

12 Creating Charts

LESSON SKILL MATRIX

Skills	Exam Objective	Objective Number
Building Charts	Create a new chart.	5.1.1
Formatting the Parts of a Chart Manually	Add and modify chart elements.	5.2.2
Modifying a Chart	Add additional data series. Switch between rows and columns in source data. Move charts to a chart sheet. Resize charts. Apply chart layouts and styles.	5.1.2 5.1.3 5.2.4 5.2.1 5.2.3
Using Quick Analysis Tools	Insert sparklines. Analyze data by using Quick Analysis.	2.3.1 5.1.4

SOFTWARE ORIENTATION

The Insert Tab

The Insert tab contains the command groups you'll use to create charts in Excel (see Figure 12-1). To create a basic chart in Excel that you can modify and format later, start by entering the data for the chart on a worksheet. Then, you select that data and choose a chart type to graphically display the data. Simply by choosing a chart type, a chart layout, and a chart style—all of which are within easy reach on the ribbon's Insert and Chart Tools tabs—you will have instant professional results every time you create a chart.

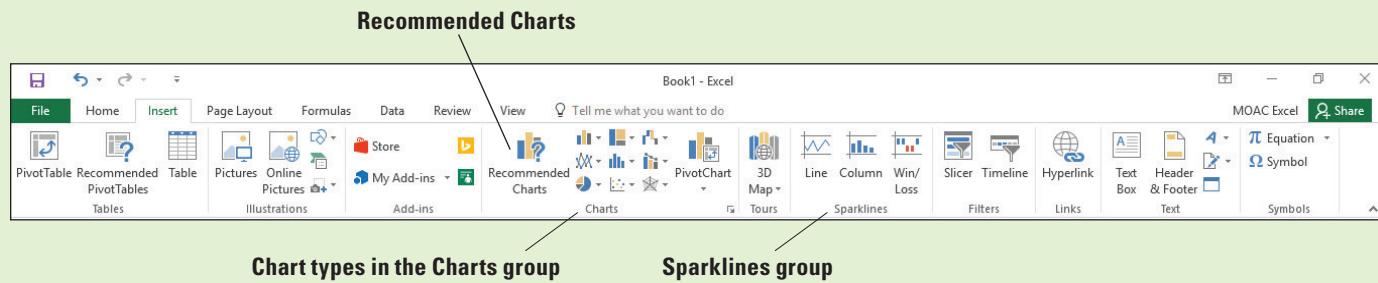


Figure 12-1

The Insert tab

Use this illustration as a reference throughout this lesson as you become familiar with and use Excel's charting capabilities to create attention-getting graphics that summarize your data.

BUILDING CHARTS

A **chart** is a graphical representation of numeric data in a worksheet. Data values are represented by graphs with combinations of lines, vertical or horizontal rectangles (columns and bars), points, and other shapes. When you want to create a chart or change an existing chart, you can choose from 16 chart types with numerous subtypes and combo charts. These include five new chart types offered in Excel 2016—Treemap, Sunburst, Histogram, Box & Whisker, and Waterfall. Table 12-1 gives a brief description of the most commonly used Excel chart types.

Table 12-1
Excel Chart Types

Chart Type	Description	Usual Data Arrangement
Column	Useful for comparing values across categories or a time period. Data points are vertical rectangles.	Categories (in any order) or time are usually on horizontal axis and values are on vertical axis.
Line	Useful for showing trends in data at equal intervals. Displays continuous data over time set against a common scale. Values are represented as points along a line.	Time in equal units on horizontal axis and values on vertical axis.
Pie	Useful for comparing the size of items in one data series and how each slice compares with the whole. Data points are displayed as a percentage of a circular pie.	Only one data series and none of the values are negative or are zero.
Doughnut	Useful for displaying the relationship of parts to a whole. Can contain more than one data series. Values are represented as sections of a circular band.	Categories are colors of circular bands and the size of the bands are the values of each band.
Bar	Useful for illustrating comparisons among individual items when axis labels are long. Values are represented as horizontal rectangles.	Categories or time are along the vertical axis and values are along the horizontal axis.
Area	Useful for emphasizing magnitude of change over time. Shows relationships of parts to the whole. Values represented as shaded areas.	Categories or time are on the horizontal axis and values are on the vertical axis.
XY (Scatter)	Useful for showing relationships of one numeric set of data against another numeric set of data to see whether there is a correlation between two variables.	The independent variable is usually on the horizontal axis and the dependent variable is on the vertical axis.
Bubble	Useful for comparing three sets of values.	First value is horizontal distance, second value is vertical distance, and third value is the size of bubble.
Stock	Useful for illustrating the fluctuation of stock prices or scientific data when there is a start, end, high, and low value during each period.	For each time period, there are three to five numbers.
Surface	Useful for finding optimum combinations between two sets of data. The resulting plot looks similar to a topographic map or piece of cloth draped over points.	Both categories and values are numeric values.
Radar	Useful for showing multiple variables for each subject, standardized to the same scale. Represents values as points that radiate on spikes from the center.	First column is label of spike. First row is label of units. Values for each unit go down each column starting in the second column after the row labels.
Combo	Two or more chart types, such as line and column, depicted in a single graphic.	

Take Note

When building a worksheet for a chart, the time period is normally displayed in the first row and the categories are in the first column. There is a Switch Row/Column button on the Design tab that allows you to change the orientation of the data as it appears in the chart.

Selecting Data to Include in a Chart

You can begin creating one of Excel's common chart types by clicking its image on the Insert tab of the ribbon. More important than the chart type, however, is the selection of the data you want to display graphically. What aspects of the data do you want viewers to notice? In this exercise, you will learn to select data for use in an Excel chart that returns your calculations and data in a color-coded pie chart with sections identified by numbers or labels.

There are two approaches to identifying the data for your chart. If you lay out your worksheet efficiently, you can select multiple ranges at one time that will become the different chart elements. The second way is to identify the chart type and then select the data for each chart element. The first part of this lesson walks you through choosing the ranges first and the second part of the lesson walks you through adding and removing certain chart elements.

STEP BY STEP

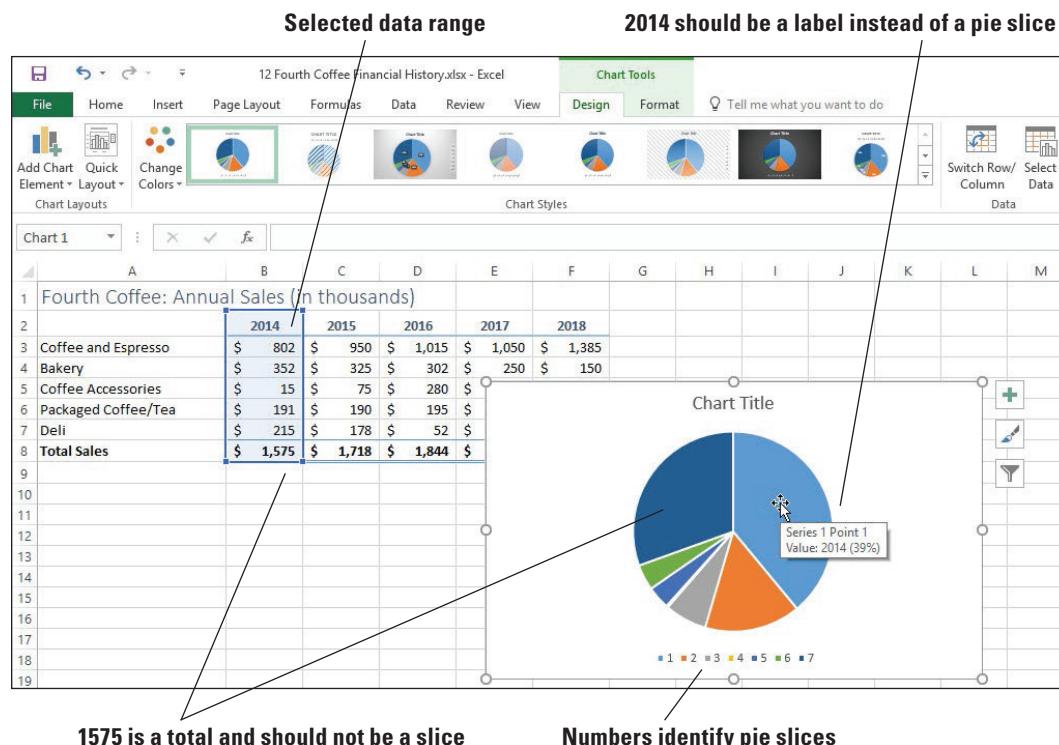
Select Data to Include in a Chart

GET READY. LAUNCH Excel.

1. OPEN the **12 Fourth Coffee Financial History** file for this lesson.
2. Select **B2:B8** (the 2014 data).
3. Click the **Insert** tab, and in the Charts group, click the **Pie** button. Click the **first** 2-D Pie chart in the drop-down menu. A color-coded pie chart with sections identified by number is displayed.
4. Move the mouse pointer to the largest slice. The ScreenTip shows **Series 1 Point 1 Value: 2014 (39%)**, as shown in Figure 12-2. This corresponds to the label 2014 rather than actual data.

Figure 12-2

Pie chart created with incorrect data



5. Point to the second largest slice and you'll see that the value is 1575, which is the amount for the total. Neither the column label (2014) nor the total sales amount should be included as pie slices.
6. Click in the chart's white space and press **Delete**. The chart is now removed from the worksheet.



Troubleshooting

To delete a chart, click in the white space then press the Delete key on your keyboard. If you click on the graphic or another chart element and press Delete, only the selected element will be deleted.

7. Select **B3:B7**. Click the **Insert** tab and, in the Charts group, click **Pie** and then click the **first** 2-D Pie chart. The correct data is displayed, but the chart is difficult to interpret with only numbers to identify the parts of the pie.



Troubleshooting

When you insert a chart into your worksheet, the Chart Tools tabs (Design and Format) become available in Excel's ribbon with the Design tab active by default. You must select the Insert tab on the ribbon each time you want to insert a chart.

8. Click in the chart's white space and press **Delete**.
9. Select **A2:B7**, click the **Insert** tab, and click **Pie** in the Charts group. Click the **first** 2-D Pie chart. As illustrated in Figure 12-3, the data is clearly identified with a title and a label for each colored slice of the pie.

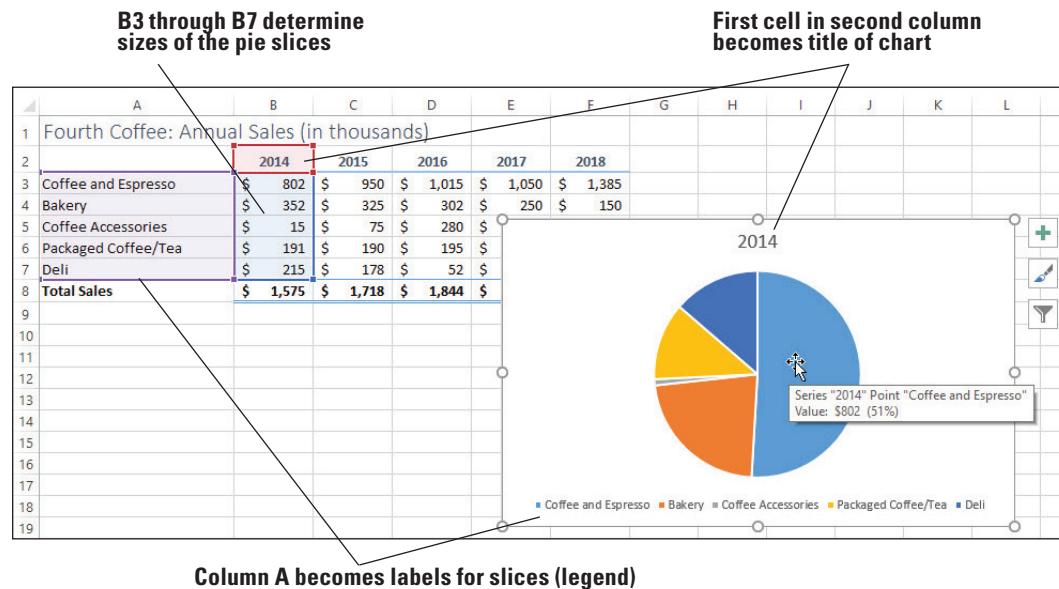


Figure 12-3

Pie chart with correct data range

10. Move the mouse pointer to a blank spot within the chart and drag the chart to move it below the data.
11. Click outside of the chart, click **File**, and then click **Print**. Notice that the Annual Sales data appears with the chart on the page.
12. Press **Esc** and then click on the **Chart** and choose **File, Print**. Now notice that the chart appears by itself on the page.

Take Note

If you want to print just an embedded chart on a workbook, select the chart before you choose File, Print.

13. **CREATE** an Excel Lesson 12 folder and then **SAVE** the workbook as **12 Charts Solution**.

PAUSE. LEAVE the workbook open for the next exercise.

This exercise illustrates that the chart's data selection must contain sufficient information to interpret the data at a glance. Excel did not distinguish between the column B label and its data when you selected only the data in column B. Although the label is formatted as text, because the column label was numeric, it was interpreted as data to be included in the chart. When you expanded the selection to include the row labels, 2014 was correctly recognized as a label and displayed as the title for the pie chart.

When you select data and create a pie chart, the chart is placed on the worksheet. This is referred to as an **embedded chart**, meaning it is placed on the worksheet rather than on a separate **chart sheet**, a sheet that contains only a chart.

Moving a Chart

When you insert a chart, by default it is embedded in the worksheet. You can click a corner of a chart or the midpoint of any side to display sizing handles (two-sided vertical, horizontal, or diagonal white arrows). You can use the sizing handles to change the size of a chart. To move the chart, you need to click in the white space and drag, using the four-headed black mouse pointer. You might want a chart to be reviewed with the worksheet data or you might want the chart to stand on its own. In this exercise, you move a chart to a new chart sheet in the workbook.

STEP BY STEP

Move a Chart

GET READY. USE the workbook from the previous exercise.

1. Click in the white space on the chart to select it.
2. Click the **Design** tab, and then click the **Move Chart** button.
3. In the *Move Chart* dialog box, click in the **New** sheet box and type **2014 Pie** to create the name of your new chart sheet.
4. Click **OK**. The chart becomes a separate sheet in the workbook.
5. Click on the **Sales** worksheet tab to return to the data portion of the workbook.
6. **SAVE** the workbook.

PAUSE. LEAVE the workbook open for the next exercise.

If you want to return the chart to the Sales sheet, you could go to the 2014 Pie tab, click the Move Chart button again, and in the Object in box, select Sales (the name of the sheet).

Choosing the Right Chart for Your Data

You can create most charts, such as column and bar charts, from data that you have arranged in rows or columns in a worksheet. Some charts, such as pie and bubble charts, require a specific data arrangement. A single pie chart cannot be used for comparisons across periods of time or for analyzing trends. The column chart works well for comparisons. In a 2-D or 3-D column chart, each data marker is represented by a column. In a stacked column, data markers are stacked so that the top of the column is the total of the same category (or time) from each data series. A line chart shows points connected by a line for each value. In this exercise, you learn how to create a column chart and a line chart to illustrate the increase in coffee and espresso sales at Fourth Coffee during a five-year period.

STEP BY STEP**Choose the Right Chart for Your Data**

GET READY. USE the workbook from the previous exercise.

1. Select cells A2:F7.

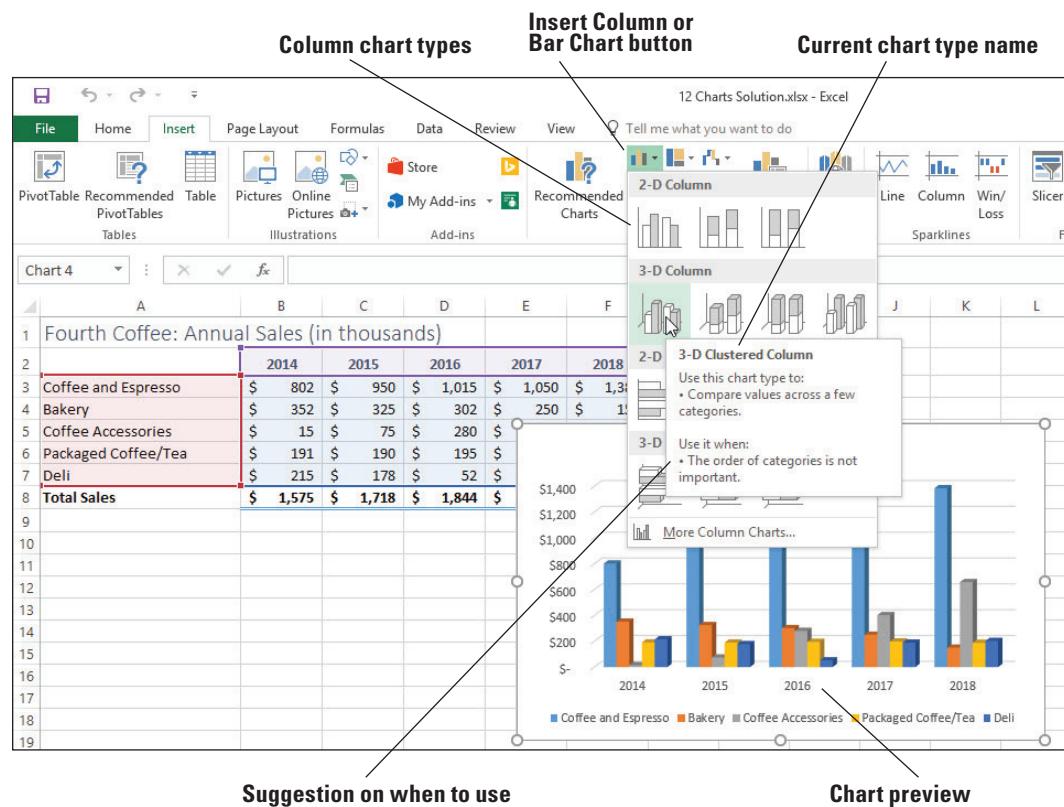
**Troubleshooting**

Make sure you do not include row 8, the Total Sales row. It is standard practice not to include totals in column and bar charts. In some instances it may be helpful to add a line with the totals as a separate axis on the right.

2. Click the **Insert** tab, and in the Charts group, click **Insert Column or Bar Chart**. In the drop-down list, move to each of the options. When you pause on an option, Excel shows a preview of the chart on the worksheet and a description and tips for the selected chart type. Under 3-D Column, move to the first option. As shown in Figure 12-4, the ScreenTip shows that the type of chart is a 3-D Clustered Column. Excel suggests using this chart type to compare values when the order of categories is not important.

Figure 12-4

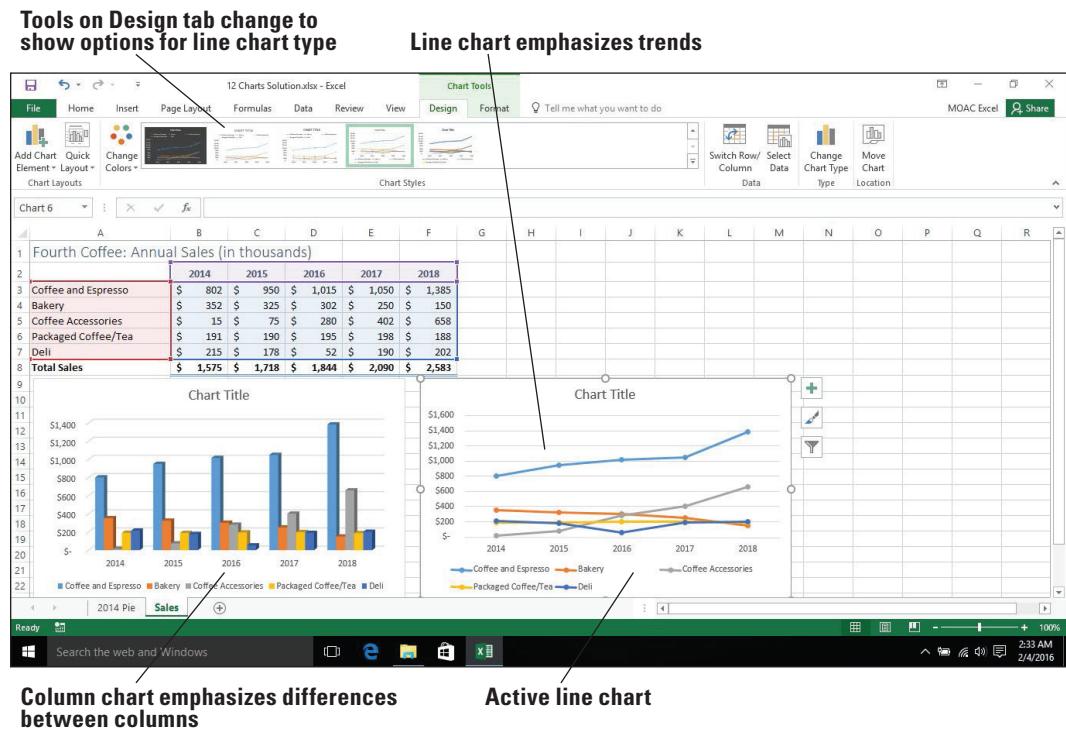
ScreenTip and chart preview



3. In the drop-down list, click **3-D Clustered Column**. The column chart illustrates the sales for each of the revenue categories for the five-year period. The Chart Tools tab appears with the Design tab active.
4. Anywhere in a blank area on the chart, click and drag the chart below the worksheet data and position it at the far left.
5. Click outside the column chart to deselect it. Notice that the Chart Tools tab disappears.
6. Select A2:F7, click the **Insert** tab, and in the Charts group, click **Line** (first chart in the second row). In the 2-D Line group, click the **Line with Markers** option. Position the line chart next to the column chart. Refer to Figure 12-5.

Figure 12-5

Column chart and line chart

**Take Note**

Take a minute to study the two charts. In the column chart, Coffee and Espresso are by far the largest revenue sources, but Coffee Accessories are catching up. On the line chart, notice that Coffee and Espresso increase over time, but that Coffee Accessories increases faster. Bakery items are decreasing, and the Deli sales is a bit up and down.

7. Click the column chart and click the **Design** tab.
8. Click the **Move Chart** button and in the New sheet box, type **Column** and then click **OK**.
9. Click the **Sales** worksheet tab, select the **line** chart, click the **Move Chart** button, and in the New sheet box, type **Line**. Click **OK**.
10. **SAVE** the workbook.

PAUSE. LEAVE the workbook open for the next exercise.

The column and line charts provide two views of the same data, illustrating that the chart type you choose depends on the analysis you want the chart to portray. The pie chart, which shows values as part of the whole, displays the distribution of sales for one year. Column charts also facilitate comparisons among items but also over time periods. A line chart's strength is showing trends over time.

The line chart you created in this exercise includes data markers to indicate each year's sales. A **data marker** is a bar, area, dot, slice, or other symbol in a chart that represents a single data point or value that originates from a worksheet cell. Related data markers in a chart constitute a **data series**.

Using Recommended Charts

If you are new to charting, the number of chart types to choose from can be overwhelming. Excel 2016 has a feature to help narrow the choices depending on the data that you select. It is the Recommended Charts button. In this exercise, you will select different sets of data and observe what choices the Recommended Charts button displays.

STEP BY STEP**Use Recommended Charts**

GET READY. USE the workbook from the previous exercise.

1. Click the **Sales** worksheet tab.
2. Select the **Year** labels and Coffee and Espresso cells **A2:F3**, click the **Insert** tab, and then click the **Recommended Charts** button. Excel recommends four chart types and explains when you should use each of the charts underneath the example.
3. Click the other three chart types and read each description. Click the **Line** chart and then click **OK**.
4. Click the **Move Chart** button, and in the New sheet box, type **Coffee Line** and then click **OK**.
5. Click the **Sales** worksheet tab, select **A2:F2**, hold down **Ctrl**, and select **A8:F8**. You do not have to choose adjacent ranges when charting your data.
6. Click the **Recommended Charts** button. The recommended choices are the same as in Step 2 because the first row includes years and the second row includes values. Click **OK**.
7. Click the **Move Chart** button, and in the New sheet box, type **Total Line** and then click **OK**.
8. **SAVE** the workbook.

PAUSE. LEAVE the workbook open for the next exercise.

Creating a Bar Chart

Bar charts are similar to column charts and can be used to illustrate comparisons among individual items. Data that is arranged in columns or rows on a worksheet can be plotted in a bar chart. Clustered bar charts compare values across categories. Stacked bar charts show the relationship of individual items to the whole of that item. The side-by-side bar charts you create in this exercise illustrate two views of the same data. You can experiment with chart types and select the one that best portrays the message you want to convey to your target audience.

STEP BY STEP**Create a Bar Chart**

GET READY. USE the workbook from the previous exercise.

1. Click the **Sales** worksheet tab.
2. Select cells **A2:F7** and on the Insert tab, in the Charts group, click the **Insert Column or Bar Chart** button.

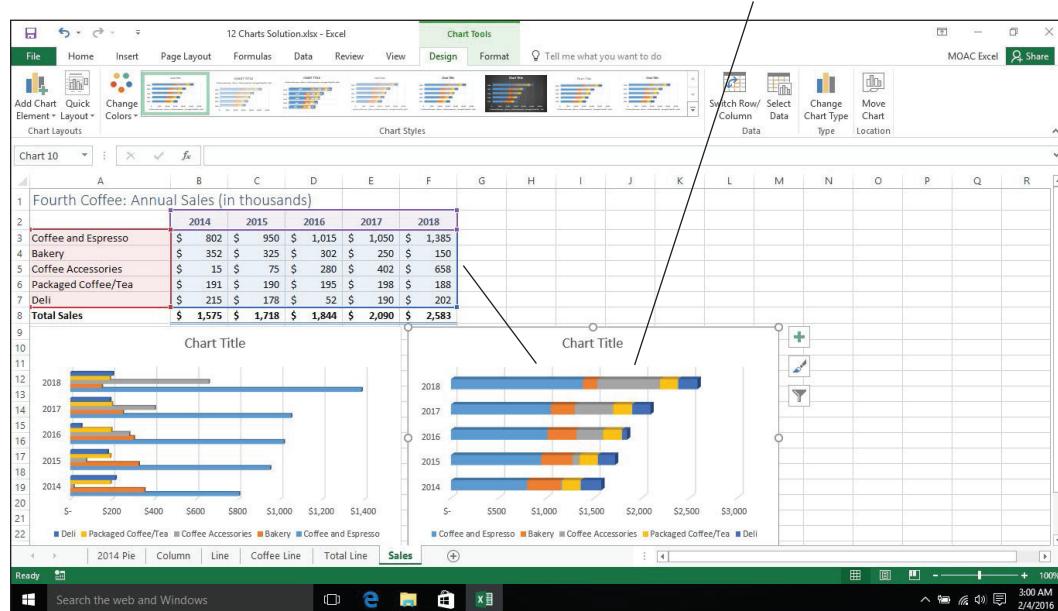
Take Note A ScreenTip displays the chart type name when you hover the mouse pointer on its button or subtype option.

3. Under 3-D Bar, click the **3-D Clustered Bar** subtype. The data is displayed in a clustered bar chart and the Design tab is active on the Chart Tools tab.
4. Drag the clustered bar chart to the left, below the worksheet data.
5. Select **A2:F7**. On the **Insert** tab, in the Charts group, click the **Insert Column or Bar Chart** button.
6. Under 3-D Bar, click the **3-D Stacked Bar** subtype.
7. Position the stacked bar graph next to the 3-D bar graph. Your worksheet should look like Figure 12-6.

Each part of bar adds together to show total in the stacked bar

Figure 12-6

A clustered bar chart and stacked bar chart



8. Click the **Move Chart** button, and in the New sheet box, type **Stacked Bar** and then click **OK**.
9. Click the **Sales** worksheet tab, click the clustered bar chart, click the **Move Chart** button, and in the New sheet box, type **Clustered Bar** and then click **OK**.
10. **SAVE** the workbook.

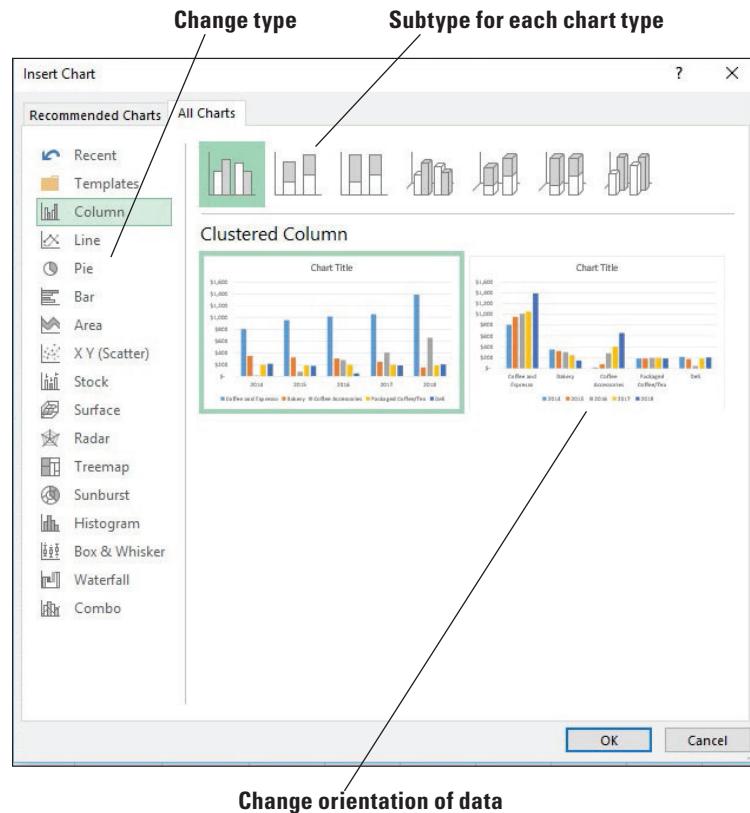
PAUSE. LEAVE the workbook open for the next exercise.

The Charts group on the Insert tab contains nine buttons leading to multiple chart types (including a combined chart type). To create one of these charts, select the worksheet data and click the button and choose one of the chart type options. You can select from any chart type by clicking the Charts dialog box launcher to open the Insert Chart dialog box. The Recommended Charts shows in the first tab. Click on the All Charts tab in the dialog box as shown in Figure 12-7 to see samples of all types and subtypes of charts.

When you click a chart type in the left pane of the dialog box, the first chart of that type is selected in the right pane. You can also scroll through the right pane and select any chart subtype. Different examples display to determine whether you want the data interpreted in rows and columns vs. columns and rows.

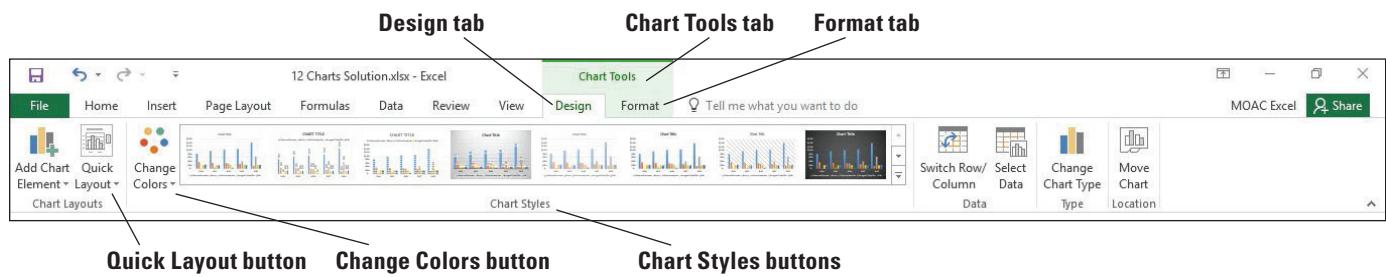
Figure 12-7

All Charts tab of the Insert Chart dialog box



FORMATTING A CHART WITH A QUICK STYLE OR LAYOUT

After you create a chart, you can instantly change its appearance by applying a predefined style or layout. Excel provides a variety of useful quick styles and quick layouts from which you can choose. As shown in Figure 12-8, when you create a chart, the Chart Tools tab becomes available and the Design and Format tabs and Quick Layout button appear on the ribbon.

**Figure 12-8**

The Chart Tools tab displays when a chart is inserted.

Formatting a Chart with a Quick Style

Predefined layouts and styles are timesaving features that you can use to enhance the appearance of your charts. In this exercise, you apply a Quick Style to your chart.

STEP BY STEP

Format a Chart with a Quick Style

GET READY. USE the workbook from the previous exercise.

1. Click on the **2014 Pie** chart tab. If the Design tab is not visible and the buttons active, click the white space inside the chart boundary and click the **Design** tab if necessary.
2. One of the Chart Styles is already selected. Click each of the styles until you come to the style shown in Figure 12-9 with the labels and percentages shown next to each pie slice. If necessary, click the down arrow to select more styles.

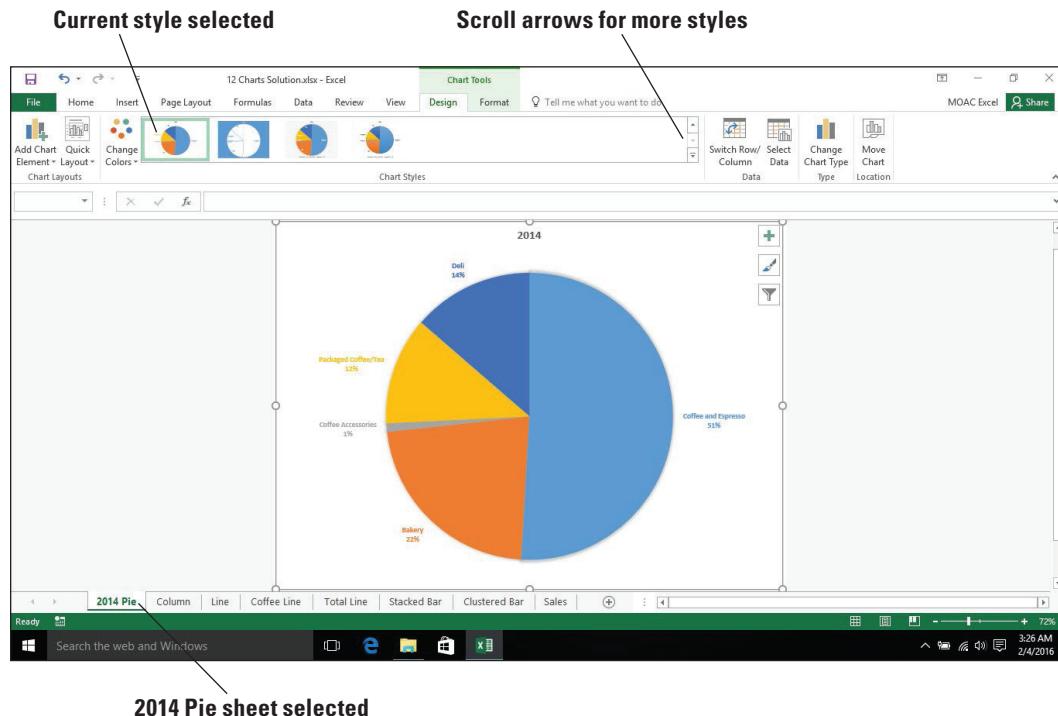


Figure 12-9

Pie chart with labels next to each slice

3. The chart colors are determined by the theme of your worksheet. Click the **Change Colors** button and move the mouse pointer over each of the different rows to see the preview of the pie change.
4. Click **Color 3** to make the change. This change affects only the current chart.
5. **SAVE** the workbook.

PAUSE. LEAVE the workbook open for the next exercise.

Formatting a Chart with a Quick Layout

In addition to the colors and patterns, you can change which elements appear on your chart and where they appear. This includes items such as axis titles, data tables, and the position of the legend. In this exercise, you will apply a Quick Layout to your chart to display a data table under the chart.

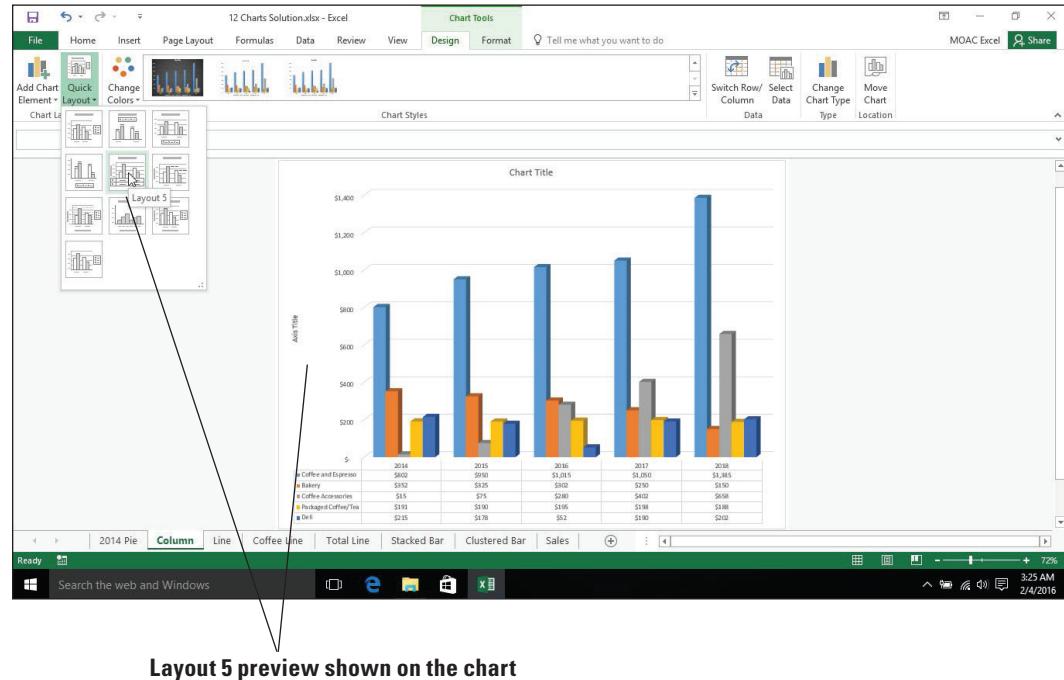
STEP BY STEP**Format a Chart with a Quick Layout**

GET READY. USE the workbook from the previous exercise.

1. Click the **Column** chart tab.
2. Click the **Design** tab, and then click the **Quick Layout** button. As you move to each of the options, the chart changes to preview what it will look like if you select the option (see Figure 12-10).

Figure 12-10

Quick Layout choices



3. Click **Layout 5**. The data table appears under the chart. The years (2014–2018) act as both the x-axis labels and column headers of the data table.

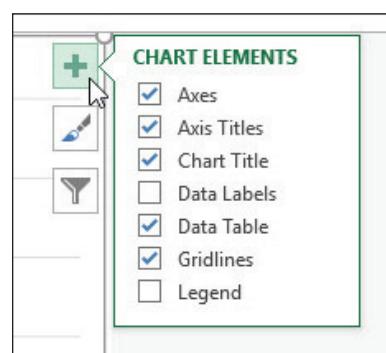
4. **SAVE** the workbook.

PAUSE. **LEAVE** the workbook open for the next exercise.

You can also use the design buttons on the right of a selected chart to change the style and color and select which elements appear on the chart. Click on the chart and click the first button, the Chart Elements button, to select which items appear on the chart as shown in Figure 12-11.

Figure 12-11

Chart Elements options



Click the second button, Chart Styles, and choose which style and color you want. The third button, Chart Filters, enables you to filter your chart data to see only a portion of the source data charted.

FORMATTING THE PARTS OF A CHART MANUALLY

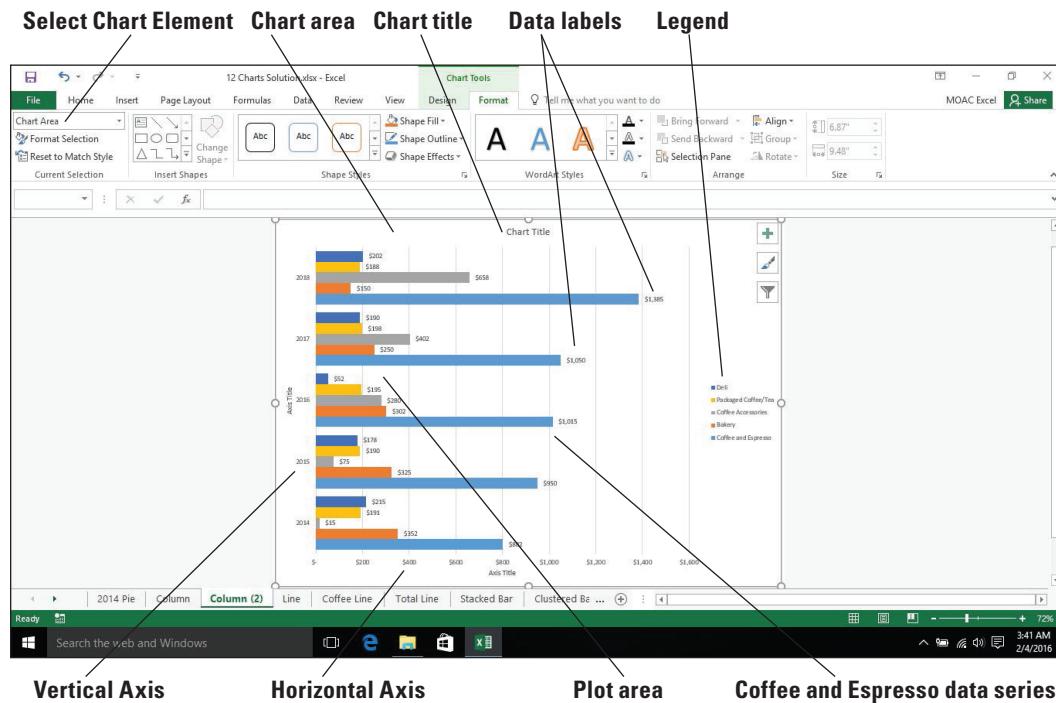
The Format tab provides a variety of ways to format chart elements. To format a chart element, click the chart element that you want to change and then use the appropriate commands from the Format tab.

The following list defines some of the chart elements you can manually format in Excel. These elements are illustrated in Figure 12-12:

- **Chart area:** The entire chart and all its elements.
- **Plot area:** The area bounded by the axes.
- **Axis:** A line bordering the chart plot area used as a frame of reference for measurement.
- **Data Series:** Row or column of data represented by a line, set of columns, bars or other chart type.
- **Title:** Descriptive text that is aligned to an axis or at the top of a chart.
- **Data labels:** Text that provides additional information about a data marker, which represents a single data point or value that originates from a worksheet cell.
- **Legend:** A box that identifies the patterns or colors that are assigned to the data series or categories in a chart.

Figure 12-12

Chart elements



Take Note

To learn the elements of the chart, click the Chart Elements drop-down list in the Current Selection group of the Format tab and select each of the elements on the sample charts in your workbook.

Editing and Adding Text on Charts

Up until now we have used only the default text on the charts created. You can edit existing titles or labels in a similar way that you do in a worksheet. Click the label, select the text, and type the new text. If the element isn't visible, you can add it by checking the Chart Elements option or inserting a text box.

STEP BY STEP**Edit and Add Text on Charts**

GET READY. USE the workbook from the previous exercise.

1. Click the **2014 Pie** chart tab.
2. Click the **2014** title, move the insertion point to the end of the label and click. Type a **space** and then type **Annual Sales**. The text appears in all caps based on the current layout.
3. Select the label text. Click the **Home** tab and click the **Font dialog box launcher**. The **Font** dialog box appears.
4. Click the **All Caps** check box to uncheck this option. Click **OK**.
5. Click on the **Format** tab and then in the Insert Shapes group, click the **Text Box** button. Click the lower-left corner of the chart area and type your initials and today's date in the text box.
6. Edit the chart titles on each of the charts as follows:

Chart	Title	Text
Column	Chart Title	Annual Sales
Column	Axis Title	Thousands
Line	Chart Title	Annual Sales (Thousands)
Stacked Bar	Chart Title	Annual Sales
Clustered Bar	Chart Title	Annual Sales

**Troubleshooting**

If you have difficulty viewing the text as you type a new chart title or axis title, select the text box containing the title, click in the formula bar (just to the right of the *fx* button), type the new text, and press Enter.

7. **SAVE** the workbook.

PAUSE. **LEAVE** the workbook open for the next exercise.

Formatting a Data Series

Use commands on the Format tab to add or change fill colors or patterns applied to chart elements. Select the element to format and click on one of the buttons on the ribbon or display the Format pane to add fill color or a pattern to the selected chart element.

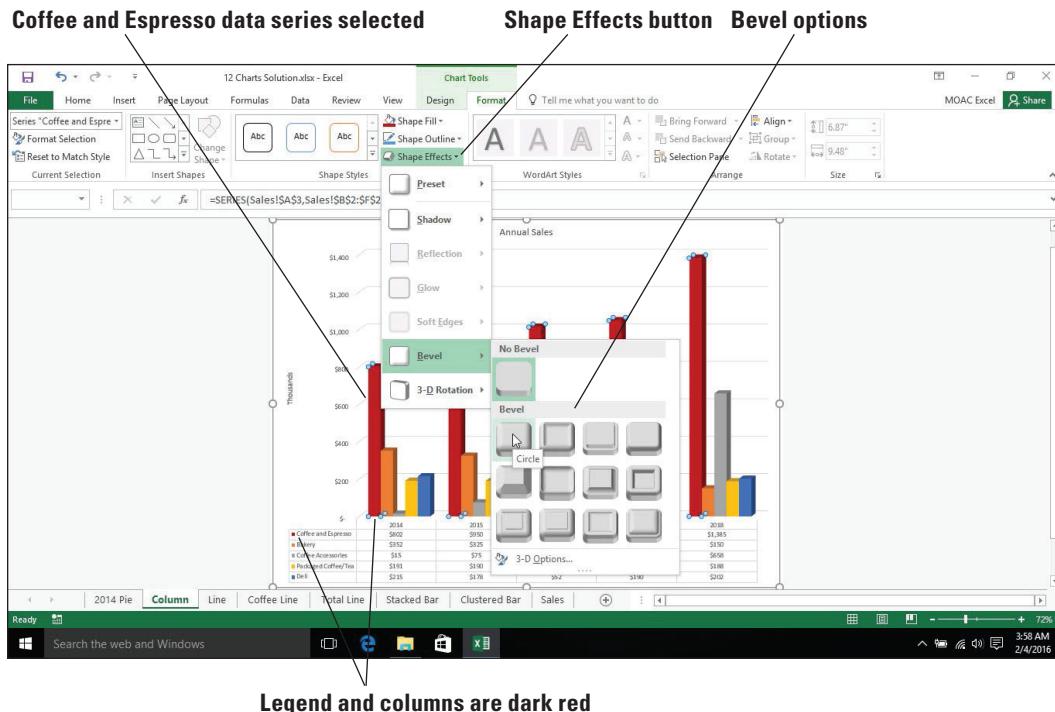
STEP BY STEP**Format a Data Series**

GET READY. USE the workbook from the previous exercise.

1. Click the **2014 Pie** chart tab.
2. Click in the largest slice of the pie. You can see data selectors around each of the pie slices.
3. Click the largest pie slice again and you should see data selectors only on the slice. Click the **Shape Fill** button and choose **Dark Red**. The Coffee and Espresso pie slice changes to dark red.
4. Click the **Column** chart tab.
5. Click the tallest bar (Coffee and Espresso). Notice that the five bars have data selectors. Click the **Shape Fill** button and select **Dark Red**. All five bars and the legend color for Coffee and Espresso changes to dark red.
6. Click the **Shape Effects** button, click **Bevel** and notice the options available (see Figure 12-13).

Figure 12-13

Shape Effects menu



7. Click the **first** Bevel option (Circle). Repeat this option for each of the data series.
8. In addition to the Shape Fill, Shape Outline, and Shape Effects buttons, you can also change the elements with the Shape Styles dialog box launcher. Select any data series in the column chart, if necessary. On the Format tab, in the Shape Styles group, click the **Shape Styles dialog box launcher**. The Format Data Series pane opens with the Series Options button selected.
9. Click each of the three buttons under the Series Options label and look at the choices. Click one of the **Coffee Accessories** columns.
10. Click the **Fill & Line** button, choose **Fill**, and select **Picture or texture fill** from the options.
11. Click the **Texture drop-down arrow** and choose the **Brown Marble** option.
12. **SAVE** the workbook.

PAUSE. LEAVE the workbook open for the next exercise.

When you use the mouse to point to an element in the chart, the element name appears in a ScreenTip. You can select the element you want to format by clicking the arrow next to the Chart Elements box in the Current Selection group on the Format tab. This list is chart specific. When you click the arrow, the list will include all elements that you have included in the displayed chart.

Changing the Chart's Border Line

You can create an outline around a chart element. Just select the element and apply one of the predefined outlines or click Shape Outline to format the shape of a selected chart element. You can also apply a border around the entire chart. Select an element or the chart and use the colored outlines in the Shape Styles group on the Format tab, or click Shape Outline and choose a color.

STEP BY STEP

Change the Chart's Border Line

GET READY. USE the workbook from the previous exercise.

1. Click the **Line** chart tab and choose the **Format** tab.
2. In the Current Selection group, click the **arrow** in the Chart Elements selection box and

then click **Chart Area**.

3. Click the **More** arrow in the Shape Styles group. The Shape Styles gallery opens.
4. Scroll through the outline styles to locate Colored Outline – Blue, Accent 1.
5. Click **Colored Outline – Blue, Accent 1**. You might not notice a change because of the thin line width.
6. In the Format Chart Area pane, click the **Border arrow** to expand that section.
7. Click the **Width up arrow**, until you get to 2.5 pt. Now you can see that the chart is outlined with a light blue border.
8. Click the **Coffee and Espresso** line.
9. In the **Color** drop-down button, under the Line section, choose **Dark Red**.
10. **SAVE** your workbook.

PAUSE. LEAVE the workbook open for the next exercise.

Modifying a Chart's Legend

You can modify the content of the legend, change the position of the legend relative to the chart, expand or collapse the legend box, edit the text that is displayed, and change character attributes. In the chart you modify in this exercise, changing the font colors in the legend to match the blocks in the columns provides an additional visual aid that enables the viewer to quickly see the income contribution for each category.

STEP BY STEP

Modify a Chart's Legend

GET READY. USE the workbook from the previous exercise.

1. Click the **Line** chart tab.
2. On the **Format** tab, click the **Chart Elements drop-down arrow** and choose **Legend**.
3. If the Format Legend pane does not appear, click the **Format Selection** button.
4. Click the **Legend Options** button.
5. In the Legend Position section, click **Right** to move the legend to the right side of the chart.
6. Click the **Coffee and Espresso** label in the legend.
7. Click the **Text Options** button to display the menus for the text.
8. In the Fill Color drop-down, choose **Dark Red** so the text in the legend matches the line color.
9. Click the **2014 Pie** chart tab.
10. Click the **Coffee and Espresso** label twice. If necessary, click the **Text Options** button and underneath Text Fill, click the **Color** button, and then choose **Dark Red** to change the text color.
11. **CLOSE** the Format Data Label pane and **SAVE** the workbook.

PAUSE. LEAVE the workbook open for the next exercise.

MODIFYING A CHART

Sometimes the chart that you add from the Insert tab and modify through the Quick Layout and Chart Styles still isn't exactly what you want. In addition to using the creation and design features mentioned previously, you can modify a chart by adding or deleting individual elements or by moving or resizing the chart. You can also change the chart type without having to delete the existing chart and create a new one or change how Excel selects data as its data elements by changing rows to columns.

Adding Elements to a Chart

Adding elements to a chart can provide additional information that was not available in the data you selected to create the chart. In some cases, adding data labels helps make a chart more understandable. In this exercise, you learn to use the Chart Elements button to add items to a chart.

STEP BY STEP

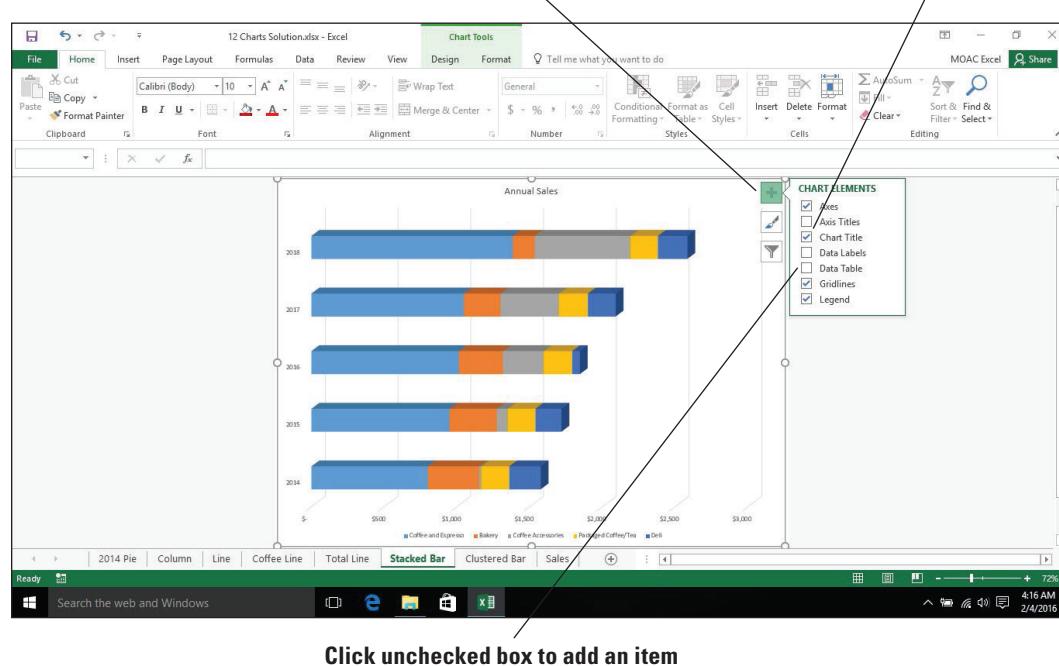
Add Elements to a Chart

GET READY. USE the workbook from the previous exercise.

1. Click the **Stacked Bar** chart tab.
2. If necessary, click in a white space of the chart to select the chart and make the buttons in the upper-right corner appear.
3. Click the **Chart Elements** button. A menu appears showing which elements are currently on the chart (checked boxes) and which are not (unchecked boxes). See Figure 12-14.

Figure 12-14

Current Chart Elements



4. Click the **Axis Titles** box to check the box and add both a vertical and horizontal axis placeholder.
5. The Axis Title on the bottom of the screen has selection indicators to indicate it is selected. Click in the formula bar just above the chart, type **Thousands**, and then press **Enter**.
6. Click the **Total Line** chart tab, click the **Chart Elements** button, and select the **Axis Titles** option. This time the vertical Axis Title is selected. You can click any label placeholder to select it if it is already on a chart. Click in the formula bar, type **Thousands** for the vertical title, and then press **Enter**.
7. Repeat the previous step to add a vertical axis title of Thousands for the Coffee Line chart and the horizontal axis title for the Clustered Bar chart.
8. Click the **Stacked Bar** chart tab, click the **Chart Elements** button, and then select the **Data Labels** option. Labels appear for each of the bars on the chart.
9. **SAVE** the workbook.

PAUSE. LEAVE the workbook open for the next exercise.

Deleting Elements from a Chart

When a chart becomes too cluttered, you may need to delete nonessential elements. You can select an element on the chart and press the Delete key. You can also select an element in the Chart Elements drop-down in the Current Selection group and press Delete. You will use this next exercise to delete elements from some charts.

STEP BY STEP

Delete Elements from a Chart

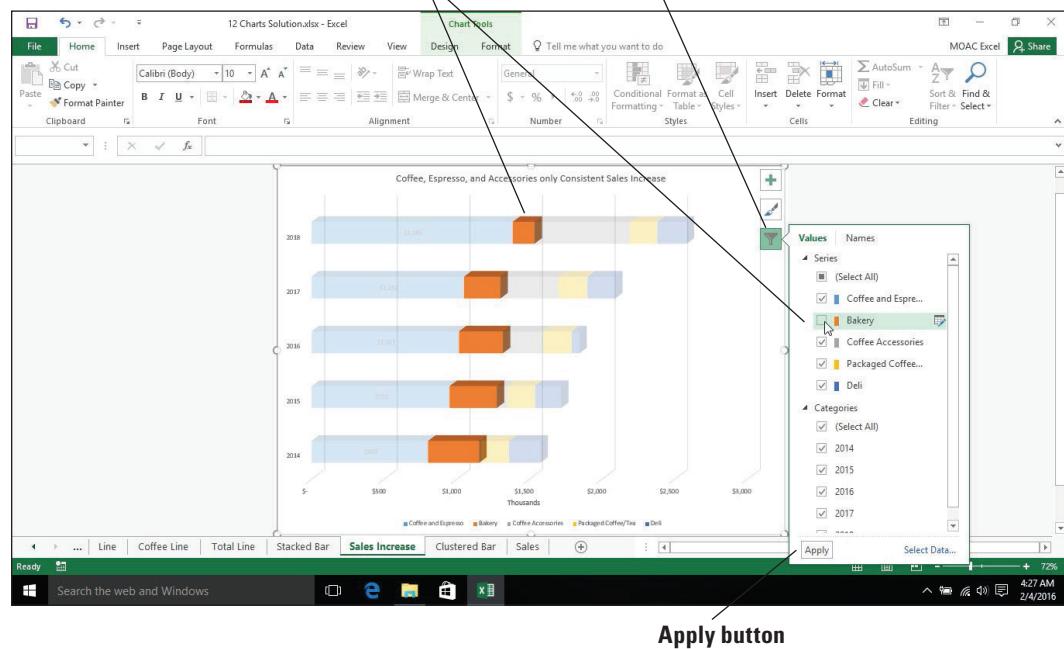
GET READY. USE the workbook from the previous exercise.

1. On the Stacked Bar chart sheet tab, click the vertical **Axis Title** and then press **Delete**.
2. Repeat Step 1 to delete the following generic Axis Title labels:
Chart tab Vertical or Horizontal Axis Title
 Coffee Line Horizontal
 Total Line Horizontal
 Clustered Bar Vertical
3. Right-click the **Stacked Bar** chart tab and select **Move or Copy**. In the Before sheet list box, select **Clustered Bar**, click the **Create a copy** check box, and then click **OK** to create another copy of the Stacked Bar chart.
4. Double-click the **Stacked Bar (2)** label for the tab and type **Sales Increase** for the new name.
5. Click the **\$150** data label for the Bakery in 2018. All data labels for bakery have selection indicators. Press **Delete**.
6. Repeat Step 5 for Coffee Accessories, Packaged Coffee/Tea, and Deli data labels.
7. Click the Annual Sales title, click in the formula bar, and then type **Coffee, Espresso, and Accessories only Consistent Sales Increase**. Press **Enter**.
8. You can also hide data series. Click the **Chart Filters** button on the right side of the chart and in the Series group, click **Bakery** to uncheck it (see Figure 12-15).

When you point to series, chart highlights just that series Chart Filters button

Figure 12-15

Uncheck series you do not want to appear on the chart.



9. Repeat step 8 for Packaged Coffee/Tea and Deli and click the **Apply** button.
10. After looking at the chart, you might decide it is better to keep all of the data series.

Repeat Steps 8 and 9 to recheck the Bakery, Packaged Coffee /Tea, and Deli series and click the **Apply** button.

11. SAVE the workbook.

PAUSE. LEAVE the workbook open for the next exercise.

Take Note

It is important to remember that whether the chart is embedded in the worksheet or located on a chart sheet, the chart is linked to the worksheet data. Any changes in the worksheet data are reflected in the chart. Likewise, if the worksheet data is deleted, the chart is also deleted.

Adding Additional Data Series

You might need to add additional data to a chart. In this case, the CEO of the company has asked you to create a new data sheet that breaks out coffee and espresso and packaged coffee and tea to see if you can see any new trends.

STEP BY STEP

Add Additional Data Series

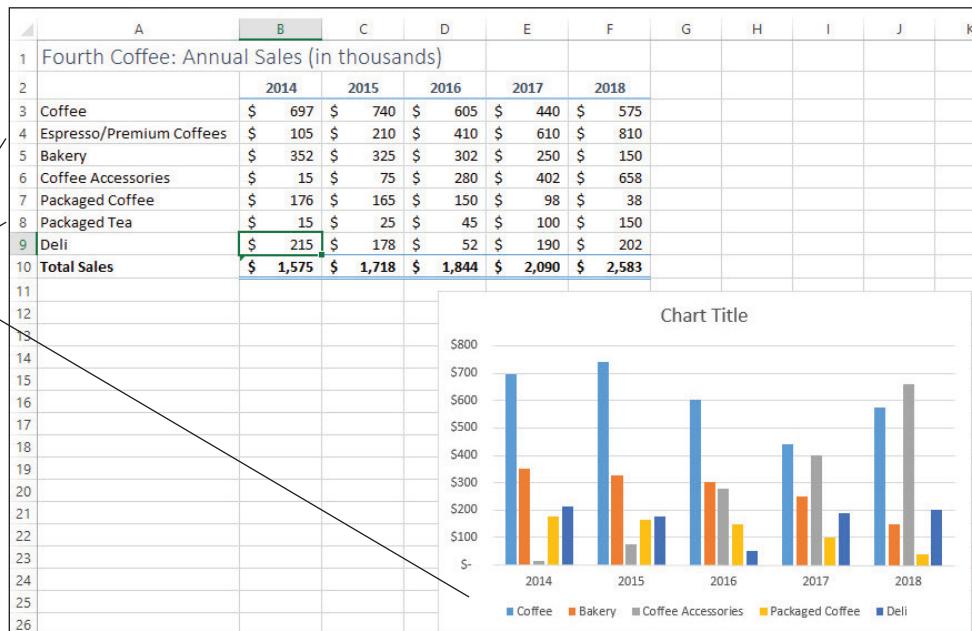
GET READY. USE the workbook from the previous exercise.

- Right-click the **Sales** worksheet tab, select **Move or Copy**, scroll to the bottom of the Before sheet list, and select **(move to end)**. Click the **Create a copy** checkbox and click **OK**. Double-click the **Sales (2)** tab, type **Sales Exp**, and then press **Enter**.
- On the Sales Exp sheet, select **A2:F7**, click the **Insert** tab, click the **Insert Column or Bar Chart** button, and then under 2-D Column, click the **Clustered Column** option.
- Insert rows below Coffee and Espresso and Packaged Coffee/Tea. Edit the labels and values as shown in Figure 12-16.

Figure 12-16

Edited Annual Sales with new categories

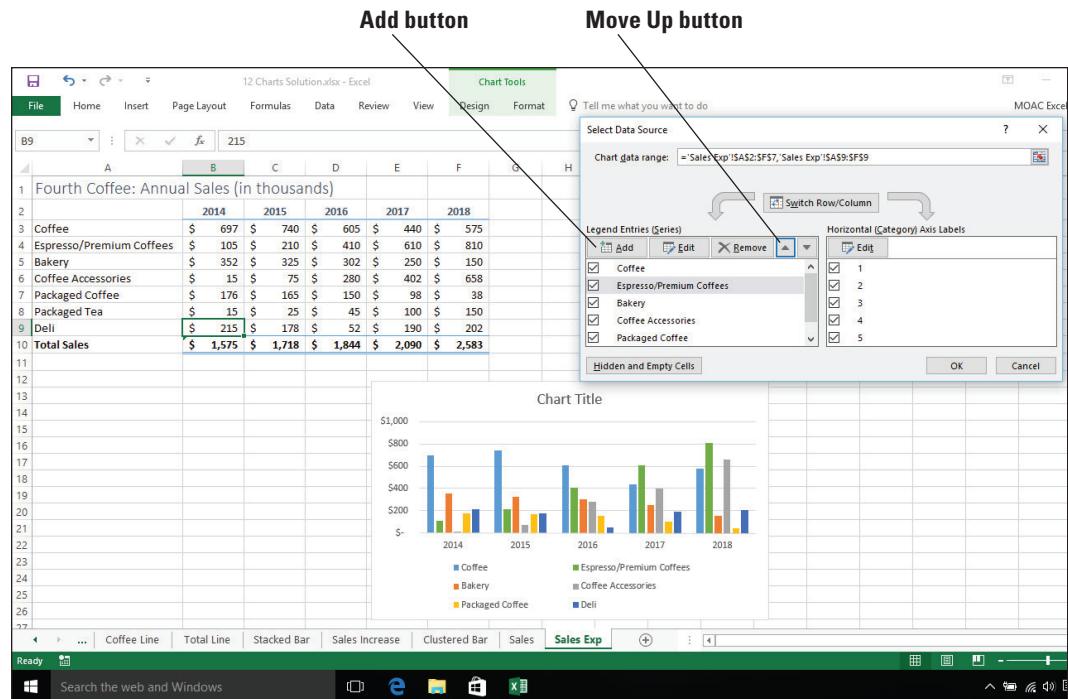
New rows
of data do not
appear in chart



- Right-click in a blank area of the chart, and choose **Select Data**. The **Select Data Source** dialog box opens.
- Click the **Add** button and in the Series name box, click cell **A4**. In the Series values box, delete the entry and drag on the worksheet to select cells **B4:F4**.
- Click **OK**, then click the **Move Up** button multiple times to move the Espresso/Premium Coffees label below Coffee, as shown in Figure 12-17.

Figure 12-17

Add additional data series with the Select Data Source dialog box.



7. Repeat Steps 5 and 6 with Packaged Tea in A8 and the data in B8:F8 so the label is below Packaged Coffee. Click **OK** to accept the changes and return to the sheet.
8. **SAVE** the workbook.

PAUSE. LEAVE the workbook open for the next exercise.

Resizing a Chart

You can point to a corner of a chart or the midpoint of any side to display sizing handles (two-sided arrows). Use the side handles to change the chart height or width. Use the corner sizing handles to change both height and width. In this exercise, you learn to resize the chart.

STEP BY STEP

Resize a Chart

GET READY. USE the workbook from the previous exercise. The Sales Exp sheet should be selected.

1. On the Sales Exp sheet, move the mouse pointer to the white space to the left of the chart title. The mouse is a black four-headed arrow. Drag to move the chart to the left edge of the sheet and below row 11.
2. Move the mouse to the lower-right corner of the chart. The mouse pointer changes to a two-headed diagonal arrow. Drag the mouse pointer so the lower-right corner of the chart is in cell H28. The chart expands to take up more of the screen and you can see the columns and legend easier.
3. Click the **Chart Title**, click in the formula bar, and type **Detailed Annual Sales**. Click a blank area of the chart and point to the right center resize handle.
4. **SAVE** the workbook.

PAUSE. LEAVE the workbook open for the next exercise.

Choosing a Different Chart Type

For most 2-D and 3-D charts, you can change the chart type and give it a completely different look. If a chart contains multiple data series, you can also select a different chart type for any single data series, creating a combined chart. You cannot combine a 2-D and a 3-D chart, however.

STEP BY STEP

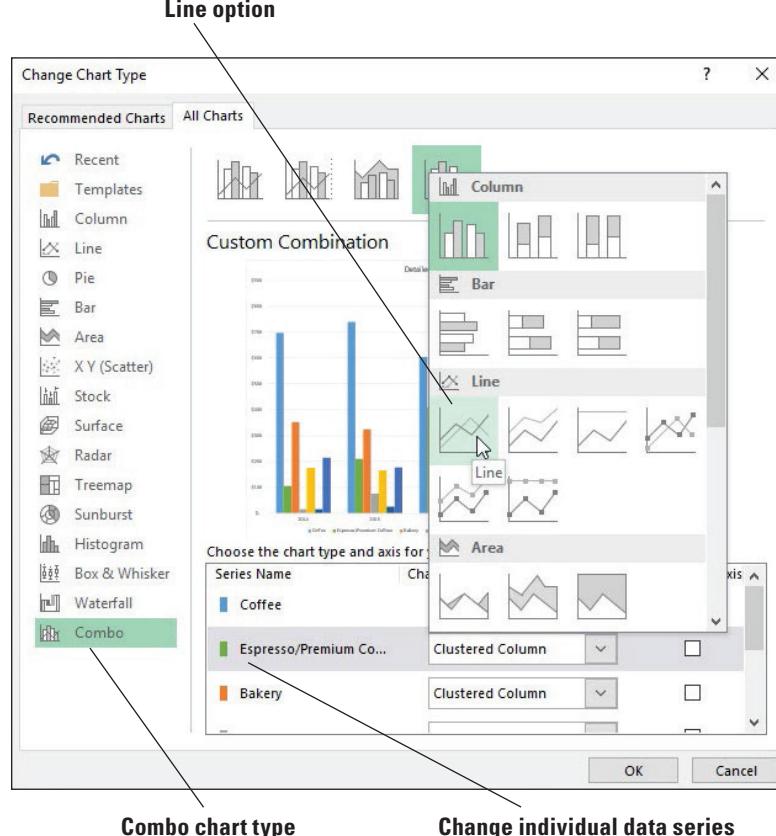
Choose a Different Chart Type

GET READY. USE the workbook from the previous exercise. The Sales Exp sheet should be visible and the chart selected.

1. Click the **Design** tab and select the **Change Chart Type** button. The *Change Chart Type* dialog box opens.
2. Click each of the chart types on the left and you will see a set of different icons representing subtypes for each of the chart types. Click the **Column** button. Click the **Stacked Column** subtype (second icon in the right pane, at the top of the dialog box).
3. Click **OK**.
4. Click the **Move Chart** button and in the New sheet box, type **Det Sales**. Click **OK**.
5. **COPY** the Det Sales chart sheet before the Sales Exp sheet and name the tab **Det Sales Es**.
6. On the **Design** tab, using the **Change Chart Type** button, change the chart back to a **Clustered Column** and then click **OK**.
7. Click one of the **Espresso/Premium Coffees** columns.
8. On the Design tab, click the **Change Chart Type** button.
9. The *Change Chart Type* dialog box opens to the Combo chart type. In the Espresso/Premium Coffees Chart Type box, select **Line** (see Figure 12-18).

Figure 12-18

Change Chart Type with
Combo chart type



10. Click **OK** and edit the chart title to read **WOW! Look at Espresso/Premium Coffee Sales!**
11. Click the **Format** tab and in the Insert Shapes group, click the **Arrow** button and drag the arrow from the chart title to the Espresso line. Use the Shape Outline button to change the arrow to **Red** and the Weight to **3 pt**.
12. **SAVE** the workbook.

PAUSE. LEAVE the workbook open for the next exercise.

Switching Between Rows and Columns in Source Data

You might want to change the orientation of your chart so that the categories are along the horizontal axis instead of the years or vice versa.

STEP BY STEP

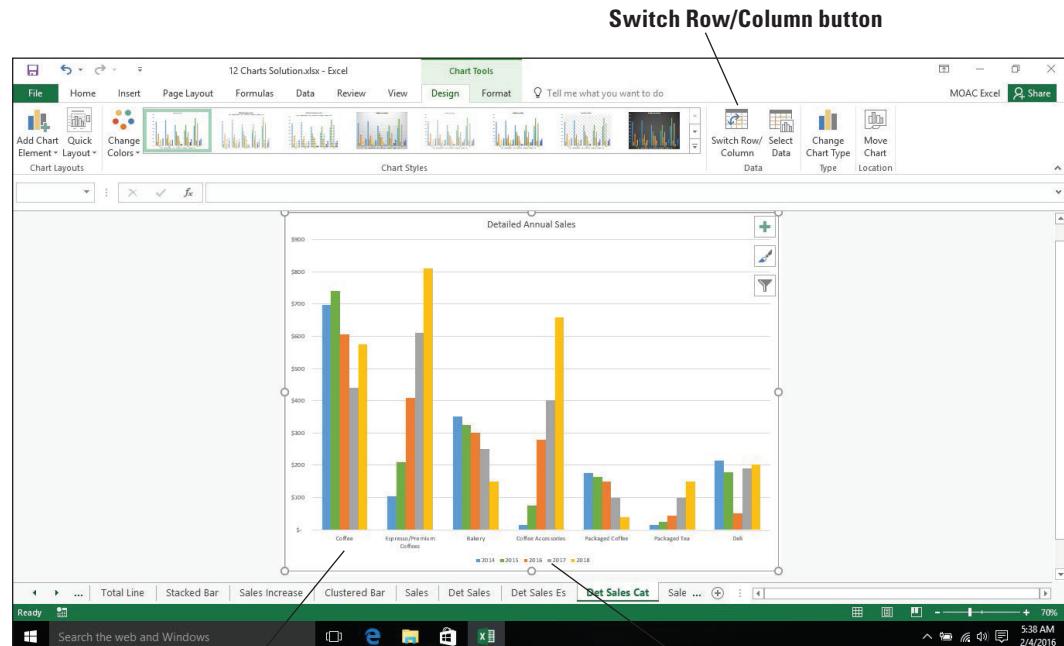
Switch Between Rows and Columns in Source Data

GET READY. USE the workbook from the previous exercise.

1. **COPY** the Det Sales chart sheet before the Sales Exp sheet and then name the tab **Det Sales Cat**.
2. On the Design tab, use the **Change Chart Type** button to change the chart back to a **Clustered Column**. Click **OK**.
3. The horizontal axis shows each year and the categories repeat within each year. We're going to change the chart so each category is a group and each year is shown as a different bar color. On the Design tab, click the **Switch Row/Column** button. The chart changes (see Figure 12-19).

Figure 12-19

Rows and columns switched (legend and categories changed)



4. **SAVE** the workbook.

PAUSE. LEAVE the workbook open for the next exercise.

USING QUICK ANALYSIS TOOLS

Excel 2016 includes a feature that allows analysis of data with a few clicks of the mouse. You select a data range, and the Quick Analysis button appears, allowing you to quickly create charts, add tiny miniature graphs called **sparklines**, work with totals, format the data with conditional formatting, and create PivotTables.

Adding a Chart or Sparklines

In addition to the Insert tab, the Quick Analysis button allows you to quickly add charts to your workbook. After you add the chart, you can modify it using the procedures covered in the previous exercises.

STEP BY STEP

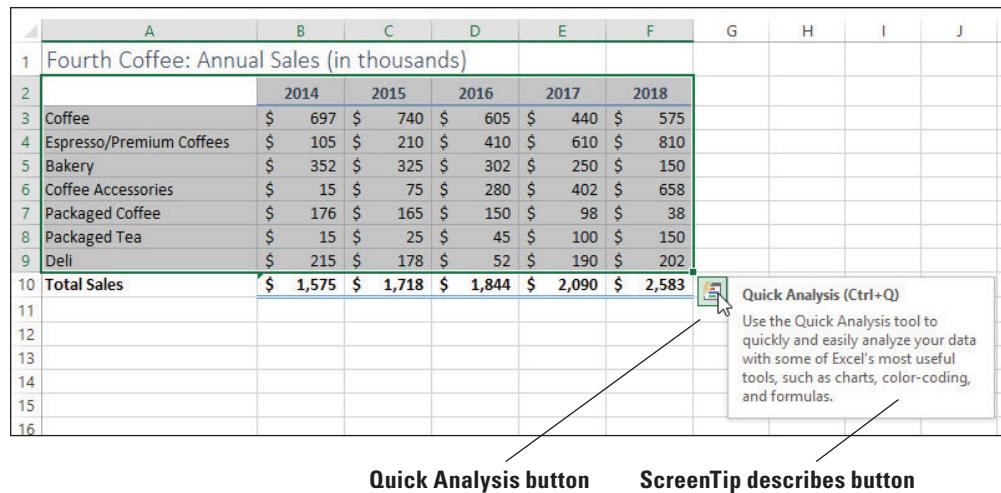
Add a Chart or Sparklines

GET READY. USE the **12 Charts Solution** workbook from the previous exercise.

- Click the **Sales Exp** worksheet tab. Select cells **A2:F9**. The Quick Analysis icon appears at the lower-right corner of the selected range. Move the mouse pointer to the button and the ScreenTip displays (see Figure 12-20).

Figure 12-20

Quick Analysis button and ScreenTip



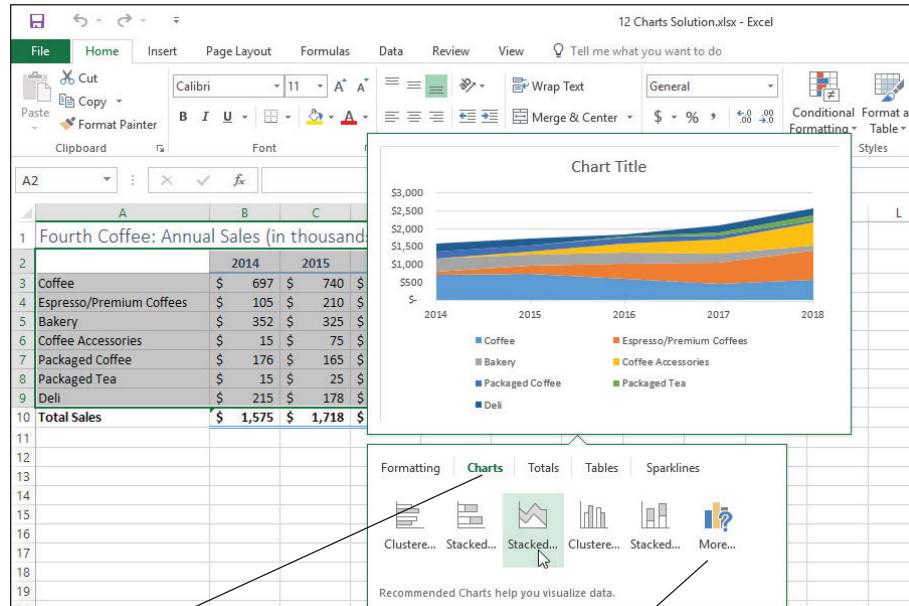
Quick Analysis button

ScreenTip describes button

- Click the **Quick Analysis** button. The Quick Analysis gallery opens.
- Click the **Charts** tab in the gallery. The options change in the lower part of the gallery. Move the mouse pointer to each of the charts and a preview appears on the screen above the Quick Analysis gallery. For example, move the mouse pointer to the Stacked Area option and you'll see a preview showing this type of chart (see Figure 12-21).

Figure 12-21

Preview of Stacked Area chart



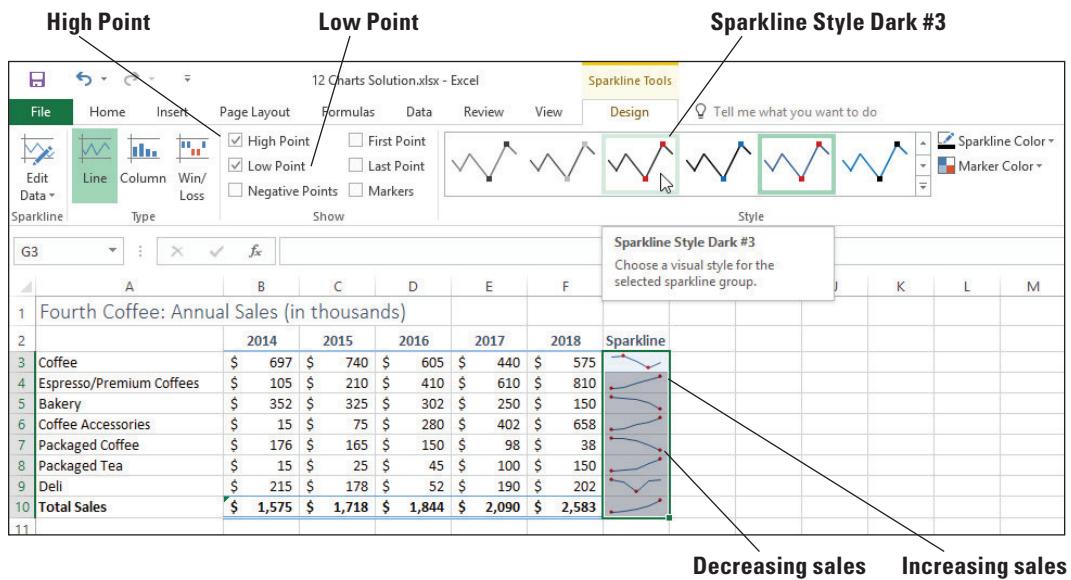
Charts tab

More Charts – displays recommended charts and all chart types

4. We will not add any charts from the Charts menu at this time. Click the **Sparklines** tab. Move the mouse pointer to preview the Column option. A set of tiny column charts shows in column G.
5. Click the **Line** option. A series of lines appear in your worksheet in column G.
6. Row 2 (years) should not have a sparkline. Click cell **G2** and on the Design tab, click the **Clear** button. The sparkline is removed in that cell. In cell **G2**, type **Sparkline** and then apply the **Heading 3** cell style to that cell.
7. Click cell **G9**. Use the fill handle to drag to cell **G10**. A sparkline appears for the total.
8. Select **G3:G10** and click the **Design** tab. There are a number of options you can do with the sparklines.
9. In the Show group, click **High Point** and **Low Point** and in the Style gallery, choose **Sparkline Style Dark #3** (see Figure 12-22).

Figure 12-22

Sparklines in column G



Take Note The Design tab changes to Sparkline Tools when you have sparklines selected. Take the time to explore the options on the ribbon shown in Figure 12-22.

10. SAVE the workbook.

PAUSE. LEAVE the workbook open for the next exercise.

Working with Totals

The Quick Analysis button can also quickly add SUM, AVERAGE, and COUNT functions as well as % of Total and Running Totals to either the bottom row or to the right of the data.

STEP BY STEP

Work with Totals

GET READY. USE the workbook from the previous exercise and click the **Sales** worksheet tab.

1. Select **A3:F7**. Click the **Quick Analysis** button and select the **Totals** tab.
2. Move to the first icon, Sum (with the blue row highlighted in the icon). You'll see a preview on the worksheet of Sum overwriting the Total Sales row that was already there.
3. Move to the next icon and you'll see row 8 previewed with Averages for each column. Move to each of the Count, % Total, and Running Total icons and watch the preview of the worksheet change.

4. Move to the second Sum icon (with the orange column highlighted). Notice that the worksheet preview changes to show totals in column G.
5. Click the arrow on the right to show more options. Preview each of the options and return to % Total.
6. Click the % Total option (with the orange highlighted column). Click cell G3 and notice that the formula =SUM(B3:F3)/SUM(\$B\$3:\$F\$7) appears in the formula bar.
7. In cell G2, type Average and then apply the Heading 3 cell style to that cell.
8. SAVE the workbook.

PAUSE. LEAVE the workbook open for the next exercise.

Applying Conditional Formatting

The Quick Analysis gallery also has a Formatting tab that allows you to format the cell data in different ways. You can show tiny bars so the cells look like a bar chart, change the colors for high and low values and other options.

STEP BY STEP

Apply Conditional Formatting

GET READY. USE the workbook from the previous exercise. You should still be on the Sales worksheet tab.

1. Select A3:F7. Click the Quick Analysis icon. The Formatting tab is selected.
2. Move to the first icon, Data Bars. You can see a preview on the worksheet of small bars in each cell indicating the relative value in the cell. The largest value is in F3 and the bar shows the largest width (see Figure 12-23).

Figure 12-23

Data Bars preview

Fourth Coffee: Annual Sales (in thousands)						
	2014	2015	2016	2017	2018	Average
3 Coffee and Espresso	\$ 802	\$ 950	\$ 1,015	\$ 1,050	\$ 1,385	53.03%
4 Bakery	\$ 352	\$ 325	\$ 302	\$ 250	\$ 150	14.06%
5 Coffee Accessories	\$ 15	\$ 75	\$ 280	\$ 402	\$ 658	14.58%
6 Packaged Coffee/Tea	\$ 191	\$ 190	\$ 195	\$ 198	\$ 188	9.81%
7 Deli	\$ 215	\$ 178	\$ 52	\$ 190	\$ 202	8.53%
8 Total Sales	\$ 1,575	\$ 1,718	\$ 1,844	\$ 2,090	\$ 2,583	

3. Click the Color Scale option to make this choice. Click in a cell outside the range so the formatting is clearer. The worksheet is formatted with the highest values in green with the highest value in dark green. The lowest values are in red with the lowest value in a darker red.
4. SAVE and CLOSE the workbook.

PAUSE. LEAVE Excel open for the next exercise.

CREATING PIVOTTABLES AND PIVOTCHARTS

A **PivotTable** report and **PivotCharts** are collaborative ways to quickly condense and rearrange large amounts of data. Use a PivotTable report to analyze and display the numerical data in detail and to answer unforeseen questions about your data. In this exercise, you will learn to create a basic PivotTable and PivotChart.

A PivotTable report and PivotCharts are especially designed for:

- **Analyzing** large amounts of data in many different ways.
- **Subtotaling** and gathering numeric data, summarizing data by categories and subcategories, and creating custom calculations and formulas.
- **Expanding and collapsing** levels of data to filter your results, and drilling down finer points from the summary data for areas of importance.
- **Moving** rows to columns or columns to rows to examine different summaries of the data.

Creating a Basic PivotTable

PivotTable reports are used to examine and analyze related totals. Examples are calculating a long list of figures or comparing several facts about each piece of numerical data. In this exercise, you create a basic PivotTable report.

STEP BY STEP

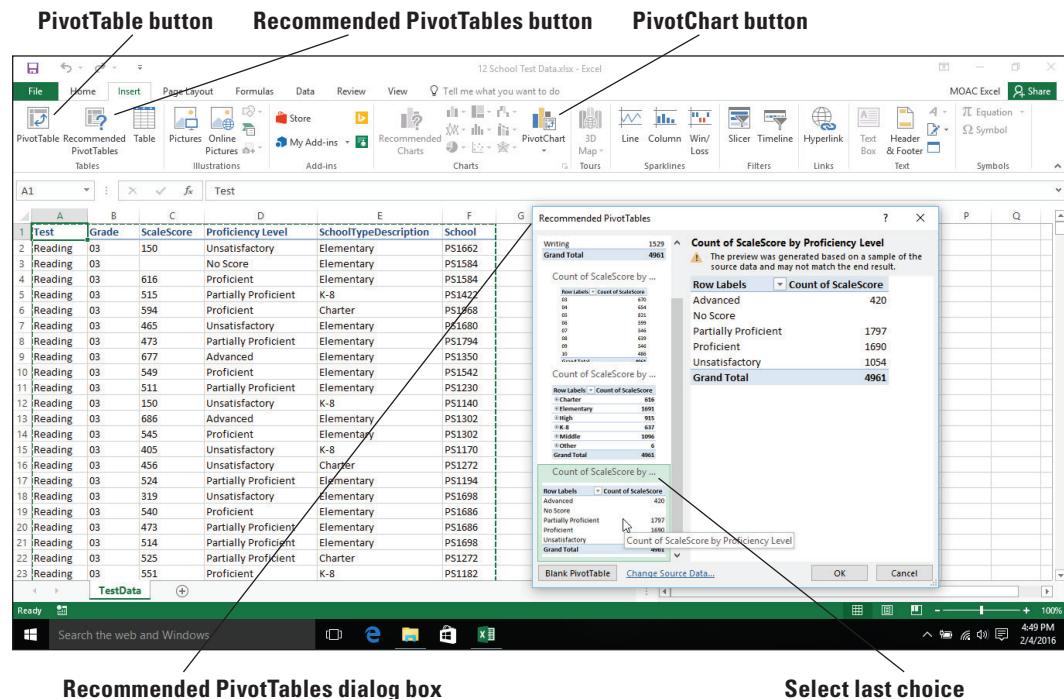
Create a Basic PivotTable

GET READY. OPEN *12 School Test Data* from the student data files.

1. Click cell **A1**. Press **End** and then press the **down arrow**. Notice that there are 139,129 rows of data.
2. Press **Ctrl+Home** to return to the top of the worksheet.
3. Click the **Insert** tab, and then click the **Recommended PivotTables** button.
4. Scroll to the bottom and click **Count of ScaleScore by Proficiency Level** (see Figure 12-24).

Figure 12-24

Recommended PivotTables dialog box



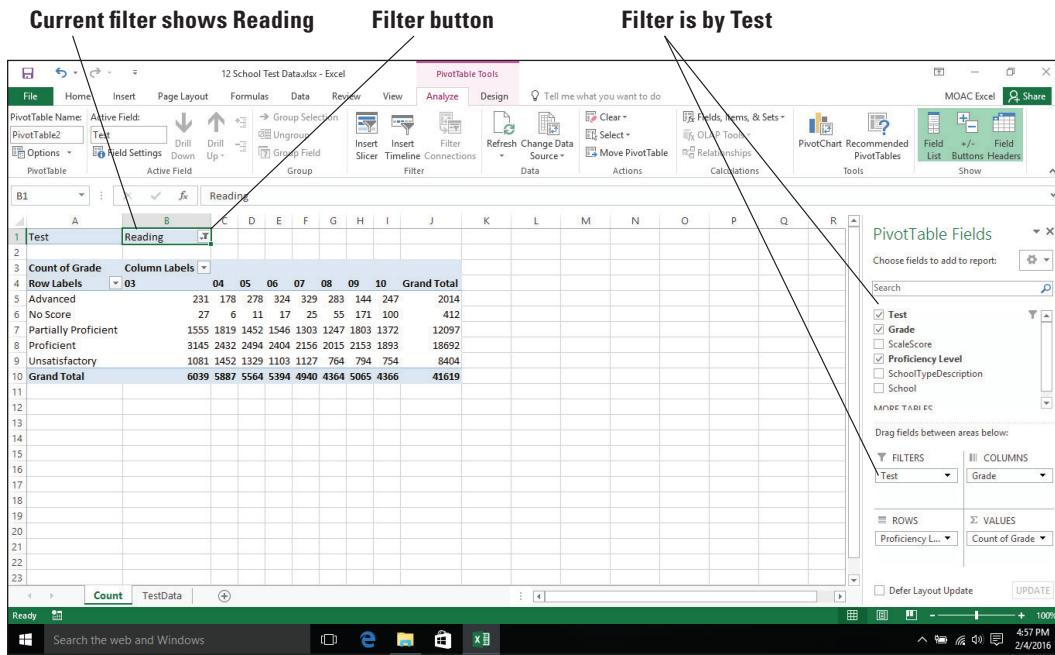
5. Click **OK** and name the new sheet **Count**. The PivotTable Fields pane opens on the right side of your screen and the data appears on the worksheet. Notice that the data for No Score is blank. That is because the count of the rows is based on the Scale Score, which is empty for unavailable scores. You will want to change the field to count to a field that has data. If you look back on the TestData tab, every row is filled by a grade so you can use the Grade column so that every row is counted.

Take Note

When you click any empty cell, the PivotTable Fields pane disappears. To make it reappear, you simply need to click on any active cell that is showing data.

6. Return to the Count sheet and drag the **Grade** field in the PivotTable Fields pane down to the **VALUES** section.
7. Drag the **Count of ScaleScore** from the **VALUES** section into the worksheet to remove it. Notice that the No Score row now counts each missing score.
8. Drag the **Grade** field to the **COLUMNS** area. You'll see each grade summarized.
9. Drag the **Test** field to the **FILTERS** area.
10. Cell B1 currently shows **(All)**. Click the **Filter drop-down arrow**, choose **Math**, and click **OK**.
11. Click the **Filter drop-down arrow** again and choose **Reading**. Click **OK**. Your data should look similar to Figure 12-25.

Figure 12-25
Results of PivotTable



12. **SAVE** the workbook to the Excel Lesson 12 folder as **12 Test PivotTable Solution**.

PAUSE. LEAVE the workbook open for the next exercise.

After you create the initial PivotTable report by defining the data source, arranging fields in the PivotTable Field List, and choosing an initial layout, you can perform additional tasks as you work with and improve a PivotTable report.

Take time to explore these options for PivotTables on your own. Most of these options are available on the PivotTable Fields pane or the PivotTable Tools tabs that display when you select any cell in the PivotTable.

Adding a PivotChart

A **PivotChart** is an essential tool to help organize and arrange large amounts of data from worksheets. In addition to summarizing a huge amount of data, you can visualize the information in a simple chart.

STEP BY STEP

Add a PivotChart

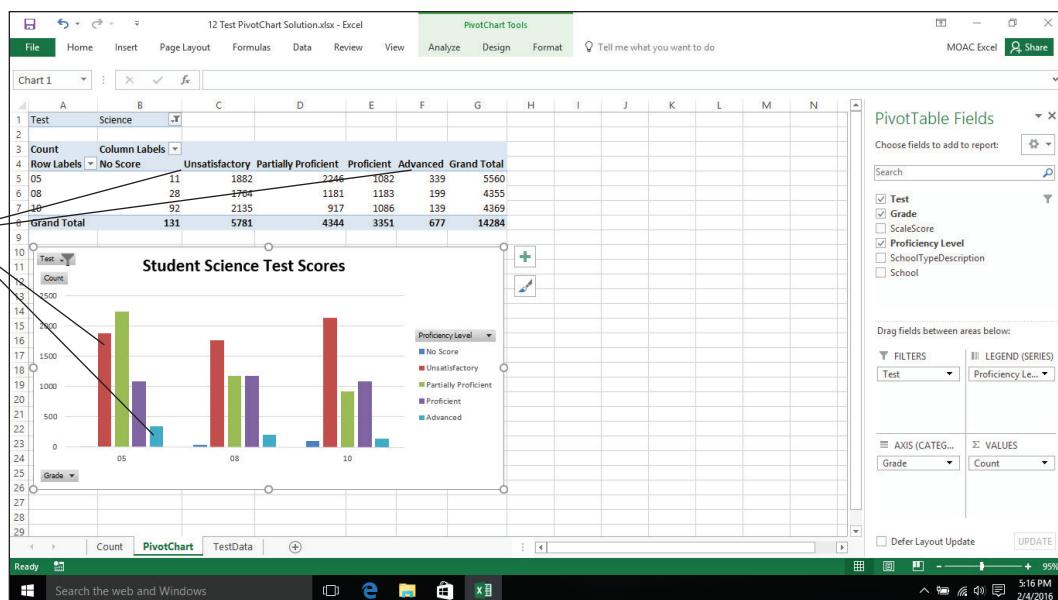
GET READY. USE the workbook from the previous exercise.

1. On the TestData worksheet, click cell **A1**.
2. On the Insert tab, click the **PivotChart** button arrow and then choose **PivotChart**. The *Create PivotChart* dialog box opens and the range is selected.
3. The default location is for a New Worksheet, so with that option selected, click **OK**. Name the new sheet tab **PivotChart**.
4. In the PivotTable Fields pane on the right side of the worksheet, drag the **Test** field to the FILTERS area.
5. Drag **Grade** to the VALUES area (count number of items).
6. Drag **Grade** again to the AXIS area.
7. Drag **Proficiency Level** to the LEGEND area.
8. **MOVE** the chart to the left edge of the worksheet, below the data.
9. Click the **Test** drop-down arrow on the chart, choose **Science** and click **OK**. Notice that only 5th, 8th, and 10th grades are available because only those grades take the Science test.
10. Click the **Format** tab, click the **Text Box** button in the Insert Shapes group, and then click the top of the chart. Add a label that says **Student Science Test Scores** and make this label **Bold** and **18** points. Drag a border of the text box to reposition it, as necessary.
11. Click cell **A3** and change the label to just say **Count**.
12. In cell **F4**, click on the label for **Unsatisfactory**.
13. Move the mouse pointer to the left edge of the cell until the mouse pointer changes to a four-headed black arrow and drag the mouse between columns C and D. Release the mouse button to drop the data in the new location.
14. Repeat Step 13 and move the Advanced column to display between the Proficient and Grand Total columns.
15. Move and resize the PivotChart so that it appears within the range A10:G26.
16. **SAVE** the workbook as **12 Test PivotChart Solution**. Your final PivotChart sheet should look like that shown in Figure 12-26.

Figure 12-26

PivotChart sheet completed

**Advanced and
Unsatisfactory
columns rearranged**



PAUSE. CLOSE the workbook and CLOSE Excel.

Knowledge Assessment

Multiple Choice

Select the best response for the following statements.

1. Which chart type shows values as parts of a whole?
 - a. Column
 - b. Bar
 - c. Area
 - d. Pie
2. Which chart type appears on a worksheet with other data?
 - a. Chart sheet
 - b. Embedded
 - c. PivotChart
 - d. Mixed
3. Which part of a chart do you click when you want to select the entire chart?
 - a. Chart area
 - b. Plot area
 - c. Chart title
 - d. Legend
4. Which of the following happens to a chart when the source data is deleted?
 - a. Nothing.
 - b. The chart will move to the area where the data was located.
 - c. The data in the chart is deleted.
 - d. You will be asked if you want the chart deleted.
5. Which of the following is the first step that should be taken when creating a chart?
 - a. Providing a name for the chart
 - b. Selecting the chart type
 - c. Selecting the range of cells that contain the data the chart will use
 - d. Choosing the data labels that will be used in the chart

6. When you want to print only the chart in a worksheet, which of the following steps should be taken before printing?
 - a. Click the chart to select it and then print.
 - b. Select the Print chart only option in the Page Setup dialog box.
 - c. Move the chart to a new sheet by itself and then print that sheet.
 - d. You cannot print only the chart if it is part of a larger worksheet.
7. A bar chart represents values as which of the following?
 - a. Horizontal bars
 - b. Vertical bars
 - c. Horizontal lines
 - d. Vertical lines
8. A column chart represents values as which of the following?
 - a. Horizontal bars
 - b. Vertical bars
 - c. Horizontal lines
 - d. Vertical lines
9. Which of the following steps should be performed to move a chart from a worksheet to a chart sheet?
 - a. Use the move handles and drag it to the new location.
 - b. Use the Move Chart button on the Design tab.
 - c. Cut the chart from the worksheet and paste it to a new workbook sheet.
 - d. You cannot move the chart after it has been created.
10. Which of the following statements is *not* true?
 - a. You can change both the height and width of a chart with commands on the Format tab.
 - b. You can use the sizing handles to change the height and width of a chart.
 - c. You must delete an existing chart in order to have the data displayed in a different chart type.
 - d. When a chart sheet is created, the chart no longer appears on the worksheet containing the data series.

Projects

Project 12-1: Creating a Pie Chart

In this project, the Blue Yonder Airlines boss has asked you to do an analysis of your time for the past month.

GET READY. LAUNCH Excel if it is not already running.

1. In a blank workbook, enter the worksheet data shown in Figure 12-27. Resize column A to fit the data and apply the Number format with two decimal places in column B. Insert a SUM function in B9.

Figure 12-27

Data for pie chart

	A	B	C
1	Blue Yonder Airlines		
2	Monthly Time Analysis		
3	Labor Council Presentation	23.75	
4	VP Staff Meetings	19.25	
5	BOD Meetings	25.00	
6	Terrorism Impact Analysis	75.00	
7	Pilot Wages	25.00	
8	Miscellaneous	12.75	
9	Total	180.75	
10			

2. Select A3:B8.
3. Click the **Insert** tab. Click **Pie** and then click **3-D Pie**.
4. On the **Design** tab, click **Quick Layout** and choose **Layout 4**.
5. Click the **Move Chart** button.
6. In the New Sheet box, type **Time Pie** and then click **OK**.
7. Click the **Chart Elements** button and then check **Chart Title**.
8. For the selected Chart Title, click in the formula bar, and type **Monthly Time Analysis**.
9. **SAVE** the workbook to the Excel Lesson 12 folder as **12 My Time Solution**.
10. **CLOSE** the workbook.

PAUSE. **LEAVE** Excel open for the next project.

Project 12-2: Creating a Column Chart

In this project, your friends have asked you to summarize salaries for selected occupations. You are going to meet as a group and discuss the pros and cons of each position. Salary is only one of the issues you will talk about, but it is significant.

GET READY. **LAUNCH** Excel if it is not already running.

1. In a blank workbook, enter the worksheet data shown in Figure 12-28. Resize column A to fit the data and then apply the number formatting shown in column B.

Figure 12-28

Data for column chart

	A	B	C
1	Salaries for Entry Level Positions		
2		US	
3	Accountant	44,911	
4	Attorney	85,669	
5	Biologist	44,116	
6	Budget Analyst	49,420	
7	Teller	23,112	
8	Trader	44,472	
9	Community Organizer	32,266	
10	Database Analyst	56,284	
11			

2. Select A3:B10.
3. Click the **Insert** tab. Click **Insert Column or Bar Chart** and then click **3-D Clustered Column**.
4. Edit the chart title to read **Entry Level Salaries**.
5. Right-click in a blank area of the chart, choose **Move Chart**, and then in the New sheet box, type **Salaries**. Click **OK**.
6. Right-click on the **Vertical (Value)** axis and select **Format Axis**.
7. In the Format Axis pane, choose **Number**. In the Category drop-down, choose **Currency**.
8. **SAVE** the workbook to the Excel Lesson 12 folder as **12 Salaries Solution** and then **CLOSE** the file.

CLOSE Excel.