

# Office 2010

## Made Simple

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# Contents at a Glance

<b>Contents.....</b>	<b>V</b>
<b>About the Author.....</b>	<b>xvii</b>
<b>About the Technical Reviewer .....</b>	<b>xviii</b>
<b>Acknowledgments .....</b>	<b>xix</b>
<b>Part I.....</b>	<b>1</b>
■ <b>Quick Start Guide.....</b>	<b>3</b>
<b>Part II.....</b>	<b>17</b>
■ <b>Introduction.....</b>	<b>19</b>
<b>Part III.....</b>	<b>25</b>
■ <b>Chapter 1: Meeting the Office Programs and Learning What They Do .....</b>	<b>27</b>
■ <b>Chapter 2: Using the Ribbon, Backstage, and Common Tools.....</b>	<b>45</b>
■ <b>Chapter 3: Working with Text.....</b>	<b>75</b>
■ <b>Chapter 4: Using Graphics in Your Documents.....</b>	<b>99</b>
■ <b>Chapter 5: Coauthoring in Real Time and Sharing Documents.....</b>	<b>121</b>
■ <b>Chapter 6: Making the Office Programs Work Your Way.....</b>	<b>141</b>
<b>Part IV.....</b>	<b>163</b>
■ <b>Chapter 7: Entering and Editing Text in Your Documents .....</b>	<b>165</b>
■ <b>Chapter 8: Formatting Your Documents Easily and Efficiently.....</b>	<b>199</b>
■ <b>Chapter 9: Adding Headers, Footers, Tables, and Columns.....</b>	<b>231</b>
■ <b>Chapter 10: Revising, Finalizing, and Printing Your Documents.....</b>	<b>249</b>
<b>Part V.....</b>	<b>277</b>
■ <b>Chapter 11: Creating Workbooks and Entering Data .....</b>	<b>279</b>
■ <b>Chapter 12: Editing Worksheets and Applying Formatting .....</b>	<b>313</b>
■ <b>Chapter 13: Performing Calculations with Formulas and Functions.....</b>	<b>343</b>
■ <b>Chapter 14: Creating Charts to Present Your Data .....</b>	<b>371</b>
■ <b>Chapter 15: Creating Databases and Solving Business Problems.....</b>	<b>395</b>

**Part VI..... 423**

■ **Chapter 16: Getting Up to Speed and Taking Notes..... 425**

■ **Chapter 17: Searching, Protecting, and Synchronizing Your Notes ..... 461**

■ **Chapter 18: Customizing OneNote and Using It with  
Word, Excel, PowerPoint, and Outlook ..... 473**

**Part VII..... 499**

■ **Chapter 19: Starting a Presentation ..... 501**

■ **Chapter 20: Building Effective Slides for Your Presentation ..... 519**

■ **Chapter 21: Giving a Presentation Life and Impact..... 545**

■ **Chapter 22: Delivering a Presentation in Person or Online ..... 569**

**Part VIII ..... 593**

■ **Chapter 23: Setting Up Outlook and Meeting the Interface ..... 595**

■ **Chapter 24: Sending and Receiving E-mail ..... 619**

■ **Chapter 25: Managing Your Contacts with Outlook ..... 641**

■ **Chapter 26: Organizing Your Schedule, Tasks, and Notes ..... 665**

**Index..... 691**

# Creating Charts to Present Your Data

In this chapter, I'll show you how to create clear and compelling charts that present your data exactly as you want it to appear.

We'll start by making sure you understand the ways you can place charts in your workbooks, what the components of charts are, and which types of charts you can create in Excel. We'll then look in detail at how you create a chart from your data, lay it out the way you want, and then give it the look it needs—everything from adding a chart title and axis titles to adding a picture to the chart wall for visual appeal.

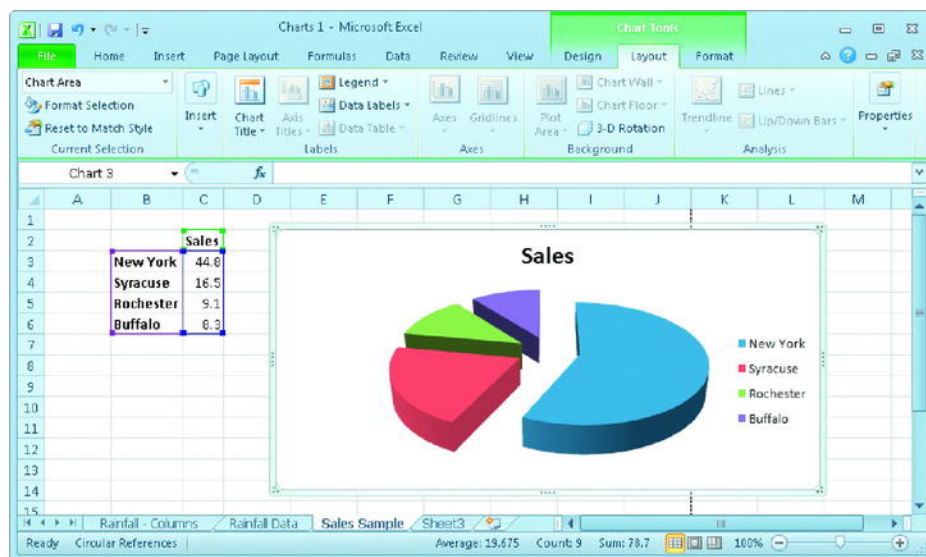
## Learning the Essentials of Charts in Excel

In this section, we'll look at the two ways you can place charts in your workbooks, identify the different components of charts and examine what they show, and go over the many different types of charts that Excel offers you.

## Understanding Embedded Charts and Chart Sheets

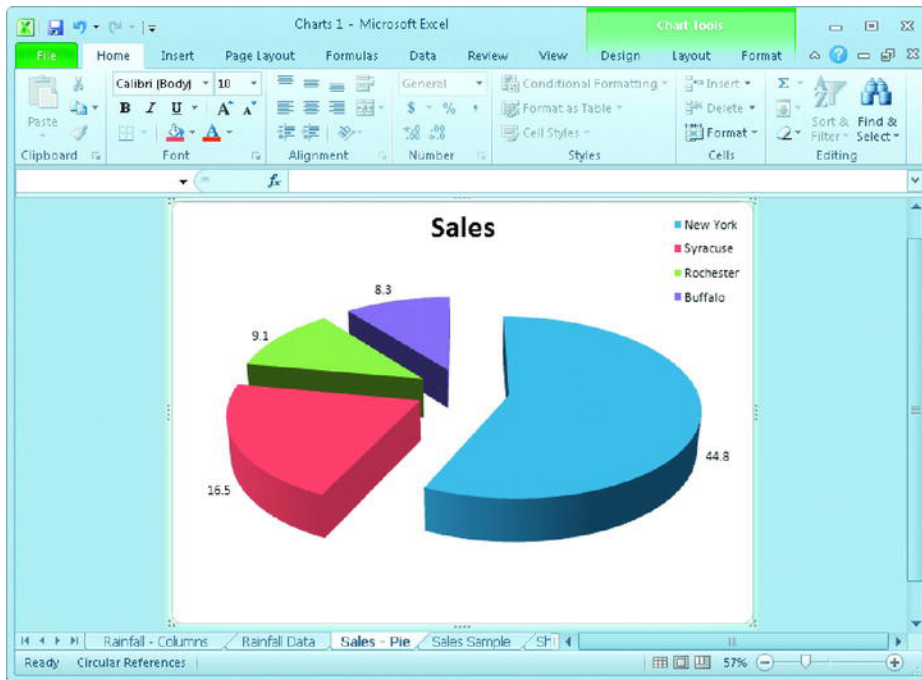
In Excel, you can either place a chart on a worksheet (for example, with its data) or on its own chart sheet:

- *Chart on a worksheet.* Excel calls a chart on a worksheet an *embedded chart*—the chart object is embedded in the worksheet. Usually, the worksheet is the one that contains the chart's data, but you can embed a chart on a different worksheet if necessary. Create an embedded chart when you want to look at the chart alongside its data or alongside other information, including other charts. Figure 14–1 shows an embedded chart.



**Figure 14–1.** Create an embedded chart on a worksheet when you want to work on or view the chart alongside its data.

- **Chart on chart sheet.** When you need more space for a chart, create it on a *chart sheet*—a separate sheet in the workbook that contains only a chart. The chart sheet doesn't contain the source data, but you can add a data table showing the source data if you don't mind sacrificing some of the chart sheet's space for the table. Figure 14–2 shows a chart on a chart sheet, with a legend but without the source data.

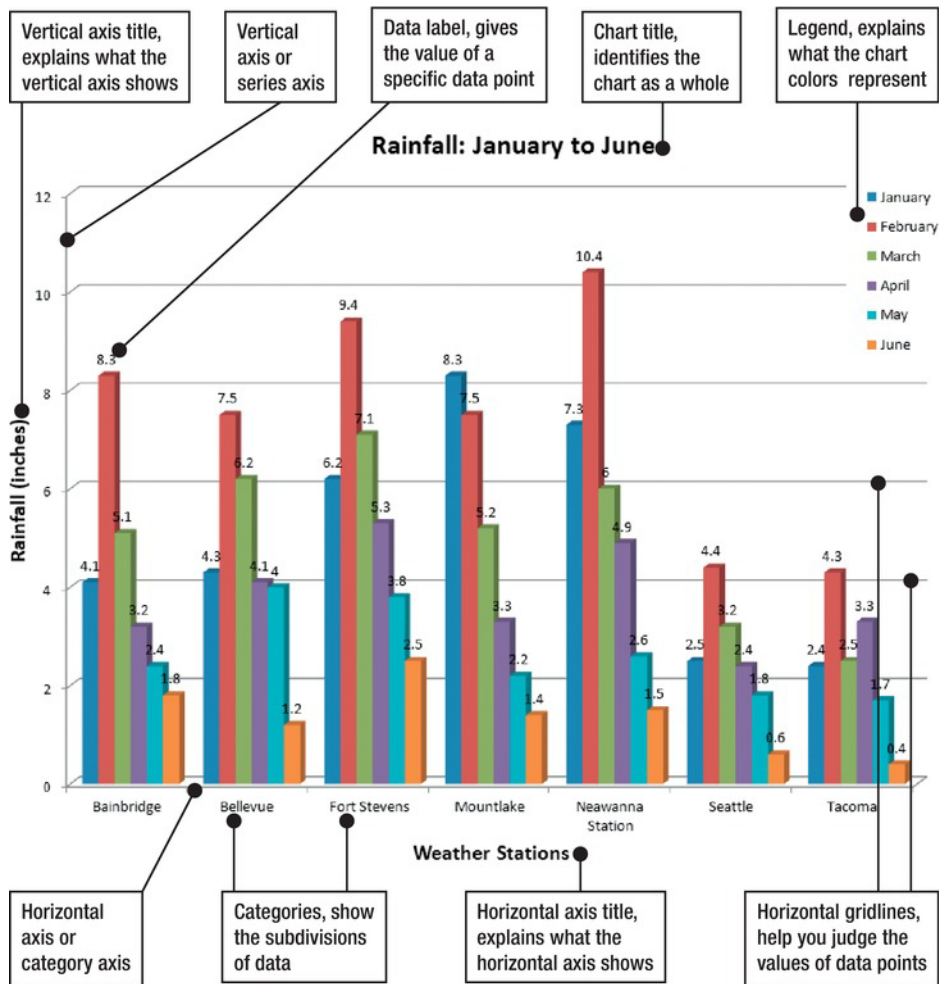


**Figure 14–2.** Place a chart on its own chart sheet when you want to give it plenty of space.

**NOTE:** You can change an embedded chart to a chart on its own chart sheet, or a chart on a chart sheet to an embedded chart, as needed.

## Understanding the Components of a Chart

Excel's charts vary widely in looks and use, but most of them use the same set of components. Figure 14–3 shows a typical type of chart—a 3-D column chart—of rainfall data for six months for seven weather stations, with the main parts of the chart labeled.



**Figure 14-3.** This column chart contains most of the typical elements of Excel charts.

Apart from the chart elements shown in Figure 14-3, you need to know the following three elements:

- **Chart area.** The chart area is the whole area occupied by the chart. If the chart has a white background, the easiest way to see the extent of the chart area is to click the chart so that Excel displays a border around it.
- **Plot area.** The plot area is the area of the chart that contains the plotted data—in other words, the main part of the chart area, excluding the areas occupied by the chart title, the axis titles, and the legend (if it appears outside the plot area).
- **Depth axis.** In 3-D charts, this is the axis that provides the third dimension. The depth axis is also called the Z-axis.



# Understanding Excel’s Chart Types and Choosing Which to Use

Excel enables you to create many different types of charts. Some of the chart types are widely useful, like the column chart shown in Figure 14–3; other chart types are highly specialized. Table 14–1 describes the types of charts that Excel provides and suggests typical uses for them. The table lists the charts in the same order as Excel’s **Insert Chart** dialog box, which you’ll meet shortly and which puts the most widely used chart types first.

**Table 14–1.** *Excel’s Chart Types and Suggested Uses*

Chart Category	Description	Suggested Uses
Column	Displays data in vertical bars.	Comparing equivalent items (such as sales results) or sets of data that change over time (such as rainfall).
Line	Displays each series in a line.	Showing evenly spaced values that change over time, such as temperatures.
Pie	Displays a single data series as a pie divided up by the contribution of each data point.	Showing how much each item contributes to the whole—for example, breaking down expenses by department.
Bar	Displays data in horizontal bars.	Comparing similar items or indicating progress.
Area	Displays data as lines but with the areas between them shaded.	Showing how values have changed over time, especially the contribution of different data points in the series.
X Y (Scatter)	Displays each data point as a point (or cross, or similar marker) on the plot area.	Showing values sampled at different times or that are not directly related to each other.
Stock	Displays each data series as a vertical line or bar indicating three or more prices or measurements (for example, high, low, and closing prices).	Showing the daily prices of stocks. Also suitable for some scientific data.
Surface	Displays the data points as a three-dimensional surface.	Comparing two sets of data to find a suitable combination of them.

Chart Category	Description	Suggested Uses
Doughnut	Displays the data series as a sequence of concentric rings.	Showing how much each item contributes to the whole—like a pie chart, but it works with two or more data series.
Bubble	Displays the data points as bubbles of different sizes depending on their values.	Showing the relative importance of each data point.
Radar	Displays the combined values of different data series.	Showing how the combined values of separate data series compare to each other—for example, the sales contributions of several different products over several periods of time.

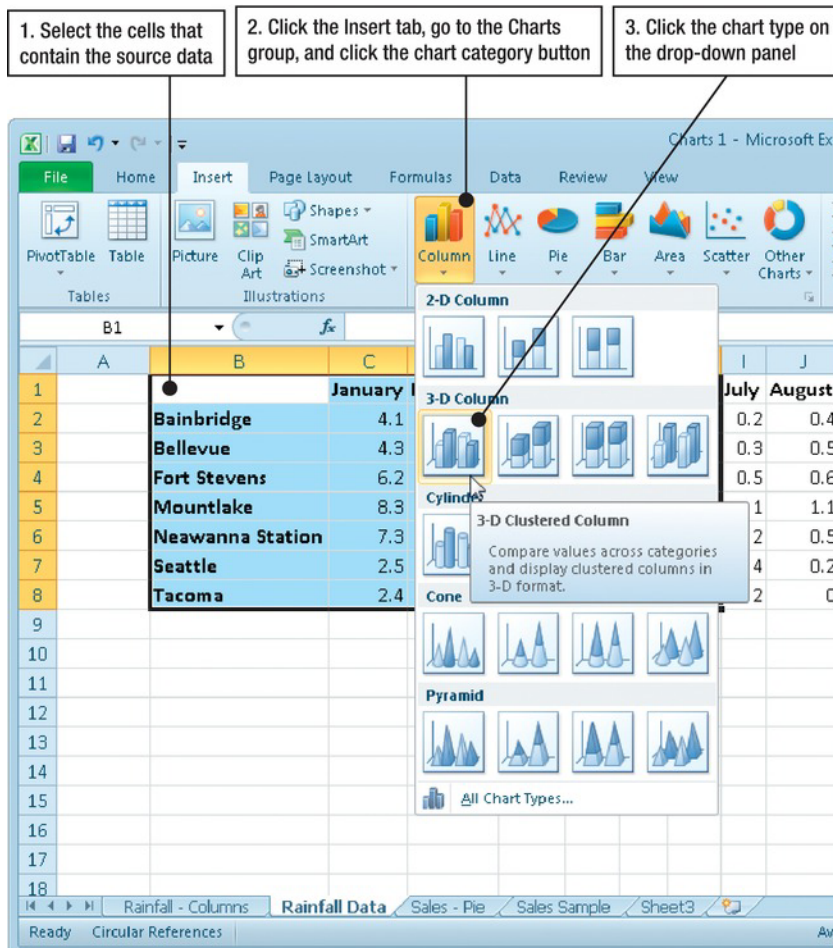
## Creating, Laying Out, and Formatting a Chart

In this section, we’ll look at how to create a chart from your data, lay it out with the components and arrangement you want, and apply the most useful types of formatting.

### Creating a Chart Using the Chart Category Buttons

The quickest way to create a chart is by using the chart category buttons, as shown in Figure 14–4. Briefly, you select the range that contains the data, and then choose the chart type by using the controls in the **Charts** group on the **Insert** tab of the Ribbon.

**TIP:** You can create a chart from either a block range or from a range of separate cells. To use separate cells, select them as usual—for example, click the first, and then **Ctrl+click** each of the others.



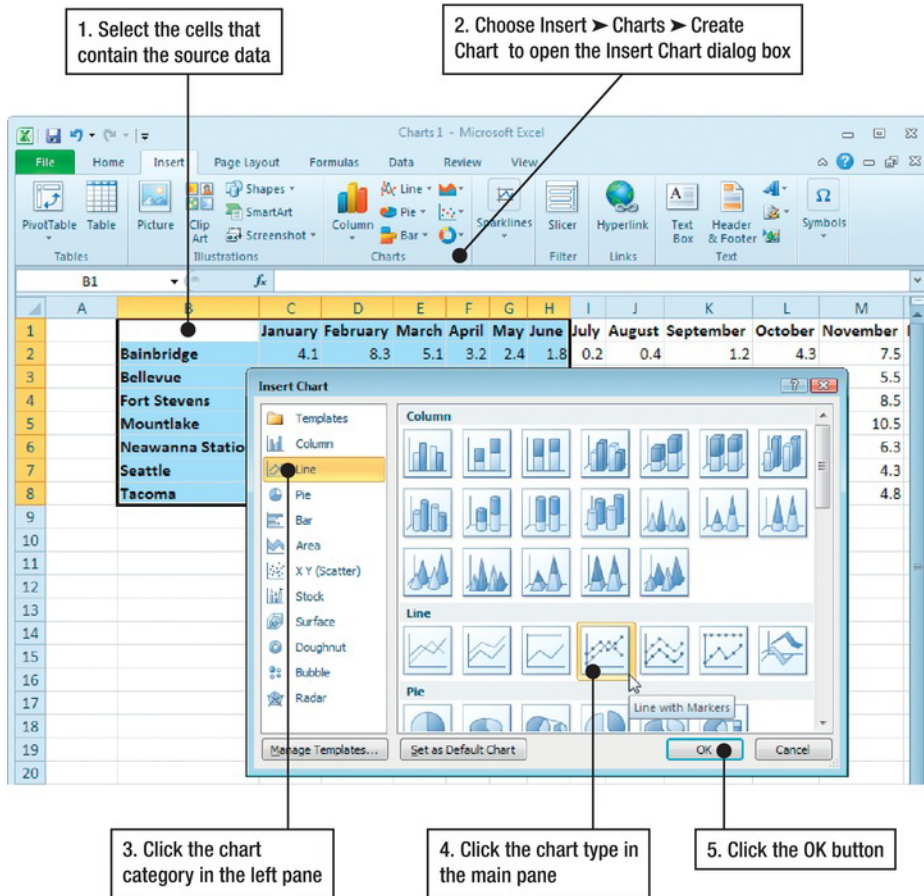
**Figure 14-4.** The quickest way to insert a chart is to click the appropriate drop-down button in the **Charts** group on the **Insert** tab of the Ribbon, and then click the chart type you want.

When you create a chart this way, Excel creates it as an embedded chart in the current worksheet.

**TIP:** If the chart doesn't turn out the way you want it, you can change to another chart type. Right-click the chart, and then click **Change Chart Type** on the context menu to display the **Change Chart Type** dialog box, which is like the **Insert Chart** dialog box. Click the chart category, click the chart type, and then click the **OK** button. Excel changes the chart to the new type.

## Creating a Chart Using the Insert Chart Dialog Box

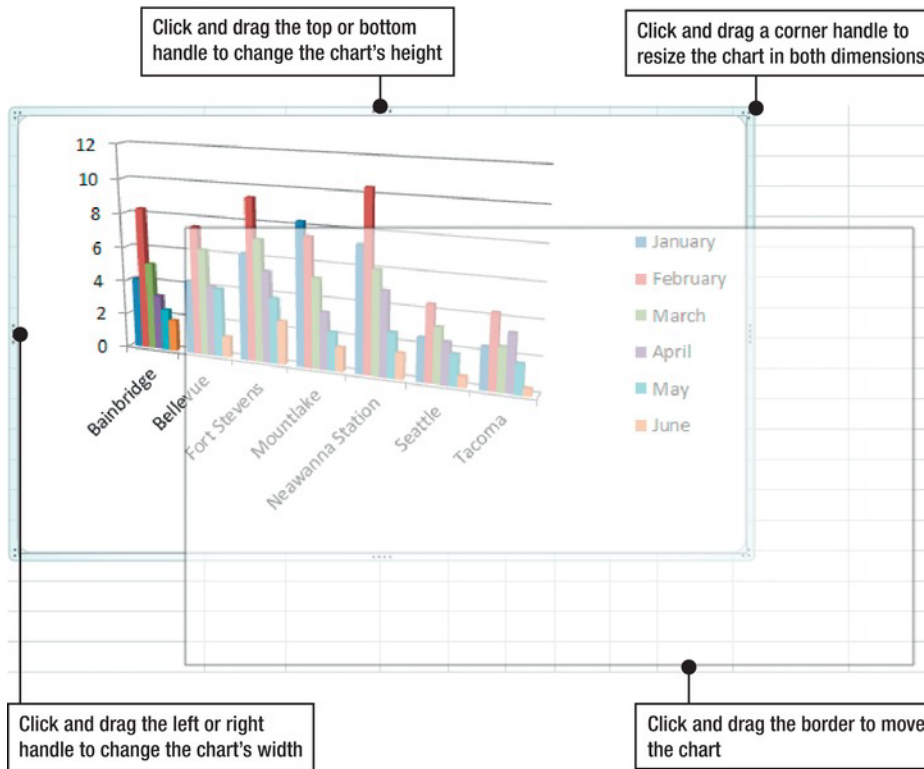
If you prefer to browse through the various types of chart that Excel offers, use the **Insert Chart** dialog box instead of the **Charts** group on the Ribbon. Figure 14–5 shows you how to use the **Insert Chart** dialog box. The **Create Chart** button is the tiny button at the lower-right corner of the **Charts** group; the button shows an arrow pointing down and to the right.



**Figure 14–5.** Use the **Insert Chart** dialog box when you want to browse through the many types of charts that Excel offers. To see what a chart type is called, hold the mouse pointer over it until the ScreenTip appears.

## Resizing or Repositioning an Embedded Chart

Whether you use the controls in the **Charts** group or the **Insert Chart** dialog box, Excel inserts the chart as an embedded chart on the active worksheet. You can then resize it or reposition it, as shown in Figure 14–6.

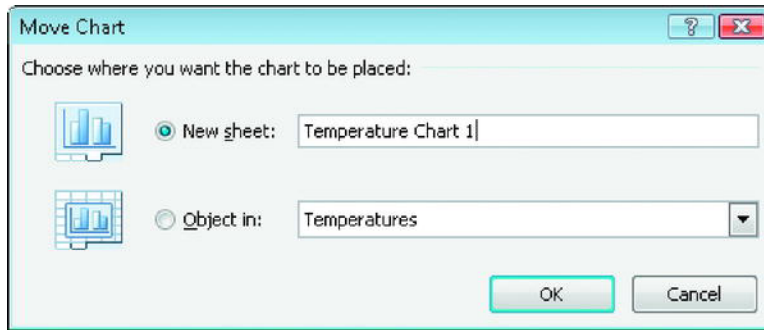


**Figure 14-6.** You can quickly resize or reposition an embedded chart by using the mouse.

## Changing a Chart from an Embedded Chart to a Chart Sheet

You can change a chart from being embedded in a worksheet to being on its own chart sheet like this:

1. Click the chart on the worksheet it's embedded in.
2. Choose **Chart Tools > Design > Location > Move Chart** to display the **Move Chart** dialog box (see Figure 14-7).



**Figure 14–7.** Use the **Move Chart** dialog box to change a chart from being embedded to being on its own chart sheet.

3. Select the **New sheet** option button.
4. Type the name for the new chart sheet in the **New sheet** text box.
5. Click the **OK** button. Excel creates the new chart sheet and moves the chart to it.

**NOTE:** You can also use the **Chart Tools > Design > Location > Move Chart** command to move a chart from a chart sheet to an embedded chart on a worksheet, or to move an embedded chart from one worksheet to another.

## Switching the Rows and Columns in a Chart

When Excel displays the chart, you may realize that the data series are in the wrong place—for example, the chart is displaying months by rainfall instead of rainfall by months.

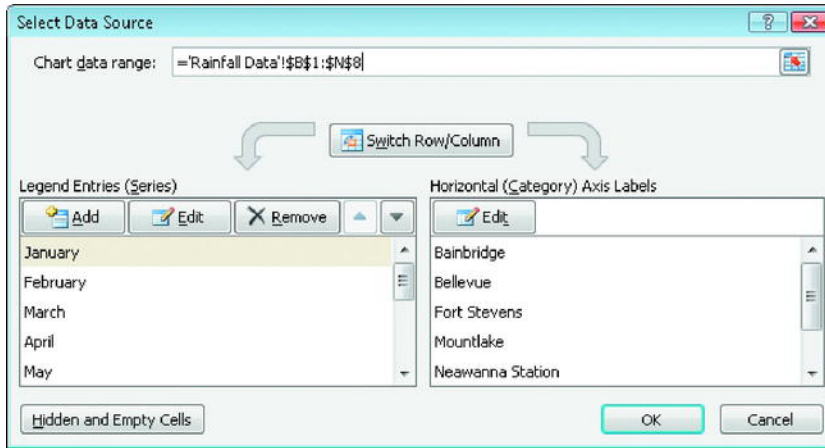
To fix the problem, switch the rows and columns by choosing **Chart Tools > Design > Data > Switch Row/Column**. Excel displays the chart with the series the other way around.

## Changing the Source Data for a Chart

After creating the chart, you may find you need to change the source data. For example, you may need to remove some data because there's too much, or add data you left out.

To change the source data for the chart, follow these steps:

1. Choose **Chart Tools > Design > Data > Select Data** to display the **Select Data Source** dialog box (see Figure 14–8).



**Figure 14–8.** Use the **Select Data Source** dialog box to change the source data the chart is using.

2. Click in the **Chart data range** box.
3. Click the **Collapse Dialog** button to collapse the dialog box.
4. Drag on the worksheet to select the right data range.
5. Click the **Collapse Dialog** button again to restore the dialog box.

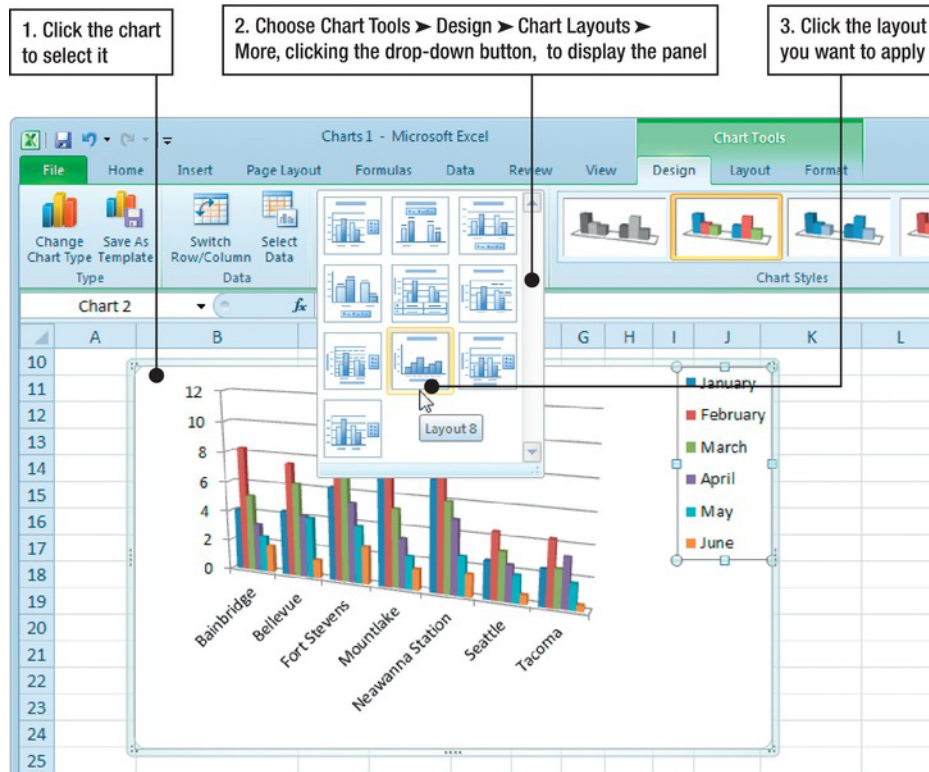
**TIP:** You can also type the data range in the **Chart data range** box. This is easy when you just need to change a column letter or row number to fix the data range.

6. If you need to switch the rows and columns as well, click the **Switch Row/Column** button.
7. Click the **OK** button to close the **Select Data Source** dialog box. Excel updates the chart with the new source data.

## Choosing the Layout for the Chart

After selecting the chart type and the source data, you can choose which preset layout to use for the chart. The layout controls where the title, legend, and other chart elements appear. After applying a layout, you can reposition the elements as needed.

Figure 14–9 shows you how to apply a chart layout.



**Figure 14–9.** To set the overall layout of chart elements, such as the chart title and legend, open the **Quick Layout** panel and click the layout you want.

## Applying a Style to a Chart

To control the overall graphical look of a chart, apply one of Excel's styles to it from the **Quick Styles** box in the **Chart Styles** group on the **Design** tab of the **Chart Tools** section of the Ribbon.

Click the chart to select it, and then click the **More** button on the **Quick Styles** box to display the **Quick Styles** panel (see Figure 14–10). Click the style you want to apply.

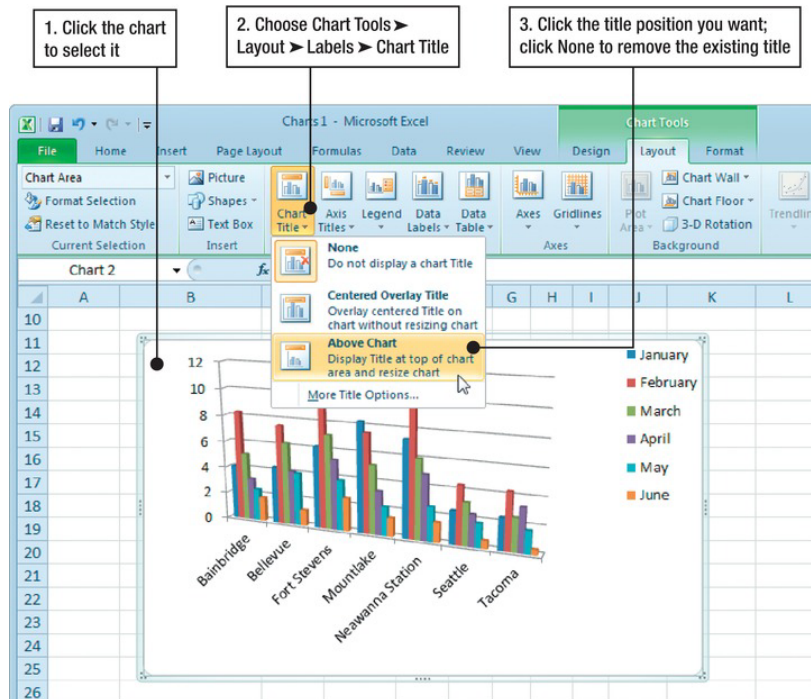




**Figure 14-10.** To give the chart an overall graphical look, apply a style from the **Quick Styles** panel in the **Chart Styles** group of the **Design** tab.

## Adding a Title to a Chart

To let viewers know what your chart shows, add a descriptive title to it. Add the title as shown in Figure 14-11, triple-click the placeholder text to select it all, and then type the text you want.

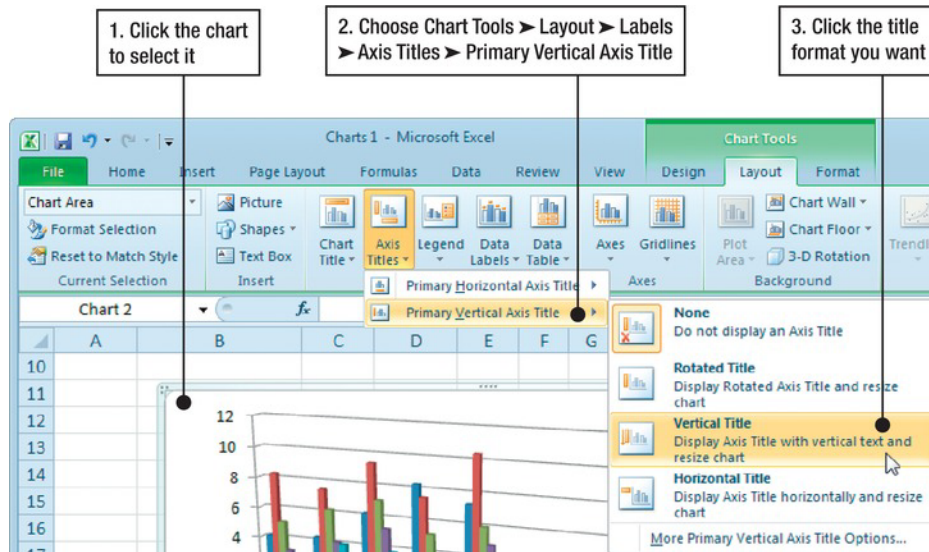


**Figure 14-11.** You can quickly add a title by using the **Chart Title** drop-down panel in the **Labels** group on the **Layout** tab of the Ribbon.

After adding the title, you can drag it to a different position if necessary.

## Adding Axis Titles to the Chart

To make clear what the chart shows, you'll usually want to add titles to the axes. To do so, use the **Axis Titles** button in the Labels group on the **Layout** tab of the Ribbon. Figure 14–12 shows you how to add a title to the vertical axis.



**Figure 14–12.** You can quickly add vertical axis titles and horizontal axis titles by using the **Axis Titles** drop-down panel in the **Labels** group on the **Layout** tab of the Ribbon.

After adding the title, select the placeholder text, and then type your title over it. If you want to reposition the title, drag it to the new location.

**NOTE:** For the vertical axis title, you can choose among **Horizontal Title**, **Rotated Title**, and **Vertical Title**. **Horizontal Title** makes the axis title appear horizontally, so it's easy to read, but it takes up more space. **Rotated Title** rotates the axis title 90 degrees counterclockwise so that it runs upward along the axis. **Vertical Title** makes the axis title appear vertically, with the letters placed horizontally one above the other.

Similarly, you can add a title to the horizontal axis by clicking the chart and choosing **Chart Tools > Layout > Labels > Axis Titles > Primary Horizontal Axis Title > Title Below Axis**. Type the title text over the placeholder that Excel adds.

**NOTE:** If the chart has a Z axis, you can add the axis title by choosing **Chart Tools > Layout > Labels > Axis Titles > Depth Axis Title**, and then clicking the **Rotated Title** item, the **Vertical Title** item, or the **Horizontal Title** item, as needed.

## Changing the Scale or Numbering of an Axis

When you insert a chart, Excel automatically numbers the vertical axis to suit the data range. If you need to change the scale or numbering, follow these steps:

1. Right-click the vertical axis, and then click **Format Axis** on the context menu. The **Format Axis** dialog box opens with the **Axis Options** category at the front (see Figure 14–13).

The screenshot shows the **Format Axis** dialog box with the **Axis Options** category selected in the left-hand pane. The main area contains the following settings:

- Axis Options**
  - Minimum: ☒ Auto ☐ Fixed 0.0
  - Maximum: ☐ Auto ☒ Fixed 15.0
  - Major unit: ☒ Auto ☐ Fixed 2.0
  - Minor unit: ☐ Auto ☒ Fixed 0.5
  - ☐ Values in reverse order
  - ☐ Logarithmic scale Base: 10
  - Display units: None
  - ☐ Show display units label on chart
  - Major tick mark type: Cross
  - Minor tick mark type: None
  - Axis labels: Next to Axis
  - Floor crosses at:
    - ☒ Automatic
    - ☐ Axis value: 0.0
    - ☐ Maximum axis value

A **Close** button is located at the bottom right of the dialog box.

**Figure 14–13.** You can format an axis to control its values, major and minor units, and where the tick marks appear. Excel applies the changes as you work in the **Axis Options** category of the **Format Axis** dialog box.

2. Use the controls at the top to set up the values on the axis:

- *Minimum, Maximum, Major unit, and Minor unit.* To have Excel set the value, select the **Auto** option button. To set it yourself, select the **Fixed** option button, and then type the value in the box.

**TIP:** Depending on how big your chart is, you'll probably want between five and ten major units on the scale you've set by choosing the **Minimum** value and **Maximum** value. Similarly, try using four and ten minor units per major unit, depending on what the chart shows.

- *Values in reverse order.* Select this check box if you want the values to run in reverse order—for example, lowest values at the top instead of the highest.
- *Logarithmic scale.* If you need the chart to use a logarithmic scale rather than an arithmetic scale, select the **Logarithmic scale** check box, and then enter the logarithm base in the **Base** box. For example, enter **10** to have the scale use the values 1, 10, 100, 1000, 10000, and so on at regular intervals.
- *Display units.* If you want the chart to show units—**Hundreds**, **Thousands**, **Millions**, and so on—select the unit in this drop-down list. Excel reduces the figures shown accordingly; for example, **1000000** appears as **1**, with **Millions** next to the scale. This helps make the axis easier to read.

3. In the second section, set up the positioning of the tick marks:

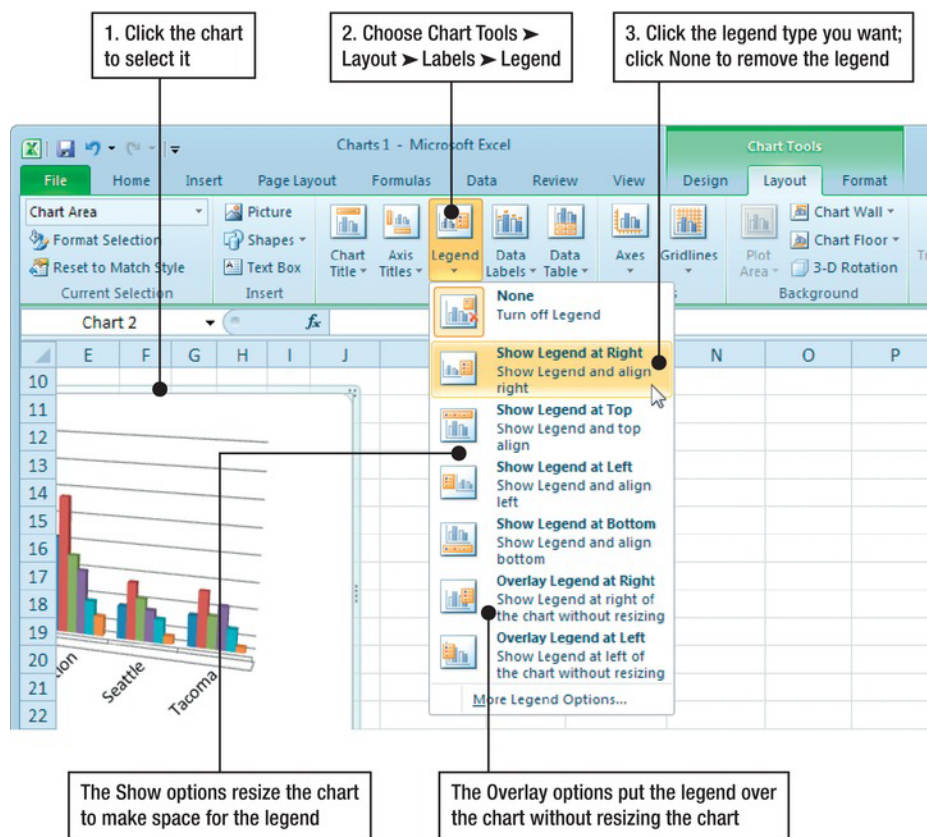
- *Major tick mark type.* In this drop-down list, choose **Inside** to have the tick marks appear inside the chart, **Outside** to have them appear outside (on the axis side), or **Cross** to have them appear on both sides. Choose **None** if you do not want major tick marks.
- *Minor tick mark type.* In this drop-down list, choose how you want minor tick marks to appear—**Outside**, **Inside**, **Cross**, or **None**.
- *Axis labels.* Choose **Next to Axis** to have the labels appear next to the axis. Choose **High** to have the labels appear on the high side of the chart, or choose **Low** to have them appear on the low side. Choose **None** to suppress the labels.

4. In the bottom section, choose where to have the horizontal axis cross the vertical axis:

- *Automatic.* Select this option button to have Excel decide. If your chart looks right with Excel's choice, there's no reason to change it.
  - *Axis value.* Select this option button if you need to control where the axis crosses. Type the value in the box. For example, for some charts, it's helpful to have the horizontal axis cross at a negative value.
  - *Maximum axis value.* Select this option button to make Excel place the horizontal axis at the maximum value.
5. When you're satisfied with the axis, click the **Close** button to close the **Format Axis** dialog box.

## Adding a Legend to a Chart

Many charts benefit from having a legend that summarizes the colors used for different data series. You can add a legend by working as shown in Figure 14-14. Whichever placement you use for the legend, you can drag it to a better position as needed. You can also resize the legend by clicking it and then dragging one of the handles that appear around it.



**Figure 14–14.** When adding a legend from the Labels group, you can select a **Show** placement to resize the chart to make space for the legend or an **Overlay** placement to place the legend on the chart.

## Adding Data Labels to the Chart

If viewers will need to see the precise value of data points rather than just getting a general idea of their value, add data labels to the chart. To do so, click the chart, and then choose **Chart Tools > Layout > Labels > Data Labels > Show**.

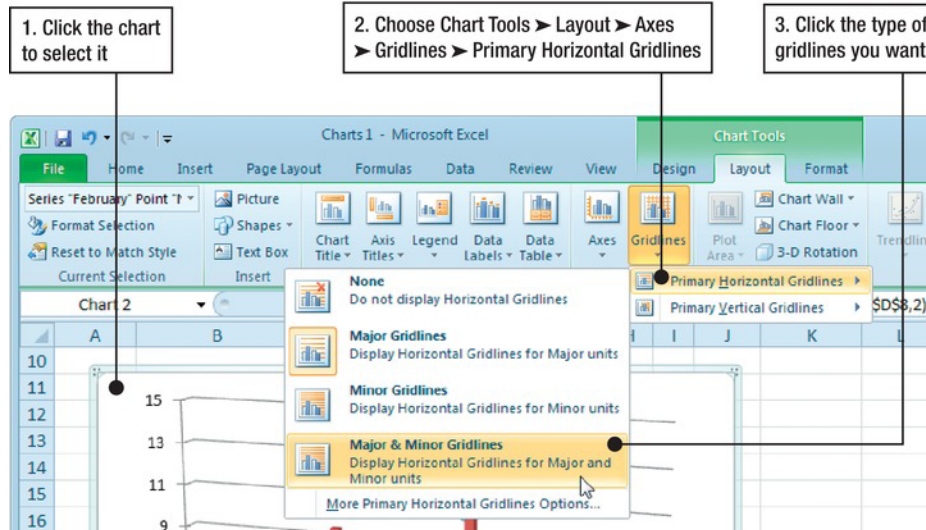
**CAUTION:** Use data labels sparingly. Only some charts benefit from data labels—other charts may become too busy, or having the details may distract the audience from the overall thrust of the chart.

When you add data labels to a chart, Excel displays a data label for each data marker. If you want to display only some data labels, delete the ones you don't need. To delete a data marker, click it, and then either press **Delete** or right-click the selection and click **Delete** on the context menu.

## Choosing Which Gridlines to Display

On many types of charts, you can choose whether to display horizontal and vertical gridlines to help the viewer judge how the data points relate to each other and to the axes.

To control which gridlines appear, work as shown in Figure 14–15.



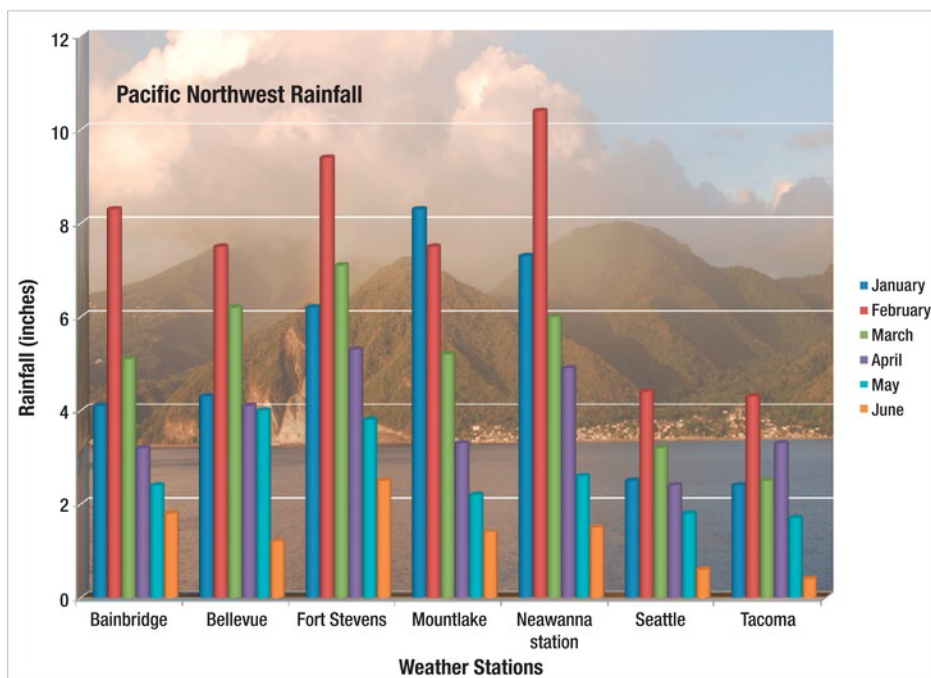
**Figure 14–15.** Use the **Gridlines** drop-down panel in the **Axes** group on the **Layout** tab of the Ribbon to control whether Excel displays major gridlines, minor gridlines, both, or neither for the chart.

**NOTE:** To change the values at which the gridlines appear, format the axis, as described earlier in this chapter.

## Formatting the Chart Wall and Chart Floor

Some charts look fine with a plain background, but for others you may want to decorate the chart walls and the chart floor. The *chart wall* is the vertical area at the back of a chart; if the chart is three-dimensional, it has a side chart wall and a chart floor as well. You can add a solid color, a gradient, a picture, or a texture to the walls, the floor, or both, to give the chart a meaning or context, or simply to make it more visually appealing. Figure 14–16 shows a chart that uses a picture for the walls.



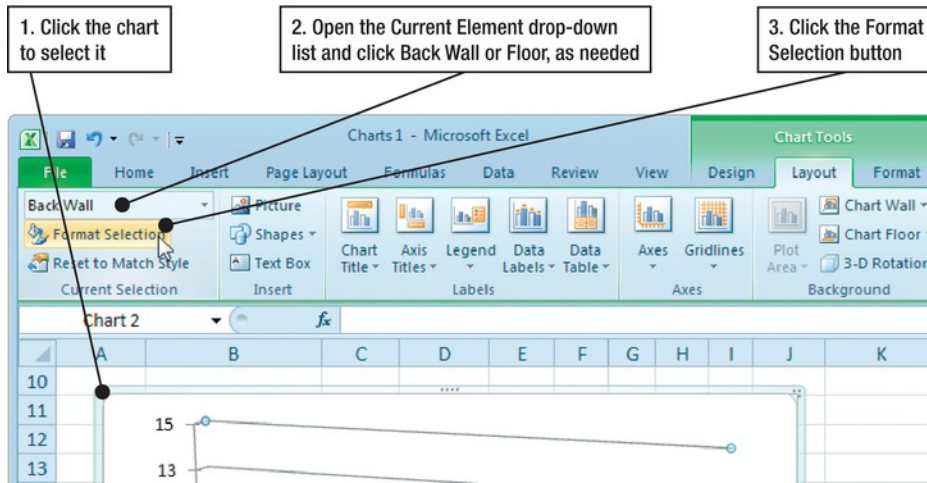


**Figure 14–16.** You can give a chart a themed look by applying a picture to the chart walls.

**TIP:** Usually, the chart walls and floors are the elements that look best with a custom fill (such as a picture). But you can apply a custom fill to many other chart elements as well. To do so, display the **Format** dialog box for the element, click the **Fill** category in the left pane, and then make your choices.

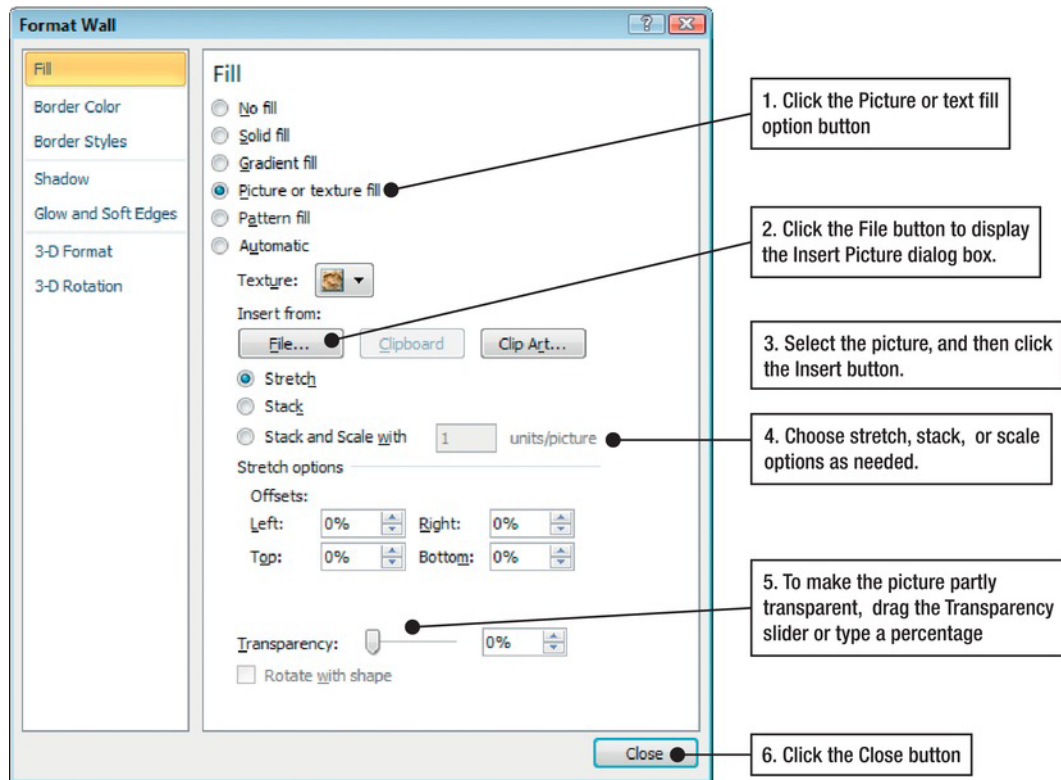
To format the chart wall or the chart floor, first open the Format dialog box for the wall or the floor. Figure 14–17 shows you how to do this.





**Figure 14–17.** Select the **Back Wall** element or the **Floor** element in the **Chart Elements** drop-down list in the **Current Selection** group on the **Layout** tab of the Ribbon. Then click the **Format Selection** button to display the **Format** dialog box for the element.

Clicking the **Format Selection** button opens the **Format** dialog box for the element you chose—in this case, the **Format Wall** dialog box. Use the controls in this dialog box to choose the picture or specify the fill you want. Figure 14–18 shows you how to choose a picture from a file on your PC.



**Figure 14–18.** Use the **Fill** pane in the **Format** dialog box to apply a picture fill to objects such as the chart wall or floor.

## Formatting Individual Chart Elements

You can format any of the individual elements of a chart—for example, the legend, the gridlines, or the data labels—by selecting it and then using its **Format** dialog box. This dialog box includes the name of the element it affects: the **Format Data Labels** dialog box, the **Format Plot Area** dialog box, and so on.

You can display the **Format** dialog box in either of these ways:

- Right-click the element, and then click the **Format** item on the context menu. This is usually the easiest way of opening the **Format** dialog box.

- *Select the element in the Chart Elements drop-down list, and then click the Format Selection button.* If you're finding it difficult to right-click the element on the chart (for example, because the chart is busy), choose **Chart Tools > Format > Current Selection > Chart Elements**, and then click the element you want on the drop-down list. You can then click the **Format Selection** button (also in the **Current Selection** group) to open the **Format** dialog box for the element.

The contents of the **Format** dialog box vary depending on the object you've selected, but for most objects, you'll find categories such as these:

- *Fill.* You can fill in a solid shape with a solid color, color gradient, picture, or texture.
- *Border Color.* You can give a shape a color border, gradient border, or no line.
- *Border Styles.* You can choose among different border styles, change the border width, and pick a suitable line type.
- *Shadow.* You can add a shadow to the shape, set its color, and adjust its transparency, width, and other properties.
- *Glow and Soft Edges.* You can make an object stand out by giving it a glow, choosing a color that contrasts with the object's surroundings, and choosing how wide the glow should be. You can also apply soft edges to a shape.
- *3-D Format.* You can apply a 3-D format to different aspects of a shape—for example, setting a different bevel for the top and bottom of the shape.
- *3-D Rotation.* You can apply a 3-D rotation to the object.
- *Alignment.* For text objects, you can choose how to align text and whether to rotate it.

If the chart element contains text, you can format it by using the controls on the **Home** tab of the Ribbon or keyboard shortcuts. For example, to apply boldface to the data labels, click the data labels, and then choose **Home > Font > Bold** (or press **Ctrl+B**).

**TIP:** To restore an element to its original formatting, select the element either by clicking it on the chart or by using the **Chart Elements** drop-down list. Then choose **Chart Tools > Format > Current Selection > Reset to Match Style**.

## Summary

In this chapter, you learned to create charts that present your data in a clear and compelling way. You know the difference between embedded charts and charts on chart sheets, you can identify the components of charts, and you're familiar with the different types of charts you can create in Excel. You know how to create a chart from your data, change its layout, and apply formatting as needed.

In the next chapter, I'll show you how to create databases in Excel and solve business problems using what-if analysis.