts are indicated by a plus sign (+) separating key names. For example, Ctrl+Alt+Delete means that you press the Ctrl, Alt, and Delete keys at the same time.

Design Conventions

INSIDE OUT

This Statement Illustrates an Example of an "Inside Out" Heading

These are the book's signature tips. In these tips, you get the straight scoop on what's going on with the software—inside information about why a feature works the way it does. You'll also find handy workarounds to deal with software problems.

Sidebar

Sidebars provide helpful hints, timesaving tricks, or alternative procedures related to the task being discussed.

TROUBLESHOOTING

This statement illustrates an example of a "Troubleshooting" problem statement.

Look for these sidebars to find solutions to common problems you might encounter. Troubleshooting sidebars appear next to related information in the chapters. You can also use "Index to Troubleshooting Topics" at the back of the book to look up problems by topic.

Cross-references point you to locations in the book that offer additional information about the topic being discussed.

CAUTION!

Cautions identify potential problems that you should look out for when you're completing a task or that you must address before you can complete a task.

Note

Notes offer additional information related to the task being discussed.

When an example has a related file that is included on the companion Web site, this icon appears in the margin. You can use these files to follow along with the book's examples. The companion Web site is located at *http://go.microsoft.com/fwlink/?Linkid=198961*.

CHAPTER 9

Worksheet Formatting Techniques

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Using Template Files to Store Formatting. 368

When creating a worksheet in Microsoft Excel 2010, you probably don't ask yourself the question, why use formats? But we'll answer it anyway. Compare Figure 9-1 to Figure 9-2, and we need say no more. Although the data is the same in both worksheets, the worksheet in Figure 9-2 takes advantage of the formatting features available in Excel 2010, and as you can see, it's much easier to read and interpret. In this chapter, you'll learn how to apply basic formatting to help turn your data into information. We also discuss advanced formatting features such as themes, cell styles, and conditional formatting.

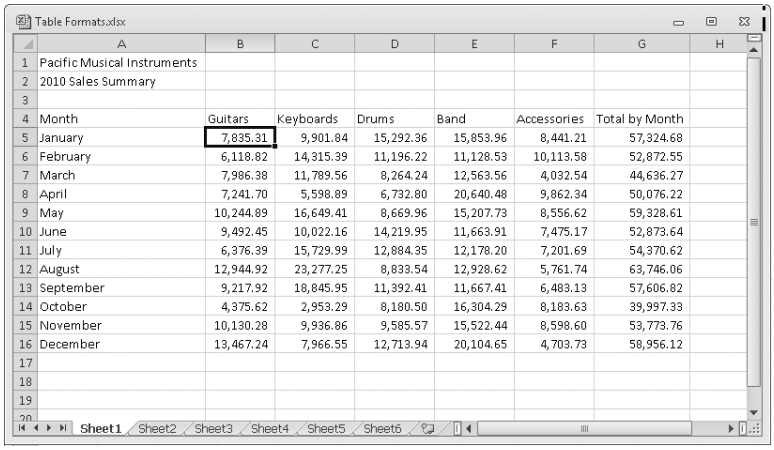


Table Formats.xlsx

	A	B	C	D	E	F	G	H
1	Pacific Musical Instruments							
2	2010 Sales Summary							
3								
4	Month	Guitars	Keyboards	Drums	Band	Accessories	Total by Month	
5	January	7,835.31	9,901.84	15,292.36	15,853.96	8,441.21	57,324.68	
6	February	6,118.82	14,315.39	11,196.22	11,128.53	10,113.58	52,872.55	
7	March	7,986.38	11,789.56	8,264.24	12,563.56	4,032.54	44,636.27	
8	April	7,241.70	5,598.89	6,732.80	20,640.48	9,862.34	50,076.22	
9	May	10,244.89	16,649.41	8,669.96	15,207.73	8,556.62	59,328.61	
10	June	9,492.45	10,022.16	14,219.95	11,663.91	7,475.17	52,873.64	
11	July	6,376.39	15,729.99	12,884.35	12,178.20	7,201.69	54,370.62	
12	August	12,944.92	23,277.25	8,833.54	12,928.62	5,761.74	63,746.06	
13	September	9,217.92	18,845.95	11,392.41	11,667.41	6,483.13	57,606.82	
14	October	4,375.62	2,953.29	8,180.50	16,304.29	8,183.63	39,997.33	
15	November	10,130.28	9,936.86	9,585.57	15,522.44	8,598.60	53,773.76	
16	December	13,467.24	7,966.55	12,713.94	20,104.65	4,703.73	58,956.12	
17								
18								
19								
20								

Sheet1 Sheet2 Sheet3 Sheet4 Sheet5 Sheet6

Figure 9-1 All entries in this worksheet are displayed in their default formats.

Table Formats.xlsx

	A	B	C	D	E	F	G
1	Pacific Musical Instruments						
2	*2010 Sales Summary*						
4	Month	Guitars	Keyboards	Drums	Band	Accessories	Total by Month
5	January	7,835.31	9,901.84	15,292.36	15,853.96	8,441.21	**57,324.68**
6	February	6,118.82	14,315.39	11,196.22	11,128.53	10,113.58	**52,872.55**
7	March	7,986.38	11,789.56	8,264.24	12,563.56	4,032.54	**44,636.27**
8	April	7,241.70	5,598.89	6,732.80	20,640.48	9,862.34	**50,076.22**
9	May	10,244.89	16,649.41	8,669.96	15,207.73	8,556.62	**59,328.61**
10	June	9,492.45	10,022.16	14,219.95	11,663.91	7,475.17	**52,873.64**
11	July	6,376.39	15,729.99	12,884.35	12,178.20	7,201.69	**54,370.62**
12	August	12,944.92	23,277.25	8,833.54	12,928.62	5,761.74	**63,746.06**
13	September	9,217.92	18,845.95	11,392.41	11,667.41	6,483.13	**57,606.82**
14	October	4,375.62	2,953.29	8,180.50	16,304.29	8,183.63	**39,997.33**
15	November	10,130.28	9,936.86	9,585.57	15,522.44	8,598.60	**53,773.76**
16	December	13,467.24	7,966.55	12,713.94	20,104.65	4,703.73	**58,956.12**
17							
18							
19							

Sheet1 Sheet2 Sheet3 Sheet4 Sheet5 Sheet6

Figure 9-2 The formatted worksheet is easier to read.

Formatting Fundamentals

Worksheet *editing* involves creating and modifying the content, layout, and organization of data, while worksheet *formatting* deals with the appearance and readability of that data. With formatting, you can take mind-numbing detail and turn it into information by highlighting the important stuff, adding visual cues and clues, and enhancing overall readability and organization. Be careful, though—over formatting can be as distracting as none at all. Usually, the goal of a good worksheet is to call attention to the right information, not to showcase Excel's formatting features (or your mastery of them).

Formatting in Excel is easy: Select the cell or range, and use the appropriate buttons and commands on the ribbon to apply formatting. Many of the most often used formatting features appear on the Home tab on the ribbon for quick access, as shown in Figure 9-3. In fact, formatting commands dominate the Home tab; all seven of its ribbon groups include formatting commands (even the Editing group). Figure 9-3 also shows the Format Cells dialog box, which you can access by clicking the dialog box launcher in the Font, Alignment, or Number group on the Home tab on the ribbon. (The dialog box launcher is the small arrow icon to the right of the title in many ribbon groups.)

Note

To quickly access the Format Cells dialog box, press Ctrl+1.

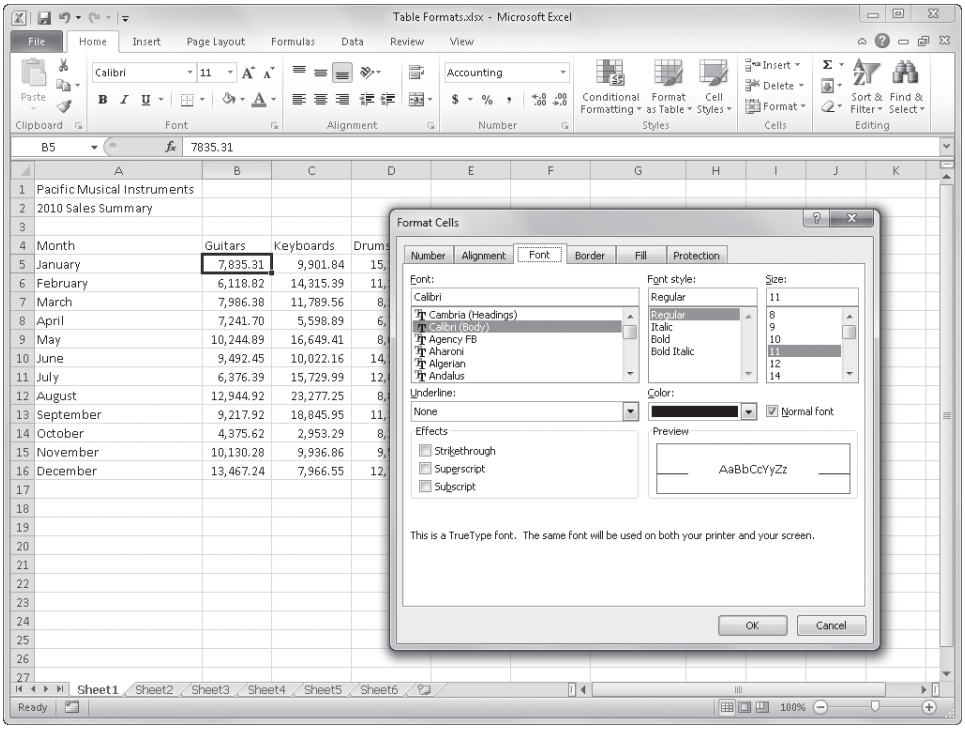


Figure 9-3 The Home tab on the ribbon and the Format Cells dialog box are your formatting toolboxes.

Here are some fundamental rules of formatting in Excel:

- A formatted cell remains formatted until you remove the format or apply a new format.
- When you overwrite or edit a cell entry, you need not reformat the cell.
- When you copy or cut a cell, the formats applied to that cell travel with it.

Note

Build and edit the worksheet first; apply formatting later. Sometimes, the *least* efficient step you can take is to apply your formatting too soon. Applying, removing, and then reapplying formatting is at least three times the work. Trust us, you'll do some reformatting no matter what, so give yourself the freedom to rearrange until the layout becomes clear for your purposes.

Formatting Tables

The concept of "tables" in Excel took on fresh meaning with the 2007 release, and it continues in the 2010 release. Tables are special objects in Excel that include many features beyond formatting, but you can use the Format As Table button on the Home tab to apply specific font, border, and fill attributes to all the elements of a table at once. The Format As Table gallery, shown in Figure 9-4, applies predefined combinations of these formatting criteria.

> **Note**
>
> **When you use Format As Table, you apply more than just formatting—you are actually transforming a region of your worksheet into a kind of self-contained entity that not only adds filters to all column headings but also has special properties that offer extreme editing while preserving the integrity and format of the table structure. Chapter 22, "Managing Information in Tables," covers tables in more detail. You'll want to check out that chapter.**

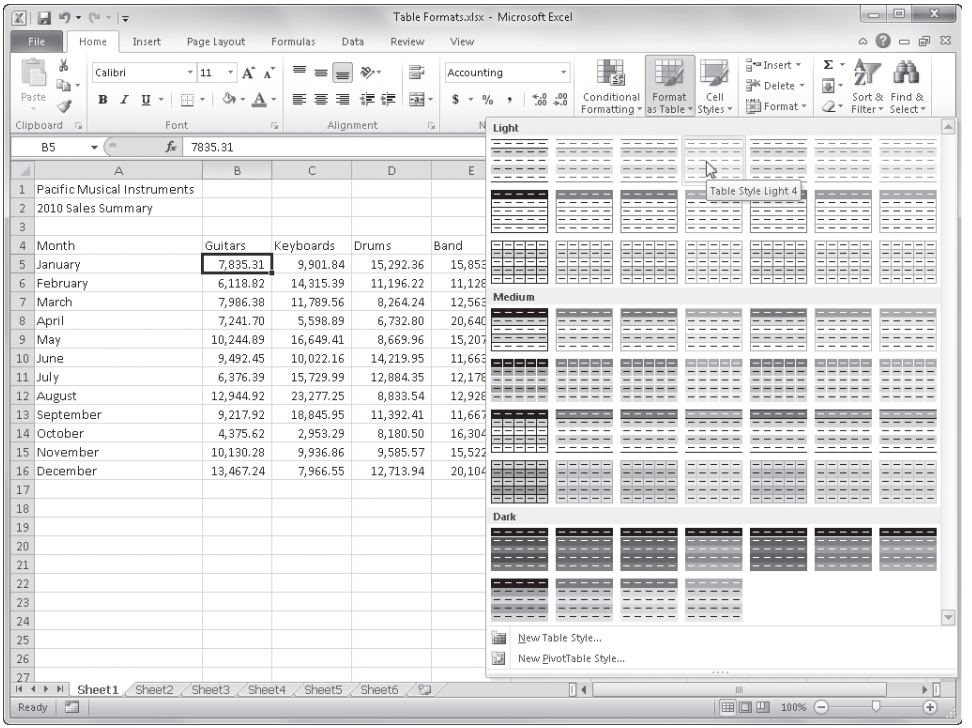


Figure 9-4 The Format As Table gallery offers a selection of predefined formats you can apply with one click.

You can apply the Format As Table command to any *region* of cells (that is, a contiguous block of cells on a worksheet). You select a cell anywhere within the region, click Format As Table, and then select one of the sample table formats from the gallery. When you do, Excel displays the Format As Table dialog box, which lets you adjust the selection, as shown in Figure 9-5.

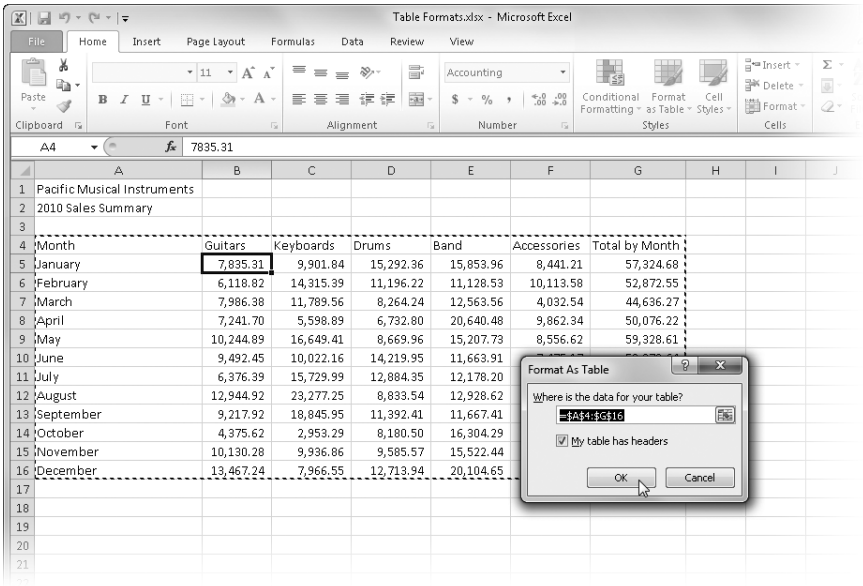


Figure 9-5 The Format As Table dialog box appears after you select a format in the Format As Table gallery.

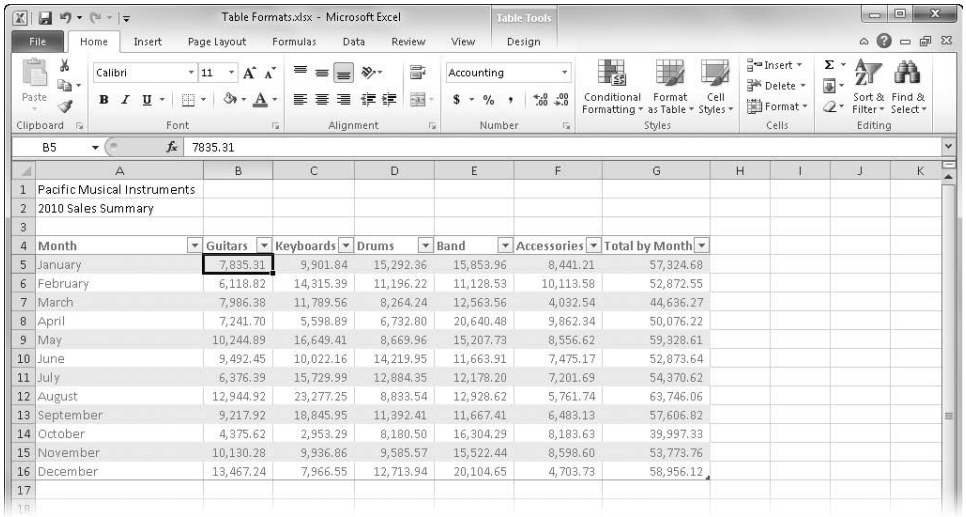
If your table includes headers (as most do), select the My Table Has Headers check box in the Format As Table dialog box. Excel then selects the entire table automatically and applies the selected table format to it.

Here are a few tips to keep in mind when using Format As Table:

Undo

- If you don't like the way something looks, click the Undo button on the Quick Access Toolbar (or press Ctrl+Z).
- The boundaries of a table are defined by blank rows and columns or the edges of the worksheet. Try adding blank columns or rows around your table to effectively fence off areas you don't want Format As Table to touch.
- Select more than one cell before issuing the command, and Format As Table affects only the selected cells.

Although Format As Table does a pretty good job with simple tables, you usually need to make a few adjustments afterward. For example, starting with the raw data shown in Figure 9-1, we applied the Table Style Light 4 format. Figure 9-6 shows the result.



	A	B	C	D	E	F	G
1	Pacific Musical Instruments						
2	2010 Sales Summary						
3							
4	Month	Guitars	Keyboards	Drums	Band	Accessories	Total by Month
5	January	7,835.31	9,901.84	15,292.36	15,853.96	8,441.21	57,324.68
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10	June	9,492.45	10,022.16	14,219.95	11,663.91	7,475.17	52,873.64
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14	October	4,375.62	2,953.29	8,180.50	16,304.29	8,183.63	39,997.33
15	November	10,130.28	9,936.86	9,585.57	15,522.44	8,598.60	53,773.76
16	December	13,467.24	7,966.55	12,713.94	20,104.65	4,703.73	58,956.12
17							

Figure 9-6 In seconds, you can transform a raw worksheet into something more presentable.

As you can see in Figure 9-6, the title and subtitle in cells A1 and A2 were not part of the table, and therefore were not formatted, so we applied additional formatting manually to arrive at the result shown in Figure 9-2. In addition, we applied number formatting to the cells containing data. Nonetheless, using Format As Table speeds up the formatting process and provides at least one formatting feature that is otherwise unavailable: automatic row and column banding, which was one attribute of the automatic format we applied in Figure 9-6. Another cool part of using Format As Table is the automatic preview feature. After you define a table using the Format As Table command, you can then use the Format As Table gallery to preview other predefined formats. (It doesn't work on raw data.) Rest the pointer on any format in the gallery, and the associated formatting is temporarily reflected in the table you have already created, but it is not actually applied unless you click.

After you create a table, a context-triggered tab appears on the ribbon only when you select a cell or cells within the table. Figure 9-7 shows the Table Tools Design tab.

The Design tab contains formatting commands in the Table Style Options and Table Styles groups. The latter group contains the same gallery as the Format As Table command on the Home tab. In Figure 9-7, we selected both the First Column and Last Column check boxes in the Table Style Options group, which in this particular predefined format applied bold formatting to the fonts in those columns. You can select and clear check boxes in this group and view the changes immediately. The Header Row check box actually adds or removes

the header row from the table. The Total Row check box adds a double border at the bottom of the table and adds another row containing summary formulas. If you add the summary row, you can select which summary function you want to use by clicking the summary formula in the totals row and then clicking the menu arrow that appears. The menu offers a selection of functions—including Sum (the default), Average, Max, and Min— or you can select More Functions to display the Insert Function dialog box.

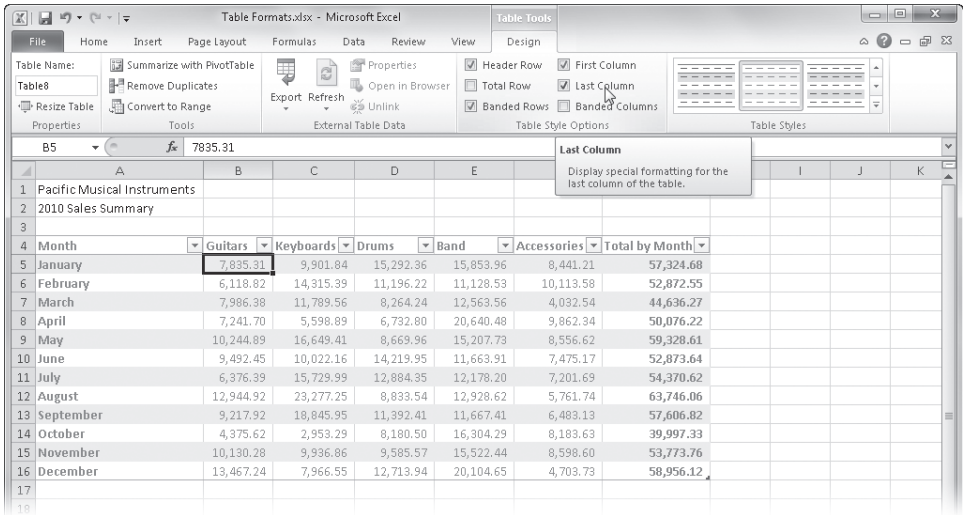


Figure 9-7 The Table Tools Design tab appears on the ribbon whenever you select a cell in a table.

TROUBLESHOOTING

Did your Design tab disappear?

The Table Tools Design tab appears only when you select a cell that is part of a table. When you select any cell outside the table, this context-triggered tab disappears, and the Home tab is activated.

The two "Banded" check boxes on the Table Tools Design tab—Banded Rows and Banded Columns—are useful. In large worksheets, row banding often makes it easier to track long rows of data across a screen or printed page. In previous versions of Excel, banding required you to construct an esoteric conditional formatting formula using the MOD function. Banding is now easier than ever to apply in Excel thanks to these two options, and unlike the old MOD function approach, these table banding options are smart enough to survive just about any kind of editing, including inserting and deleting rows and columns.

For more information, see "Formatting Conditionally" on page 309 and "Creating Conditional Formatting Rules" on page 315.

You can insert and delete rows in a table, even at the edges, and the table automatically does the right thing with formats and formulas. Another great feature of tables is that you can make them bigger just by dragging. As Figure 9-8 shows, the cell in the lower-right corner of the table contains a small triangular indicator (similar to a cell comment indicator) that you can drag horizontally or vertically to increase (or decrease) the size of the table.

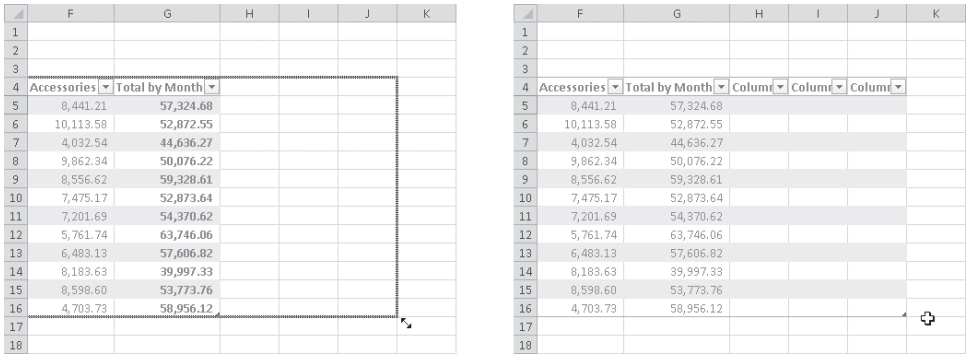


Figure 9-8 Drag the lower-right corner of a table to make it bigger.

Options for Applying Table Formats

When you right-click an item in the Format As Table gallery, you'll find a few more tools you can employ when you are working with table formats. Figure 9-9 shows the shortcut menu that appears when you right-click a gallery item.

The following are the options:

- Apply And Clear Formatting sounds backward, because what really happens is that Excel removes the existing formatting first before applying the selected table format.
- Apply (And Maintain Formatting) gives you the option of using the selected table format without disturbing any format attributes previously applied to the selected cells. This is handy if you have special number formats or conditional formats you want to preserve.
- Duplicate copies the selected table format; opens the Modify Table Quick Style dialog box (which is identical to the New Table Quick Style dialog box shown in Figure 9-10), letting you make modifications; and places the resulting format in the Custom category at the top of the Format As Table gallery.

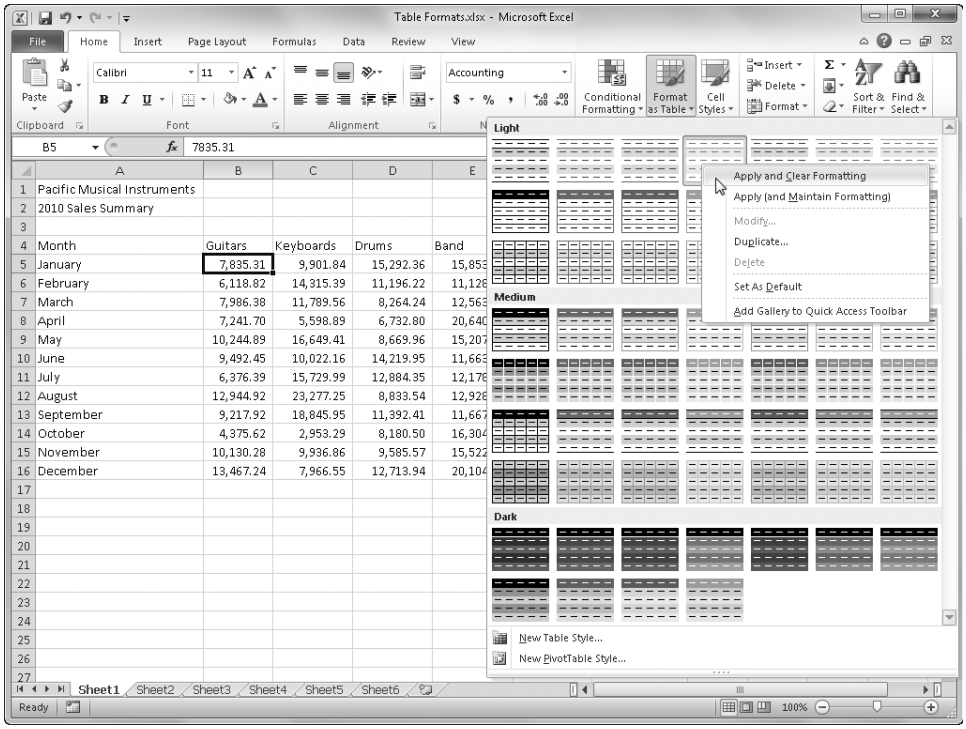
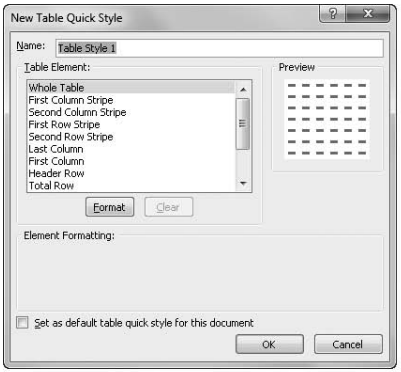


Figure 9-9 Right-click any table format thumbnail to reveal a shortcut menu containing helpful options.

Creating Custom Table Formats

If the built-in gallery of table styles doesn't do it for you, you can create your own. To do so, click the Format As Table button on the Home tab, scroll to the bottom of the gallery, and click New Table Style to display the New Table Quick Style dialog box shown in Figure 9-10.

In the New Table Quick Style dialog box, you can assign font, border, and fill formats to each item included in the Table Element list. Select the element you want to format, and click the Format button to display the Format Cells dialog box shown on the right in Figure 9-10. You can click the Clear button to remove the formatting from a selected element; select the Set As Default Table Quick Style For This Document check box to make yours the go-to style whenever you create tables in the current workbook. After you finish specifying formats and click OK, your custom style appears at the top of the Format As Table gallery in the Custom category.



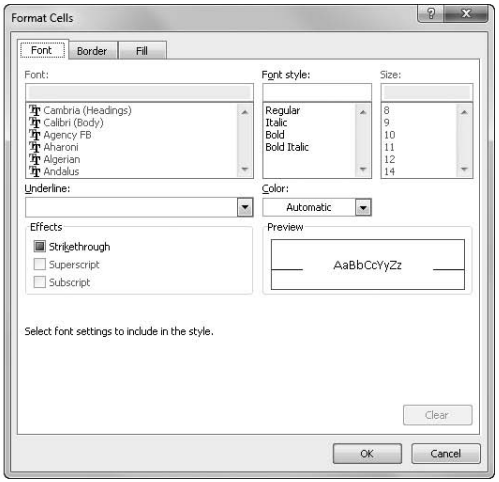
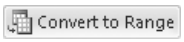


Figure 9-10 Click the New Table Style command in the Format As Table gallery to create your own table styles.

Removing the Automatic Table Features



If you like the formatting you get from tables but don't want or need the special features of a table, use the Convert To Range button in the Tools group on the Table Tools Design tab. When you do so, all the special features applied to the selected table are removed, leaving most of the formatting intact. (Remember, you need to click a cell in the table to display the Table Tools Design tab.) Figure 9-11 shows the message that appears when you click Convert To Range.

Convert To Range removes the Filter menus from the selected table, discontinues displaying the Table Tools Design tab, turns off any additional table features (such as automatic cell banding and totals), and relegates the range formerly known as Table to simple "formatted cells" status. Any visible table formatting you applied remains (including the totals row), but the automatic table functionality disappears. Even the banding formats remain, but they are no longer dynamic or automatic. Converting your table in this way makes sense if you don't want to deal with the automatic accoutrements such as Filter menus. This technique is a great way to take advantage of automatic table formatting features for cell ranges that you just want to format uniformly.

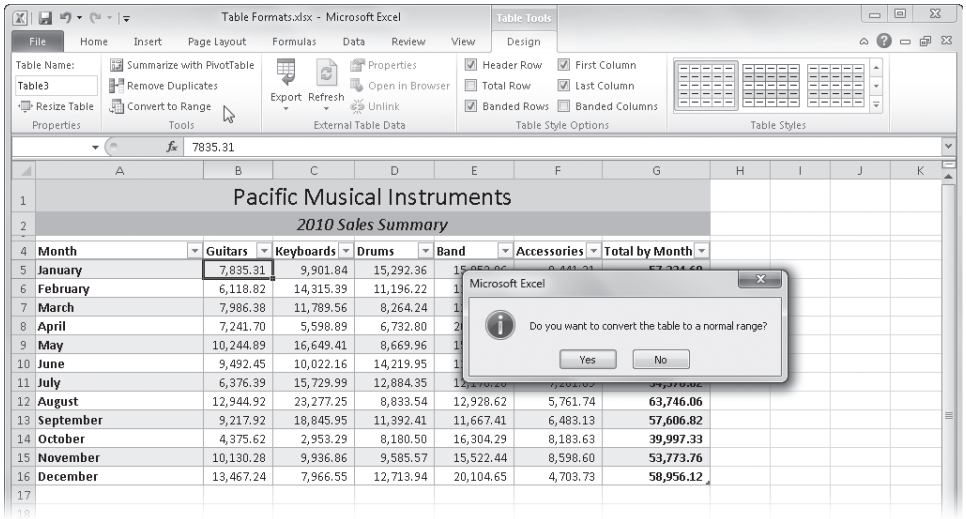


Figure 9-11 The Convert To Range command removes the automatic table features but leaves the formatting.

Painting Formats

Format Painter

One of the most useful tools on your formatting tool belt is the Format Painter button. The Clipboard group on the Home tab is home to the Format Painter button, which looks like a little paintbrush. Select the cell or range from which you want to copy formatting, and click the Format Painter button. (A small paintbrush icon appears next to the pointer.) Then select the cell or drag through the range of cells to which you want to copy the formatting. It's that simple.

If you copy formats from a range of cells and then select a single cell when you paste, Format Painter selects and formats the same size range—from the selected cell down and to the right. However, if you select a range of cells when you paste formats, Format Painter limits the pasted formats to the shape of the destination range you select. If the range you want to format is a different shape from the copied range, the pattern is repeated or truncated as necessary.

Clear

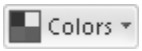
Note

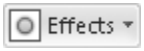
To remove all formatting, select a cell or range, click the Clear menu (located in the Editing group on the Home tab of the ribbon), and click Clear Formats. To remove the values as well as the formatting in selected cells, click Clear All on the menu. For more information, see "Clearing Cells" on page 220.

Using Themes and Cell Styles

Excel 2010 now offers a couple of ways to format globally—meaning you can perform certain tasks to help standardize the look of your worksheets and create a consistent appearance for all your documents.

Formatting with Themes





A *theme* is a set of formatting attributes that apply specifically to the line and fill effects, the color palette, and the fonts that are available when formatting documents. The three buttons that control these attributes—Colors, Fonts, and Effects—appear in the Themes group on the Page Layout tab, shown in Figure 9-12. Themes give individuals or workgroups using Microsoft Office programs (versions 2007 and 2010) the ability to use the same sets of basic design attributes for all the documents they create. You'll find corresponding themes in Microsoft PowerPoint and Microsoft Word as well. You can use themes to standardize all your internal documents, for example, or to maintain a consistent look between pages in a package of presentation handouts.

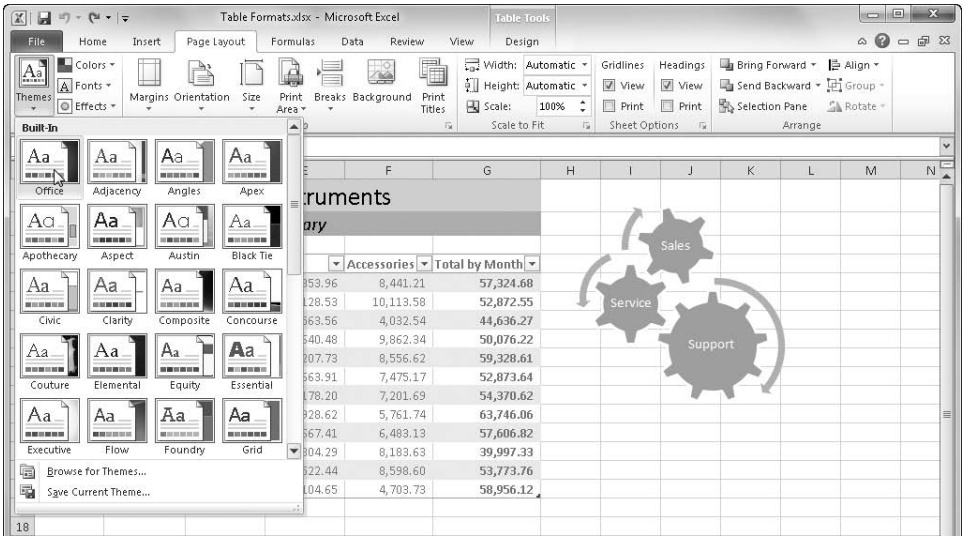
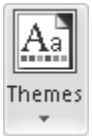


Figure 9-12 Themes control the overall palette of available colors, fonts, and effects.



When you apply a theme using the Themes button, all applicable formats in the active workbook change instantly, including the colors of text, background, accents and hyperlinks, heading and body text fonts, line and fill effects, and even graphics, as shown in Figure 9-13. This happens regardless of the number of cells you have selected.

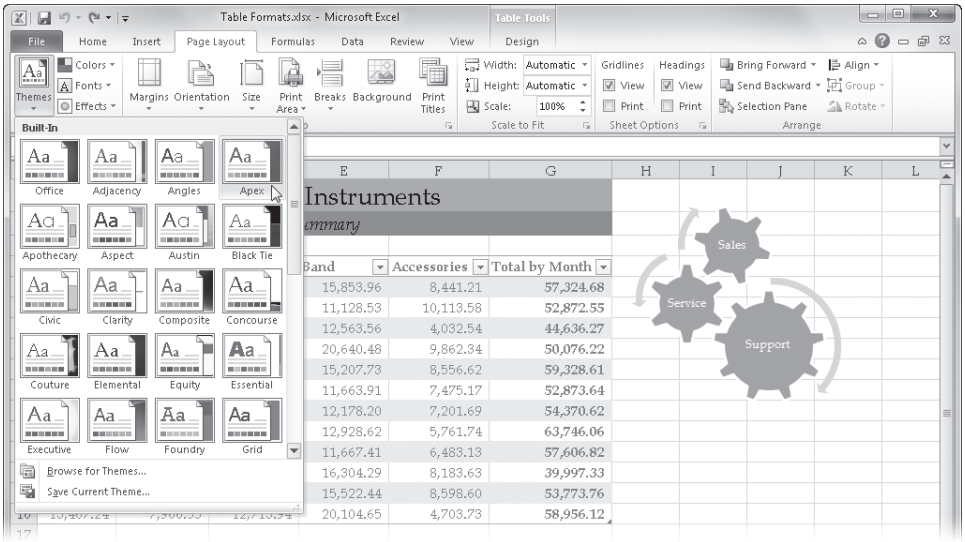


Figure 9-13 Changing the theme instantly changes the look of all the worksheets in the active workbook.

Just as when you choose a theme, changes you make using the Colors, Fonts, or Effects galleries are reflected immediately throughout the workbook. The Colors gallery contains a selection of coordinated color schemes that, when selected, change the available colors in all other galleries where colors are used. The Fonts gallery offers a selection of font sets including two fonts each—one for headings and one for body text. The Effects gallery gives you a choice of graphic "looks," accomplished using various applications of line and fill effects that reflect the current color scheme.

CAUTION!

Themes have no effect on cells to which you have directly applied font, color, line, or fill formatting using settings that are not part of a theme.

Creating Custom Themes

You can save your own themes using the Save Current Theme command at the bottom of the Themes gallery, which you can see in Figure 9-12. Doing so creates a .thmx file and saves it in a special folder on your computer. The name you give the file when you save it becomes the name of the theme, which subsequently appears in the Custom category at the top of the Themes gallery, as shown in Figure 9-14. The Custom category appears only if a custom theme exists.

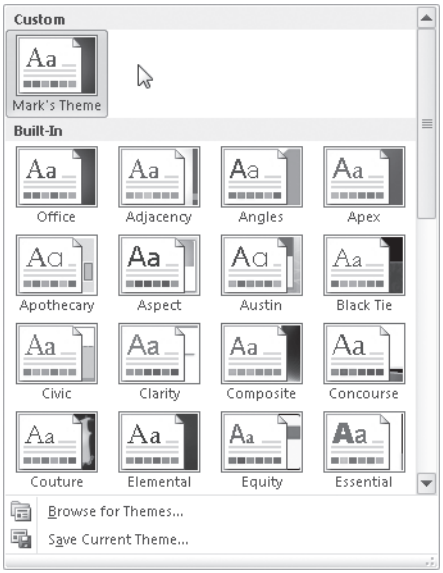


Figure 9-14 The Custom category is created in the Themes gallery when you save a custom theme.

The Browse For Themes button at the bottom of the Themes gallery lets you load .thmx files from other locations, such as a company theme file on your network, for example.

INSIDE OUT Mousing Around

Microsoft has gone to great lengths to try to make features more discoverable and self-explanatory. It crafted a new approach for many of the commands that used to live on menus, transforming them into drop-down galleries containing thumbnail representations of the options they offer. In many cases, these galleries exhibit "live preview" functionality, where you can rest the pointer on items in the gallery to get a live preview in the worksheet of what would happen if you actually clicked. This is a great feature, but it can be finicky. For example, if you convert an older Excel file and try to use the Themes gallery in this way, you might find that not much seems to happen. This can occur when formatting in the old file overrides the default font, color, line, or fill styles controlled by themes. For example, the default font in Excel 2003 is Arial, and the default font in Excel 2010 is Calibri. When you convert an old Excel file, the original fonts carry over as well. Resting the pointer on the Themes gallery might not show any changes in the font, and indeed, applying a theme might not have any effect either.

To get around this problem, you can start with a fresh workbook and type everything again (but who wants to do that?), or you can copy the contents of each worksheet in the old workbook and click Paste, Paste Values (on the Home tab) to add the data to the new workbook. This requires you to redo all the formatting, but that should be a lot easier with the tools in Excel 2010. Another approach is to reformat all the text in the converted workbook using one of the fonts from the current theme. Use the same approach to convert any colors, lines, or fill styles to use current theme styles.

Formatting with Cell Styles

The relatively new Cell Styles feature bears little resemblance to the fairly old Styles feature, although the basic idea is the same: applying combinations of formatting attributes all at once to eliminate a lot of time clicking buttons, opening dialog boxes, and choosing individual options. Cell styles help you achieve consistency in formatting, both within a worksheet and across worksheets and workbooks. Using cell styles, you can easily modify the formatting characteristics of many cells at once.

Note

Cell styles are based on the formatting attributes of the current theme. Changing the theme causes the displayed cell styles to update accordingly.

The Cell Styles button appears in the Styles group on the Home tab on the ribbon. Cell styles wield the following formatting attributes: number and fill formatting, cell alignment, fonts, borders, and even cell-level protection settings. Several built-in cell styles have specific purposes, as you can see in Figure 9-15, and you can create your own custom styles (designed in concert with your company theme, perhaps).

You'll find the following six cell style categories, with individual styles that have uses suggested by their titles and the categories in which they live:

- **Good, Bad And Neutral** If you want, you can use these styles when highlighting good news, bad news, and . . . just plain old news. The Normal style also lives here, which you can use to "reset" selected cells to default formatting.
- **Data And Model** These styles are intended for specific purposes, such as Input and Output styles for cells that are meant to accept user input or reveal the results of calculations.

- **Titles And Headings** The intended use is self-explanatory, but it's interesting to note that the top three Heading styles include bottom borders of different weights, making them useful for creating color-coordinated column headers in tables.
- **Themed Cell Styles** These Accent and Emphasis styles are heavily dependent on the current theme colors, offering four graduated percentages of each Accent color for quartile comparisons.
- **Number Format** Included for continuity, these styles are actually more accessible using the Number buttons on the Home tab on the ribbon.
- **Custom** This category does not appear in the gallery until you create a custom style. After you do, the Custom category appears at the top of the gallery.

The Cell Styles gallery exhibits "mouse hover" functionality, letting you see a live preview in selected cells on the worksheet when you rest the pointer on an item in the gallery. To apply a style, select the cells you want to format, and click your chosen style in the gallery.

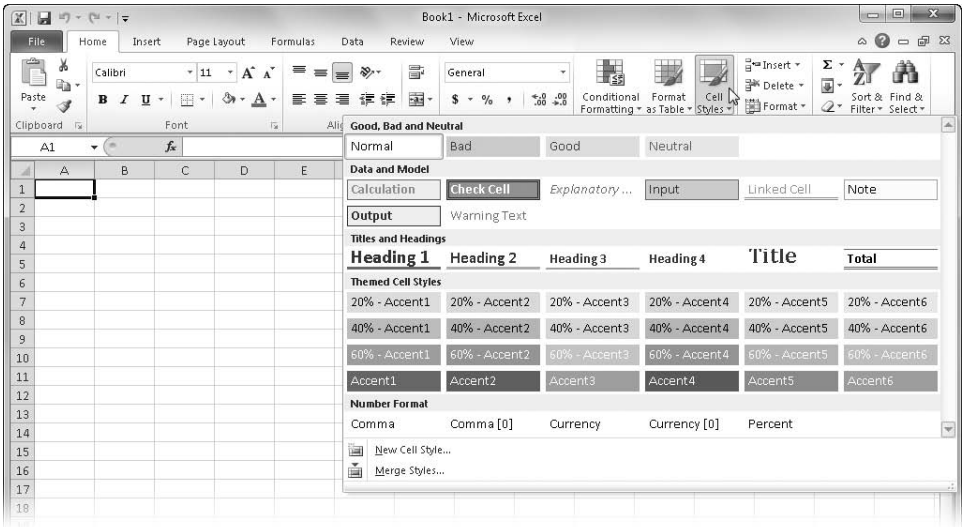


Figure 9-15 The Cell Styles gallery offers categories of styles based on the current theme.

Creating Custom Cell Styles

You can create your own styles using one of two methods: by modifying an existing style or by clicking the New Cell Style command at the bottom of the Cell Styles gallery, which displays the Style dialog box shown in Figure 9-16.

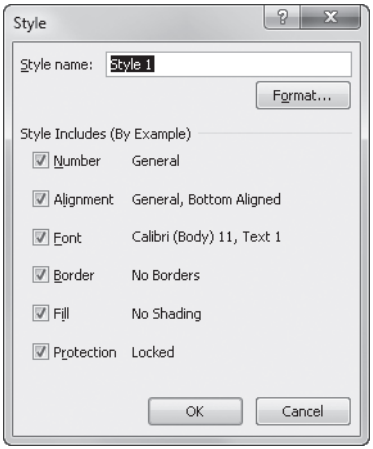


Figure 9-16 Use the Style dialog box to create your own cell styles.

The Style dialog box opens with the attributes of the default Normal style displayed. Styles can have a minimum of one and a maximum of six sets of attributes: Number, Alignment, Font, Border, Fill, and Protection, each with a corresponding check box in the Style dialog box. Use the check boxes to specify the attributes you want for your cell style. For example, you could clear all but the Protection check box to define a style that does nothing more than change selected cells to "unlocked" status, allowing user entries on a protected worksheet. Using such a style would have no effect on any of the other five style attributes in cells to which it is applied.

To specify style attributes, click the Format button to display the Format Cells dialog box, where you can specify your formatting choices in detail. The Format Cells dialog box contains six tabs corresponding to the six categories of style attributes; you can make as many choices as you want on each tab. When you finish with the Format Cells dialog box, click OK to close it and return to the Style dialog box. Then type a name in the Style Name box, and click OK. Your custom style appears in the Custom category at the top of the Cell Styles gallery, as shown in Figure 9-17, where you can see the Unlocked style we created.

For more information about the Format Cells dialog box, see "Formatting Numbers" on page 324.

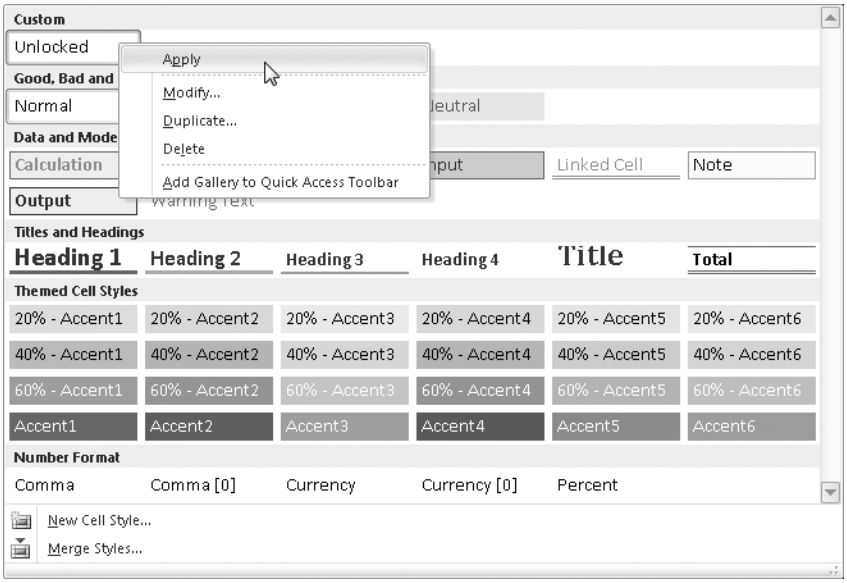


Figure 9-17 Custom styles appear at the top of the Cell Styles gallery.

As you can see in Figure 9-17, you can right-click a cell style to display a shortcut menu you can use to delete, modify, or duplicate the style. Duplication is handy if, for example, you want to create a number of related styles with different fill percentages. Clicking the Duplicate command would make it easier because it copies the other attributes for you—all you have to do is change the fill percentage.

Creating Cell Styles by Example If you have formatted a cell using attributes you want to use often, you can use the style-by-example procedure to encapsulate those attributes in a new style. For example, suppose you format a cell with right alignment and 18-point Arial Black. To make this combination of attributes a new style, follow these steps:

1. Select the cell that contains the formatting you want.
2. On the ribbon, click Home, Cell Styles, New Cell Style.
3. Type a name such as **HeadRight** in the Style Name box.
4. Clear the Number, Border, Fill, and Protection check boxes in the Style Includes area, and click OK. The new style then appears in the Cell Styles gallery.

CAUTION!

The safest way to create a style by example is to select only one cell—one you know has all the attributes you want to assign to the new style. If you select two or more cells that are not formatted identically, the new style assumes only those attributes that all cells in the selection have in common.

Modifying and Duplicating Cell Styles The principal advantage of using styles is that if you change your mind about the appearance of a particular element in your workbook, you can revise every instance of that element at once by changing the style. For example, if you'd like the font in the custom HeadRight style—which is now 18-point Arial Black—to also be italic, you can redefine HeadRight.

To modify a style definition, follow these steps:

1. Click Home, Cell Styles.
2. Right-click the thumbnail for the style (in this case, HeadRight) in the gallery, and click Modify to display the Style dialog box.
3. Click the Format button to display the Format Cells dialog box, and select the appropriate format options, as shown in Figure 9-18. (For this example, click the Font tab, and select the Italic option in the Font Style list.)
4. Click OK to return to the Style dialog box, then click OK to confirm your changes.

You can also right-click an existing style and click the Duplicate command, which opens a Style dialog box similar to the one shown in Figure 9-18 and appends a number to the end of the style name. You can then change the name if you like and click the Format button to make adjustments to the formatting attributes. Using Duplicate is helpful when you want to create a number of similar styles or when you want to base a custom style on one of the built-in styles. When you finish defining the style, click OK; your new style appears in the Custom category of the Cell Styles gallery.

Note

The predefined Normal style is applied to every cell in every new workbook. Thus, if you want to use the standard set of formatting attributes, you don't need to do anything. If, however, you want to change the default attributes for all cells in a worksheet, you can redefine any or all attributes of the Normal style.

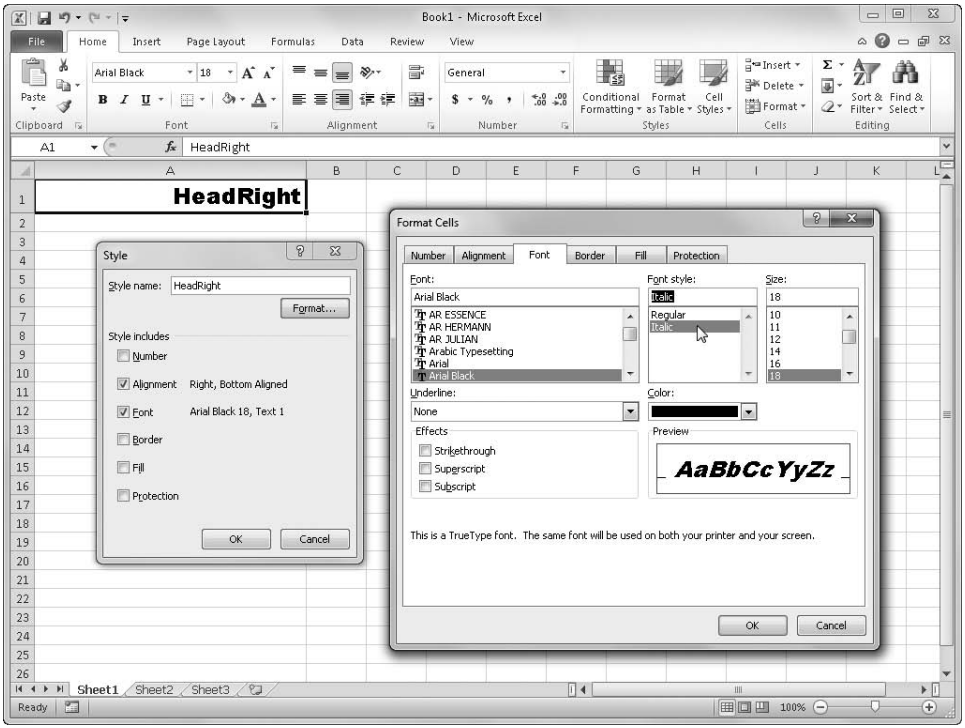


Figure 9-18 Modify an existing cell style by right-clicking its thumbnail in the gallery and clicking Modify.

Merging Cell Styles from Different Workbooks To maintain formatting consistency across a group of worksheets, you can keep the worksheets in the same workbook. If this is impractical but you still want to maintain stylistic consistency, you can copy style definitions between workbooks. (Of course, themes are also helpful in this regard and are covered in "Formatting with Themes" on page 300.)

To copy a style from one workbook to another, take the following steps:

1. Open both the source workbook (the one you're copying from) and the destination workbook (the one you're copying to).

2. Click the destination workbook to make it the active window.

3. On the ribbon, click Home, Cell Styles, Merge Styles. Excel displays a dialog box listing all the other open workbooks, as shown in Figure 9-19.

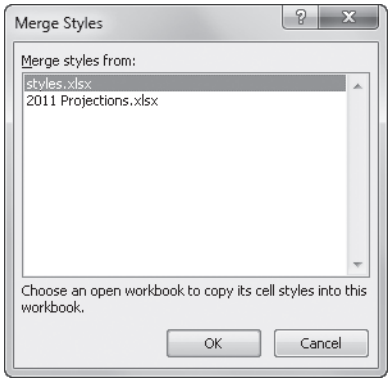


Figure 9-19 Copy cell styles from any open workbook using the Merge Styles command.

4. Select the name of the workbook you want to copy styles from, and click OK.

CAUTION!

If a style in the source workbook has the same name as one already in your destination workbook, a message asks whether you want to merge styles that have the same names. You receive this warning only once, however, no matter how many duplicate style names exist. If you click Yes, the styles from the source workbook override those with the same names in the destination workbook.

Deleting a Cell Style To delete a style, click Home, Cell Styles, and right-click the custom style you want to delete. (You cannot delete a built-in cell style.) Then click Delete. Any cells formatted using the deleted style revert to the Normal style.

Formatting Conditionally

Conditional formats respond to the contents of cells. They are almost always applied to groups of cells—often rows or columns of totals—if not entire tables. Click Home, Conditional Formatting to display the menu shown in Figure 9-20.

Excel 2010 offers five flavors of formatting features you can use for your conditional creations:

- **Highlight Cells Rules** Formatting you apply to cells that stays "asleep" until the values (numeric or text) the cells contain achieve the specified state. Click Greater Than, Less Than, Between, Equal To, Text That Contains, A Date Occurring, or Duplicate Values to display a dialog box where you can specify the appropriate criteria.

- **Top/Bottom Rules** Selected formatting applied to all cells in a range that are greater than or less than a given threshold. Click Top N Items, Top N %, Bottom N Items, Bottom N %, Above Average, or Below Average to display a dialog box where you can specify the appropriate criteria.

- **Data Bars** Gradient fills of color within cells. The bars' lengths indicate the values in the cells relative to all other adjacent cells formatted using the same conditions. Choose from a number of different colors, based on the current theme.

- **Color Scales** Two-color or three-color formats whose color indicates the values in the cells relative to all other adjacent cells formatted using the same conditions. Choose from a number of different color combinations, based on the current theme.

- **Icon Sets** Sets of three, four, or five tiny graphic images placed inside cells. The icons' shape or color indicates the values in the cells relative to all other adjacent cells formatted using the same conditions. Choose from a number of different types of icons.

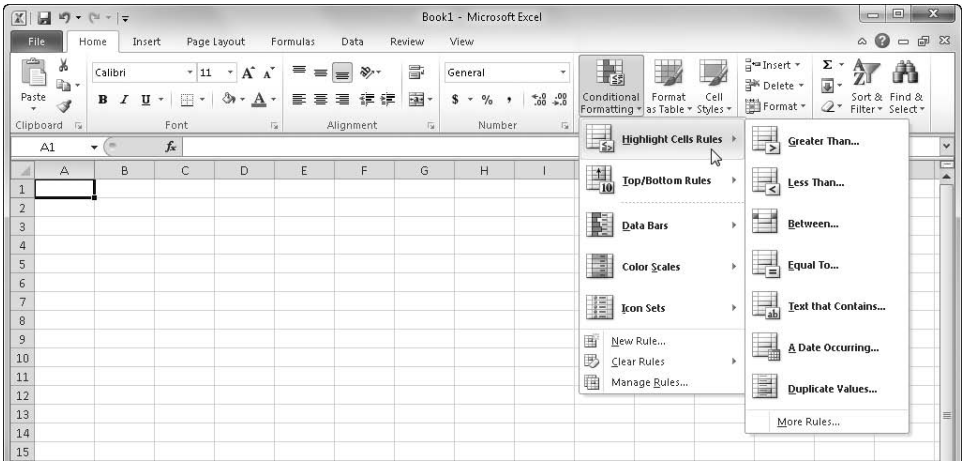


Figure 9-20 The conditional formatting features in Excel 2010 are powerful and easy to use.

For example, you could apply conditional formatting to a range of cells that contain sales totals, specifying that if any of the totals drops to less than $1,000, the format of the cell changes to stand out from the other cells. To do so, follow these steps:

1. Select the cells you want to format.

2. Click Conditional Formatting, Highlight Cells Rules, Less Than to display the dialog box shown in Figure 9-21.

3. Type the number you want to use as the threshold for this condition; in this case, **1000**.

4. Select one of the options from the drop-down list of available formats.

   Notice that when you select a format option from the Highlight Cells Rules menu, Excel previews it for you on the worksheet. Type a number in the Format Cells That Are Less Than box, select a format option from the drop-down list, and the preview adjusts accordingly. Clicking the Custom Format option at the bottom of the list displays a version of the Format Cells dialog box with the Number, Font, Border, and Fill tabs available.

5. Click OK.

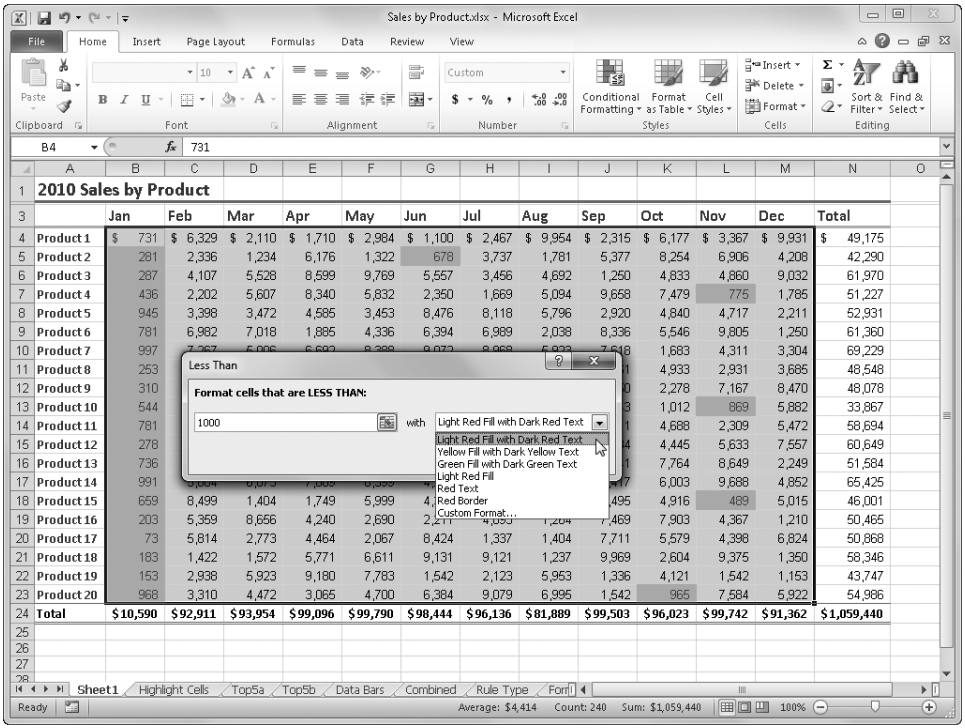


Figure 9-21 Select the Less Than rule on the Highlight Cells Rules menu to create a stoplight chart using conditional formatting.

Figure 9-22 shows a table after applying conditional formatting. This example was formatted using two highlight cells conditions: one format for numbers greater than 9,000 and a different format for numbers less than 1,000.

You'll find the Sales by Product.xlsx file with the other examples on the companion Web site.

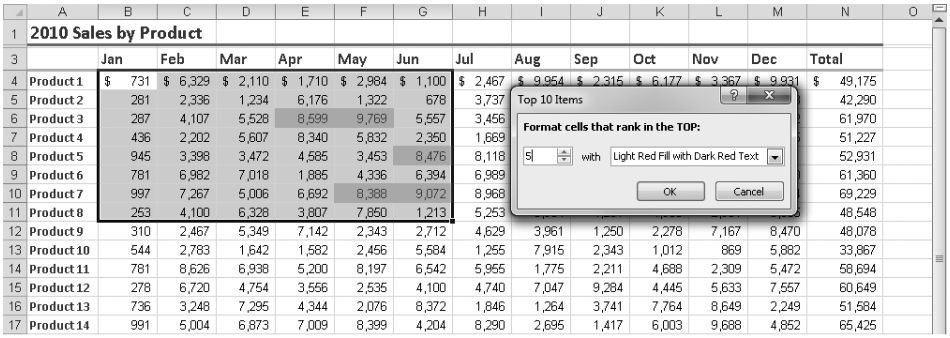
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	2010 Sales by Product													
3		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
4	Product 1	$ 731	$ 6,329	$ 2,110	$ 1,710	$ 2,984	$ 1,100	$ 2,467	$ 9,954	$ 2,315	$ 6,177	$ 3,367	$ 9,931	$ 49,175
5	Product 2	281	2,336	1,234	6,176	1,322	678	3,737	1,781	5,377	8,254	6,906	4,208	42,290
6	Product 3	287	4,107	5,528	8,599	9,769	5,557	3,456	4,692	1,250	4,833	4,860	9,032	61,970
7	Product 4	436	2,202	5,607	8,340	5,832	2,350	1,669	5,094	9,658	7,479	775	1,785	51,227
8	Product 5	945	3,398	3,472	4,585	3,453	8,476	8,118	5,796	2,920	4,840	4,717	2,211	52,931
9	Product 6	781	6,982	7,018	1,885	4,336	6,394	6,989	2,038	8,336	5,546	9,805	1,250	61,360
10	Product 7	997	7,267	5,006	6,692	8,388	9,072	8,968	5,923	7,618	1,683	4,311	3,304	69,229
11	Product 8	253	4,100	6,328	3,807	7,850	1,213	5,253	3,934	4,261	4,933	2,931	3,685	48,548
12	Product 9	310	2,467	5,349	7,142	2,343	2,712	4,629	3,961	1,250	2,278	7,167	8,470	48,078
13	Product 10	544	2,783	1,642	1,582	2,456	5,584	1,255	7,915	2,343	1,012	869	5,882	33,867
14	Product 11	781	8,626	6,938	5,200	8,197	6,542	5,955	1,775	2,211	4,688	2,309	5,472	58,694
15	Product 12	278	6,720	4,754	3,556	2,535	4,100	4,740	7,047	9,284	4,445	5,633	7,557	60,649
16	Product 13	736	3,248	7,295	4,344	2,076	8,372	1,846	1,264	3,741	7,764	8,649	2,249	51,584
17	Product 14	991	5,004	6,873	7,009	8,399	4,204	8,290	2,695	1,417	6,003	9,688	4,852	65,425
18	Product 15	659	8,499	1,404	1,749	5,999	4,398	2,211	1,167	9,495	4,916	489	5,015	46,001
19	Product 16	203	5,359	8,656	4,240	2,690	2,211	4,893	1,264	7,469	7,903	4,367	1,210	50,465
20	Product 17	73	5,814	2,773	4,464	2,067	8,424	1,337	1,404	7,711	5,579	4,398	6,824	50,868
21	Product 18	183	1,422	1,572	5,771	6,611	9,131	9,121	1,237	9,969	2,604	9,375	1,350	58,346
22	Product 19	153	2,938	5,923	9,180	7,783	1,542	2,123	5,953	1,336	4,121	1,542	1,153	43,747
23	Product 20	968	3,310	4,472	3,065	4,700	6,384	9,079	6,995	1,542	965	7,584	5,922	54,986
24	Total	$10,590	$92,911	$93,954	$99,096	$99,790	$98,444	$96,136	$81,889	$99,503	$96,023	$99,742	$91,362	$1,059,440
25														

Figure 9-22 We created two conditions—one to flag high values and one to flag low values. These guys had a rough January.

This procedure is essentially the same for all the highlight cells and top/bottom rules, but several of these rules deserve additional comment:

- **Between** This is obvious perhaps, but although the Greater Than, Less Than, and Equal To rules require you to type a single number criterion, the Between rule requires two criteria.
- **Text That Contains** When you choose this rule, cells containing any form of the text string you type as a criterion are highlighted (entering "and" highlights cells containing sand, Andrew, and so on).
- **A Date Occurring** This rule always uses the current date as the point of reference. The "occurring" options are all relative to this: Yesterday, Last Week, Next Month, and so on.
- **Duplicate Values** This rule actually has two options, highlighting either duplicate or unique values.

The highlight cells rules are the only ones that operate independently of other cells. That is, each cell is evaluated against criteria individually and formatted accordingly. All other conditional formats depend entirely on the rest of the cell values formatted using the same condition. For example, Figure 9-23 shows the same top/bottom rule applied to two different selected regions (in this case, we specified the top five).



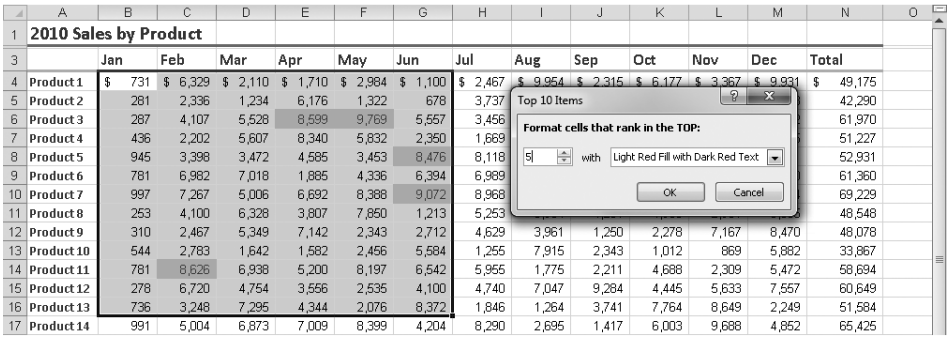


Figure 9-23 We used the same top/bottom rule on two different selections, with different results.

As you can see in Figure 9-23, cell F10 drops out of the top five, and cell C14 is added to the top five when we select a different range of cells. Excel uses all the values in the selected cell range to determine which cells to format. For data bars, color scales, and icon sets, Excel actually applies formatting to every cell in the selected range but adjusts the color, size, or icon based on each cell's value relative to the whole.

Data bars are a unique type of conditional format because each cell actually contains the same color (actually, a gradation of color), but the size of the colored area varies in each cell to reflect the cell's value relative to the other selected cells. Figure 9-24 shows a live preview of the orange data bar.

All these conditional formats are pretty flashy, and they definitely help identify relative values in a range, but you can begin to see that too much conditional formatting can become counterproductive. As with any flashy feature, it's easy to love it a little too much, so make sure you're serving the purpose of your worksheet. Figure 9-25 shows what might be considered a more judicious application of conditional formatting using highlight cells and data bars.

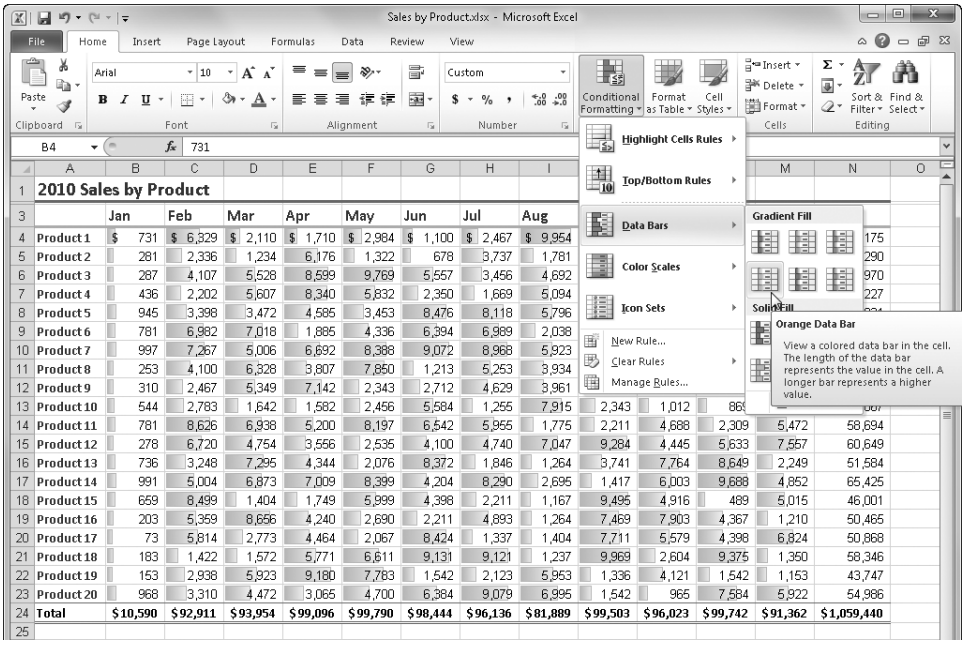


Figure 9-24 You can rest the pointer on items on the Data Bars menu to see a live preview on your worksheet.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	2010 Sales by Product													
3		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
4	Product 1	$ 731	$ 6,329	$ 2,110	$ 1,710	$ 2,984	$ 1,100	$ 2,467	$ 9,954	$ 2,315	$ 6,177	$ 3,367	$ 9,931	$ 49,175
5	Product 2	281	2,336	1,234	6,176	1,322	678	3,737	1,781	5,377	8,254	6,906	4,208	42,290
6	Product 3	287	4,107	5,528	8,599	9,769	5,557	3,456	4,692	1,250	4,833	4,860	9,032	61,970
7	Product 4	436	2,202	5,607	8,340	5,832	2,350	1,669	5,094	9,658	7,479	775	1,785	51,227
8	Product 5	945	3,398	3,472	4,585	3,453	8,476	8,118	5,796	2,920	4,840	4,717	2,211	52,931
9	Product 6	781	6,982	7,018	1,885	4,336	6,394	6,989	2,038	8,336	5,546	9,805	1,250	61,360
10	Product 7	997	7,267	5,006	6,692	8,388	9,072	8,968	5,923	7,618	1,683	4,311	3,304	69,229
11	Product 8	253	4,100	6,328	3,807	7,850	1,213	5,253	3,934	4,261	4,933	2,931	3,685	48,548
12	Product 9	310	2,467	5,349	7,142	2,343	2,712	4,629	3,961	1,250	2,278	7,167	8,470	48,078
13	Product 10	544	2,783	1,642	1,582	2,456	5,584	1,255	7,915	2,343	1,012	869	5,882	33,867
14	Product 11	781	8,626	6,938	5,200	8,197	6,542	5,955	1,775	2,211	4,688	2,309	5,472	58,694
15	Product 12	278	6,720	4,754	3,556	2,535	4,100	4,740	7,047	9,284	4,445	5,633	7,557	60,649
16	Product 13	736	3,248	7,295	4,344	2,076	8,372	1,846	1,264	3,741	7,764	8,649	2,249	51,584
17	Product 14	991	5,004	6,873	7,009	8,399	4,204	8,290	2,695	1,417	6,003	9,688	4,852	65,425
18	Product 15	659	8,499	1,404	1,749	5,999	4,398	2,211	1,167	9,495	4,916	489	5,015	46,001
19	Product 16	203	5,359	8,656	4,240	2,690	2,211	4,893	1,264	7,469	7,903	4,367	1,210	50,465
20	Product 17	73	5,814	2,773	4,464	2,067	8,424	1,337	1,404	7,711	5,579	4,398	6,824	50,868
21	Product 18	183	1,422	1,572	5,771	6,611	9,131	9,121	1,237	9,969	2,604	9,375	1,350	58,346
22	Product 19	153	2,938	5,923	9,180	7,783	1,542	2,123	5,953	1,336	4,121	1,542	1,153	43,747
23	Product 20	968	3,310	4,472	3,065	4,700	6,384	9,079	6,995	1,542	965	7,584	5,922	54,986
24	Total	$10,590	$92,911	$93,954	$99,096	$99,790	$98,444	$96,136	$81,889	$99,503	$96,023	$99,742	$91,362	$1,059,440
25														

Figure 9-25 We used highlight cells in the body of this table and data bars in the Totals column.

Creating Conditional Formatting Rules

Excel provides quite a nice variety of conditional formatting options, but you can always create your own as well. You may have noticed the New Rule command at the bottom of the Conditional Formatting menu and the ubiquitous More Rules command on each submenu. These all do essentially the same task—display the New Formatting Rule dialog box shown in Figure 9-26.

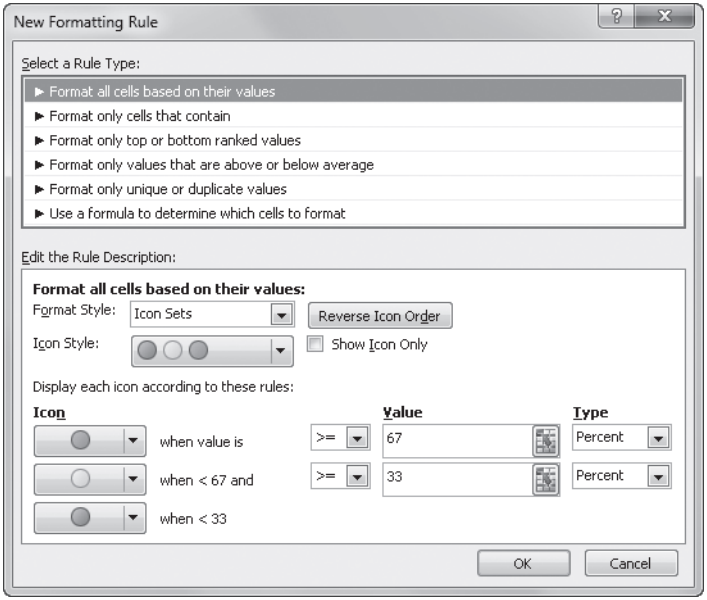


Figure 9-26 Use the New Formatting Rule dialog box to construct your own conditional formats.

All these commands open the same dialog box, but based on the menu or submenu where you clicked the command, a different rule type is selected when it opens. Each rule type displays a different set of rule-description criteria below it. To display the dialog box in Figure 9-26, we clicked Conditional Formatting on the Home tab, then Icon Sets, and then the New Rule command. Each format style has a different set of controls for creating conditional formatting rules.

The first rule type—Format All Cells Based On Their Values—contains all the controls for creating data bars, color scales, and icon sets. The rule description controls for the second rule type—Format Only Cells That Contain, shown in Figure 9-27—is what you use to create highlight cells rules. The controls for the remaining rule types are similar to this one.

We discuss the last rule type, Use A Formula To Determine Which Cells To Format, in "Creating Conditional Formatting Formulas" on page 319.

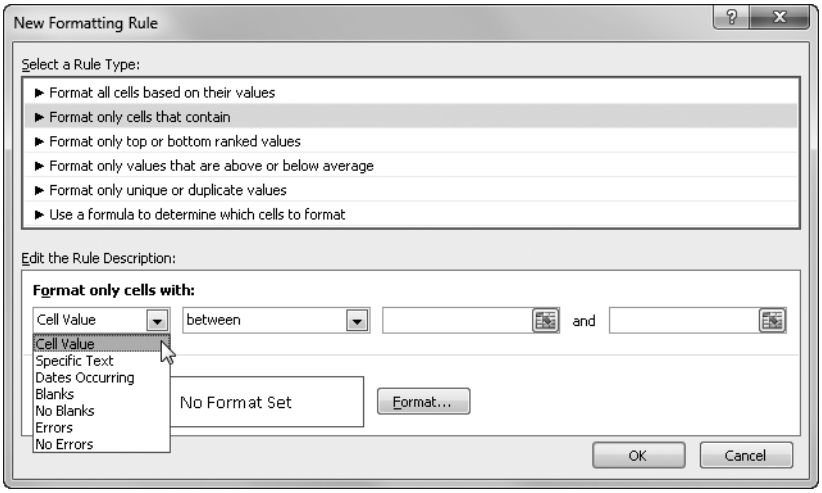


Figure 9-27 Use the second rule type in the New Formatting Rule dialog box to create your own highlight cells rules.

Use the Edit The Rule Description area to define your formats. This area changes depending on the rule selected. With Format Only Cells That Contain selected, the first drop-down list in this area (shown in Figure 9-27) allows you to define rules for highlighting Specific Text, Dates Occurring (relative to now), Blanks, No Blanks, Errors, or No Errors. Then, select an operator (Between, Not Between, Equal To, Not Equal To, Greater Than, Less Than, Greater Than Or Equal To, Less Than Or Equal To) and type comparison values in the remaining text boxes.

After you establish the rule description criteria, click the Format button. An abbreviated version of the Format Cells dialog box appears, containing only Number, Font, Border, and Fill tabs. Specify any combination of formats you want to apply when your rule is triggered. When you finish, click OK to return to the New Formatting Rule dialog box, and click OK again to save your new rule. You can create as many rules as you want; next, we'll discuss how to work with them.

Managing Conditional Formatting Rules

You can apply as many conditional formats as you think are necessary—using three or more per table is not uncommon. But it is also not uncommon for you to tweak some of the numbers or adjust some of the formatting. To do so, click Home, Conditional Formatting, Manage Rules to display a Conditional Formatting Rules Manager dialog box similar to the one shown in Figure 9-28.

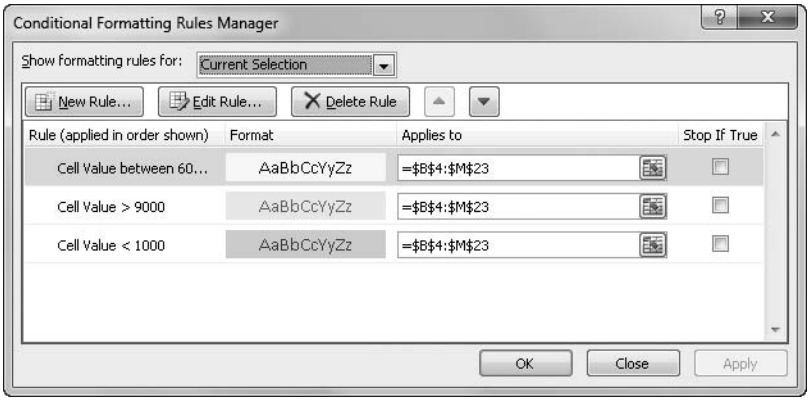
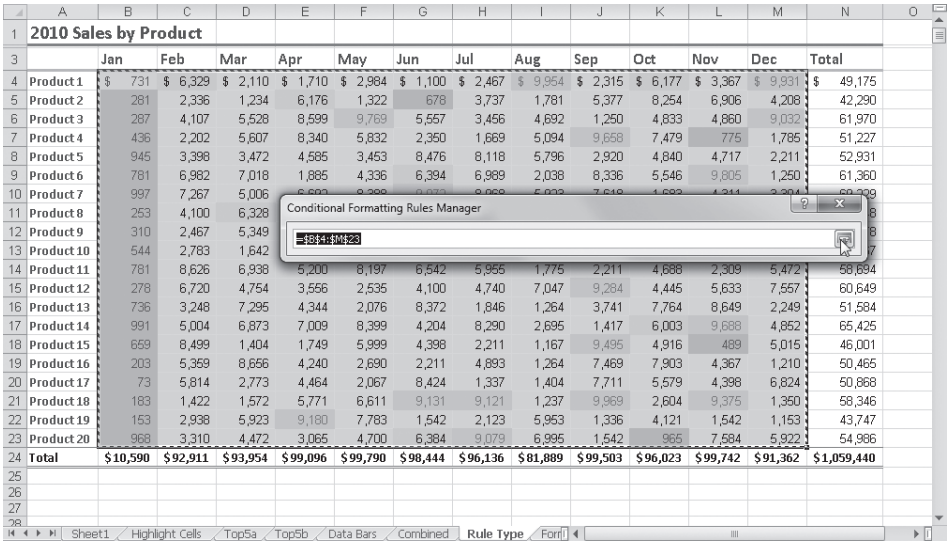


Figure 9-28 Use the Conditional Formatting Rules Manager dialog box to tweak any rules that have been applied in a workbook.

You can use the Show Formatting Rules For drop-down list at the top of the dialog box to choose where to look in the current workbook for rules: Each worksheet in the current workbook is listed here, or you can choose This Worksheet or Current Selection (the default). As you can see in Figure 9-28, you can create, edit, and delete rules by using corresponding buttons. When you click New Rule, the now-familiar New Formatting Rule dialog box appears. When you click Edit Rule, a similar dialog box appears (Edit Formatting Rule) with the criteria for the selected rule displayed.

Excel applies the rules listed in the Conditional Formatting Rules Manager dialog box in the order in which they appear in the Rule list—new rules are added to the top of the list and are processed first. Use the two arrow buttons next to Delete Rule to move a selected rule up or down in the precedence list. The Applies To box contains the address of the cell range to which the rule is applied. If you want to change the cell range, click the Collapse button at the right end of the Applies To text box to collapse the dialog box, letting you see the worksheet, as shown in Figure 9-29. When you do so, you can drag to select the cell range you want and insert the range address in the text box. To restore the dialog box to its original size, click the Collapse (now Expand) button again.

The Stop If True check box is present in this dialog box only for backward compatibility. Previous versions of Excel cannot recognize multiple conditional formatting rules, and instead they apply the rule that occurs last in precedence. If you need to share files with older versions, you need to choose which conditional formatting rule you prefer. Select the Stop If True check box for the last rule in the list if you want Excel to use the previous rule; select the Stop If True check box for the last two rules to use the third-to-last rule, and so on.



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2010 Sales by Product													
Product 1	$ 731	$ 6,329	$ 2,110	$ 1,710	$ 2,984	$ 1,100	$ 2,467	$ 9,954	$ 2,315	$ 6,177	$ 3,367	$ 9,931	$ 49,175
Product 2	281	2,336	1,234	6,176	1,322	678	3,737	1,781	5,377	8,254	6,906	4,208	42,290
Product 3	287	4,107	5,528	8,599	9,769	5,557	3,456	4,692	1,250	4,833	4,860	9,032	61,970
Product 4	436	2,202	5,607	8,340	5,832	2,350	1,669	5,094	9,658	7,479	775	1,785	51,227
Product 5	945	3,398	3,472	4,585	3,453	8,476	8,118	5,796	2,920	4,840	4,717	2,211	52,931
Product 6	781	6,982	7,018	1,885	4,336	6,394	6,989	2,038	8,336	5,546	9,805	1,250	61,360
Product 7	997	7,267	5,006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Product 8	253	4,100	6,328	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Product 9	310	2,467	5,349	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Product 10	544	2,783	1,642	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Product 11	781	8,626	6,938	5,200	8,197	6,542	5,955	1,775	2,211	4,688	2,309	5,472	58,694
Product 12	278	6,720	4,754	3,556	2,535	4,100	4,740	7,047	9,284	4,445	5,633	7,557	60,649
Product 13	736	3,248	7,295	4,344	2,076	8,372	1,846	1,264	3,741	7,764	8,649	2,249	51,584
Product 14	991	5,004	6,873	7,009	8,399	4,204	8,290	2,695	1,417	6,003	9,688	4,852	65,425
Product 15	659	8,499	1,404	1,749	5,999	4,398	2,211	1,167	9,495	4,916	489	5,015	46,001
Product 16	203	5,359	8,656	4,240	2,690	2,211	4,893	1,264	7,469	7,903	4,367	1,210	50,465
Product 17	73	5,814	2,773	4,464	2,067	8,424	1,337	1,404	7,711	5,579	4,398	6,824	50,868
Product 18	183	1,422	1,572	5,771	6,611	9,131	9,121	1,237	9,969	2,604	9,375	1,350	58,346
Product 19	153	2,938	5,923	9,180	7,783	1,542	2,123	5,953	1,336	4,121	1,542	1,153	43,747
Product 20	968	3,310	4,472	3,065	4,700	6,384	9,079	6,995	1,542	965	7,584	5,922	54,986
Total	$10,590	$92,911	$93,954	$99,096	$99,790	$98,444	$96,136	$81,889	$99,503	$96,023	$99,742	$91,362	$1,059,440

Figure 9-29 Click the Collapse button in the Applies To text box to minimize the dialog box and allow direct selection of the cell range you want.

Note

When two (or more) conditional rules are true for a particular cell, but they are both set to apply a similar format, such as font color, the rule that is higher in the Conditional Formatting Rules Manager dialog box's list of precedence wins. Try to make multiple conditions compatible by having each rule apply a different type of format, such as the first rule applying cell color, the second applying font color, and the third applying bold formatting. In addition, conditional formats override manual formats when the condition in the cell is true.

Copying, Clearing, and Finding Conditional Formats

You can copy and paste conditionally formatted cells and use the Fill features or the Format Painter button to copy cells that you have conditionally formatted. When you do, the conditional rules travel with the copied cells, and a new rule is created that references the new location in the workbook.

To remove conditional formatting rules, click Home, Conditional Formatting, Clear Rules, and then click Clear Rules From Selected Cells or Clear Rules From Entire Sheet to clear all the corresponding rules. If your conditions have been applied to a table or a PivotTable, additional corresponding commands are available.

You can use two commands on the Find & Select menu on the Home tab to locate cells on the current worksheet that conditional formats are applied to. The Conditional Formatting command locates and selects all the cells on the current worksheet to which conditional formats are applied. If conditional formatting exists in more than one cell region on the worksheet, using this command selects all the regions. This makes it easy to edit all the rules using the Conditional Formatting Rules Manager dialog box (refer to Figure 9-28). You can also use the Go To Special command on the Find & Select menu to get a little more specific. Clicking this command displays the Go To Special dialog box, shown in Figure 9-30.

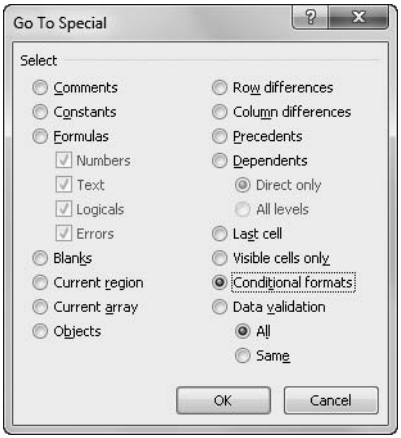


Figure 9-30 Use the Go To Special dialog box to locate all conditional formats or just matching ones.

When you select the Conditional Formats option, two additional options—All and Same—become available. Selecting All is the same as using the Conditional Formatting command on the Find & Select menu to select all conditionally formatted cells and regions. If you use the Same option, however, Go To Special finds only those cells that are formatted using the same condition that exists in the selected cell. Before clicking the Go To Special command, select a cell containing the conditional format you want to locate.

Creating Conditional Formatting Formulas

The last rule type in the New Formatting Rule dialog box shown in Figure 9-26 offers the ability to create your own conditional formatting formulas. When you select the rule type labeled Use A Formula To Determine Which Cells To Format, the dialog box looks similar to the one shown in Figure 9-31.

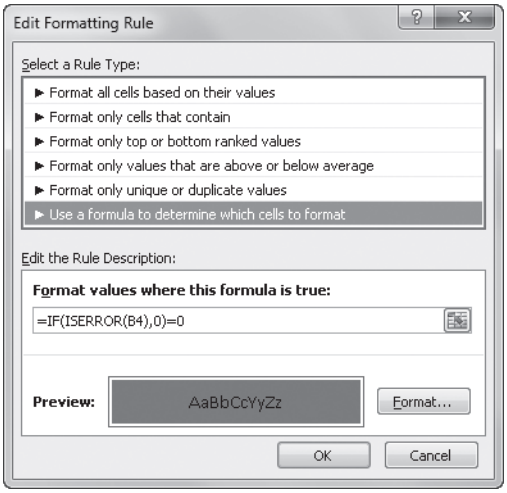


Figure 9-31 Use the last rule type in the list to create your own conditional formatting formulas.

You can create formulas to perform tasks such as identifying dates that fall on specific days of the week, specifying particular values, or doing anything you can't quite accomplish using the built-in conditional formatting tools. For example, using our worksheet example, we typed the following formula in the Format Values Where This Formula Is True text box in the New Formatting Rule dialog box:

=IF(ISERROR(B4),0)=0

Then we clicked the Format button and selected a color on the Fill tab. The formula applies the selected fill color to any cell that generates an error value. (The cell reference B4 is the relative reference of the top-left cell of the range to which the format is applied.) When you use this technique, you can type any formula that results in the logical values TRUE (1) or FALSE (0). For example, you could use a logical formula such as =N4>AVERAGE($N$4:$N$37), which combines relative and absolute references to apply formatting to a cell when the value it contains is less than the average of the specified range. When you use relative references in this situation, the formatting formulas adjust in each cell where you apply or copy them, just as regular cell formulas do.

For more information, see "Using Cell References in Formulas" on page 468 and "Understanding Logical Functions" on page 550; also see Chapter 14, "Everyday Functions," and Chapter 15, "Formatting and Calculating Date and Time."

Formatting in Depth

The formatting features in Excel 2010 control the display characteristics of numbers and text. It is important to keep in mind the difference between underlying and displayed worksheet values. Formats do not affect the underlying numeric or text values in cells. For example, if you type a number with six decimal places in a cell that is formatted with two decimal places, Excel displays the number with only two decimal places. However, the underlying value isn't changed, and Excel uses the underlying value in calculations.

> **Note**
>
> **When you copy a cell or range of cells, you copy both its contents and its formatting. If you then paste this information into another cell or range, the formatting of the source cells normally replaces any existing formatting. For more information about copying and pasting, see Chapter 8, "Worksheet Editing Techniques."**

Most of your formatting needs should be quickly and easily fulfilled using buttons and controls located on the Home tab on the ribbon, but for more options, you can employ the Format Cells dialog box. To display the Format Cells dialog box, press Ctrl+1. Alternatively, click one of the dialog box launchers adjacent to the titles of the Font, Alignment, and Number groups on the Home tab. Clicking a dialog box launcher also activates the corresponding tab. Figure 9-32 shows the Format Cells dialog box.

Throughout the following sections we'll discuss formatting options available directly on the ribbon, but we'll go into more depth by employing the Format Cells dialog box.

Formatting Individual Characters

If you select a cell and apply formats, the entire contents of the cell receive the formats. However, you can also apply formatting to individual text characters within cells (but not numeric values or formulas). Select individual characters or words inside a cell, and apply the attributes you want. When you are finished, press Enter to see the results, an example of which is shown in Figure 9-33.

For more examples of formatting individual characters, see "Using Fonts" on page 351.

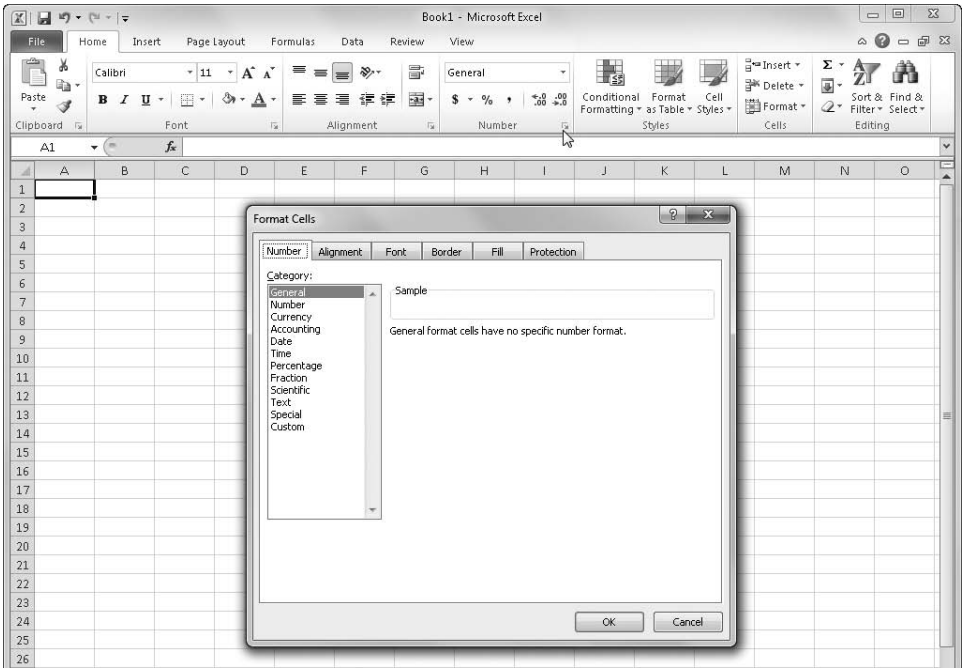


Figure 9-32 Click the dialog box launcher in the Number group to display the Number tab of the Format Cells dialog box.

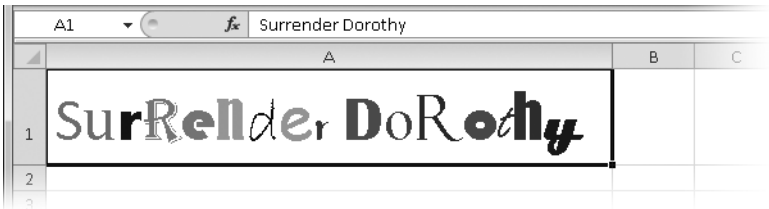


Figure 9-33 You can format individual characters within a cell.

Formatting as You Type

You can include special formatting characters—such as dollar signs, percent signs, commas, or fractions—to format numbers as you type them. When you type numeric-entry characters that represent a format Excel recognizes, Excel applies that format to the cell on the fly. The following list describes some of the more common special formatting characters:

- If you type **$45.00** in a cell, Excel interprets your entry as the value 45 formatted as currency with two decimal places. Only the value 45 appears in the formula bar after you press Enter, but the formatted value, $45.00, appears in the cell.

- If you type **1 3/8** (with a single space between 1 and 3), 1 3/8 appears in the cell and 1.375 appears in the formula bar. However, if you type **3/8**, then 8-Mar appears in the cell, because date formats take precedence over fraction formats. Assuming you make the entry in the year 2010, then 3/8/2010 appears in the formula bar. To display 3/8 in the cell as a fraction so that 0.375 appears in the formula bar, you must type **0 3/8** (with a space between 0 and 3). For information about typing dates and a complete listing of date and time formats, see "Entering Dates and Times" on page 566.

- If you type **23%** in a cell, Excel applies the no-decimal percentage format to the cell, and 23% appears in the formula bar. Nevertheless, Excel uses the 0.23 decimal value for calculations.

- If you type **123,456** in a cell, Excel applies the comma format without decimal places. If you type **123,456.00**, Excel formats the cell with the comma format including two decimal places.

Note

Leading zeros are almost always dropped, unless you create or use a format specifically designed to preserve them. For example, when you type 0123 in a cell, Excel displays the value 123, dropping the leading zero. Excel provides custom formats for a couple of commonly needed leading-zero applications, namely ZIP codes and social security numbers, on the Number tab, Special category of the Format Cells dialog box. For more information, see "Using the Special Formats" on page 332. For information about creating your own formats, see "Creating Custom Number Formats" on page 333.

Understanding the General Format

The General format is the default format for all cells. Although it is not just a number format, it is nonetheless always the first number format category listed. Unless you specifically change the format of a cell, Excel displays any text or numbers you type in the General format. Except in the cases listed next, the General format displays exactly what you type. For example, if you type **123.45**, the cell displays 123.45. Here are the four exceptions:

- The General format abbreviates numbers too long to display in a cell. For example, if you type **12345678901234** (an integer) into a standard-width cell, Excel displays 1.23457E+13.

- Long decimal values are also rounded or displayed in scientific notation. Thus, if you type **123456.7812345** in a standard-width cell, the General format displays 123456.8. The actual typed values are preserved and used in all calculations, regardless of the display format.

- The General format does not display trailing zeros. For example, if you type **123.0**, Excel displays 123.
- A decimal fraction typed without a number to the left of the decimal point is displayed with a zero. For example, if you type **.123**, Excel displays 0.123.

Formatting Numbers

The second option in the drop-down list displayed in the Number group on the Home tab is called, helpfully, *Number*. When you use the drop-down list, selecting Number applies a default number format, with two decimal places and comma separators. For example, if you apply the Number format with a cell selected containing 1234.556, the cell displays the number as 1,234.56. Excel rounds the decimal value to two places in the process, which does not change the actual value in the cell, just the displayed value.

Comma Style

Note

The Comma Style button in the Number group on the Home tab applies the same format as does the Number format in the drop-down list.

In the Format Cells dialog box, the Number category contains additional options, letting you display numbers in integer, fixed-decimal, and punctuated formats, as shown in Figure 9-34. It is essentially the General format with additional control over displayed decimal places, thousand separators, and negative numbers. You can use this category to format any numbers that do not fall into any of the other categories.

Follow these guidelines when using the Number category:

- Select the number of decimal places to display (0 to 30) by typing or scrolling to the value in the Decimal Places box.
- Select the Use 1000 Separator (,) check box to add commas between hundreds and thousands, and so on.
- Select an example in the Negative Numbers list to display negative numbers preceded by a minus sign, in red, in parentheses, or in both red and parentheses.

Note

When formatting numbers, always select a cell containing a number before opening the Format Cells dialog box so that you can see the actual results in the Sample area.

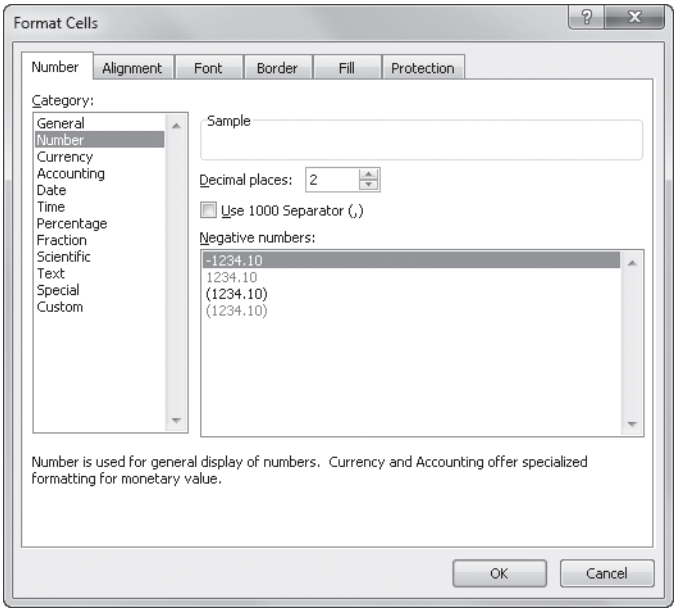


Figure 9-34 Use the Number category for general-purpose, noncurrency numeric formatting.

Using Currency Formats

The quickest way to apply currency formatting is by clicking Currency in the Number drop-down list in the Number group on the Home tab, as shown in Figure 9-35. The Currency format is similar to the Number format that precedes it in the drop-down list, except it also includes the default currency symbol for your locale. Notice that most of the commands listed here display little previews showing you what the contents of the active cell will look like if you click that command.

Note

Despite the button's appearance, clicking the $ button on the Home tab actually applies a two-decimal Accounting format, which is similar to, but a little different from, the Currency format. We'll discuss Accounting formats in the next section.

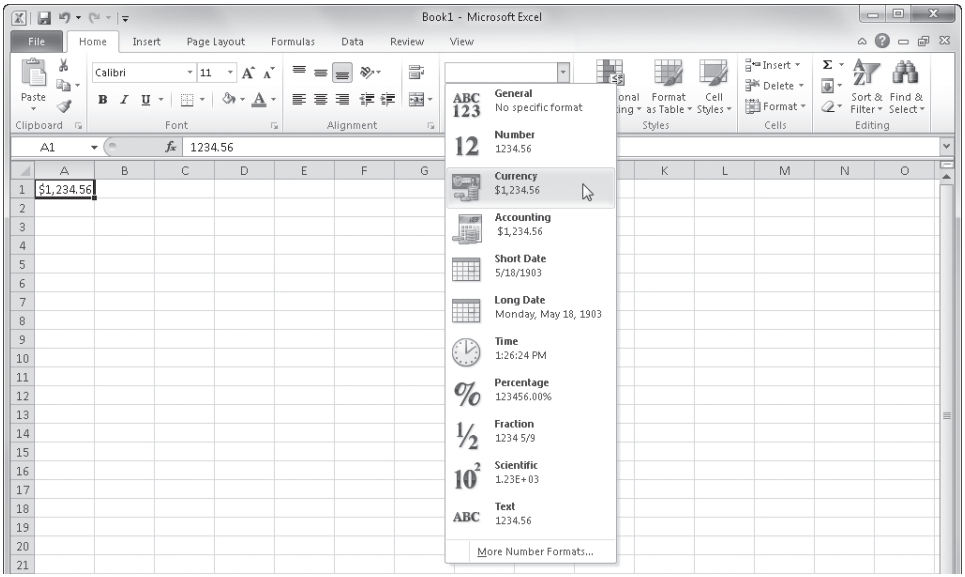
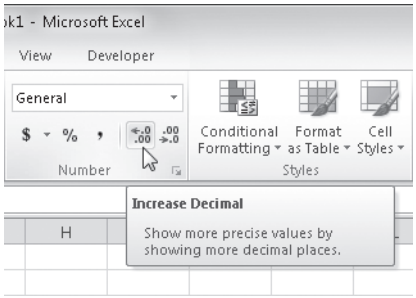


Figure 9-35 The contents of the selected cell are previewed below each command in the Number drop-down list.

For additional currency formatting options, select the Currency category in the Format Cells dialog box, which offers a similar set of options as the Number category (refer to Figure 9-34) but adds a drop-down list of worldwide currency symbols. Besides clicking the dialog box launcher in the Number group on the Home tab to display the Format Cells dialog box, you can also select the More Number Formats command at the bottom of the Number drop-down list shown in Figure 9-35.

Using the Decimal Buttons

You can change the number of displayed decimal places in any selected cell or range at any time using two buttons—Increase Decimal and Decrease Decimal—in the Number group on the Home tab:



The Increase Decimal button displays an arrow pointing to the left, and the Decrease Decimal button displays an arrow pointing to the right, which might seem backward to those of us in the left-to-right/smaller-to-larger world of Western culture, but of course these buttons address what happens only on the right side of the decimal point. Each click adds or subtracts one decimal place from the displayed value. Interestingly, although you can specify up to 30 decimal places using the Format Cells dialog box, you can increase the number of decimal places to a maximum of 127, one click at a time, using the Increase Decimal button.

Using Accounting Formats

Accounting Number Format

The most-often-used Accounting format is directly available on the Home tab on the ribbon, using the Accounting Number Format button in the Number group. Clicking this button applies a standard two-decimal-place format with comma separators and currency symbols to the selected cells. Clicking the arrow button adjacent to the Accounting Number Format button displays a menu providing access to a few additional currency symbols, as shown in Figure 9-36.

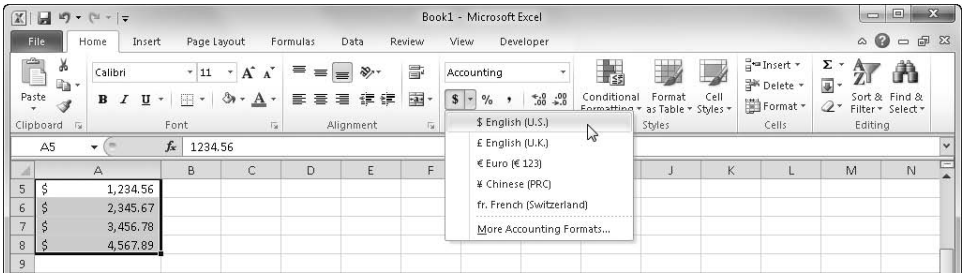


Figure 9-36 The $ button applies a standard Accounting format and offers a few optional currency symbols.

The Accounting formats address the needs of accounting professionals, but they benefit the rest of us as well. When you use one of these formats with the Single Accounting or Double Accounting font formats (to add underlines to your numbers), you can easily create profit and loss (P&L) statements, balance sheets, and other schedules that conform to generally accepted accounting principles (GAAP). The Accounting formats correspond roughly to the Currency format in appearance—you can display numbers with or without your choice of currency symbols and specify the number of decimal places. However, the two formats have some distinct differences. The rules governing the Accounting formats are as follows:

- The Accounting format displays every currency symbol flush with the left side of the cell and displays numbers flush with the right side, as shown in Figure 9-36. The result is that all the currency symbols in the same column are vertically aligned, which looks much cleaner than Currency formats.
- In the Accounting format, negative values are always displayed in parentheses and always in black—displaying numbers in red is not an option.
- The Accounting format includes a space equivalent to the width of a parenthesis on the right side of the cell so that numbers line up evenly in columns of mixed positive and negative values.
- The Accounting format displays zero values as dashes. The spacing of the dashes depends on whether you select decimal places. If you include two decimal places, the dashes line up under the decimal point.
- Finally, the Accounting format is the only built-in format that includes formatting criteria for text. It includes spaces equivalent to the width of a parenthesis on each side of text so that it too lines up evenly with the numbers in a column.

Typically, when creating a GAAP-friendly worksheet of currency values, you would use currency symbols only in the top row and in the totals row at the bottom of each column of numbers. This makes good sense because using dollar signs with every number would make for a much busier table. The middle of the table is then formatted using a compatible format without currency symbols, as shown in Figure 9-37.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	2010 Sales by Product													
3		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
4	Product 1	$ 731	$ 6,329	$ 2,110	$ 1,710	$ 2,984	$ 1,100	$ 2,467	$ 9,954	$ 2,315	$ 6,177	$ 3,367	$ 9,931	$ 49,175
5	Product 2	281	2,336	1,234	6,176	1,322	678	3,737	1,781	5,377	8,254	6,906	4,208	42,290
6	Product 3	287	4,107	5,528	8,599	9,769	5,557	3,456	4,692	1,250	4,833	4,860	9,032	61,970
7	Product 4	436	2,202	5,607	8,340	5,832	2,350	1,669	5,094	9,658	7,479	775	1,785	51,227
8	Product 5	945	3,398	3,472	4,585	3,453	8,476	8,118	5,796	2,920	4,840	4,717	2,211	52,931
9	Product 6	781	6,982	7,018	1,885	4,336	6,394	6,989	2,038	8,336	5,546	9,805	1,250	61,360
10	Product 7	997	7,267	5,006	6,692	8,388	9,072	8,968	5,923	7,618	1,683	4,311	3,304	69,229
11	Product 8	253	4,100	6,328	3,807	7,850	1,213	5,253	3,934	4,261	4,933	2,931	3,685	48,548
12	Product 9	310	2,467	5,349	7,142	2,343	2,712	4,629	3,961	1,250	2,278	7,167	8,470	48,078
13	Product 10	544	2,783	1,642	1,582	2,456	5,584	1,255	7,915	2,343	1,012	869	5,882	33,867
14	Product 11	781	8,626	6,938	5,200	8,197	6,542	5,955	1,775	2,211	4,688	2,309	5,472	58,694
15	Product 12	278	6,720	4,754	3,556	2,535	4,100	4,740	7,047	9,284	4,445	5,633	7,557	60,649
16	Product 13	736	3,248	7,295	4,344	2,076	8,372	1,846	1,264	3,741	7,764	8,649	2,249	51,584
17	Product 14	991	5,004	6,873	7,009	8,399	4,204	8,290	2,695	1,417	6,003	9,688	4,852	65,425
18	Product 15	659	8,499	1,404	1,749	5,999	4,398	2,211	1,167	9,495	4,916	489	5,015	46,001
19	Product 16	203	5,359	8,656	4,240	2,690	2,211	4,893	1,264	7,469	7,903	4,367	1,210	50,465
20	Product 17	73	5,814	2,773	4,464	2,067	8,424	1,337	1,404	7,711	5,579	4,398	6,824	50,868
21	Product 18	183	1,422	1,572	5,771	6,611	9,131	9,121	1,237	9,969	2,604	9,375	1,350	58,346
22	Product 19	153	2,938	5,923	9,180	7,783	1,542	2,123	5,953	1,336	4,121	1,542	1,153	43,747
23	Product 20	968	3,310	4,472	3,065	4,700	6,384	9,079	6,995	1,542	965	7,584	5,922	54,986
24	Total	$10,590	$92,911	$93,954	$99,096	$99,790	$98,444	$96,136	$81,889	$99,503	$96,023	$99,742	$91,362	$1,059,440
25														

Figure 9-37 It is standard practice to use currency symbols only in the top and bottom rows of a table.

Luckily, Excel makes it easy for you to format this way by using buttons in the Number group on the Home tab. Despite seemingly incompatible button names, both the Accounting Number Format button and the Comma Style button apply Accounting formats adhering to the rules described earlier. So, to format the numeric entries in the table shown in Figure 9-37, select the first and last rows, click the Accounting Number Format button, then select all the cells in between, and click the Comma Style button. (We then selected all the numeric cells in the table and clicked the Decrease Decimal button twice to hide all the decimal values.)

Using Accounting Underlines

Generally accepted accounting principles specify the proper usage of single and double underlines in tables. The Underline button on the Home tab includes a menu letting you select single or double underlines, but unfortunately these do not rise to the accepted standard. But fear not—Excel provides two accounting-specific underline formats in a drop-down list of the same name on the Font tab in the Format Cells dialog box. These differ from their regular counterparts in two ways. First, accounting underlines are applied to the entire width of the cell (minus a parenthesis-sized space on each side), whereas regular underlines are applied only under the actual characters in a cell. If the cell contains a text entry that extends beyond the cell border, the accounting underlines stop at the cell border. Second, the accounting underline formats appear near the bottom of cells, unlike regular underlines, which are applied much closer to the numbers or text in the cell, resulting in annoying lines through commas and the descenders of letters like *g* and *p*. Of course, you can also apply single-line and double-line cell borders instead of underline formats, which is the approach used when you add a totals row to a table using the Totals Row option on the Table Tools Design tab.

For information about font formats, see "Using Fonts" on page 351. For information about tables, see "Formatting Tables" on page 292.

Formatting Percentages

Not surprisingly, using the Percentage format displays numbers as percentages. The decimal point of the formatted number, in effect, moves two places to the right, and a percent sign appears at the end of the number. For example, if you choose a percentage format without decimal places, the entry **0.1234** is displayed as 12%; if you select two decimal places, the entry **0.1234** is displayed as 12.34%. Remember that you can always adjust the number of displayed decimal places using the Increase Decimal and Decrease Decimal buttons.

Percent Style

An interesting (and helpful) quirk about percentage formats is that they behave differently depending on whether you type a number and then apply the format or type a number in a previously formatted cell. For example, Figure 9-38 shows two cells formatted as percentages. We typed the same number—**22.33**—in each cell, but only cell A1 was previously formatted with the Percentage format; we clicked the Percent Style button *after* typing the value in cell A2.

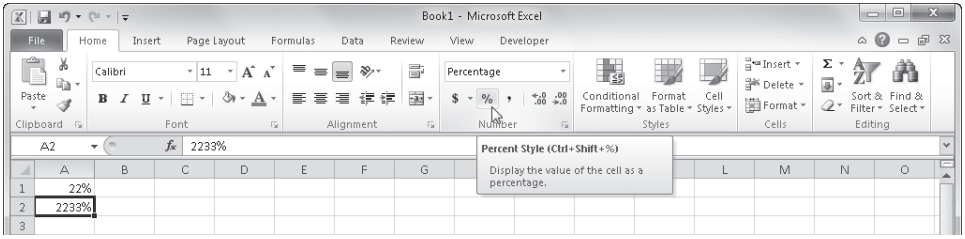


Figure 9-38 When using percentages, it makes a difference whether you format before or after typing values.

As you can see, it makes a world of difference which way you do this. So, why is this behavior helpful? For example, if a worksheet contains a displayed value of 12% and you need to change it to 13%, typing **13** in the cell would seem to make sense, even though this is technically wrong. It is not particularly intuitive to type **.13** (including the leading decimal point). Usability studies show that most people would type **13** in this situation, which would logically result in a displayed value of 1300% (if not for the quirky behavior), so Excel assumes that you want to display 13%. If you apply the Percentage format to a range of cells that already contain values (or formulas that result in values), check all the cells afterward to make sure you get the intended results.

Formatting Fractions

The formats in the Fraction category in the Format Cells dialog box, shown in Figure 9-39, display fractional numbers as actual fractions rather than as decimal values. As with all number formats, the underlying value does not change despite the displayed value of the fraction.

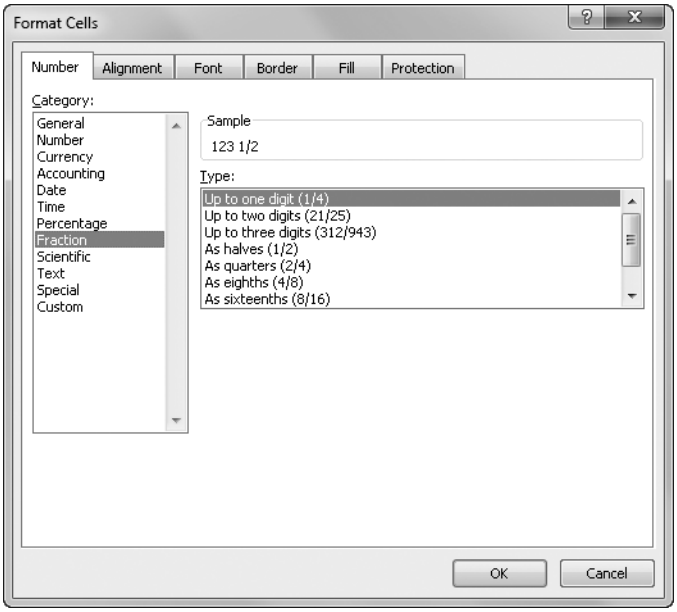


Figure 9-39 Excel provides many fraction-formatting options.

You can generate some wild, nonstandard fractions unless you apply constraints using options in the Format Cells dialog box. Here is how Excel applies different fraction formats:

- The Up To One Digit (single-digit) fraction format displays 123.456 as 123 1/2, rounding the display to the nearest value that can be represented as a single-digit fraction.
- The Up To Two Digits (double-digit) fraction format uses the additional precision allowed by the format and displays 123.456 as 123 26/57.
- The Up To Three Digits (triple-digit) fraction format displays 123.456 as the even more precise 123 57/125.
- The remaining six fraction formats specify the exact denominator you want by rounding to the nearest equivalent; for example, displaying 123.456 using the As Sixteenths format, or 123 7/16.

You can also apply fraction formatting on the fly by typing fractional values in a specific way. Type a number (or a zero), type a space, and then type the fraction, as in 123 1/2. For more details, see "Formatting as You Type" on page 322.

Formatting Scientific (Exponential) Values

The Scientific format displays numbers in exponential notation. For example, a two-decimal Scientific format (the default) displays the number 98765432198 as 9.88E+10 in a standard-width cell. The number 9.88E+10 is 9.88 times 10 to the 10th power. The symbol E stands for *exponent*, a synonym here for 10 to the *n*th power. The expression "*10 to the 10th power*" means 10 times itself 10 times, or 10,000,000,000. Multiplying this value by 9.88 gives you 98,800,000,000, an approximation of 98,765,432,198. Increasing the number of decimal places (the only option available for this format) increases the precision and will likely require a wider cell to accommodate the displayed value.

You can also use the Scientific format to display very small numbers. For example, in a standard-width cell this format displays 0.000000009 as 9.00E–09, which equates to 9 times 10 to the negative 9th power. The expression "*10 to the negative 9th power*" means 1 divided by 10 to the 9th power, 1 divided by 10 nine times, or 0.000000001. Multiplying this number by nine results in our original number, 0.000000009.

Understanding the Text Format

Applying the Text format to a cell indicates that the entry in the cell is to be treated as text, even if it's a number. For example, a numeric value is ordinarily right-aligned in its cell. If you apply the Text format to the cell, however, the value is left-aligned as if it were a text entry. For all practical purposes, a numeric constant formatted as text is still considered a number because Excel is capable of recognizing its numeric value anyway.

Using the Special Formats

The four Special formats shown in Figure 9-40 are a result of many requests from users. These generally noncalculated numbers include two ZIP code formats, a phone number format (complete with the area code in parentheses), and a Social Security number format. Using each of these Special formats, you can quickly type numbers without having to type the punctuation characters.

The following are guidelines for using the Special formats:

- **Zip Code and Zip+4** Leading zeros are retained to correctly display the code, as in 04321. In most other number formats, if you type **04321**, Excel drops the zero and displays 4321.

- **Phone Number** Excel applies parentheses around the area code and dashes between the digits, making it much easier to type many numbers at the same time because you don't have to move your hand from the keypad. Furthermore, the numbers you type remain numbers instead of becoming text entries, which they would be if you typed parentheses or dashes in the cell.

- **Social Security Number** Excel places dashes after the third and fifth numbers. For example, if you type **123456789**, Excel displays 123-45-6789.

- **Locale** This drop-down list lets you select from more than 120 locations with unique formats. For example, if you select Vietnamese, only two Special formats are available: Metro Phone Number and Suburb Phone Number.

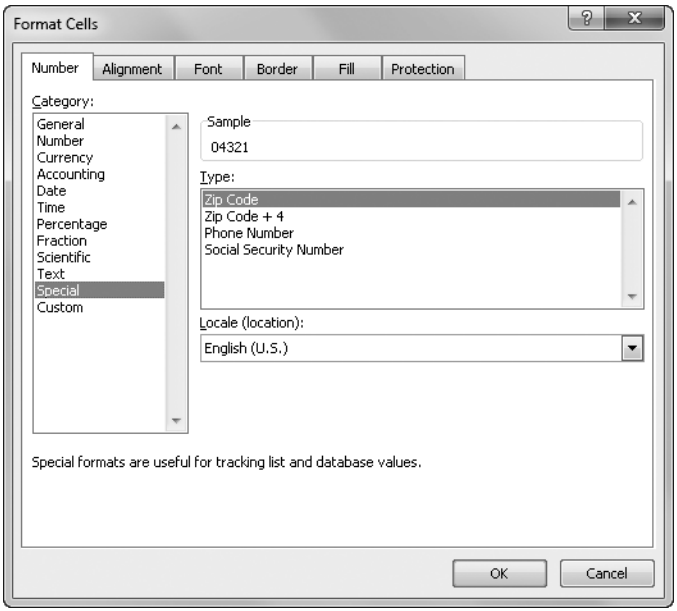


Figure 9-40 Excel provides several frequently requested formats in the Special category.

Creating Custom Number Formats

Most number formats you need are available through commands and buttons on the ribbon, but you can use the Format Cells dialog box to accomplish minor feats of formatting that might surprise you. We'll use the Custom category on the Number tab in the Format Cells dialog box, shown in Figure 9-41, to create custom number formats using special formatting codes. (To quickly display the Format Cells dialog box, press Ctrl+1.) Excel adds new formats to the bottom of the list of formatting codes in the Type list, which also

includes built-in formats. To delete a custom format, select the format in the Format Cells dialog box, and click Delete. You cannot delete built-in formats.

Creating New Number Formats The quickest way to start creating a custom format is to use one of the built-in formats as a starting point. Here's an easy way to build on an existing format, as well as to see what the codes in the Type list mean:

1. Type a number (or, in the case of our example, a date), and apply the built-in format that most closely resembles the custom format you want to create. Leave this cell selected.

2. On the Number tab in the Format Cells dialog box, select the Custom category. The format you selected is highlighted in the Type list, representing the code equivalent of the format you want to modify, as shown in Figure 9-41.

3. Edit the contents of the Type text box, using the codes listed in Table 9-1. The built-in format isn't affected, and the new format is added to the bottom of the Type list.

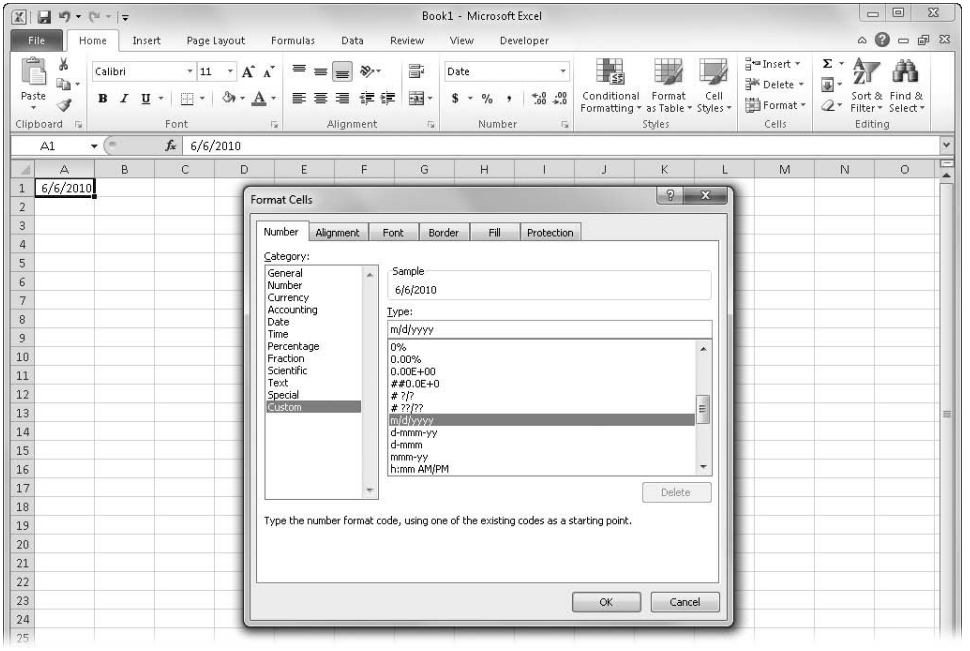


Figure 9-41 Use the Custom category to create new formats using special codes.

For example, to create a format that displays the date and time with the longest available format for day, month, and year, start by typing a date in a cell, and then select it. In the Custom category in the Format Cells dialog box, edit the format in the Type text box to read *dddd, mmmm dd, yyyy – hh:mm AM/PM* (including spaces and commas), and then click OK. Figure 9-42 shows the result.

Note

Saving the workbook saves your new formats, but to carry special formats from one workbook to another, you must copy and paste a cell with the Custom format. For easy access to special formats, consider saving them in one workbook.

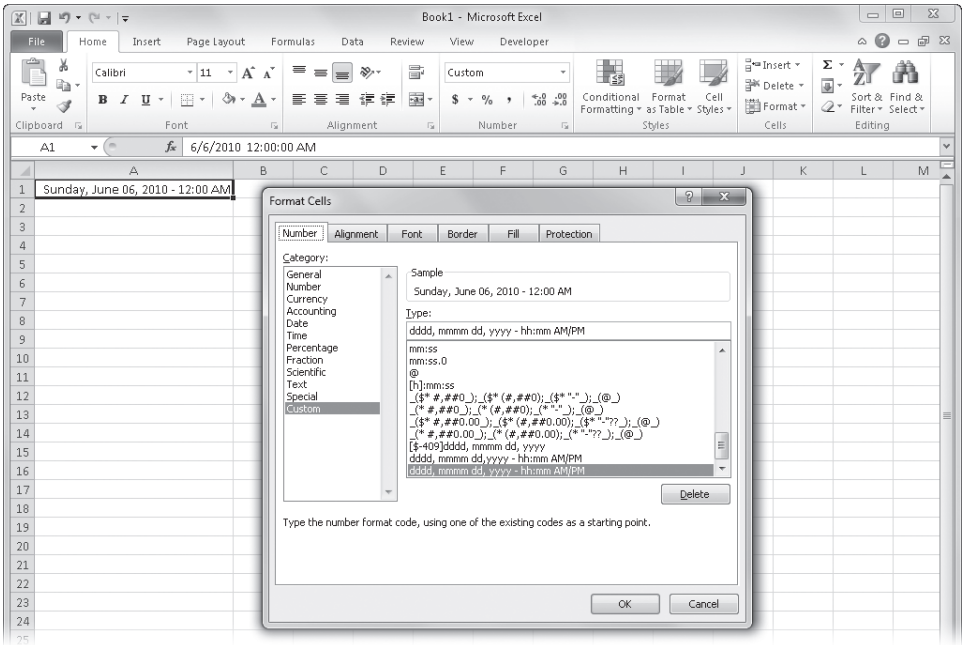


Figure 9-42 We created a custom format by typing codes in the Type text box.

You can create any number format using the codes in Table 9-1.

Table 9-1 **Custom Format Symbols**

Symbol	Meaning
0	**Digit placeholder.** This symbol ensures that a specified number of digits appear on each side of the decimal point. For example, if the format is *0.000*, the value .987 is displayed as 0.987. If the format is *0.0000*, the value .987 is displayed as 0.9870. If a number has more digits to the right of the decimal point than the number of zeros specified in the format, the number displayed in the cell is rounded. For example, if the format is *0.00*, the value .987 is displayed as 0.99; if the format is *0.0*, .987 is rounded to 1.0.
?	**Digit placeholder.** This symbol follows the same rules as the 0 placeholder, except that space is left for insignificant zeros on either side of the decimal point. This placeholder aligns numbers on the decimal points. For example, 1.4 and 1.45 would line up on the decimal point if both were formatted as *0.??*.
#	**Digit placeholder.** This symbol works like 0, except that extra zeros do not appear if the number has fewer digits on either side of the decimal point than # placeholders specified in the format. This symbol shows Excel where to display commas or other separating symbols. The format *#,###*, for example, tells Excel to display a comma after every third digit to the left of the decimal point.
.	**Decimal point.** This symbol determines how many digits (0 or #) appear to the right and left of the decimal point. If the format contains only # placeholders to the left of this symbol, Excel begins numbers less than 1 with a decimal point. To avoid this, use 0 as the first digit placeholder to the left of the decimal point instead of #. If you want Excel to include commas and display at least one digit to the left of the decimal point in all cases, specify the format *#,##0*.
%	**Percentage indicator.** This symbol multiplies the entry by 100 and inserts the % character.
/	**Fraction format character.** This symbol displays the fractional part of a number in a nondecimal format. The number of digit placeholders that surround this character determines the accuracy of the display. For example, the decimal fraction 0.269 when formatted with *# ?/?* is displayed as 1/4, but when formatted with *# ???/???* is displayed as 46/171.
,	**Thousands separator.** If the format contains a comma surrounded by #, 0, or ? placeholders, Excel uses commas to separate hundreds from thousands, thousands from millions, and so on. In addition, the comma acts as a rounding and scaling agent. Use one comma at the end of a format to tell Excel to round a number and display it in thousands; use two commas to tell Excel to round to the nearest million. For example, the format code *#,###,###*, would round 4567890 to 4,568, whereas the format code *#,###,###,,* would round it to 5.
E– E+ e– e+	**Scientific format characters.** If a format contains one 0 or # to the right of an E–, E+, e–, or e+, Excel displays the number in scientific notation and inserts *E* or *e* in the displayed value. The number of 0 or # placeholders to the right of the *E* or *e* determines the minimum number of digits in the exponent. Use E– or e– to place a negative sign by negative exponents; use E+ or e+ to place a negative sign by negative exponents and a positive sign by positive exponents.
$ – + / ( ) space	**Standard formatting characters.** Typing any of these symbols adds the actual corresponding character directly to your format.

Symbol	Meaning
\	**Literal demarcation character.** Precede each character you want to display in the cell—except for : $ – + / ( ) and space—with a backslash. (Excel does not display the backslash.) For example, the format code *#,##0 \D;–#,##0 \C* displays positive numbers followed by a space and a *D* and displays negative numbers followed by a space and a *C*. To insert several characters, use the quotation-mark technique described in the "Text" table entry.
_	**Underscore.** This code leaves space equal to the width of the next character. For example, *_)* leaves a space equal to the width of the close parenthesis. Use this formatting character for alignment purposes.
"Text"	**Literal character string.** This formatting code works like the backslash technique except that all text can be included within one set of double quotation marks without using a separate demarcation character for each literal character.
*	**Repetition initiator.** This code repeats the next character in the format enough times to fill the column width. Use only one asterisk in the format.
@	**Text placeholder.** If the cell contains text, this placeholder inserts that text in the format where the @ appears. For example, the format code "This is a" @ displays "This is a debit" in a cell containing the word *debit*.

Table 9-2 lists the built-in formats and indicates how these codes relate to the other categories on the Number tab. (This table does not list date and time codes, which are covered in Chapter 15.)

Table 9-2 Built-In Custom Format Codes

Category	Custom Format Codes
0	Digit
General	No specific format
Number	0
	0.00
	#,##0
	#,##0.00
	#,##0_);(#,##0)
	#,##0_);[Red](#,##0)
	#,##0.00_);(#,##0.00)
	#,##0.00_);[Red](#,##0.00)
Currency	$#,##0_);($#,##0)
	$#,##0_);[Red]($#,##0)
	$#,##0.00_);($#,##0.00)
	$#,##0.00_);[Red]($#,##0.00)

Category	Custom Format Codes
Percentage	0%
	0.00%
Scientific	0.00E+00
	##0.0E+0
Fraction	# ?/?
	# ??/??
Date	(See Chapter 15)
Time	(See Chapter 15)
Text	@
Accounting	_($* #,##0_);_($* (#,##0);_($* "-"_);_(@_)
	_(* #,##0_);_(* (#,##0);_(* "-"_);_(@_)
	_($* #,##0.00_);_($* (#,##0.00);_($* "-"??_);_(@_)
	_(* #,##0.00_);_(* (#,##0.00);_(* "-"??_);_(@_)

Creating Four-Part Formats Within each custom format definition, you can specify completely different formats for positive, negative, zero, and text values. You can create custom formats with as many as four parts, separating the portions by semicolons—positive number; negative number; zero; text. Figure 9-43 shows how three different formats are constructed using codes.

	A	B	C	D	E	F	G
2		Syntax:	Positive Number code	Negative Number code	Zero code	Text code	
3		Accounting #3	_($* #,##0.00_);	_($* (#,##0.00);	_($* "-"??_);	_(@_)	
4		Value in cell	123.45	-123.45	0	see note	
5		Displayed Value	$ 123.45	$ (123.45)	$ -	see note	
6		Custom Billing	"Amount due: "$#,##0.00_);	"Credit: "($#,##0.00);	"Let's call it even.";	"Please note: "@	
7		Value in cell	123.45	-123.45	0	due 3/15	
8		Displayed Value	Amount due: $123.45	Credit: ($123.45)	Let's call it even.	Please note: due 3/15	
9		Custom Part #	"Part # "###-####				
10		Value in cell	1234567				
11		Displayed Value	Part # 123-4567				
12							

Figure 9-43 You can create your own four-part formats.

You'll find the Formatting Numbers.xlsx file with the other examples on the companion Web site. It contains many of the custom formatting code examples described in this section.

Among the built-in formats, only the Accounting formats use all four parts, as shown in Figure 9-43, which breaks down each part of the third Accounting format in Table 9-2. The following are some guidelines for creating multipart formats:

- If your custom format includes only one part, Excel applies that format to positive, negative, and zero values.
- If your custom format includes two parts, the first part applies to positive and zero values, and the second part applies only to negative values.
- If your custom format has three parts, the third part controls the display of zero values.
- The fourth and last element in a four-way format controls text-value formatting. Any formats with three or fewer elements have no effect on text entries.

Note

If you prefer, you can suppress the display of all zero values in a worksheet, including the displayed values of formulas with a zero result. Click the File tab, Options, and then click the Advanced category. In the Display Options For This Worksheet area, clear the Show A Zero In Cells That Have Zero Value check box.

Adding Color to Formats You can also use the Number formats to change the color of selected cell entries. For example, you might use color to distinguish categories of information or to make totals stand out. You can even create formats that assign different colors to specific numeric ranges so that, for example, all values greater than or less than a specified value appear in a different color.

Create Custom Billing and Part Number Formats

Suppose you create a billing statement and you want to format the totals in the Amount Due column so they display differently depending on the value in each cell. You might create the Custom Billing format shown in Figure 9-43, which was created using the following code:

```
"Amount due: "$#,##0.00_);"Credit: "($#,##0.00);"Let's call it even. ";"Please
note: "@
```

Suppose you're creating an inventory worksheet and you want all the entries in a particular column to appear in the format *Part # XXX-XXXX*, shown as the *Custom Part #* format in Figure 9-43, which was created using the following code:

```
"Part # "###-####
```

Using this code lets you type your part numbers as actual numbers rather than as text entries, which happens if you include any non-numeric characters, including dashes. This way, you can sort your part numbers properly and otherwise manipulate them as numeric data.

Note

You can create codes that assign different colors based on the value in the cell, but an easier way is built into Excel: You can use the Conditional Formatting menu on the Home tab on the ribbon. For more information, see "Formatting Conditionally" on page 309.

To change the color of an entry, type the name of the new color in brackets in front of each segment of code. For example, if you want to apply a blue Currency format with two decimal places, edit the *$#,##0.00_);($#,##0.00)* format as follows:

```
[Blue]$#,##0.00_);($#,##0.00)
```

When you apply this format to a worksheet, positive and zero values appear in blue, and text and negative values appear as usual, in black. The following simple four-part format code displays positive values in blue, negative values in red, zero values in yellow, and text in green (with no additional number formatting specified).

```
[Blue];[Red];[Yellow];[Green]
```

You can specify the following color names in your formats: Black, Blue, Cyan, Green, Magenta, Red, White, and Yellow. You can also specify a color as COLOR*n*, where *n* is a number in the range 1 through 16. Excel selects the corresponding color from your worksheet's current 16-color palette.

Note

If you define colors that are not among your system's repertoire of solids, Excel produces them by mixing dots from solid colors. Such blended colors, which are said to be *dithered,* work well for shading. But for text and lines, Excel always uses the nearest solid color rather than a dithered color.

TROUBLESHOOTING

Decimal points in my Currency formats don't line up.

Sometimes when you use Currency formats with trailing characters, such as the French Canadian dollar (23.45 $), you want to use the GAAP practice of using currency symbols only at the top and bottom of a column of numbers. The numbers between should not display any currency symbols, so how do you make all the decimal points line up properly?

You can create a custom format code to apply to the noncurrency format numbers in the middle of the column. An underscore character (_) in the format code tells Excel to leave a space that is equal in width to the character that follows it. For example, the code _$ leaves a space equal to the width of the dollar sign. Thus, the following code does the trick for you:

```
#,##0.00 _$;[Red]#,##0.00 _$
```

Make sure you add a space between the zeros and the underscores to properly line the numbers up with the built-in French Canadian dollar format.

Using Custom Format Conditional Operators You can create custom formats that are variable. To do so, you can add a conditional operator to the first two parts of the standard four-part custom format. This, in effect, replaces the positive/negative formats with either/or formats. The third format becomes the default format for values that don't match the other two conditions (the "else" format). You can use the conditional operators <, >, =, <=, >=, and <> with any number to define a format.

For example, suppose you are tracking accounts receivable balances. To display accounts with balances of more than $50,000 in blue, negative values in parentheses and in red, and all other values in the default color, create this format:

```
[Blue][>50000]$#,## 0.00_);[Red][<0]($# ,##0.00);$#,##0.00_)
```

Using these conditional operators can also be a powerful aid if you need to scale numbers. For example, if your company produces a product that requires a few milliliters of a compound for each unit and you make thousands of units every day, you need to convert from milliliters to liters and kiloliters when you budget the use of this compound. Excel can make this conversion with the following numeric format:

```
[>999999]#,##0,," kl";[>999]##," L";#" ml"
```

The following table shows the effects of this format on various worksheet entries:

Entry	Display
72	72 ml
7286957	7 kl
7632	8 L

As you can see, using a combination of conditional formats, the thousands separator, and text with spaces within quotation marks can improve both the readability and the effectiveness of your worksheet—and without increasing the number of formulas.

The Hidden Number Format

To hide values in a worksheet, assign a null format to them. To create a null format, type only the semicolon separator for that portion of the format. For example, to hide negative and zero values only, use this format:

```
$#,##0.00;;
```

To hide all entries in a cell, use this format:

```
;;;
```

The null format hides the cell contents in the worksheet, but the entry is still visible in the formula bar and accessible via reference in formulas. To hide the cell contents so they don't appear in the worksheet or the formula bar, use the worksheet and cell protection features. For more information, see "Protecting Worksheets" on page 170.

Aligning Data in Cells

The Alignment group on the Home tab on the ribbon, shown in Figure 9-44, contains the most useful tools for positioning data within cells. For more precise control and additional options, click the dialog box launcher adjacent to the title of the Alignment group to display the Format Cells dialog box shown in Figure 9-45.

The Alignment tab in the Format Cells dialog box includes the following options:

- **Horizontal** These options control the right or left alignment within the cell. The General option, the default for Horizontal alignment, right-aligns numeric values and left-aligns text values.
- **Vertical** These options control the top-to-bottom position of cell contents within cells.

- **Text Control** These three check boxes wrap text in cells, reduce the size of cell contents until they fit in the current cell width, and merge selected cells into one.
- **Text Direction** The options in this drop-down list format individual cells for right-to-left languages. The default option is Context, which responds to the regional settings on your computer. (This feature is applicable only if support is available for right-to-left languages.)
- **Orientation** These controls let you precisely specify the angle of text within a cell, from vertical to horizontal and anywhere in between.

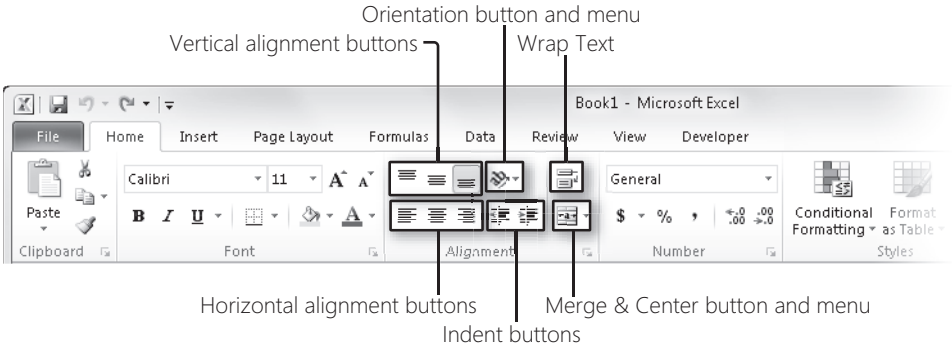


Figure 9-44 Excel can address most of your alignment needs via tools on the ribbon.

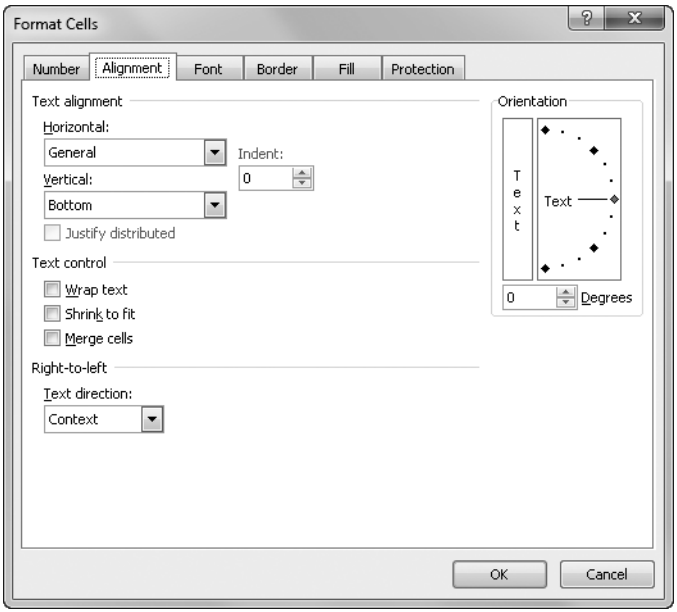


Figure 9-45 Alignment means a lot more than just right, left, or justified.

Aligning Text Horizontally

Align Left

Center

Align Right

The Align Left, Center, and Align Right buttons on the ribbon correspond to three of the options in the Horizontal drop-down list on the Alignment tab in the Format Cells dialog box: Left (Indent), Center, and Right (Indent). These options align the contents of the selected cells, overriding the default cell alignment. Figure 9-46 shows the Horizontal alignment options in action, all of which we'll discuss in detail in the following sections.

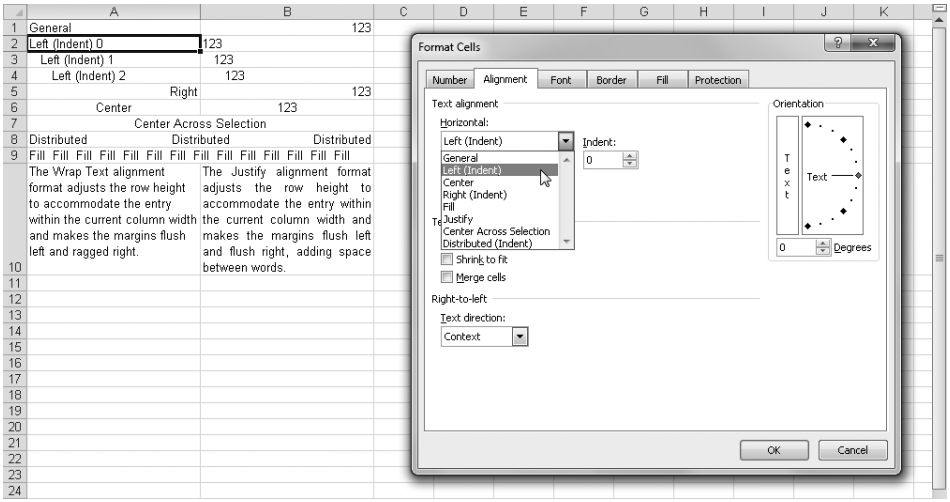


Figure 9-46 Use the Horizontal alignment options to control the placement of text from left to right.

Increase Indent

Decrease indent

Indenting Cell Contents The Increase Indent button simultaneously applies left alignment to the selected cells and indents the contents by the width of one character. (One character width is approximately the width of the capital X in the Normal cell style.) Each click increments the amount of indentation by one. The adjacent Decrease Indent button does just the opposite, decreasing the indentation by one character width with each click.

In the Format Cells dialog box, the corresponding options are Left (Indent) and Right (Indent), shown in Figure 9-46. These are linked to the adjacent Indent control, whose displayed value is normally zero—the standard left-alignment setting. Each time you increase this value by one, the entry in the cell begins one character width to the right. For example, in Figure 9-46, row 2 is formatted with no left indent, row 3 with a left indent of 1, and row 4 with a left indent of 2. The maximum indent value you can use is 250.

Distributing Cell Contents Using the Distributed (Indent) option in the Horizontal drop-down list, you can position text fragments contained in a cell with equal spacing within the cell. For example, in Figure 9-46, we first merged cells A8:B8 into one cell, then typed the word **Distributed** three times in the merged cell, and then applied the Distributed (Indent)

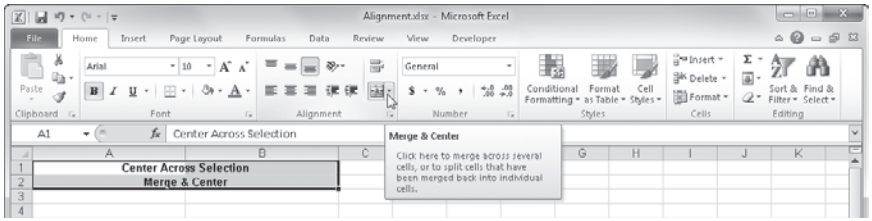
horizontal alignment. The result shows that Excel expanded the spaces between words in equal amounts to justify the contents within the cell.

To learn about merging, see "Merging and Unmerging Cells" on page 365.

Centering Text Across Columns The Center Across Selection option in the Horizontal text alignment drop-down list centers text from one cell across all selected blank cells to the right or to the next cell in the selection that contains text. For example, in Figure 9-46, we applied the Center Across Selection format to cells A7:B7. The centered text is actually in cell A7.

Center Across Selection vs. Merge & Center

Although the result might look similar to that of the Merge & Center button on the Home tab, the Center Across Selection alignment option does not merge cells. When you use Center Across Selection, the text from the leftmost cell remains in its cell but is displayed centered across the entire selected range. Notice in the following figure that the selection shading shows that cells A1 and B1 are still two separate cells. The Merge & Center button creates a single cell in place of all the selected cells. Although Merge & Center merges rows and columns of cells, Center Across Selection works only on rows.



In the above figure, the text "Center Across Selection" actually spans two active cells, while the text "Merge & Center" is in a single cell that was created by selecting cells A2:B2 and clicking the Merge & Center button. Either method allows you to change column widths; the centering readjusts automatically. If you type anything in cell B1, the centered text "retreats" to cell A1; if you subsequently clear cell B1, the text is re-centered across the two cells until you clear the format from both cells. You cannot type anything in cell B2 because it essentially no longer exists after being merged with cell A2. For more information, see "Merging and Unmerging Cells" on page 365.

Filling Cells with Characters The Fill option in the Horizontal alignment drop-down list repeats your cell entry to fill the width of the column. For example, in Figure 9-46, cells A9:B9 contain the single word *Fill* and a space character, with the Fill alignment format applied. Only the first cell in the selected range needs to contain text. Excel repeats the text

to fill the range. Like the other Format commands, the Fill option affects only the appearance, not the underlying contents, of the cell.

CAUTION!

Because the Fill option affects numeric values as well as text, it can cause a number to look like something it isn't. For example, if you apply the Fill option to a ten-character-wide cell that displays 3, the cell appears to contain the number 3333333333.

Wrap Text

Wrapping Text in Cells If you type a label that's too wide for the active cell, Excel extends the label past the cell border and into adjacent cells—provided those cells are empty. If you click the Wrap Text button on the Home tab (or the Wrap Text option on the Alignment tab in the Format Cells dialog box), Excel displays your label entirely within the active cell. To accommodate it, Excel increases the height of the row in which the cell is located and then wraps the text onto additional lines within the same cell. As shown in Figure 9-46, cell A10 contains a multiline label formatted with the Wrap Text option.

Justifying Text in Cells The Alignment tab in the Format Cells dialog box provides two justify options—one in the Horizontal drop-down list and one in the Vertical drop-down list. The Horizontal Justify option not only forces text in the active cell to align flush with the right margin, as shown in cell B10 in Figure 9-46, but also wraps text within the cell and adjusts the row height accordingly.

Note

Do not confuse the Horizontal Justify option with the Justify command (on the Fill menu in the Editing group on the Home tab), which redistributes a text entry into as many cells as necessary below the selected cell by dividing the text into separate chunks. For more information about the Justify command on the Fill menu, see "Distributing Long Entries Using the Justify Command" on page 236.

The Vertical Justify option performs essentially the same task as its Horizontal counterpart, except it adjusts cell entries relative to the top and bottom of the cell rather than the sides, as shown in cell E3 of Figure 9-47.

The Justify Distributed option becomes available only when you select one of the Distributed options in either the Horizontal drop-down list or the Vertical drop-down list. It combines the effect of the Justify option with that of the Distributed option not only by wrapping text in the cell and forcing it to align flush right but also by spacing the contents of the cell as evenly as possible within each wrapped line of text.

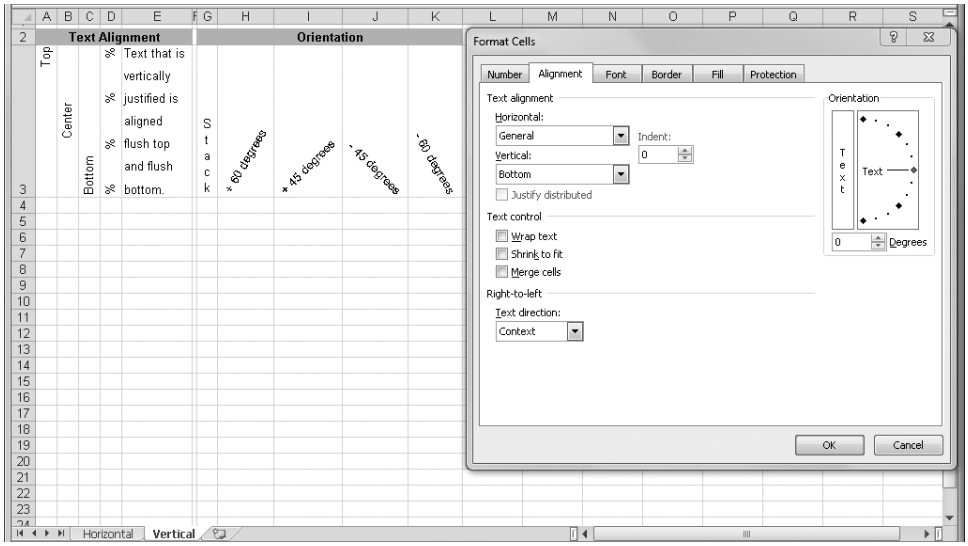


Figure 9-47 Use the Vertical options to control placement of text from top to bottom.

Aligning Text Vertically

Top Align

Middle Align

Bottom Align

The Top Align, Middle Align, and Bottom Align buttons on the Home tab control the vertical placement of cell contents and fulfill most of your needs in this regard. The Vertical drop-down list on the Alignment tab in the Format Cells dialog box includes two additional alignment options—Justify and Distributed—which are similar to the corresponding Horizontal alignment options. Cells A3:C3 in Figure 9-47 show examples of the first three alignment options. As noted earlier, cell E3 shows the Justify option in action. We formatted cell D3, containing the percent signs, using the Distributed option.

The options in the Vertical drop-down list create the following effects:

- **Top, Center, and Bottom** These options force cell contents to align to each respective location within a cell. The default vertical cell orientation in new worksheets is Bottom.
- **Justify** This option expands the space between lines so that text entries align flush with the top and bottom of the cell.
- **Distributed** This option spreads the contents of the cell evenly from top to bottom, making the spaces between lines as close to equal as possible.

Controlling Text Orientation

Orientation

Clicking the Orientation button in the Alignment group on the Home tab displays the menu shown in Figure 9-48, offering common orientation options.

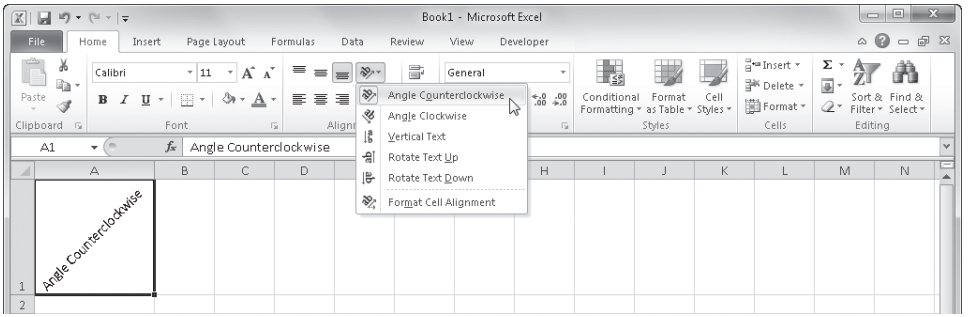


Figure 9-48 Use the Orientation menu to rotate or stack text in a cell.

The Orientation area on the Alignment tab in the Format Cells dialog box contains additional controls, letting you change the angle of cell contents to read at any angle from 90 degrees counterclockwise to 90 degrees clockwise.

A Cool Application of Angled Text

Many times the label at the top of a column is much wider than the data stored in it. You can use the Wrap Text option to make a multiple-word label narrower, but sometimes that's not enough. Vertical text is an option, but it can be difficult to read and takes a lot of vertical space. Try using rotated text and cell borders:

	A	B	C	D	E	F	G
1	*Publication*	*Cost per ad*	*Audience per ad (millions)*	*Number of ads placed*	*Total cost*	*Percent of total*	*Total audience (millions)*
2	*Pub1*	$147,420	9.9	6.0	$884,520	26%	59.4
3	*Pub2*	$124,410	8.4	6.0	$746,460	22%	50.4
4	*Pub3*	$113,100	8.2	6.0	$678,600	20%	49.2
5	*Pub4*	$70,070	5.1	6.0	$420,420	13%	30.6
6	*Pub5*	$53,000	3.7	6.0	$318,000	9%	22.2
7	*Pub6*	$52,440	3.6	6.0	$314,640	9%	21.6
8	**Total**				$3,362,640		233.4
9							

	A	B	C	D	E	F	G
1	*Publication*	*Cost per ad*	*Audience per ad (millions)*	*Number of ads placed*	*Total cost*	*Percent of total*	*Total audience (millions)*
2	*Pub1*	$147,420	9.9	6.0	$884,520	26%	59.4
3	*Pub2*	$124,410	8.4	6.0	$746,460	22%	50.4
4	*Pub3*	$113,100	8.2	6.0	$678,600	20%	49.2
5	*Pub4*	$70,070	5.1	6.0	$420,420	13%	30.6
6	*Pub5*	$53,000	3.7	6.0	$318,000	9%	22.2
7	*Pub6*	$52,440	3.6	6.0	$314,640	9%	21.6
8	**Total**				$3,362,640		233.4
9							

Here's how to do it:

1. Select the cells you want to format, and click the dialog box launcher in the Font group on the Home tab to display the Format Cells dialog box.
2. Click the Border tab, and apply vertical borders to the left, right, and middle of the range.
3. Click the Alignment tab, and use the Orientation controls to select the angle you want. (It's usually best to select a positive angle from 30 to 60 degrees.)
4. In the Horizontal Text Alignment drop-down list, select Center, and then click OK. Excel rotates the left and right borders along with the text.
5. Drag down the bottom border of the row 1 header (the line between 1 and 2) to make it deep enough to accommodate the labels without wrapping.
6. Select all the active columns, and double-click any one of the lines between the selected column headers (for example, the line between the column letters C and D) to shrink all the columns to their smallest possible width.

Using the Angle Counterclockwise command on the Orientation button's menu (in the Alignment group on the Home tab) rotates the text to +45 degrees for you, but because we wanted to apply borders and alignment options as well, using the Format Cells dialog box was a more efficient method.

Note

Interestingly, as you experiment with orientation, you won't see a Horizontal option on the Orientation button's menu. This means that you need to use either the Format Cells dialog box or the Undo command (Ctrl+Z) to restore cells to their default orientation.

Excel automatically adjusts the height of the row to accommodate vertical orientation unless you manually set the row height either before or after changing text orientation. Cell G3 in Figure 9-47 shows what happens when you click the tall, skinny Text button on the left side of the Orientation area. Although the button is labeled Text, you can also apply this "stacked letters" effect to numbers and formulas.

The angle controls let you rotate text to any point in a 180-degree arc. You can use either the Degrees box at the bottom or the large dial above it to adjust text rotation. To use the dial, click and drag the Text pointer to the angle you want; the number of degrees appears in the spinner below. You also can click the small up and down arrows in the Degrees box to increment the angle one degree at a time from horizontal (zero), or you can highlight

the number displayed in the Degrees box and type a number from –90 through 90. Cells H3:K3 in Figure 9-47 show some examples of rotated text.

You'll find the Angled Text.xlsx file with the other examples on the companion Web site.

For more about cell borders, see "Customizing Borders" on page 353. For more about row heights, see "Changing Row Heights" on page 364.

Shrinking Text to Fit in Cells

The Shrink To Fit check box on the Alignment tab in the Format Cells dialog box reduces the size of the font in the selected cell until the contents can be completely displayed in the cell. This is useful when you have a worksheet in which adjusting the column width to allow a particular cell entry to be visible has undesirable effects on the rest of the worksheet or where angled text, vertical text, and wrapped text aren't feasible solutions. In Figure 9-49, we typed the same text in cells A1 and A2 (and increased the font size for readability) and applied the Shrink To Fit option to cell A2.

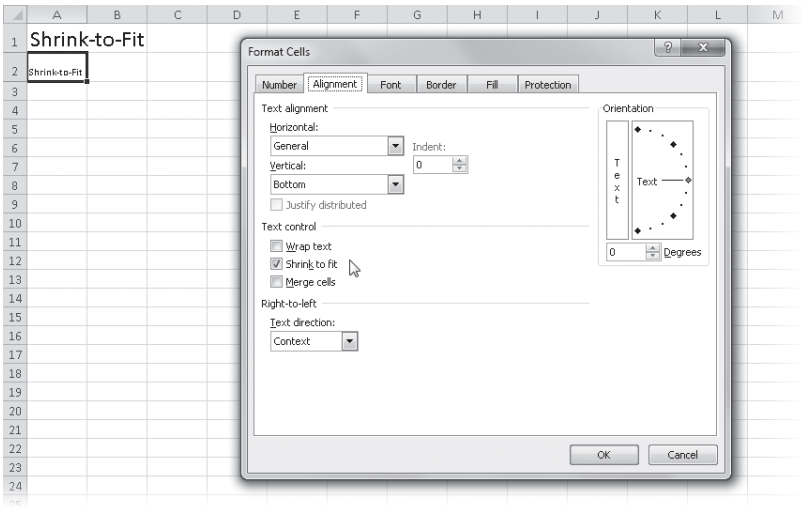


Figure 9-49 The Shrink To Fit alignment option reduces the font size until the cell contents fit within the cell.

The Shrink To Fit format is dynamic and readjusts if you change the column width, either increasing or decreasing the font size as needed. The assigned size of the font does not change; therefore, no matter how wide you make the column, the font will not expand beyond the assigned size.

The Shrink To Fit option can be a good way to solve a problem, but keep in mind that this option reduces the font to as small a size as necessary. If the cell is narrow enough and the cell contents long enough, the result might be too small to read.

Using Fonts

The term *font* refers to a typeface (such as Calibri), along with its attributes (such as point size and color). The Font group on the Home tab on the ribbon, shown in Figure 9-50, is the easiest way to apply general font formatting to selected cells. Here are a few facts about the controls in the Font group:

- The Font, Font Size, Underline, Borders, Fill Color, and Font Color buttons all include arrows to their right, which you can click to display a menu or gallery with additional options.
- The appearance of the Font Color, Fill Color, and Borders buttons changes to reflect the last-used option. This lets you apply the same option again by clicking the button, without using the menu or gallery.
- The Bold and Italic buttons are toggles; click once to apply the format, and click again to remove it.

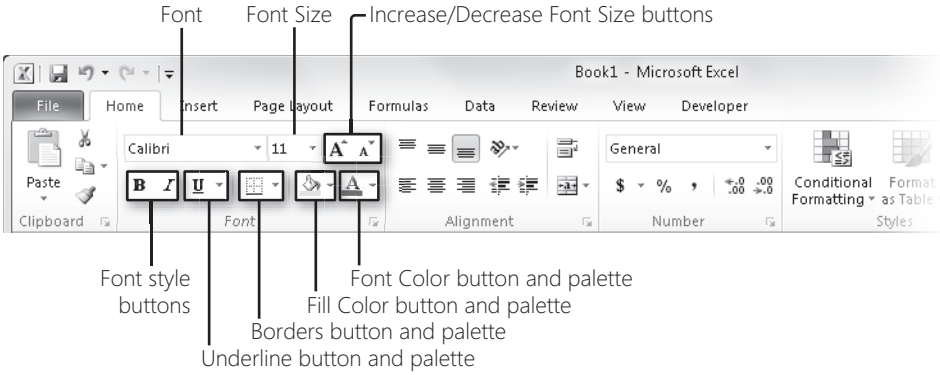


Figure 9-50 The Font group contains font-formatting controls, as well as border and fill controls.

For more extensive control over fonts, use the Font tab in the Format Cells dialog box. To specify a font, select the cell or range, click the dialog box launcher in the Font group, and then click the Font tab, shown in Figure 9-51.

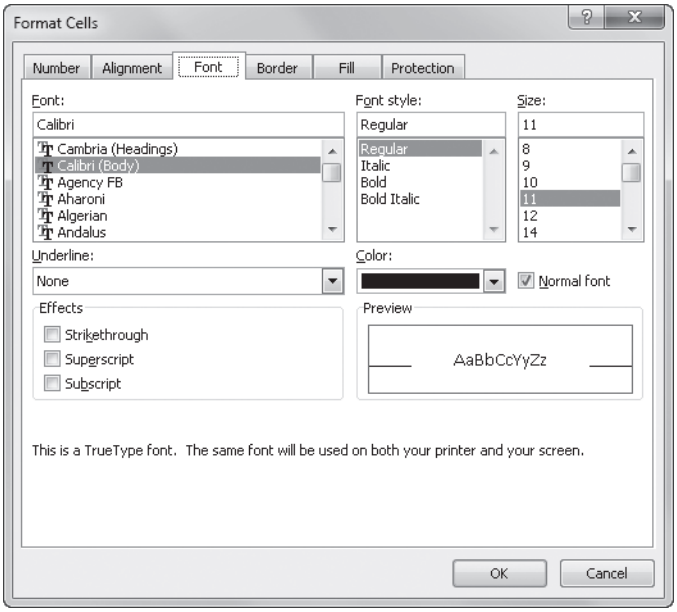


Figure 9-51 On the Font tab you can assign fonts, character styles, sizes, colors, and effects to your cell entries.

Note

You can also press Ctrl+1 to display the Format Cells dialog box.

The numbers in the Size list show the point sizes at which Excel can optimally print the selected font, but you can type any number in the text box at the top of the list—even fractional point sizes up to two decimal places. Unless you preset it, Excel adjusts the row height as needed to accommodate the largest point size in the row. The available font styles vary depending on the font you select in the Font list. Most fonts offer italic, bold, and bold italic styles. To reset the selected cells to the font and size defined as the Normal cell style, select the Normal Font check box.

For more information about using cell styles, see "Formatting with Cell Styles" on page 303.

INSIDE OUT **Automatic Font Color Isn't Really Automatic**

If you select Automatic (the default font color option) in the Color drop-down list (or use its equivalent in the Font group on the Home tab on the ribbon), Excel displays the contents of your cell in black. You might think that Automatic should select an appropriate color for text on the basis of the color you apply to the cell, but this isn't the case. If, for example, you apply a black background to a cell, you might think the automatic font color would logically be white. This isn't so; Automatic is always black unless you select another Window Font color in the Display Properties dialog box (accessed from Windows Control Panel). For more information about applying colors to cells, see "Applying Colors and Patterns" on page 357.

Customizing Borders

Borders

Borders and shading can be effective devices for defining areas in your worksheet or for drawing attention to important cells, and the Borders button in the Font group on the Home tab is the easiest way to apply them. Clicking this button applies the last-used border format and displays a thumbnail representation of it on the button. Click the arrow to the right of the button to display the menu shown in Figure 9-52.

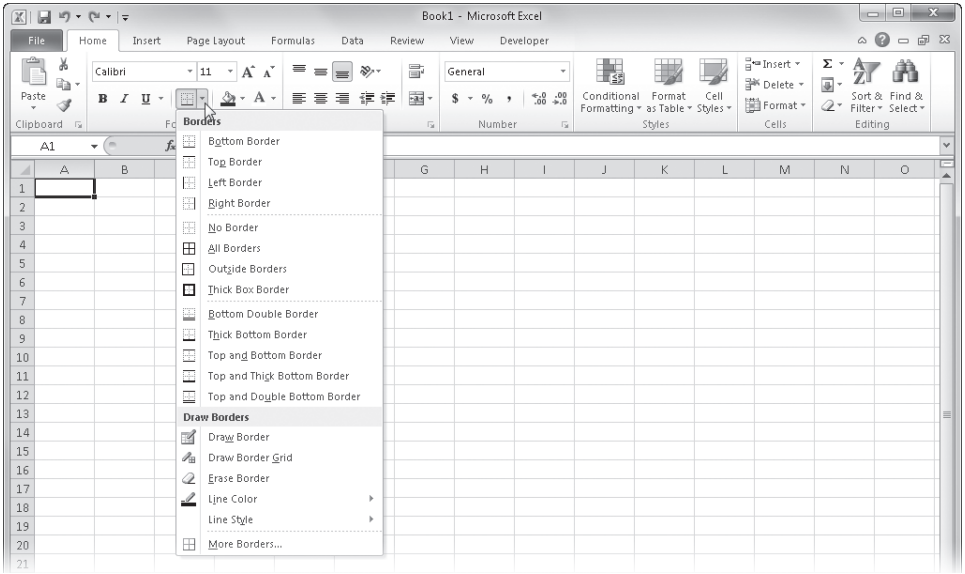


Figure 9-52 Click the arrow next to the Borders button to display the Borders menu.

Note

As does the image displayed on the button, the button name also reflects the last-used border format when you rest the pointer on the button to display a ScreenTip.

The most-often-used border options are represented on the Borders menu, but for more precise control, click the More Borders command on the menu to display the Border tab in the Format Cells dialog box, shown in Figure 9-53. (As always, the dialog box launcher next to the Font group opens the dialog box as well.) If you have more than one cell selected when you open the dialog box, the Border preview area includes tick marks in the middle and at the corners, as shown in Figure 9-53.

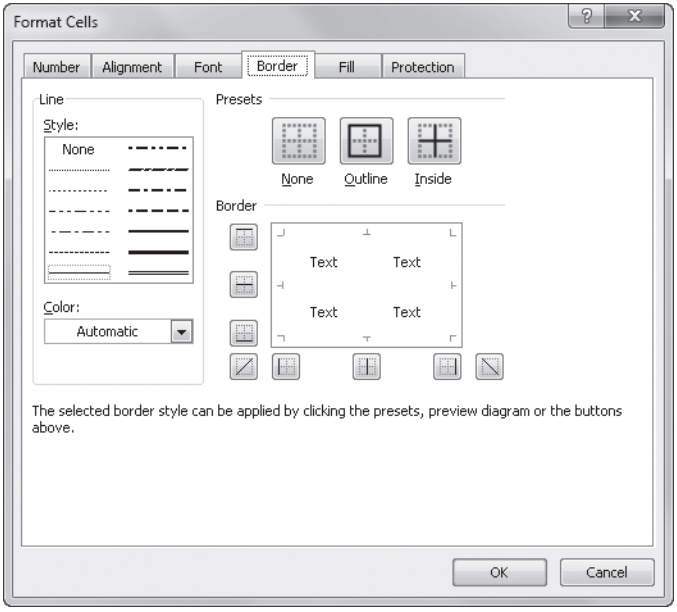


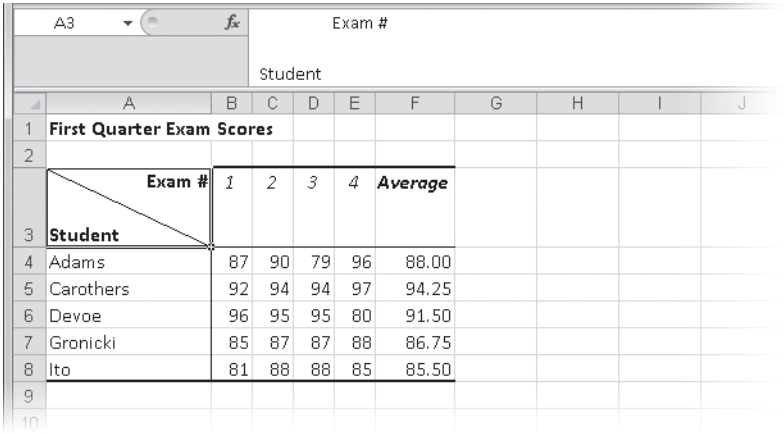
Figure 9-53 Using the Border tab, you can assign 13 styles of borders in 70 colors.

Note

A solid gray line in the preview area means that the format applies to some but not all of the selected cells.

An Angled Border Trick

Sometimes you might want to use that pesky cell that generally remains empty in the upper-left corner of a table. You can use an angled border to create dual-label corner cells (we expanded the formula bar in the following figure to show all the text in cell A3):



Here's how to do it:

1. Select the cell you want to format, and type about 10 space characters. You can adjust this later (there are 20 spaces before the Exam # label in the example).
2. Type the label you want to correspond to the column labels across the top of the table.
3. Hold down the Alt key, and press Enter twice to create two line breaks in the cell.
4. Type the second label, which corresponds to the row labels down the left side of the table, and press Enter.
5. With the cell selected, click the More Borders command on the Borders menu.
6. Select a line style, and click the upper-left to lower-right angled border button.
7. Click the Alignment tab, select the Wrap Text check box, and then click OK.

You will probably need to fine-tune a bit by adjusting the column width and row height and by adding or removing space characters before the first label. In the example, we also selected cells B3:F3 and then clicked the Top Align button in the Alignment group on the Home tab so that all the labels line up across the top of the table.

For more information about alignment, see "Aligning Data in Cells" on page 342. For more about entering line breaks and tabs in cells, see "Formula-Bar Formatting" on page 497.

You'll find the Angled Borders.xlsx file with the other examples on the companion Web site.

To apply borders, you can click the preview area where you want the border to appear, or you can click the buttons located around the preview area. An additional preset button, Inside, becomes active only when you have more than one cell selected. If you click the Outline button, borders are applied only to the outside edge of the entire selection. The None preset removes all border formats from the selection.

> **Note**
>
> **Borders often make a greater visual impact on your screen when you remove worksheet gridlines. Click the View tab on the ribbon, and clear the Gridlines check box in the Show/Hide group to remove gridlines from your worksheet. For more information about gridlines, see "Controlling Other Elements of the Excel 2010 Interface" on page 103.**

The default, or Automatic, color for borders is black. To select a line style, click the type of line you want to use in the Line area, and then click any of the buttons in the Border area or click the preview box directly to apply that style in the selected location. (The first finely dotted line in the Style area is a solid hairline when printed.) To remove a border, click the corresponding button—or the line in the preview window—without selecting another style.

By using the commands in the Draw Borders group at the bottom of the Borders menu (shown in Figure 9-52), you can create complex borders quickly and easily. When you click Draw Border, you enter "border-drawing mode," which persists until you click Draw Border again or press Esc. After you activate this mode, you can drag to create lines and boxes along cell gridlines, as shown in Figure 9-54. If you click Draw Border Grid, not only are borders drawn along the boundaries of the selected cells, but they're also drawn along all the gridlines in the selection rectangle, as shown at the bottom of Figure 9-54.

If you make selections in the Line Color and Line Style galleries at the bottom of the Borders menu prior to using either Draw Border command, the borders you draw reflect your color and style selections. Clicking Erase Border predictably activates the opposite of border-drawing mode: "border-erasing mode." Dragging while in erase mode removes all borders within the selection rectangle.

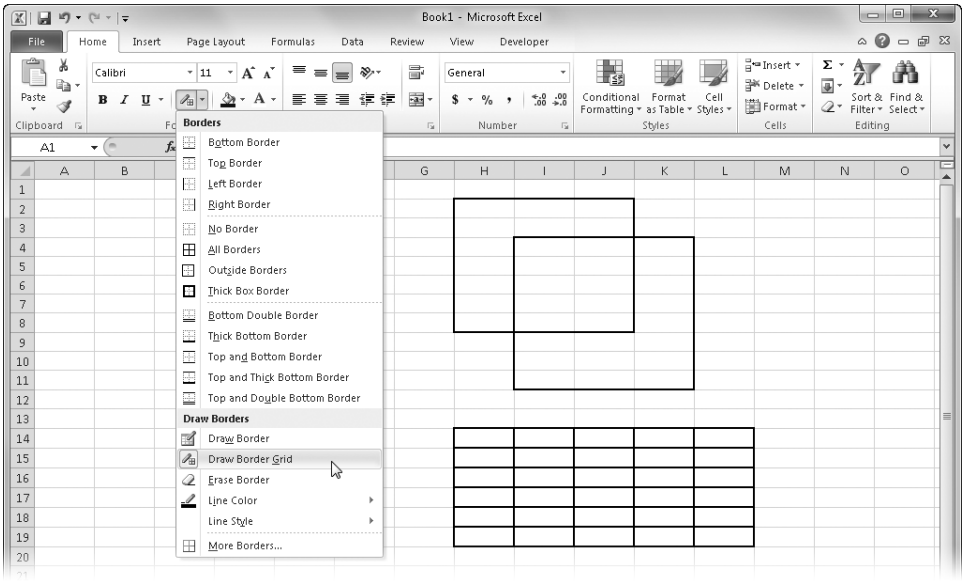


Figure 9-54 We created two boxes using the Draw Border command and another using the Draw Border Grid command.

Applying Colors and Patterns

Fill Color

The Fill Color button in the Font group on the Home tab offers colors you can apply to selected cells. Click the button's arrow to display the options shown in Figure 9-55.

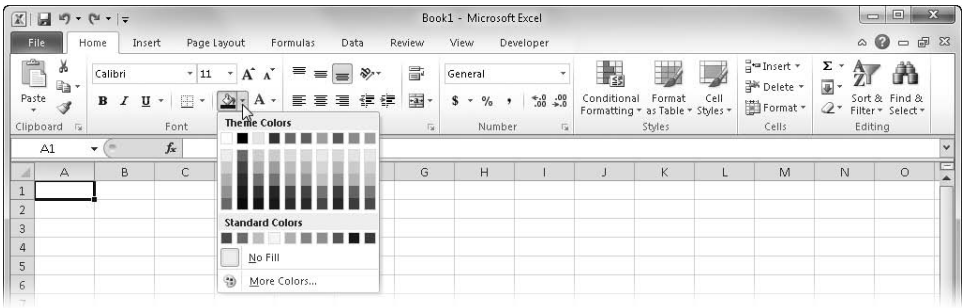


Figure 9-55 Use the Fill Color palette to add color to cells.

If you want to do more than just fill cells with color, the Fill tab in the Format Cells dialog box provides additional control. (Click the dialog box launcher in the Font group on the ribbon to display the Format Cells dialog box.) The main feature of the Fill tab is a palette of colors, mimicking the palette available on the ribbon. A feature not available on the ribbon is the Pattern Style drop-down palette, shown in Figure 9-56. You use this palette to select

a pattern for selected cells and the Pattern Color drop-down palette above it to choose a color.

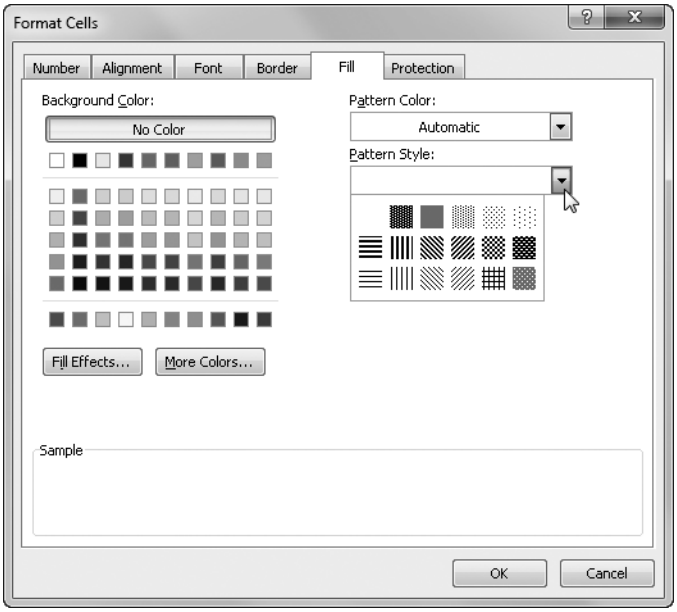


Figure 9-56 Using the Fill tab, you can select colors and patterns for cell backgrounds.

Follow these guidelines when using the Fill tab:

- The Background Color area controls the background of selected cells. When you choose a color and do not select any pattern, Excel applies a solid colored background.
- To return the background color to its default state, click No Color.
- If you pick a background color and then select a pattern style, the pattern is overlaid on the solid background. For example, if you select red from the Background Color area and then click one of the dot patterns, the result is a cell that has a red background and black dots.
- The Pattern Color options control the color of the pattern, not the cell. For example, if you leave Background Color set to No Color and select a red for Pattern Color and any dot pattern for Pattern Style, the cell is displayed with a white background with red dots.

Note

When selecting colors for cell backgrounds, select one on which you can easily read any text or numbers in the cell. For example, yellow is the most visible background color you can choose to complement black text, which is why you see this combination on road signs. A dark blue background with black text—that's not so good.

The More Colors button on the Fill tab displays the Colors dialog box shown in Figure 9-57, where you can select colors that are not otherwise represented on the color palettes. The Standard tab in the Colors dialog box displays a stylized color wheel using the current theme colors, most of which are already available on the palettes. The Custom tab shown in Figure 9-57 lets you pinpoint colors, use specific color values, and switch between the default RGB (red, green, blue) color model or HSL, a color model defined by hue, saturation, and luminosity values instead of RGB color values.

The Fill Effects button on the Fill tab in the Format Cells dialog box opens up another world of possibility, offering gradient fills you can apply to cells. Clicking this button displays the Fill Effects dialog box shown in Figure 9-58. You can select different colors and shading styles, but this version of the Fill Effects dialog box offers only two-color effects. The One Color and Preset options are not available. Note that Fill Effects gradient fills are static, unlike data bars, which are conditional gradient fills that respond to cell values and interact with adjacent cells by applying proportional amounts of fill to each cell.

For more about gradients, see "Filling an Area with a Color Gradient" on page 702. For more about data bars, see "Formatting Conditionally" on page 309.

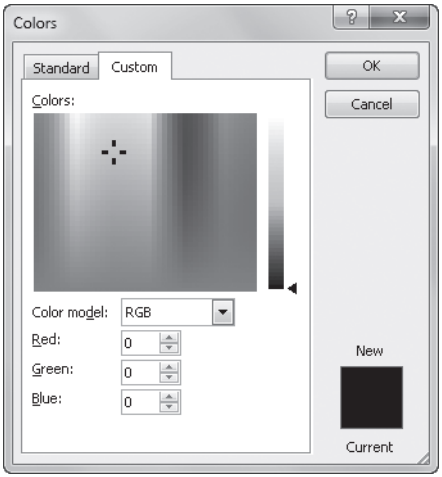


Figure 9-57 Click the More Colors button on the Fill tab in the Format Cells dialog box to select the colors you need.

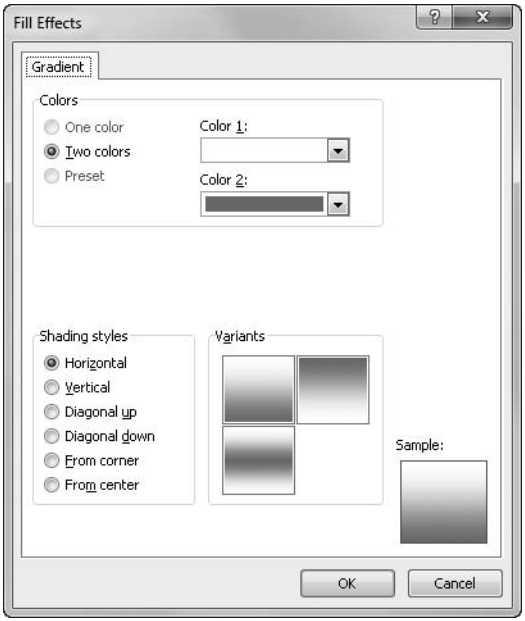


Figure 9-58 Click the Fill Effects button on the Fill tab in the Format Cells dialog box to use gradient fills in cells.

Adding Graphic Backgrounds to Worksheets

Adding background images to worksheets is easy. Click the Page Layout tab on the ribbon, and click the Background button. A standard Windows file-management dialog box appears, from which you can open most types of image files, located anywhere on your computer or network. Excel then applies the graphic image to the background of the active worksheet, as shown in Figure 9-59.

Here are some tips for working with background images:

- The example in Figure 9-59 is a cover sheet for a large workbook; be careful when using backgrounds behind data. It can be difficult to read cell entries with the wrong background applied.
- You might want to turn off the display of gridlines, as shown in Figure 9-59. To do so, clear the Gridlines View check box, which is also located on the Page Layout tab.
- If you don't like the way the background looks with your data, click the Background button again, whose name changes to Delete Background when a background is present.

- The graphic image is tiled in the background of your worksheet, which means the image is repeated as necessary to fill the worksheet.
- Cells to which you have assigned a color or pattern override the graphic background.
- Backgrounds are preserved when you save the workbook as a Web page.

Figure 9-59 Add a background graphic to any worksheet.

For more information about saving workbooks as Web pages, see Chapter 26, "Collaborating Using the Internet."

Controlling the Size of Cells

The primary methods you use to control the size of cells are adjusting the row height and changing the column width. In addition, you can adjust the size of cells by merging several cells into one or by unmerging previously merged cells. The Format menu, located in the Cells group on the Home tab, is the central command location for cell sizing, as shown in Figure 9-60.

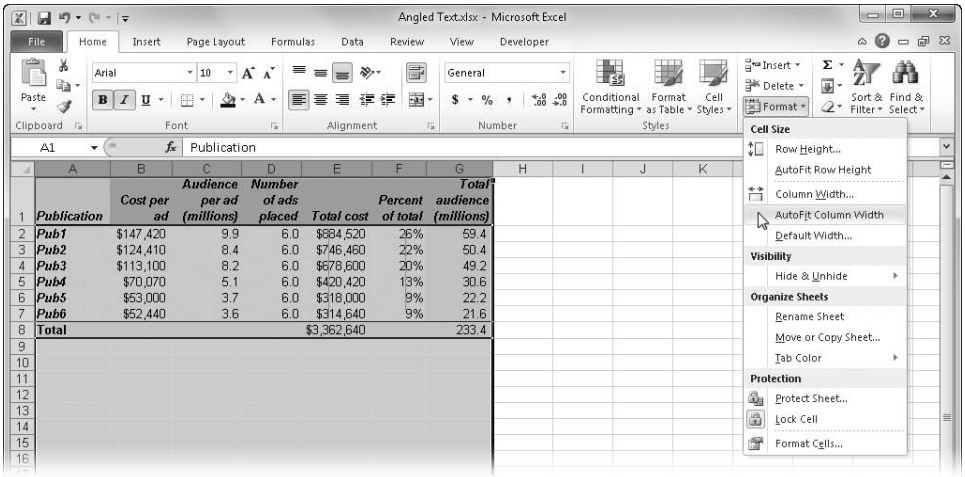


Figure 9-60 You can use the Cell Size commands on the Format menu to manage row height and column width.

Here are the options you can use:

- **Column Width and Row Height** These two commands display a dialog box where you can type a different value to be applied to selected cells. Column width is limited to 255, and row height can be up to 409. The default column width for Excel is 8.43 characters; however, this does not mean each cell in your worksheet can display 8.43 characters. Because Excel uses proportionally spaced fonts (such as Arial) as well as fixed-pitch fonts (such as Courier), different characters can take up different amounts of space. A default-width column, for example, can display about eight numerals in most 10-point fixed-pitch fonts.

- **AutoFit Row Height** This command adjusts the row height in selected cells by adjusting them to accommodate the tallest item in the row. (Row height is usually self-adjusting based on font size.)

- **AutoFit Column Width** This command adjusts column widths in selected cells by adjusting them to accommodate the widest entry in the column.

- **Default Width** This command displays a dialog box where you can change the starting column width for all selected worksheets in the current workbook. This has no effect on columns whose width you have previously specified.

Changing Column Widths

If the standard column width isn't enough to display the complete contents of a cell, one of the following will occur:

- Text that is too long runs over into adjacent cells.
- Long text entries are truncated at the border if the adjacent cell isn't empty.
- Long numbers appear in scientific notation (for example, 1.23E+12).
- A series of number signs (#) appears if you assign a numeric format.

To change column widths using the mouse, drag the lines between column headings. As you drag, the width of the column and the number of pixels appear in a ScreenTip, as shown in Figure 9-61. This figure also illustrates how to change the width of multiple columns at the same time: Drag to select column headings; alternatively, hold down Ctrl, and click headings to select nonadjacent columns. Then, when you drag the line to the right of any selected column, all the selected column widths change simultaneously.

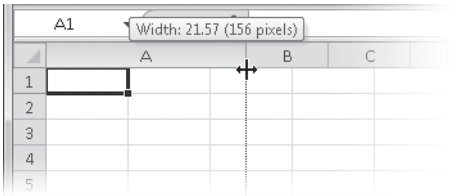


Figure 9-61 The cursor looks like a double-headed arrow when you adjust column width or row height with the mouse.

Note

Depending on the font you are using, characters that appear to fit within a column on your screen might not fit when you print the worksheet. You can preview your output before printing by pressing Ctrl+P to display the Print screen in Backstage View, where you can see an image of the worksheet as it will look when printed. For information about print preview, see Chapter 11, "Printing and Presenting."

Tricks for Tailoring Cells

Here are a few methods you can use to speed up your cell-sizing chores:

- **When you select a number of rows or columns, you can tailor all of them to fit their contents—essentially the same as using one of the AutoFit commands—by double-clicking any line to the right of a selected column header or any line below a selected row header. Doing so automatically snaps all the selected cells to accommodate the widest or tallest displayed values.**
- **To tailor all the cells in the worksheet at once, first click the gray square at the intersection of the row and column headers to select the entire worksheet (or press Ctrl+A). Then double-click any line in the row header to autofit all rows, and double-click any line in the column header to autofit all columns.**
- **To change the widths of all the columns in the current worksheet, select any entire row by clicking a row heading (or pressing Shift+Spacebar), and then click the Column Width command on the Format menu on the Home tab.**
- **To change the height of all of the rows in the current worksheet, select any entire column by clicking a column heading (or pressing Ctrl+Spacebar), and then click the Row Height command on the Format menu on the Home tab.**

Changing Row Heights

The height of a row always changes dynamically to accommodate the largest font used in that row. Thus, you don't usually need to worry about characters being too tall to fit in a row. Adjusting row height is the same as adjusting column width—just drag one of the lines between row headings.

To restore the default height of one or more rows, select any cell in those rows, and click AutoFit Row Height on the Format menu on the Home tab. Unlike column width, you cannot define a standard row height. The AutoFit command serves the same function, returning empty rows to the standard height needed to accommodate the default font and fitting row heights to accommodate the tallest entry. When you create or edit a multiline text entry using the Wrap Text button or the Justify option on the Alignment tab in the Format Cells dialog box, Excel automatically adjusts the row height to accommodate it.

For more information, see "Wrapping Text in Cells" on page 346 and "Justifying Text in Cells" on page 346.

Hiding a Column or Row

If you want to hide information within a worksheet, you can hide entire columns or rows. To do so, select any cell in the row or column you want to hide. Then, on the Format menu on the Home tab, click Hide & Unhide, and then click Hide Rows or Hide Columns. This sets the width of the column to zero. You can also hide rows and columns by dragging the line between headings up or to the left until the height or width is zero. When a row or column's width is set to 0, Excel skips over it when you move the active cell, and the column letter or row number disappears. For example, if you hide column C, the column heading line reads A, B, D, and so on.

To redisplay a hidden row or column, drag to select the headings on both sides, and click Unhide Rows or Unhide Columns on the Hide & Unhide menu. The Hidden check box on the Protection tab of the Format Cells dialog box hides only formulas in the formula bar.

Merging and Unmerging Cells

Merge & Center

The spreadsheet grid is arguably the most versatile type of document, and the ability to merge cells makes it all the more versatile. Select the cells you want to merge, and click the arrow to the right of the Merge & Center button in the Alignment group on the Home tab to display the menu shown in Figure 9-62.

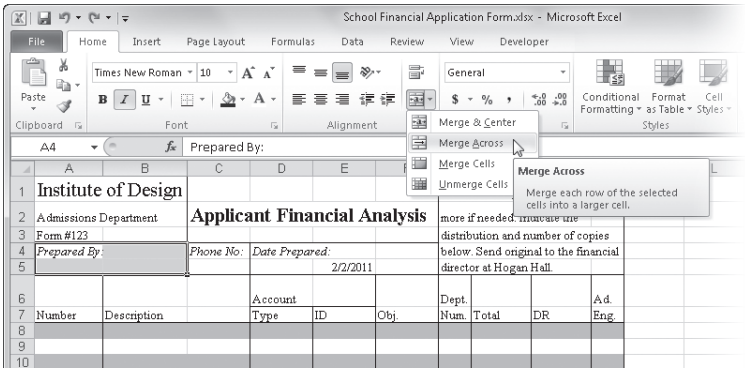


Figure 9-62 The Merge & Center button offers a variety of merge commands.

CAUTION!

When you merge several cells that contain data, only the data in the uppermost, leftmost cell is preserved. Excel overwrites data in subsidiary cells. Copy any data you need to another location before merging.

When you merge cells, you end up with a single cell that comprises the original cells. If in the worksheet shown in Figure 9-63, we were to select cells A4:B5 and click the Merge Across command, the result would be two merged cells, A4 and A5, each spanning two columns. Here are the differences between the Merge & Center commands:

- **Merge & Center** This command consolidates all selected cells—both rows and columns—into one big cell and centers the contents across the newly merged cell.
- **Merge Across** This command consolidates each row of selected cells into one wide cell per row.
- **Merge Cells** This command consolidates all selected cells into one big cell, but it does not center the contents.
- **Unmerge Cells** This command returns a merged cell to its original component cells and places its contents in the upper-leftmost cell. Clicking the Merge & Center button (not the Merge & Center command) when a merged cell is selected has the same effect, like a toggle "turning off" the merge.

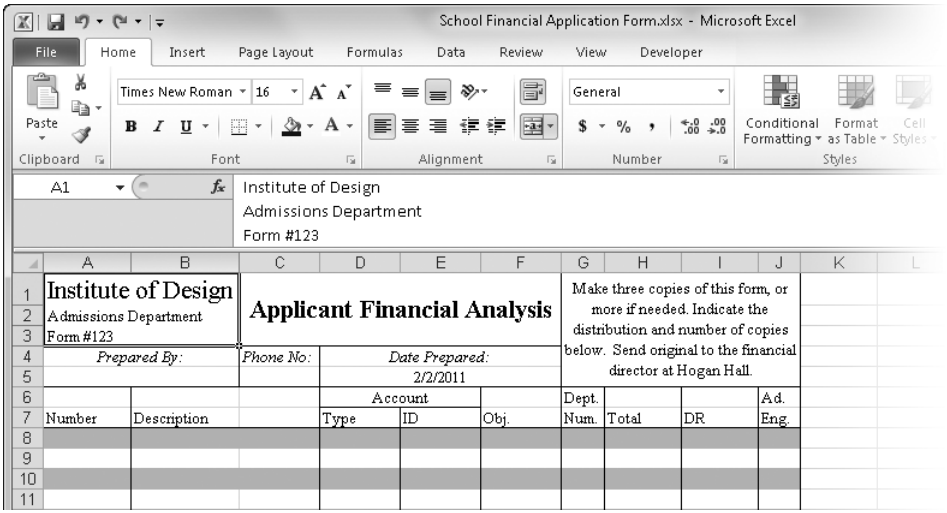


Figure 9-63 Most of the cells in the top five rows of this worksheet, and a couple in the sixth row, are merged in various combinations.

Figure 9-63 shows the same worksheet shown in Figure 9-62 after merging cells A1:B3, C1:F3, G1:J5, A4:B4, A5:B5, D4:F4, D5:F5, and D6:E6. We had to shuffle some of the text, *before* merging so that we wouldn't lose it to the merging process. For example, the text in the original range G1:J5 was unevenly spaced because of the different row heights needed to accommodate the text in cells A1 and C2. To eliminate this problem, we used the Merge

Cells command on the range A1:B3, we used the Merge & Center command on the ranges C1:F3 and G1:J5, and then we reentered the text.

You'll find the School Financial Application Form.xlsx file with the other examples on the companion Web site.

When you merge cells, the new *big cell* uses the address of the cell in the upper-left corner, as shown in Figure 9-63. Cell A1 is selected, as you can see in the Name box. (In the figure, we also expanded the formula bar to show the three rows of text in the merged cell.) The headings for rows 1, 2, and 3 and columns A and B are highlighted, which would ordinarily indicate that the range A1:B3 is selected. For all practical purposes, however, cells A2:A3 and B1:B3 no longer exist. The other merged cells, or the subsidiary cells, act like blank cells when referred to in formulas and return zero (or an error value, depending on the type of formula).

> **Note**
>
> **In Figure 9-63, the information in the formula bar is on three lines. To enter line breaks within a cell, press Alt+Enter. For more information, see "Formula-Bar Formatting" on page 497.**

Merging cells obviously has interesting implications, considering that it seems to violate the grid—one of the defining attributes of spreadsheet design. That's not as bad as it sounds, but keep in mind these tips:

- If you select a range to merge and any single cell contains text, a value, or a formula, the contents are relocated to the new big cell.
- If you select a range of cells to merge and more than one cell contains text or values, only the contents of the uppermost, leftmost cell are relocated to the new big cell. Contents of subsidiary cells are deleted; therefore, if you want to preserve data in subsidiary cells, make sure you add it to the upper-left cell or relocate it.
- Formulas adjust automatically. A formula that refers to a subsidiary cell in a merged range changes to refer to the address of the new big cell. If a merged range of cells contains a formula, relative references adjust. For more about references, see "Using Cell References in Formulas" on page 468.
- You can copy, delete, cut and paste, or click and drag big cells as you would any other cell. When you copy or move a big cell, it replaces the same number of cells at the destination. The original location of a cut or deleted big cell returns to individual cells.

- You can drag the fill handle of a big cell as you can drag the fill handle of regular cells. When you do so, the big cell is replicated, in both size and content, replacing all regular cells in its path. For more about using the fill handle, see "Filling and Creating Data Series" on page 229.
- If you merge cells containing border formatting other than along any outer edge of the selected range, border formats are erased.

Using Template Files to Store Formatting

A *template* is a model that can serve as the basis for new worksheets. A template can include both data and formatting information. Template files are great timesavers. They're also an ideal way to ensure a consistent look among reports, invoices, and other documents you tend to create repeatedly. Figure 9-64 shows an example of a template for an expense report. This worksheet would make a good template because expense reports are used repeatedly, but each time you want to start with a fresh, clean copy.

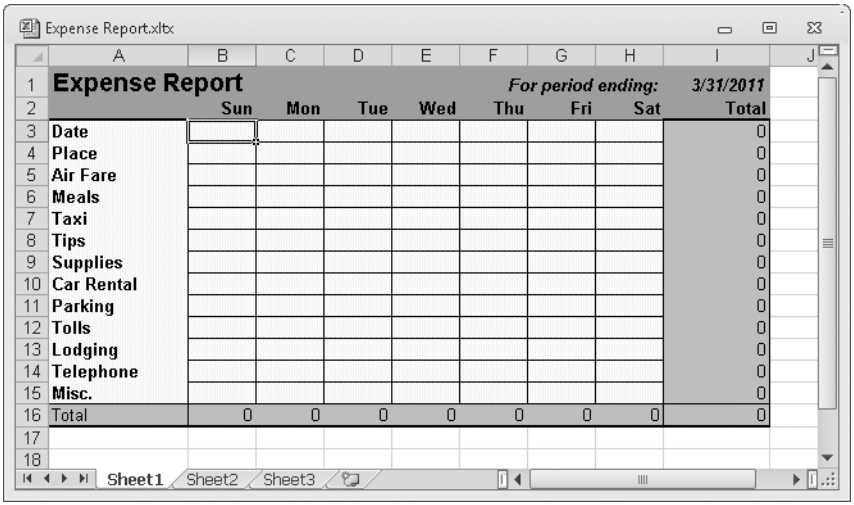


Figure 9-64 This template file serves as the basis for creating new expense reports.

You'll find the Expense Report.xltx file with the other examples on the companion Web site.

The advantages to using templates are standardization and protection. It is difficult to overwrite the original accidentally, because when you save a new template-based workbook for the first time, you must supply a new name for it. This way you can repeatedly create new workbooks with the same appearance without worrying about overwriting the original.

To create a template file, follow these steps:

1. Open the workbook you want to use as a template.
2. Click the File tab, Save As, and supply a file name.
3. Choose Excel Template (*.xltx) from the Save As Type drop-down list, and click Save.

When you choose the Excel Template format in the Save As dialog box, Excel switches to the Templates folder and saves your new template there. This is the location that ensures that your template is always available when you click the New command on the File tab and click My Templates.

When you install Excel, a folder named Templates is installed on your hard disk in the following location:

- **Windows 7, Windows Vista** C:\Users\<your name>\AppData\Roaming\Microsoft\Templates
- **Windows XP** C:\Documents and Settings\<your name>\Application Data\Microsoft\Templates

When you create a new document by clicking the File tab, New, and then selecting one of the many templates available,, a fresh copy of the workbook is created, and the copy is given a temporary name consisting of the original file name plus a number. If the template file is named Expenses, for example, the working copy is named Expenses1.

INSIDE OUT Full Disclosure

Windows tries to keep secrets from you—for your own good, of course. But fearless readers of this book need no such accommodation, so here are a couple of actions you can take to make life a little easier. First, let's show hidden files and folders. If you go looking, the Templates folders described in this chapter can be hard to find because they are in locations Windows likes to keep hidden from view. To make them more findable, click the Windows Start menu, Control Panel, Appearance And Personalization, and Folder Options; then, on the View tab, select Show Hidden Files, Folders, And Drives. Second, let's display all the file extensions. The old-style MS-DOS extensions used to be three characters in length and now can be four, such as .xltx for templates and .xlsx for regular workbooks. These may be "retro," but they are also still helpful, letting you tell at a glance in which format a file is saved. To make extensions visible, clear the Hide Extensions For Known File Types check box, which is also on the View tab in the Folder Options dialog box.

CHAPTER 23

Analyzing Data with PivotTable Reports

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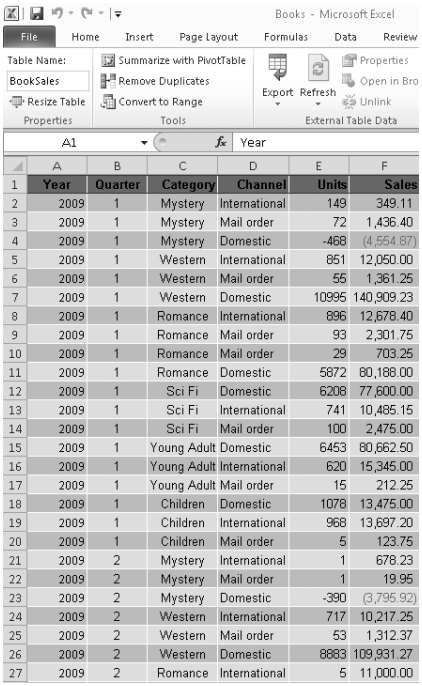
A PivotTable report is a special kind of table that summarizes information from selected fields of a data source. The source can be a Microsoft Excel 2010 list or table, a relational database file, or an online analytical processing (OLAP) cube. When you create a PivotTable, you specify which fields you're interested in, how you want the table organized, and what kinds of calculations you want the table to perform. After you build the table, you can rearrange it to view your data from alternative perspectives. This ability to "pivot" the dimensions of your table—for example, to transpose column headings to row positions—gives the PivotTable its name and its analytical power.

Introducing PivotTables

PivotTables are linked to the data from which they're derived. If the PivotTable is based on external data (data stored outside Excel), you can choose to have it refreshed at regular time intervals, or you can refresh it whenever you want.

Figure 23-1 shows Books.xlsx, a list of sales figures for a small publishing firm. The list is organized by year, quarter, category, distribution channel, units sold, and sales receipts. The data spans a period of eight quarters (2009 and 2010). The firm publishes six categories of fiction (Mystery, Western, Romance, Sci Fi, Young Adult, and Children) and uses three distribution channels—domestic, international, and mail order. It's difficult to get useful summary information by looking at a list like this, even though the list itself is well organized.

You'll find the Books.xlsx file with the other examples on the companion Web site.



	A	B	C	D	E	F
1	Year	Quarter	Category	Channel	Units	Sales
2	2009	1	Mystery	International	149	349.11
3	2009	1	Mystery	Mail order	72	1,436.40
4	2009	1	Mystery	Domestic	-468	(4,554.87)
5	2009	1	Western	International	851	12,050.00
6	2009	1	Western	Mail order	55	1,361.25
7	2009	1	Western	Domestic	10995	140,909.23
8	2009	1	Romance	International	896	12,678.40
9	2009	1	Romance	Mail order	93	2,301.75
10	2009	1	Romance	Mail order	29	703.25
11	2009	1	Romance	Domestic	5872	80,188.00
12	2009	1	Sci Fi	Domestic	6208	77,600.00
13	2009	1	Sci Fi	International	741	10,485.15
14	2009	1	Sci Fi	Mail order	100	2,475.00
15	2009	1	Young Adult	Domestic	6453	80,662.50
16	2009	1	Young Adult	International	620	15,345.00
17	2009	1	Young Adult	Mail order	15	212.25
18	2009	1	Children	Domestic	1078	13,475.00
19	2009	1	Children	International	968	13,697.20
20	2009	1	Children	Mail order	5	123.75
21	2009	2	Mystery	International	1	678.23
22	2009	2	Mystery	Mail order	1	19.95
23	2009	2	Mystery	Domestic	-390	(3,795.92)
24	2009	2	Western	International	717	10,217.25
25	2009	2	Western	Mail order	53	1,312.37
26	2009	2	Western	Domestic	8883	109,931.27
27	2009	2	Romance	International	5	11,000.00

Figure 23-1 It's difficult to see the bottom line in a flat list like this; turning the list into a PivotTable will help.

Figures 23-2 through 23-4 show several ways you can transform this flat table into PivotTables that show summary information at a glance.

The example on the left in Figure 23-2 breaks the data down first by category, second by distribution channel, and finally by year, with the total sales at each level displayed in column B. Looking at this table, you can see (among many other details) that the Children category generated domestic sales of $363,222, with more revenue in 2010 than in 2009.

In the example on the right in Figure 23-2, the per-category data is broken out first by year and then by distribution channel. The data is the same; only the perspective is different.

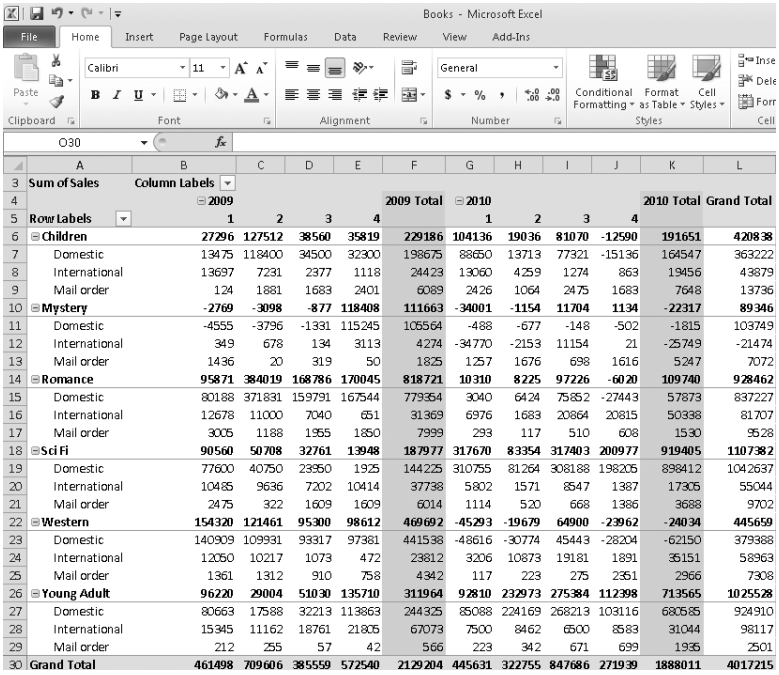
Row Labels	Sum of Sales
Children	420838
Domestic	363222
2009	198675
2010	164547
International	43879
2009	24423
2010	19456
Mail order	13736
2009	6089
2010	7648
Mystery	89346
Domestic	103749
2009	105564
2010	-1815
International	-21474
2009	4274
2010	-25749
Mail order	7072
2009	1825
2010	5247
Romance	928462
Domestic	837227
2009	779354
2010	57873
International	81707
2009	31369

Row Labels	Sum of Sales
Children	420838
2009	229186
Domestic	198675
International	24423
Mail order	6089
2010	191651
Domestic	164547
International	19456
Mail order	7648
Mystery	89346
2009	111663
Domestic	105564
International	4274
Mail order	1825
2010	-22317
Domestic	-1815
International	-25749
Mail order	5247
Romance	928462
2009	818721
Domestic	779354
International	31369
Mail order	7999
2010	109740
Domestic	57873
International	50338

Figure 23-2 These two PivotTables provide summary views of the information in Figure 23-1.

Both the PivotTables shown in Figure 23-2 are single-axis tables. That is, we generated a set of row labels (Children, Mystery, Romance, and so on) and set up outline entries below these labels. (And, by default, Excel displays outline controls beside all the headings, so we can collapse or expand the headings to suit our needs.)

Figure 23-3 shows a more elaborate PivotTable that uses two axes. Along the row axis, we have categories broken out by distribution channel. Along the column axis, we have years (2009 and 2010), and we added the quarterly detail (not included in the Figure 23-2 examples) so we can see how each category in each channel did each quarter of each year. With four *dimensions* (category, distribution channel, year, and quarter) and two axes (row and column), we have a lot of choices about how to arrange the furniture. Figure 23-3 shows only one of many possible permutations.

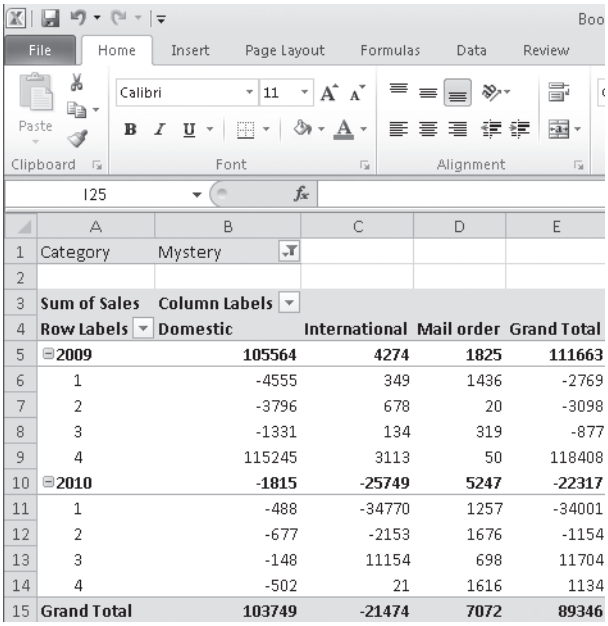


	A	B	C	D	E	F	G	H	I	J	K	L
3	Sum of Sales	Column Labels										
4		2009				2009 Total	2010				2010 Total	Grand Total
5	Row Labels	1	2	3	4		1	2	3	4		
6	**Children**	**27296**	**127512**	**38560**	**35819**	**229186**	**104136**	**19036**	**81070**	**-12590**	**191651**	**420838**
7	Domestic	13475	118400	34500	32300	198675	88650	13713	77321	-15136	164547	363222
8	International	13697	7231	2377	1118	24423	13060	4259	1274	863	19456	43879
9	Mail order	124	1881	1683	2401	6089	2426	1064	2475	1683	7648	13736
10	**Mystery**	**-2769**	**-3098**	**-877**	**118408**	**111663**	**-34001**	**-1154**	**11704**	**1134**	**-22317**	**89346**
11	Domestic	-4555	-3796	-1331	115245	105564	-488	-677	-148	-502	-1815	103749
12	International	349	678	134	3113	4274	-34770	-2153	11154	21	-25749	-21474
13	Mail order	1436	20	319	50	1825	1257	1676	698	1616	5247	7072
14	**Romance**	**95871**	**384019**	**168786**	**170045**	**818721**	**10310**	**8225**	**97226**	**-6020**	**109740**	**928462**
15	Domestic	80188	371831	159791	167544	779354	3040	6424	75852	-27443	57873	837227
16	International	12678	11000	7040	651	31369	6976	1683	20864	20815	50338	81707
17	Mail order	3005	1188	1955	1850	7999	293	117	510	608	1530	9528
18	**Sci Fi**	**90560**	**50708**	**32761**	**13948**	**187977**	**317670**	**83354**	**317403**	**200977**	**919405**	**1107382**
19	Domestic	77600	40750	23950	1925	144225	310755	81264	308188	198205	898412	1042637
20	International	10485	9636	7202	10414	37738	5802	1571	8547	1387	17305	55044
21	Mail order	2475	322	1609	1609	6014	1114	520	668	1386	3688	9702
22	**Western**	**154320**	**121461**	**95300**	**98612**	**469692**	**-45293**	**-19679**	**64900**	**-23962**	**-24034**	**445659**
23	Domestic	140909	109931	93317	97381	441538	-48616	-30774	45443	-28204	-62150	379388
24	International	12050	10217	1073	472	23812	3206	10873	19181	1891	35151	58963
25	Mail order	1361	1312	910	758	4342	117	223	275	2351	2966	7308
26	**Young Adult**	**96220**	**29004**	**51030**	**135710**	**311964**	**92810**	**232973**	**275384**	**112398**	**713565**	**1025528**
27	Domestic	80663	17588	32213	113863	244325	85088	224169	268213	103116	680585	924910
28	International	15345	11162	18761	21805	67073	7500	8462	6500	8583	31044	98117
29	Mail order	212	255	57	42	566	223	342	671	699	1935	2501
30	**Grand Total**	**461498**	**709606**	**385559**	**572540**	**2129204**	**445631**	**322755**	**847686**	**271939**	**1888011**	**4017215**

Figure 23-3 In this PivotTable, we arranged the data along two axes—rows and columns.

Figure 23-4 presents a different view. Now the distribution channels are arrayed by themselves along the column axis, while the row axis offers years broken out by quarters. The category, meanwhile, has been moved to what you might think of as a page axis. The data has been filtered to show the numbers for a single category, Mystery, but by using the filter control at the right edge of cell B2, we could switch the table to a different category (or combination of categories). Filtering the Category dimension by one category after another is like flipping through a stack of index cards.

None of these tables required more than a few clicks to generate.



	A	B	C	D	E
1	Category	Mystery			
2					
3	Sum of Sales	Column Labels			
4	Row Labels	Domestic	International	Mail order	Grand Total
5	2009	105564	4274	1825	111663
6	1	-4555	349	1436	-2769
7	2	-3796	678	20	-3098
8	3	-1331	134	319	-877
9	4	115245	3113	50	118408
10	2010	-1815	-25749	5247	-22317
11	1	-488	-34770	1257	-34001
12	2	-677	-2153	1676	-1154
13	3	-148	11154	698	11704
14	4	-502	21	1616	1134
15	Grand Total	103749	-21474	7072	89346

Figure 23-4 This PivotTable presents a filtered view, confining the report to a single category.

Creating a PivotTable

You can create a PivotTable from either an Excel range or an external data source. If you're working from an Excel range, your data should meet the criteria for a well-constructed list. That is, it should have column labels at the top (the headings become field names in the PivotTable), each column should contain a particular kind of data item, and you should not have any blank rows within the range. If the range includes summary formulas (totals, subtotals, or averages, for example), you should omit them from the PivotTable; the PivotTable performs its own summary calculations.

For information about connecting to and querying external data sources, see Chapter 24, "Working with External Data."

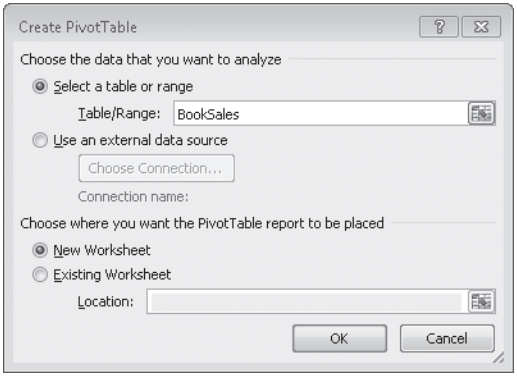
The source range on your Excel worksheet can be a table (as described in Chapter 22, "Managing Information in Tables") or an ordinary list. Starting from a table has the advantage of allowing for expansion. When you create a PivotTable from a table, Excel references your source data by its table name (either a default name, such as Table1, or the name you assign to the table). If you add rows to a table, the table dimensions automatically adjust to encompass the new data, and hence your PivotTable stays in sync with the expanded source data.

For information about converting a list to a table, see "Creating a Table" on page 731.

To create a PivotTable, select a single cell within the source data and do either of the following:

- Click the Insert tab, and then click PivotTable in the Tables group.
- If your source data is a table and you're currently displaying the Design tab under Table Tools, click Summarize With PivotTable in the Tools group.

Either way, the Create PivotTable dialog box appears. If your source data has a name (we assigned the name BookSales to the source table in our example), that name appears in the Table/Range box. Otherwise, Excel discerns the extent of your source data and presents a range reference in that box:



By default, your PivotTable arrives on a new worksheet, and that's generally a good arrangement. If you want it elsewhere, specify where in the Location box. After you click OK, Excel generates a blank table layout on the left side of the worksheet and displays the PivotTable Field List window on the right. (See Figure 23-5.) The PivotTable Field List window is docked at the right by default. You can make it wider or narrower by dragging the split bar on its left edge. You can also undock it or drag it across the worksheet and dock it on the left.

Note

If you want to work with only a subset of items in a field, you can filter the field before you add it to the table. If your data source is large, and particularly if the source is external, you can save some time by filtering in advance. (You can also filter fields after you have created the table, of course.) To filter a field before you add it to the table, select the field name in the PivotTable Field List window, and then click the arrow on the right. For more details, see "Filtering PivotTable Fields" on page 793.

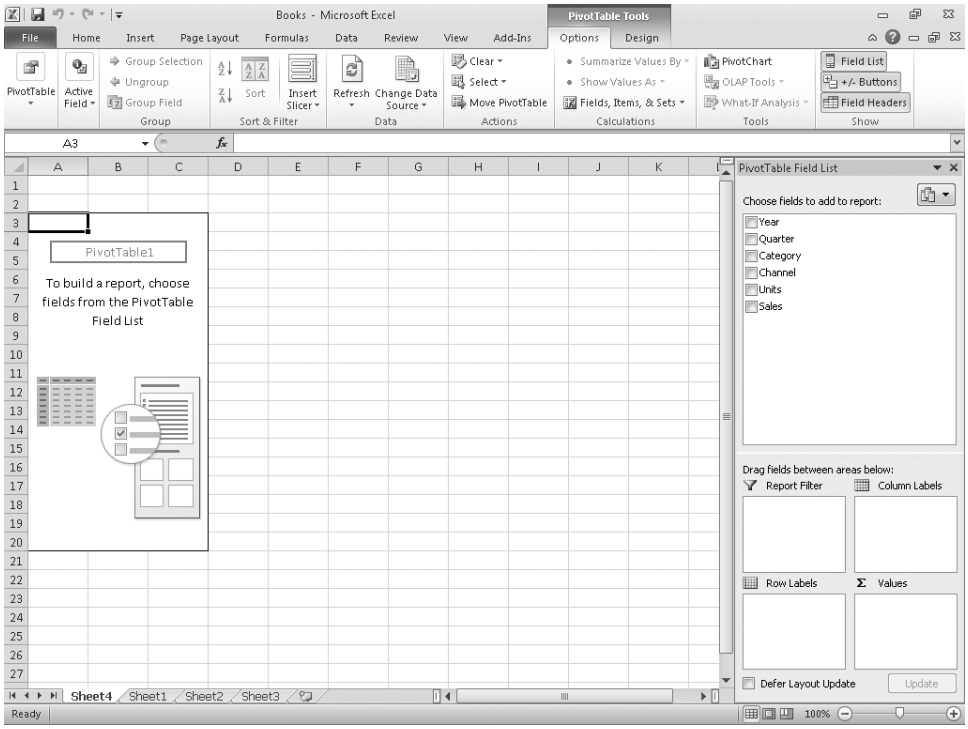


Figure 23-5 As you select the check boxes for fields in the PivotTable Field List window, Excel populates the table layout at the left side of the worksheet.

To put some fields and data on that blank layout, begin by selecting the check boxes for those fields in the Choose Fields To Add To Report area of the PivotTable Field List window. As you select fields, Excel positions them in the four boxes at the bottom of the window. These four boxes represent the various components of the table. The Row Labels and Column Labels boxes hold the fields that appear on the row and column axes. The Report Filter box holds the field (or fields) you want to use to filter the table (comparable to the Category field in Figure 23-4), and the Values box holds the field (or fields) you want to use for calculations—the data you're summarizing (your sales, for example).

Initially, Excel puts selected fields in default table locations that depend on their data types. Most likely you'll want some arrangement other than the one you get by default. That's not a problem, because you can move fields from one location to another easily; just drag them between the various boxes at the bottom of the PivotTable Field List window. Let's look at an example.

To create the table shown in Figure 23-3, we want to put the Category and Channel fields in the Row Labels box, the Year and Quarter fields in the Column Labels box, and the Sales field in the Values box. When we select the check boxes for those fields, Excel drops the

Category and Channel fields in the Row Labels box (because they are text fields) and the Sales field in the Values box (because it's a numeric field). These are all good guesses on the part of Excel—and, in fact, it's just what we want. In addition to putting field headings in the appropriate boxes, Excel begins creating our PivotTable—as Figure 23-6 shows.

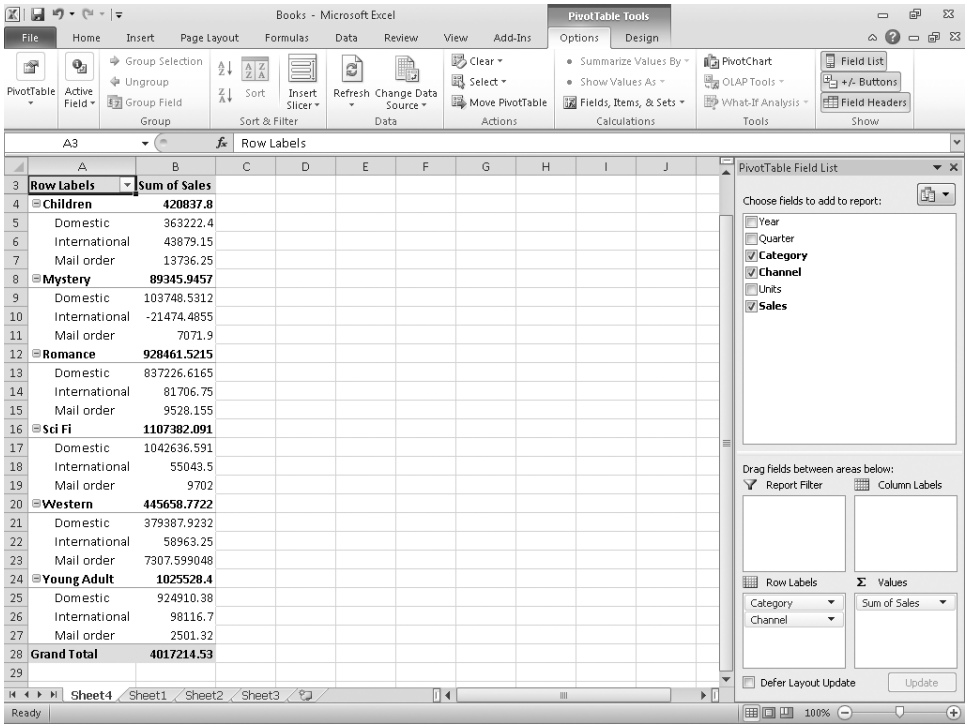


Figure 23-6 Excel builds the table, piece by piece, as you select fields.

So far, so good. The numeric formats aren't right, but we can fix that easily enough.

What remains is to put the Year and Quarter fields into the Column Labels box. Unfortunately, if we simply select their check boxes, Excel drops these fields in the Values box because the fields are numbers and the program has a predilection for adding numbers. This (see Figure 23-7) is definitely not what we want.

The solution is simple: Select the check boxes for the Year and Quarter fields, and then drag the Sum of Quarter and Sum of Year headings from the Values box to the Column Labels box. (Alternatively, you can make sure your field headings go where you want them by dragging them directly from the Choose Fields To Add To Report box to the appropriate boxes below, disregarding the defaults.)

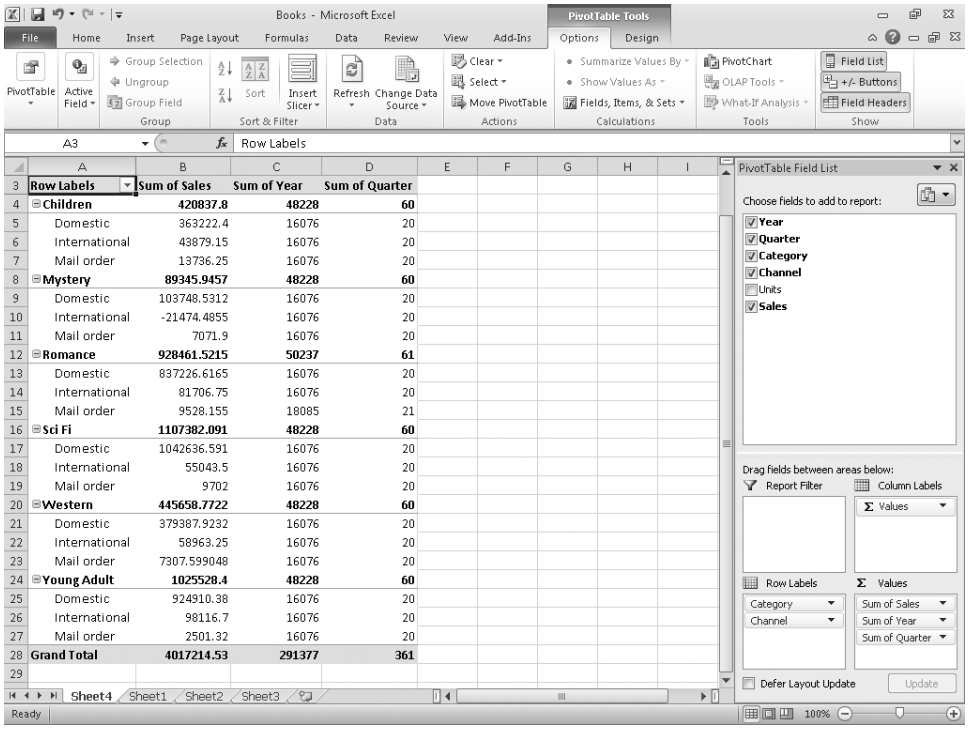
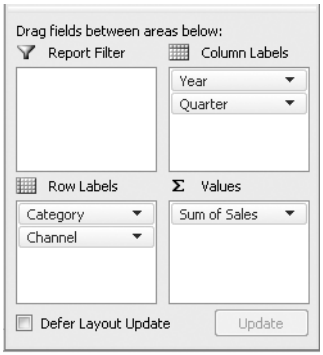


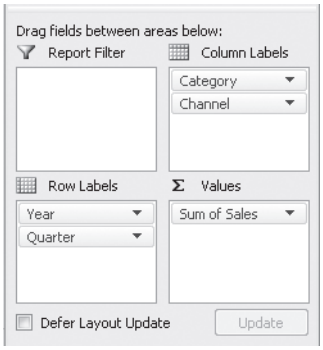
Figure 23-7 By default, Excel puts all numeric fields, including years and quarters, in the Values box. You can fix that by dragging field headings to the appropriate locations.

Rearranging PivotTable Fields

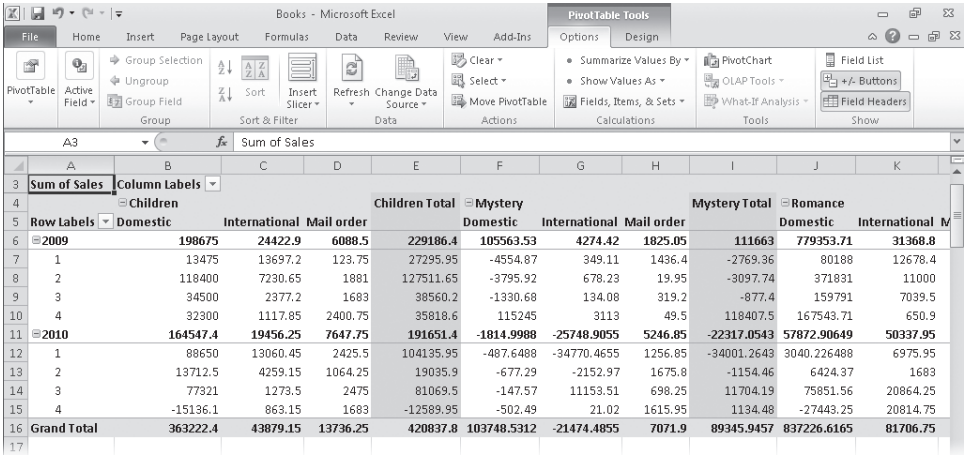
To pivot, or rearrange, a PivotTable, drag one or more field headings from one part of the PivotTable Field List window to another. For example, by using the mouse to change this configuration of the PivotTable Field List window:



to this one:



we can change the table from the form shown in Figure 23-3 to this:



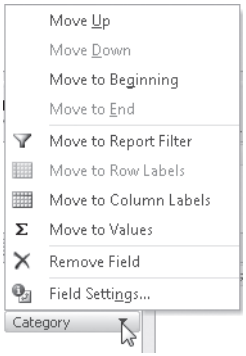
Sum of Sales	Column Labels									
	Children			Children Total	Mystery			Mystery Total	Romance	
Row Labels	Domestic	International	Mail order		Domestic	International	Mail order		Domestic	International
2009	198675	24422.9	6088.5	229186.4	105563.53	4274.42	1825.05	111663	779353.71	31368.8
1	13475	13697.2	123.75	27295.95	-4554.87	349.11	1436.4	-2769.36	80188	12678.4
2	118400	7230.65	1881	127511.65	-3795.92	678.23	19.95	-3097.74	371831	11000
3	34500	2377.2	1683	38560.2	-1330.68	134.08	319.2	-877.4	159791	7039.5
4	32300	1117.85	2400.75	35818.6	115245	3113	49.5	118407.5	167543.71	650.9
2010	164547.4	19456.25	7647.75	191651.4	-1814.9988	-25748.9055	5246.85	-22317.0543	57872.90649	50337.95
1	88650	13060.45	2425.5	104135.95	-487.6488	-34770.4655	1256.85	-34001.2643	3040.226488	6975.95
2	13712.5	4259.15	1064.25	19035.9	-677.29	-2152.97	1675.8	-1154.46	6424.37	1683
3	77321	1273.5	2475	81069.5	-147.57	11153.51	698.25	11704.19	75851.56	20864.25
4	-15136.1	863.15	1683	-12589.95	-502.49	21.02	1615.95	1134.48	-27443.25	20814.75
Grand Total	363222.4	43879.15	13736.25	420837.8	103748.5312	-21474.4855	7071.9	89345.9457	837226.6165	81706.75

Note

If you don't see the PivotTable Field List window, select a cell in the PivotTable. (The window disappears when your selection is not within the table.) If you still don't see it, click the Options tab under PivotTable Tools on the ribbon, and then click Field List. This button is a handy way to toggle the field list in and out of view, letting you reduce distraction when you don't need to do any field rearrangement.

To rearrange fields within the same axis—for example, to put Year before Quarter or Channel before Category in Figure 23-3, you can drag field headings from one place to another within the same area of the PivotTable Field List window. Often it's simpler to click the arrow

to the right of the field heading you want to move. (For example, you might click the arrow to the right of Category in the Row Labels box.) The menu that appears includes easy-to-use positioning commands:



INSIDE OUT

Pivot Your Tables the Excel 2003 Way If You Prefer

Earlier versions of Excel let you move fields around by dragging them directly on the table, instead of requiring you to work with the PivotTable Field List window. If you prefer that way of working, right-click any cell in the PivotTable, and click PivotTable Options. In the PivotTable Options dialog box, click the Display tab. Then select the Classic PivotTable Layout (Enables Dragging Of Fields In The Grid) check box. Note, however, that this option also changes the appearance of your table from the compact, outline-style presentation of Excel 2010 to the more space-consuming, tabular style of earlier versions. See "Choosing Report Layout Options" on the next page.

Refreshing a PivotTable

Because users often generate PivotTables from large volumes of data (and in many cases that data resides on external servers), Excel doesn't automatically update PivotTables when their source data changes. To refresh a PivotTable, right-click any cell within it, and click Refresh. Alternatively, under PivotTable Tools, click the Options tab, and then click Refresh in the Data group. If you prefer keyboard shortcuts, press Alt+F5.

To ensure that your PivotTable is up to date whenever you open the file, right-click any cell in the table, choose PivotTable Options from the shortcut menu, and click the Data tab in the PivotTable Options dialog box. Select the Refresh Data When Opening The File check box, and then click OK.

Changing the Numeric Format of PivotTable Data

As Figure 23-6 shows, Excel initially displays numeric PivotTable data in the General format, regardless of how it's formatted in your source range. To fix that, right-click a cell in the field you want to change, and then click Number Format.

Choosing Report Layout Options

In Excel 2010, PivotTables by default use a more compact presentation style than some earlier versions used. This default layout (called Compact) indents inner fields on the row axis beneath their outer fields, letting you see more information at a glance. If you prefer, you can select from two alternative layouts, called Outline and Tabular. To switch from one layout to another, select a cell within the table, click the Design tab under PivotTable Tools, click Report Layout in the Layout group, and then click one of the displayed layouts (Show In Compact Form, Show In Outline Form, or Show In Tabular Form). Figure 23-8 compares the three layout options.

	A	B	C	D
3	Sum of Sales	Column Labels		
4		2009		
5	Row Labels	1	2	3
6	Children	27296	127512	38560
7	Domestic	13475	118400	34500
8	International	13697	7231	2377
9	Mail order	124	1881	1683
10	Mystery	-2769	-3098	-877
11	Domestic	-4555	-3796	-1331
12	International			
13	Mail order			

	A	B	C	D
3	Sum of Sales		Year	Quarter
4			2009	
5	Category	Channel	1	2
6	Children		27296	127512
7		Domestic	13475	118400
8		International	13697	7231
9		Mail order	124	1881
10	Mystery		-2769	-3098
11		Domestic	-4555	-3796
12		International		
13		Mail order		

	A	B	C	D
3	Sum of Sales		Year	Quarter
4			2009	
5	Category	Channel	1	2
6	Children	Domestic	13475	118400
7		International	13697	7231
8		Mail order	124	1881
9	Children Total		27296	127512
10	Mystery	Domestic	-4555	-3796
11		International	349	678
12		Mail order	1436	20

Figure 23-8 Excel offers three PivotTable layout options: Compact (left), Outline (center), and Tabular (right).

Note that the layout options affect the row axis only. For example, the outline form simply indents the distribution channels below each category of book.

Formatting a PivotTable

The Design tab that appears on the ribbon under PivotTable Tools when you select any part of a PivotTable includes a large selection of professionally designed PivotTable styles. These work just like—and, in fact, are similar to—the styles available with ordinary tables. By choosing from the PivotTable Styles gallery, you can ensure that your PivotTable looks good and uses colors consistent with the rest of your workbook. You can customize the built-in style choices by selecting or clearing the check boxes in the PivotTable Style Options group, and you can add your own designs by clicking New PivotTable Style at the bottom of the PivotTable Styles gallery. To display the PivotTable Styles gallery, click the More button at the bottom of the scroll bar. (This button is a small arrow with a line above it.) For more information about using and customizing built-in styles, see "Formatting Tables" on page 770.

Customizing the Display of Empty or Error Cells

Empty cells in a PivotTable are usually displayed as empty cells. If you prefer, you can have your PivotTable display something else—a text value such as NA, perhaps—in cells that would otherwise be empty. To do this, right-click any cell in the PivotTable, and click PivotTable Options. On the Layout & Format tab in the PivotTable Options dialog box, select the For Empty Cells Show check box, and in the text box type the text or value that you want to see.

If a worksheet formula references a cell containing an error value, that formula returns the same error value. This is usually true in PivotTables as well. Error values in your source data propagate themselves into the PivotTable. If you prefer, you can have error values generate blank cells or text values. To customize this aspect of PivotTable behavior, right-click any cell in the PivotTable, and click PivotTable Options. On the Layout & Format tab in the PivotTable Options dialog box, select the For Error Values Show check box. Then, in the text box, type what you want to see.

Merging and Centering Field Labels

When you have two or more fields stacked either on the column axis or on the row axis of a PivotTable, centering the outer labels over the inner ones can sometimes improve the table's readability. Just right-click a PivotTable cell, click PivotTable Options, and then select

the Merge And Center Cells With Labels check box on the Layout & Format tab in the PivotTable Options dialog box. With this option, you can change this kind of presentation:

	2009				2009 Total	2010			
Row Labels	1	2	3	4		1	2	3	4

to this:

	2009				2009 Total	2010			
Row Labels	1	2	3	4		1	2	3	4

Hiding Outline Controls

You'll probably find outline controls useful in some contexts and not in others. They're great when you have large or complex PivotTables and you want to be able to switch quickly from a details view to an overview. But if you find that they clutter the picture instead of enhance it, you can banish them easily: Select a PivotTable cell, click the Options tab under PivotTable Tools, and then click +/– Buttons in the Show group.

> **Note**
>
> **With outline controls suppressed, you can still expand and collapse field headings. Select a heading in the field you're interested in, click the Options tab under PivotTable Tools on the ribbon, and then click Expand Entire Field or Collapse Entire Field in the Active Field group.**

Hiding *Row Labels* and *Column Labels*

The headings *Row Labels* and *Column Labels* that Excel displays near the upper-left corner of your PivotTable may prove distracting at times. You can suppress them by selecting a PivotTable cell, clicking the Options tab under PivotTable Tools, and then clicking Field Headers in the Show group. Note, however, that removing these labels also removes their associated filter controls—and you might want those controls from time to time. (See "Filtering PivotTable Fields" on page 793.) The Field Headers command is a toggle. Click it again to restore the headings—and the filter controls.

> **Note**
>
> **You can change the name of a PivotTable field or an item within a field by selecting any occurrence of it and typing the name you want. When you change one occurrence, all occurrences in the table change.**

Displaying Totals and Subtotals

By default, Excel generates grand totals for all outer fields in your PivotTable by using the same summary function as the body of the table. In Figure 23-3, for example, row 30 displays grand totals for each quarter of each year, as well as for the years themselves. Column L, meanwhile, displays per-category totals by channel. The intersection of column L and row 30 displays the grandest of totals, the sum of all sales for the period covered by the table. Because the body of the table uses the SUM function, all these grand totals use that function as well.

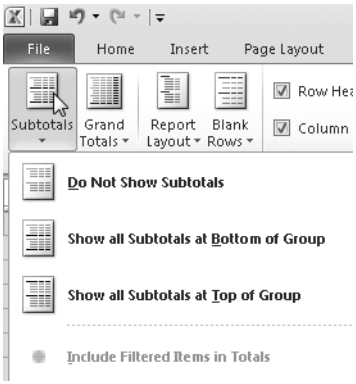
To remove grand totals from a PivotTable, right-click any cell in the table, and click PivotTable Options. On the Totals & Filters tab in the PivotTable Options dialog box, clear the Show Grand Totals For Rows check box, the Show Grand Totals For Columns check box, or both check boxes.

Naturally, PivotTables are not restricted to calculating sums. For other calculation options, see "Changing PivotTable Calculations" on page 800.

Customizing Subtotals

By default, Excel creates subtotals for all but the innermost fields. For example, in Figure 23-3, cell B6 displays the sum of cells B7:B9 (the Children subtotal for Quarter 1 of 2009), cell C10 displays the sum of cells C11:C13 (the Mystery subtotal for Quarter 2 of 2009), and so on. Columns F and K display yearly subtotals. The innermost fields, Channel (for the row axis) and Quarter (for the column axis), do not have subtotals.

To find options affecting all subtotals, select a cell in the PivotTable, click the Design tab under PivotTable Tools, and then click Subtotals on the left edge of the ribbon:



You can use this menu to turn subtotaling off altogether or to move row-axis subtotals from their default position above the detail items to a position below.

To customize subtotals for a particular field, right-click an item in the field, and then click Field Options. (Alternatively, select an item in the field, click the Options tab under PivotTable Tools, and then click Field Settings in the Active Field group.) Figure 23-9 shows the Field Settings dialog box for the Category field in our PivotTable example.

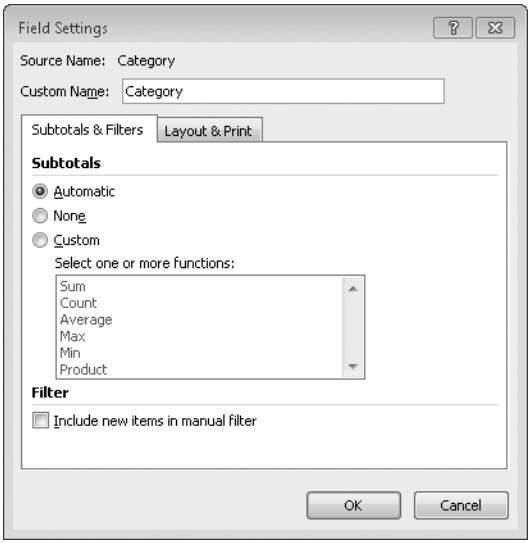


Figure 23-9 In the Field Settings dialog box, you can override the default subtotaling behavior for a particular field.

The Automatic option on the Subtotals & Filters tab in this dialog box means—as Automatic means throughout Excel—that you're letting the program decide what to do. In other words, this option gives you the default behavior. You can turn off subtotals for the selected field by selecting None. Selecting Custom lets you change the default subtotal calculation, such as from Sum to Average. And, as the text above the function list suggests, you're not limited to one function. You can select as many as you need by holding down Ctrl while you click. Figure 23-10 shows a PivotTable with four subtotaling calculations applied to the Category field. (Note that when you have multiple subtotals for a field, Excel moves them below the detail.)

By using the Field Settings dialog box, you can also generate subtotals for innermost fields—subtotals that Excel usually does not display. Such inner subtotals appear at the bottom of the table (just above the grand total row) or at the right side of the table (just to the left of the grand total column). Figure 23-11 shows an example of inner-field subtotaling.

	A	B	C	D	E	F	G	H	I	J	K	L
3	Sum of Sales	Column Labels										
4		2009				2009 Total	2010				2010 Total	Grand Total
5	Row Labels	1	2	3	4		1	2	3	4		
6	Children											
7	Domestic	13475	118400	34500	32300	198675	88650	13713	77321	-15136	164547	363222
8	International	13697	7231	2377	1118	24423	13060	4259	1274	863	19456	43879
9	Mail order	124	1881	1683	2401	6089	2426	1064	2475	1683	7648	13736
10	Children Sum	27296	127512	38560	35819	229186	104136	19036	81070	-12590	191651	420838
11	Children Average	9099	42504	12853	11940	19099	34712	6345	27023	-4197	15971	17535
12	Children Max	13697	118400	34500	32300	118400	88650	13713	77321	1683	88650	118400
13	Children Min	124	1881	1683	1118	124	2426	1064	1274	-15136	-15136	-15136
14	Mystery											
15	Domestic	-4555	-3796	-1331	115245	105564	-488	-677	-148	-502	-1815	103749
16	International	349	678	134	3113	4274	-34770	-2153	11154	21	-25749	-21474
17	Mail order	1436	20	319	50	1825	1257	1676	698	1616	5247	7072
18	Mystery Sum	-2769	-3098	-877	118408	111663	-34001	-1154	11704	1134	-22317	89346
19	Mystery Average	-923	-1033	-292	39469	9305	-11334	-385	3901	378	-1860	3723
20	Mystery Max	1436	678	319	115245	115245	1257	1676	11154	1616	11154	115245
21	Mystery Min	-4555	-3796	-1331	50	-4555	-34770	-2153	-148	-502	-34770	-34770
22	Romance											
23	Domestic	80188	371831	159791	167544	779354	3040	6424	75852	-27443	57873	837227
24	International	12678	11000	7040	651	31369	6976	1683	20864	20815	50338	81707
25	Mail order	3005	1188	1955	1850	7999	293	117	510	608	1530	9528
26	Romance Sum	95871	384019	168786	170045	818721	10310	8225	97226	-6020	109740	928462
27	Romance Average	23968	128006	56262	56682	62979	3437	2742	32409	-2007	9145	37138
28	Romance Max	80188	371831	159791	167544	371831	6976	6424	75852	20815	75852	371831
29	Romance Min	703	1188	1955	651	651	293	117	510	-27443	-27443	-27443

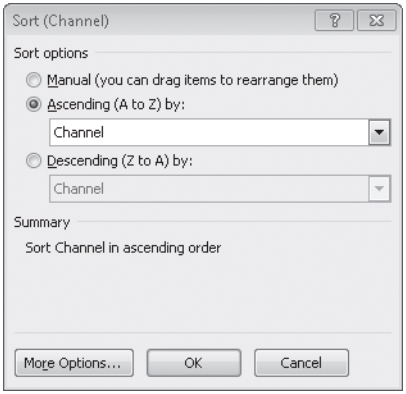
Figure 23-10 You can generate subtotals using more than one summary function; this table uses four for the Category field.

	A	B	C	D	E	F	G	H	I	J	K	L
4		2009				2009 Total	2010				2010 Total	Grand Total
5	Row Labels	1	2	3	4		1	2	3	4		
6	Children	27296	127512	38560	35819	229186	104136	19036	81070	-12590	191651	420838
7	Domestic	13475	118400	34500	32300	198675	88650	13713	77321	-15136	164547	363222
8	International	13697	7231	2377	1118	24423	13060	4259	1274	863	19456	43879
9	Mail order	124	1881	1683	2401	6089	2426	1064	2475	1683	7648	13736
10	Mystery	-2769	-3098	-877	118408	111663	-34001	-1154	11704	1134	-22317	89346
11	Domestic	-4555	-3796	-1331	115245	105564	-488	-677	-148	-502	-1815	103749
12	International	349	678	134	3113	4274	-34770	-2153	11154	21	-25749	-21474
13	Mail order	1436	20	319	50	1825	1257	1676	698	1616	5247	7072
14	Romance	95871	384019	168786	170045	818721	10310	8225	97226	-6020	109740	928462
15	Domestic	80188	371831	159791	167544	779354	3040	6424	75852	-27443	57873	837227
16	International	12678	11000	7040	651	31369	6976	1683	20864	20815	50338	81707
17	Mail order	3005	1188	1955	1850	7999	293	117	510	608	1530	9528
18	Sci Fi	90560	50708	32761	13948	187977	317670	83354	317403	200977	919405	1107382
19	Domestic	77600	40750	23950	1925	144225	310755	81264	308188	198205	898412	1042637
20	International	10485	9636	7202	10414	37738	5802	1571	8547	1387	17305	55044
21	Mail order	2475	322	1609	1609	6014	1114	520	668	1386	3688	9702
22	Western	154320	121461	95300	98612	469692	-45293	-19679	64900	-23962	-24034	445659
23	Domestic	140909	109931	93317	97381	441538	-48616	-30774	45443	-28204	-62150	379388
24	International	12050	10217	1073	472	23812	3206	10873	19181	1891	35151	58963
25	Mail order	1361	1312	910	758	4342	117	223	275	2351	2966	7308
26	Young Adult	96220	29004	51030	135710	311964	92810	232973	275384	112398	713565	1025528
27	Domestic	80663	17588	32213	113863	244325	85088	224169	268213	103116	680585	924910
28	International	15345	11162	18761	21805	67073	7500	8462	6500	8583	31044	98117
29	Mail order	212	255	57	42	566	223	342	671	699	1935	2501
30	Domestic Sum	388280	654704	342440	528257	1913681	438429	294118	774869	230035	1737452	3651132
31	International Sum	64605	49925	36587	37573	188689	1773	24694	67519	33560	127546	316235
32	Mail order Sum	8614	4978	6532	6710	26834	5429	3942	5298	8344	23013	49847
33	Grand Total	461498	709606	385559	572540	2129204	445631	322755	847686	271939	1888011	4017215

Figure 23-11 Subtotals for Channel, an inner field, appear in rows 30–32 of this table.

Sorting PivotTable Fields

You can sort a PivotTable field either by its own items (for example, alphabetizing the categories in Figure 23-11) or on the basis of values in the body of the table (for example, sorting categories in descending order of sales totals so that the best-selling categories appear at the top). To sort a field, right-click any item in that field, and then click Sort. On the menu that appears, you can specify how you want to sort (for example A to Z or Z to A in the case of a text column). If you want to sort the field by values in the body of the table, click More Sort Options. You'll see a dialog box similar to the one shown here (with the name of the field you selected in the title of the dialog box).



To sort by values in the table body instead of by items in the selected field, open the Ascending or Descending list. The list will include the available value fields.

Note

To ensure that Excel retains your sort specification when you update your PivotTable, click More Options in the dialog box shown above. Then select Sort Automatically Every Time The Report Is Updated.

Filtering PivotTable Fields

Filtering a field lets you focus your table on a subset of items in that field. You can filter on the basis of the field's own content (only the Children and Young Adult categories, for example) or on the basis of values associated with the field (for example, the three categories with the best overall sales). You can apply filters in a variety of ways—one of which is new in Excel 2010.

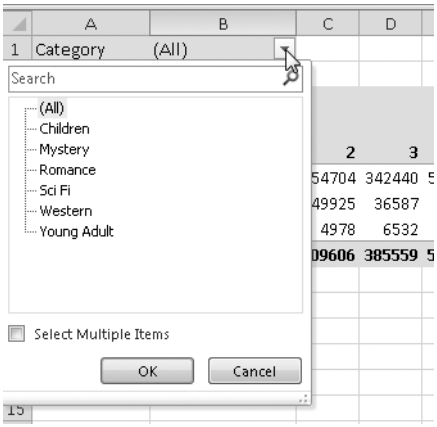
Filtering with the Report Filter Axis

Figure 23-4, on page 779, shows a PivotTable in which one field, Category, appears on the Report Filter Axis. To create this table, we simply dragged the Category field from the PivotTable Field List to the Report Filter area below the field list. With the table arranged in this manner, we can focus on one category at a time.

When you put a field heading in the Report Filter area, the table initially aggregates all values of the field and displays the heading (All) next to the field name—like this:

	A	B	C	D
1	Category	(All)		
2				
3	**Sum of Sales**	**Column Labels**		
4		⊟**2009**		
5	**Row Labels**	**1**	**2**	**3**
6	Domestic	388280	654704	342440
7	International	64605	49925	36587
8	Mail order	8614	4978	6532
9	**Grand Total**	**461498**	**709606**	**385559**

To filter the report so that it shows a particular field value, click the drop-down arrow beside the field name, and select a value:



To select two or more field values, select the Select Multiple Items check box. Note, however, that if you filter on multiple field values, the indication beside the field name, above the table, does not tell you which values you're looking at. It simply says (Multiple Items):

	A	B	C	D
1	Category	(Multiple Items)		
2				
3	**Sum of Sales**	**Column Labels**		
4		**2009**		
5	**Row Labels**	**1**	**2**	**3**
6	Domestic	153233	408785	182410
7	International	23513	21314	14376
8	Mail order	6916	1530	3883
9	**Grand Total**	**183662**	**431629**	**200669**

Correcting this deficiency is one of the principal virtues of Excel's newest PivotTable feature, the slicer.

Filtering with Slicers

A slicer is an independently movable and formattable window containing buttons for each item in a field. You can use the buttons to filter your PivotTable. Figure 23-12 presents an example. Here, we selected three members of the Category field—Children, Romance, and Young Adult. Because these field items appear in a contrasting color in the slicer, you can see at a glance how the table has been filtered.

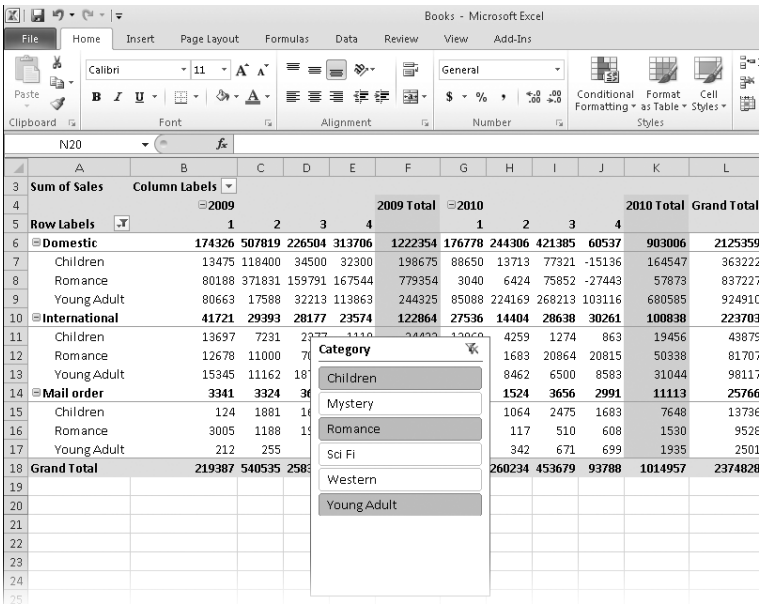


Figure 23-12 A slicer makes it easy to see how the table has been filtered.

To use a slicer, select any cell in your PivotTable, click Insert Slicer in the Sort & Filter group on the PivotTable Tools Options tab, and then click Insert Slicer. The Insert Slicers dialog box presents a check box for each field in your table. Select a field, and then click OK. You can select multiple fields to create more than one slicer. Figure 23-13 shows a table filtered by two slicers.

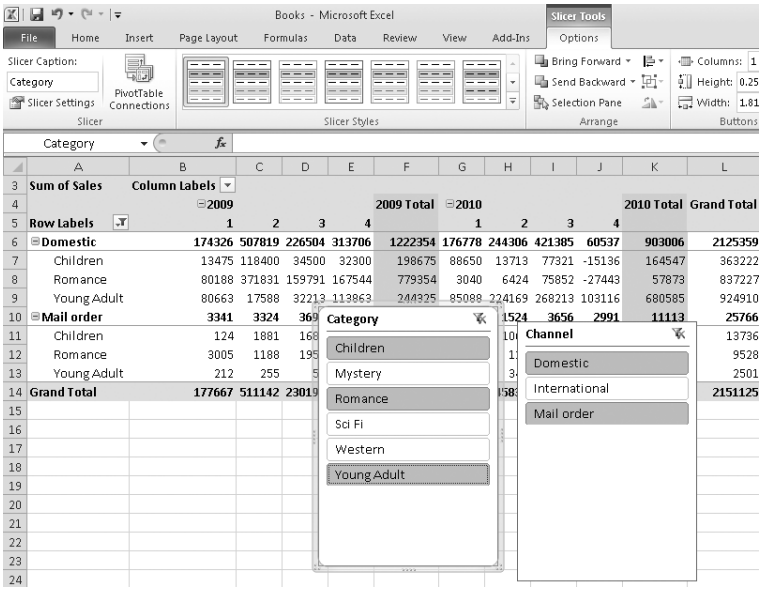
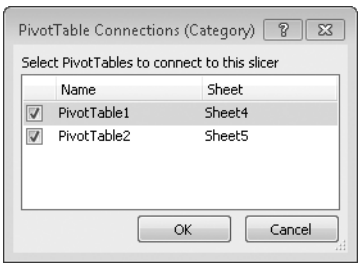


Figure 23-13 You can use multiple slicers to filter in more complex ways.

Connecting a Slicer to Multiple PivotTables

A single slicer can slice many tables. If you create multiple PivotTables to show a common set of data in different perspectives, you might find it convenient to set up slicers that are linked to all the related tables. To connect an existing slicer to another PivotTable, select the slicer. Then click PivotTable Connections in the Slicer group on the Slicer Tools Options tab. The PivotTable Connections dialog box displays the name of the selected slicer and a check box for each available PivotTable, as shown here.



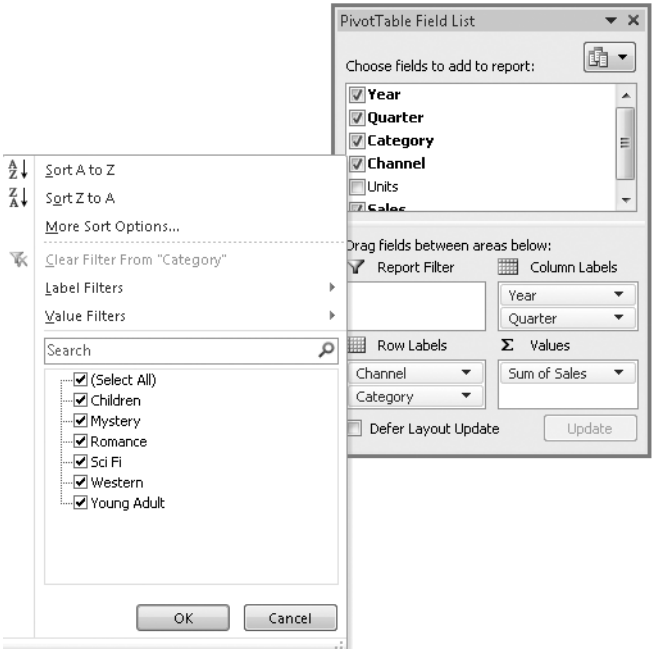
Select the tables you want to slice, and click OK.

Formatting Slicers

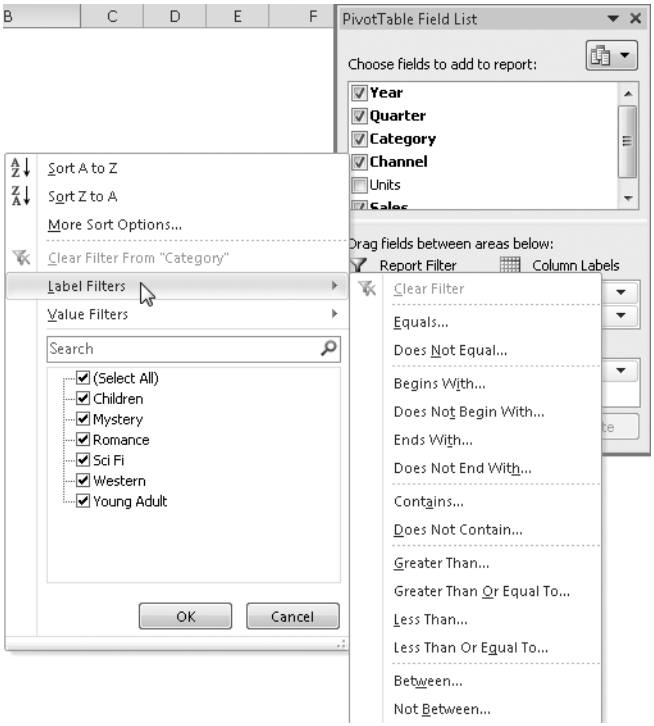
You can style your slicers by using the same techniques you use to style a PivotTable or an ordinary table. Select a slicer, click the Slicer Tools Options tab, and then take your pick of styles from the Slicer Styles gallery. As with styles elsewhere in Excel, the available choices are keyed to your current workbook theme, so your slicer uses colors that are consistent with the rest of your workbook. For more information about using and customizing built-in styles, see "Formatting Tables" on page 770.

Filtering in the Field List Window

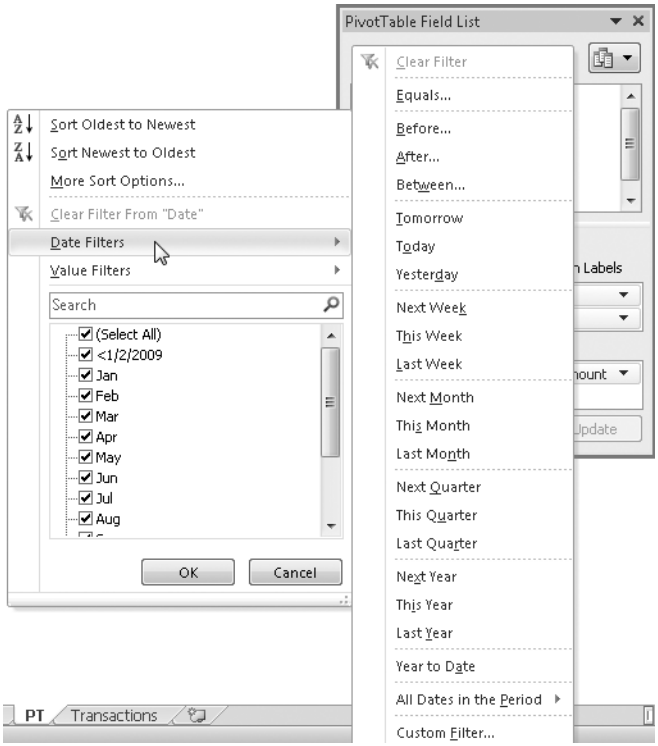
If you're working with a large external data source and you need only a subset of the data, you can save yourself some time by setting up a filter in the PivotTable Field List window before you execute the query and create your PivotTable. To filter in the PivotTable Field List window, select the heading for the field you want to filter, and then click the arrow to the right of the field heading. The dialog box that appears includes check boxes for each unique item in the selected field:



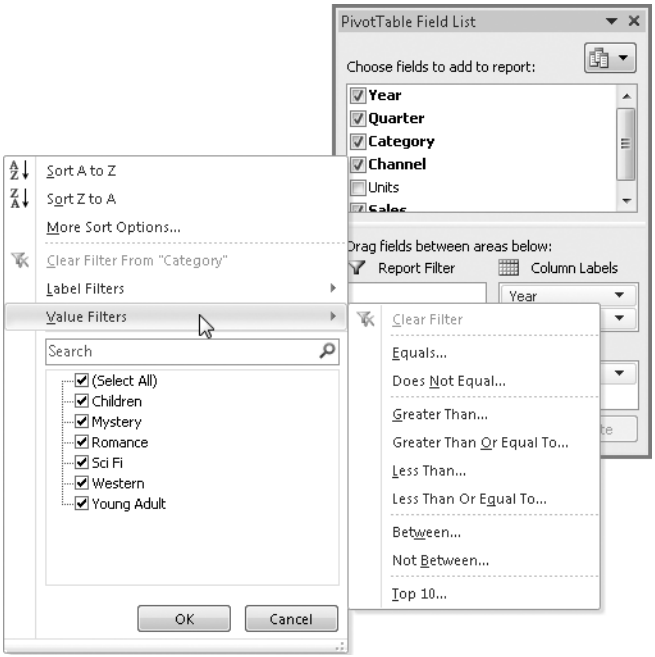
You can use the check boxes to select one or more particular items in your selected field. If your field is more complex than the example here, you might want to click Label Filters, in response to which Excel presents many additional filtering options:



The options that appear on this menu are tailored for the data type of the selected field. If your field holds dates instead of text, for example, you see these options:

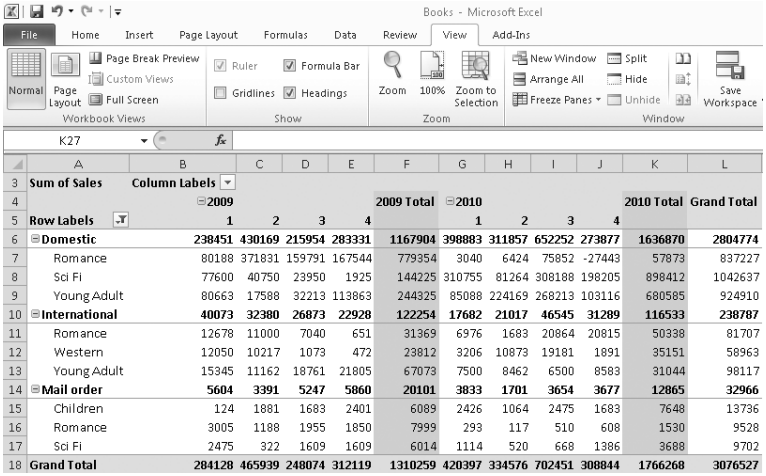


To filter a field on the basis of values associated with that field, click the arrow next to the field heading in the PivotTable Field List window, and then click Value Filters on the menu that appears. For example, to filter the PivotTable in Figure 23-3 so that it shows only the three categories with the highest total sales, click the arrow beside Category, and then click Value Filters to see the following menu.



Then click Top 10 to display the Top 10 Filter dialog box:

Replace the 10 with a 3, and then click OK. Figure 23-14 shows the result.



	A	B	C	D	E	F	G	H	I	J	K	L
3	Sum of Sales	Column Labels										
4		2009				2009 Total	2010				2010 Total	Grand Total
5	Row Labels	1	2	3	4		1	2	3	4		
6	Domestic	238451	430169	215954	283331	1167904	398883	311857	652252	273877	1636870	2804774
7	Romance	80188	371831	159791	167544	779354	3040	6424	75852	-27443	57873	837227
8	Sci Fi	77600	40750	23950	1925	144225	310755	81264	308188	198205	898412	1042637
9	Young Adult	80663	17588	32213	113863	244325	85088	224169	268213	103116	680585	924910
10	International	40073	32380	26873	22928	122254	17682	21017	46545	31289	116533	238787
11	Romance	12678	11000	7040	651	31369	6976	1683	20864	20815	50338	81707
12	Western	12050	10217	1073	472	23812	3206	10873	19181	1891	35151	58963
13	Young Adult	15345	11162	18761	21805	67073	7500	8462	6500	8583	31044	98117
14	Mail order	5604	3391	5247	5860	20101	3833	1701	3654	3677	12865	32966
15	Children	124	1881	1683	2401	6089	2426	1064	2475	1683	7648	13736
16	Romance	3005	1188	1955	1850	7999	293	117	510	608	1530	9528
17	Sci Fi	2475	322	1609	1609	6014	1114	520	668	1386	3688	9702
18	Grand Total	284128	465939	248074	312119	1310259	420397	334576	702451	308844	1766268	3076527

Figure 23-14 This table has been filtered to show only the three best-selling categories; the rankings are based on values in the Grand Total column.

Note that when you apply a value filter to a field, Excel bases its calculations on the current grand total associated with that field. If you wanted to see the three top-selling categories for the year 2009 (in the example shown in Figure 23-3), you would need to filter the Year field as well as the Category field.

Changing PivotTable Calculations

By default, Excel populates the Values area of your PivotTable by applying the SUM function to any numeric field you put there or by applying the COUNT function to any nonnumeric field. But you can choose from many alternative forms of calculation, and you can add your own calculated fields to the table.

Using a Different Summary Function

To switch to a different summary function, right-click any cell in the Values area of your PivotTable, and then click Value Field Settings. (Alternatively, click the Options tab under PivotTable Tools, and then click Field Settings in the Active Field group.) Excel displays the Value Field Settings dialog box, shown in Figure 23-15. Select the function you want from the Summarize Value Field By list, and then click OK.

Excel fills in the Custom Name line in this dialog box according to your selection in the Summarize Value Field By list. If you switch from SUM to AVERAGE, for example, the Custom Name line changes to include the word *Average*. You can type whatever you like there, though.

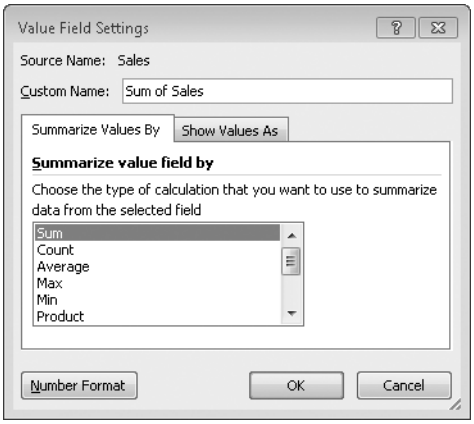


Figure 23-15 Using this dialog box, you can change the function applied to a field in the Values area of your PivotTable.

Applying Multiple Summary Functions to the Same Field

You can apply as many summary functions as you want to a value field. To use a second or subsequent function with a field that's already in the Values area of your PivotTable, drag another copy of the field from the PivotTable Field List window to the Values box. Then select a Values area cell, return to the Value Field Settings dialog box, and select the function you want to use. The available functions are SUM, COUNT, AVERAGE, MAX, MIN, PRODUCT, COUNT NUMBERS, STDDEV, STDDEVP, VAR, and VARP.

Using Custom Calculations

In addition to the standard summary functions enumerated in the previous paragraph, Excel offers a set of custom calculations. With these you can have each item in the Values area of your table report its value as a percentage of the total values in the same row or column, create running totals, or show each value as a percentage of some base value.

To apply a custom calculation, right-click a cell in the Values area, and then click Value Field Settings. Click the Show Values As tab in the Value Field Settings dialog box. Then select a calculation from the Show Values As list. Table 23-1 lists the available options.

When you select a calculation in the Show Values As list, the Base Field and Base Item boxes display choices that are relevant to your calculation. For example, as Figure 23-16 shows, if you select Difference From in our books example, the Base Field box displays Quarter, Category, Channel, and so on. If you select Quarter in this list, the Base Item box presents the four quarters, along with the self-explanatory items Previous and Next.

Table 23-1 Custom Calculation Options

Difference From	Displays data as a difference from a specified base field and base item
% Of	Displays data as a percentage of the value of a specified base field and base item
% Difference From	Displays data as a percentage difference from a specified base field and base item
Running Total In	Displays data as a running total
% Of Row	Displays each data item as a percentage of the total of the items in its row
% Of Total	Displays each data item as a percentage of the grand total of all items in its field
Index	Uses this formula: ((Value in cell) * Grand Total of Grand Totals)) / ((Grand Row Total) * (Grand Column Total))

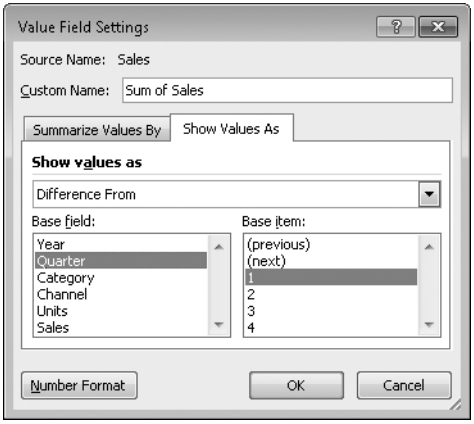
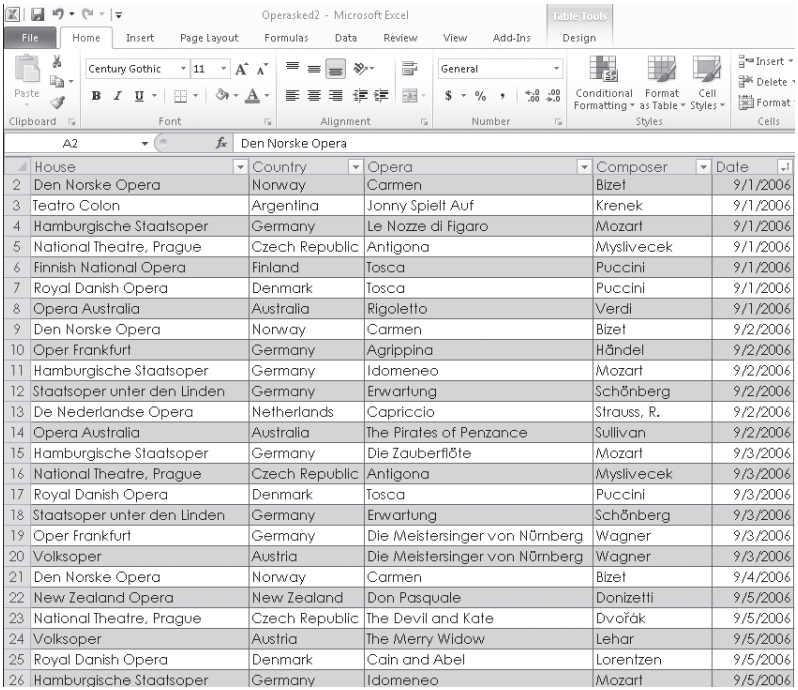


Figure 23-16 When you choose a calculation such as Difference From, the Base Field and Base Item boxes display relevant options.

Figure 23-17 and Figure 23-18 illustrate some ways you can modify default calculations and Values field names. The table in Figure 23-17 lists 2006–2007 performances at major opera houses around the world by theater, country, opera, composer, and performance date. The PivotTable in Figure 23-18 includes the Date field twice in the Values box. The default summary calculation for date data is Count, and that's fine because we want the number of performances, and counting dates is a way to get that. But we used the Custom Name box in the Value Field Settings dialog box (refer to Figure 23-15) to change the name from

Count of Date to No. of Performances. When we dragged the second instance of the Date field to the Values box, we used the Value Field Settings dialog box to make the field report the percentage of total. You could use similar techniques with other kinds of polling or survey applications.



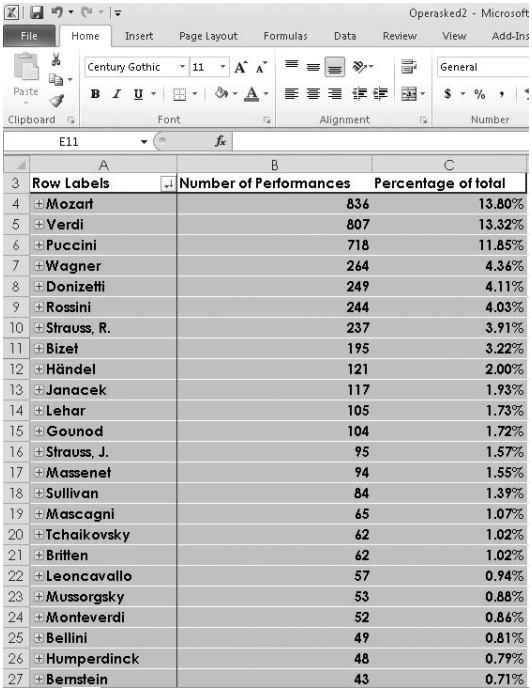
	House	Country	Opera	Composer	Date
2	Den Norske Opera	Norway	Carmen	Bizet	9/1/2006
3	Teatro Colon	Argentina	Jonny Spielt Auf	Krenek	9/1/2006
4	Hamburgische Staatsoper	Germany	Le Nozze di Figaro	Mozart	9/1/2006
5	National Theatre, Prague	Czech Republic	Antigona	Myslivecek	9/1/2006
6	Finnish National Opera	Finland	Tosca	Puccini	9/1/2006
7	Royal Danish Opera	Denmark	Tosca	Puccini	9/1/2006
8	Opera Australia	Australia	Rigoletto	Verdi	9/1/2006
9	Den Norske Opera	Norway	Carmen	Bizet	9/2/2006
10	Oper Frankfurt	Germany	Agrippina	Händel	9/2/2006
11	Hamburgische Staatsoper	Germany	Idomeneo	Mozart	9/2/2006
12	Staatsoper unter den Linden	Germany	Erwartung	Schönberg	9/2/2006
13	De Nederlandse Opera	Netherlands	Capriccio	Strauss, R.	9/2/2006
14	Opera Australia	Australia	The Pirates of Penzance	Sullivan	9/2/2006
15	Hamburgische Staatsoper	Germany	Die Zauberflöte	Mozart	9/3/2006
16	National Theatre, Prague	Czech Republic	Antigona	Myslivecek	9/3/2006
17	Royal Danish Opera	Denmark	Tosca	Puccini	9/3/2006
18	Staatsoper unter den Linden	Germany	Erwartung	Schönberg	9/3/2006
19	Oper Frankfurt	Germany	Die Meistersinger von Nürnberg	Wagner	9/3/2006
20	Volksoper	Austria	Die Meistersinger von Nürnberg	Wagner	9/3/2006
21	Den Norske Opera	Norway	Carmen	Bizet	9/4/2006
22	New Zealand Opera	New Zealand	Don Pasquale	Donizetti	9/5/2006
23	National Theatre, Prague	Czech Republic	The Devil and Kate	Dvořák	9/5/2006
24	Volksoper	Austria	The Merry Widow	Lehar	9/5/2006
25	Royal Danish Opera	Denmark	Cain and Abel	Lorentzen	9/5/2006
26	Hamburgische Staatsoper	Germany	Idomeneo	Mozart	9/5/2006

Figure 23-17 From this table, a PivotTable will apply the COUNT function to the Date field to count performances.

You'll find the OperaSked.xlsx file with the other examples on the companion Web site.

Note

If you filter a field, percentage-of-total calculations are based on the data that meets the filter criterion, not the unfiltered data set.



Row Labels	Number of Performances	Percentage of total
Mozart	836	13.80%
Verdi	807	13.32%
Puccini	718	11.85%
Wagner	264	4.36%
Donizetti	249	4.11%
Rossini	244	4.03%
Strauss, R.	237	3.91%
Bizet	195	3.22%
Händel	121	2.00%
Janacek	117	1.93%
Lehar	105	1.73%
Gounod	104	1.72%
Strauss, J.	95	1.57%
Massenet	94	1.55%
Sullivan	84	1.39%
Mascagni	65	1.07%
Tchaikovsky	62	1.02%
Britten	62	1.02%
Leoncavallo	57	0.94%
Mussorgsky	53	0.88%
Monteverdi	52	0.86%
Bellini	49	0.81%
Humperdinck	48	0.79%
Bernstein	43	0.71%

Figure 23-18 The PivotTable uses the Date field from Figure 23-17 twice—once to count performances and a second time to calculate percentage of total.

Using Calculated Fields and Items

In case custom calculations don't meet all your analytical needs, Excel lets you add calculated fields and calculated items to your PivotTables. A *calculated field* is a new field, derived from calculations performed on existing fields in your table. A *calculated item* is a new item in an existing field, derived from calculations performed on other items that are already in the field. After you create a custom field or item, Excel makes it available to your table as though it were part of your data source.

Custom fields and items can apply arithmetic operations to any data already in your PivotTable (including data generated by other custom fields or items), but they cannot reference worksheet data outside the PivotTable.

Creating a Calculated Field

To create a calculated field, select any cell in the PivotTable. Then click the Options tab under PivotTable Tools, and click Field, Items, & Sets in the Calculations group. On the Fields, Items, & Sets menu, click Calculated Field. Figure 23-19 shows the Insert Calculated Field dialog box.

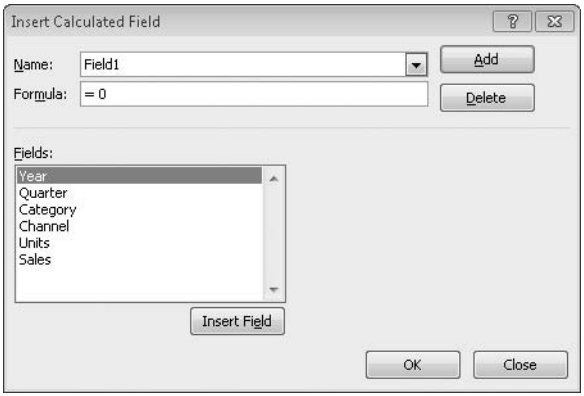


Figure 23-19 Create a calculated field in this dialog box.

Type a name for your calculated field in the Name box, and then type a formula in the Formula box. To enter a field in the formula, select it from the Fields list, and click Insert Field. Figure 23-20 shows an example of a calculated field.

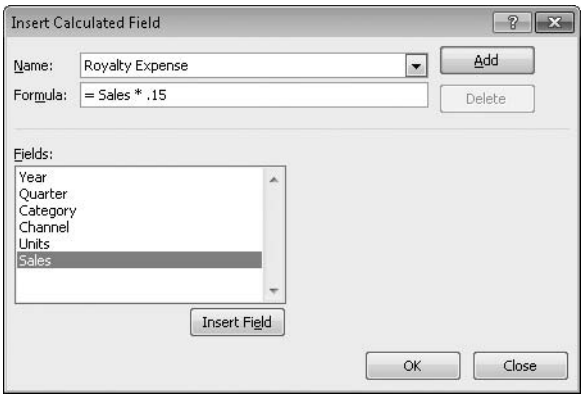


Figure 23-20 This calculated field multiplies an existing field by a constant.

Excel adds a new calculated field to your PivotTable when you click either Add or OK. You can then work with the new field using the same techniques you use to work with existing fields.

Creating a Calculated Item

To create a calculated item for a field, select any existing item in the field or the field heading. Then click the Options tab under PivotTable Tools, and click Fields, Items, & Sets in the Calculations group. On the Fields, Items, & Sets menu, click Calculated Item. Excel displays a dialog box comparable to the one in Figure 23-21.

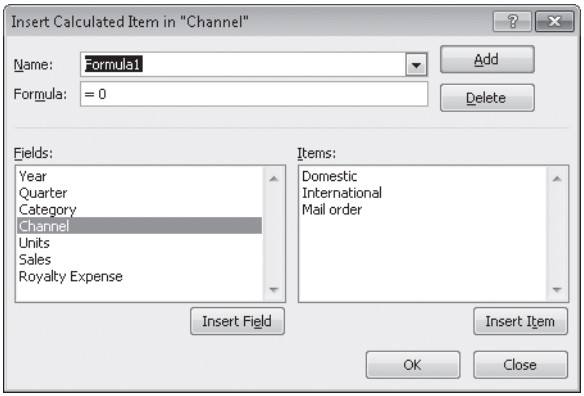


Figure 23-21 Use this dialog box to create a calculated item for a field.

To create a calculated item, type a unique name for the item in the Name box, and then enter a formula in the Formula box. You can select from the Fields and Items lists and click Insert Field and Insert Item to enter field and item names in the formula.

> **Note**
>
> **You cannot create calculated items in fields that have custom subtotals.**

Figure 23-22 shows an example of a calculated item. In this case the new item represents domestic sales divided by the sum of international and mail order sales.

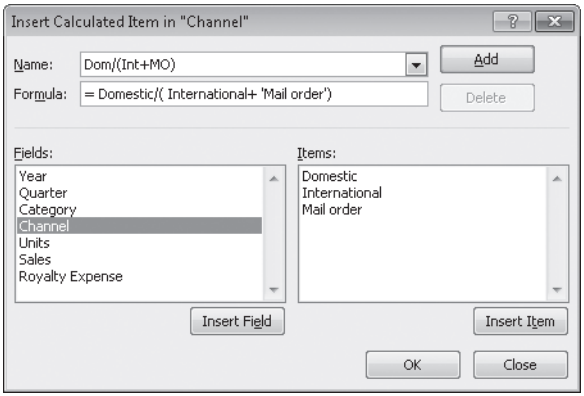


Figure 23-22 This calculated item appears by default whenever you include the Channel field in the PivotTable.

> **Note**
> **You cannot create a calculated field or a calculated item in a PivotTable based on OLAP source data.**

Displaying a List of Calculated Fields and Items

To display a list of your calculated fields and items, along with their formulas, click the Options tab under PivotTable Tools, and then click Fields, Items, & Sets in the Calculations group. On the Fields, Items, & Sets menu, click List Formulas. Excel displays the list on a new worksheet, as shown in Figure 23-23.

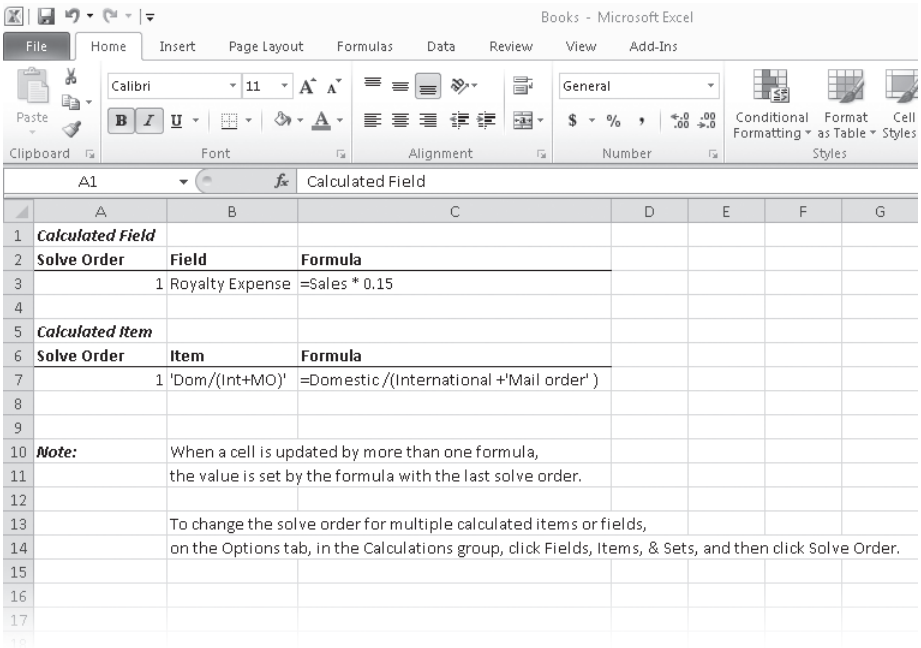


Figure 23-23 Excel lists calculated fields and items on a new worksheet

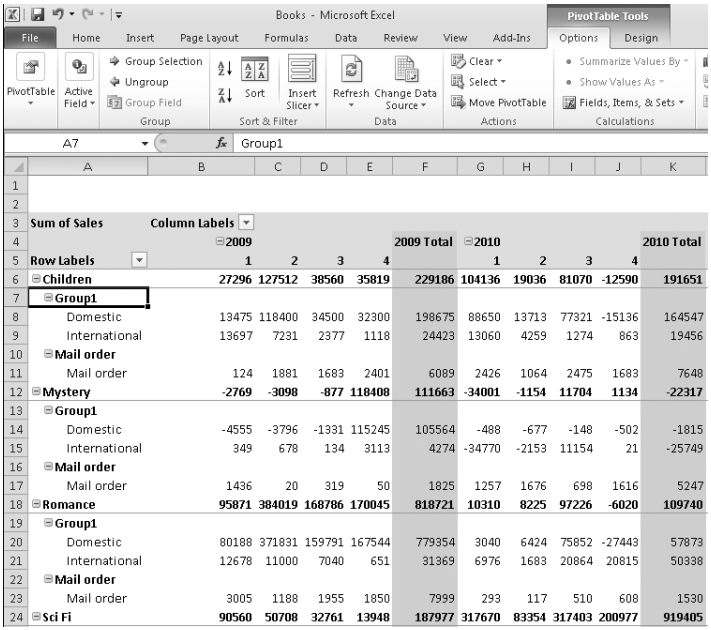
As the note in Figure 23-23 indicates, you need to be careful when a cell in your table is affected by more than one calculated field or item. In such cases, the value is set by the formula that's executed last. The Solve Order information in the list of calculated fields and items tells you which formula that is. If you need to change the solve order, select the worksheet that contains the PivotTable, click the Options tab under PivotTable Tools, and then click Fields, Items, & Sets in the Calculations group. Then click Solve Order.

Grouping and Ungrouping Data

PivotTables group inner field items under each outer field heading and, if requested, create subtotals for each group of inner field items. You might find it convenient to group items in additional ways—for example, to collect monthly items into quarterly groups or sets of numbers into larger numeric categories. Excel provides several options for grouping items.

Creating Ad Hoc Item Groupings

Suppose that after looking at Figure 23-3 you decide you'd like to see the domestic and international sales figures grouped into a category called Retail. To create this group, select the Domestic and International items anywhere in the table. Then click the Options tab under PivotTable Tools, and click Group Selection in the Group group. Excel creates a new heading called Group1:

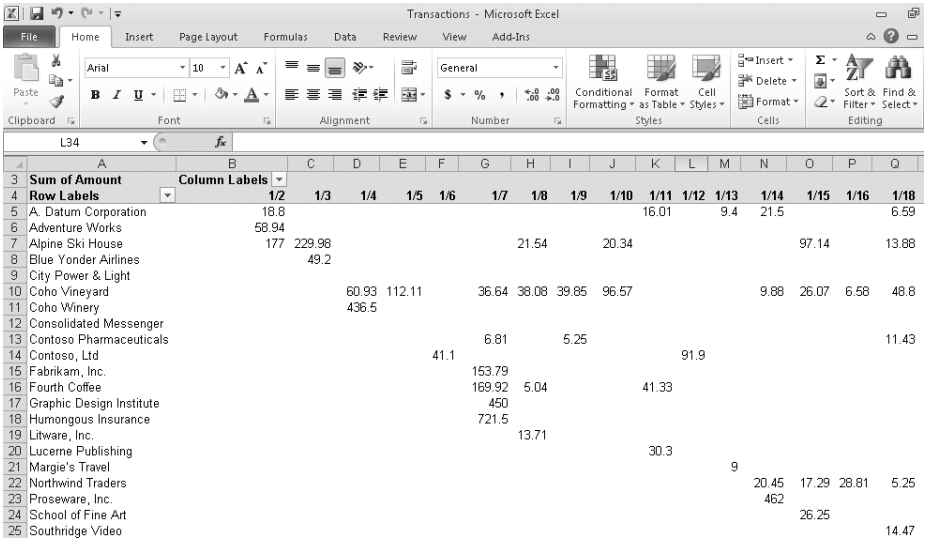


	A	B	C	D	E	F	G	H	I	J	K
1											
2											
3	Sum of Sales	Column Labels									
4		2009				2009 Total	2010				2010 Total
5	Row Labels	1	2	3	4		1	2	3	4	
6	Children	27296	127512	38560	35819	229186	104136	19036	81070	-12590	191651
7	Group1										
8	Domestic	13475	118400	34500	32300	198675	88650	13713	77321	-15136	164547
9	International	13697	7231	2377	1118	24423	13060	4259	1274	863	19456
10	Mail order										
11	Mail order	124	1881	1683	2401	6089	2426	1064	2475	1683	7648
12	Mystery	-2769	-3098	-877	118408	111663	-34001	-1154	11704	1134	-22317
13	Group1										
14	Domestic	-4555	-3796	-1331	115245	105564	-488	-677	-148	-502	-1815
15	International	349	678	134	3113	4274	-34770	-2153	11154	21	-25749
16	Mail order										
17	Mail order	1436	20	319	50	1825	1257	1676	698	1616	5247
18	Romance	95871	384019	168786	170045	818721	10310	8225	97226	-6020	109740
19	Group1										
20	Domestic	80188	371831	159791	167544	779354	3040	6424	75852	-27443	57873
21	International	12678	11000	7040	651	31369	6976	1683	20864	20815	50338
22	Mail order										
23	Mail order	3005	1188	1955	1850	7999	293	117	510	608	1530
24	Sci Fi	90560	50708	32761	13948	187977	317670	83354	317403	200977	919405

Now you can rename Group1 by typing over any instance of it.

Grouping Items in Date or Time Ranges

Figure 23-24 shows a PivotTable that summarizes daily transactions by payee. As you can see, the data in this table is extremely sparse. Most intersections between a day item and a payee item are blank.



Sum of Amount	Column Labels															
Row Labels	1/2	1/3	1/4	1/5	1/6	1/7	1/8	1/9	1/10	1/11	1/12	1/13	1/14	1/15	1/16	1/18
A. Datum Corporation	18.8									16.01		9.4	21.5			6.59
Adventure Works	58.94															
Alpine Ski House	177	229.98					21.54		20.34					97.14		13.88
Blue Yonder Airlines		49.2														
City Power & Light																
Coho Vineyard			60.93	112.11		36.64	38.08	39.85	96.57				9.88	26.07	6.58	48.8
Coho Winery			436.5													
Consolidated Messenger																
Contoso Pharmaceuticals						6.81		5.25								11.43
Contoso, Ltd					41.1						91.9					
Fabrikam, Inc.						153.79										
Fourth Coffee						169.92	5.04			41.33						
Graphic Design Institute						450										
Humongous Insurance						721.5										
Litware, Inc.							13.71									
Lucerne Publishing										30.3						
Margie's Travel												9				
Northwind Traders													20.45	17.29	28.81	5.25
Proseware, Inc.													462			
School of Fine Art														26.25		
Southridge Video																14.47

Figure 23-24 To make the data in this table more meaningful, you can group the date field.

You'll find the Transactions.xlsx file with the other examples on the companion Web site.

To make this kind of table more meaningful, you can group the date field. To do this, select an item in the field. Then click the Options tab under PivotTable Tools, and click Group Field. Excel responds by displaying the Grouping dialog box, shown in Figure 23-25.

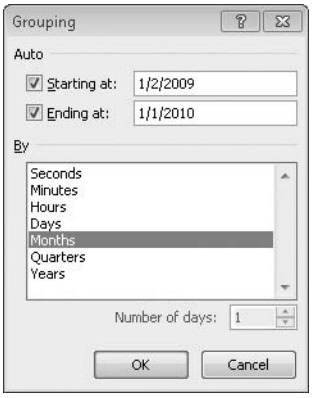
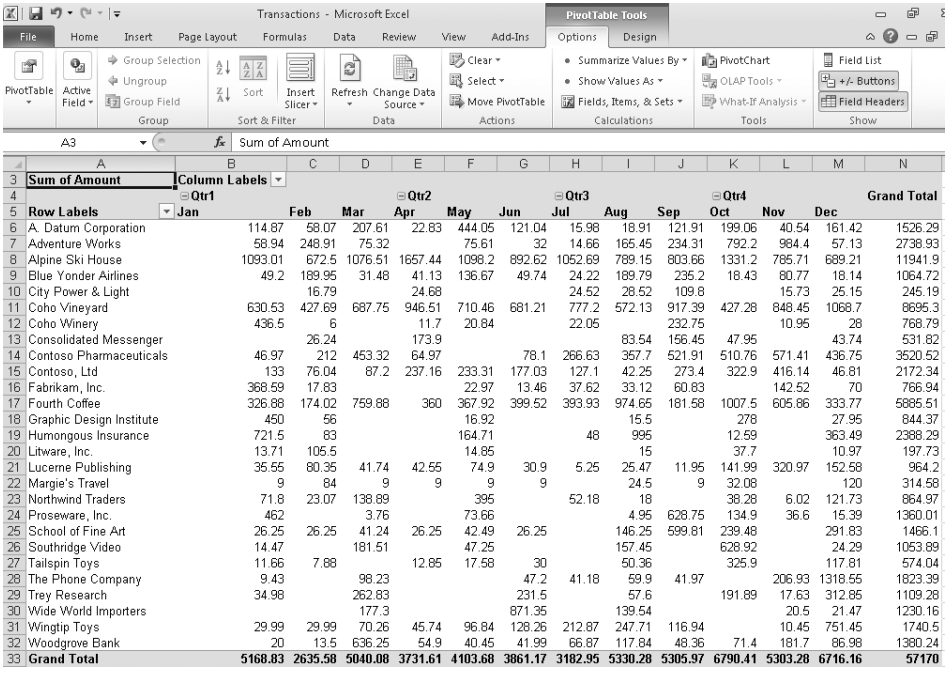


Figure 23-25 Excel gives you lots of ways to group by date.

Excel gives you a great deal of flexibility in the way your date and time fields are grouped. In the By list, you can choose any common time interval, from seconds to years, and if the standard intervals don't meet your needs, you can select an arbitrary number of days. You can also create two or more groupings at the same time (hold down Ctrl while you select); the results of grouping by both Quarter and Month are shown in Figure 23-26.

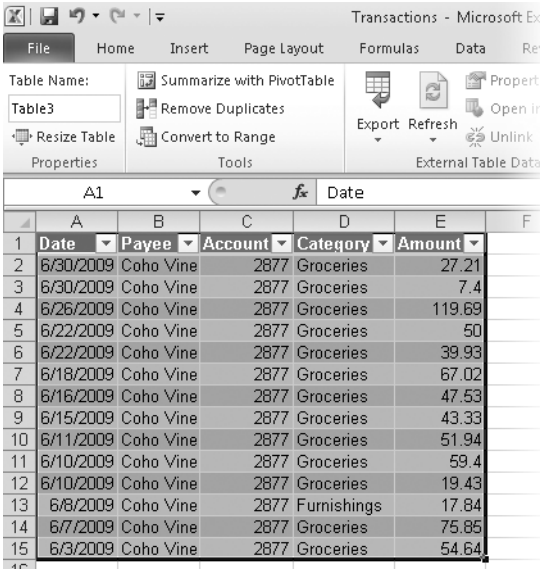


Sum of Amount	Column Labels												
	Qtr1			Qtr2			Qtr3			Qtr4			Grand Total
Row Labels	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
A. Datum Corporation	114.87	58.07	207.61	22.83	444.05	121.04	15.98	18.91	121.91	199.06	40.54	161.42	1526.29
Adventure Works	58.94	248.91	75.32		75.61	32	14.66	165.45	234.31	792.2	984.4	57.13	2738.93
Alpine Ski House	1093.01	672.5	1076.51	1657.44	1098.2	892.62	1052.69	789.15	803.66	1331.2	785.71	689.21	11941.9
Blue Yonder Airlines	49.2	189.95	31.48	41.13	136.67	49.74	24.22	189.79	235.2	18.43	80.77	18.14	1064.72
City Power & Light		16.79		24.68			24.52	28.52	109.8		15.73	25.15	245.19
Coho Vineyard	630.53	427.69	687.75	946.51	710.46	681.21	777.2	572.13	917.39	427.28	848.45	1068.7	8695.3
Coho Winery	436.5	6		11.7	20.84		22.05		232.75		10.95	28	768.79
Consolidated Messenger		26.24		173.9				83.54	156.45	47.95		43.74	531.82
Contoso Pharmaceuticals	46.97	212	453.32	64.97		78.1	266.63	357.7	521.91	510.76	571.41	436.75	3520.52
Contoso, Ltd	133	76.04	87.2	237.16	233.31	177.03	127.1	42.25	273.4	322.9	416.14	46.81	2172.34
Fabrikam, Inc.	368.59	17.83			22.97	13.46	37.62	33.12	60.83		142.52	70	766.94
Fourth Coffee	326.88	174.02	759.88	360	367.92	399.52	393.93	974.65	181.58	1007.5	605.86	333.77	5885.51
Graphic Design Institute	450	56			16.92			15.5		278		27.95	844.37
Humongous Insurance	721.5	83			164.71		48	995		12.59		363.49	2388.29
Litware, Inc.	13.71	105.5			14.85			15		37.7		10.97	197.73
Lucerne Publishing	35.55	80.35	41.74	42.55	74.9	30.9	5.25	25.47	11.95	141.99	320.97	152.58	964.2
Margie's Travel	9	84	9	9	9	9		24.5	9	32.08		120	314.58
Northwind Traders	71.8	23.07	138.89		395		52.18	18		38.28	6.02	121.73	864.97
Proseware, Inc.	462		3.76		73.66			4.95	628.75	134.9	36.6	15.39	1360.01
School of Fine Art	26.25	26.25	41.24	26.25	42.49	26.25		146.25	599.81	239.48		291.83	1466.1
Southridge Video	14.47		181.51		47.25			157.45		628.92		24.29	1053.89
Tailspin Toys	11.66	7.88		12.85	17.58	30		50.36		325.9		117.81	574.04
The Phone Company	9.43		98.23			47.2	41.18	59.9	41.97		206.93	1318.55	1823.39
Trey Research	34.98		262.83			231.5		57.6		191.89	17.63	312.85	1109.28
Wide World Importers			177.3			871.35		139.54			20.5	21.47	1230.16
Wingtip Toys	29.99	29.99	70.26	45.74	96.84	128.26	212.87	247.71	116.94		10.45	751.45	1740.5
Woodgrove Bank	20	13.5	636.25	54.9	40.45	41.99	66.87	117.84	48.36	71.4	181.7	86.98	1380.24
Grand Total	**5168.83**	**2635.58**	**5040.08**	**3731.61**	**4103.68**	**3861.17**	**3182.95**	**5330.28**	**5305.97**	**6790.41**	**5303.28**	**6716.16**	**57170**

Figure 23-26 In this table, daily data is grouped by months and then by quarters.

Displaying the Details Behind a Data Value

If you double-click any PivotTable value that represents a summary calculation, Excel displays the details behind that calculation on a new worksheet. For example, in Figure 23-26, cell G11 informs us that we spent $681.21 at Coho Vineyard during the month of June. Double-clicking G11 reveals the details:



	A	B	C	D	E
1	Date	Payee	Account	Category	Amount
2	6/30/2009	Coho Vine	2877	Groceries	27.21
3	6/30/2009	Coho Vine	2877	Groceries	7.4
4	6/26/2009	Coho Vine	2877	Groceries	119.69
5	6/22/2009	Coho Vine	2877	Groceries	50
6	6/22/2009	Coho Vine	2877	Groceries	39.93
7	6/18/2009	Coho Vine	2877	Groceries	67.02
8	6/16/2009	Coho Vine	2877	Groceries	47.53
9	6/15/2009	Coho Vine	2877	Groceries	43.33
10	6/11/2009	Coho Vine	2877	Groceries	51.94
11	6/10/2009	Coho Vine	2877	Groceries	59.4
12	6/10/2009	Coho Vine	2877	Groceries	19.43
13	6/8/2009	Coho Vine	2877	Furnishings	17.84
14	6/7/2009	Coho Vine	2877	Groceries	75.85
15	6/3/2009	Coho Vine	2877	Groceries	54.64

Creating PivotCharts

PivotCharts, like PivotTables, summarize tabular information and allow for easy transposition of fields and axes. They're a great way to study or present elements of your data set.

You can create a PivotChart directly from your source data by selecting a cell in the original data range, clicking the Insert tab, clicking the arrow beneath PivotTable in the Tables group, and then clicking PivotChart. After you specify or confirm your data source and indicate where you want the new PivotChart to reside (in a location on the existing worksheet or on a new worksheet), Excel presents both a PivotTable layout and a blank chart canvas, along with a PivotChart Filter Pane. (See Figure 23-27.) Excel creates a PivotTable at the same time it creates a PivotChart—and hence you see a blank table layout.

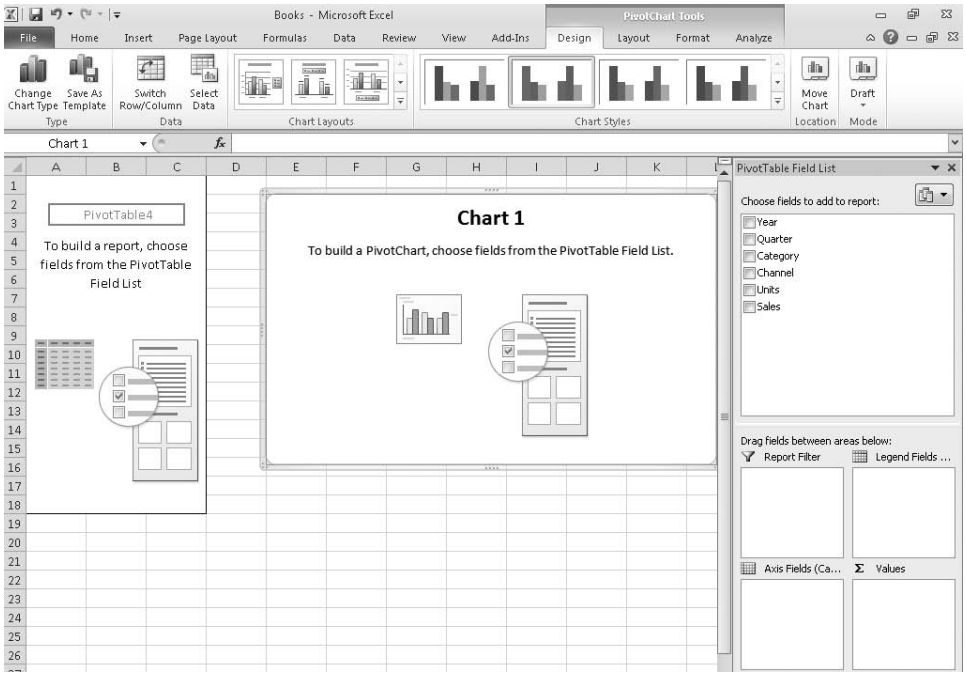


Figure 23-27 When you create a new PivotChart, Excel draws a blank chart canvas as well as a blank table layout. The program creates a PivotTable at the same time it creates the PivotChart.

Figure 23-28 shows a simple PivotChart created from this chapter's Books table. Because charts are generally most effective when applied to a modest amount of data, we used the Report Filter box to restrict the presentation to a single category (Children), and we filtered the Channel field to show international and mail order sales only. We also tidied up a bit by closing the PivotTable Field List window and dragging the PivotChart Filter Pane to a less obtrusive position.

As you can see, when you select a PivotChart, Excel adds a new set of tabs to the ribbon, under PivotChart Tools. With these tabs, you can manipulate and format your PivotChart the same way you do an ordinary chart. (For details about working with charts, see Chapter 19, "Basic Charting Techniques," and Chapter 21, "Advanced Charting Techniques.") While the chart is selected, changes in the four boxes below the field list reflect the fact that you're working with a chart instead of a table: the Row Labels box becomes the Axis Fields box, and the Column Labels box becomes the Legend Fields box. You can pivot the chart the same way you would pivot a PivotTable—by dragging field names from one box to another. You can also change the filter applied to the chart by manipulating the drop-down lists that appear alongside the chart axes and above the legend.

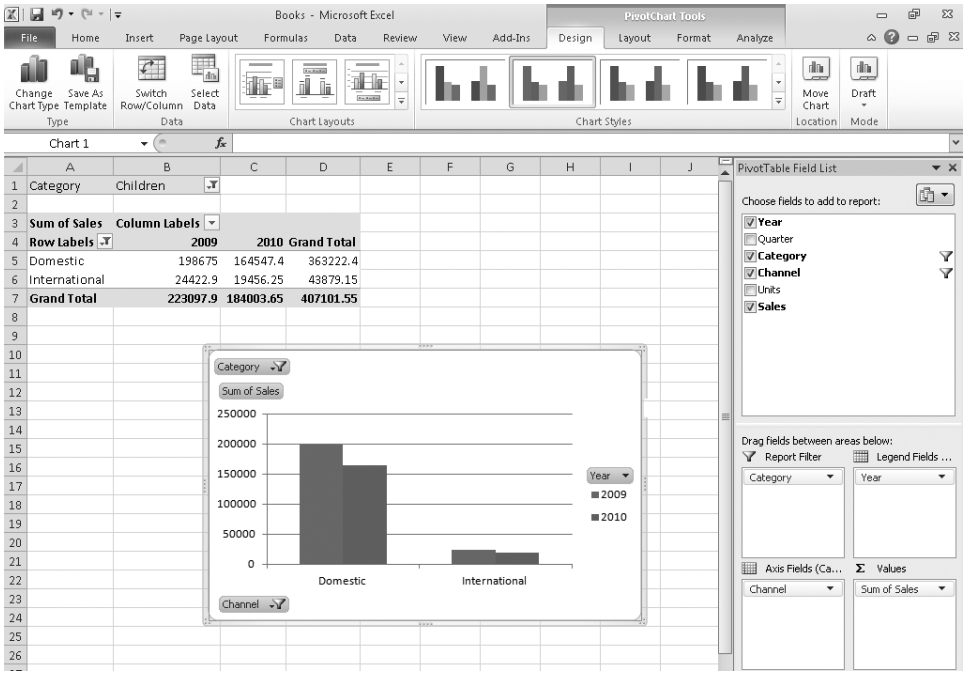


Figure 23-28 We used a PivotChart to plot two distribution channels for one book category.

A PivotChart and its associated PivotTable are inextricably linked. Changes to one are immediately reflected in the other.

In Figures 23-27 and 23-28, we created a PivotChart directly from the source data. You can also create one from an existing PivotTable. Select any cell in the PivotTable, click the Options tab under PivotTable Tools, and then click PivotChart in the Tools group.

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