

Charting Worksheet Data



LESSON OUTLINE

- 17.1 Creating Charts in Excel
- 17.2 Moving and Sizing Embedded Charts
- 17.3 Exploring Other Chart Types
- 17.4 Modifying Existing Charts
- 17.5 Applying Layouts and Styles to Charts
- 17.6 Previewing and Printing Charts
- 17.7 Concepts Review

Reinforce Your Skills

Apply Your Skills

Critical Thinking & Work-Readiness Skills

LEARNING OBJECTIVES

After studying this lesson, you will be able to:

- Create a variety of different types of charts
- Move and size embedded charts
- Modify, format, and print charts

In this lesson, you will use Excel's charting features to create various types of charts.

Charting is an important skill to have when using worksheets because comparisons, trends, and other relationships are often conveyed more effectively with charts. You will use Excel to create column charts, line charts, and pie charts. In addition, you will learn how to edit and format legends, data labels, and other chart objects to communicate data clearly.

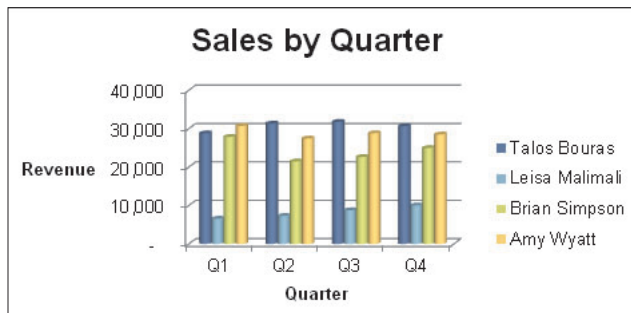
Student Resources

labyrinthlab.com/oe10

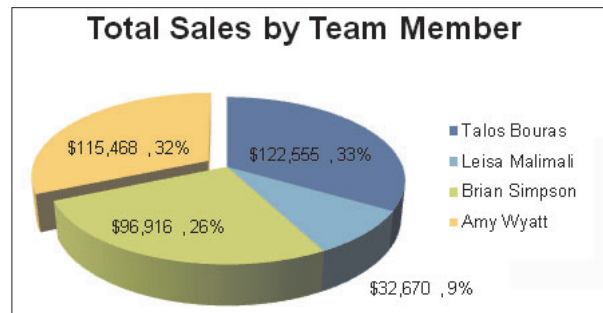
CASE STUDY

Charting Sales Performance

Mary Wright is the vice president, sales and marketing, of Green Clean. Her company earns revenue by selling janitorial products and contracts for cleaning services. Mary has asked sales manager Talos Bouras to prepare several charts depicting revenue for the most recent fiscal year. Mary wants charts that compare sales in the various quarters, the growth trend throughout the year, and the contributions of each sales team member to the company sales. Talos will work together with administrative assistant Jenna Mann in using Excel's features to produce accurate and easy-to-understand charts that meet Mary's high standards.



A column chart that compares the sales that sales team members achieved in each quarter of the year



A pie chart that displays the portion of total yearly sales that each sales team member contributed



A line chart that indicates the sales trend upward or downward from quarter to quarter

17.1 Creating Charts in Excel

Video Lesson labyrinthelab.com/videos

Numerical data is often easier to interpret when presented in a chart. You can embed a chart in a worksheet so that it appears alongside the worksheet data, or you can place the chart on a separate worksheet. Putting the chart on a separate worksheet prevents the chart from cluttering the data worksheet. Regardless of their placement, charts are always linked to the data from which they are created. Thus, charts are automatically updated when worksheet data changes. Charts are made up of individual objects including the chart title, legend, plot area, value axis, category axis, and data series. You can apply options and enhancements to each object.

Integrated Chart Engine

A chart engine is integrated within the suite of Office programs. You can create a chart in Microsoft Word or PowerPoint as well as in Excel. Once you have mastered the topics in this lesson, you will be able to understand how to create charts in those other Microsoft Office applications as well! When a chart is created in Word or PowerPoint, it is actually saved and stored as an Excel chart. You can create charts in Access, but the chart engine is different.

Creating New Charts

When you create a chart, you have the option of either embedding it into the current worksheet where the data is or placing it on a separate sheet of its own. You may want to embed the chart if it can fit on one printed page with the worksheet data. A large or complex chart may display better on its own sheet. An embedded chart can be moved to its own sheet, and a chart on a separate sheet can be moved to embed on a worksheet.

Embedding a Chart in the Worksheet

Embedded charts can be created by choosing the chart type from the Insert tab of the Ribbon. If you want to see the entire list of chart types displayed before you make your choice, you can open the Insert Chart dialog box. To avoid covering the worksheet data, you can move and resize an embedded chart.

Creating a Chart on a Separate Sheet

FROM THE KEYBOARD

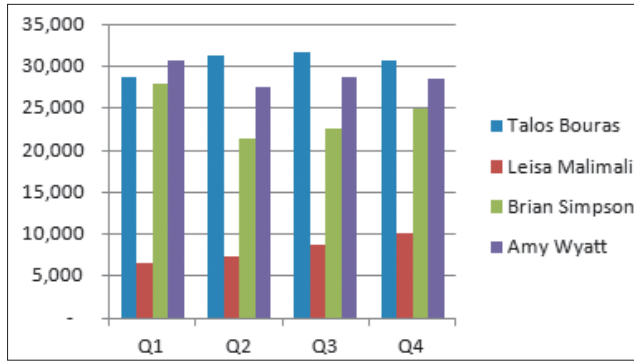
[F11] to create a chart on its own sheet

To place a full-size chart on its own sheet, simply select the source range of cells in the worksheet and then tap the **[F11]** key. A new sheet with a generic name, such as Chart1, will be created before the active worksheet in the workbook tab order. When you use the **[F11]** key, the chart on the new sheet will be based on the default chart type, but you can change the type after creating the chart. You can choose the chart type while creating an embedded chart, if you prefer, and then use the Move Chart command in the Ribbon to relocate the chart from the worksheet to its own sheet.

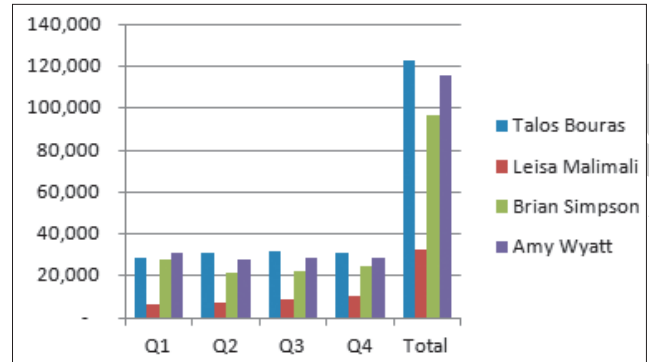
Choosing the Proper Data Source

It is important to select the proper data on which to base your chart. In addition to selecting the basic data for the chart, you will also want to determine whether or not to select any “total” rows to include in the chart. You will not usually include both individual category data and totals because the individual data will appear distorted, as shown on the next page in the illustration to the right. You should also make certain that you select the proper row and

column headings for your column and bar charts. If you notice that any of these important pieces are missing, you will need to reselect your source data.



The data in this column chart correctly compare the sales among the four sales team members during each of four quarters.



Including the total sales in the chart shrinks the columns for the individual sales team members. Comparing their data is more difficult, and their sales may seem bad as compared with the totals.

Chart Types

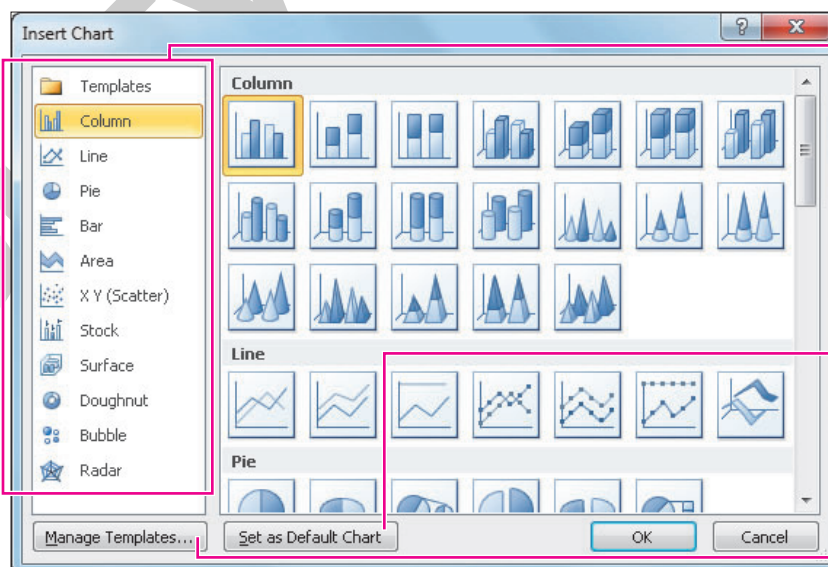
Excel provides 11 major chart types. Each chart type also has several subtypes from which you can choose. Excel has a chart type for most data-display needs.

Built-In Chart Types

Each chart type represents data in a different manner. You can present the same data in completely different ways by changing the chart type. For this reason, you should always use the chart type that most effectively represents your data. The three most common chart types are column, pie, and line. You will be creating all three types in this lesson.

User-Defined Charts

Excel lets you create and save customized charts to meet your particular needs. For example, you can create a customized chart that contains the name of your company and its color(s) in the background and use it as the template for all new charts of that type.



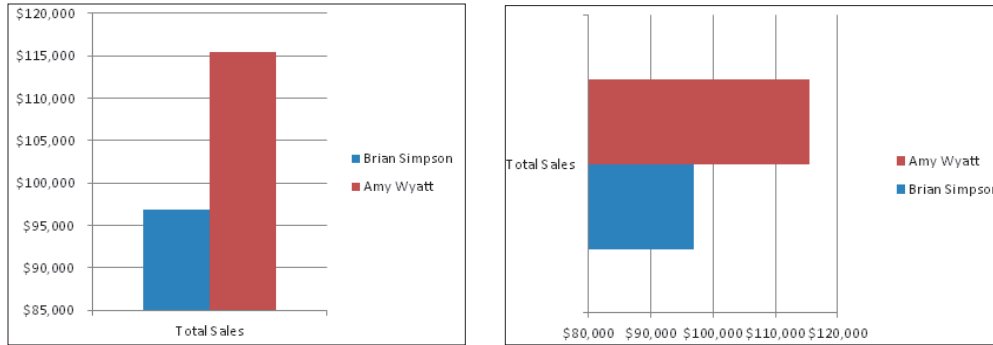
The 11 major chart types are displayed along the left side. Click a type to display all of the available subtypes.

If you create one type of chart the majority of the time, you can set it as your default chart type.

You can create and manage your own chart templates.

Column Charts and Bar Charts

Column charts compare values (numbers) using vertical bars. Bar charts compare values using horizontal bars. Each column or bar represents a value from the worksheet. Column charts and bar charts are most useful for comparing sets of values (called data series). Column and bar charts can be created in 2-D or 3-D formats.



The column chart on the left and the bar chart on the right both display the same data to compare total sales for two people, but the chart types are different. The number of dollar values on the bar chart axis has been modified to accommodate the bar length.

Category Axis and Value Axis

The horizontal line that forms the base of a column chart is the category axis. The category axis typically measures units of time such as days, months, and quarters, although it can also measure products, people, tests, and other categories. The vertical line on the left side of a column chart is the value axis. The value axis typically measures values such as dollars. Most chart types (including column and bar charts) have a category and a value axis.

Legend

The box containing a text description for each data series is the legend. The text labels usually are taken from the first column or first row of the selected worksheet data.

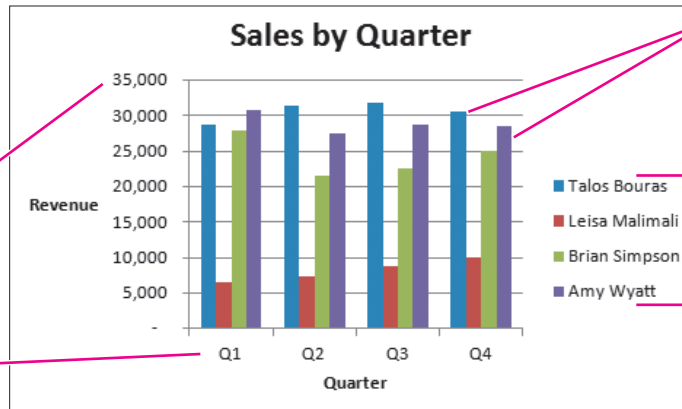
The following illustrations show the worksheet data and one of the two column charts you will create in the next exercise. The illustrations show the objects included on most column charts and the corresponding data used to create the chart. Take a few minutes to study the following illustrations carefully.

	A	B	C	D	E	F
2	Quarterly and Total Sales - Fiscal Year					
3						
4		Q1	Q2	Q3	Q4	Total Sales
5	Talos Bouras	28,775	31,342	31,763	30,675	\$ 122,555
6	Leisa Malimali	6,575	7,304	8,768	10,023	\$ 32,670
7	Brian Simpson	27,850	21,471	22,634	24,961	\$ 96,916
8	Amy Wyatt	30,725	27,444	28,802	28,497	\$ 115,468
10	Quarter Total	\$ 93,925	\$ 87,561	\$ 91,967	\$ 94,156	\$ 367,609

The following chart was created using the selected data shown here. Notice that the Total row and column were not included in the selection. The column chart compares the sales numbers for the individual quarters, but it does not include the total sales from row 10 nor column F.

This is the vertical value axis. Excel created the numbering scale (0–35,000) after it determined the range of values included in the chart.

This is the horizontal category axis. The category axis labels (Q1, Q2, Q3, and Q4) were taken from row 4, the first row of the selected worksheet range.



Notice the chart columns. The columns represent values from the various data series. The first data series is the Talos Bouras numbers in row 5. The first column in each group of four columns represents his sales for that quarter.

The legend identifies each data series in the chart columns. The four names in the legend were taken from column A, the first column of the selected worksheet range.

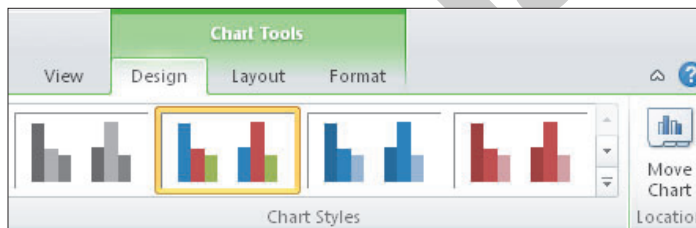
Notice that the chart includes a chart title (Sales by Quarter), a value axis title (Revenue), and a category axis title (Quarter).

Chart and Axis Titles

Excel allows you to create titles for your charts as well as the value and category axes. If you choose a range of information that includes what appears to Excel to be a title, Excel will include it in the new chart. You can always edit this title if it is not correct.

The Chart Tools

When a chart is selected, various Chart Tools will be displayed as additional tabs on the Ribbon. These tabs allow you to make changes to the design, layout, and formatting of the chart.



When a chart is selected, the Chart Tools will be displayed, adding the Design, Layout, and Format tabs to the Ribbon.



These additional Ribbon tabs are called contextual tabs.

QUICK REFERENCE	CREATING AND PLACING A CHART
Task	Procedure
Create a chart	<ul style="list-style-type: none"> ■ Enter the data you wish to chart into Excel. ■ Select the data range for the chart. ■ Display the Insert tab of the Ribbon. ■ Choose the type of chart from the Charts group.
Move an existing chart to its own sheet	<ul style="list-style-type: none"> ■ Right-click a blank area of the chart and choose Move Chart from the context menu. ■ Choose New Sheet in the Move Chart dialog box and rename the sheet, if desired.
Move a chart from its own sheet to a worksheet as an embedded object	<ul style="list-style-type: none"> ■ Right-click a blank area of the chart and choose Move Chart from the context menu. ■ Choose Object In and select the desired worksheet in the Move Chart dialog box.
Add a title to a chart	<ul style="list-style-type: none"> ■ Select the chart to which you wish to add a title. ■ Choose Layout→Labels→Chart Title from the Ribbon to display the title options. ■ Choose how you wish the title to appear. ■ Select the default title “Chart Title,” and type in the title you wish for your chart.
Add axis titles to a chart	<ul style="list-style-type: none"> ■ Select the chart to which you wish to add an axis title. ■ Choose Layout→Labels→Axis Titles from the Ribbon to display the axis options. ■ Choose whether you wish to apply a horizontal or vertical axis title. ■ Choose how you wish the title to appear. ■ Select the default title “Axis Title,” and type the title you wish for your axis. ■ Repeat these steps for the other axis.

DEVELOP YOUR SKILLS 17.1.1

Create Charts

In this exercise, you will create two column charts. The 2-D column chart will display on a separate sheet and the clustered cylinder chart will be embedded in the worksheet.

Create a 2-D Column Chart on a New Sheet

1. **Open** the Sales Performance Charts workbook from the Lesson 17 folder in your file storage location.
2. Select the **range A4:E8** in the Sales by Quarter worksheet.
3. **Tap** the **[F11]** key.

Tapping [F11] creates a new sheet before the Sales by Quarter sheet in the workbook tab order. The new chart fills the area on the sheet and the chart is based on the default chart type of Clustered Column. Notice that the Chart Tools display on the Ribbon; they can be used to modify the chart.

4. **Double-click** the new chart tab, type **Sales by Rep**, and **tap [Enter]** to rename the sheet.

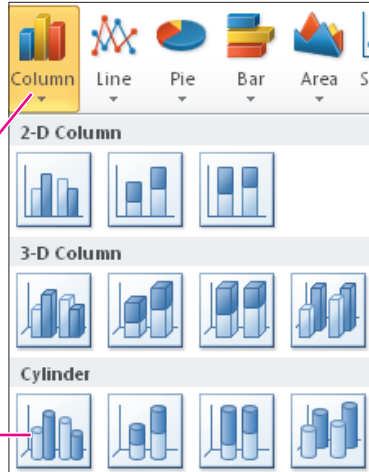


Create an Embedded Column Chart

5. Display the **Sales by Quarter** worksheet and make certain the **range A4:E8** is still selected.
6. Follow these steps to create a clustered cylinder column chart:

A Display the **Insert** tab on the Ribbon.

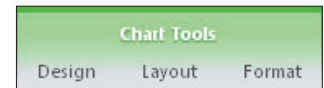
B Click the **Column** button in the Charts group.




C Choose the first chart type listed under **Cylinder** (**Clustered Cylinder**).

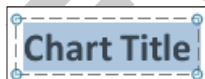
The chart will appear embedded in the **Sales by Quarter** worksheet with the default properties for the clustered column chart type displayed. The data in the chart is based on the range of cells you preselected.

7. Look at the Ribbon to see that the **Chart Tools** are now displayed and the **Design** tab is active. Notice that the chart is covering part of the data. In the next exercise, you will learn how to move charts within a sheet.



Edit the Chart and Axis Titles

8. Choose **Chart Tools**→**Layout**→**Labels**→**Chart Title** →**Above Chart** from the Ribbon.
9. Follow these steps to title the chart:




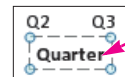
A Select the default title, **Chart Title**.




B Type the new title as shown here.

C Click in a blank area of the chart to accept the new title.

10. Choose **Layout**→**Labels**→**Axis Titles** →**Primary Horizontal Axis Title**→**Title Below Axis** from the Ribbon.
11. **Drag** to select the default title, **Axis Title**.
12. **Type** in the new horizontal axis title, **Quarter**, and then **click away** to accept the new title.



13. Choose **Layout**→**Labels**→**Axis Titles** →**Primary Vertical Axis Title**→**Horizontal Title** from the Ribbon.
14. Notice that the default title placeholder, *Axis Title*, is selected.
15. **Type** the new vertical axis title, **Revenue**, and then **click** outside the title box to accept the new title.
16. **Save** the changes and leave the workbook **open** for the next exercise.

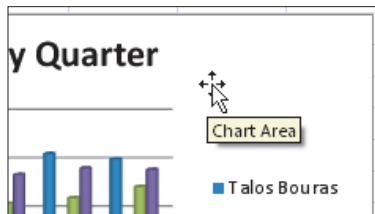
17.2 Moving and Sizing Embedded Charts

Video Lesson labyrinthlab.com/videos

When a chart is selected, it is surrounded by a light border with sizing handles displayed. A selected chart can be both moved and resized.

Moving Embedded Charts

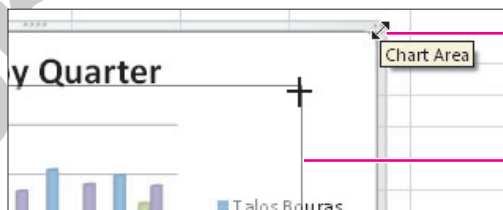
Charts that are embedded in a worksheet can easily be moved to a new location. A chart can be moved by a simple drag, but you need to ensure that you click the chart area and not a separate element. Regardless of whether a chart is embedded within a worksheet or moved to a separate tab, the chart data will automatically update when values are changed in the source data.



A four-pointed arrow indicates that you can drag to move this selected chart.

Sizing Embedded Charts

To size a chart, it must first be selected. You simply need to drag a sizing handle when the double-arrow mouse pointer is displayed. In order to change a chart size proportionately, hold **Shift** while dragging a corner handle.



A double arrow appears when you point at a chart's sizing handle.

As you drag to size a chart, the chart "fades" and a black line displays the new size.

Deleting Charts

Deleting an embedded chart is a very simple process—just select the chart area and tap **Delete**. You can always use the Undo command if you delete an embedded chart by mistake. You delete a chart that is on its own tab by deleting the worksheet. This action cannot be undone, so Excel warns you with a prompt to confirm the deletion.

QUICK REFERENCE	MOVING AND SIZING EMBEDDED CHARTS AND DELETING CHARTS
Task	Procedure
Move an embedded chart	Drag the selected chart to a new location with the move pointer while it is positioned over the chart area.
Change the chart size	Drag any sizing handle (hold down Shift while dragging a corner handle to resize proportionally).
Delete a chart	Embedded Chart: Select the chart, and then tap the Delete key. Worksheet Chart: Delete the worksheet.

DEVELOP YOUR SKILLS 17.2.1

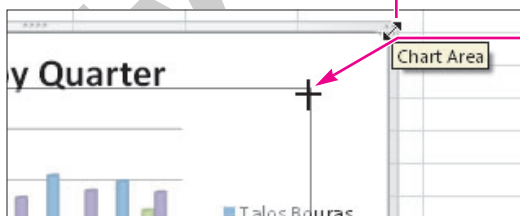
Size and Move an Embedded Chart

In this exercise, you will move and resize the embedded column chart that you created in the previous exercise. You will also copy a sheet containing an embedded chart and delete the chart.

Size a Chart

1. **Click once** on the chart area of the embedded chart in the Sales by Quarter sheet to select the chart.
Sizing handles appear around the border of the chart.
2. Follow these steps to resize the chart to be smaller:

- A** Place the mouse pointer over the **upper-right sizing handle** until you see the **double-pointed arrow** (not a four-pointed arrow).



- B** Press and hold **Shift** while you drag the sizing handle down and to the left.
- C** Release the mouse button about one-half inch from the corner in order to decrease the size by one-half inch; release the **Shift** key.

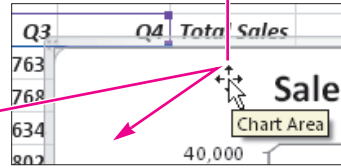
*Notice that Excel resized the width and height proportionately because you held down the **Shift** key as you resized the chart.*

Move a Chart

3. Follow these steps to move the chart and center it below the worksheet data:

A Place the mouse pointer over a blank area of the chart so that a four-pointed arrow appears.

B Drag the chart down and to the left until it is just below row 11 and centered within columns A through F.

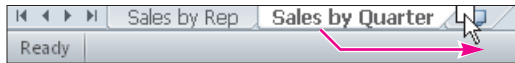


C Release the mouse button when you are satisfied with the chart position.

You will see a rectangle “ghost” as you drag, showing you where the chart will land if you release the mouse button at that location.

Copy a Sheet

4. Hold down the **Ctrl** key; drag the Sales by Quarter sheet tab to the right and then release the mouse and **Ctrl** key.



The duplicate sheet is named Sales by Quarter (2).

5. Rename the Sales by Quarter (2) sheet to **Team Totals**.

Delete an Embedded Chart

6. Click once to select the column chart in the Team Totals sheet and tap **Delete**.
Excel deletes the embedded chart.

7. Use **Ctrl** + **Z** to undo the **Delete** command.

The embedded chart reappears on the worksheet. You can restore an embedded chart right after it is deleted.

8. Use **Ctrl** + **Y** to redo the **Delete** command.

The chart is once again deleted. (You will create a pie chart here in a later exercise.)

9. Use **Ctrl** + **S** to save your workbook, and leave it **open** for the next exercise.

17.3 Exploring Other Chart Types

Video Lesson labyrinthelab.com/videos

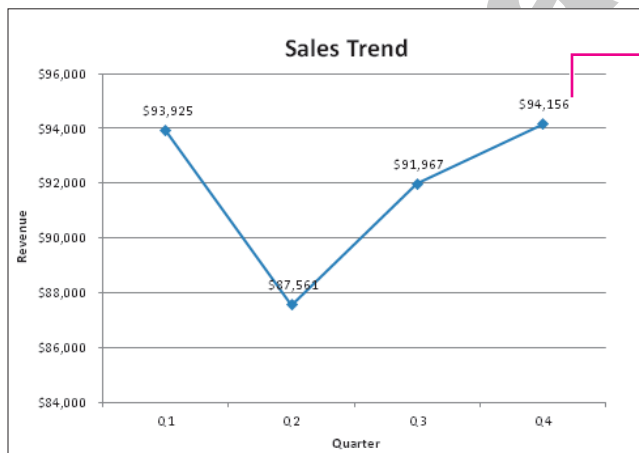
In the previous section, you learned about column and bar charts. Now you will explore line and pie charts and how they can make your data work for you.

Line Charts

Line charts are most useful for comparing trends over a period of time. For example, line charts are often used to show stock market activity where the upward or downward trend is important. Like column charts, line charts have category and value axes. Line charts also use the same or similar objects as column charts. The following illustration shows a line chart that depicts the trend in quarter sales throughout the year. Data labels indicate the value for each time period along the line plotted on the chart. Take a moment to study the following figures.

	A	B	C	D	E	F
1	Sales Department					
2	<i>Quarterly and Total Sales - Fiscal Year</i>					
3						
4		Q1	Q2	Q3	Q4	Total Sales
5	Talos Bouras	28,775	31,342	31,763	30,675	\$ 122,555
6	Leisa Malimali	6,575	7,304	8,768	10,023	\$ 32,670
7	Brian Simpson	27,850	21,471	22,634	24,961	\$ 96,916
8	Amy Wyatt	30,725	27,444	28,802	28,497	\$ 115,468
10	Quarter Total	\$ 93,925	\$ 87,561	\$ 91,967	\$ 94,156	\$ 367,609

The following chart was created using the selected data shown here. Notice that the data is in two separate ranges. You use the **Ctrl** key to select these nonadjacent ranges so that you can chart just the totals and the Q1–Q4 labels.



This is a data label. Data labels show the precise value of the various data points. You can use data labels with any chart type.

The line chart clearly depicts the downward and upward trend in sales volume.

Microsoft Excel

DEVELOP YOUR SKILLS 17.3.1

Create a Line Chart

In this exercise, you will create a line chart that displays the total sales.

Before You Begin: The Sales by Quarter worksheet should be displayed.

Create a Line Chart

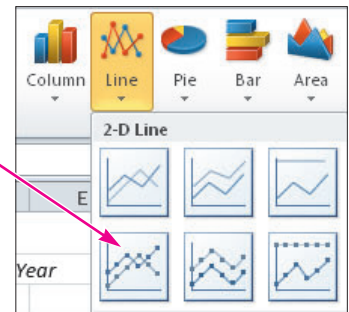
1. Follow these steps to select the data for the line chart on the Sales by Quarter worksheet:

- A** Select the range **A4:E4** (do not select cell F4).
- B** Press and hold down **Ctrl** while selecting the range **A10:E10** (do not select cell F10). Both ranges should be selected.

	A	B	C	D	E	F
1	Sales Department					
2	<i>Quarterly and Total Sales - Fiscal Year</i>					
3						
4		Q1	Q2	Q3	Q4	Total Sales
5	Talos Bouras	28,775	31,342	31,763	30,675	\$ 122,555
6	Leisa Malimali	6,575	7,304	8,768	10,023	\$ 32,670
7	Brian Simpson	27,850	21,471	22,634	24,961	\$ 96,916
8	Amy Wyatt	30,725	27,444	28,802	28,497	\$ 115,468
9						
10	Quarter Total	\$ 93,925	\$ 87,561	\$ 91,967	\$ 94,156	\$ 367,609

2. Choose **Insert**→**Charts**→**Line** →**Line with Markers** from the Ribbon, as shown.

Excel creates an embedded line chart in the current worksheet. Notice the light border and sizing handles, indicating the chart is selected. The Chart Tools contextual tabs are also visible on the Ribbon.



Move the Chart

Now you will move the chart to its own worksheet.

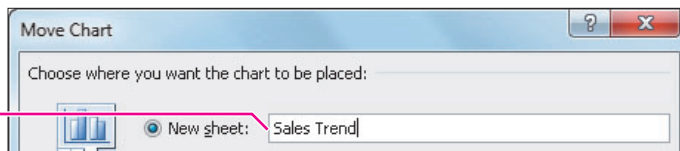
3. Follow these steps to move the chart:

- Make certain the chart is **selected** (displays handles), which also makes the Chart Tools contextual tabs visible.
- Choose **Design**→**Location**→**Move Chart** from the Ribbon.

The Move Chart dialog box appears. In this dialog box, you can choose where to place the chart as well as provide a name for a new sheet if you wish to create one.

4. Follow these steps to move the chart to its own sheet:




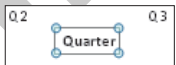



- A** Drag to select the existing **New Sheet** entry and type **Sales Trend** as the name for the new sheet



- B** Click **OK**.

The chart now appears on its own worksheet.

Edit the Chart

- Click the **Title** text box once to select it, and then **triple-click** on Quarter Total to select the entire entry. 
- Type **Sales Trend**, and then **click** another area of the chart. 
- Choose **Layout**→**Labels**→**Axis Titles**  →**Primary Horizontal Axis Title**→**Title Below Axis** from the Ribbon.
Excel provides a text box below the horizontal axis with a default name of Axis Title displayed.
- Drag** to select the default horizontal axis title.
- Type** the new horizontal axis title, **Quarter**, and then **click away** to accept the new title. 
- Choose **Layout**→**Labels**→**Axis Titles**  →**Primary Vertical Axis Title**→**Rotated Title** from the Ribbon.
- Triple-click** to select the default vertical axis title.
- Type **Revenue** as the new vertical axis title, and then **click away** to accept the new title.
- Choose **Layout**→**Labels**→**Data Labels**  →**Above** from the Ribbon.
Excel displays the values above the data points on the chart. 
- Use **Ctrl** + **S** to **save** your worksheet, and leave it **open** for the next exercise.

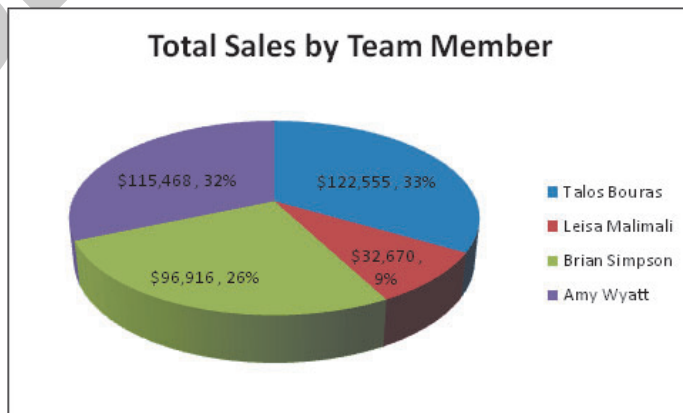
Pie Charts

Video Lesson labyrinthelab.com/videos

Pie charts are useful for comparing parts of a whole. For example, pie charts are often used in budgets to show how funds are allocated. You typically select only two sets of data when creating pie charts: the values to be represented by the pie slices and the labels to identify the slices. The following illustration shows a worksheet and an accompanying 3-D pie chart with data labels applied. Notice that the worksheet has a Total Sales column.

	A	B	C	D	E	F
4		Q1	Q2	Q3	Q4	Total Sales
5	Talos Bouras	28,775	31,342	31,763	30,675	\$ 122,555
6	Leisa Malimali	6,575	7,304	8,768	10,023	\$ 32,670
7	Brian Simpson	27,850	21,471	22,634	24,961	\$ 96,916
8	Amy Wyatt	30,725	27,444	28,802	28,497	\$ 115,468
10	Quarter Total	\$ 93,925	\$ 87,561	\$ 91,967	\$ 94,156	\$ 367,609

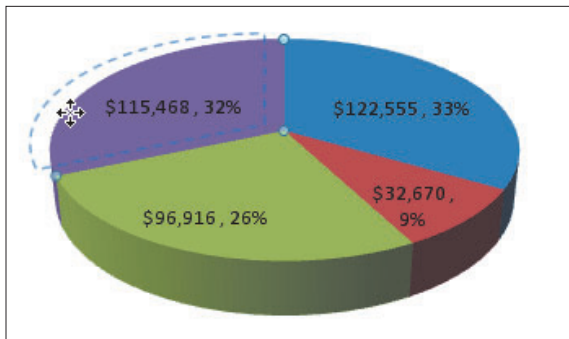
The names in column A will become labels in the legend. The numbers in column F will determine the sizes of the slices.



Excel calculates the percentages based on the numbers you select.

Exploding Pie Slices

There are times when you may want to draw attention to a particular slice of the pie chart. You can make one slice explode from the chart simply by dragging it away from the other slices.



Notice that as you drag a slice out to give it an exploded effect, Excel will show with a dashed line where it will land.

Rotating and Elevating Pie Charts

You have the option to change the rotation and perspective (also known as elevation) of pie charts in order to display data in a different position or change the angle at which it is viewed. The 3-D Rotation button on the Layout tab of the Ribbon will open a dialog box that allows changes to the rotation and perspective to take place.

DEVELOP YOUR SKILLS 17.3.2

Create a Pie Chart


In this exercise, you will create a pie chart with the same data used for the line chart and leave it embedded in the Team Totals worksheet.

Before You Begin: The Team Totals worksheet should be displayed.


Insert the Pie Chart

1. Follow these steps to select the range for the chart on the Team Totals worksheet:

	A	B	C	D	E	F
4		Q1	Q2	Q3	Q4	Total Sales
5	Talos Bouras	28,775	31,342	31,763	30,675	\$ 122,555
6	Leisa Malimali	6,575	7,304	8,768	10,023	\$ 32,670
7	Brian Simpson	27,850	21,471	22,634	24,961	\$ 96,916
8	Amy Wyatt	30,725	27,444	28,802	28,497	\$ 115,468
9						
10	Quarter Total	\$ 93,925	\$ 87,561	\$ 91,967	\$ 94,156	\$ 367,609

2. Choose **Insert**→**Charts**→**Pie** →**3-D Pie**→**Pie in 3-D** from the Ribbon.

Edit the Chart

- Place the **mouse pointer** over the chart area so that the **four-pointed arrow appears**, and then **drag it down** and to the **left** until it is below row 11 and centered between columns A through F.
Notice that the cell F4 entry, Total Sales, is used as the chart title.
- Edit** the chart title to read **Total Sales by Team Member**, clicking outside of the Title box to accept the new title.
- Choose **Layout**→**Labels**→**Data Labels** →**More Data Label Options** from the Ribbon.
The Format Data Labels dialog box appears.
- Follow these steps to format the data labels:

A Place a checkmark next to the Percentage option.

B Choose the Best Fit option, if not already selected.

Label Options

Label Contains

Series Name

Category Name

Value

Percentage

Show Leader Lines

Label Position

Center

Inside End

Outside End

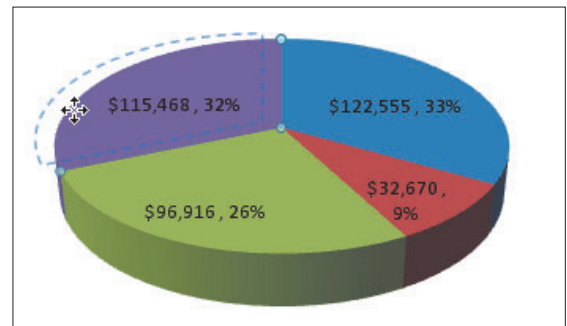
Best Fit

C Click the Close button.

Excel displays both the value and the percentage in each pie slice wherever they “best fit.”

Explode a Pie Slice

- Click** the slice representing Amy Wyatt’s sales, and then **pause** and **click** it again.
The first click will select all slices, and the second click will select just the slice for Amy Wyatt.
- Place the **mouse pointer** over the Amy Wyatt slice until you see a **move pointer**, and then **drag** away from the pie chart slightly and **release**.
Notice that as you drag the pie slice away from the main chart, a dashed line appears where the slice will land if you release the mouse button.
- Use **Ctrl+S** to **save** your worksheet, and leave it **open** for the next exercise.



17.4 Modifying Existing Charts

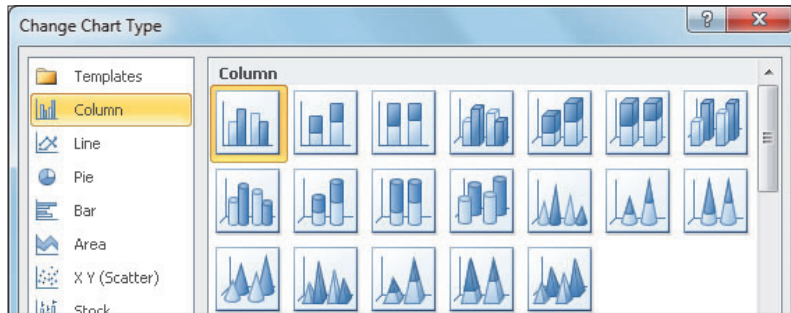
Video Lesson labyrinthelab.com/videos

You can modify any chart object after the chart has been created. You can change the size, font, color, and placement of titles; format the numbers on the value axis; change the background color of the chart area; and more. You can also add or remove objects such as legends and data labels. You can even move an embedded chart to a separate worksheet and vice versa. These changes are made with the Chart Tools, which are grouped onto three contextual Ribbon tabs that appear when a chart is selected: Design, Layout, and Format. The following table describes the various Chart Tools available to modify your charts.

QUICK REFERENCE USING CHART TOOLS ON THE RIBBON	
Contextual Tab	Command Groups on the Tab
Design	<ul style="list-style-type: none"> ■ <i>Type</i> allows you to change the type of chart, set the default chart type, and save a chart as a template. ■ <i>Data</i> allows you to switch the data displayed on rows and columns and to reselect the data for the chart. ■ <i>Chart Layouts</i> allows you to change the overall layout of the chart. ■ <i>Chart Styles</i> allows you to choose a preset style for your chart. ■ <i>Location</i> allows you to switch a chart from being embedded to being placed on a sheet and vice versa. ■ <i>Mode</i> allows you to switch the display mode for charts.
Layout	<ul style="list-style-type: none"> ■ <i>Current Selection</i> allows you to select a specific chart element and apply formatting to it. ■ <i>Insert</i> allows you to insert objects into your chart. ■ <i>Labels</i> allows you to make changes to various labels on your chart, such as the title and data labels. ■ <i>Axes</i> allows you to choose whether to display axes and gridlines, as well as to set the properties for them. ■ <i>Background</i> allows you to change the background formatting, such as fill color, for the chart. ■ <i>Analysis</i> allows you to analyze the data displayed within the chart. ■ <i>Properties</i> allows you to change the name of the chart.
Format	<ul style="list-style-type: none"> ■ <i>Current Selection</i> allows you to select a specific chart element and apply formatting to it. ■ <i>Shape Styles</i> allows you to visually make changes to the selected chart element. ■ <i>WordArt Styles</i> allows you to apply WordArt to text labels in your chart. ■ <i>Arrange</i> allows you to change how your chart is arranged in relation to other objects in your worksheet. ■ <i>Size</i> allows you to change the size of your chart by typing in exact values.

Changing the Chart Type

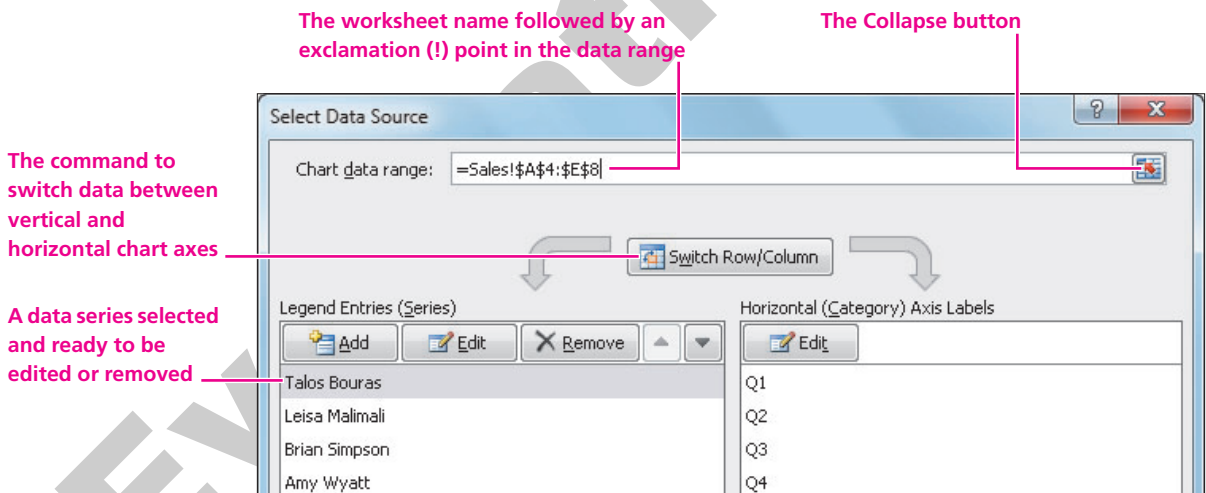
There are so many chart types available that you may wish to explore other options before making a final decision. It is easy to change the type of an existing chart by using the Change Chart Type dialog box.



In the Change Chart Type dialog box, you can choose from many preset chart types if you wish to change the type of an existing chart.

Reselecting Data

You may decide after creating a chart that some source data is missing or data that should be excluded. The Select Data command displays the Select Data Source dialog box, where you may change the data range for the entire chart. The recommended reselection method is to collapse the dialog box and drag in the worksheet. The following illustration shows that the Chart Data Range reference =Sales!\$A\$4:\$E\$8 includes the worksheet name followed by an exclamation (!) point. You also can add, edit, or remove a single data series or edit the category axis labels. The Switch Row/Column option swaps the data in the vertical and horizontal axes of the chart. You could use this option when values display along the horizontal axis and you would rather have them on the vertical axis.



The Select Data Source dialog box allows you to change the range of cells for individual data series or the entire chart.

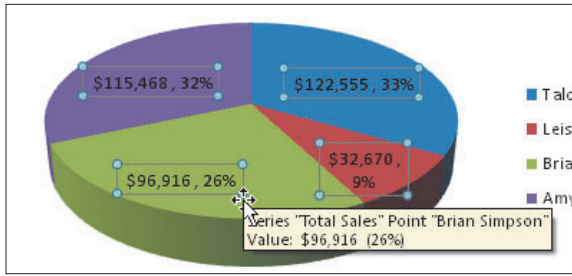


Using the arrow keys while attempting to edit a data range in a text box results in unwanted characters. For best results, reselect a data range by dragging in the worksheet.

Modifying Chart Elements

Charts are made up of various elements. For example, the legends, titles, and columns are all types of elements. You must select an element before you can perform an action on it. You can select an element by clicking it with the mouse. Once selected, you can delete, move, size, and format the element. You delete a selected element by tapping the `Delete` key, move a selected

element by dragging it with the mouse when you see the move pointer, and change the size by dragging a sizing handle.





In this illustration, the data labels are the selected element, and the ScreenTip indicates that the mouse is pointing at the data label for Brian Simpson.

Formatting Chart Elements

You can modify any chart element after the chart has been created by using the visual Chart Tools on the Ribbon. As an alternative, you can double-click the chart element to display a Format dialog box with many options for that element. For example, options in the Format Data Series dialog box allow you to adjust the column bar width; change the space between bars; and apply a fill, border, or other visual effects.

Previewing Formatting Before Applying

You can preview how a formatting change would appear in a worksheet cell before actually issuing the command to apply it. The same is true with the Chart Tools Format ribbon in Excel. If you place the mouse pointer over a button on one of the options in the Shape Styles or WordArt Styles group, a preview displays how the change will look in your chart.

QUICK REFERENCE	MODIFYING EXISTING CHARTS
Task	Procedure
Change the chart type	<ul style="list-style-type: none"> ■ Select the chart you wish to change to a different type. ■ Choose Design→Change Chart Type from the Ribbon. ■ Browse the types available and double-click the desired type.
Reselect a data range for the entire chart	<ul style="list-style-type: none"> ■ Select the chart. ■ Choose Design→Data→Select Data from the Ribbon. ■ Click the Collapse  button at the right of Chart Data Range in the Select Data Source dialog box. ■ Drag in the worksheet to select the new data range. ■ Click the Expand  button at the right of Chart Data Range in the Select Data Source dialog box.

QUICK REFERENCE	MODIFYING EXISTING CHARTS (continued)
Task	Procedure
Reselect the range for a data series	<ul style="list-style-type: none"> ■ Select the chart. ■ Choose Design→Data→Select Data from the Ribbon. ■ Select the desired item under Legend Entries (Series) in the Select Data Source dialog box and click Edit. ■ Drag to select the entire Series Name or Series Values entry in the Edit Series dialog box. ■ Drag in the worksheet to select the new range and click OK.
Delete a chart element	<ul style="list-style-type: none"> ■ Select the desired chart element and tap Delete.
Format an element on an existing chart	<ul style="list-style-type: none"> ■ Select the chart element that you wish to format. ■ Display the Design, Layout, or Format tab of the Ribbon. ■ Choose the appropriate formatting command from the Ribbon.


DEVELOP YOUR SKILLS 17.4.1

Modify a Chart

In this exercise, you will change a chart type and then apply various formatting features to it.

Before You Begin: The Sales by Rep worksheet should be displayed.

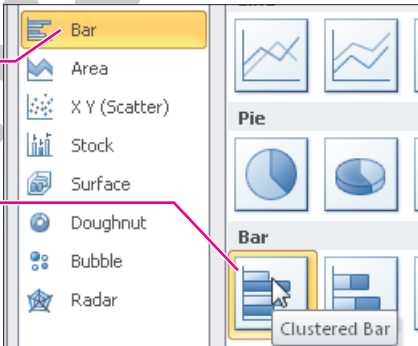
Change a Chart Type

1. Click anywhere within the column chart on the **Sales by Rep** sheet to select the chart and display the **Chart Tools** Ribbon tabs.
2. Choose **Design→Type→Change Chart Type**  from the Ribbon.
The Change Chart Type dialog box appears.
3. Follow these steps to change the chart type:

A Display the **Bar** category.

B Choose the **Clustered Bar** chart type.

C Click **OK**.



Reselect Data

- Choose **Design**→**Data**→**Select Data**  from the Ribbon.

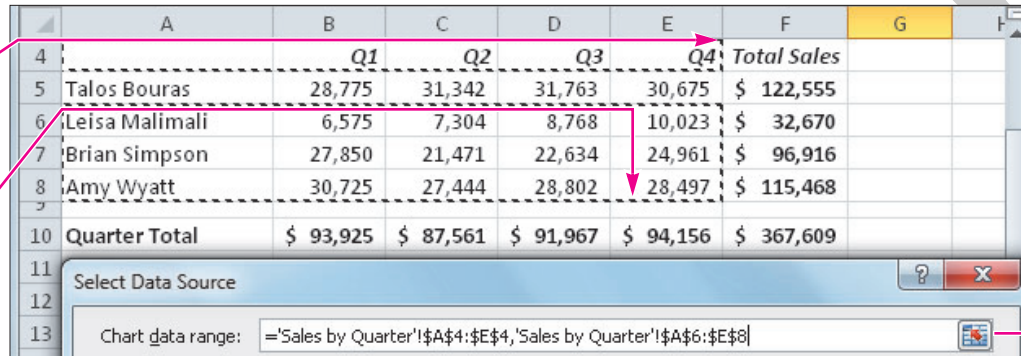
The *Select Data Source* dialog box appears with the *Chart Data Range* as =‘Sales by Quarter’!\$A\$4:\$E\$8. You want to compare sales performance without including sales manager Talos Bouras. You will reselect the range to include the labels in row 4 and the data for the other three sales team members.

- Follow these steps to reselect the chart data range:

- Click the **Collapse** button or drag the title bar of the dialog box, as necessary, to view the worksheet data.

- Drag to select the range **A4:E4**.

- Hold down **Ctrl** and select the range **A6:E8**.



	A	B	C	D	E	F	G	H
4		Q1	Q2	Q3	Q4	Total Sales		
5	Talos Bouras	28,775	31,342	31,763	30,675	\$ 122,555		
6	Leisa Malimali	6,575	7,304	8,768	10,023	\$ 32,670		
7	Brian Simpson	27,850	21,471	22,634	24,961	\$ 96,916		
8	Amy Wyatt	30,725	27,444	28,802	28,497	\$ 115,468		
10	Quarter Total	\$ 93,925	\$ 87,561	\$ 91,967	\$ 94,156	\$ 367,609		

Select Data Source dialog box: Chart_data range: =Sales by Quarter!\$A\$4:\$E\$4,'Sales by Quarter!\$A\$6:\$E\$8

- Click the **Expand**  button at the right of the range in the *Select Data Source* dialog box if you collapsed the box.

The *Legend Entries (Series)* should list *Leisa Malimali*, *Brian Simpson*, and *Amy Wyatt*.

- Click **OK**.
- Select one of the column bars for *Leisa Malimali* and tap **Delete**.
Now two data series display in the chart. Any chart element can be deleted in this way.

Format a Chart Using the Ribbon

- Click anywhere within the top bar in the chart, which represents the *Amy Wyatt* data series.

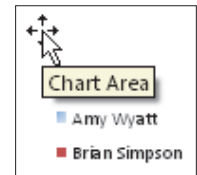


Make certain that you single-click because that selects *Amy Wyatt's* data series for all four quarters and leaves the current tab displayed. If you double-click, the *Design* tab with the current style displays on the Ribbon. In this case, it won't matter as you are already viewing the *Design* tab, but it could cause you to take extra steps if you were already working on the *Format* tab.

- Follow these steps to apply formatting to the Amy Wyatt data series:



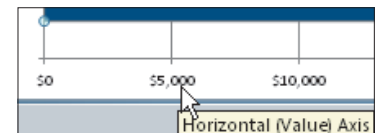
- Click anywhere within the chart area to select it.
Remember that any formatting you choose will apply only to the chart element you have selected.



- Choose **Format**→**Shape Styles**→**Shape Outline** →**Weight** from the Ribbon.
- Point at various line weights to preview how they would look in the chart; then choose **3 pt** from the list.
- Choose **Format**→**Shape Styles**→**Shape Outline** from the Ribbon, and then apply the color of your choice.
A line now appears around the entire chart area. In the next few steps, you will be changing the number format of the value axis.

Format Axis Numbers

- Double-click** on any of the values in the horizontal axis at the bottom of the chart.
The Format Axis dialog box displays. If the Format Plot Area or other dialog box displays, close it and again double-click a value on the horizontal axis.

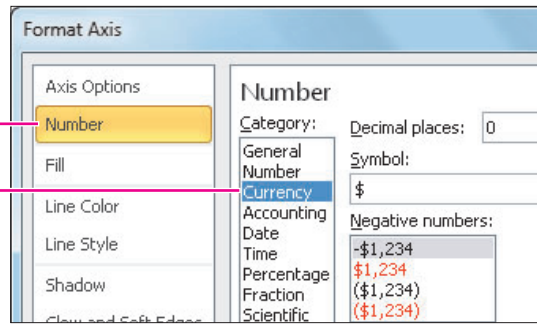


15. Follow these steps to format the axis numbers as Currency:

A Choose **Number** at the left of the dialog box.

B Choose the **Currency** category.

C Click **Close**.

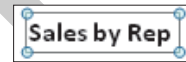


The numbers on the axis now display with dollar (\$) signs.

Add a Chart Title

16. Choose **Layout**→**Labels**→**Chart Title** →**Above Chart** from the Ribbon.

17. Change the default chart title to **Sales by Rep.**

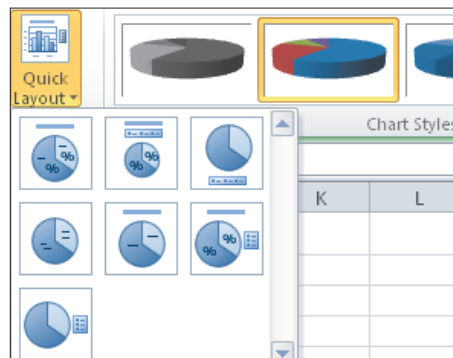
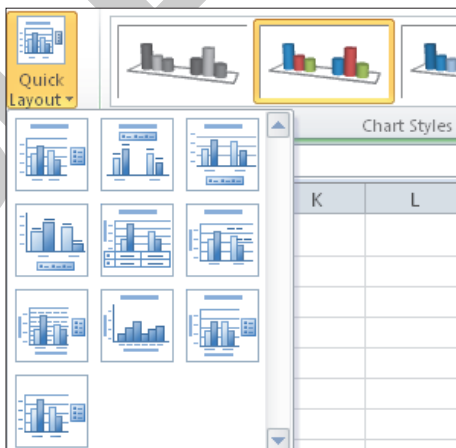


18. **Save**  the changes, and leave the workbook **open**.

17.5 Applying Layouts and Styles to Charts

Video Lesson labyrinthlab.com/videos

Chart layouts, also known as quick layouts, are designs that contain various chart elements. Choosing a chart layout saves time versus adding and formatting chart elements one at a time. Chart Quick Styles are based on the theme applied to your workbook. There are many preset styles that you can apply to charts. The layouts and styles displayed on the Design tab of the Ribbon are based on the type of chart that you currently have selected. In the figures displayed below, you can see that the layouts and styles available for column charts are different from those available for pie charts.



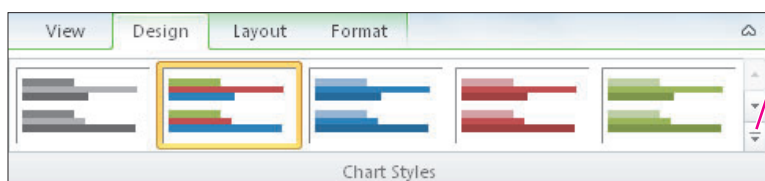
The chart layouts and styles available through Excel's Design tab of the Ribbon will change based on the type of chart you have selected.

Formatting Attributes Controlled by the Selected Style

When you choose a style for your chart, the colors and effects (such as fill effects) will change to match the style selected. Data in worksheet cells is not affected by any styles that you apply to charts. Excel does not allow you to create your own styles, but you can save the formatting from a selected chart as a template to use as the basis for future charts.

Viewing All Available Layouts and Styles for a Chart Type

The Ribbon will display just a few of the layouts and styles available for the selected chart type. To view the entire gallery, click the More button to expand the Chart Layouts or Chart Styles group of the Ribbon.



The More button in the Chart Styles group displays all available styles for the selected chart type.

QUICK REFERENCE	APPLYING A LAYOUT AND STYLE TO A CHART
Task Apply a layout or style to a chart	Procedure <ul style="list-style-type: none"> ■ Select the chart to which you wish to apply a layout or style. ■ Choose the Design tab from the Ribbon. ■ Click the More button in the Chart Layouts or Chart Styles group to display the full array of available choices. ■ Click to choose the layout or style you wish to apply.

DEVELOP YOUR SKILLS 17.5.1

Apply a Layout and a Style to a Chart

In this exercise, you will apply a quick layout and Quick Style to the bar chart you created in the last exercise.



Before You Begin: The Sales by Rep sheet should be displayed.

Apply a Workbook Theme



1. Choose **Page Layout**→**Themes**→**Themes** →**Origin** from the Ribbon.
2. **Click** each of the workbook tabs and view the result.
A uniform color scheme, font set, and graphic effects are applied to all worksheet data and charts. The chart style that you apply later in this exercise will match the workbook theme.

Change the Chart Layout

3. Select the **Sales by Rep** sheet.
4. **Click** in the chart area of the **Sales by Rep** chart to select the chart.

5. Choose **Design**→**Chart Layouts**→**More**  from the Ribbon.
Excel displays all of the chart layout choices for this type of chart.
6. **Click once** to apply the layout of your choice and view the result in the chart.
7. Choose **Design**→**Chart Layouts**→**More**  from the Ribbon.
8. Choose **Layout 2** in the list.
A Screen Tip displays the layout name as you point at each layout. You will need to reenter any title that is not within the data range specified for the chart.
9. If the default chart title displays at the top of the chart, change it to **Sales by Rep.**

Change the Chart Style

10. Choose **Design**→**Chart Styles**→**More**  from the Ribbon.
Excel displays all of the available chart styles for this type of chart. The gallery styles match the color scheme and graphic effects from the currently applied workbook theme.
11. **Click once** to apply a chart style you find attractive.
If there were data on this worksheet, the data would not be affected by the new chart style.
12. Repeat **steps 10 and 11** if you wish to apply a different chart style.
13. **Save**  the changes and leave the workbook **open**.

17.6 Previewing and Printing Charts

Video Lesson labyrinthelab.com/videos

The Print command is used to preview and print charts. If a chart is embedded, you can print the entire worksheet or select and print just the chart. If a chart is on a separate worksheet, you must first display the sheet before issuing the Print command. In the preview on the Print tab in Backstage view, the chart will display in black and white or in color, depending on the type of printer selected.



TIP

Color fills and borders may not provide good contrast in charts printed on grayscale printers. Consider using shades of gray or black-and-white pattern fills.

QUICK REFERENCE

PRINTING CHARTS

Task	Procedure
Preview how a chart will look when printed	<ul style="list-style-type: none"> ■ Select the chart by either clicking it if it is embedded or displaying the sheet on which it is placed. ■ Choose File→Print and look at the preview in Backstage view.
Print a chart	<ul style="list-style-type: none"> ■ After using the above steps to preview the chart, select printing options in the Print tab of Backstage view. ■ Click Print.

DEVELOP YOUR SKILLS 17.6.1**Preview and Print a Chart**

In this exercise, you will preview the pie chart you created in the last exercise and print the column chart.

Before You Begin: The **Team Totals** worksheet should be displayed.

1. **Click once** to select the pie chart on the **Team Totals** worksheet.
2. Choose **File**→**Print**.
The pie chart appears in the preview of the Print tab in Backstage view.
3. Tap **[Esc]** to exit Backstage view without printing.
4. **Click** in a cell away from the pie chart to **deselect** the chart.
5. Choose **File**→**Print**.
Notice that when the chart is not selected, Excel will print the worksheet along with the embedded chart.
6. Tap **[Esc]** to exit Backstage view without printing.
7. Display the **Sales Trend** worksheet.
8. Choose **File**→**Print**, select an appropriate printer, click **Print**, and retrieve the printout.
Excel will print one copy of your chart to the default printer.
9. **Close** the workbook.

17.7 Concepts Review

Concepts Review labyrinthlab.com/oe10

To check your knowledge of the key concepts introduced in this lesson, complete the Concepts Review quiz by going to the URL listed above. If your classroom is using Labyrinth eLab, you may complete the Concepts Review quiz from within your eLab course.

Reinforce Your Skills



REINFORCE YOUR SKILLS 17.1

Create a Column Chart

In this exercise, you will create a column chart to compare total new customers by time period. You will move and format the chart. Then you will switch the row and column data to compare the data by customer source category.

Create a Stacked Column Chart

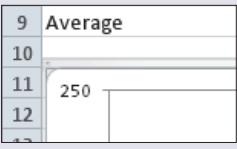
1. **Open** the rs-Service Contracts Comparison workbook from the Lesson 17 folder.
2. Select the **range A3:E7**, taking care not to include the totals in row 8.
3. Choose **Insert**→**Charts**→**Column**→**2-D Column**→**Stacked Column** from the Ribbon.

The chart shows a column for each quarter with the four customer source categories stacked in a column. The stacked column chart is not as cluttered as a clustered column chart, which requires 16 columns to present the same data but allows more precise comparison of single categories.



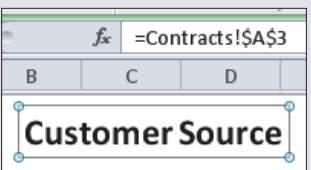
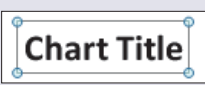
Move and Format the Chart

4. **Point** at the chart area and drag the chart down and to the left until the upper-left corner is at **cell A11**.
5. Choose **Design**→**Chart Layouts**→**Layout 3** from the Ribbon. *ScreenTips help you to locate Layout 3 in the list. The legend is moved below the horizontal axis and a title text box is added above the chart.*



Link the Chart Title to a Cell

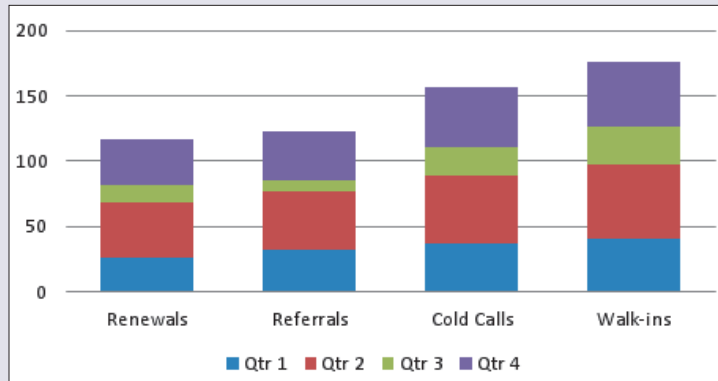
6. **Click** in the chart title text box. *The entry = "Chart Title" appears in the Formula Bar.*
7. Type = to begin a formula.
8. Click **cell A3** in the worksheet and **tap** [Enter]. *You just linked the chart title to the contents of cell A3 in Sheet1. The entry =Sheet1!\$A\$3 appears in the Formula Bar. Notice that Customer Source now appears in the chart title text box. The chart title would be updated if you edited the text in cell A3.*




Switch Row/Column Data

Notice that the chart's horizontal axis displays the quarters of the year and the legend contains the customer source categories. Each column represents the total new customers in one quarter for comparison among time periods.

9. Choose **Design**→**Data**→**Switch Row/Column** from the Ribbon.



The data reverse so the horizontal category axis displays the customer source categories. Each column represents the total new customers in a customer source category for comparison among categories.

10. **Save**  the changes and **close** the workbook.

REINFORCE YOUR SKILLS 17.2

Adjust a Chart

In this exercise, you will correct the data source range and convert a column chart to a line chart. The chart is formatted with a grayscale chart style suitable for printing on a grayscale printer.

Correct a Data Range

1. **Open** the rs-Chart Conversion workbook from the Lesson 17 folder.
An embedded column chart has been created on the Service Contracts sheet.
2. Inspect the chart to locate an error in the way data are labeled.



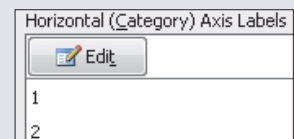
The categories on the horizontal axis are labeled 1 through 4 rather than Qtr 1 through Qtr 4. Excel used a default number series, which indicates a common error.

3. **Select** the chart and notice that the chart data range does not include the category labels in row 3.

	A	B	C	D	E
3	Customer Source	Qtr 1	Qtr 2	Qtr 3	Qtr 4
4	Renewals	47	37	33	44
5	Referrals	22	28	30	32
6	Cold Calls	26	17	25	22
7	Walk-ins	18	20	15	17

4. Choose **Design**→**Data**→**Select Data** from the Ribbon; drag the **Select Data Source** dialog box to view the worksheet data, if necessary.
You learned earlier in this lesson to reselect the chart data range. In the next step, you will use an alternative method to reselect just the horizontal axis labels.

5. Click the **Edit** button in the Horizontal (Category) Axis Labels area of the dialog box.



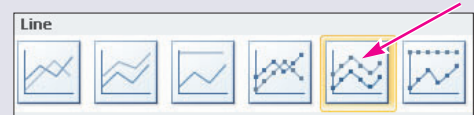
6. Select the **range B3:E3** in the worksheet, click **OK** to exit the Axis Labels dialog box, and click **OK** again.
The category axis labels are shown correctly on the chart.


Convert the Chart to a Line Chart

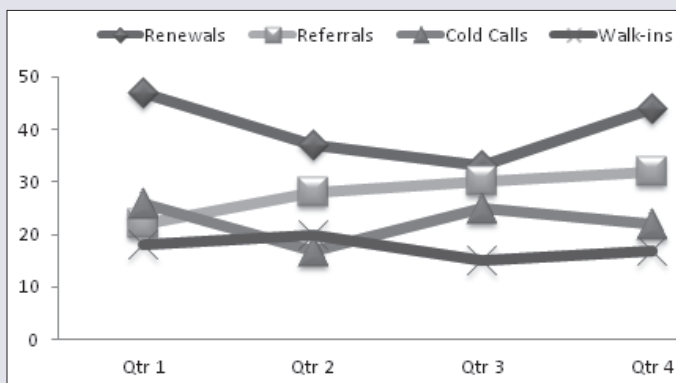
Suppose you are interested in seeing only the trends in customer source rather than the numbers in individual quarters. You can easily convert the column chart to a line chart.

7. Choose **Design**→**Type**→**Change Chart Type**  from the Ribbon.


8. Choose **Line with Markers** in the Line category and click **OK**.



9. Choose **Layout**→**Labels**→**Data Labels**  → **None** from the Ribbon.



The line chart shows downward and upward trends.

10. **Deselect** the chart and **save**  the changes.
11. Display the **print preview** in Backstage view, **print**, and **close** the workbook.
Both the worksheet and the chart should print on a single page.

REINFORCE YOUR SKILLS 17.3




Create Pie Charts

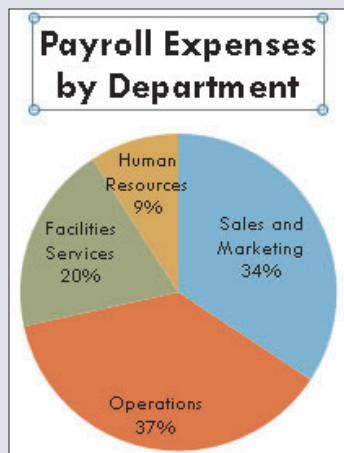
In this exercise, you will create two pie charts to illustrate employee salaries. The charts will show how salary cost is divided among departments and how one department's salaries are allocated. You will embed the first chart and place the second chart on a separate sheet.

Create the Company Chart

1. **Open** the rs-Payroll Expenses workbook from the Lesson 17 folder.
2. Use the **[Ctrl]** key to select the **ranges B3:E3 and B9:E9**.
3. Choose **Insert**→**Charts**→**Pie**→**2-D Pie**→**Pie** from the Ribbon.
If you included the totals in column F by mistake, either delete and reinsert the chart or use the Select Data command in the Design ribbon to reselect the data source range.
4. Move the chart to **row 11** below the worksheet data.

Format the Company Chart

5. Choose **Layout**→**Labels**→**Data Labels** →**More Data Labels Options** from the Ribbon.
The Format Data Labels dialog box displays the Label Options.
6. Place a checkmark next to **Category Name and Percentage**, remove the checkmark from **Value**, and click **Close**.
Notice that the data label does not fit inside the smallest pie slice. This is OK, but an option can make the labels look uniform.
7. Choose **Layout**→**Labels**→**Data Labels** →**Inside End** from the Ribbon.
This data labels option causes all data labels to fit inside their pie slices.
8. Click in the legend and tap **[Delete]**.
The legend is unnecessary because the department names are in the data labels.
9. Choose **Layout**→**Labels**→**Chart Title** →**Above Chart** from the Ribbon.
10. Select the default **chart title** text and use the **[Enter]** key while typing **Payroll Expenses by Department** to create a two-line title, as shown.



Create a Pie Chart for the Sales and Marketing Department

11. Select the **range A3:B8**.

Using the **[Ctrl]** key is unnecessary because columns A and B are adjacent.


12. Choose **Insert**→**Charts**→**Pie**→**2-D Pie**→**Pie** from the Ribbon.

Notice that the text in cell B3 is used as the chart title because B3 is the first cell in the data series.

13. Choose **Design**→**Chart Layouts**→**Layout 1** from the Ribbon.

Layout 1 removes the legend and adds data labels with categories and percentages.

Move the Department Chart to Its Own Sheet

14. Choose **Design**→**Location**→**Move Chart**  from the Ribbon.

The Move Chart dialog box is displayed. You can move a chart to a new sheet or as an embedded object to an existing sheet.

15. Select the **text entry** (such as Chart1) next to New Sheet, type **Sales and Marketing**, and tap **[Enter]** to choose **OK**.

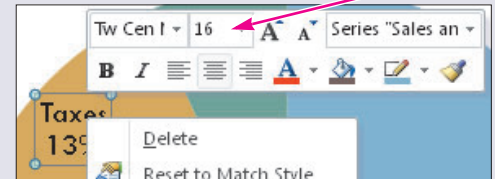
The new sheet containing the chart appears before Sheet1 in the workbook tab order.


16. Choose **Design**→**Chart Styles**→**More**  from the Ribbon and choose an attractive Quick Style.

You may want to choose a grayscale Quick Style if you plan to print on a grayscale printer. The styles in the last row contain a black background, which you should avoid printing to conserve printer toner or ink.

17. **Right-click** a data label to select all data labels and choose a **larger font size** from the Mini toolbar.

Some data labels may appear outside their pie slices, depending on the font you chose.




18. **Save**  the changes and **close** the workbook.

REINFORCE YOUR SKILLS 17.4

Create a Doughnut Chart

In this exercise, you will create a doughnut chart. Like pie charts, doughnut charts are useful for comparing parts of a whole. However, doughnut charts can contain more than one data series. Each ring in a doughnut chart represents a data series. The chart you create will compare the quarter 4 sales with total sales.

Create the Chart

1. **Open** the rs-Sales Comparison workbook from the Lesson 17 folder.
2. Take a few moments to determine the ranges that need to be selected in order to create a chart that **compares Qtr 4 sales** with the **total product sales**.
3. Use the **[Ctrl]** key to select the **ranges A3:A7 and E3:F7**.
4. Choose **Insert**→**Charts**→**Other Charts** →**Doughnut**→**Doughnut** from the Ribbon.


The Total data series appears in the outer ring of the chart. The Qtr 4 data series is in the inner ring. You will add formatting in the next few steps to identify the data clearly.



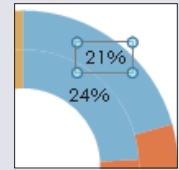
Format Data Labels and the Title

5. Choose **Design**→**Chart Layouts**→**Layout 6** from the Ribbon.
The layout adds a default chart title and data labels with percentages.

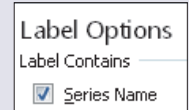
6. **Click once** on the data label for total **Cold Calls (21%)**, and then click again to select just that label.

7. Choose **Layout**→**Labels**→**Data Labels**  →**More Data Label Options** from the Ribbon.

The Format Data Label dialog box appears with the Label Options displayed.



8. Place a checkmark next to **Series Name** under Label Contains and click **Close**.



9. Select only the **Cold Calls** label for Qtr 4 (24%) and **repeat** the previous step to add the series name to the label.

If labels were displayed for all data series names, the labels would overlap. Formatting at least one label on each ring, however, is important for identifying the time period that each ring represents.

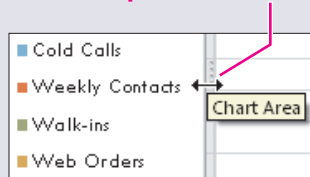
10. Change the default **chart title** to **Sales Source** (the contents of cell A3 on the worksheet).

Move and Size the Chart

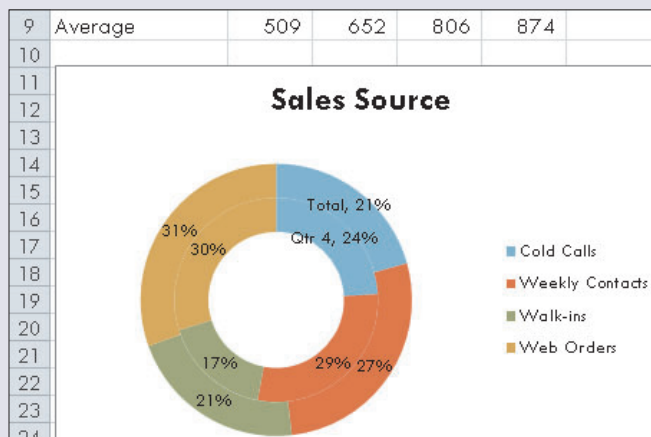
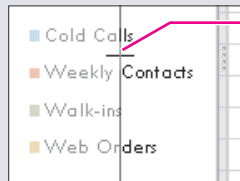
11. **Drag** the chart below the worksheet data and make certain all the data are visible.


12. Follow these steps to resize the chart width:

A Point at the **middle resizing handle** on the right edge of the chart frame until the mouse changes to a **double-pointed arrow**.



B Drag to the left until the right edge of the chart aligns with the right edge of column F.



13. **Save**  the changes, and **close** the workbook.

Apply Your Skills



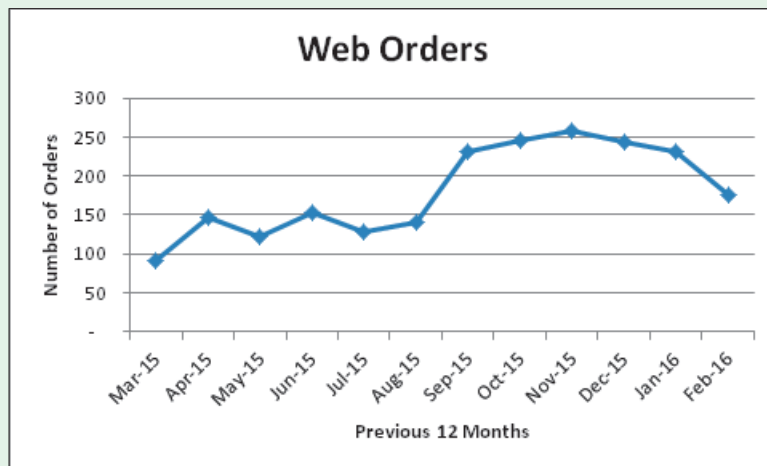
APPLY YOUR SKILLS 17.1

Create a Line Chart

In this exercise, you will create a line chart on a separate sheet, rename the sheet tabs, and print a chart.

- Start a **new** workbook and create the worksheet shown at right:
 - Enter dates for the actual previous 12 months rather than the dates shown.
 - Use **AutoFill** to expand the date series.
 - Resize the column widths as necessary.
- Format** the dates so that they are displayed as *Mar-15* without the year (your year may be different).
- Use the worksheet data to create the following chart:
 - Set up the **axis labels** and **title** as shown (your years may be different).
 - Do **not** include a legend.

	A	B
1	Green Clean Web Orders	
2	Product Sales	
3		
4	Date	Web Orders
5	Mar-15	92
6	Apr-15	146
7	May-15	122
8	Jun-15	154
9	Jul-15	128
10	Aug-15	140
11	Sep-15	231
12	Oct-15	245
13	Nov-15	258
14	Dec-15	244
15	Jan-16	231
16	Feb-16	176
17	Total	2,167



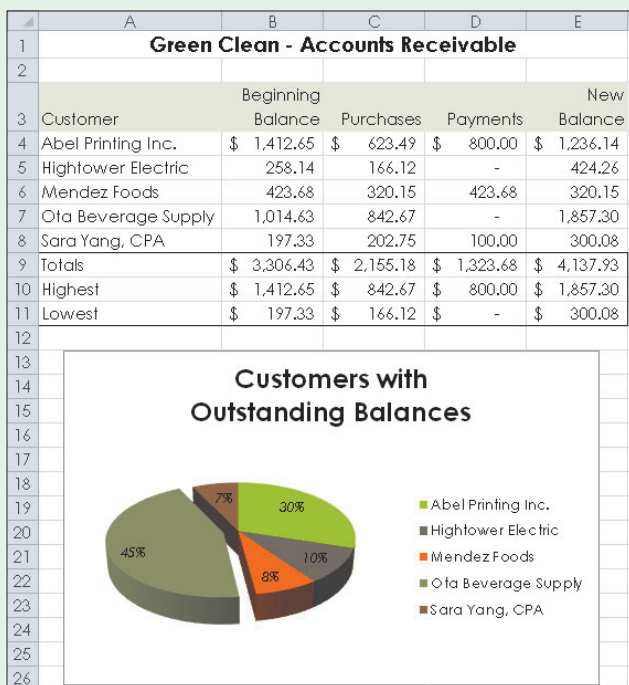
- Place the **chart** on a separate sheet, naming it **Web Orders Trend**.
The dates will not appear slanted after the chart is moved.
- Rename** the Sheet1 tab to **Supporting Data**.
- Print** the chart.
- Save** with the name **as-Web Orders** in the Lesson 17 folder and **close** the workbook.

APPLY YOUR SKILLS 17.2

Create a Worksheet and Pie Chart

In this exercise, you will create a worksheet and a pie chart based on the data in the worksheet. You will also apply a style to the worksheet; insert formulas in the worksheet; and move, resize, and explode a piece of the pie chart.

1. Use these guidelines to create the worksheet and chart shown in the following illustration:
 - **Type** all numbers and text entries as shown, but use formulas to calculate the New Balance in **column E** and the Totals, Highest, and Lowest values in **rows 9–11**. The formula for New Balance is $\text{New Balance} = \text{Beginning Balance} + \text{Purchases} - \text{Payments}$. Calculate the Totals in **row 9** with AutoSum, and use the MAX and MIN functions for the Highest and Lowest calculations in **rows 10 and 11**.
 - Use the font size of your choice for the title **cell A1**, merge and center the title across the worksheet, and then format the workbook with the theme of your choice. Apply a cell style to the cells in **row 3** and add a border around the data in **rows 9–11**.
 - Create the embedded 3-D pie chart shown in the illustration. The pie chart slices represent the new balance percentages of each customer. The pie chart does not represent any of the data in **rows 9–11**.
 - Adjust the position and size of the embedded chart as shown in the illustration.
 - **Explode** the largest slice.
 - Format all pie slice data labels as italic by using a command on the Mini toolbar or the Home tab of the Ribbon.
2. **Print** the worksheet and embedded chart on a **single page**.
3. **Save** with the name **as-Accounts Receivable Report** in the Lesson 17 folder and **close** the workbook.



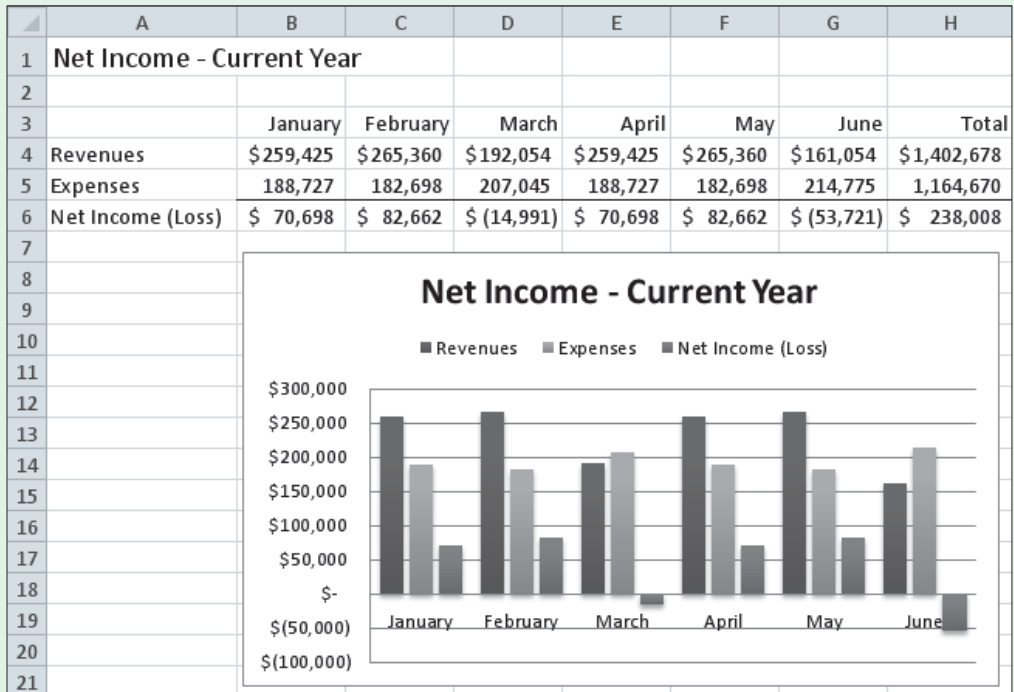
Microsoft Excel

APPLY YOUR SKILLS 17.3

Create a Column Chart and Edit Worksheets

In this exercise, you will create a column chart embedded in the worksheet and then move, resize, and print the chart.

- 1. Create** the worksheet and embedded column chart shown in the following illustration. Use the font size of your choice for the title in **cell A1** and enter the actual year instead of the words *Current Year*. Notice that the column chart is 2-D. The differences in **row 6** are simply the Revenues numbers minus the Expenses numbers. Choose an appropriate chart layout so the negative numbers dip below the category axis in the chart as shown. Move the legend to the top of the chart as shown.



- 2.** Change the **chart colors** to shades of gray, suitable for printing on a grayscale printer.
- 3.** Move the chart to a **separate sheet**, and **rename** the sheet tab to **Net Income Chart**.
- 4. Rename** the worksheet tab to **Net Income Analysis**.
- 5. Delete** the unused sheet tabs, Sheet2 and Sheet3.
- 6.** Add the **color** of your choice to the **Net Income Analysis** sheet tab.
- 7. Preview** the worksheet to ensure that it fits on one page and then **print** the worksheet and chart.
- 8. Save** with the name **as-Net Income Analysis** in the Lesson 17 folder and **close** the workbook.

Critical Thinking & Work-Readiness Skills



In the course of working through the following Microsoft Office-based Critical Thinking exercises, you will also be utilizing various work-readiness skills, some of which are listed next to each exercise. Go to labyrinthelab.com/workreadiness to learn more about the work-readiness skills.

17.1 Analyze Data Using an Embedded Column Chart

As part of an effort to reduce costs and environmental impact, Talos Bouras is tasked with reporting the delivery reps' driving activities. Open ct-Rep Driving Data (Lesson 17 folder). Create an embedded column chart that displays the miles driven by each driver. Title the chart appropriately. Label each driver at the base of the appropriate chart column. Use data labels to display the number of miles driven at the top of the appropriate column. Remove the legend. Create a similar chart to graph the total expenses for each driver. Save the file as **ct-Rep Driving Charts**. If working in a group, present your results. Answer questions such as: Who drove the most? Who drives the most efficiently? If working alone, type your answers in a Word document named **ct-Questions** saved to your Lesson 17 folder. Close the workbook.

WORK-READINESS SKILLS APPLIED

- Seeing things in the mind's eye
- Reading
- Interpreting and communicating information

17.2 Display Test Results Using a Pie Chart

Open ct-Test Results (Lesson 17 folder). On a separate worksheet, create a 3-D pie chart showing the percentage of contribution for each cleaner category to the overall total produced. Apply an appropriate style to the chart. Include appropriate data labels and give the chart a title. Change the 3-D rotation of the chart so the largest slice is in front. Determine whether or not to display the legend. Explode the largest slice. Change the sheet name to **Test Pie Chart** and save the file as **ct-Test Pie Chart** in your Lesson 17 folder. If working in a group, present your results. Discuss what cleaning product creates the most waste. Can you think of any alternative cleaning products that might be used? If working alone, type your answers in a Word document named **ct-Questions2** saved to your Lesson 17 folder.

WORK-READINESS SKILLS APPLIED

- Seeing things in the mind's eye
- Reading
- Interpreting and communicating information

17.3 Chart Sales Trends

Green Clean's sales results are in! Your job is to chart the sales data so that your manager can discuss the implications in a team meeting. Open the the Microsoft Word document named ct-Sales Results (Lesson 17 folder). Enter the information shown into a new Excel workbook. Type the actual current year, and calculate the totals. Review the data to determine the significant trends in sales performance. Create an embedded pie chart with appropriate labeling for one of these trends. Show other results in a columnar chart on a separate sheet. Keep in mind the data relationships that each chart type can best display. Save the file as **ct-Sales Charts** in your Lesson 17 folder. Why might you (or your manager) want to see the information displayed both ways? Type your answer in a Word document named **ct-Questions3** saved to your Lesson 17 folder.

WORK-READINESS SKILLS APPLIED

- Seeing things in the mind's eye
- Interpreting and communicating information
- Using computers to process information