EXCEL 2013

6 Charting Worksheet Data

Charting is an important skill to have when using worksheets because comparisons, trends, and other relationships are often conveyed more effectively with charts than by displaying only data. In this lesson, you will use Excel to create column charts, line charts, and pie charts. You will edit and format legends, data labels, and other chart objects. You will also add trendlines to worksheets.

LEARNING OBJECTIVES

After studying this lesson, you will be able to:

- Create different types of charts
- Move and size embedded charts
- Modify and format chart elements
- Create trendlines
- Preview and print worksheets

LESSON TIMING

- Concepts/Develop Your Skills: 1 hr 00 min
- Concepts Review: 15 min
- Total: 1 hr 15 min

CASE STUDY: CHARTING SALES PERFORMANCE

You have been asked to prepare several charts for Green Clean. You will prepare charts that compare sales in the various quarters, display the growth trend throughout the year, and illustrate the contributions of each sales team member to the company sales as a whole. You will use Excel's charting features to produce accurate and easy-to-understand visuals that meet Green Clean's high standards.

Creating Charts in Excel

Many people are "visual learners" and find that numerical data is easier to interpret when presented in a chart. Charts are linked to the data from which they are created, thus charts are automatically updated when worksheet data changes. You can apply options and enhancements to each chart element, such as the title, legend, plot area, value axis, category axis, and data series.

Chart Placement

You have the option of either embedding a new chart into the worksheet where the data resides or placing it on a separate sheet. This can be done when the chart is first created, or at any time thereafter.

Embedded charts can be created by choosing the chart type from the Insert tab. To avoid covering the worksheet data, you can move and resize an embedded chart.

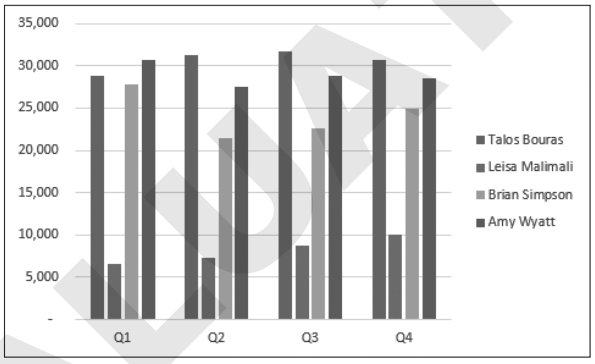
FROM THE KEYBOARD

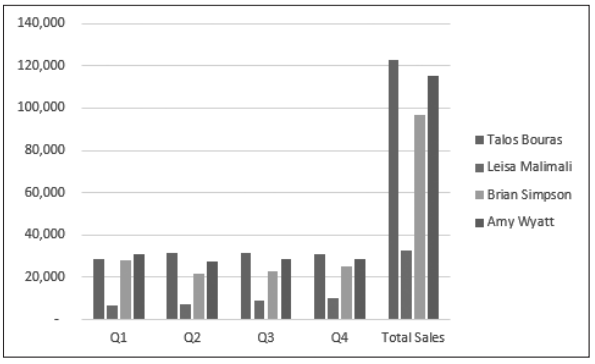
F11 to create a chart on its own sheet

You can use the F11 key to place a full-size chart on its own sheet. When you do, the chart on the new sheet will be based on the default chart type. You can easily change the type after creating the chart with the Change Chart Type option.

Choosing the Proper Data Source

It is important to select both the appropriate data, and the proper row and column headings for your column and bar charts to make sure the data are accurate. Usually, you will not include both individual category data and totals because the individual data would appear distorted.





The column chart that excludes the Total Sales data does a better job of displaying the differences between each data series.

Chart Types

Excel provides 10 major chart types, as well as several subtypes for each. Each chart type represents data in a different manner, and you can also create a customized chart (which can be used as a template) to meet your exact needs.

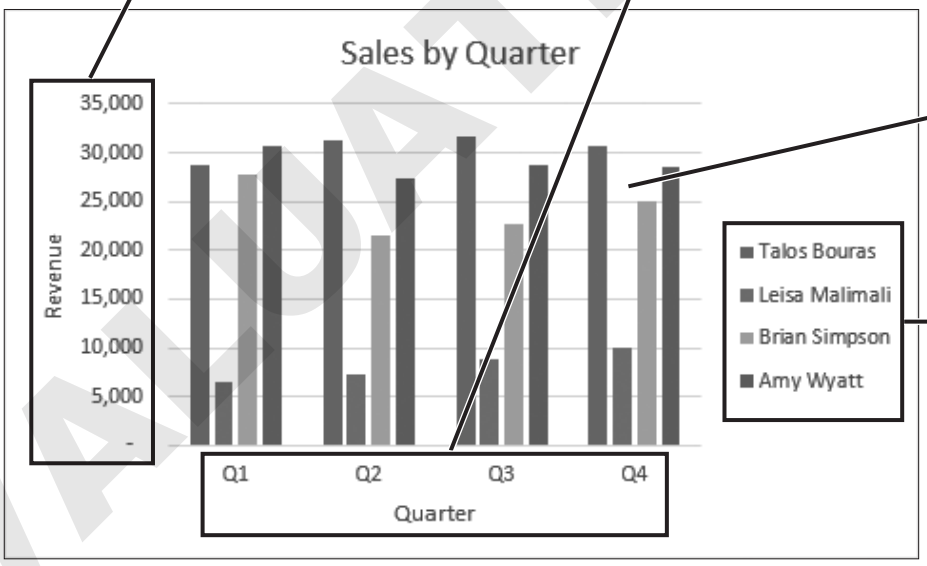
FROM THE RIBBON

Insert→Charts→ Recommended Charts

Chart and Axis Titles

Excel allows you to create titles for your charts as well as for 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.

	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 vertical value axis

The horizontal category axis

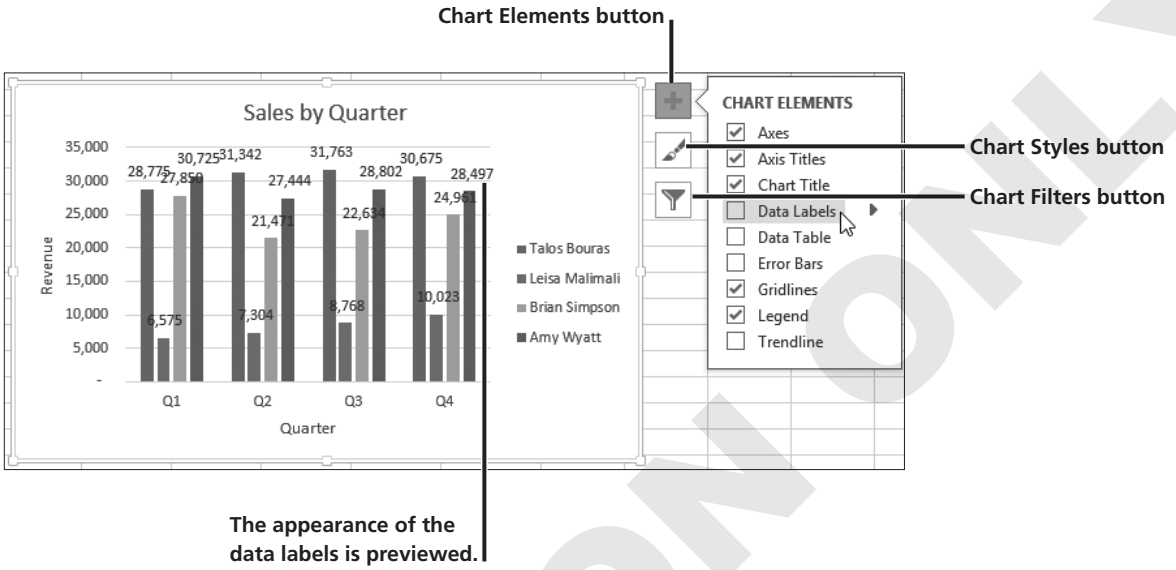
The columns represent values from the various data series.

The legend uses labels from the first column or row of the selected range to identify each data series in the chart columns.

This column chart compares values using vertical bars. It was created using the highlighted worksheet data.

Chart Formatting Control

To quickly preview and select different chart elements, styles, and filters, you can use the chart formatting buttons that appear when a chart is selected. When you scroll over an option within any of the three buttons, its appearance will be previewed within your chart.



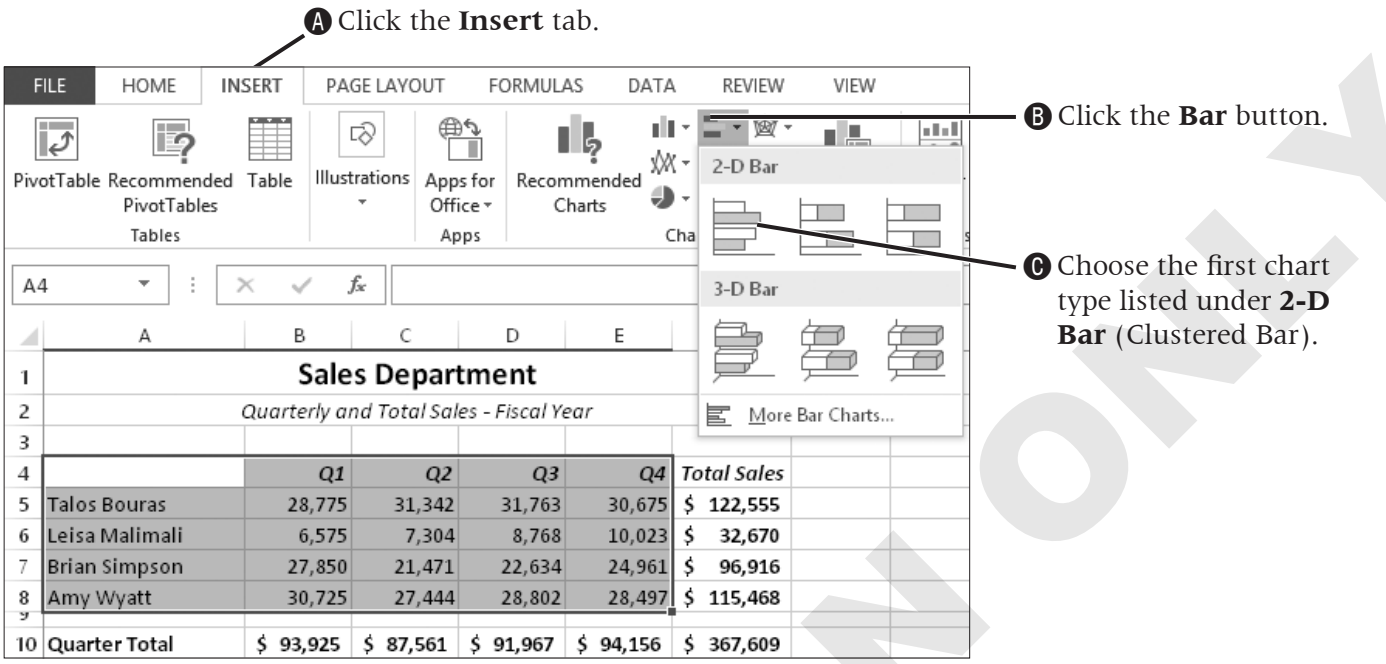
DEVELOP YOUR SKILLS EX06-D01

Create a Chart

1. Open **EX06-D01-SalesCharts** from the **EX2013 Lesson 06** folder and save it as **`EX06-D01-SalesCharts-[FirstInitialLastName]`**.
2. Select the **range A4:E8** in the **Sales by Quarter** worksheet.
3. Tap the F11 key.
4. Double-click the new chart tab, type **`Sales by Rep`**, and tap Enter.

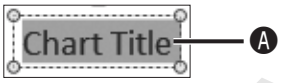
5. Display the **Sales by Quarter** worksheet and make certain the **range A4:E8** is still selected.

6. Follow these steps to create a clustered bar chart:



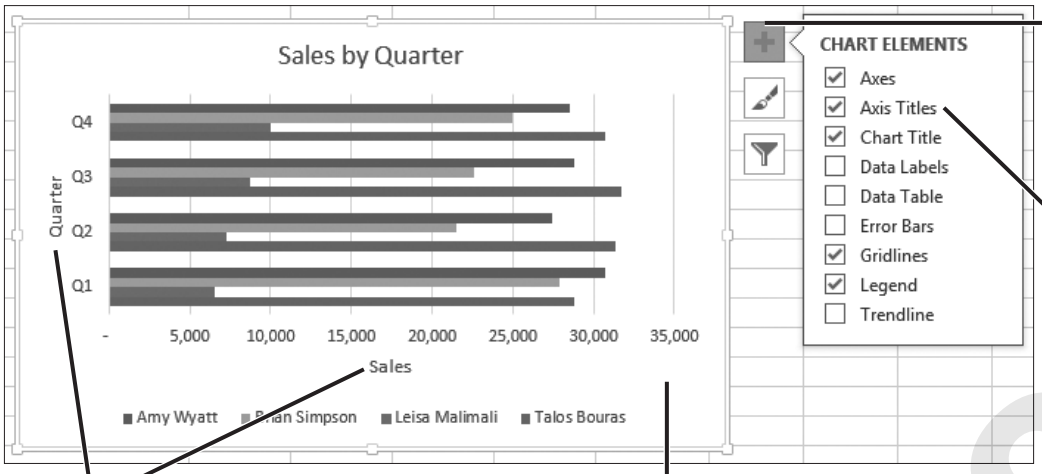
7. Look at the Ribbon to see that the **Chart Tools** are now displayed and the **Design** tab is active.

8. Follow these steps to title the chart:



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

9. Remaining within the chart, follow these steps to add a vertical axis title:



Ⓐ Click the **Chart Elements** button.

Ⓑ Choose **Axis Titles**.

Ⓒ Click and type **`Quarter`** for the vertical axis, and then click and type **`Sales`** for the horizontal axis.

Ⓓ Click in any blank area of the chart to accept each new title.

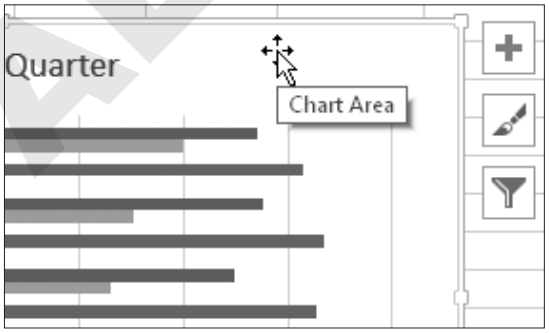
10. Save the file and leave it open; you will modify it throughout this lesson.

Moving and Sizing Embedded Charts

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

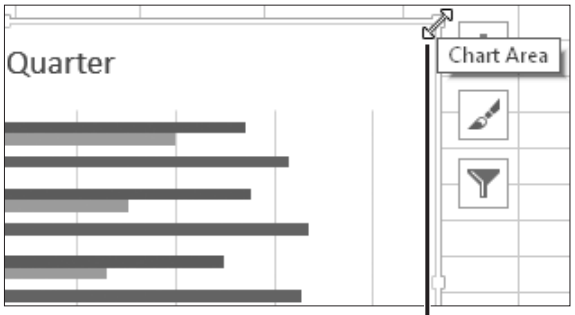
Charts that are embedded in a worksheet can easily be moved to a new location. A chart can be moved by a simple drag, but you need to ensure that you click the chart area and not a separate element.



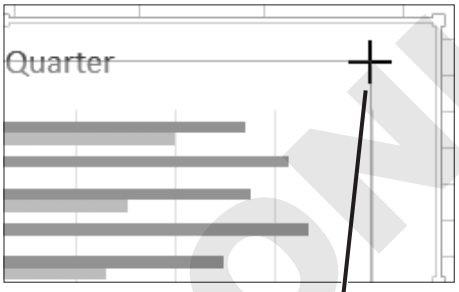
A four-pointed arrow (along with the "Chart Area" ScreenTip) indicates that you can drag to move this selected chart.

Sizing Embedded Charts

To size a chart, it must first be selected. You can drag a sizing handle when the double-arrow mouse pointer is displayed. To change a chart size proportionately, hold Shift while dragging a corner handle. If you wanted to only change the height or width of a chart you would not hold Shift.



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



As you drag to size a chart element, a black line displays the new size.

Deleting Charts

Deleting an embedded chart is simple—just select the chart area and tap Delete. You can delete a chart that is on its own tab by deleting the worksheet.

DEVELOP YOUR SKILLS EX06-D02

Size and Move an Embedded Chart

1. Save your file as **`EX06-D02-SalesCharts-[FirstInitialLastName]`**.
2. Click once on the chart area of the embedded chart in the **Sales by Quarter** sheet to select the chart.
3. Follow these steps to resize the chart to be smaller:

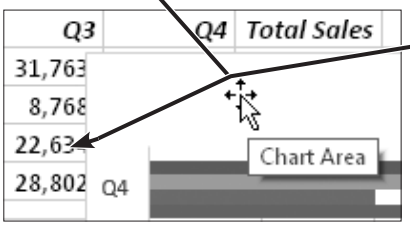
Ⓐ Place the mouse pointer here until you see the **double-pointed arrow** (not a four-pointed arrow).

Ⓑ Press and hold Shift while you drag the sizing handle down and to the left.

Ⓒ Release the mouse button to decrease the size a little, and then release Shift.

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

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



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

   Ⓒ Release the mouse button.

5. Hold down Ctrl, drag the **Sales by Quarter** sheet tab to the right, and then release the mouse and Ctrl.

6. Rename the **Sales by Quarter (2)** sheet to **`Team Totals`**.
7. Click once to select the chart in the **Team Totals** sheet and tap Delete.
8. Use Ctrl + Z to undo the Delete command.
9. Use Ctrl + Y to redo the Delete command.
10. Save the file and leave it open.

Exploring Other Chart Types

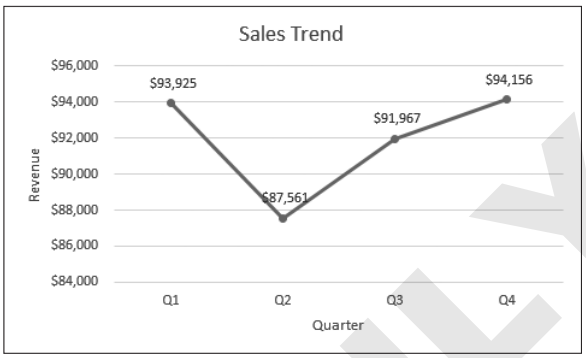
Here you will explore line and pie charts and how they can make your data work for you. Pie charts are suitable when you are examining data that represent portions of a whole (just as pieces of an apple pie, when combined, represent the whole pie).

Line Charts

Line charts are most useful for comparing trends over a period of time. Like column charts, line charts have category and value axes. Line charts also use the same or similar objects as column charts.

	A	B	C	D	E	F
1	**Sales Department**					
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
9						
10	Quarter Total	$ 93,925	$ 87,561	$ 91,967	$ 94,156	$ 367,609

The chart was created using the selected data.

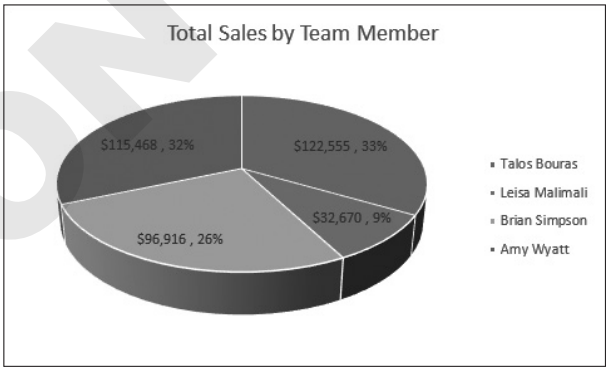


Data labels show the precise value of the various data points.

Pie Charts

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.

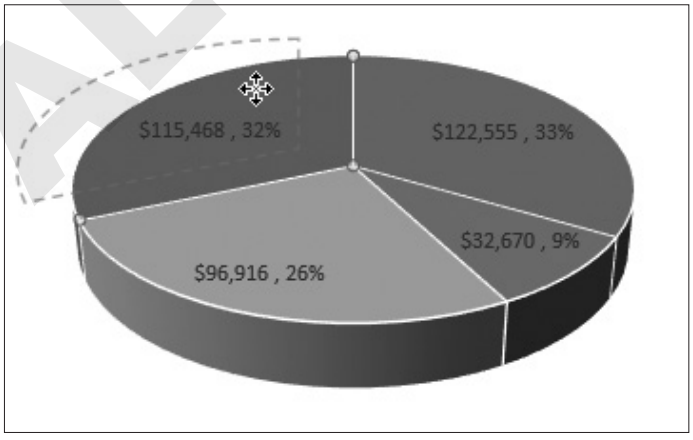
	A	B	C	D	E	F
4		*Q1*	*Q2*	*Q3*	*Q4*	*Total Sales*
5	Talos Bouras	28,775	31,342	31,763	30,675	$ 122,555
6	Leisa Malimali	6,575	7,304	8,768	10,023	$ 32,670
7	Brian Simpson	27,850	21,471	22,634	24,961	$ 96,916
8	Amy Wyatt	30,725	27,444	28,802	28,497	$ 115,468
9						
10	Quarter Total	$ 93,925	$ 87,561	$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



This pie chart is based on the selected data.

Exploding Pie Slices

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



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

FROM THE RIBBON

Format→Shape Styles→Shape Effects→3-D Rotation→3-D Rotation Options

You can change the rotation and perspective (also known as elevation) of pie charts to display data in a different position or change the angle at which it is viewed.

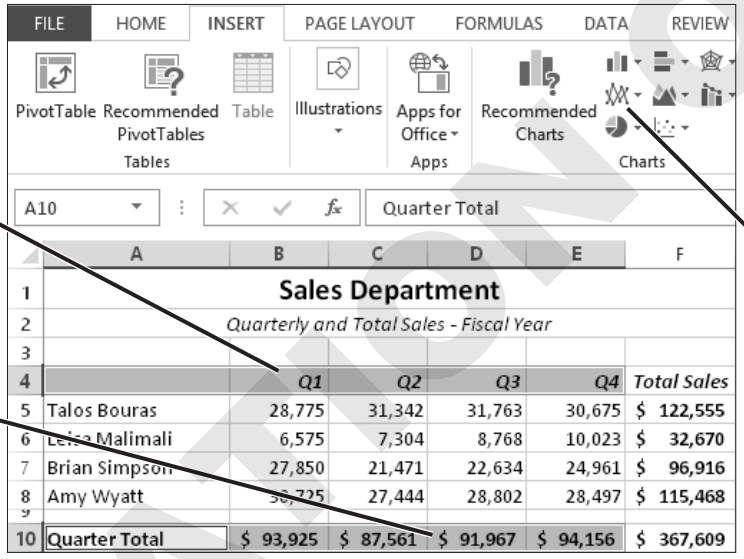
DEVELOP YOUR SKILLS EX06-D03

Create a Line Chart

1. Save your file as **`EX06-D03-SalesCharts-[FirstInitialLastName]`**.
2. Select the **Sales by Quarter** worksheet.
3. Follow these steps to select the data for the line chart:

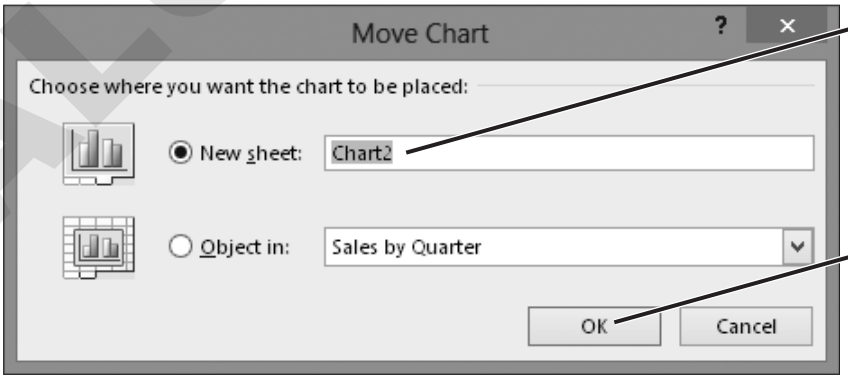
Ⓐ Select the **range A4:E4**.

Ⓑ Press and hold Ctrl while selecting the **range A10:E10**.



Ⓒ Choose **Insert→ Charts→ Insert Line Chart ▾ →Line with Markers**.

4. With the chart selected, choose **Chart Tools→Design→Location→Move Chart**.
5. Follow these steps to move the chart to its own sheet:

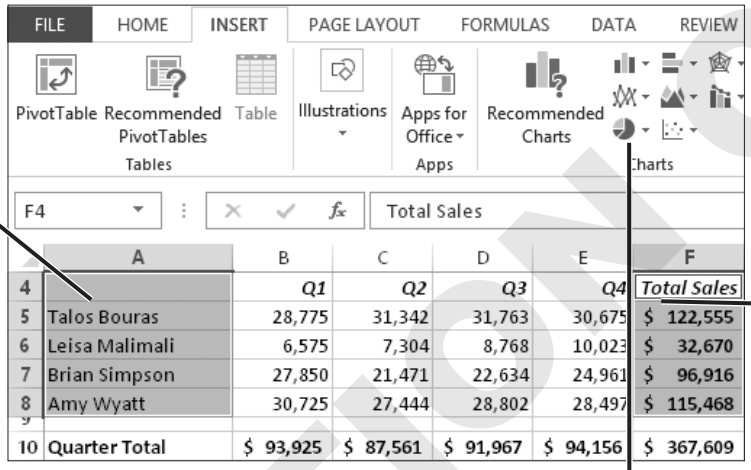


Ⓐ Highlight **Chart2** and type **`Sales Trend`**.

Ⓑ Click **OK**.

6. Click the **Title** text box, type **`Sales Trend`**, and tap Enter.

7. Choose **Chart Tools→Design→Chart Layouts→Add Chart Element →Axis Titles→Primary Horizontal**.
8. Type **`Quarter`** and tap Enter to replace the default horizontal axis title.
9. Choose **Chart Tools→Design→Chart Layouts→Add Chart Element →Axis Titles→Primary Vertical**, type **`Revenue`**, and tap Enter.
10. Choose **Chart Tools→Design→Chart Layouts→Add Chart Element →Data Labels→Above**.
11. Select the **Team Totals** worksheet.
12. Follow these steps to select the range for the pie chart:



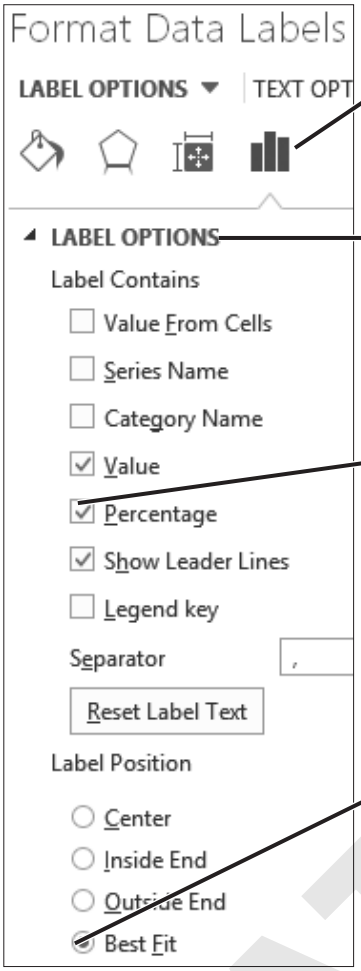
Ⓐ Drag to select the **range A4:A8**.

Ⓑ While holding Ctrl, drag to select the **range F4:F8**.

Ⓒ Choose **Insert→Charts→Insert Pie or Doughnut Chart →3-D Pie**.

13. Place the mouse pointer over the chart area so that the **four-pointed arrow** appears, and then drag down and left until it is below **row 11** and centered between **columns A–F**.
14. Edit the chart title to read **`Total Sales by Team Member`**. Click outside of the Title box to accept the new title.
15. Choose **Chart Tools→Design→Chart Layouts→Add Chart Element →Data Labels→More Data Label Options**.

16. Follow these steps to format the data labels:



Ⓐ Select **Label Options**.

Ⓑ Click the **Label Options category title** to expand the list of options, if necessary.

Ⓒ Place a checkmark next to **Percentage**.

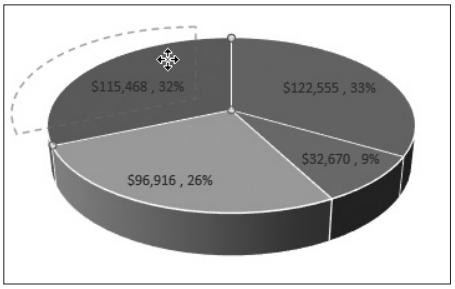
Ⓓ Choose **Best Fit** here, if necessary.

Ⓔ Click **Close**.

17. Click the slice representing **Amy Wyatt's sales**, and then pause and click it again.

18. 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.

19. Save the file and leave it open.



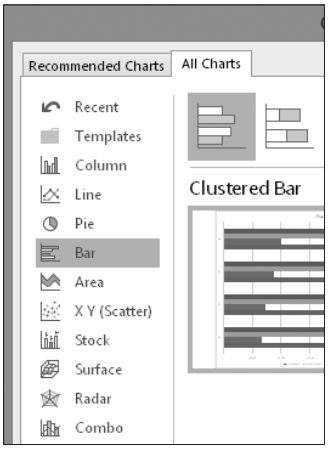
Modifying Existing Charts

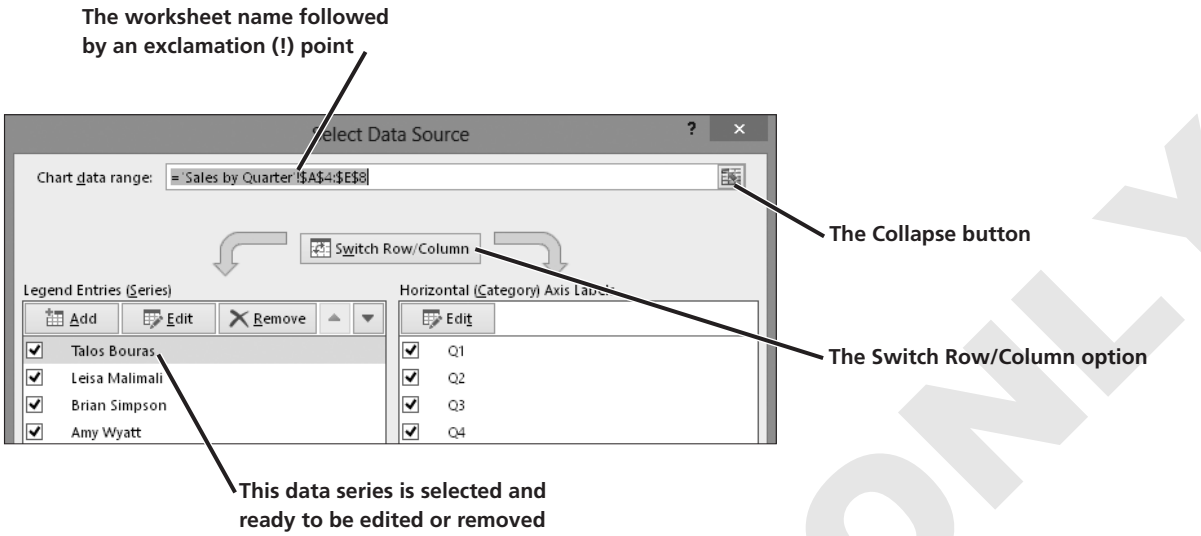
You can modify any chart object after the chart has been created. The following table describes the various Chart Tools available to modify your charts.

CHART TOOLS ON THE RIBBON	
Contextual Tab	**Command Groups on the Tab**
Design	■ *Chart Layouts:* Change the overall layout of the chart and add chart elements. ■ *Chart Styles:* Choose a preset style for your chart. ■ *Data:* Switch the data displayed on rows and columns, and reselect the data for the chart. ■ *Type:* Change the type of chart, set the default chart type, and save a chart as a template. ■ *Location:* Switch a chart from being embedded to being placed on its own sheet and vice versa.
Format	■ *Current Selection:* Select a specific chart element, apply formatting, and reset formatting. ■ *Insert Shapes:* Insert and change shapes. ■ *Shape Styles:* Visually make changes to the selected chart element. ■ *WordArt Styles:* Apply WordArt to text labels in your chart. ■ *Arrange:* Change how your chart is arranged in relation to other objects in your worksheet. ■ *Size:* Change the size of your chart.

Changing the Chart Type and Source Data

It's easy to change an existing chart to a different type using the Change Chart Type dialog box. You can also change the source data from within the Select Data Source dialog box. You may find it easier to edit the existing data range by using the collapse button. Aside from editing the data range, you can also alter individual data series, add additional data series, and alter the horizontal axis. Note that the Switch Row/Column option swaps the data in the vertical and horizontal axes.





Modifying and Formatting Chart Elements

The legend, titles, and columns are chart elements. Once selected, you can delete, move, size, and format different elements. You can move a selected element by dragging it with the mouse when you see the move pointer, or change its size by dragging a sizing handle.

You can modify any chart element after the chart has been created by double-clicking the chart element to display a Format task pane with many options for that element. For example, options in the Format Chart Title dialog box allow you to adjust the vertical alignment, adjust the text direction, and apply a fill, border, or other visual effects.

Previewing Formatting Before Applying

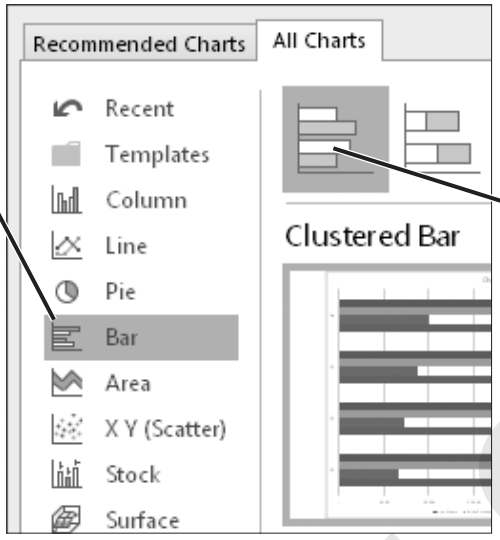
The Chart Formatting buttons allow you to preview a variety of formatting changes. If you place the mouse pointer over an option accessed through these buttons, a preview displays how the change will look in your chart.

DEVELOP YOUR SKILLS EX06-D04

Modify a Chart

1. Save the file as **`EX06-D04-SalesCharts-[FirstInitialLastName]`**.
2. Select the **Sales by Rep** worksheet, click anywhere within the column chart, and choose **Chart Tools→Design→Type→Change Chart Type**.

3. Follow these steps to change the chart type:



Ⓐ Display the **Bar** category.

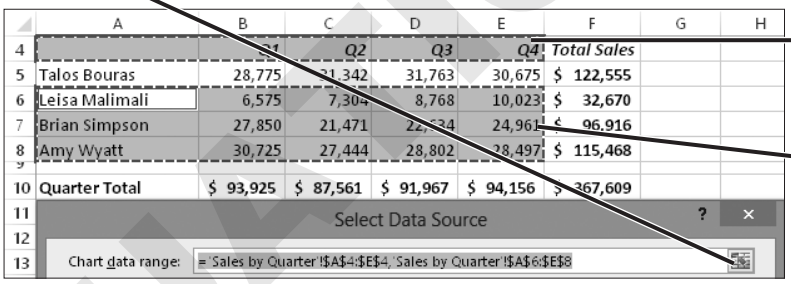
Ⓑ Choose **Clustered Bar**.

Ⓒ Click **OK**.

4. Choose **Chart Tools→Design→Data→Select Data**.

5. Follow these steps to reselect the chart data range:

Ⓐ Click the **Collapse** button to view the worksheet data.



Ⓑ Select the **range A4:E4**.

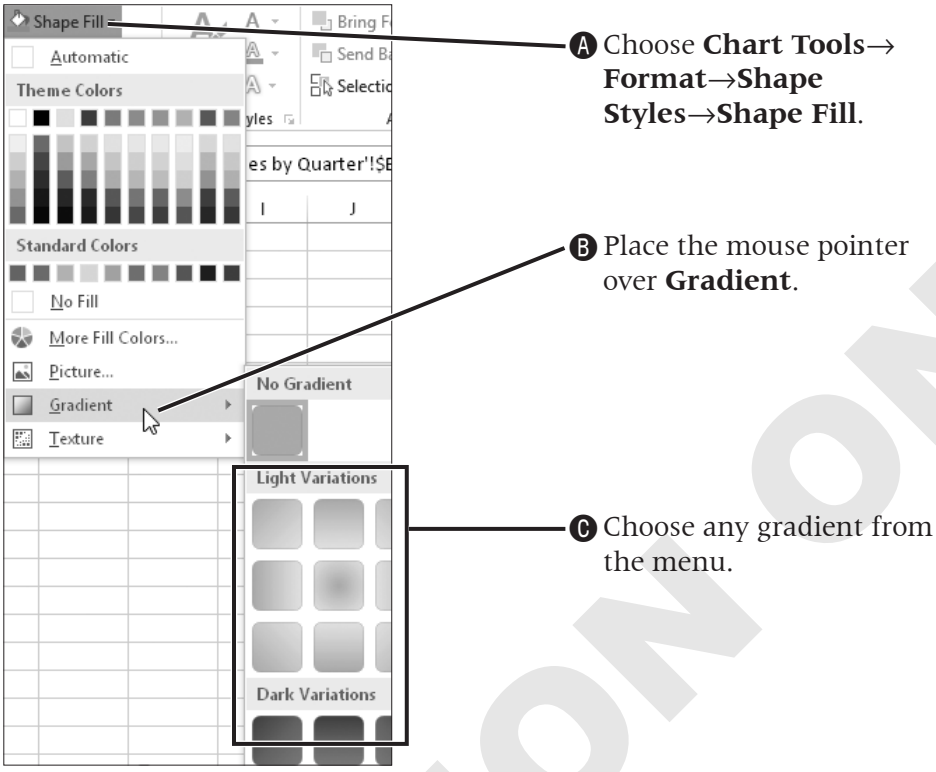
Ⓒ Hold down Ctrl and select the **range A6:E8**.

Ⓓ Click the **Expand** button and click **OK**.

6. Select one of the column bars for **Leisa Malimali** and tap Delete.

7. Click anywhere within the top bar in the chart.

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



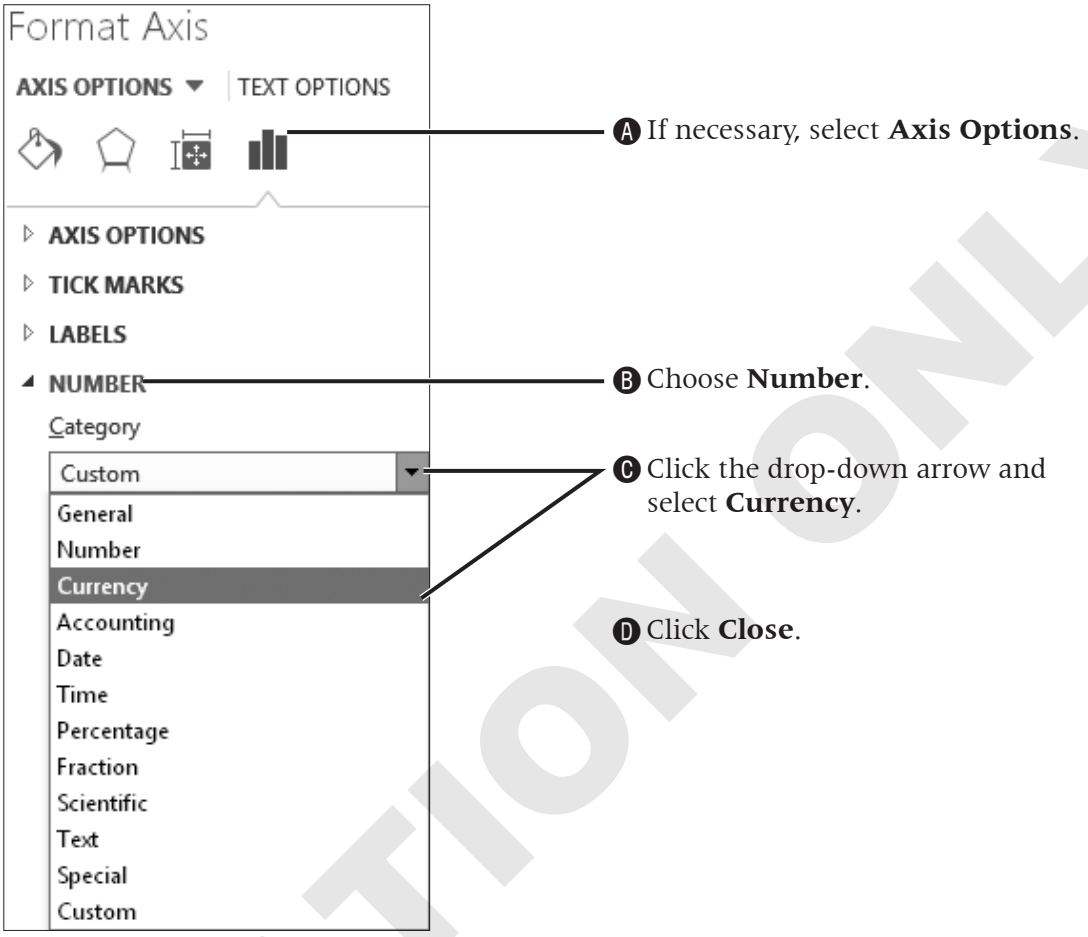
9. Click anywhere within the chart area to select it.

10. Choose **Chart Tools→Format→Shape Styles→Shape Outline** →**Weight** and select **3 pt**.

11. Choose **Chart Tools→Format→Shape Styles→Shape Outline** and apply any color; then, click away from the chart to review your formatting changes.

12. Double-click any of the values in the **horizontal axis**.

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

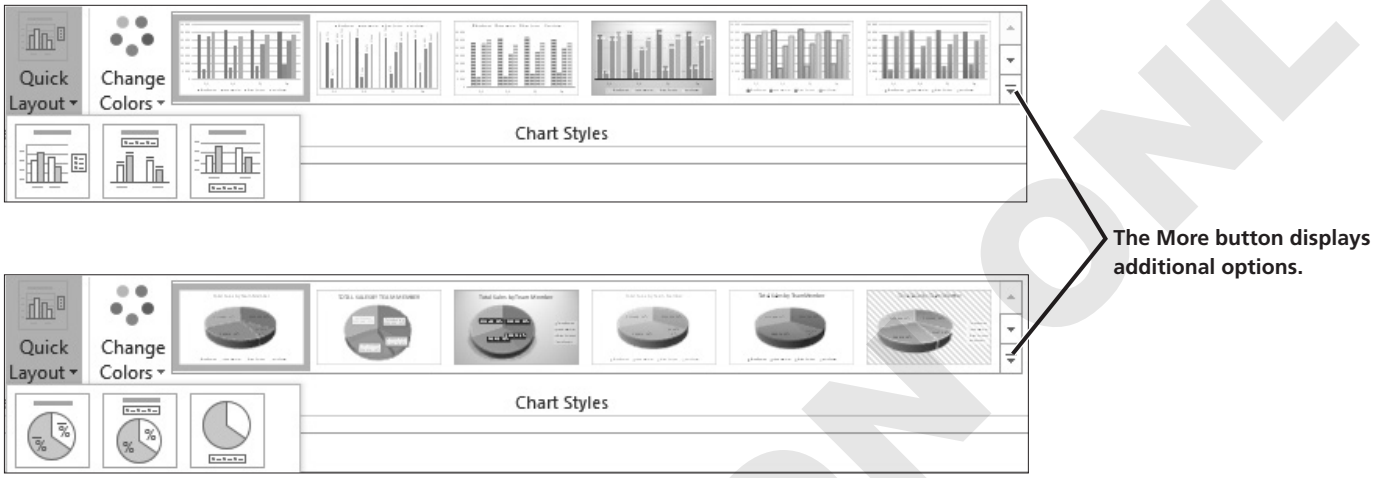


14. Change the default chart title to **`Sales by Rep`**.

15. Save the file and leave it open.

Applying Layouts and Styles to Charts

Chart layouts, also known as quick layouts, are designs that contain various preset chart elements. Choosing a chart layout saves time versus adding and formatting chart elements one at a time. Chart styles are based on the theme applied to your workbook. You can apply many preset styles to each chart type.



The available chart layouts and styles change based on the type of chart selected.

Formatting Attributes Controlled by the Selected Style

When you choose a style for your chart, the colors and effects (such as fill effects) change to match the style selected. Data in worksheet cells are not affected by any styles 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.

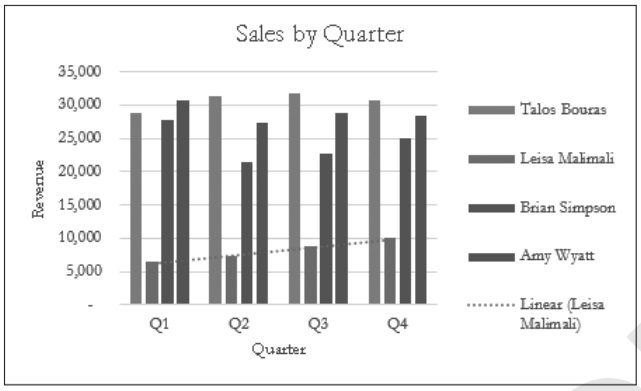
DEVELOP YOUR SKILLS EX06-D05

Apply a Layout and a Style to a Chart

1. Save your file as **`EX06-D05-SalesCharts-[FirstInitialLastName]`**.
2. Select the **Sales by Rep** sheet and choose **Page Layout→Themes→Themes →Organic**.
3. Click in the chart area of the **Sales by Rep** chart to select the chart, if necessary.
4. Choose **Chart Tools→Design→Chart Layouts→Quick Layout**.
5. Choose **Layout 2** in the list.
6. Choose **Chart Tools→Design→Chart Styles→ More**.
7. Choose **Style 4** in the list.
8. Save the file and leave it open.

Creating Trendlines

Trendlines are used on charts for data analysis and prediction. A trendline displays the trend (increasing or decreasing) of one data series in a chart. There are several types of trendlines available, each suited to the display of particular data types. For example, a linear trendline works well with data that follow a fairly straight path. A moving average trendline will smooth out fluctuations in data by averaging two or more adjacent data points for each trendline data point.



This linear trendline depicts the upward trend for Leisa Malimali's sales.

DEVELOP YOUR SKILLS EX06-D06

Add a Trendline

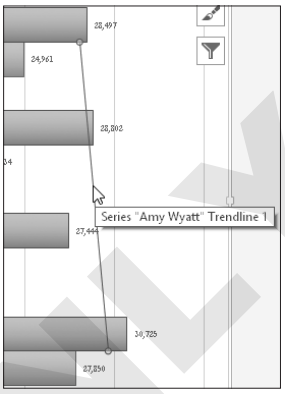
1. Save your file as **`EX06-D06-SalesCharts-[FirstInitialLastName]`**.
2. Follow these steps to add a trendline to the Amy Wyatt data series:

Ⓐ Select the **Sales by Rep** sheet.

Ⓑ Choose **Chart Tools→ Design→Chart Layouts→Add Chart Element→Trendline→Linear**.

Ⓒ Choose **Amy Wyatt**.

Ⓓ Click **OK**.



3. Position the tip of the pointer arrow against the trendline and click to select the trendline.
4. Choose **Chart Tools→Design→Chart Layouts→Add Chart Element →Trendline→Linear Forecast**.
5. If necessary, double-click the trendline to open the **Format Trendline** task pane.
6. In the **Forecast** area of Trendline Options, change **Forward** from 2.0 periods to **1**; tap Enter.
7. With the trendline still selected, select **Moving Average** in the Format Trendline task pane; click **Close**.
8. Save the file and leave it open.

Previewing and Printing Charts

The print area within the File tab of Backstage view shows chart previews. Keep in mind that if an embedded chart is active when you choose to print, only the chart itself will print. You must deselect an embedded chart to print its entire worksheet.

DEVELOP YOUR SKILLS EX06-D07

Preview and Print a Chart

1. Save the file as **EX06-D07-SalesCharts-[FirstInitialLastName]**.
2. Select the **Team Totals** worksheet; then click once to select the pie chart.
3. Choose **File→Print**.
4. Tap Esc to exit Backstage view without printing.
5. Click in a cell away from the pie chart to deselect the chart.
6. Choose **File→Print**.
7. Tap Esc to exit Backstage view without printing.
8. Display the **Sales Trend** worksheet and, if desired, choose **File→Print** to print the worksheet.
9. Save then close the file. Exit **Excel**.

Concepts Review

To check your knowledge of the key concepts introduced in this lesson, complete the Concepts Review quiz on the student resource center.