

## IN THIS CHAPTER

- Charting terminology you need to understand before you start.
- Charting data quickly and easily with the Chart Wizard and Chart toolbar.
- Opening a chart in its own window, so you can tweak its design.
- Formatting a chart's text, axes, and frame.
- Tilting and rotating 3-D charts for dramatic effects.



# CHARTING (GRAPHING) THE WORKSHEET DATA

Graphs or *charts*, as Excel likes to call them, present data in a more meaningful, visual format. Instead of displaying a block of meaningless values, charts can help you compare annual sales figures, see which portions of a budget are devoted to various programs, analyze the growth of a portfolio, and much more. In this chapter, you learn how to create various types of charts in Excel and enhance those charts to achieve the desired effect.

## Understanding Charting Terminology

Most charts consist of several objects, including axes and legends, that define the chart's structure and content. To build charts effectively in Excel, you should understand some key charting terminology. Table 8.1 lists the key charting terms and their definitions.

**TABLE 8.1** Charting Terminology

Charting Term	Definition
Chart	A diagram that shows the relationship between various values or sets of values.
Data series	A collection of related data, such as the monthly sales for a particular division. A data series is typically a single row or column of data.
Axis	An edge of a chart. A two-dimensional chart is composed of an x-axis (horizontal line) and a y-axis (vertical line). Charts that have a z-axis display a third dimension, where the z-axis adds the front-to-back dimension.
Legend	A color key that shows what each data series represents. Legends typically display several colors along with the name of the data series each color represents.

## Creating a Chart

Charting data in Excel does not require you to return to the days of graph paper and rulers. You don't need to draw axes, plot points, or even connect the dots. Excel provides advanced tools that transform your data into any chart type you can imagine. You simply drag over the data you want to chart, run the Chart Wizard, pick a chart type, and enter any additional preferences. (See "Making Data Graphical with Charts," in Chapter 1, "Understanding Excel Worksheets (Spreadsheets)," for descriptions of the most common chart types.)

The following sections show you how to create charts with Excel's Chart Wizard and how to use the Chart toolbar to modify the chart and enhance its appearance.

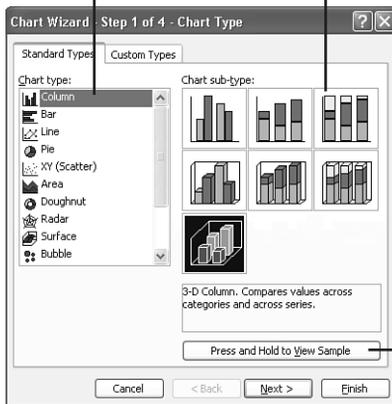
## Making a Chart with the Chart Wizard

Excel's Chart Wizard can whip up a chart in a matter of minutes, and best of all, the Chart Wizard leads you step-by-step through the process. To use the Chart Wizard, follow these steps:

1. Select the data you want to chart. If you typed names or other labels (Qtr 1, Qtr 2, and so on) and you want them included in the chart (as labels), include them in the selection.
2.  Click the **Chart Wizard** button in the Standard toolbar. The Chart Wizard Step 1 of 4 dialog box appears, asking you to select the desired chart type. (Ignore the Custom Types tab for now.)
3. Make sure the **Standard Types** tab is up front, and then click the desired chart type in the **Chart Type** list, as shown in Figure 8.1. The Chart Subtype list displays various renditions of the selected chart type.

1. Pick a chart type    2. Pick a chart subtype

**FIGURE 8.1**  
The Chart Wizard leads you through the process of charting your data.



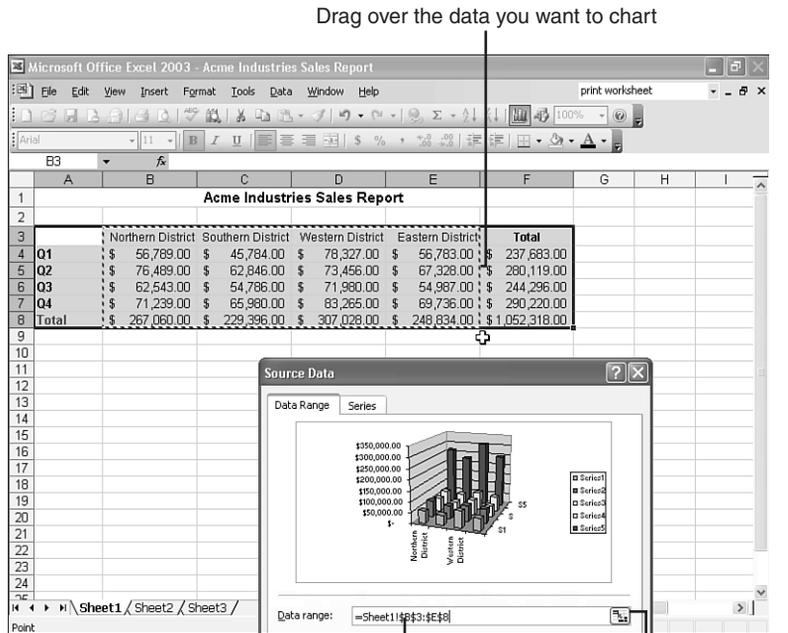
3. Point and hold down the mouse button to see how your data looks with the selected chart type

4. In the **Chart Subtype** list, click the chart design you want to use. (To see how this chart type appears when it charts your data, point to **Press and Hold to View Sample**, and hold down the mouse button.)
5. Click the **Next** button. The Chart Wizard Step 2 of 4 dialog box appears, asking you to specify the worksheet data you want to chart, which you have done already.
6. If the data you want to graph is already selected, go to step 7. If the Chart Wizard is highlighting the wrong data, drag over the correct data in your worksheet, as shown in Figure 8.2. (You can move the Chart Wizard dialog box out of the way by clicking the **Collapse Dialog Box** button just to the right of the Data Range text box.)
7. Under Series In, click **Rows** or **Columns** to specify how you want the data graphed. Your selection tells Excel which labels to use for the category axis

and which ones to use for the legend. This is a tough choice that is best done by trial and error.

**FIGURE 8.2**

If you selected the wrong data, you get a second chance to change it.



The range of the selected data appears here

The Collapse Dialog Box button

8. Click the **Next** button. The Chart Wizard Step 3 of 4 dialog box appears, prompting you to enter additional preferences for your chart.
9. Enter your preferences on the various tabs to give your chart a title, name the x- and y-axes, turn on additional gridlines, move the legend, enter data labels, and more.
10. Click the **Next** button. The Chart Wizard Step 4 of 4 dialog box appears, asking whether you want to insert the chart on the current worksheet or on a new worksheet.
11. If you want the chart to appear alongside your data, select **As Object In** and choose the worksheet on which you want the chart to appear. To have the chart appear on a worksheet of its own, select **As New Sheet** and type a name for the sheet.
12. Click **Finish**. Excel makes the chart and adds it to your worksheet or as a separate worksheet.

To change any of the settings you entered for your chart, click the chart and then run the Chart Wizard again. Step through the Chart Wizard's four dialog boxes, and change any settings, as desired.

## Moving and Resizing a Chart

If your chart has only two or three data types to graph, it probably looks okay. If you choose to graph several columns or rows, chances are that all of your data labels are scrunched up, your legend is chopped in half, and your chart contains several other eyesores. Fortunately, you can fix most of these problems by resizing the chart.

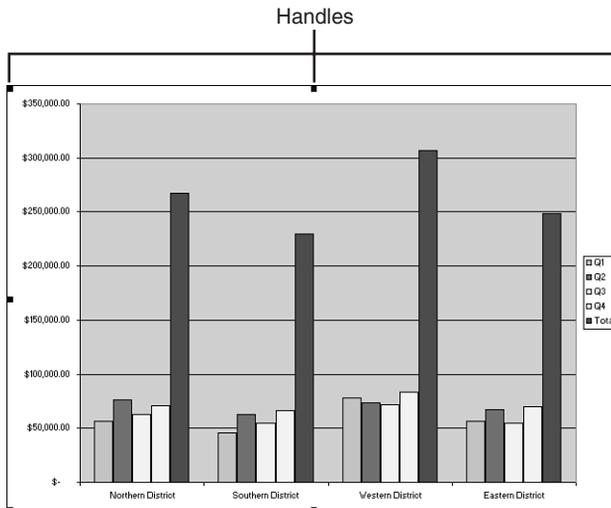
If you inserted the chart as an object, you can move and resize the chart. First, click the chart's background to select it. (If you haven't clicked outside the chart since creating it, it is already selected and the Chart toolbar is displayed.) Make sure you click the chart's background and not an object on the chart itself. When you click a chart's background, the entire chart should be selected, and tiny squares called *handles* appear around its perimeter, as shown in Figure 8.3. If you click an object, such as the data area or an axis, that object is selected, and handles appear around the selected object, not around the entire chart. Selecting the correct object can be a bit tricky at first.



### tip

A chart blends in with the worksheet, acting like a clip art image "pasted" to the page. If you prefer to have the chart displayed in its own window, right-click the chart and choose **Chart Window**. To return to displaying the chart on its worksheet, right-click the chart and choose **Chart Window** to turn off the window view.

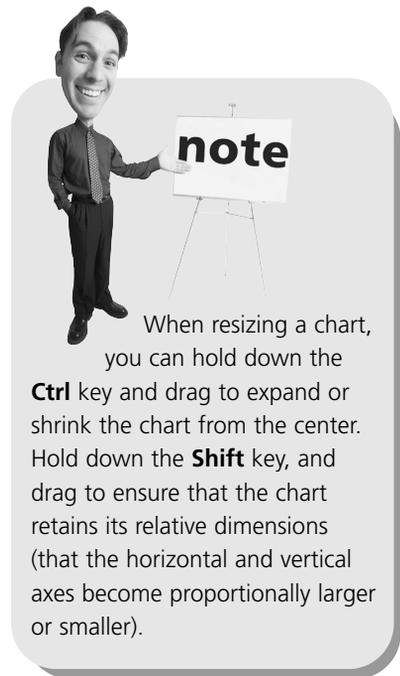
**FIGURE 8.3**  
When the chart is selected, handles appear around its perimeter.



To resize the chart, drag one of its handles. To move the chart, position the mouse pointer over the chart (not on a handle), and drag the chart to the desired location. To delete the chart and start over, select the chart and press the **Delete** key. If the chart is on a separate worksheet, delete the worksheet.

## Using the Chart Toolbar

One of the best tools for tweaking the chart design is the Chart toolbar. To display it, right-click any toolbar and click **Chart**. The Chart toolbar offers several chart formatting tools, as listed and described in Table 8.2. (If a button you want to use is not on the toolbar, click the **Toolbar Options Add or Remove Buttons**; point to **Chart**; and then click the desired button.)



When resizing a chart, you can hold down the **Ctrl** key and drag to expand or shrink the chart from the center. Hold down the **Shift** key, and drag to ensure that the chart retains its relative dimensions (that the horizontal and vertical axes become proportionally larger or smaller).

**TABLE 8.2** Chart Toolbar Tools

Tool	Tool Name	Purpose
	<b>Chart Objects</b>	Displays a list of the elements inside the chart. Select the item you want to format from this list, and then click the <b>Format Chart Object</b> button, listed next (where <i>Chart Object</i> is the type of object currently selected).
	<b>Format Chart Object</b>	Displays a dialog box that contains formatting options for only the specified chart object. (The button's name varies depending on the object. If you selected the legend, the button's name is Format Legend.)
	<b>Chart Type</b>	Enables you to change the chart type (bar, line, pie, and so on).

Tool	Tool Name	Purpose
	<b>Legend</b>	Turns the legend on or off.
	<b>Data Table</b>	Turns the data table on or off. A data table displays the charted data in a table right next to (or on top of) the chart, so you can see the data and chart next to each other.
	<b>By Row</b>	Charts selected data by row. (If the chart looks wrong, click By Column.)
	<b>By Column</b>	Charts selected data by column. (If the chart looks wrong, click By Row.)
	<b>Angle Clockwise</b>	Enables you to angle text entries so they slant down from left to right. Angled text is a nice effect, but it's also great for fitting text in a box when room is tight.
	<b>Angle Counterclockwise</b>	Enables you to angle data labels so they slant up from left to right.

The tools in Table 8.2 function differently, depending on the tool and on the selected object, but the following steps provide overall instructions on how to use the tools to format the various elements that make up the chart:

1. Open the **Chart Objects** list, and choose the object you want to format.
2. Click the **Format Chart Object** button (where *Chart Object* is the type of object you selected in step 1). The Format dialog box for the selected object appears. Figure 8.4 shows the Format Chart Area dialog box, which appears when you choose to format the chart area.
3. Enter your preferences and click **OK**.

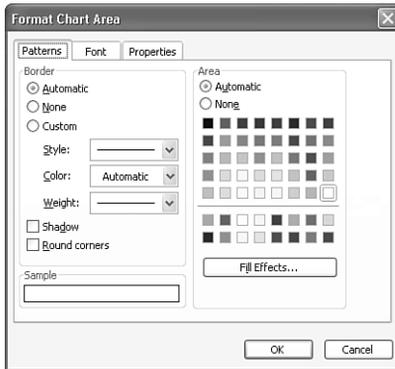


**tip**

Right-click the chart or one of its objects to view a context menu that lists commands for formatting the selected object. Click the desired command and enter your preferences.

**FIGURE 8.4**

The Format Chart Area dialog box enables you to enhance your chart.

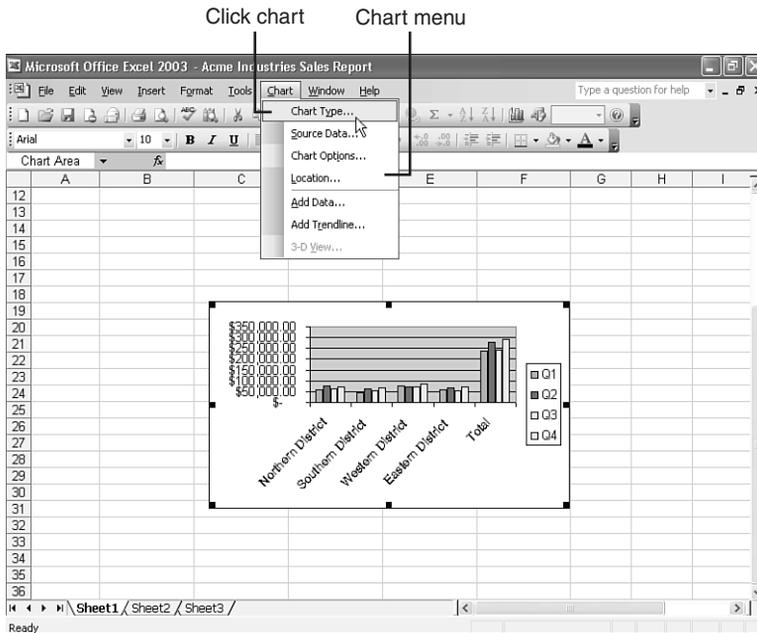


## Using the Chart Menu

Another way to access the options for formatting your charts is to use the Chart menu. This menu contains options for changing the chart type, selecting different data to chart, adding data, and even moving the chart to its own page. The Chart menu remains hidden when the worksheet is selected, but it pops into view on Excel's menu bar whenever you select a chart. Simply click **Chart** on Excel's menu bar, as shown in Figure 8.5, and then choose the desired option. If a dialog box pops up, enter your preferences and click **OK**.

**FIGURE 8.5**

You can use the Chart menu to customize and format your chart.



For most formatting options, open the **Chart** menu and click **Chart Options**. The Chart Options dialog box appears, providing tabs for changing the chart and axes titles, configuring the axes, adding gridlines, positioning the legend, adding data labels, and turning the data table on or off. Enter your preferences and click **OK**. The following sections provide additional details for formatting specific design elements that make up the chart.

## Formatting Text on a Chart

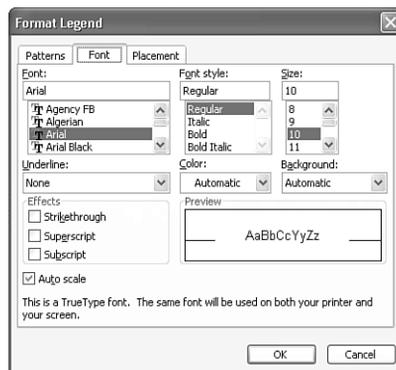
Though charts are primarily graphic objects, every chart contains plenty of text in the form of a chart title, axis labels, and a legend. Even though the chart obtains its raw data (including text) from the worksheet, the chart itself controls the appearance of this text, and you can change the text appearance without affecting the appearance of your worksheet data.

Before formatting text on a chart, be aware that all entries that appear within an object on the chart use the same text formatting. For example, if you change the font for the legend, all entries in the legend appear in the same font. You can't change one legend entry without changing all of them.

To change the appearance of text on a chart, follow these steps:

1. Double-click the text whose appearance you want to change. You can change the appearance of the chart title, axis labels, or legend. The Format dialog box for the selected object appears.
2. Click the **Font** tab. The font options appear, as shown in Figure 8.6.

**FIGURE 8.6**  
The Font options control the appearance of the text.



3. Use the font options to specify the desired font, text size, color, enhancements (such as bold and italic), and other text attributes.

4. If you are formatting text for axis labels, you can lean the text to provide additional room for the labels (so they don't overlap). Click the **Alignment** tab and enter your preferences. (The Alignment tab does not appear in the Format dialog box for all chart objects.)
5. When you're finished entering preferences, click **OK**.

## Formatting the Chart Axes

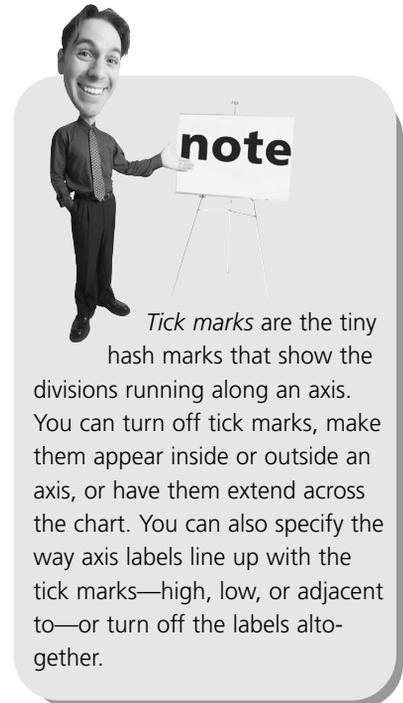
Bar, column, line, area, and stock charts all have two axes (x and y); 3-D versions of these chart types include a third axis (z). In addition to being able to change the fonts and alignment used for the axis labels, you can specify the line type and color of the axes, add tick marks, change the scale (value increments), and specify a number format.

To change the appearance of any axis of a chart, follow these steps:

1. Take one of the following steps to display the Format Axis dialog box for the desired axis, as shown in Figure 8.7.

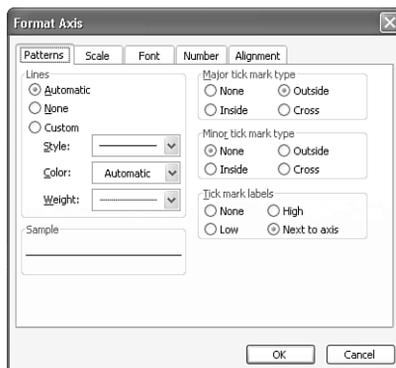
Right-click on the axis you want to format, and choose **Format Axis**.

In the Chart toolbar, open the **Chart Objects** list and click **Value Axis** or **Category Axis**, depending on which axis you want to format. Click the **Format Axis** button.



**FIGURE 8.7**

The Format Axis dialog box enables you to change the look of the axis and its text.



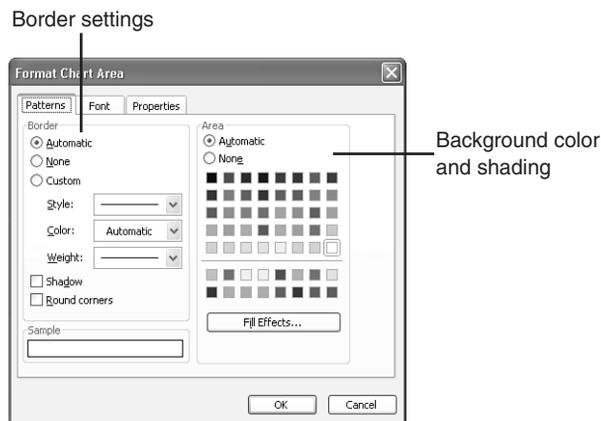
2. On the **Patterns** tab, select the desired line style, color, and weight for the axis, and enter any tick mark preferences.
3. Click the **Scale** tab, and enter your preferences to specify how you want values or labels to appear along the axis. For example, if values run along the axis, you can specify the minimum value, the maximum value, and the way you want values broken down between the minimum and maximum.
4. If values appear along the axis, click the **Number** tab, and enter your preferences for the number format—Currency, Percentage, and so on.
5. Enter any additional preferences, and then click **OK** or press **Enter**.

## Enhancing the Chart Frame

Up to this point, you have been micromanaging your chart, adding and removing objects from the chart and formatting text, axes, and data series. For a more global change, you can modify the overall appearance of a chart by adding a border or shading. To change a chart's border and its background shading (or color), follow these steps:

1. Select the chart. Handles appear around the entire chart.
2. In the Chart toolbar, open the **Chart Objects** list and click **Chart Area**; then click the **Format Chart Area** button, or right-click on the chart's background and choose **Format Chart Area**. The Format Chart Area dialog box appears, as shown in Figure 8.8.

**FIGURE 8.8**  
You can add a border and background to your chart.



3. Click the **Patterns** tab, if needed, to bring it to the front.
4. Under **Border**, enter the preferences for the line style, weight, and color of the line that surrounds the chart. You can also choose to add a drop shadow to the border and/or have the corners rounded.
5. Under **Area**, choose the desired color for the chart's background.
6. Click **OK** to save your changes and have the specified formatting applied to your chart.

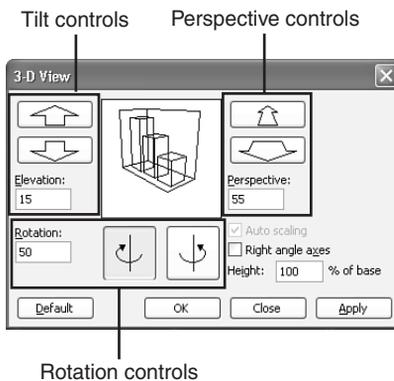
## Changing the Appearance of 3-D Charts

Most charts are flat, two-dimensional graphics that are slightly more visually appealing than the data they represent. To create a truly dramatic effect, consider using one of the three-dimensional charts. The third dimension can create a dramatic effect, lifting your data right off the page. With a third dimension, bar charts begin to look like high-rise buildings and pie charts look like actual pies.

The third dimension also enables you to rotate and tilt the chart to accentuate its three-dimensional appearance. To rotate or tilt the chart, follow these steps:

1. Click the chart to select it.
2. Open the **Chart** menu and choose **3-D View**, or right-click the chart and choose **3-D View**, if the option is available for this chart type. (3-D View is unavailable for two-dimensional charts.) The 3-D View dialog box appears, as shown in Figure 8.9. As you make changes, they are reflected in the wire-frame picture in the middle of the 3-D View dialog box.

**FIGURE 8.9**  
You can tilt and rotate a three-dimensional chart.



3. To change the elevation (or tilt), click the up or down elevation control, or type a number in the **Elevation** box.
4. To change the rotation (rotation around the z-axis), click the left or right rotation controls, or type the desired degrees of rotation in the **Rotation** box.
5. Take one of the following steps:  
 To increase or decrease the chart depth (the ratio of the front of the chart to the back of the chart, expressed as a percentage between 0 and 100), click the back or forward **Perspective** control, or type a number in the **Perspective** box.  
 To change height of the chart in respect to its base, click in the **Height: \_\_\_%** **of Base** box and type the desired percentage. For example, to make the chart twice as tall as it is wide, type **200**.
6. To see the proposed changes applied to the actual chart, click the **Apply** button.
7. When you're finished making changes, click **Close** or press **Enter**.



## caution

Some changes in the 3-D View dialog box can cause the Perspective controls to disappear. For example, turning on the Right Angle Axes option disables your ability to change the perspective. To redisplay the Perspective controls, click the **Default** button.

## THE ABSOLUTE MINIMUM

Charting is one of the most exciting aspects of creating worksheets. With a few clicks of the mouse, you can now transform even the dreariest collection of data into a dynamic graphic that illustrates just how the numbers stack up. To review, you now know how to

- Create a chart with the Chart Wizard and use the Chart toolbar to make quick changes.

- Move and resize the chart on a worksheet.

- Use the Chart menu for entering commands that apply only to charts.

- Change the type style, size, and color of any text that appears on a chart and change other text attributes.

- Modify the lines that make up the chart axes and configure the tick marks that run along the axes.

- Change the overall appearance of a chart by formatting its border and background.

- Tilt and rotate 3-D charts to accentuate their third dimension.

With the skills you acquired in this chapter, you can transform existing worksheet data into a chart in a matter of minutes, change the chart type, add a border and shading to the chart, and format every object that composes the chart. In the next chapter, you will pick up additional skills for working with the more graphical aspects of Excel worksheets.